

STATE OF TENNESSEE

Office of the Attorney General



ROBERT E. COOPER, JR.
ATTORNEY GENERAL AND REPORTER

ANDY D. BENNETT
CHIEF DEPUTY ATTORNEY GENERAL

LUCY HONEY HAYNES
ASSOCIATE CHIEF DEPUTY
ATTORNEY GENERAL

MAILING ADDRESS

P.O. BOX 20207
NASHVILLE, TN 37202

MICHAEL E. MOORE
SOLICITOR GENERAL

CORDELL HULL BUILDING
NASHVILLE, TN 37243-0485

TELEPHONE (615) 741-3491
FACSIMILE (615) 741-2009

March 2, 2007

Chairman Sara Kyle
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, Tennessee 37243-0505

Filed electronically in docket office 03/02/2007

Re: Tennessee American Water Rate Case (Docket 06-00290)

Dear Chairman Kyle:

We are filing the testimony of the Consumer Advocates's expert witness Dr. Steve Brown today even though the deadline for filing testimony has been moved to March 5, 2007. We are doing this because we do not anticipate any changes in Dr. Brown's testimony between now and March 5th and also because we believe this early filing may help the parties and the TRA staff in their efforts to keep on the already compressed procedural schedule.

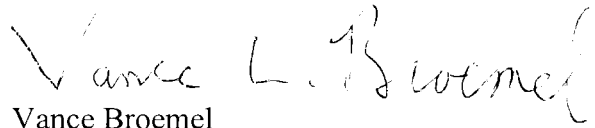
The Consumer Advocate and the City of Chattanooga have outstanding discovery requests regarding material related to American Water Company's Initial Public Offering and we reserve the right to supplement the testimony of Dr. Brown and our other witnesses when this material is received.

Testimony from additional Consumer Advocate witnesses will be filed March 5, 2007.

Director Kyle
Re: TRA Docket No. 06-00290
March 2, 2007
Page 2

Thank for your attention to this matter. By copy of this letter, I am notifying all counsel of record.

Sincerely,

A handwritten signature in dark ink, appearing to read "Vance L. Broemel". The signature is fluid and cursive, with the first name "Vance" and last name "Broemel" clearly distinguishable.

Vance Broemel
Assistant Attorney General
(615) 741-8700

cc: Counsel of record

104816

I. Introduction

Q_1. Please state your name.

A_1. Steve Brown.

Q_2. Where do you work?

A_2. I work in the Office of the Attorney General.

Q_3. What is your job title?

A_3. I have been the Economist in the Consumer Advocate and Protection Division since 1995. A statement of my credentials appears later.

II. Opinion On The Capital Structure And Debt Cost.

Q_4. What is your opinion on capital structure?

A_4. In my opinion there is good reason to base any change of rates for Tennessee-American Water Company's (TAWC's) customers on a capital structure and a capital cost that reflects the utmost caution towards the financial behavior of TAWC's parent, American Water Works (AWW).

Q_5. Why do you have the opinion that TAWC's capital structure be based on utmost caution towards the parent?

1 **A_5.** I have the opinion because in the
2 discovery process TAWC has made
3 representations that differ significantly
4 from the Company's statement made under
5 oath in 2003 regarding AWW's potential
6 transformation to a publicly-traded stock
7 and the possible effects on TAWC's capital
8 structure and costs. RWE is divesting
9 itself of AWW through an Initial Public
10 Offering, and AWW will soon be a publicly-
11 traded company. As shown in the following
12 two pages, AWW let it be known on November
13 2, 2006 that it hoped to complete the IPO
14 in the second quarter of 2007. On November
15 22, 2006 TAWC filed its rate case. The
16 Authority established a six-month
17 timetable to complete the case in May
18 2007. There is a strong possibility that
19 shortly after the Authority's decision
20 AWW's post-IPO capital structure and
21 capital costs will be known. These greatly
22 influence TAWC's capital costs because the
23 Authority's practice has been to establish
24 TAWC's rates via double-leverage, where
25 the AWW's capital costs flow to the
26 subsidiary rather than the subsidiary
27 being treated as if it were a stand-alone
28 entity. Unlike my testimony in prior cases
29 involving TAWC, I am providing this
30 testimony without knowing the capital
31 structure and capital costs of TAWC's
32 soon-to-be parent, AWW.

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MSN Money Experts
Jim Jubak
Jon Markman
Liz Pulliam Weston
MP Dunleavy

November 2, 2006 3:57 PM ET

American Water Set for Consolidation

NEW YORK (AP) - The U.S. water industry is set for a wave of consolidation, and American Water expects to be an acquirer, said Chief Executive Donald L. Correll, whose company is preparing to become the biggest publicly traded U.S. water utility.

In a wide-ranging interview, Correll also talked about the industry's need to seek a bigger spotlight, how the brightest long-term growth prospects lie with municipal partnerships and the kind of investors he expects his company to

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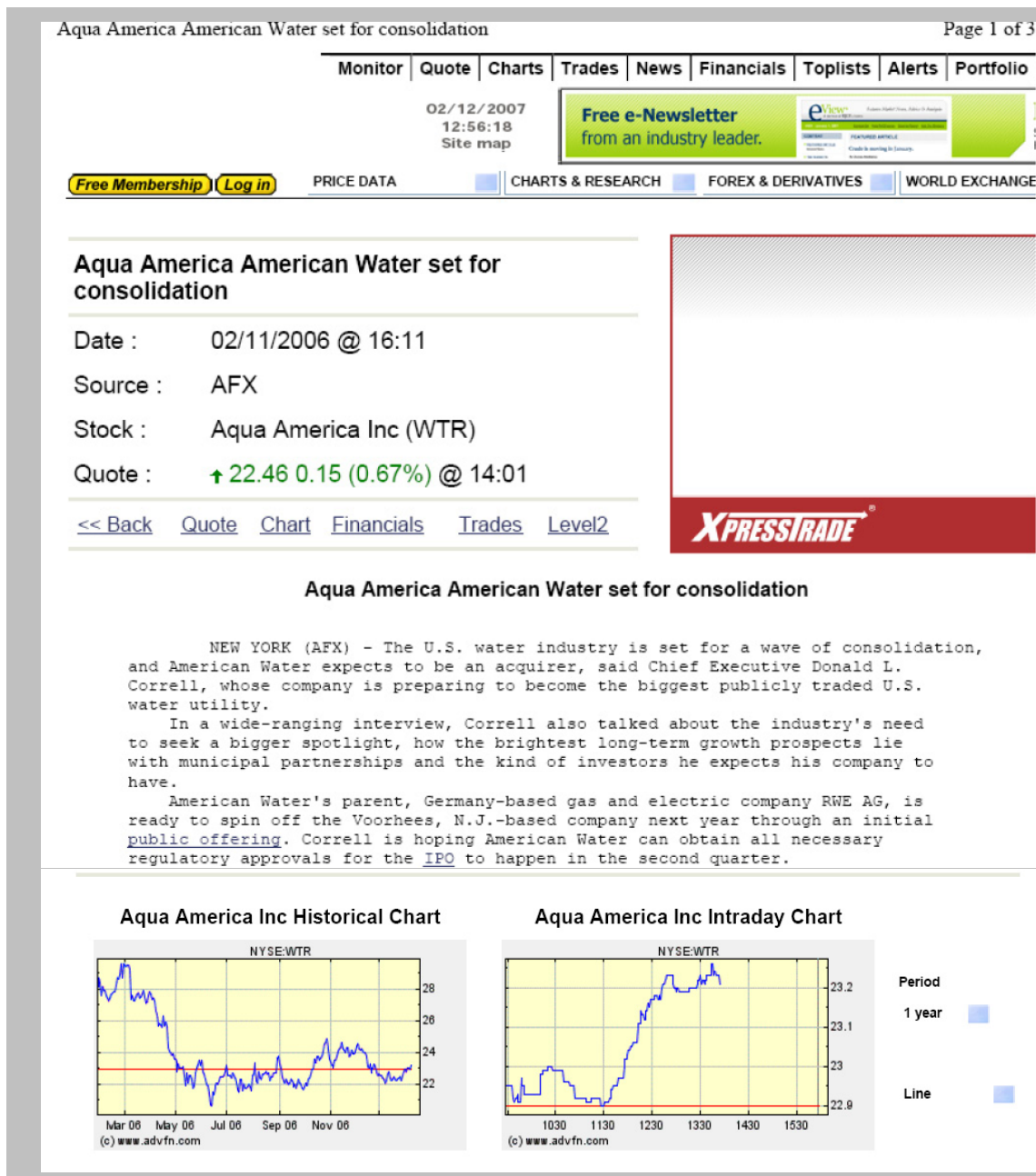
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Iran on course for nuclear bomb, EU told
At Reuters: Prodesse Q4 net income dips vs Q3, dividend rises

American Water's parent, Germany-based gas and electric company RWE AG, is ready to spin off the Voorhees, N.J.-based company next year through an initial public offering. Correll is hoping American Water can obtain all necessary regulatory approvals for the IPO to happen in the second quarter.

The size of an American Water IPO could mean a dramatic increase in investor awareness for the water industry, Janney Montgomery Scott analyst Debra Coy said. American Water, with a possible market capitalization of about \$5 billion, could single-handedly double the industry's overall market capitalization, she said.



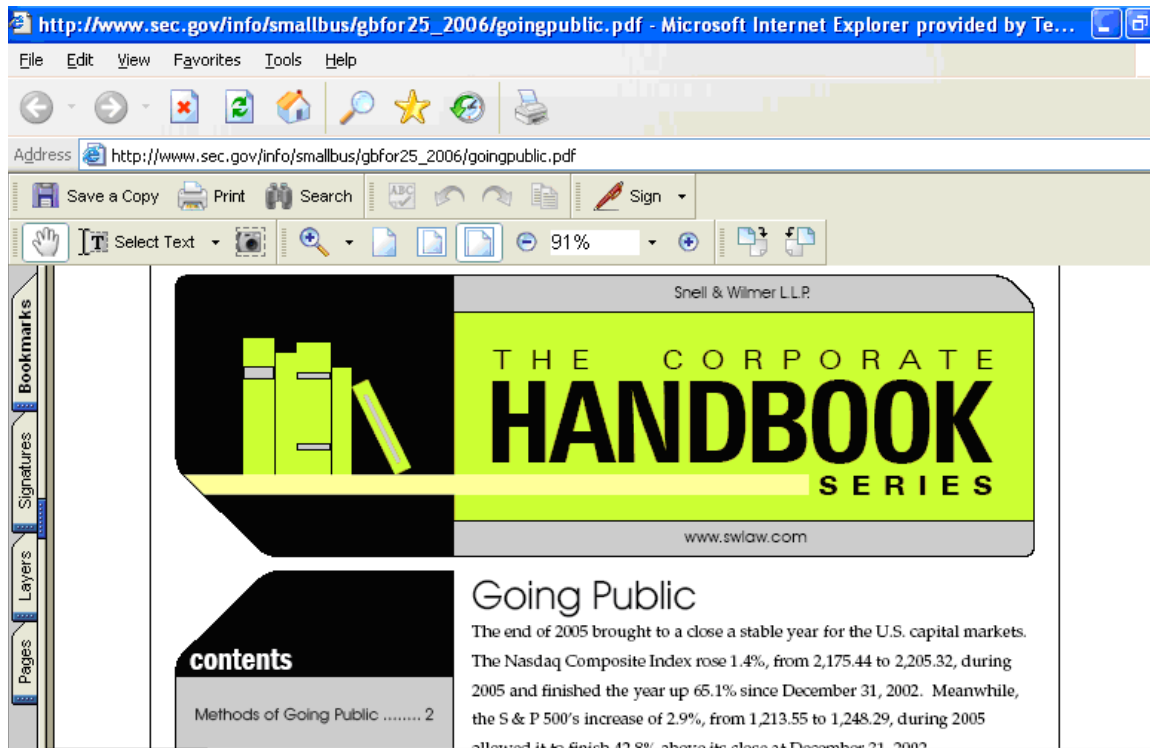
q_6. What efforts did CAPD make to obtain data that would allow you to estimate AWW's post-IPO capital structure and capital costs?

1 **A_6.** CAPD issued discovery requests aimed at
2 acquiring needed information but the
3 Company objected to them.

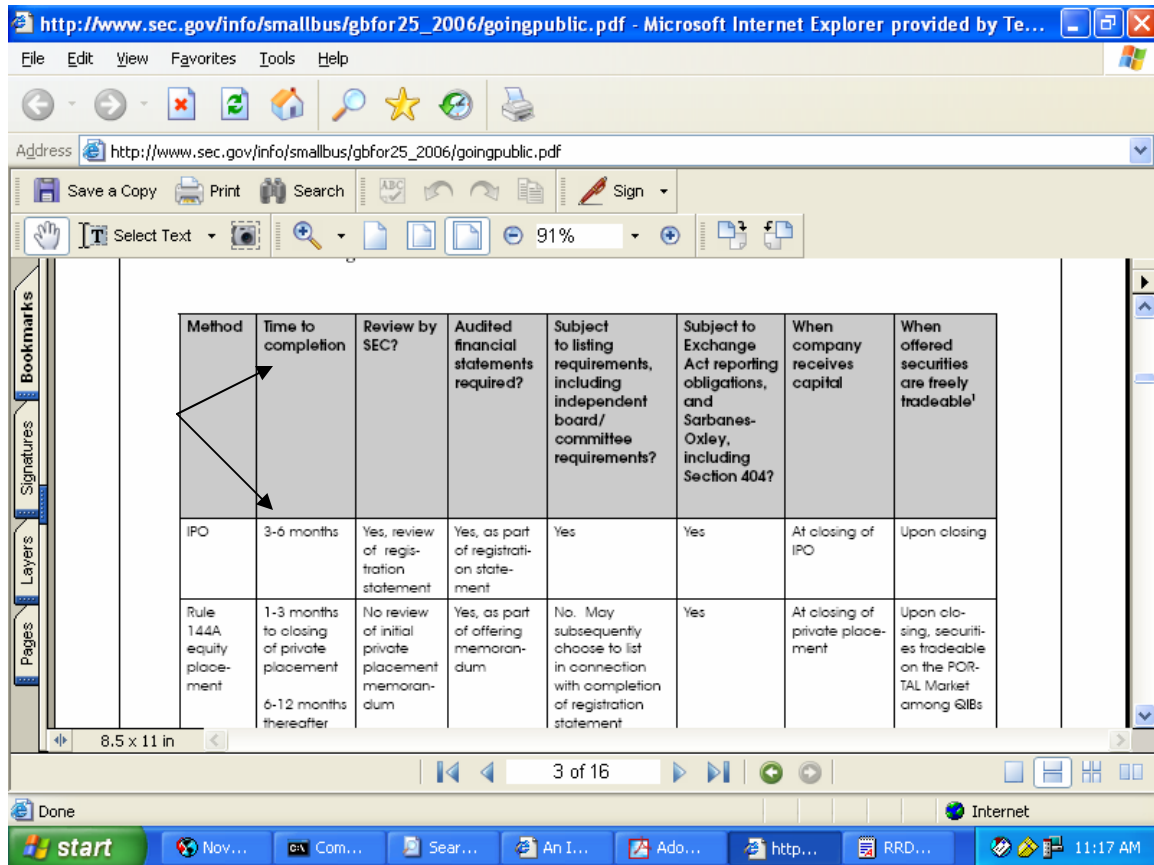
4
5 **Q_7.** **What evidence supports your opinion that**
6 **shortly after the Authority's decision the**
7 **IPO may be complete and AWW's post-IPO**
8 **costs and capital structure will be known?**

9
10 **A_7.** My opinion is based on the normal six-
11 month timetable for an IPO. Two sources of
12 IPO timetables, one from the SEC and one
13 from R.R. Donnelly, are shown on the
14 following pages. For each source I display
15 two pictures.

16
17 SEC Picture 1:



1 SEC Picture 2:

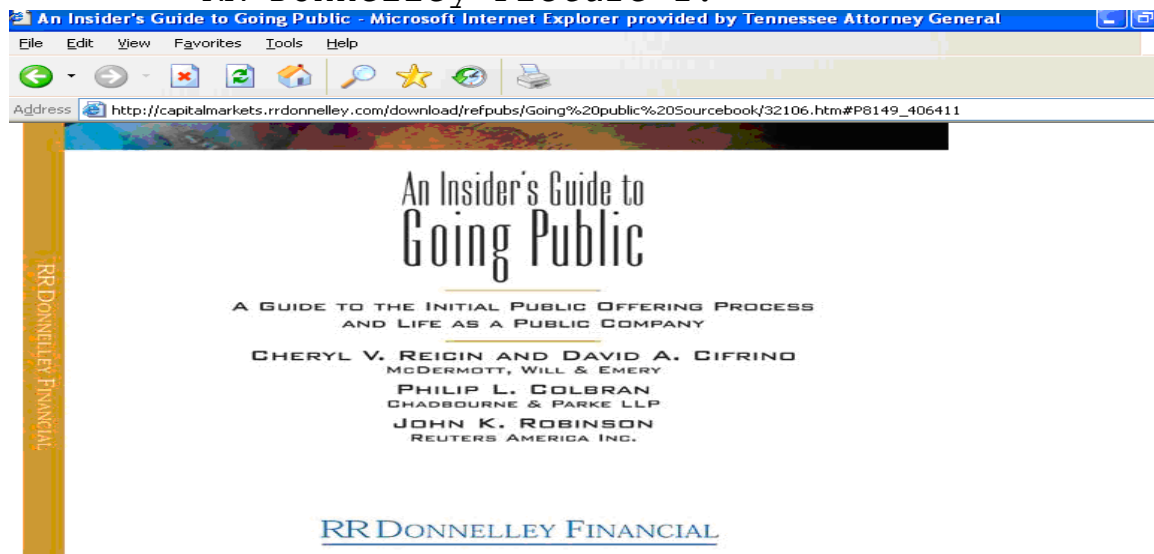


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4

RR Donnelley Picture 1:



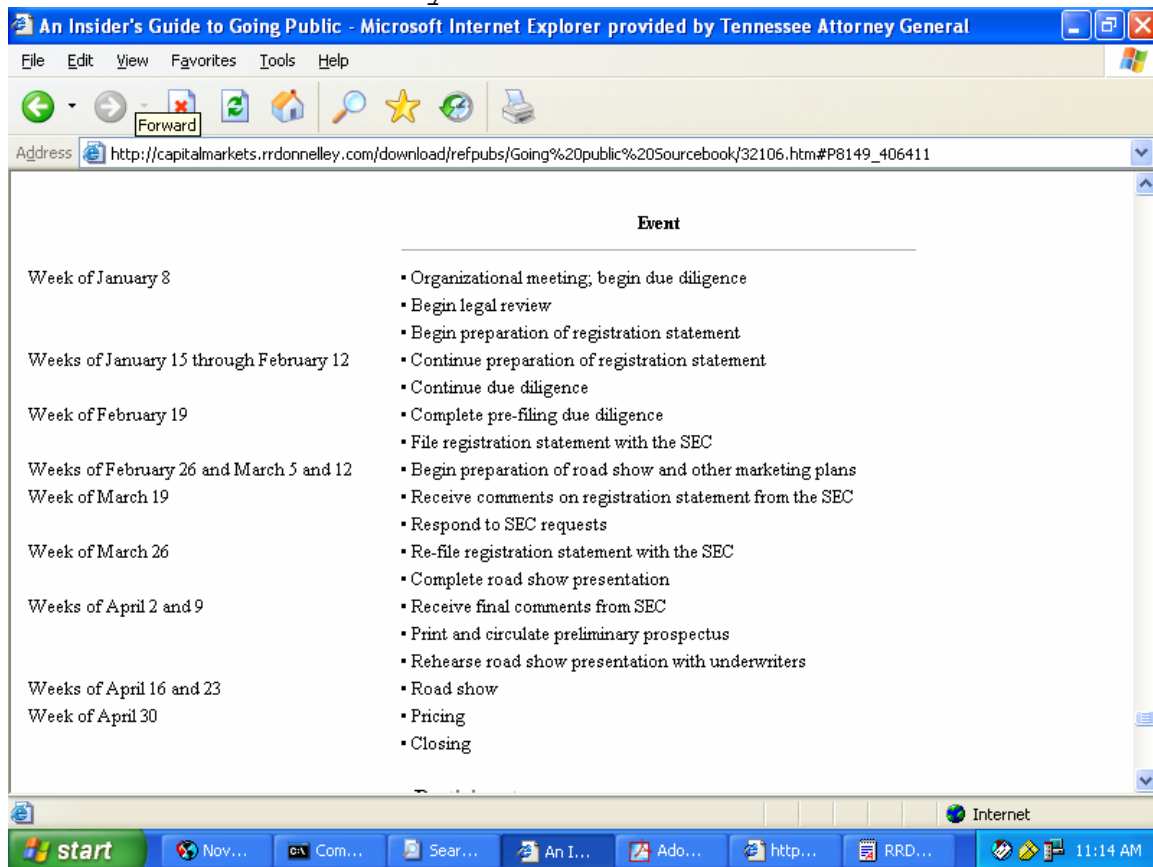
5

6

7

8

1 RR Donnelly Picture 2:



2 The displayed pictures clearly show a six
3 month timetable for an IPO and suggest
4 that AWW's IPO would be complete by June
5 30, 2007 because that date is eight months
6 from November 2, 2006. However, the
7 Company refused to confirm or deny that it
8 will complete the IPO before June 30,
9 2007. In response to CAPD Discovery
10 Request Part III, number 9, TAWC replied:

Responsible Witness: Michael Miller/or others

PART III: QUESTIONS & REQUESTS REGARDING COST OF CAPITAL & MISCELLANEOUS

Question:

9. Admit the following statement: The IPO will be complete by June 30, 2007.

Response:

The Company objects to this request on the grounds that it does not seek an admission of the truth of any matter related to a statement or opinion of fact or of the application of law to fact. Notwithstanding this objection, the Company states that it has made reasonable inquiry and the information known or readily obtainable by the Company is insufficient to enable it to admit or deny the request. However, the Company can state that it is unlikely that the IPO will be complete by June 30, 2007.

In the recent hearing to resolve discovery disputes the Company represented that the IPO will have a limited effect on ratepayers:

" ... We locked in a 5.52 percent. That is higher than 4.75, obviously. And so that's why we make the statement that RWE is committed to make Tennessee American whole for that difference, for that \$19 million that they are calling. And that's the only conceivable effect of the IPO on this rate case... we're solving that through the actions of RWE and the commitment of RWE." [TRA Docket 06-00290,, Tuesday, February 9, Page 43, line 25 – Page 45 line 2].

Also, Mr. Miller replied to the City Of Chattanooga's discovery request 32, regarding TAWC's dividend payments to its parent, that no policy changes are expected:

1

Responsible Witness: Michael Miller

Question: |

32. Provide all **Documents** reflecting, recording, referring to, reporting, or related to changes in projected **TAWC** dividend rates for the periods 2006 through 2011, plans for, projections of, or recommendations for increases in dividend rates by **TAWC** or any **Operating Company**, including, without limitation, any **Documents** reflecting **Communications** with Goldman Sachs or any other investment banker or adviser concerning such dividend changes.

Response:

TAWC objects to this question on the grounds that the requested information is overly broad, overly burdensome, not within the possession or control of TAWC, and not relevant to this proceeding. Notwithstanding the objection, TAWC provides the following response. TAWC does not expect any change in its dividend policy. The dividend policy of the other operating subsidiaries of AWW are not relevant to this proceeding. TAWC has had no communications with Goldman Sachs or any other advisor.

2

3

4

5

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9

However, the Company's current assessment of TAWC's post-IPO future, that the change of ownership will have a de minimis effect, is very different than the Company's assessment in the Authority's Docket No. 03-00118:

10

11

12

13

14

15

DIRECT EXAMINATION: BY MR. GRIMES: "Q. Mr. Miller, I believe it's in the testimony that you provided, I don't think you stated this in your summary yesterday, so could you please tell us what your position is with the company."

16

17

18

19

20

"A. I'm the vice president and treasurer of Tennessee American Water Company, its chief financial officer." [TRA Docket 03-0018, Trans. Vol. II, Tuesday, July 1, Page 173, lines 16-24].

1
2 *Q. Is Tennessee American guaranteed additional parent*
3 *equity or debt through American Water Company?"*

4
5 *"A. Absolutely not. There is always a possibility that the*
6 *company would have to retract that capital as a stand-*
7 *alone entity in the public market..." [TRA Docket 03-0018,*
8 *Trans. Vol. II, Tuesday, July 1, Page 177, lines 13-17].*

9
10 Mr. Miller warned all parties that if AWW
11 became a public company, it would, at its
12 discretion, deplete TAWC's equity.

13
14 **Q_8. In your opinion what is the effect of the**
15 **company providing different**
16 **representations of future events?**

17
18 **A_8.** In my opinion the Company's different
19 statements create uncertainty regarding
20 the appropriate capital structure for
21 consumers' water-rates. If the rates are
22 based on a capital structure where AWW's
23 estimated equity ratio is larger than its
24 actual post-IPO equity ratio, consumers
25 will bear a heavier burden for equity than
26 AWW as whole.

27
28 **Q_9. How have you dealt with the uncertainty**
29 **created by TAWC's statements?**

30
31 **A_9.** TAWC's statements refer to future events.
32 In this situation it is not possible to
33 declare that one scenario is accurate and
34 the other is wrong, or that one scenario
35 is the truth while the other is not.
36

1 In my opinion TAWC has placed into the
2 record two different scenarios: one is
3 rosy where the IPO has no impact while the
4 other warns of harm the IPO may bring.
5 TAWC's proposed stand-alone equity ratio
6 of 43% is a forecast which does not
7 consider Mr. Miller's cautionary statement
8 of July 1, 2003. He told us what might
9 happen if AWW went public, and AWW is
10 going public. I heed his warning. Ignoring
11 it places consumers at risk -- they will
12 not be protected when and if the new
13 owners of AWW proceeded to withdraw
14 capital from TAWC.

15
16 **Q_10. In your opinion, how can consumers in**
17 **Chattanooga be protected from the peril**
18 **which Mr. Miller has identified?**

19
20 **A_10.** In my opinion consumers can be protected
21 by a capital structure based on AWW's past
22 behavior. In the five years prior to the
23 sale of AWW to RWE, AWW's capital
24 structure was laden with debt and its
25 annual equity ratio hovered at 36%. As of
26 March 2002, the equity ratio had fallen to
27 30%. Also, AWW's equity ratios were well
28 below the equity ratios of most other
29 publicly-traded water companies. These
30 facts are presented in my Schedules 1, 2
31 and 3. Furthermore, I provided direct
32 testimony in TRA Dockets Nos. 03-00118 and
33 04-00288 regarding the equity ratio of
34 TAWC's ultimate owner, RWE. At the time
35 RWE's equity ratios were about 11% and
36 27%.

1
2 Furthermore, the recent audits provided by
3 AWW in response to CAPD's discovery
4 requests show AWW operating at a 33%
5 equity ratio, but this data is for the
6 regulated and nonregulated businesses in
7 Thames Water Aqua US Holdings, Inc.
8 (TWAUSHI) and AWW. Therefore, in my
9 opinion the 43% equity ratio proposed by
10 TAWC is not likely to match AWW's post-IPO
11 capital structure. In addition, my opinion
12 is that AWW's post-IPO capital structure,
13 whatever level it may be initially, will
14 not be sustainable without additional
15 rounds of rate cases for the subsidiary,
16 despite TAWC having filed rate cases 2003,
17 2004, and November 2006.

18
19 For example, Schedule 4 is a copy of
20 publicly available testimony given in
21 September 2006 to the Pennsylvania Public
22 Utility Commission in its Docket No. A-
23 212285F0136. Schedule 4 presents the cover
24 page and page 18 of testimony by Mr. Scott
25 Rubin. At page 18 he notes that AWW will
26 have to provide \$1.75 billion to redeem
27 AWW's preferred stock held by an RWE
28 affiliate. This prospect must be evaluated
29 in view of TAWC's response to CAPD
30 discovery request, part III 7c. CAPD asked
31 the Company to "provide the portion of
32 expected gross proceeds which will flow to
33 AWW." The Company responded by objecting
34 to the question but replied: "AWW is not
35 expected to obtain any proceeds from the
36 IPO."

1
2 Considering Mr. Miller's warning about the
3 likely behavior of TAWC's parent, the
4 parent's history of operating at low
5 equity ratios, and the possibility that
6 AWW will soon be called on to redeem its
7 preferred stock, my opinion is that
8 consumers are protected via an ultimate
9 capital structure having 30 percent equity
10 and 70 percent debt. This procedure is
11 different from the equity ratios I
12 proposed in the last two cases involving
13 TAWC. In those cases I based the equity
14 ratio on an average of comparable water
15 companies. However, the circumstances of
16 this case are different.

17
18 The cautious equity ratio I am using is
19 one way to protect consumers in the event
20 TAWC's parent withdraws capital for the
21 subsidiary. However, the cautious equity
22 ratio may not prevent the billing of
23 unreasonable expenses to TAWC by the
24 parent, which would be another way to
25 retract capital from the subsidiary.

26
27 Consistent with my opinion that consumers
28 need protection, my further opinion is
29 that TAWC's proposed capital structure of
30 43% and proposed rate increase of 20% are
31 means to a short-run goal established by
32 its current owner: to improve the
33 attractiveness of the subsidiary and AWW
34 to potential buyers in the IPO.

1 **Q_11.** **What evidence supports your opinion that**
2 **the 43% capital structure and the 20%**
3 **price-increase are means to the short-run**
4 **goal of improving AWW's attractiveness to**
5 **potential buyers?**

6
7 **A_11.** My opinion is supported by TAWC's lack of
8 planning for "rate shock." The Company has
9 requested a 20% rate increase, but no
10 witness addresses the issue of rate shock
11 or provides an affordability analysis.

12
13 **Q_12.** **What is "rate shock?"**

14
15 **A_12.** Rate shock is an economic situation where
16 a community's demand for water declines in
17 response to a large price-increase by the
18 service provider or turns to another
19 service provider. The Company adjusts its
20 sale volumes for weather, but there is no
21 similar planning for the economic response
22 of the communities being served. The lack
23 of such planning is unusual. One thing is
24 certain, though. If the communities were
25 to decrease their water consumption
26 levels, the problem would not be RWE's
27 because that company will no longer be the
28 owner of AWW.

29
30 **Q_13.** **In your opinion why is the omission of**
31 **such planning unusual?**

32
33 **A_13.** The omission is unusual because the water
34 industry considers "rate shock" an
35 important issue as shown by the following

pictures from the American Water Works Association's (AWWA) internet site.



1 **Q_14. Are TAWC and AWW members of the AWWA?**

2

3 **A_14. Yes, they are members.**

4

5 **Q_15. In your opinion, can the ratepayers avoid**
6 **the 20% price increase by turning to**
7 **another service provider?**

8

9 **A_15. No. In my opinion, ratepayers cannot avoid**
10 **the 20% price increase by turning to**
11 **another service provider because TAWC has**
12 **no competitors.**

13

14 **Q_16. Did you ask TAWC about its competitors?**

15

16 **A_16. Yes. In CAPD Discovery Request Part III,**
17 **item 24 TAWC has asked to admit that it**
18 **had no competitors. The Company objected**
19 **to the request and did not admit that it**
20 **has no competitors, but Company did not**
21 **name any of its competitors.**

22

23 **Q_18. In your opinion would TAWC raise its**
24 **prices by 20% if it were facing**
25 **competitors?**

26

27 **A_18. No. In my opinion TAWC would not be able**
28 **to raise its prices by 20%.**

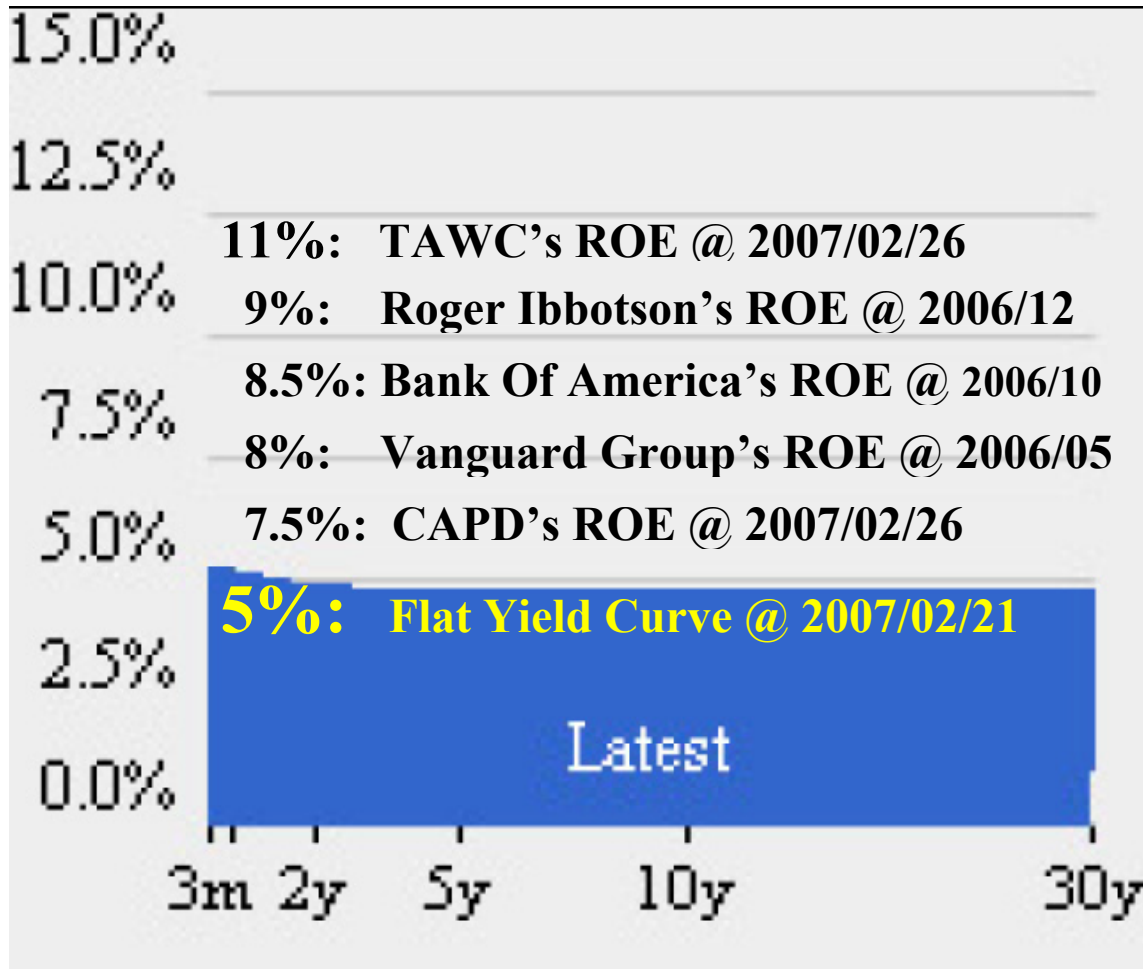
29

30 **Q_19. What cost do you apply to the debt ratio?**

31

32 **A_19. I apply a debt cost of 5.3%, the current**
33 **long-term debt cost of TWAUSHI and AWW.**
34 **The calculation appears in my Schedule 5.**
35 **I apply this rate to short-term debt too**
36 **because the Federal Reserve Board's Yield**

Curve is flat: the cost of 3-month note (3m) equals the cost of a 30-year note (30y), as shown in the chart below. The chart displays percentages on the left side, and the 5% Yield Curve near the bottom. Above the yield curve are five estimates for return-on-equity (ROE). TAWC's and the CAPD's ROEs refer to each party's recommended ROE. The other ROEs are from a financial expert and two financial organizations and are estimates of the entire stock market's ROE:



III. Opinion Regarding The Return On Common Equity.

Q_20. In your opinion what is the ROE?

A_20. In my opinion the data suggest an ROE of 7.5%. Later in my testimony I show how I arrive at that number. My return is consistent with current estimates from the Federal Reserve Bank Of Philadelphia:



RESEARCH DEPARTMENT FEDERAL RESERVE BANK OF PHILADELPHIA
Ten Independence Mall, Philadelphia, PA 19106-1574 • www.philadelphiafed.org

Release Date: February 13, 2007

Forecasters Trim Estimates for Long-Run Growth in Output and Productivity

In first-quarter surveys, the forecasters provide their long-run projections for an expanded set of variables, including growth in output and productivity, as well as returns on financial assets. Over the next 10 years, the forecasters now think real GDP will grow at an annual rate of 3.00 percent, down from their previous estimate of 3.20 percent. Labor productivity is seen growing 2.20 percent at an annual rate over the same period, down from 2.44 percent. The forecasters have raised their estimate of the returns to stocks and Treasury bills, to 7.50 percent and 4.50 percent, respectively, but they continue to think 10-year Treasury bonds will return 5.00 percent.

	Long-Term (10-year) Forecasts (%)	
	First Quarter 2006	Current Survey
Real GDP Growth	3.20	3.00
Productivity Growth	2.44	2.20
Stock Returns (S&P 500)	7.00	7.50
Bond Returns (10-year)	5.00	5.00
Bill Returns (3-month)	4.25	4.50

1
2 Q_21. What is your opinion on 11% ROE requested
3 by TAWC?

4
5 A_21. My opinion is that 11% is not justified by
6 current economic conditions and that the
7 methods employed to reach the 11% return
8 are not sound.

9
10 Estimating a return on equity is largely a
11 dispute over the returns expected by the
12 market and by investors as a whole. Such
13 expectations are not necessarily correct.
14 The market can be and has been wrong. When
15 the market is wrong, the investors face a
16 reckoning in the sense that actual returns
17 do not meet expectations. However, when
18 rates are set for a regulated utility via
19 an expected market return that proves to
20 be wrong, the regulated utility avoids the
21 reckoning and ratepayers continue to pay
22 rates based on above-market returns unless
23 the regulatory agency causes the utility
24 to lower its rates. Unfortunately "what
25 actually happens" has little meaning in a
26 rate-case setting, and unlike investors
27 the ratepayers never get to learn from
28 past mistakes.

29
30 Thus there is a pervasive strategy on the
31 utility's part or on its behalf to
32 overestimate equity returns and resist
33 corrections to the errors. This strategy
34 is embodied in Dr. Vilbert's testimony.
35

1 Q_22. **How does Dr. Vilbert's testimony embody a**
2 **strategy to overestimate returns and**
3 **resist corrections?**

4
5 A_22. There are several portions of his
6 testimony which exhibit such strategy.

7
8 Consider his discussion of the equity risk
9 premium at pages B-2 to B-11. Dr. Vilbert
10 acknowledges the accumulating body of
11 evidence that the equity risk premium has
12 declined but says he is "skeptical:"

13
14 *"The cost of equity [is] the sum of a current interest rate*
15 *and a risk premium...despite eye-catching claims like*
16 *'equity risk premium as low as three percent' ...I remain*
17 *skeptical for several reasons...Regulatory Commissions*
18 *should not, in my opinion, attempt to keep pace with such*
19 *rapidly changing opinions...there is no consensus on its*
20 *value nor even how to estimate it. I estimate the risk*
21 *premium to be 8.0 percent over Treasury bonds and 6.5%*
22 *over long-term government bonds" [Vilbert Direct ,page*
23 *B2 line 17, page B6 lines 8-10, page B8 line 4, page B11*
24 *lines 16-18].*

25
26 I have several remarks about this portion
27 of his testimony.

Dr. Vilbert suggests the decline of the risk premium is a "rapid" change of opinion, but footnotes 4 and 5 on his page B6 refer to publications in 2001, six years ago. He also sprinkles this portion of his testimony with references to the expert Roger Ibbotson without acknowledging that in June 2002 Ibbotson told the TIAA CREF Investment Forum that the equity risk premium was under 4% and the market's overall return was 9%. This exposes the huge differences between Dr. Vilbert's estimates and those of an expert relied on by Dr. Vilbert: In 2002 Dr. Ibbotson's equity premium and market returns were 3.9% and 9%, but in 2007 Dr. Vilbert's respective estimates are 6.5% and 13% [Vilbert Direct, page 4 line 9].

Q_23. Has the Ibbotson material appeared in any prior cases before the Authority?

A_23. Yes. Only the 2005 article I refer to was reviewed by the staff economist testifying as a party in Docket No. 05-00258. The witness neither accepted nor rejected it, but expressed skepticism:

"There's like I think five pages to the article. You notice lots of things. One of the first things you'll notice is the article states that Ibbotson started doing these calculations back in 2001... As far as the cost of capital information, we've had a lot of uncertainty in the economy... we can look at them again when that time comes"[Transcript TRA Docket No. 05-00258, August 30, 2006, Vol. VI, Page 10, at line 22 and Page 18 lines 1-6]

1
2
3

I D E A

exchange

Building the Future From the Past*



BY ROGER G. IBBOTSON

Professor in the
Practice of Finance,
Yale School of
Management

UNTIL THE LAST TWO YEARS, INVESTORS had not seen consecutive negative annual stock market returns since the 1970s. In contrast, during the 1980s and 1990s the market produced its best 20-year performance ever. But neither the last two years nor the last two decades are good predictors of the long run.

A forecast usually begins by comparing the expected return on stocks with that of a low-risk asset, such as U.S. government bonds. This differ-

ence is called the equity (stock) risk premium, because it is likely to be positive and represents the extra payoff that an investor demands (but does not always get) for investing in something risky (stocks) compared with something nearly risk-free (government bonds). Thus, the bond yield is our starting point, and adding the equity risk premium gives us the expected return on stocks.

Generally, the best way to get a sense of what the future may bring is to look at the past. After all, the past is our primary source of data. But, as you already know from recent market results, the stock market is quite

volatile. The only way to get a good representation is to look back over a long period of time, so that the ups and downs of the market tend to cancel out and we get a reasonable average.

The compound average annual nominal rate of return (including inflation) for common stocks was 10.7 percent over the period 1926–2001. This return exceeded long-term U.S. Treasury yields by over 5 percent per year. That difference was the historical equity risk premium—the amount of extra return investors got over the last three-quarters of a century for invest-

about 14 over the whole 76 years. This growth in the P/E ratio is not expected to repeat in the future. Thus, to a certain extent, the stock market has outrun the underlying real earnings power of corporations.

A long-term forecast should not extrapolate the separation of the P/E ratio indefinitely. But today's high P/E ratios are not necessarily going to soon revert to historical levels, because the prices reflect the future outlook of investors—all those people and institutions that hold, buy, or sell stocks. In fact, if today's P/E ratio is higher than in the past, it has to mean one of three things: The price is now unrealistically high, people are willing to accept a much lower expected return for the

Measuring Equity Ris

ing in stocks rather than bonds.

But looking at historical stock returns relative to bond income is not the whole picture. The bull market of the 1980s and 1990s had so much of an impact on stock prices that the price of stocks in the S&P 500® Index is almost 30 times the earnings of the same companies. This contrasts with a price/earnings (P/E) ratio closer to 10 back in the 1970s—and only



risk of stocks, or the market is optimistic that the earnings per share growth of corporations will be higher than it was in the past.

In fact, I believe in the market's optimism. Earnings per share will grow at faster rates for two reasons. First, corporations are paying out lower dividends and retaining more earnings. These extra retained earnings are reinvested back into firms. If the money is used productively, extra growth can be achieved.

continued on page 12

TIAA-CREF INVESTMENT FORUM June 2002

4

I D E A

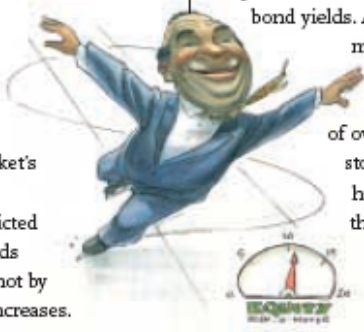
exchange

Building the Future From the Past

continued from page 10

Second, investors are rationally willing to pay high prices for current earnings when they think future earnings will grow. The evidence demonstrates that over time investors who buy when the market's P/E ratios are high do just about as well as those who buy when the market's P/E ratios are low.

Stocks are predicted to outperform bonds in the future, but not by further P/E ratio increases.



Instead, stocks will tend to participate with the overall U.S. economy and earnings per share growth. My forecast for stocks is somewhat less than 4 percent in excess of long-term bond yields. Applying this premium to recent bond yields gives a long-term forecast of over 9 percent for the stock market. It is high, but lower than the historical stock market return. But, of course, there is no free lunch. The

reason stocks are expected to outperform bonds is that they are riskier than bonds. Although stocks belong in most people's portfolios, the smart investor will still want to diversify across different types of stocks, as well as across bonds and other asset classes. ■



To learn more about Ibbotson's research, go to <http://mba.yale.edu/faculty/professors/ibbotson.htm>.

Mr. Ibbotson reiterated his 9% equity forecast in December 2005:



« Bonus Feedback from the Trenches? | Main | AIG To Enable HF Managers To Cover Their Asses »

DECEMBER 14, 2005

Ibbotson Dials It Down, No Longer "Mr. Ten Percent"

Roger Ibbotson was one half of the team to make arguably the most impressive market prediction in history. In 1974, along with fellow U Chicagoan Rex Sinquefeld, Ibbotson forecasted that the DJIA, then in the 800s, would reach 9,218 at the end of 1998 and 10,000 by November 1999. These calls were built on the assumption that long-term stock returns would exceed 10% so it's no small news in academic and financial circles that Ibbotson--a devotee of efficient market theory and CAPM--has dialed down this growth rate to 9.27%.

The 9% Prediction [Fortune]



1
2 Dr. Vilbert is in the unusual position of
3 relying on an expert who has much lower
4 estimates of the risk premium and market
5 returns than Dr. Vilbert himself. Rather
6 than identifying the differences, Dr.
7 Vilbert quotes an Ibbotson article to
8 imply there is agreement between them:
9

10 *“Ibbotson...conclude[s]...the equity risk premium is ‘far*
11 *closer to the historical risk premium than being zero or*
12 *negative.’” [Vilbert Direct, page B7 lines -9].*
13

14 There are other ways in which in Dr.
15 Vilbert’s testimony embodies a resistance
16 to economic corrections. He ignores the
17 effect of the federal government’s tax
18 cuts on the cost of capital and denies
19 ratepayers in Chattanooga the economic
20 benefit of the tax law - a reduced cost of
21 capital. This was a major goal of the 2003
22 tax cut, as shown in the policy statement
23 made by a U.S. Senator:
24



October 4, 2004

The Dividend-Tax Cut: A Success Story with More Potential

The reduction in the dividend-tax rate was designed to reduce the double taxation of corporate profits. In so doing, it was expected to lower the tax burden on individuals who invest in corporate equities, which in turn would reduce the cost of capital for American businesses.

In May 2003 dividend taxes were reduced from 35% to 15%. Under the old law the investor kept only \$65 per \$100 of dividends received, but under current law the investor keeps \$85, a 30% increase in the investor's after-tax return. Federal policy increased the demand for the stock of dividend paying companies, and reduced those companies' cost-of-capital, a point proven in the following study:

DIVIDEND TAXES AND CORPORATE BEHAVIOR: EVIDENCE FROM THE 2003 DIVIDEND TAX CUT

Raj Chetty
Emmanuel Saez

Working Paper 10841
<http://www.nber.org/papers/w10841>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
October 2004

The authors concluded:

1 *"This paper analyzes the effects of dividend taxation on*
2 *corporate behavior using the large tax cut on individual*
3 *dividend income enacted in 2003. Using data spanning*
4 *1980 to 2004-Q2, we document a sharp and widespread*
5 *surge in dividend payments following the tax cut, along*
6 *several dimensions. First, an unprecedented number of*
7 *firms initiated regular dividend payments after the reform.*
8 *As a result, the number of publicly traded firms paying*
9 *dividends, after having declined continuously for more than*
10 *two decades, began to increase precisely in 2003. Second,*
11 *many firms that were already paying dividends prior to the*
12 *reform raised regular dividend payments significantly."*

13
14 Dr. Vilbert chose eight publicly-traded
15 water companies as a basis for arriving at
16 his 11% ROE. All of them pay dividends to
17 the stockholder, whether the holder is an
18 individual or an institution such as a
19 mutual fund. Despite the well-documented
20 impact of the tax cuts, Dr. Vilbert says
21 at page D-6 lines 9 to 10 that "the
22 effects of personal taxes on the cost of
23 common equity are hard to measure."
24 Apparently Congress and the President
25 thought otherwise, regardless of whether
26 the holder is an individual or an
27 institution. Dr. Vilbert is well aware of
28 the tax cut because he says at page D-6
29 footnote 5 that "This provision is set to
30 expire at the end of 2008." He has not
31 kept pace. The tax cuts were extended
32 through 2010 by the Tax Reconciliation Act
33 signed into law on May 17, 2006, six
34 months prior to Dr. Vilbert's submission
35 of testimony in the instant case.

1 Dr. Vilbert has tossed aside a sea-change
2 in the nation's economic policy.

3
4 In the case of the comparable water
5 companies which Dr. Vilbert chose and
6 which I accept, the next page displays my
7 analysis of the companies' dividends and
8 price movements for the past seven years.
9 The top half of the chart displays
10 dividend data and the bottom half displays
11 price data. Two observations confirm that
12 the cost of capital was lowered for these
13 companies: from January 2003 to January
14 2004, each company's stock price increased
15 despite the small growth in dividends, as
16 shown in column 15. In addition, for seven
17 out of eight companies, price growth from
18 2003 to 2007 was much larger than the
19 price growth from 2000 to 2003.

20
21 The table also appears as my Schedule 6.
22 The price data is from Yahoo's historical
23 prices' internet site where closing prices
24 are adjusted to reflect splits so that
25 prices are comparable through time. The
26 dividends are adjusted for splits, too. In
27 their SEC form 10ks the companies restate
28 earnings per share and dividends per share
29 in their standard five-year financial
30 presentations. The SEC files and Yahoo
31 price files are provided in this filing.

32

Div Data

Annual Dividend(\$) History At Jan 1 - Start
Of Fiscal Year

Dividend Growth(%)
January To January

Dividend Growth(%) : January To January

DivYield
at Jan. 26,
2007

Water Company	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	2000	2001	2002	2003	2004	2005	2006	2007	2000-2003	2003-2007	2000-2007	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	
Amer St Water (NYSE:AWR)	0.85	0.86	0.87	0.87	0.88	0.89	0.90	0.94	2.23	3.15	2.42	0.47	1.17	0.58	1.38	0.45	1.35	4.44	2.4
Connecticut Water Service, Inc. (NASDAQ:CTWS)	0.79	0.80	0.80	0.81	0.83	0.84	0.85	0.86	3.43	3.77	3.86	1.02	1.13	1.24	1.35	1.21	1.20	1.78	3.6
California Water Svc (NYSE:CWT)	1.09	1.10	1.12	1.12	1.13	1.13	1.14	1.16	3.23	2.27	1.35	1.38	1.36	0.45	0.45	0.44	0.88	1.75	2.9
Middlesex Water Company (NASDAQ:MSEX)	0.59	0.61	0.62	0.63	0.65	0.66	0.67	0.69	6.91	5.87	6.42	3.37	1.63	1.77	2.37	2.16	1.51	2.53	3.7
S J W Cp (AMEX:SJM)	0.40	0.41	0.43	0.46	0.49	0.51	0.53	0.57	15.00	19.51	18.60	2.50	4.88	6.98	6.52	4.08	3.92	6.80	1.5
Southern Water Company (NASDAQ:SWWC)	0.12	0.13	0.14	0.15	0.16	0.18	0.20	0.23	25.00	23.08	28.57	8.33	7.69	7.14	6.67	12.50	11.11	15.20	1.8
Aqua America (NYSE:WTR)	0.27	0.29	0.30	0.32	0.34	0.37	0.40	0.46	17.72	18.49	23.33	5.56	4.55	6.67	6.25	8.82	8.11	15.00	2.1
York Water Company (NASDAQ:YORW)	0.31	0.33	0.34	0.35	0.37	0.39	0.42	0.47	11.70	12.24	17.03	4.26	3.06	3.96	4.76	7.45	7.61	11.32	2.6

Average Annual Increase → 3.4

→ 3.4 3.2 3.6 3.7 4.6 4.5 7.3

2.6

ALL DATA ADJUSTED FOR SPLITS

Price Data

Stock Price (\$) On First Trading Day Of
January Each Year

Price Growth (%): January
To January

Price Growth(%): January To January - 03 To 04 All Comps Prices Increased

Water Company	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	2000	2001	2002	2003	2004	2005	2006	2007	2000-2003	2003-2007	2000-2007	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Amer St Water (NYSE:AWR)	18.91	19.12	20.01	20.58	22.81	24.47	31.01	38.57	8.8	87.4	104.0	1.1	4.7	2.8	10.8	7.3	26.7	24.4
Connecticut Water Service, Inc. (NASDAQ:CTWS)	16.44	16.37	25.20	22.21	24.99	24.70	23.68	23.11	35.1	4.1	40.6	-0.4	53.9	-11.9	12.5	-1.2	-4.1	-2.4
California Water Svc (NYSE:CWT)	21.29	20.57	20.84	20.91	25.11	34.59	37.40	39.63	-1.8	89.5	86.1	-3.4	1.3	0.3	20.1	37.8	8.1	6.0
Middlesex Water Company (NASDAQ:MSEX)	12.17	12.91	14.39	13.99	18.46	17.49	16.96	18.75	15.0	34.0	54.1	6.1	11.5	-2.8	32.0	-5.3	-3.0	10.6
S J W Cp (AMEX:SJM)	16.22	14.35	12.77	11.67	13.70	16.77	22.20	39.88	-28.1	241.7	145.9	-11.5	-11.0	-8.6	17.4	22.4	32.4	79.6
Southern Water Company (NASDAQ:SWWC)	6.70	6.78	8.52	8.64	10.34	12.46	14.27	13.31	29.0	54.1	98.7	1.2	25.7	1.4	19.7	20.5	14.5	-6.7
Aqua America (NYSE:WTR)	6.46	8.59	12.21	11.39	15.62	17.48	27.05	22.51	76.3	97.6	248.5	48.5	27.3	-6.7	37.1	11.9	54.7	-16.8
York Water Company (NASDAQ:YORW)	4.62	5.17	8.97	8.73	11.04	12.64	16.49	17.88	89.0	104.8	287.0	11.9	73.5	-2.7	26.5	14.5	30.5	8.4

Average Annual Increase → 6.7

→ 6.7 23.4 -3.5 22.0 13.5 20.0 12.9

IV. CAPD DCF Model.

Q_24. In your opinion what ROE does the dividend data suggest?

A_24. In my opinion the data suggest an ROE of 7.5%. My ROE is the sum of the average dividend yield of 2.6% shown in column 19 and 5.0%, the average of the annual average dividend growths after the tax cuts: 3.7%, 4.5%, 4.5%, 7.3%. My return is consistent with current estimates from the Federal Reserve Bank Of Philadelphia:



Release Date: February 13, 2007

RESEARCH DEPARTMENT FEDERAL RESERVE BANK OF PHILADELPHIA
Ten Independence Mall, Philadelphia, PA 19106-1574 • www.philadelphiafed.org

Forecasters Trim Estimates for Long-Run Growth in Output and Productivity

In first-quarter surveys, the forecasters provide their long-run projections for an expanded set of variables, including growth in output and productivity, as well as returns on financial assets. Over the next 10 years, the forecasters now think real GDP will grow at an annual rate of 3.00 percent, down from their previous estimate of 3.20 percent. Labor productivity is seen growing 2.20 percent at an annual rate over the same period, down from 2.44 percent. The forecasters have raised their estimate of the returns to stocks and Treasury bills, to 7.50 percent and 4.50 percent, respectively, but they continue to think 10-year Treasury bonds will return 5.00 percent.

	<i>Long-Term (10-year) Forecasts (%)</i>	
	<i>First Quarter 2006</i>	<i>Current Survey</i>
<i>Real GDP Growth</i>	3.20	3.00
<i>Productivity Growth</i>	2.44	2.20
<i>Stock Returns (S&P 500)</i>	7.00	7.50
<i>Bond Returns (10-year)</i>	5.00	5.00
<i>Bill Returns (3-month)</i>	4.25	4.50

1 Q_25. What are the advantages of your DCF
2 method?

3
4 A_25. The method captures the change in tax law
5 that so dramatically affected investors.
6 The method is accurate, clear and simple,
7 requiring no adjustments whatsoever, other
8 than verifying the historical record of
9 dividends for the water companies. The DCF
10 model is a standard way that investors
11 evaluate their potential returns. The
12 model defines the cost of common equity as
13 the cash flowing to the investor, where
14 the cash flow is based on the revenue
15 stream of from the sum of the dividend
16 yield and the dividend's growth rate.

17
18
19 ***V. Dr. Vilbert Relies On Discredited***
20 ***Sources To Estimate DCF Returns.***

21
22 Q_26. What are the major differences between
23 your DCF analysis and Dr. Vilbert's?

24
25 A_26. I use historical growth rates, and I
26 shed light on the effect of the tax
27 cut. Dr. Vilbert dismisses actual
28 events saying:
29

1 *“historical growth rates today are useless as forecasts of*
2 *current investor expectations for the water industry or the*
3 *gas LDC sample. I therefore use rates forecasted by*
4 *security analysts... Accordingly, the first step in my DCF*
5 *analysis is to examine a sample of investment analysts’*
6 *forecasted earnings growth rates from the Institutional*
7 *Brokers Estimate System("I/B/E/S") and from Value Line*
8 *for both samples.” [Vilbert Direct, page C12 lines 3-17].*
9

10 Dr. Vilbert’s DCF analysis can be found at
11 pages 23 and 24 of 86 in the workpapers he
12 attached to his direct testimony.

13
14 This is another example of how Dr.
15 Vilbert’s testimony embodies a strategy to
16 overestimate returns and resist
17 corrections to them. “What actually
18 happened” has not the slightest impact on
19 his testimony. No one would ever know that
20 there was a tax cut on dividends and that
21 it reduced the cost of capital and that
22 the reduction is and was an economic goal
23 of the federal government. In addition,
24 his reliance on security analysts is
25 unsound because security analysts have
26 been corrupted in the past by the
27 pressures brought against them.

28
29 In addition, it is well known that the
30 “expectations” created by analysts have
31 borne bitter fruit in the American
32 economy. Consider the remarks by former
33 Chairman of the Federal Reserve Board,
34 Allen Greenspan in 2002:
35

1 *"...long-term earnings forecasts of brokerage-based*
2 *securities analysts, on average, have been persistently*
3 *overly optimistic. Three-to five-year earnings forecasts for*
4 *each of the S&P 500 corporations, compiled from*
5 *projections of securities analysts by I/B/E/S, averaged*
6 *almost 12 percent per year between 1985 and 2001. Actual*
7 *earnings growth over that period averaged about 7*
8 *percent." [Remarks by Chairman Alan Greenspan*
9 *"Corporate Governance" At the Stern School of Business,*
10 *New York University, New York, New York March 26,*
11 *2002]*

12
13 Consider the "Joint Report by NASD and
14 the NYSE On the Operation and
15 Effectiveness of the Research Analyst
16 Conflict of Interest Rules" published
17 jointly in December 2005 by New York
18 Stock Exchange and NASD, formerly the
19 National Association of Securities
20 Dealers.

21
22 The report details the abuses that
23 occurred, how investors were misled:

24
25 *"research analysts were subject to a host of pressures and*
26 *influences that could – and in many instances, did –*
27 *compromise the objectivity of their research" [NYSE NASD*
28 *Joint Report, page 2]*

29
30 Reforms were undertaken to curb abuse.
31 The report cites several sources on
32 both sides of the current question: do
33 conflicts still exist despite the
34 reforms? The report cautiously notes:

1 *"Conflicts of interest have been reduced but not*
2 *eliminated."*[NYSE NASD Joint Report, page 24]....

3
4 For example the joint report documents
5 some of the current problems:

6
7 *"Between July 2002 and November 30, 2005, NASD*
8 *initiated 467 examinations reviewing firms for compliance*
9 *with Rule 2711 and Regulation AC. In the course of these*
10 *examinations, NASD found 110 violations of Rule 2711 and*
11 *25 violations of Regulation AC. Specifically, the Rule 2711*
12 *violations have involved: (1) failure to have adequate*
13 *procedures in place to supervise the activities of research*
14 *analysts with respect to conflicts of interest, in violation of*
15 *Rule 2711(i) (47 of 467 examinations); (2) failure to*
16 *adequately comply with the disclosure requirements*
17 *regarding research reports and public appearances, in*
18 *violation of Rule 2711(h) (24 of 467 examinations); (3)*
19 *failure to file the Annual Attestation, in violation of Rule*
20 *2711(i) (20 of 467 examinations); (4) personal trading of*
21 *the subject companies' securities in the analyst's account*
22 *within the restricted time period, in violation of Rule*
23 *2711(g) (10 of 467 examinations); and (5) failure to*
24 *comply with restrictions on communications with the*
25 *subject company, in violation of Rule 2711(c) (9 of 467*
26 *examinations). "*[NYSE NASD Joint Report, page 13]

27
28
29 The former Chairman of the Federal
30 Reserve Board singled out I/B/E/S as a
31 data source of exaggeration. The NYSE
32 NAD joint report says that conflicts-
33 of-interest still exist.
34

1 While individuals and institutions may
2 wish to proceed with their own investments
3 on the basis of the reforms despite the
4 continuing problems described in the Joint
5 Report, my opinion is that captive
6 ratepayers should not be subject to
7 expectations that have a recent and on-
8 going history of manipulation. Dr. Vilbert
9 provides no evidence that he has
10 considered or evaluated whether such
11 problems are ongoing in the development of
12 his 11% return. There is no good reason to
13 accept I/B/E/S's or Value Line's growth
14 estimates as a basis for setting rates for
15 water-rate-payers in Chattanooga. His
16 single attempt to address the issue leaves
17 plenty of room for doubt about his
18 sources:

19
20 *"Q. Does optimism bias mean that the DCF estimates*
21 *based upon analysts' earnings forecasts are completely*
22 *unreliable?"*

23
24 *"A. No." [Vilbert Direct , page C7 lines1-3].*

25
26 However, in my opinion forecasts that are
27 not "completely unreliable" are not a
28 basis for just and reasonable rates in
29 Tennessee.

30
31 **Q_27. Does Dr. Vilbert rely on the DCF model to**
32 **make his conclusions**
33

1 **A_27.** No. Dr. Vilbert does not rely on the DCF
2 model. He relies on the "risk positioning
3 model:

4
5 *"I estimate the overall cost of capital for two samples of*
6 *regulated companies using the discounted cash flow*
7 *("DCF") and the risk positioning models but I rely*
8 *primarily on the risk positioning results[Vilbert Direct,*
9 *page 1 line 17, page 2 line17].*

10
11 **Q_28.** ***Do you know of an instance where Dr.***
12 ***Vilbert has relied on the DCF model?***

13
14 **A_28.** Yes. In a FERC docket where he
15 testified as a witness Dr. Vilbert
16 relied on the DCF model. The next page
17 displays that testimony's cover page
18 and pages 2 to 4 where he summarizes
19 his methods.

Unofficial FERC-Generated PDF of 20060821-0176 Received by FERC OSEC 08/18/2006 in Docket#: ER06-427-003

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Mystic Development LLC

)

Docket No. ER06-427-003

*PREPARED DIRECT TESTIMONY AND SUPPORTING EXHIBITS OF
MICHAEL J. VILBERT ON BEHALF OF MYSTIC DEVELOPMENT, LLC*

Exhibits MYS-7 and MYS-8

16 Q: PLEASE SUMMARIZE YOUR APPROACH TO ESTIMATING THE COST OF
17 CAPITAL FOR THE COMPANY.

18 A: To assess the cost of capital for the Mystic plants, I select three benchmark samples of
19 regulated electric utilities. I have reviewed the Commission's preferred sample selection
20 procedures in generic rate cases plus the sample relied upon in a recent New England

1

Exhibit MYS-7
Page 3 of 67

1 decision.² Based on these decisions, I selected comparable samples that to the best of my
2 knowledge are consistent with those decisions. First, I selected a sample of electric utilities
3 that meet the Commission's generic criteria. I refer to this sample as the Commission-Based
4 Electric sample. Second, I selected the proxy group used in the recent Devon 2005 Initial
5 Decision and calculated the cost of equity for those companies for which I have sufficient
6 data. I refer to this sample as the LICAP sample. For these samples, I estimated the sample
7 companies' costs of equity using Discounted Cash Flow ("DCF") calculations designed to
8 duplicate those used in recent Commission proceedings.

9 The Commission's preferred sample selection and estimation methods differ from
10 my usual procedures. Some companies in the Commission-based samples have
11 characteristics that may bias cost of equity estimates, such as a relatively low percentage of
12 revenues from regulated electric operations. Therefore, I select a third sample of companies
13 I believe have risk characteristics comparable to those of a regulated electric utility³ and that
14 are expected to be free of factors that may bias the cost of equity estimates. I refer to this
15 sample as the Baseline Electric Sample. While I rely on the Commission's preferred DCF
16 estimation method for the Commission-Based Electric and LICAP samples, I estimate the
17 cost of capital using procedures and methods that differ somewhat from the Commission's

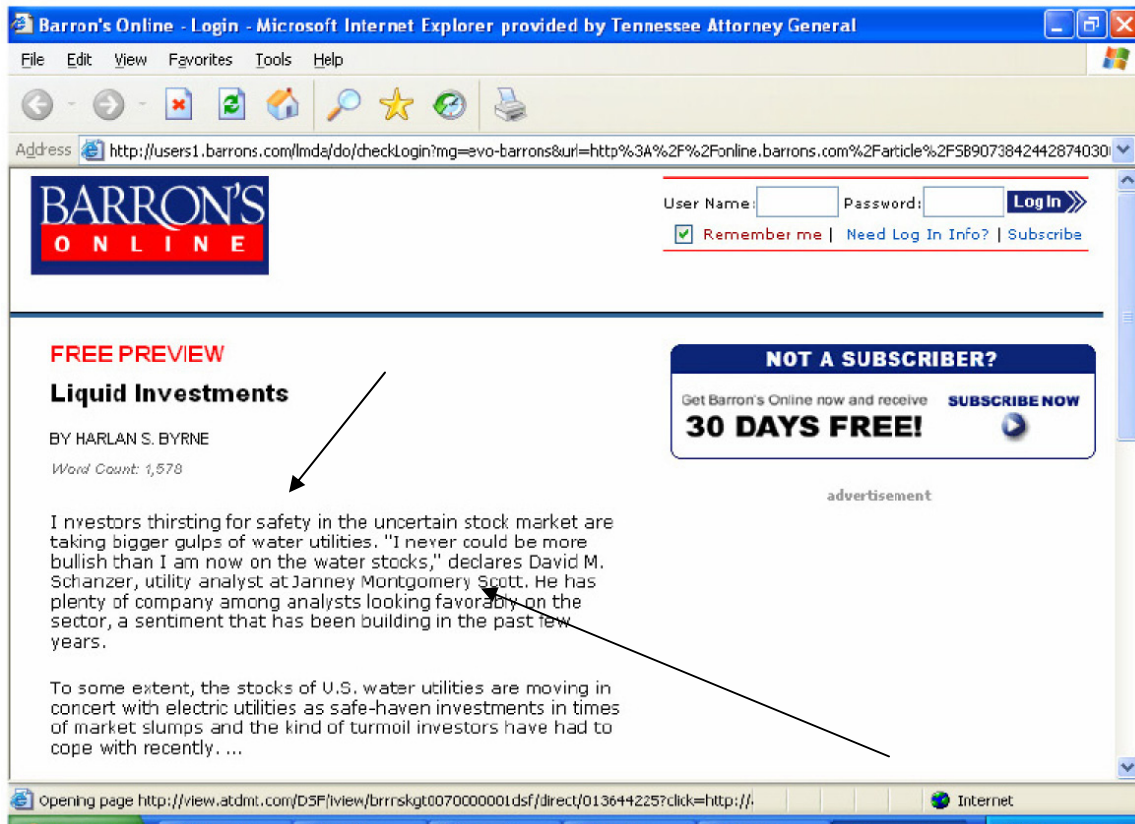
1 DCF procedures for the Baseline Electric sample. For this sample, I estimate the cost of
2 equity using both the DCF method and the Risk Positioning model.

1
2
3 Unlike Dr. Vilbert's position in this
4 case, where he reaches his opinion by
5 relying on the results of the "risk
6 positioning" model applied to two sets
7 sample companies, in his FERC
8 testimony he reaches his opinion by
9 relying on the results of the DCF
10 model applied to two of the three sets
11 of sample companies he chose.

VI. RISK PREMIUM (RISK POSITION) ANALYSIS

Q_29. In your opinion what is the general theme of Dr. Vilbert's "risk positioning" reasoning?

A_29. In my opinion his theme is that water companies are risky investments. However, I do not agree. The general perception is that these are "safe" companies, as a Barron's article noted:



1 This article describes water utilities as
2 good for "investors thirsting for safety"
3 and the research firm which is highlighted
4 is Janney Montgomery Scott, the same
5 research firm quoted in the article
6 appearing at page 3 of my testimony, where
7 an analyst from Janney Montgomery Scott is
8 quoted as saying "The size of an American
9 Water IPO could mean a dramatic increase
10 in investor awareness for the water
11 industry."

12
13 Clearly, Dr. Vilbert's "risk positioning"
14 approach is not realistic. The principal
15 way he implements "risk positioning" is
16 through the Capital Asset Pricing
17 Model (CAPM) which depends heavily on the
18 "beta" as a risk measure. Thus he
19 testifies:

20
21 *"The risk measure I examine is the 'beta' of the stocks in*
22 *question...a stock with a beta equal to 1.0 goes up or down*
23 *by 10 percent...when the market goes up or down by 10*
24 *percent. Stocks with betas above 1.0 exaggerate the swings*
25 *in the market...Stocks with betas below 1.0 are less volatile*
26 *than the market. A stock with a beta of 0.5 will tend to rise*
27 *5 percent when the market rises 10 percent..."*

28
29
30 *"Many investment services report betas...Betas are not*
31 *always calculated the same way, and therefore must be*
32 *used with a degree of caution," [Vilbert Direct ,page B12*
33 *line 2, page B14 line 15- page B15 line 7].*

34
35 **Q_30. In your opinion was Dr. Vilbert cautious?**

A_30. No, he was not cautious. He uses Value Line's betas, and those betas are biased upward. To prove that I started with the graph on his page 6 of his direct testimony and adding a text box with a question:

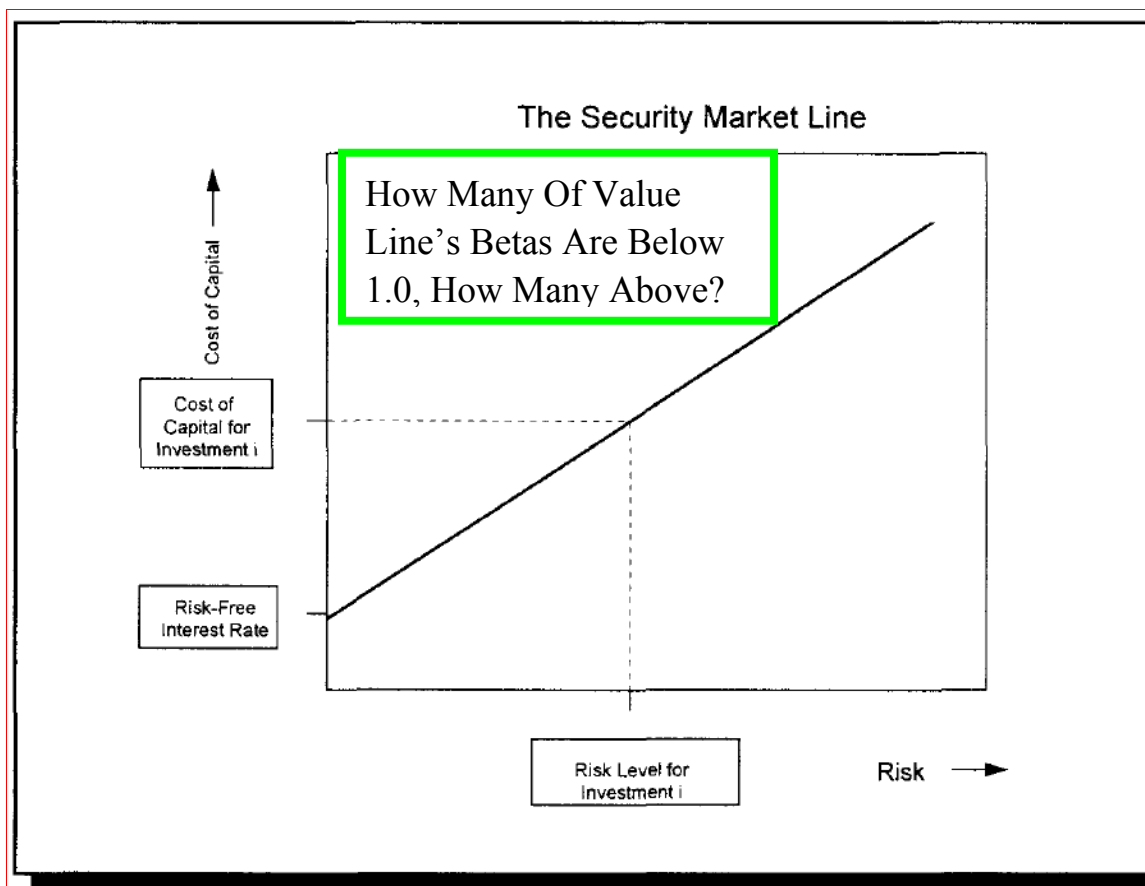


Figure 1

1 The question, "How Many Of Value Line's
2 Betas Are Below 1.0, How Many Above" gets
3 to the issue of balance and bias. If the
4 betas are a proper measure of the market
5 risk, one-half of the betas would be below
6 1.0 and one-half would be above 1.0. If
7 Value Line's betas deviate from this
8 expected pattern, Value Line's betas
9 become inaccurate measures of risk. The
10 next page displays the results of my
11 analysis of Value Line's published betas,
12 and also appears as my Schedule 7. Dr.
13 Vilbert's source is the "Value Line
14 Investment Survey: Plus Addition" of
15 August 24, 2006. My source is "Value Line
16 Investment Survey" of August 4, 2006,
17 which is subscribed to by the
18 Comptroller's Office. A copy is in my
19 workpapers.

20
21 More than 60% of Value Line's betas are at
22 or above the market's beta of 1, and less
23 than 40% of the companies are less risky
24 than the market beta. The average beta
25 value is 1.10. The maximum beta value is
26 2.85. The minimum beta value is .35. In
27 his testimony Dr. Vilbert mentioned a
28 "stock with a beta of 0.5." This is a rare
29 value in Value Line, only six betas have a
30 value of .5 or below. All of these numbers
31 confirm that Value Line's betas are biased
32 upward, making every company appear more
33 risky than it is when compared to the
34 market, and raising Dr. Vilbert's
35 estimated cost of equity in Tennessee.

The Lopsided Distribution Of Value Line's Betas August 4, 2006 - 1568 Companies With Betas:
60% Of The Companies Are As Risky Or More Risky Than The Market And The Weighted
Average Beta Is 1.103

Beta Value	# Of Companies With The Beta Value To The Left	Cumulative Total	% Of Companies At Or Above The Beta Value	% Of Companies Below The Beta Value	# Of Companies As % Of Total Comps.	Weighted Av. Of Betas
2.85	1	1	0.1%	99.9%	0.1%	0.002
2.80	1	2	0.1%	99.9%	0.1%	0.002
2.60	3	5	0.3%	99.7%	0.2%	0.005
2.40	1	6	0.4%	99.6%	0.1%	0.002
2.30	2	8	0.5%	99.5%	0.1%	0.003
2.25	3	11	0.7%	99.3%	0.2%	0.004
2.20	1	12	0.8%	99.2%	0.1%	0.001
2.15	4	16	1.0%	99.0%	0.3%	0.005
2.10	3	19	1.2%	98.8%	0.2%	0.004
2.05	5	24	1.5%	98.5%	0.3%	0.007
2.00	2	26	1.7%	98.3%	0.1%	0.003
1.95	8	34	2.2%	97.8%	0.5%	0.010
1.90	6	40	2.6%	97.4%	0.4%	0.007
1.85	11	51	3.3%	96.7%	0.7%	0.013
1.80	16	67	4.3%	95.7%	1.0%	0.018
1.75	12	79	5.0%	95.0%	0.8%	0.013
1.70	21	100	6.4%	93.6%	1.3%	0.023
1.65	14	114	7.3%	92.7%	0.9%	0.015
1.60	28	142	9.1%	90.9%	1.8%	0.029
1.55	25	167	10.7%	89.3%	1.6%	0.025
1.50	23	190	12.1%	87.9%	1.5%	0.022
1.45	30	220	14.0%	86.0%	1.9%	0.028
1.40	49	269	17.2%	82.8%	3.1%	0.044
1.35	61	330	21.0%	79.0%	3.9%	0.053
1.30	48	378	24.1%	75.9%	3.1%	0.040
1.25	64	442	28.2%	71.8%	4.1%	0.051
1.20	72	514	32.8%	67.2%	4.6%	0.055
1.15	81	595	37.9%	62.1%	5.2%	0.059
1.10	115	710	45.3%	54.7%	7.3%	0.081
1.05	117	827	52.7%	47.3%	7.5%	0.078
1.00	120	947	60.4%	39.6%	7.7%	0.077
0.95	130	1077	68.7%	31.3%	8.3%	0.079
0.90	125	1202	76.7%	23.3%	8.0%	0.072
0.85	95	1297	82.7%	17.3%	6.1%	0.051
0.80	86	1383	88.2%	11.8%	5.5%	0.044
0.75	69	1452	92.6%	7.4%	4.4%	0.033
0.70	45	1497	95.5%	4.5%	2.9%	0.020
0.65	35	1532	97.7%	2.3%	2.2%	0.015
0.60	18	1550	98.9%	1.1%	1.1%	0.007
0.55	12	1562	99.6%	0.4%	0.8%	0.004
0.50	3	1565	99.8%	0.2%	0.2%	0.001
0.40	1	1566	99.9%	0.1%	0.1%	0.000
0.35	2	1568	100.0%	0.0%	0.1%	0.000
					100.0%	1.103

VII. Dr. Vilbert's Contradictory Positions On Comparability.

In his testimony Dr. Vilbert says:

"I estimate the cost of capital using two samples of comparable risk companies." [Vilbert Direct Page 11, lines 16-17]

His testimony implies that comparability between companies is based on companies having similar or the same risk, not on the notion that companies are in the same business. To clarify his position about what makes companies comparable, during CAPD's discovery three "Admit" statements were asked of Dr. Vilbert. The statements and his replies are displayed:

"I (b). Admit the following statements:"

"(i.) The CAPM assumes that comparability in risk results not from being in the same line of business or industry, but from similar volatility in stock prices."

"RESPONSE: Not admitted. The CAPM says that the expected return on a stock depends upon its systematic risk, where its systematic risk is measured by the stock's correlation with the market return. Two stocks with similar volatility (i.e., variance of stock return) may have quite different levels of systematic risk."

"(ii.) According to the CAPM, all companies with the same beta are considered to be of comparable risk, regardless of their line of business."

1 *"RESPONSE: Admitted with the following qualification: A*
2 *stock's beta measures its systematic risk and is defined as*
3 *the covariance of the return on the company's stock with*
4 *the return on the market divided by the variance of the*
5 *market return. Companies with the same beta are assumed*
6 *to have the same amount of systematic risk. They may have*
7 *very different levels of total risk which is the sum of*
8 *systematic (non-diversifiable) risk and non-systematic*
9 *(diversifiable) risk."*

10
11 *"(iii). According to the CAPM, a stock's beta with the*
12 *market is the stock's sole relevant measure of risk;*

13
14 *"RESPONSE: Admitted in the following sense. The CAPM*
15 *says that the only factor that affects a stock's expected*
16 *return is its sensitivity to the market return. In that sense,*
17 *the stock's beta is the sole relevant measure of risk."*

18
19 His response to (i) contradicts the
20 responses to (ii) and (iii) and reveals a
21 severe contradictions in his analysis.

22
23 Consider the betas he uses:
24

Company:	Value	Dr. Vilbert's	Page Source In
	Line's	Adjusts	
	Published	Value	Dr. Vilbert's
	Beta	Line's	Workpapers
	Beta To:		
Water Companies Sample			
Amer St Water (NYSE:AWR)	0.75	0.60	34 of 86
Connecticut Water Service, Inc.	0.80	0.67	34 of 86
California Water Svc (NYSE:CWT)	0.80	0.67	34 of 86
Middlesex Water Company (NASDAQ:MSEX)	0.80	0.67	34 of 86
S J W Cp (AMEX:SJW)	0.70	0.52	34 of 86
Southwest Water Company (NASDAQ:SWWC)	0.70	0.52	34 of 86
Aqua America(NYSE:WTR)	0.80	0.67	34 of 86
York Water Company (NASDAQ:YORW)	0.45	0.56	34 of 86
Gas Companies Sample			
LaClede Group(NYSE:LG)	0.85	0.75	74 of 86
Northwest Natural Gas (NYSE:LG)	0.75	0.60	74 of 86
South Jersey Industries (NYSE:SJI)	0.70	0.52	74 of 86
Southwest Gas (NYSE:SW)	0.85	0.75	74 of 86
WGL Holding (NYSE:WL)	0.80	0.67	74 of 86

According to my study of Value Line's betas, which appears at page 42 of this testimony, there were about 280 companies with betas ranging between .85 and .45. His method also begs for questions, such as - how can a company with a beta of .85 be of comparable risk to a company with a beta of .45? Dr. Vilbert has provided no explanation of how he narrowed the field to eight water companies or five gas companies. If he was truly basing his 11% ROE on companies with "comparable risk" there were many choices available to him.

He expresses different opinion elsewhere in his testimony, suggesting that comparability is not based on beta but on being in the same business:

1
2 *"the overall cost of capital depends primarily on the*
3 *business the firm is in"* [Vilbert Direct Page 8, line9]

4
5 And

6
7 *"a sample of companies whose operations are*
8 *concentrated solely in the regulated portion of the water*
9 *industry would be ideal."* [Vilbert Direct Page 12, lines 20-
10 21]

11
12 He has exactly that sample in the
13 eight water companies he selected, and
14 there is no good reason to add gas
15 companies to that mix.

16
17 But he changes course once again,
18 adding a size criteria for
19 comparability:

20
21 *"the size of the companies in the water sample also makes*
22 *the cost of capital estimation."* [Vilbert Direct Page 25,
23 lines 14]

24
25
26 He makes the further argument that

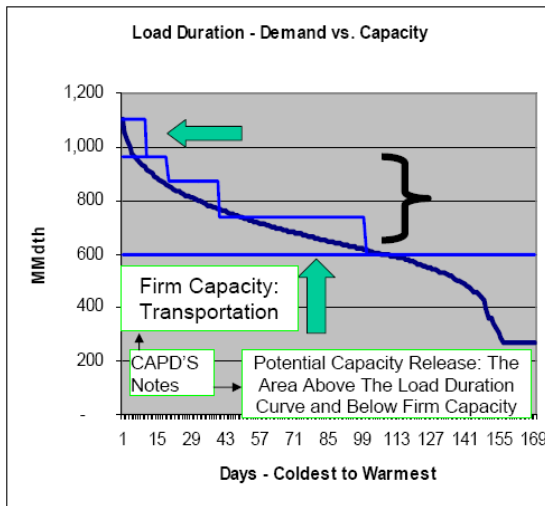
27
28 *"[data] weaknesses in the water sample [cause him]... to*
29 *utilize a sample of natural gas...companies."* [Vilbert
30 Direct Page 26, lines 20-21]

31
32 Q_31. **In your opinion are gas and water**
33 **companies similar enough to be**
34 **substitutes in a rate-case proceeding?**
35
36

1 **A_31.** No. In my opinion they are not. I do
2 not know of any rate-case for
3 regulated gas company in Tennessee or
4 elsewhere where a water company has
5 been used in the derivation of a gas
6 company's ROE. Dr. Vilbert's use of
7 gas companies is inappropriate because
8 there are huge operational differences
9 between them.

10
11 For example, local gas companies have
12 to contract with interstate natural
13 gas pipelines to acquire natural-gas,
14 the commodity being sold to the end-
15 user. To that end the local companies
16 have to coordinate their contracts
17 with storage and peaking facilities as
18 shown on the next page, as shown in a
19 slide presentation by the American Gas
20 Association to the Federal Energy
21 Regulatory Commission:
22

FERC Conference on State of the Natural Gas Industry – Storage October 21, 2004



- Adds Supply/Capacity to the Load Duration
 - Flowing Gas (FT)
 - Storage Withdrawals
 - Peak Shaving
- Broken into three Parts
- Minimize Fixed Costs & Optimize Assets



Gas companies have the opportunity to release or resell the firm capacity not currently being used by firm customers as a potential offset to the revenues required to serve firm customers. In response to CAPD discovery item III, part 15, TAWC provided a copy of chapters seven and eight of the "Rates Manual of the American Water Works Association." I found no mention of secondary markets as a means to offset revenues required from firm customers. Also, the water and gas industries have much different levels of losses. The following picture displays the MLGW's (Memphis Light, Gas & Water) losses in electric, gas and water. A record of TAWC's losses appears below those of MLGW's:

<http://mlgw.com/images/scorecard.pdf>

MLGW Scorecard (2006)

Mission: To provide safe, customer-focused, reliable, and cost-effective utility services to the Greater Memphis Con

Vision: To be the best utility for our customers.

Strategic Areas of Focus	Strategic Framework	Index	Key Performance Indicators	Weight	00-'04 Avg	2005	2006 1st Qtr	2006 2nd Qtr	2006 3rd Qtr	2006 4th Qtr	On Target?
	Reliability/Quality	Utility Supply Index	Financial Index Score		93.6	96.2	94.7	97.7	96.8		
			Distribution Losses - Electric	20%	3.432%	3.118%	2.51%	3.40%	2.11%		▲
			Distribution Losses - Gas	20%	2.70%	3.25%	3.55%	3.00%	1.43%		▲
			Distribution Losses - Water	20%	16.98%	13.2%	15.0%	15.7%	14.7%		▼

TAWC's Annual Water Losses

Year	Unaccounted for % Actual	Unaccounted for % Budget
2000	17.99%	15.85%
2001	17.67%	15.02%
2002	17.48%	16.01%
2003	19.36%	22.35%
2004	22.50%	21.22%
2005	22.83%	20.94%
2006	20.96%	23.96%
2007		18.65%
2008		17.92%

1
2 MLGW's data proves that losses in the
3 water and gas industries are much
4 different. In addition, the water loss
5 data for TAWC shows that losses are
6 rising in Chattanooga while water
7 losses in MGLW are declining.
8

9 **VI. CAPD's CAPM Model.**

10
11
12 **Q_32. Do you use the CAPM model?**

13
14 **A_32.** Yes, but Dr. Vilbert's flawed risk
15 premiums cause me to reconsider the CAPM.
16 The failure of his CAPM to be meaningful
17 is consistent with recent financial
18 literature showing the CAPM's very limited
19 value. The next five page display excerpts
20 from two scholarly articles dealing with
21 the CAPM. The first one has two authors,
22 Eugene Fama and Kenneth French and was
23 published in the summer of 2004. The
24 second article was published in May 2005
25 in the Quarterly Journal Of Economics and
26 has three authors and confirms the
27 findings of Fama and French. The essence
28 of each article is that the CAPM approach
29 to equity returns is no longer accepted by
30 the scholarly community that created the
31 theory. In my opinion the DCF model is the
32 reliable method to produce just and
33 reasonable rates
34

35 Dr. Vilbert dismisses Fama's article:
36

1 *"The merits of beta seemed to have been challenged by*
2 *widely publicized work by Professors Eugene F. Fama and*
3 *Kenneth R. However, despite the early press reports of*
4 *their work as signifying that "beta is dead," it turns out that*
5 *beta is still a potentially important explanatory factor*
6 *(albeit one of several) in their work. Thus, beta remains*
7 *alive and well as the best single measure of relative risk."*
8 *[Vilbert Direct Page B16 lines 2-7]*

9
10 Dr. Vilbert's testimony on this point is a
11 raw assertion unsupported by a reference
12 to any publication. The authors whom I
13 cite have the highest professional rank
14 and extensive experience in the discipline
15 of economics. He ignores the evidence of
16 the CAPM's debilities just like he ignores
17 the federal government's policy of
18 lowering dividend-taxes to reduce the cost
19 of capital and the renewal of that policy
20 in May 2006.

21
22 Dr. Vilbert's CAPM analysis is not a basis
23 for just and reasonable rates, given his
24 testimony:

25
26 *"There is presently little consensus on 'best practice' for*
27 *estimating the [market risk premium] [Vilbert Direct Page*
28 *B5 lines 10] ...the risk premium over the risk-free rate*
29 *equals the product of beta and the risk premium*
30 *on...average risk. [Vilbert Direct Page 20 line 6]*

31
32 Dr. Vilbert's opinion boils down to the
33 basic point, which I paraphrase: "there is
34 no consensus, so one opinion is as good as
35 another." That is not true. The informed
36 consensus is that the CAPM is gone and
37 that the overall ROE is no more than 8.5%.

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The Capital Asset Pricing Model: Theory and Evidence

Eugene F. Fama and Kenneth R. French

The capital asset pricing model (CAPM) of William Sharpe (1964) and John Lintner (1965) marks the birth of asset pricing theory (resulting in a Nobel Prize for Sharpe in 1990). Four decades later, the CAPM is still widely used in applications, such as estimating the cost of capital for firms and evaluating the performance of managed portfolios. It is the centerpiece of MBA investment courses. Indeed, it is often the only asset pricing model taught in these courses.¹

The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor—poor enough to invalidate the way it is used in applications. The CAPM's empirical problems may reflect theoretical failings, the result of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model. For example, the CAPM says that the risk of a stock should be measured relative to a comprehensive "market portfolio" that in principle can include not just traded financial assets, but also consumer durables, real estate and human capital. Even if we take a narrow view of the model and limit its purview to traded financial assets, is it

¹ Although every asset pricing model is a capital asset pricing model, the finance profession reserves the acronym CAPM for the specific model of Sharpe (1964), Lintner (1965) and Black (1972) discussed here. Thus, throughout the paper we refer to the Sharpe-Lintner-Black model as the CAPM.

■ Eugene F. Fama is Robert R. McCormick Distinguished Service Professor of Finance, Graduate School of Business, University of Chicago, Chicago, Illinois. Kenneth R. French is Carl E. and Catherine M. Heidt Professor of Finance, Tuck School of Business, Dartmouth College, Hanover, New Hampshire. Their e-mail addresses are <eugene.fama@gsb.uchicago.edu> and <kfrench@dartmouth.edu>, respectively.

legitimate to limit further the market portfolio to U.S. common stocks (a typical choice), or should the market be expanded to include bonds, and other financial assets, perhaps around the world? In the end, we argue that whether the model's problems reflect weaknesses in the theory or in its empirical implementation, the failure of the CAPM in empirical tests implies that most applications of the model are invalid.

We begin by outlining the logic of the CAPM, focusing on its predictions about risk and expected return. We then review the history of empirical work and what it says about shortcomings of the CAPM that pose challenges to be explained by alternative models.

The Logic of the CAPM

The CAPM builds on the model of portfolio choice developed by Harry Markowitz (1959). In Markowitz's model, an investor selects a portfolio at time $t - 1$ that produces a stochastic return at t . The model assumes investors are risk averse and, when choosing among portfolios, they care only about the mean and variance of their one-period investment return. As a result, investors choose "mean-variance-efficient" portfolios, in the sense that the portfolios 1) minimize the variance of portfolio return, given expected return, and 2) maximize expected return, given variance. Thus, the Markowitz approach is often called a "mean-variance model."

The portfolio model provides an algebraic condition on asset weights in mean-variance-efficient portfolios. The CAPM turns this algebraic statement into a testable prediction about the relation between risk and expected return by identifying a portfolio that must be efficient if asset prices are to clear the market of all assets.

Sharpe (1964) and Lintner (1965) add two key assumptions to the Markowitz model to identify a portfolio that must be mean-variance-efficient. The first assumption is *complete agreement*: given market clearing asset prices at $t - 1$, investors agree on the joint distribution of asset returns from $t - 1$ to t . And this distribution is the true one—that is, it is the distribution from which the returns we use to test the model are drawn. The second assumption is that there is *borrowing and lending at a risk-free rate*, which is the same for all investors and does not depend on the amount borrowed or lent.

Figure 1 describes portfolio opportunities and tells the CAPM story. The horizontal axis shows portfolio risk, measured by the standard deviation of portfolio return; the vertical axis shows expected return. The curve *abc*, which is called the minimum variance frontier, traces combinations of expected return and risk for portfolios of risky assets that minimize return variance at different levels of expected return. (These portfolios do not include risk-free borrowing and lending.) The tradeoff between risk and expected return for minimum variance portfolios is apparent. For example, an investor who wants a high expected return, perhaps at point *a*, must accept high volatility. At point *T*, the investor can have an interme-

MONEY ILLUSION IN THE STOCK MARKET: THE MODIGLIANI-COHN HYPOTHESIS*

RANDOLPH B. COHEN
CHRISTOPHER POLK
TUOMO VUOLTEENAHÖ

Modigliani and Cohn hypothesize that the stock market suffers from money illusion, discounting real cash flows at nominal discount rates. While previous research has focused on the pricing of the aggregate stock market relative to Treasury bills, the money-illusion hypothesis also has implications for the pricing of risky stocks relative to safe stocks. Simultaneously examining the pricing of Treasury bills, safe stocks, and risky stocks allows us to distinguish money illusion from any change in the attitudes of investors toward risk. Our empirical results support the hypothesis that the stock market suffers from money illusion.

I. INTRODUCTION

Do people suffer from money illusion, confusing nominal dollar values with real purchasing power? When the difference between real and nominal quantities is small and stakes are relatively low, equating the nominal dollar amounts with real values provides a convenient and effective rule of thumb. Therefore, it seems plausible that people often ignore the rate of inflation in processing information for relatively small decisions.¹

Modigliani and Cohn [1979] hypothesize that stock market investors may also suffer from a particular form of money illusion, incorrectly discounting real cash flows with nominal discount rates. An implication of such an error is that time variation in the level of inflation causes the market's subjective expectation of the future equity premium to deviate systematically from the

* An earlier draft of the paper was circulated under the title "How Inflation Illusion Killed the CAPM." We would like to thank Clifford Asness, John Campbell, Edward Glaeser, Jussi Keppo, Stefan Nagel, Andrei Shleifer, Jeremy Stein, and three anonymous referees for helpful comments.

1. The term "money illusion" was coined by John Maynard Keynes early in the twentieth century. In 1928 Irving Fisher gave the subject a thorough treatment in his book *The Money Illusion*. Since then, numerous papers have described implications of money illusion to test for its existence. The most widely discussed of these implications is stickiness in wages and prices (see Gordon [1983] for a review of the evidence on this topic). Although money illusion can exist even in the absence of inflation, inflation is central to most money illusion stories. Fisher and Modigliani [1978] catalog the ways in which inflation could affect the real economy, with money illusion as one important source of real effects. Shafir, Diamond, and Tversky [1997] examine in detail potential effects of money illusion and present evidence on these effects along with a theory of the psychological underpinnings of the illusion.

rational expectation. Thus, when inflation is high (low), the rational equity-premium expectation is higher (lower) than the market's subjective expectation, and the stock market is undervalued (overvalued). The claim that stock market investors suffer from money illusion is a particularly intriguing and controversial proposition, as the stakes in the stock market are obviously very high.

Nevertheless, recent time-series evidence suggests that the stock market does suffer from money illusion of Modigliani and Cohn's variety. Sharpe [2002] and Asness [2000] find that stock dividend and earnings yields are highly correlated with nominal bond yields. Since stocks are claims to cash flows from real capital and inflation is the main driver of nominal interest rates, this correlation makes little sense, a point made recently by Ritter and Warr [2002], Asness [2003], and Campbell and Vuolteenaho [2004]. These aggregate studies suffer from one serious weakness, however. Inflation may be correlated with investors' attitudes toward risk, which directly influence stock prices even if investors do not suffer from money illusion. To the extent that these aggregate studies fail to fully control for risk, the results may confound the impact of risk attitudes and money illusion.

Our novel tests explore the cross-sectional asset-pricing implications of the Modigliani-Cohn money-illusion hypothesis. Simultaneously examining the pricing of Treasury bills, safe stocks, and risky stocks allows us to distinguish money illusion from changing attitudes of investors toward risk. The key insight underlying our tests is that money illusion will have a symmetric effect on all stocks' yields, regardless of their exposure to systematic risk. In contrast, the impact of investor risk attitudes on a stock's yield will be proportional to the stock's risk, as risky stocks' yields will be affected much more than safe stocks' yields will be. This insight allows us to cleanly separate the two competing effects.

Specifically, we assume that investors use the logic of the Sharpe-Lintner capital asset pricing model (CAPM) [Sharpe 1964; Lintner 1965] to measure the riskiness of a stock and to determine its required risk premium. According to the CAPM, a stock's beta with the market is its sole relevant risk measure. In the absence of money illusion (and other investor irrationalities), the Sharpe-Lintner CAPM predicts that the risk compensation for one unit of beta among stocks, which is also called the slope of the security market line, is always equal to the rationally ex-

MONEY ILLUSION IN THE STOCK MARKET

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samples. In an influential paper Fama and French [1992] fail to find support for “the central prediction of [the CAPM], that average returns are positively related to market [betas].” Curiously, this negative result is primarily driven by their 1951–1960 and 1981–1990 subsamples, both of which were preceded by high inflation. The cross-sectional implication of the Modigliani-Cohn hypothesis is that the slope of average returns on beta should be much lower than the equity premium in precisely those subsamples. In a sense, money illusion may have killed the Sharpe-Lintner CAPM.

Although we do not explicitly consider money illusion’s effect on investor welfare, we believe that our results may nevertheless have some policy implications, however speculative. First, if investors suffer from money illusion, stable and low inflation is likely to result in a less mispriced stock market than volatile and high inflation. To the extent that real investment decisions are influenced by stock market (mis)valuations, one would expect low and stable inflation to be beneficial to society.⁵ Second, if government borrowing shifts from nominal bonds to inflation-indexed or real bonds, it is possible that the stock market will value stocks relative to real (instead of nominal) bonds, eliminating the effect of money illusion on stock prices. Third, and most importantly, to the extent that investors perceive a benefit from valuing stocks using nominal quantities, they should pay more attention to expected inflation when forecasting future nominal cash flows.

Q_33. How do you implement the CAPM model?

A_33. I implement the CAPM model by taking into account the current situation:

- *there is no longer a continuity between past and present equity costs;*

- *the current market return is estimated to be 8.5%;*
- *the current debt-yield curve is flat at 5%.*

I then apply the CAPM general formula:

$$K_e = R_f + (R_m - R_f) * B_e$$

In words the equation reads as: K_e , the cost-of-equity, equals R_m , the overall market rate of return, plus the risk premium, $(R_m - R_f)$, which is multiplied by a beta, B_e .

I then apply certain values. I substitute Long-Term Debt Cost of 5.0% for the first R_f to establish a minimum return. I treat the market return, R_m , as 8.5%, the average of the expected returns for Dr. Ibbotson, the Bank Of America, and the Vanguard Group. All three are shown on the chart at page 17 of this testimony. I also treat the risk free rate as 5.0% because of the flat yield curve and because there would be little improvement in the accuracy of the CAPM result. This creates an equity premium as 3.50%, similar to what Dr. Ibbotson mentioned in 2002, at page 23 of this testimony.

I use betas from the NASDAQ stock exchange. A comparison of those betas and Value Line's appears in the next table:

Company:	Value Line's Published Beta	Betas From The NASDAQ Internet Site
Water Companies		
Amer St Water (NYSE:AWR)	0.75	0.24
Inc. (NASDAQ:CTWS)	0.80	0.27
(NYSE:CWT)	0.80	0.65
(NASDAQ:MSEX)	0.80	0.39
S J W Cp (AMEX:SJW)	0.70	0.67
(NASDAQ:SWWC)	0.70	0.52
Aqua America(NYSE:WTR)	0.80	0.18
(NASDAQ:YORW)	0.45	0.00
Average	0.73	0.37

Thus my CAPM equity rate is 6.3%:

$$6.3\% = 5.0\% + (8.5\% - 5.0\%) * .37$$

I rely primarily on the DCF model and my double leverage calculation appears in my Schedule 8. Also, my CAPM analysis demonstrates that TAWC's CAPM analysis is flawed and that TAWC's proposed ROE of 11% is unjust and unreasonable even using the CAPM analysis. Copies of all references and data cited in my testimony are provided in electronic format. This concludes my testimony at this time.

IX. Statement of Credentials and Experience

Q_34. What experience do you have regarding utilities?

A_34. In 1995 I began work as an economist in the Consumer Advocate and Protection Division (CAPD) of the Attorney General's Office. I have also appeared as a witness for CAPD in several cases before the Tennessee Regulatory Authority (TRA). From 1986 to 1995 I was employed by the Iowa Utilities Board as Chief of the Bureau of Energy Efficiency, Auditing and Research, and Utility Specialist and State Liaison Officer to the U.S. Nuclear Regulatory Commission. From 1984 to 1986 I worked for Houston Lighting & Power as Supervisor of Rate Design. From 1982 to 1984 I worked for Arizona Electric Power Cooperative as a Rate Analyst. From 1979 to 1982 I worked for Tri-State Generation and Transmission Association as Power Requirements Supervisor and Rate Specialist. Since 1979 my work spanned many issues including cost of service studies, rate design issues, telecommunications issues and matters related to the disposal of nuclear waste.

Q_35. What is your educational background?

1 **A_35.** I have an M.S. in Regulatory Economics
2 from the University of Wyoming, an
3 M.A. and Ph.D. in International
4 Relations with a specialty in
5 International Economics from the
6 University of Denver, and a B.A. from
7 Colorado State University.

8
9 **Q_36.** **Dr. Brown, have you authored any**
10 **articles relating to your profession?**

11
12 **A_36.** Yes, my articles have appeared in
13 Public Utilities Fortnightly.

14
15 **Q_37.** **Are you and have you been a member of**
16 **any professional organizations?**

17
18 **A_37.** Yes, I am a past member of the NARUC
19 Staff Committee on Management
20 Analysis, a past trustee of and a
21 member of the Board for the Automatic
22 Meter Reading Association, and a
23 current member of the National
24 Association of Business Economists.

25
26 **Q_38.** **Have you studied mathematics and**
27 **statistics as part of your education?**

28
29 **A_38.** Yes.

30
31 **Q_39.** **Dr. Brown, do you use mathematics and**
32 **statistics in combination with**
33 **economics as part of your profession?**

34
35 **A_39.** Yes.

American Water Works: A History Of Operating At Low Equity Ratios

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Consolidated Capitalization Ratios

(At December 31)	Common Equity	Preferred Stock	Debt
2001	36%	1%	63%
2000	37%	1%	62%
1999	37%	2%	61%
1998	37%	2%	61%
1997	36%	3%	61%

**American Water Works
Capital Structure Components
At End of FY 2001**

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Capital Structure: Dollars (1000)

W/O Short-term Debt

With Short-term Debt

With Short-term Debt And Current LTD

Common Equity	DebtAtParent	DebtAtSubs	Preferred At Parent And Subs	Capital Lease	Short-term Debt	Current portion of long-term debt	Grand Total	Total Debt In Grand Total
1,758,018	297,000	2,250,490	49,415	2,529			4,357,452	2,547,490
1,758,018	297,000	2,250,490	49,415	2,529	414,083		4,771,535	2,961,573
1,758,018	297,000	2,250,490	49,415	2,529	414,083	166,087	4,937,622	3,127,660

Capital Structure: Percentages(Ratios)

W/O Short-term Debt

With Short-term Debt

With Short-term Debt And Current LTD

Common Equity	DebtAtParent	DebtAtSubs	Preferred At Parent And Subs	Capital Lease	Short-term Debt	Current portion of long-term debt	Grand Total	Total Debt In Grand Total
40.3%	6.8%	51.6%	1.1%	0.1%			100.0%	58.5%
36.8%	6.2%	47.2%	1.0%	0.1%	8.7%		100.0%	62.1%
35.6%	6.0%	45.6%	1.0%	0.1%	8.4%	3.4%	100.0%	63.3%

Common Equity		Preferred At Parent And Subs			Total Debt In Grand Total
36%		1%			63%

**Capital Structure Percentages Reported In AWW 10K
For Fiscal Year Ending Dec 31, 2001**

**American Water Works
Capital Structure Drops
To 30% In March 2002**

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(From AWK's 10K Exhibit 13 March 2002.) "Upon giving effect to the above financings through January 14, 2002, and the call of American Water Works' preferred stocks effective March 1, 2002, the Company's total debt represents 70% of total capitalization. The Company's bank credit facility that expires on June 25, 2002 includes a limitation on total debt not to exceed 72.5% of total capitalization. Upon renewal of the credit facility, the Company will seek to increase the debt limitation given the pending upgrades from the rating agencies in connection with the RWE merger. However, if the Company were not successful in increasing the debt limitation, the Company may need to issue additional equity in order to continue its acquisition strategy. In addition if the RWE merger did not close, the Company would need to issue equity in order to maintain its credit ratings. "

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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American States Water: Consolidated Capitalization

(In Thousands of \$)

<i>Capital Structure Components As Of:</i>	<i>2005: Dec 31</i>	<i>2004: Dec 31</i>	<i>2003: Dec 31</i>	<i>2002: Dec 31</i>	<i>2001: Dec 31</i>
<i>Short-Term Debt: Notes Due</i>	\$27,000	\$45,000	\$56,000	\$35,000	\$20,000
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	\$635	\$880	\$820	\$13,305	\$800
<i>Long-Term Debt</i>	\$268,405	\$228,902	\$229,799	\$231,089	\$245,692
<i>Trust Preferred Securities</i>	\$0	\$0	\$0	\$0	\$280
<i>Common Equity</i>	\$264,094	\$251,465	\$212,487	\$213,279	\$204,654
<i>Total</i>	\$560,134	\$526,247	\$499,106	\$492,673	\$471,426

RATIOS:

<i>Short-Term Debt: Notes Due</i>	5.4%	9.0%	11.2%	7.1%	4.2%
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	0.1%	0.2%	0.2%	2.7%	0.2%
<i>Long-Term Debt</i>	53.8%	45.9%	46.0%	46.9%	52.1%
<i>Trust Preferred Securities</i>	0.0%	0.0%	0.0%	0.0%	0.1%
<i>Common Equity</i>	52.9%	50.4%	42.6%	43.3%	43.4%
<i>Total</i>	112.2%	105.4%	100.0%	100.0%	100.0%

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California Water Svc Group: Consolidated Capitalization

(In Thousands of \$)

Capital Structure Components As Of:	2005: Dec 31	2004: Dec 31	2003: Dec 31	2002: Dec 31	2001: Dec 31
Short-Term Debt: Notes Due	\$0	\$0	\$6,454	\$36,379	\$22,000
Short-Term Debt: Current Portion of Long-Term Debt	\$1,133	\$1,100	\$904	\$1,000	\$5,381
Long-Term Debt	\$274,142	\$274,821	\$272,226	\$250,365	\$202,600
Common Equity	\$293,941	\$287,605	\$244,524	\$199,217	\$196,619
Preferred	\$3,475	\$3,475	\$3,475	\$3,475	\$3,475
Total	\$572,691	\$567,001	\$527,583	\$490,436	\$430,075

RATIOS:

Short-Term Debt: Notes Due	0.0%	0.0%	1.2%	7.4%	5.1%
Short-Term Debt: Current Portion of Long-Term Debt	0.2%	0.2%	0.2%	0.2%	1.3%
Long-Term Debt	47.9%	48.5%	51.6%	51.0%	47.1%

Common Equity	51.3%	50.7%	46.3%	40.6%	45.7%

Preferred	0.6%	0.6%	0.7%	0.7%	0.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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Connecticut Water Service: Consolidated Capitalization

(In Millions of \$)

Capital Structure Components As Of:	2005: Dec 30	2004: Dec 30	2003: Dec 30	2002: Dec 30	2001: Dec 30
Short-Term Debt: Notes Due	\$4,750	\$5,650	\$9,700	\$6,950	\$1,825
Short-Term Debt: Current Portion of Long-Term Debt	\$2,331	\$326	\$254	\$242	\$2,205
Long-Term Debt	\$77,404	\$66,399	\$64,754	\$64,734	\$63,953
Common Equity	\$94,076	\$87,865	\$83,315	\$79,975	\$70,783
Preferred	\$847	\$847	\$847	\$847	\$847
Total	\$179,408	\$161,087	\$158,870	\$152,748	\$139,613

RATIOS:

Short-Term Debt: Notes Due	2.6%	3.5%	6.1%	4.5%	1.3%
Short-Term Debt: Current Portion of Long-Term Debt	1.3%	0.2%	0.2%	0.2%	1.6%
Long-Term Debt	43.1%	41.2%	40.8%	42.4%	45.8%

Common Equity	52.4%	54.5%	52.4%	52.4%	50.7%

Preferred	0.5%	0.5%	0.5%	0.6%	0.6%

Total	100.0%	100.0%	100.0%	100.0%	100.0%

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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Middlesex Water Company: Consolidated Capitalization

(In \$)

<i>Capital Structure Components As Of:</i>	<i>2005: DEC 30</i>	<i>2004: DEC 30</i>	<i>2003: DEC 30</i>	<i>2002: DEC 30</i>	<i>2001: Sep 30</i>
<i>Short-Term Debt: Notes Due</i>	<i>\$4,000,000</i>	<i>\$11,000,000</i>	<i>\$12,500,000</i>	<i>\$17,650,000</i>	<i>\$13,225,000</i>
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	<i>\$1,930,617</i>	<i>\$1,091,351</i>	<i>\$1,067,258</i>	<i>\$639,427</i>	<i>\$358,836</i>
<i>Long-Term Debt</i>	<i>\$128,174,944</i>	<i>\$115,280,649</i>	<i>\$97,376,847</i>	<i>\$87,483,382</i>	<i>\$88,140,459</i>
<i>Common Equity</i>	<i>\$99,592,325</i>	<i>\$95,128,651</i>	<i>\$79,643,184</i>	<i>\$76,501,245</i>	<i>\$72,290,312</i>
<i>Preferred</i>	<i>\$3,958,062</i>	<i>\$4,063,062</i>	<i>\$4,063,062</i>	<i>\$4,063,062</i>	<i>\$4,063,062</i>
<i>Total</i>	<i>\$237,655,948</i>	<i>\$226,563,713</i>	<i>\$194,650,351</i>	<i>\$186,337,116</i>	<i>\$178,077,669</i>

RATIOS:

<i>Short-Term Debt: Notes Due</i>	<i>1.7%</i>	<i>4.9%</i>	<i>6.4%</i>	<i>9.5%</i>	<i>7.4%</i>
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	<i>0.8%</i>	<i>0.5%</i>	<i>0.5%</i>	<i>0.3%</i>	<i>0.2%</i>
<i>Long-Term Debt</i>	<i>53.9%</i>	<i>50.9%</i>	<i>50.0%</i>	<i>46.9%</i>	<i>49.5%</i>
Common Equity	41.9%	42.0%	40.9%	41.1%	40.6%
<i>Preferred</i>	<i>1.7%</i>	<i>1.8%</i>	<i>2.1%</i>	<i>2.2%</i>	<i>2.3%</i>
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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Aqua America: Consolidated Capitalization					
<i>(In Thousands of \$)</i>					
Capital Structure Components As Of:	2005: Dec 30	2004: Dec 30	2003: Dec 30	2002: Dec 30	2001: Dec 30
Short-Term Debt: Notes Due	\$138,505	\$74,810	\$96,459	\$115,113	\$109,668
Short-Term Debt: Current Portion of Long-Term Debt	\$24,645	\$50,195	\$39,386	\$34,265	\$14,935
Long-Term Debt	\$878,438	\$784,461	\$696,666	\$582,910	\$516,520
Common Equity	\$811,923	\$747,231	\$659,030	\$493,097	\$472,717
Preferred	\$1,551	\$1,237	\$0	\$172	\$1,116
Total	\$1,855,062	\$1,657,934	\$1,491,541	\$1,225,557	\$1,114,956
RATIOS:					
Short-Term Debt: Notes Due	7.5%	4.5%	6.5%	9.4%	9.8%
Short-Term Debt: Current Portion of Long-Term Debt	1.3%	3.0%	2.6%	2.8%	1.3%
Long-Term Debt	47.4%	47.3%	46.7%	47.6%	46.3%
Common Equity	43.8%	45.1%	44.2%	40.2%	42.4%
Preferred	0.1%	0.1%	0.0%	0.0%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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S J W: Consolidated Capitalization

(In Thousands of \$)

<i>Capital Structure Components As Of:</i>	<i>2005: Dec 30</i>	<i>2004: Dec 30</i>	<i>2003: Dec 30</i>	<i>2002: Dec 30</i>	<i>2001: Dec 30</i>
<i>Short-Term Debt: Notes Due</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$11,450</i>	<i>\$11,500</i>
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	<i>\$332</i>	<i>\$275</i>	<i>\$252</i>	<i>\$0</i>	<i>\$0</i>
<i>Long-Term Debt</i>	<i>\$145,281</i>	<i>\$143,604</i>	<i>\$143,879</i>	<i>\$110,000</i>	<i>\$110,000</i>
<i>Common Equity</i>	<i>\$195,908</i>	<i>\$184,691</i>	<i>\$166,368</i>	<i>\$153,499</i>	<i>\$149,354</i>
<i>Preferred</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>
<i>Total</i>	<i>\$341,521</i>	<i>\$328,570</i>	<i>\$310,499</i>	<i>\$274,949</i>	<i>\$270,854</i>

RATIOS:

<i>Short-Term Debt: Notes Due</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>4.2%</i>	<i>4.2%</i>
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	<i>0.1%</i>	<i>0.1%</i>	<i>0.1%</i>	<i>0.0%</i>	<i>0.0%</i>
<i>Long-Term Debt</i>	<i>42.5%</i>	<i>43.7%</i>	<i>46.3%</i>	<i>40.0%</i>	<i>40.6%</i>
<i>Common Equity</i>	<i>57.4%</i>	<i>56.2%</i>	<i>53.6%</i>	<i>55.8%</i>	<i>55.1%</i>
<i>Preferred</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>

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Southwest Water Company: Consolidated Capitalization

(In Thousands of \$)

Capital Structure Components As Of:	2005: Dec 31	2004: Dec 31	2003: Dec 31	2002: Dec 31	2001: Dec 31
Short-Term Debt: Notes Due	\$30,000	\$23,035	\$16,609	\$20,158	\$13,863
Short-Term Debt: Current Portion of Long-Term Debt	\$9,492	\$2,733	\$2,697	\$1,969	\$3,344
Long-Term Debt	\$117,603	\$115,827	\$56,493	\$60,827	\$50,967
Common Equity	\$144,792	\$125,737	\$79,160	\$61,324	\$55,205
Preferred	\$461	\$461	\$507	\$513	\$513
Total	\$302,348	\$267,793	\$155,466	\$144,791	\$123,892

RATIOS:

Short-Term Debt: Notes Due	9.9%	8.6%	10.7%	13.9%	11.2%
Short-Term Debt: Current Portion of Long-Term Debt	3.1%	1.0%	1.7%	1.4%	2.7%
Long-Term Debt	38.9%	43.3%	36.3%	42.0%	41.1%
Common Equity	47.9%	47.0%	50.9%	42.4%	44.6%
Preferred	0.2%	0.2%	0.3%	0.4%	0.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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York Water Company: Consolidated Capitalization

(In Thousands of \$)

Capital Structure Components As Of:	2005: Dec 31	2004: Dec 31	2003: Dec 31	2002: Dec 31	2001: Dec 31
Short-Term Debt: Notes Due	\$7,292	\$0	\$7,153	\$2,738	\$2,000
Short-Term Debt: Current Portion of Long-Term Debt	\$12,039	\$16,339	\$2,739	\$38	\$38
Long-Term Debt	\$39,385	\$35,574	\$29,913	\$32,652	\$32,690
Common Equity	\$50,415	\$48,037	\$39,057	\$37,217	\$35,891
Preferred	\$0	\$0	\$0	\$0	\$0
Total	\$109,131	\$99,950	\$78,862	\$72,645	\$70,620

RATIOS:

Short-Term Debt: Notes Due	6.7%	0.0%	9.1%	3.8%	2.8%
Short-Term Debt: Current Portion of Long-Term Debt	11.0%	16.3%	3.5%	0.1%	0.1%
Long-Term Debt	36.1%	35.6%	37.9%	44.9%	46.3%
Common Equity	46.2%	48.1%	49.5%	51.2%	50.8%
Preferred	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

AWW May Have To 'Retract' Capital From TAWC To Pay For Preferred Stock

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OCA Statement 1

COMMONWEALTH OF PENNSYLVANIA
BEFORE THE PUBLIC UTILITY COMMISSION

Application of Pennsylvania-American	:	
Water Company for Approval of a Change in	:	
Control to be Effected Through a Public	:	Docket No. A-212285F0136
Offering of the Common Stock of American	:	
Water Works Company, Inc.	:	

**Direct Testimony of
Scott J. Rubin**

on behalf of

Office of Consumer Advocate

*** Non-Proprietary Version ***

September 29, 2006

AWW May Have To 'Retract' Capital From TAWC To Pay For Preferred Stock

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Direct Testimony of Scott J. Rubin, PA PUC Docket No. A-212285F0136

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1 In short, PAWC and its customers will not receive any benefits from the IPO.

2 Indeed, as is the case with AWW, PAWC and its customers are likely to be made worse
3 off by the IPO, through higher capital costs, reduced access to capital, management
4 distraction, and increased costs associated with supporting a publicly traded company.

5 **Q. What do you conclude about the effects of the proposed IPO on PAWC and its**
6 **customers?**

7 A. I conclude that the proposed IPO would be detrimental to PAWC and its customers.

8 **8. Financial Fall-out of IPO: Preferred Stock**

9 **Q. Does the proposed IPO have any other financial consequences for AWW?**

10 A. Yes, it does. If RWE is permitted to sell its common stock in AWW, that results in the
11 automatic call of approximately \$1.75 billion in AWW preferred stock that is owned by
12 another RWE company, Thames Water International Luxemburg (TWIL). This is part of
13 a more complex financial arrangement, involving other RWE subsidiaries, designed to
14 shield RWE from tax liability. Simply, one immediate consequence of the IPO is that
15 AWW will have to come up with \$1.75 billion in cash to redeem the AWW preferred
16 stock held by another RWE company.

Calculation Of Parent's Debt Cost

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Thames Water and Subsidiary debt maturities of long-term debt

<u>Interest rate</u>	<u>2005/12/31</u>	<u>2004/12/31</u>	<u>Weighted Cost</u>	
0%-1.99%	269,547	183,432	1.0%	2,695
2%-2.99%	4,833	4,609	2.5%	121
3%-3.99%	239,461	239,566	3.5%	8,381
4%-4.99%	1,928,210	1,529,360	4.5%	86,769
5%-5.99%	860,515	860,888	5.5%	47,328
6%-6.99%	532,477	553,181	6.5%	34,611
7%-7.99%	503,986	522,863	7.5%	37,799
8%-8.99%	142,789	149,660	8.5%	12,137
9%-9.99%	145,755	170,870	9.5%	13,847
10%-10.99%	25,415	25,802	10.5%	2,669
Capital leases	2,494	1,710	<u>5.0%</u>	125
	<u>4,655,482</u>	<u>4,241,941</u>	5.29%	<u>246,482</u>

Source: TAWC Response to CAPD Discovery, Part III, No. 5(f), Attachment , page 24

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Water Company	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	2000	2001	2002	2003	2004	2005	2006	2007	2000-2003	2003-2007	2000-2007	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Amer St Water (NYSE:AWR)	18.91	19.12	20.01	20.58	22.81	24.47	31.01	38.57	8.8	87.4	104.0	1.1	4.7	2.8	10.8	7.3	26.7	24.4
Connecticut Water Service, Inc. (NASDAQ:CTWS)	16.44	16.37	25.20	22.21	24.99	24.70	23.68	23.11	35.1	4.1	40.6	-0.4	53.9	-11.9	12.5	-1.2	-4.1	-2.4
California Water Svc (NYSE:CWT)	21.29	20.57	20.84	20.91	25.11	34.59	37.40	39.63	-1.8	89.5	86.1	-3.4	1.3	0.3	20.1	37.8	8.1	6.0
Middlesex Water Company (NASDAQ:MSEX)	12.17	12.91	14.39	13.99	18.46	17.49	16.96	18.75	15.0	34.0	54.1	6.1	11.5	-2.8	32.0	-5.3	-3.0	10.6
S J W Cp (AMEX:SJW)	16.22	14.35	12.77	11.67	13.70	16.77	22.20	39.88	-28.1	241.7	145.9	-11.5	-11.0	-8.6	17.4	22.4	32.4	79.6
Southwest Water Company (NASDAQ:SWWC)	6.70	6.78	8.52	8.64	10.34	12.46	14.27	13.31	29.0	54.1	98.7	1.2	25.7	1.4	19.7	20.5	14.5	-6.7
Aqua America(NYSE:WTR)	6.46	9.59	12.21	11.39	15.62	17.48	27.05	22.51	76.3	97.6	248.5	48.5	27.3	-6.7	37.1	11.9	54.7	-16.8
York Water Company (NASDAQ:YORW)	4.62	5.17	8.97	8.73	11.04	12.64	16.49	17.88	89.0	104.8	287.0	11.9	73.5	-2.7	26.5	14.5	30.5	8.4
Average Annual Increase →												6.7	23.4	-3.5	22.0	13.5	20.0	12.9

**Value Line's
'Lopsided Distribution
Of Betas**

Docket 06_00290
Exhibit CAPD-SB
Direct Testimony
Schedule 7
Page 1 of 1

The Lopsided Distribution Of Value Line's Betas August 4, 2006 - 1568 Companies With
Betas: 60% Of The Companies Are As Risky Or More Risky Than The Market And The
Weighted Average Beta Is 1.103

Beta Value	# Of Companies With The Beta Value To The Left	Cumulative Total	% Of Companies At Or Above The Beta Value	% Of Companies Below The Beta Value	# Of Companies As % Of Total Comps.	Weighte d Av. Of Betas
2.85	1	1	0.1%	99.9%	0.1%	0.002
2.80	1	2	0.1%	99.9%	0.1%	0.002
2.60	3	5	0.3%	99.7%	0.2%	0.005
2.40	1	6	0.4%	99.6%	0.1%	0.002
2.30	2	8	0.5%	99.5%	0.1%	0.003
2.25	3	11	0.7%	99.3%	0.2%	0.004
2.20	1	12	0.8%	99.2%	0.1%	0.001
2.15	4	16	1.0%	99.0%	0.3%	0.005
2.10	3	19	1.2%	98.8%	0.2%	0.004
2.05	5	24	1.5%	98.5%	0.3%	0.007
2.00	2	26	1.7%	98.3%	0.1%	0.003
1.95	8	34	2.2%	97.8%	0.5%	0.010
1.90	6	40	2.6%	97.4%	0.4%	0.007
1.85	11	51	3.3%	96.7%	0.7%	0.013
1.80	16	67	4.3%	95.7%	1.0%	0.018
1.75	12	79	5.0%	95.0%	0.8%	0.013
1.70	21	100	6.4%	93.6%	1.3%	0.023
1.65	14	114	7.3%	92.7%	0.9%	0.015
1.60	28	142	9.1%	90.9%	1.8%	0.029
1.55	25	167	10.7%	89.3%	1.6%	0.025
1.50	23	190	12.1%	87.9%	1.5%	0.022
1.45	30	220	14.0%	86.0%	1.9%	0.028
1.40	49	269	17.2%	82.8%	3.1%	0.044
1.35	61	330	21.0%	79.0%	3.9%	0.053
1.30	48	378	24.1%	75.9%	3.1%	0.040
1.25	64	442	28.2%	71.8%	4.1%	0.051
1.20	72	514	32.8%	67.2%	4.6%	0.055
1.15	81	595	37.9%	62.1%	5.2%	0.059
1.10	115	710	45.3%	54.7%	7.3%	0.081
1.05	117	827	52.7%	47.3%	7.5%	0.078
1.00	120	947	60.4%	39.6%	7.7%	0.077
0.95	130	1077	68.7%	31.3%	8.3%	0.079
0.90	125	1202	76.7%	23.3%	8.0%	0.072
0.85	95	1297	82.7%	17.3%	6.1%	0.051
0.80	86	1383	88.2%	11.8%	5.5%	0.044
0.75	69	1452	92.6%	7.4%	4.4%	0.033
0.70	45	1497	95.5%	4.5%	2.9%	0.020
0.65	35	1532	97.7%	2.3%	2.2%	0.015
0.60	18	1550	98.9%	1.1%	1.1%	0.007
0.55	12	1562	99.6%	0.4%	0.8%	0.004
0.50	3	1565	99.8%	0.2%	0.2%	0.001
0.40	1	1566	99.9%	0.1%	0.1%	0.000
0.35	2	1568	100.0%	0.0%	0.1%	0.000
					100.0%	1.103

Double Leverage Calculations

Docket 06_00290____
 Exhibit CAPD-SB____
 Direct Testimony____
 Schedule 8____
 Page 1 of 1____

	Source:TAWC Witness Sheila Miller - Exhibit 3	Ratios:	Cost Of Outside Financing	Weighted Cost Of Outside Debt
	(1)	(2)	(3)	(4)
TAWC's Total Capital (\$)	105,827,056	100.0%		
Outside Financing:				
9.25% Series	2,500,000	2.4%	9.3%	1.5%
7.84% Series	5,700,000	5.4%	7.8%	3.4%
6.50% series	6,500,000	6.1%	6.5%	3.9%
9.489% Capital Lease	902,161	0.9%	9.8%	0.5%
Total Outside Financing	15,602,161	14.7%		9.3%
Financing From Parent:	90,224,895	85.3%		
	(1)	(2)	(3)	(4)
				Weighted Cost Of Internal Financing
Parent:		Ratios:	Cost Of Internal Financing	
Debt:		70.0%	5.3%	3.7%
Equity		30.0%	7.5%	2.3%
Total				6.0%
	(1)	(2)	(3)	(4)
				Weighted Cost: All Financing
Total Weighted Cost By Source:		Ratios		
Outside Financing:		14.7%	9.3%	1.4%
Internal Financing:		85.3%	6.0%	5.1%
Total Weighted Cost				6.4%

Stock Index

Ticker	Beta		Ticker	Beta		Ticker	Beta
AIR	190		ATU	100		AAI	160
ABM	85		AYI	100		AKAM	215
ACE	150		ADX	95		ALK	150
ACG	40		ADPT	140		AIN	110
ADCT	135		ADBE	130		AMRI	100
AES	210		ADTN	110		ALB	105
AG	110		AAP	90		ACV	65
ATG	95		AEIS	230		ABS	SEE
AKS	145		AMD	185		AL	120
AHS	120		ABCO	95		ALA	185
AMR	260		AD	100		AA	140
ASA	55		AEG	180		ACL	80
ASVI	95		ARO	155		ALEX	95
T	110		AET	110		Y	60
ATYT	135		ACS	125		AYE	195
ATMI	150		AMG	145		ATI	180
AVX	140		AFFX	155		AGN	85
ABT	85		AFL	90		ALE	NMF
ANF	110		A	150		AB	135
IAF	75		AGYS	100		LNT	90
FAX	55		AEM	55		ATK	75
ABY	100		AGU	90		ALD	85
ACN	130		AHO	135		AW	130
ACPW	130		APD	95		ALOY	NMF
ATVI	135		ARG	100		MDRX	95

Ticker	Beta		Ticker	Beta		Ticker	Beta
ALL	90		AMP	NMF		ABI	120
AT	95		ABC	75		AIT	95
ALNY	NMF		AMN	100		AMAT	145
ANR	NMF		AME	115		AMCC	185
ALO	100		AMGN	90		APSG	55
ALTR	155		AMKR	200		AHG	65
MO	80		AP	70		ATR	95
AMZN	135		ASO	90		WTR	80
ABK	120		APC	95		AQNT	105
ACO	95		ANAD	170		ILA	150
DOX	140		ADI	160		RMK	80
AEE	75		ALOG	75		ARB	75
AXL	125		ANDW	135		ARJ	100
AEOS	140		ADRX	105		ACI	125
AEP	125		AGL	85		ADM	75
AXP	140		AU	65		ASN	75
AFG	100		BUD	65		ARBA	155
AM	90		NLY	85		ABFS	110
AIG	120		ANN	120		AH	110
PLB	SEE		ANSS	120		ARW	140
APCC	135		ANT	SEE		ARRO	65
ASD	95		AOC	120		ARTC	110
AWR	75		APA	90		ARM	140
AMSC	115		AIV	75		ASH	NMF
AMT	185		APOG	95		ASBC	95
AVD	80		APOL	65		ASTE	105
AMWD	100		AAPL	100		AF	95

Ticker	Beta		Ticker	Beta		Ticker	Beta
ATML	240		BHI	100		BLS	100
ATO	75		BEZ	95		BLC	95
ADSK	115		BLL	90		BMS	95
ALV	110		BLDP	175		BHE	145
ADP	95		BDG	100		BER	85
AN	110		BAC	110		BRKA	70
AZO	85		BOH	90		BRY	80
AVB	75		BMO.TO	75		BBY	125
AV	135		BK	130		BLI	115
AVY	95		BNS.TO	75		BIO	95
AVL	125		BN	80		BIIB	120
AVID	130		BCR	80		BMET	75
AVA	95		BKS	NMF		BSTE	115
AVT	145		B	90		BVF	120
AVP	60		BRL	90		BSG	115
AZR	105		ABX	70		BDK	100
BBT	95		BSET	95		BBOX	135
BCE	80		BOL	105		BKH	110
BEAS	160		BAX	65		BBBB	NMF
BHP	110		BSC	115		BL	80
BJS	120		BE	150		HRB	110
BJ	110		BZH	135		BBI	NMF
BMC	140		BEBE	130		BTH	85
BOKF	90		BEC	55		BOBE	85
BP	90		BDX	80		BA	110
BRE	80		BBBY	105		BBDB.TO	130
BT	95		BDC	140		BBA	120

Ticker	Beta		Ticker	Beta		Ticker	Beta
BGP	100		BUCY	NMF		CTS	155
BWA	125		BMHC	110		CVS	90
BORL	150		BG	55		CVC	NMF
SAM	65		BKC	NMF		CBT	100
BSX	80		BNI	95		CCMP	165
BOW	100		CA	160		COG	100
BNE	105		CAI	90		CSG	75
BZF	SEE		CAE.TO	110		CDNS	150
BGG	105		CBG	NMF		CCC	100
BFAM	80		CBRL	80		CPKI	80
CELL	165		CBS	NMF		CWT	80
EAT	85		CDI	90		ELY	115
BCO	110		CDWC	105		CBM	100
BMY	105		CEC	65		CCO.TO	85
BAB	180		CEVA	120		CAM	120
BTI	65		CHG	85		CPB	75
BRCM	165		CHRW	95		CM.TO	90
BRCD	155		CI	110		CNI	95
BRKS	210		CIT	130		CNQ.TO	65
BRO	85		CKR	120		CP	90
BFB	70		CMS	155		CAJ	95
BWS	120		CNA	105		COF	160
BC	120		CNET	210		CFFN	65
BW	105		CPY	75		CPST	110
BPL	75		CSGS	120		CSAR	100
BKE	90		CSX	100		CAH	95

Ticker	Beta		Ticker	Beta		Ticker	Beta
CECO	75		CRDN	95		CRUS	205
CMX	90		CEN	125		CSCO	135
CSL	105		CERN	115		C	135
KMX	165		CHB	175		CZN	100
CCL	120		CRL	80		CTXS	150
CRS	155		CHRS	135		CYN	80
CRI	80		CHTT	65		CLE	115
CAE	95		CKFR	180		CLC	95
CGC	85		CKP	95		CLK	120
CWST	75		CAKE	100		CCU	145
CASY	85		CHE	100		CNL	125
POS	105		CEM	145		CLF	120
CAT	120		CSK	105		CLX	65
FUN	75		CHK	95		COH	125
CRA	160		CVX	90		COA	130
CLS	180		CME	100		KO	60
CELG	135		CHS	135		COKE	70
CX	110		PLCE	130		CCE	60
CD	SEE		CPS	90		CGNX	145
CNP	65		CBK	130		CTSH	120
CTX	130		CB	110		COGN	125
CEE	95		CHD	60		COHR	125
CENT	90		CIEN	170		CWTR	135
CPC	85		CBB	170		CL	55
CV	60		CINF	90		COLM	115
CTL	100		CTAS	105		CMCO	100
CEPH	130		CC	130		CMCSK	140

Ticker	Beta		Ticker	Beta		Ticker	Beta
CMA	105		CPO	85		CYT	115
CBH	100		GLW	140		CYTC	125
CBSH	85		EXBD	105		DNP	55
CMC	110		CPWM	130		DPL	100
CTCO	NMF		CSGP	95		DRS	70
CTV	110		COST	85		DSPG	130
CYH	65		COT	65		DST	115
CBSS	90		CFC	105		DSW	NMF
CSC	110		CVD	85		DTE	75
CPWR	140		CVA	NMF		DTSI	125
CMVT	150		CVH	110		KHI	70
CNW	110		CR	105		DADE	90
CAG	70		CRDB	115		DCX	135
CNXT	260		CMOS	185		DHR	95
CNMD	95		CREE	180		DRI	85
COP	90		CEI	90		DSCP	115
CNX	160		CCI	145		DVA	85
ED	70		CCK	135		DF	NMF
STZ	80		CRY	160		DE	105
CEG	105		CUB	125		DLM	70
CAL	260		CFR	85		DELL	105
CVG	145		CFI	125		DFG	95
COO	75		CMI	140		DLX	80
CBE	115		CW	80		XRAY	70
CTB	105		CYBX	80		DT	95
CPRT	125		CYMI	155		DVN	105
COCO	80		CY	185		DV	110

Ticker	Beta		Ticker	Beta		Ticker	Beta
DP	SEE		DRE	80		EP	225
DO	110		DNB	80		EE	70
DKS	115		DQE	90		ESIO	150
DBD	95		DRRA	SEE		ERTS	105
DIGE	120		DY	120		EDS	155
DDS	125		BOOM	90		RDEN	135
DNEX	90		DYN	280		ELK	105
DTV	125		ET	190		EME	110
DIS	135		EMC	135		EMKR	150
DXYN	80		ESV	115		HLTH	115
DLB	NMF		EOG	100		EMR	110
DG	105		EXP	100		EDE	80
DLTR	115		ELNK	130		ELX	180
D	95		EMN	105		ECA	90
DPZ	NMF		EK	110		EAC	105
DTC	95		ETN	110		ELE	105
DCI	95		EV	120		ENDP	90
RRD	95		EBAY	120		EGN	85
DOV	110		ELON	145		ENR	80
DOW	115		DISH	110		ENER	140
DJ	110		ECLP	120		EAS	90
DSL	100		ECL	85		ENCZ	SEE
DWA	NMF		EIX	110		EC	SEE
DBRN	85		EEEE	NMF		ETR	85
DW	60		EDMC	SEE		EPD	65
DD	100		AGE	135		ENTU	150
DUK	120		EW	75		ENZ	145

Ticker	Beta		Ticker	Beta		Ticker	Beta
ENZN	145		FCN	95		FLEX	175
EFX	105		FDS	130		FRK	105
EQT	85		FIC	90		FLO	90
EOP	75		FCS	180		FLS	SEE
EQR	85		FHR	SEE		FLR	125
ERES	125		FAL	110		FL	115
ERICY	185		FDO	90		F	135
ESE	90		FNM	85		FDG	85
ESPD	125		FAST	115		FRX	80
ESL	115		FRT	80		FST	NMF
ETH	110		FSS	95		FORR	105
EEA	120		FD	120		FO	NMF
RE	115		FII	95		FWRD	120
ESLR	110		FDX	105		FOSL	125
EXEL	195		FOE	105		FDRY	175
EXC	85		FNF	NMF		FELE	85
EXPE	NMF		FITB	90		BEN	120
EXPD	90		FILE	115		FRE	85
ESRX	100		FDC	105		FRED	110
EXTR	195		FHN	90		FCX	125
XOM	90		FMBI	90		FSLB	NMF
FEIC	155		FE	80		FBR	140
FLIR	90		FMER	100		FTO	90
FMC	115		FISV	105		FRO	115
FPL	80		FSH	90		FCEL	170
FSII	155		FLE	170		FUJIY	80

Ticker	Beta		Ticker	Beta		Ticker	Beta
FUL	100		GCO	125		GWW	105
FBN	130		GWR	115		GVA	100
GKSR	110		GLYT	90		GAP	115
GMT	130		GHDX	NMF		GXP	95
GSIG	160		GNTX	115		GB	100
GAB	110		GPC	85		GMP	60
AJG	90		GNW	NMF		GFF	100
GLH	55		GENZ	125		GPI	135
GME	125		GGC	115		GTK	90
GCI	85		GYI	155		GES	85
GPS	115		ROCK	95		GTRC	125
GDI	100		GIL	85		GYMB	110
GRMN	105		GILD	100		HCA	65
IT	115		GLT	100		HCC	95
GTW	135		GSK	85		HNI	80
GET	100		GISX	95		HAE	90
GMST	135		GLBL	120		HAIN	95
GPRO	100		GPN	NMF		HAL	140
GY	120		GSF	105		HKF	95
DNA	90		GG	60		HBHC	85
GAM	95		GDW	90		PDF	60
BGC	155		GS	125		HDL	95
GD	80		GR	135		THG	165
GE	125		GT	160		HANS	95
GIS	55		GOOG	NMF		JH	75
GM	135		GGG	95		HDI	95

Ticker	Beta		Ticker	Beta		Ticker	Beta
HAR	115		HES	95		IACI	NMF
HLIT	215		HEW	70		IDTC	95
HET	105		HPQ	140		IHP	95
TINY	140		HXL	90		IIVI	75
HRS	90		HIBB	110		RX	105
HSC	115		HB	75		ITT	85
HHS	90		HLT	120		ESI	110
HIG	130		HIT	100		IDA	100
HAS	100		HOC	90		IDNX	130
HVT	135		HD	110		IEX	100
HE	70		HMC	85		IDXX	75
HW	85		HON	125		IKN	120
HCP	65		HH	100		ITW	105
HMA	75		HRL	75		ILMN	140
HNT	90		DHI	140		IMCL	145
HR	75		HSP	NMF		BLUD	60
HLEX	95		HPT	95		ICI	130
HWAY	145		HOTT	105		IMO	70
HTLD	110		HOV	135		N	125
HSII	120		HUBB	110		INCY	190
HNZ	65		HCBK	85		ICBC	SEE
HELE	100		HGSI	175		INFS	160
HLX	110		HUM	105		INFA	165
HP	110		JBHT	140		INFY	115
JKHY	120		HBAN	90		IFS	NMF
HPC	115		HUN	NMF		IR	135
HSY	75		HTCH	115		IM	90

Ticker	Beta		Ticker	Beta		Ticker	Beta
IO	105		IRM	100		KSU	105
NSIT	135		ISIS	135		KDN	105
INSU	140		ITRI	110		KEA	145
IART	85		JDSU	150		KEI	140
IDTI	190		JLG	130		K	65
INTC	125		JPM	140		KWD	90
IDC	90		JBL	160		KELYA	110
IFSIA	120		JBX	90		KEM	155
INGR	85		JEC	105		KMT	110
IMGC	135		JNS	160		KCP	135
IN	130		JEQ	95		KMG	105
IBM	105		JOF	110		KIM	80
IFF	70		JBLU	105		KMI	95
IGT	100		JAS	110		KMP	70
IP	110		JNJ	70		KCI	NMF
IRF	180		JCI	100		KG	110
ISCA	70		JNY	105		KEX	105
ISSX	160		JRN	95		NITE	135
IPG	140		JOYG	125		KRI	SEE
ISIL	170		JNPR	185		KSS	90
IWOV	195		JUPM	115		KF	100
INTU	95		KSWS	80		KFY	125
ISRG	120		KBH	120		KFT	65
IVC	85		KTO	110		KKD	SEE
ITG	135		KLAC	140		KR	115
IVGN	90		KAI	95		KRON	125
IRBT	NMF		KAMN	110		KLIC	205

Ticker	Beta		Ticker	Beta		Ticker	Beta
KYO	100		LEH	135		LUX	95
KMB	70		LEN	120		LYO	135
KYPH	115		LXK	105		MTB	100
LLL	90		LBY	90		MBI	125
LCAV	100		USA	110		MDC	130
LSI	205		L	SEE		MDU	100
LZB	120		LRV	80		MMT	50
LH	95		LIFC	110		MGEE	70
LG	85		LLY	85		MTG	135
LAF	SEE		LTD	120		MGM	115
LRCX	190		LNCR	65		MKSI	175
LAMR	125		LECO	90		MPS	115
LMS	105		LNC	135		MSM	105
LANC	80		LNN	65		MNSC	SEE
LNCE	80		LLTC	135		MTSC	100
LVN	110		LIZ	90		MRD	90
LSCC	180		LMT	70		CLI	70
EL	90		LTR	110		MVSN	165
LAUR	95		STAR	85		SHOO	80
LAWS	80		LSS	160		MGA	100
LF	110		LDG	75		MAG	SEE
LEA	130		LFB	125		MANH	180
LTRE	100		LPX	145		MTW	125
LEE	80		LOW	105		HCR	90
LEG	105		LZ	100		MAN	120
LM	125		LU	160		MANT	90

Ticker	Beta		Ticker	Beta		Ticker	Beta
MANU	SEE		MHP	80		MU	155
MFC	95		MCK	90		MCRS	105
MRO	100		MWV	110		MSFT	105
MCS	90		MEDX	215		MVIS	160
MKL	80		MHS	85		MEH	145
MAR	105		MEG	85		MLNM	175
MI	100		MRX	110		MLHR	95
MMC	110		MEDI	110		MIL	95
MATK	115		MDTL	105		MSA	85
MSO	155		MDT	70		MTX	95
MLM	110		MEL	130		MOD	120
MVL	125		MW	130		MHK	120
MRVL	150		MNT	85		MFLO	95
MAS	105		MENT	140		MDCC	105
MEE	135		MRBK	90		MOLX	125
MSC	90		MRK	85		TAP	NMF
MC	95		MRCY	70		MNC	135
MAT	75		MCY	90		MON	100
MATW	75		MERQ	165		MNST	205
MXIM	150		MDP	80		MCO	75
MMS	105		MER	145		MOGA	90
MFE	170		MET	110		MS	155
MNI	75		MTD	95		MOT	110
MKC	50		MXF	95		MLI	NMF
MCDTA	150		MIK	140		MUR	100
MDR	165		MCRL	195		MYE	85
MCD	105		MCHP	120		MYL	70

Ticker	Beta		Ticker	Beta		Ticker	Beta
MYOG	65		NTAP	180		NU	85
MYGN	185		NBIX	105		NTRS	135
NTY	100		NJR	80		NOC	70
NCR	115		NXL	80		NWN	75
NIPNY	SEE		NYB	100		NCX	100
NPSP	140		NYT	90		NVS	70
NVR	115		NWL	90		NOVL	140
NYX	NMF		NFX	95		NVLS	155
NBR	120		NEM	60		NVO	80
NDAQ	110		NEWP	150		NST	80
NAFC	80		NWS	130		NUS	75
NA.TO	75		NXY.TO	90		NUE	135
NCC	100		GAS	120		NUV	35
NFP	130		NKE	90		NVDA	175
NFG	95		NDN	105		OGE	75
NATI	125		NI	90		OMG	125
NOV	NMF		NSANY	100		OMM	125
NPK	SEE		NTMD	35		OSI	90
NSM	140		NE	105		OO	115
NFS	130		NBL	100		OXY	95
NLS	135		NOK	135		CHUX	90
NCI	120		NDSN	110		ODSY	85
NAV	155		JWN	120		ODP	120
NVT	NMF		NSC	105		OMX	NMF
NKTR	165		NHY	80		OCAS	90
NFLX	145		NT	170		ONB	75
NTIQ	SEE		NFB	100		ORI	110

Ticker	Beta		Ticker	Beta		Ticker	Beta
OLN	105		PPL	105		PVR	70
OCR	95		PPG	110		JCP	105
OMC	115		PCAR	120		PEI	80
OVTI	195		PCBC	85		PNR	110
ASGN	130		PEIX	NMF		PBCT	85
FLWS	105		PSUN	110		PGL	90
OKE	100		PKG	85		PBY	140
OTEX	125		PTV	90		POM	90
OPWV	230		PLL	105		PBG	80
ORCL	115		PALM	115		PAS	80
ORBK	130		PNRA	110		PEP	70
ORLY	95		PZZA	75		PSTI	95
ORA	NMF		PRX	SEE		PFGC	60
OSK	90		PMTC	SEE		PKI	100
OSTE	130		PRXL	110		PRGO	85
OTTR	65		PKE	125		PETC	105
OSG	110		PKOH	90		PCZ	70
OMI	90		PH	115		PBR	95
OI	115		PRE	115		PETM	95
PDLI	145		PXR	105		PFE	85
PFCB	105		PAYX	115		PPDI	100
PCG	115		PSS	95		PD	140
PMCS	225		BTU	110		PHG	170
PMI	115		PDX	SEE		PVH	110
PNC	105		PEGS	SEE		PHTN	160
PNM	100		PENX	95		PLAB	170

Ticker	Beta		Ticker	Beta		Ticker	Beta
PNY	85		TROW	140		RFMD	180
PIR	115		PCLN	225		FLI	75
PPC	75		PFG	100		RPM	100
PNW	100		PG	60		RSAS	160
PXD	95		PGN	85		ROIAK	145
PBI	90		PGR	90		RSH	110
PIXR	SEE		PLD	70		RAH	55
PXLW	135		PQE	SEE		RMBS	115
PLT	100		PL	95		RRC	105
PLA	105		PRU	110		RARE	95
PYX	85		PEG	95		RJF	135
PLXS	170		PSA	65		RYN	100
PCL	85		PSD	80		RTN	80
PPP	100		PHM	130		RDA	125
PII	110		QADI	125		RNWK	170
RL	105		QLGC	160		RHAT	100
PLCM	140		KWR	95		RBC	105
POP	110		QCOM	110		REGN	160
BPOP	80		NX	110		RF	100
PKX	105		PWR	195		RGS	90
POT	90		DSS	185		RGA	100
PCH	NMF		IQW	65		RS	120
PWER	200		DGX	90		RRI	170
PWAV	170		STR	95		RLRN	100
PX	100		ZQK	110		RWY	115
PCP	135		Q	180		REP	90

Ticker	Beta		Ticker	Beta		Ticker	Beta
RSG	75		RML	95		HSIC	80
RMM	150		RYAN	90		SGP	100
RMD	90		R	115		SLB	110
RESP	95		RYI	140		SCHL	90
RTRSY	130		RYL	140		SHLM	90
REV	125		SBAC	220		SCHW	160
RAI	95		SEIC	145		SMG	90
REY	95		SEN	80		SSP	85
RAD	100		SLM	70		SCRA	SEE
RBN	95		SPW	125		SEAC	125
RHI	145		SRX	75		STX	120
RKT	110		TSG	165		SEE	70
ROK	110		SAFC	85		SHLD	NMF
COL	110		SWY	105		SCSS	100
ROG	115		JOE	85		SIGI	95
ROH	110		STJ	80		SMTL	185
ROL	85		STA	120		SRE	105
ROP	110		SKS	SEE		SMTC	165
ROST	100		CRM	NMF		SNMX	NMF
RDC	115		SBF	SEE		SXT	90
RY.TO	70		SNDK	175		SEPR	140
RCL	135		SANM	165		SQAA	110
RDSA	100		SNY	85		SCI	115
RYG.TO	75		SAPE	140		SVM	85
RVT	105		SLE	70		SHRP	95
RI	95		SHS	105		SJRB.TO	115
RDK	85		SCG	80		SGR	160

Ticker	Beta		Ticker	Beta		Ticker	Beta
SHC.TO	65		SJI	70		STE	70
SHW	100		SO	65		SVC	SEE
SRP	115		SUG	105		STEI	100
SIAL	85		LUV	120		SWC	140
SLGN	65		SWX	85		STM	175
SIMG	190		SWWC	70		STRA	85
SLAB	125		SWN	100		SRR	80
SSTI	215		SOV	110		SYK	80
SPG	80		SNF	85		SUNW	160
SBGI	110		TRK	75		SVN	SEE
SIX	105		S	120		SU.TO	80
SKX	160		SMP	75		SUN	100
SKIL	170		SPF	140		SRZ	85
SMF	90		SR	120		STI	100
AOS	75		SXI	95		SUP	105
SII	115		SWK	95		SVU	100
SFD	85		SPLS	125		SRDX	105
SJM	70		SBUX	80		SWFT	125
SSCC	125		SRT	120		SWZ	85
SNA	100		HOT	140		SY	115
SLR	175		STT	125		SYD	SEE
SONC	70		STN	95		SCMR	130
SON	100		SNS	95		STMC	105
SNE	100		STTX	80		SBL	150
BID	135		SCS	100		SMMX	120
SRCP	SEE		SRCL	80		SNPS	120

Ticker	Beta		Ticker	Beta		Ticker	Beta
SNV	105		TEF	95		TNB	135
SYV	80		TMX	85		TOC.TO	80
TCB	95		TDS	105		THO	125
AMTD	NMF		TTEC	110		THOR	95
BNK	90		TLAB	130		TMA	75
TE	105		TTO	90		COMS	110
THQI	145		TIN	120		MMM	90
TJX	100		EMF	100		TIBX	140
TXU	110		TPX	130		TDW	110
TWN	105		THC	SEE		TIF	145
TSM	155		TNC	95		TBL	100
TTWO	110		TEN	180		TWX	140
TLB	105		TPP	65		TKR	125
TLM.TO	95		TER	195		TOL	140
TGT	105		TEX	125		TLGD	135
TSTY	75		TSO	155		TOM	SEE
TECD	105		TSRA	175		TR	75
TECH	110		TTEK	110		TOPP	90
TNL	130		TSTY	75		TMK	100
TCKB.TO	100		TTI	115		TTC	95
TECUA	95		TEVA	85		TD.TO	80
TK	110		TXI	NMF		TOT	95
TEK	115		TXN	145		TSS	100
NZT	60		TXT	125		TM	90
CTC	NMF		TTF	120		TSCO	125
TFX	105		TMO	110		TWMC	100

Ticker	Beta		Ticker	Beta		Ticker	Beta
TSAI	120		UST	90		URBN	130
TA.TO	60		UFI	105		UTSI	135
TRH	80		UNF	75		VFC	95
TRP	50		UN	85		VCI	85
RIG	115		UL	85		VRX	150
TG	95		UNP	90		VLO	130
THS	NMF		UNS	75		VMI	80
TWP	105		UIS	135		VAL	85
TY	100		UDR	75		VVTV	115
TRI	60		UIC	70		VARI	105
TRY	70		UNFI	80		VAR	85
TRB	90		UNTD	130		VSEA	170
TRMB	100		UPS	75		VVC	85
TRN	105		URI	140		VECO	170
TQNT	170		USB	115		VRNT	75
TRZ	90		USM	105		VRSN	205
TUP	105		X	145		VZ	95
OVEN	75		USTR	105		VRTX	160
TWB	105		UTX	115		VIAB	NMF
TWTR	130		UTHR	115		VVI	NMF
TW	90		UNH	65		VSAT	135
TYC	155		UTR	100		VSH	170
TSN	70		UVV	75		VC	150
UAUA	NMF		UFPI	105		VTSS	SEE
UGI	90		UHS	65		VOD	95
UIL	90		UVN	155		VOL	120
USG	SEE		UNM	150		VOLV	115

Ticker	Beta		Ticker	Beta		Ticker	Beta
VG	NMF		WEBM	165		WIND	145
VMC	115		WBSN	155		WGO	140
WDFC	80		WBS	90		WEC	80
WGL	80		WTW	95		WWW	105
WPGY	130		WRI	75		WOR	95
WPS	80		WMK	80		WWY	60
WAB	85		WLM	105		WYE	95
WB	110		WLP	80		XL	115
WMT	80		WFC	85		XMSR	160
WAG	80		WEN	75		XTO	90
WLT	135		WERN	110		XEL	90
WRNC	110		WSTC	105		XRX	140
WMG	NMF		WMAR	145		XLNX	170
WFSL	85		WST	75		YRCW	120
WGIL	90		WR	95		YHOO	160
WM	100		WDC	180		YCC	85
WPO	70		WGR	110		YUM	55
WRE	80		WON	110		ZBRA	100
WCN	95		WTSLA	130		ZMH	75
WMI	95		WY	115		ZION	95
WAT	105		WHR	120		ZRAN	170
WSO	90		WFMI	100		ZICO	135
WPI	85		OATS	115			
WTS	90		JWA	75			
WPP	120		WMB	285			
WFT	115		WSM	125			
WEBX	120		WL	95			

THE VALUE LINE

Investment Survey

Part 1
Summary

RECEIVED
Index

AUG 03 2006

File at the front of the
Ratings & Reports
binder. Last week's
Summary & Index
should be removed.

August 4, 2006

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SCREENS

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The Median of Estimated
PRICE-EARNINGS RATIOS
of all stocks with earnings

17.2

26 Weeks Ago	Market Low	Market High
19.0	10-9-02 14.1	5-5-06 19.6

The Median of Estimated
DIVIDEND YIELDS
(next 12 months) of all dividend
paying stocks under review

1.7%

26 Weeks Ago	Market Low	Market High
1.6%	10-9-02 2.4%	5-5-06 1.6%

The Estimated Median Price
APPRECIATION POTENTIAL
of all 1700 stocks in the hypothesized
economic environment 3 to 5 years hence

55%

26 Weeks Ago	Market Low	Market High
40%	10-9-02 115%	5-5-06 40%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numerals in parenthesis after the industry is rank for probable performance (next 12 months).

PAGE		PAGE		PAGE		PAGE	
Advertising (48)	1919	*Educational Services (54)	1578	Internet (41)	2222	R.E.I.T. (93)	1172
Aerospace/Defense (21)	543	Electrical Equipment (10)	1001	Investment Co. (34)	956	Recreation (81)	1841
Air Transport (3)	253	Electric Util. (Central) (82)	695	Investment Co.(Foreign) (40)	360	Restaurant (80)	292
Apparel (64)	1651	Electric Utility (East) (76)	156	Machinery (23)	1331	Retail Automotive (28)	1667
Auto & Truck (27)	101	Electric Utility (West) (73)	1774	*Manuf. Housing/RV (89)	1547	Retail Building Supply (22)	876
Auto Parts (84)	781	Electronics (15)	1021	Maritime (74)	275	Retail (Special Lines) (55)	1705
Bank (56)	2101	Entertainment (53)	1860	Medical Services (72)	631	Retail Store (31)	1676
*Bank (Canadian) (66)	1564	*Entertainment Tech (91)	1591	Medical Supplies (67)	180	Securities Brokerage (4)	1422
Bank (Midwest) (77)	614	Environmental (16)	351	Metal Fabricating (69)	564	Semiconductor (14)	1047
*Beverage (Alcoholic) (70)	1531	Financial Svcs. (Div.) (57)	2130	Metals & Mining (Div.) (2)	1221	Semiconductor Equip (13)	1086
*Beverage (Soft Drink) (29)	1537	*Food Processing (63)	1481	Natural Gas (Distrib.) (90)	458	Shoe (58)	1694
Biotechnology (79)	664	*Food Wholesalers (96)	1526	Natural Gas (Div.) (51)	438	Steel (General) (17)	575
Building Materials (19)	845	*Foreign Electronics (11)	1555	Newspaper (83)	1905	Steel (Integrated) (52)	1412
Cable TV (1)	811	Furn/Home Furnishings (36)	890	Office Equip/Supplies (33)	1129	Telecom. Equipment (24)	746
Canadian Energy (25)	427	*Grocery (60)	1514	Oilfield Svcs/Equip. (6)	1938	Telecom. Services (35)	718
Cement & Aggregates (49)	883	Healthcare Information (39)	655	Packaging & Container (61)	921	Thrift (87)	1161
Chemical (Basic) (59)	1234	Home Appliance (71)	119	Paper/Forest Products (75)	906	Tire & Rubber (86)	114
Chemical (Diversified) (30)	1960	Homebuilding (97)	862	Petroleum (Integrated) (18)	405	*Tobacco (85)	1571
Chemical (Specialty) (45)	475	Hotel/Gaming (50)	1876	Petroleum (Producing) (62)	1928	Toiletries/Cosmetics (95)	799
Coal (8)	525	Household Products (88)	939	Pharmacy Services (38)	771	Trucking (5)	265
Computers/Peripherals (43)	1101	Human Resources (9)	1289	Power (92)	971	Water Utility (94)	1417
Computer Software/Svcs (20)	2167	Industrial Services (37)	324	Precious Metals (12)	1213	Wireless Networking (68)	508
Diversified Co. (46)	1374	Information Services (32)	374	Precision Instrument (44)	125		
Drug (47)	1244	Insurance (Life) (65)	1199	Publishing (78)	1891		
E-Commerce (26)	1439	Insurance (Prop/Cas.) (42)	586	Railroad (7)	283		

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXI, No. 49.

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Index to Stocks

Prices quoted are as of July 26, 2006.

All shares are traded on the New York Stock Exchange except where noted.

PAGE NUMBERS

Bold type refers to
Ratings and Reports;
italics to Selection
& Opinion

PAGE NUMBERS		RANKS										Industry Rank										Do Options Trade?			
Bold type refers to Ratings and Reports; <i>italics to Selection & Opinion</i>		Recent Price		Timeliness		Safety		Technical		3-5 year Target Price Range and % appreciation potential		Current P/E Ratio		% Est'd Yield next 12 mos.		Est'd Earnings 12 mos. to 12-31-06		(f) Est'd Div'd next 12 mos.		LATEST RESULTS					
NAME OF STOCK		Ticker Symbol																Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago		
544	AAR Corp.	AIR	24.01	3	4	4	1.90	25- 45	(5- 85%)	21.6	NIL	1.11	NIL	21	5/31	.31	.17	6/30	NIL	NIL	YES	YES			
325	ABM Industries Inc.	ABM	16.80	5	3	4	.85	25- 40	(50-140%)	17.1	2.7	.98	.45	37	4/30	.21	.18	9/30	.11	.105	YES	YES			
587	ACE Limited	ACE	53.20	▲	3	3	1.50	65- 95	(20- 80%)	8.4	1.9	6.30	1.00	42	6/30	♦1.74	1.50	9/30	▲.25	.23	YES	YES			
958	ACM Income Fund	ACG	7.70	3	3	3	.40	7- 10	(N- 30%)	12.8	7.8	.60	.60	34	12/31	8.25(q)	8.27(q)	9/30	♦.15	.165	YES	YES			
1461	747 ADC Telecom: (NDQ)	ADCT	12.75	4	4	4	1.35	30- 50	(135-290%)	21.3	NIL	.60	NIL	24	4/30	.21	.28	6/30	NIL	NIL	YES	YES			
972	AES Corp.	AES	20.07	3	5	3	2.10	15- 25	(N- 25%)	18.2	NIL	1.10	NIL	92	3/31	.42	.17	6/30	NIL	NIL	YES	YES			
1333	AGCO Corp.	AG	24.61	3	3	2	1.10	30- 40	(20- 65%)	15.4	NIL	1.60	NIL	23	3/31	.19	.23	6/30	NIL	NIL	YES	YES			
459	AGL Resources	ATG	38.58	3	2	3	.95	35- 50	(N- 30%)	14.6	3.9	2.65	1.50	90	3/31	1.41	1.14	6/30	.37	.31	YES	YES			
1413	AK Steel Holding	AKS	13.27	3	5	1	1.45	14- 25	(5- 90%)	12.1	NIL	1.10	NIL	52	6/30	♦.26	.35	6/30	NIL	NIL	YES	YES			
1290	AMN Healthcare	AHS	21.99	2	3	3	1.20	25- 40	(15- 80%)	25.9	NIL	.85	NIL	9	3/31	.24	.13	6/30	NIL	NIL	YES	YES			
254	AMR Corp.	AMR	23.03	1	5	1	2.60	20- 40	(N- 75%)	NMF	NIL	d.65	NIL	3	6/30	1.14	.30	6/30	NIL	NIL	YES	YES			
1214	ASA (Bermuda) Ltd.	ASA	61.68	2	3	5	.55	60- 75	(N- 20%)	94.9	1.5	.65	.90	12	5/31	70.16(q)	41.38(q)	6/30	.20	.20	YES	YES			
102	A.S.V., Inc. (NDQ)	ASVI	17.39	3	3	3	.95	35- 50	(100-190%)	15.1	NIL	1.15	NIL	27	3/31	.25	.20	6/30	NIL	NIL	YES	YES			
719	AT&T Inc.	T	29.50	1	2	2	1.10	40- 50	(35- 70%)	14.0	4.6	2.10	1.35	35	6/30	♦.58	.43	9/30	.333	.323	YES	YES			
1592	ATI Technologies (NDQ)	ATYT	19.83	-	3	-	1.35	30- 45	(50-125%)	25.8	NIL	▲.77	NIL	91	5/31	.16	NIL	6/30	NIL	NIL	YES	YES			
1087	ATMI, Inc. (NDQ)	ATMI	26.59	3	3	4	1.50	45- 70	(70-165%)	25.3	NIL	1.05	NIL	13	6/30	♦.27	.22	6/30	NIL	NIL	YES	YES			
1022	AVX Corp.	AVX	15.11	2	3	3	1.40	14- 20	(N- 30%)	18.9	1.0	▲.80	.15	15	6/30	♦.21	.06	9/30	♦.038	.038	YES	YES			
181	Abbott Labs.	ABT	47.10	3	1	2	.85	70- 85	(50- 80%)	18.8	2.5	2.50	1.18	67	6/30	.62	.58	9/30	.295	.275	YES	YES			
1706	Abercrombie & Fitch	ANF	52.18	3	3	2	1.10	105-155	(100-195%)	12.1	1.3	4.30	.70	55	4/30	.62	.45	6/30	.175	.125	YES	YES			
361	Aberdeen Australia Fd. (ASE)	IAF	12.95	3	3	3	.75	12- 18	(N- 40%)	NMF	3.9	NMF	.50	40	4/30	13.25(q)	11.25(q)	6/30	.30	.26	YES	YES			
957	Aberdeen Asia-Pac. Fd. (ASE)	FAX	6.07	3	4	3	.55	5- 8	(N- 30%)	13.5	6.9	.45	.42	34	10/31	6.32(q)	6.42(q)	9/30	.105	.105	YES	YES			
907	Abitibi-Consolidated	ABY	2.61	3	4	4	1.00	8- 13	(205-400%)	NMF	3.8	d.05	.10	75	6/30	♦d.07	d.08	6/30	.021	.021	YES	YES			
990	2168 Accenture Ltd.	ACN	28.29	2	3	3	1.30	45- 70	(60-145%)	16.2	1.1	1.75	.30	20	5/31	.50	.44	6/30	NIL	NIL	YES	YES			
973	Active Power (NDQ)	ACPW	2.93	4	5	5	1.30	7- 14	(140-380%)	NMF	NIL	d.47	NIL	92	3/31	d.12	d.12	6/30	NIL	NIL	YES	YES			
1593	Activision, Inc. (NDQ)	ATVI	12.38	5	3	3	1.35	▲15- 20	(20- 60%)	51.6	NIL	▼.24	NIL	91	3/31	d.03	.02	6/30	NIL	NIL	YES	YES			
817	1332 Actuant Corp.	ATU	43.85	3	3	4	1.00	65- 95	(50-115%)	14.7	0.2	2.98	.08	23	5/31	.78	.65	6/30	NIL	NIL	YES	YES			
996	1375 Actavis Brands	AYI	42.83	1	3	3	1.00	45- 65	(5- 50%)	17.9	1.4	2.39	.60	46	5/31	.63	.44	9/30	.15	.15	YES	YES			
959	Adams Express	ADX	12.90	3	2	3	.95	14- 20	(10- 55%)	NMF	1.9	NMF	.25	34	3/31	15.48(q)	14.72(q)	9/30	.05	.05	YES	YES			
1102	Adaptec Inc. (NDQ)	ADPT	4.21	3	4	4	1.40	5- 9	(20-115%)	70.2	NIL	.06	NIL	43	3/31	.04	d.04	6/30	NIL	NIL	YES	YES			
2169	Adobe Systems (NDQ)	ADBE	26.89	4	4	4	1.30	40- 60	(50-125%)	23.4	NIL	1.15	NIL	20	5/31	.28	.28	6/30	NIL	NIL	YES	YES			
748	ADTRAN, Inc. (NDQ)	ADTN	21.02	3	3	5	1.10	45- 70	(115-235%)	15.0	1.7	1.40	.36	24	6/30	.27	.27	9/30	.09	.09	YES	YES			
989	1668 Advance Auto Parts	AAP	31.51	4	3	3	.90	60- 90	(90-185%)	14.3	0.8	2.20	.24	28	3/31	.68	.62	9/30	.06	NIL	YES	YES			
1048	Advanced Energy (NDQ)	AEIS	11.71	2	4	1	2.30	16- 25	(35-115%)	9.9	NIL	1.18	NIL	14	6/30	♦.40	.09	6/30	NIL	NIL	YES	YES			
1049	Advanced Micro Dev.	AMD	18.25	3	4	4	1.85	35- 55	(90-200%)	14.0	NIL	1.30	NIL	14	6/30	.18	.03	6/30	NIL	NIL	YES	YES			
375	Advisory Board (NDQ)	ABCO	47.24	2	3	2	.95	50- 70	(5- 50%)	33.3	NIL	1.42	NIL	32	3/31	.44	.33	6/30	NIL	NIL	YES	YES			
1148	1920 ADVO, Inc.	AD	35.97	-	3	-	1.00	30- 50	(N- 40%)	26.3	1.2	1.37	.44	48	3/31	.17	.33	9/30	.11	.11	YES	YES			
1200	AEGON	AEG	16.51	3	3	3	1.80	19- 30	(15- 80%)	13.2	3.6	1.25	.60	65	3/31	.28(p)	.22(p)	6/30	.286	.274	YES	YES			
1707	Aeropostale	ARO	28.10	3	3	3	1.55	40- 65	(40-130%)	16.1	NIL	1.75	NIL	55	4/30	.15	.15	6/30	NIL	NIL	YES	YES			
632	Aetna Inc.	AET	39.96	3	3	3	1.10	60- 90	(50-125%)	14.3	0.1	2.80	.02	72	6/30	♦.64	.52	6/30	NIL	NIL	YES	YES			
2170	Affiliated Computer	ACS	50.02	4	3	3	1.25	85-130	(70-160%)	15.9	NIL	3.15	NIL	20	3/31	.62	.81	6/30	NIL	NIL	YES	YES			

★★ Supplementary Report in this week's issue.

▲ Arrow indicates the direction of a change. When it appears with the Latest Dividend, the arrow signals that a change in the regular payment rate has occurred in the latest quarter.

For Timeliness, 3-5 year Target Price Range, or Estimated Earnings 12 months to 12-31-06, the arrow indicates a change since the preceding week. When a diamond ♦ (indicating a new figure) appears alongside the latest quarterly earnings

results, the rank change probably was primarily caused by the earnings report. In other cases, the change is due to the dynamics of the ranking system and could simply be the result of the improvement or weakening of other stocks.

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RANKS

Industry Rank

Do Options Trade?

Ratings and Reports; Italics to Selection & Opinion												LATEST RESULTS											
NAME OF STOCK		Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-06	(f) Est'd Div'd next 12 mos.	Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago					
2131	Affiliated Managers	AMG	90.67	3	3	2	1.45	110-160 (20-75%)	26.3	NIL	3.45	NIL	57	6/30	◆.86	.63	6/30	NIL	NIL	YES			
182	Affymetrix Inc.	(NDQ) AFFX	22.25	5	4	4	1.55	25-40 (10-80%)	63.6	NIL	.35	NIL	67	3/31	.03	.24	6/30	NIL	NIL	YES			
1201	Aflac Inc.	AFL	43.40	3	2	3	.90	65-85 (50-95%)	15.0	1.3	2.90	.56	65	6/30	◆.75	.64	6/30	.13	.11	YES			
126	Agilent Technologies	A	27.81	2	3	3	1.50	55-80 (100-190%)	18.5	NIL	1.50	NIL	44	4/30	.26	.19	6/30	NIL	NIL	YES			
1023	Agilysys, Inc.	(NDQ) AGYS	15.51	3	3	4	1.00	20-30 (30-95%)	12.5	0.8	1.24	.12	15	3/31	.19	d.01	9/30	.03	.03	YES			
1215	Agnico-Eagle Mines	AEM	35.45	1	3	4	.55	19-30 (N- N%)	54.5	0.1	.65	.03	12	6/30	◆.21	.11	6/30	NIL	NIL	YES			
1235	Agrium, Inc.	AGU	23.25	4	3	3	.90	30-45 (30-95%)	13.7	0.5	1.70	.11	59	3/31	d.37	.18	9/30	.055	.055	YES			
1515	Ahold ADR	AHO	8.78	-	5	-	1.35	9-16 (5-80%)	14.6	NIL	.60	NIL	60	12/31	.08	NA	6/30	NIL	NIL	YES			
1961	Air Products & Chem.	APD	63.18	3	2	2	.95	85-115 (35-80%)	17.4	2.2	3.63	1.36	30	6/30	◆.92	.82	9/30	.34	.32	YES			
476	Airgas Inc.	ARG	35.73	2	3	3	1.00	40-65 (10-80%)	20.0	0.8	1.79	.28	45	6/30	◆.48	.38	6/30	◆.07	.06	YES			
255	AirTran Hldgs. Inc.	AAI	12.59	3	4	3	1.60	17-30 (35-140%)	50.4	NIL	.25	NIL	3	6/30	◆.33	.13	6/30	NIL	NIL	YES			
1440	Akamai Technologies	(NDQ) AKAM	30.00	1	4	3	2.15	45-75 (50-150%)	50.0	NIL	.60	NIL	26	6/30	◆.13	.11	6/30	NIL	NIL	YES			
256	Alaska Air Group	ALK	38.14	2	3	2	1.50	40-65 (5-70%)	9.3	NIL	4.10	NIL	3	6/30	◆.38	.74	6/30	NIL	NIL	YES			
1334	Albany Int'l 'A'	AIN	35.84	4	3	3	1.10	45-65 (25-80%)	13.0	1.1	2.75	.40	23	6/30	◆.63	.63	9/30	◆.10	.08	YES			
1245	Albany Molecular	(NDQ) AMRI	8.84	4	3	2	1.00	7-11 (N-25%)	44.2	NIL	.20	NIL	47	3/31	.06	.17	6/30	NIL	NIL	YES			
1962	Albermarle Corp.	ALB	50.90	3	3	3	1.05	50-70 (N-40%)	17.6	1.3	2.90	.66	30	6/30	◆.89	.60	9/30	.165	.15	YES			
800	Alberto Culver	ACV	47.25	-	1	-	.65	70-85 (50-80%)	18.2	1.2	2.59	.55	95	6/30	◆.69	.60	6/30	◆.13	.115	YES			
392	Albertson's, Inc.	ABS		SEE FINAL SUPPLEMENT - PAGE 392																			
1222	Alcan Inc.	AL	44.91	1	3	3	1.20	40-60 (N-35%)	9.5	1.3	4.75	.60	2	3/31	1.24	.68	6/30	.15	.15	YES			
749	Alcatel ADR(g)	ALA	11.06	3	4	4	1.85	20-35 (80-215%)	13.0	NIL	.85	NIL	24	3/31	.10	.12	6/30	NIL	NIL	YES			
1223	Alcoa Inc.	AA	29.78	2	3	3	1.40	50-70 (70-135%)	9.6	2.0	3.10	.60	2	6/30	.86	.46	9/30	.15	.15	YES			
183	Alcon Inc.	ACL	113.59	3	3	4	.80	135-200 (20-75%)	28.0	1.2	4.05	1.38	67	6/30	◆.18	1.04	6/30	◆.38	.99	YES			
276	Alexander & Baldwin	(NDQ) ALEX	40.30	4	3	4	.95	55-85 (35-110%)	15.5	2.5	2.60	1.00	74	3/31	.84	.74	9/30	.25	.225	YES			
588	Allegheny Corp.	Y	276.29	3	1	3	.60	370-455 (35-65%)	29.1	NIL	9.50	NIL	42	3/31	6.79	3.73	6/30	NIL	NIL	YES			
157	Allegheny Energy	AYE	41.10	◆	4	3	1.95	35-55 (N-35%)	24.2	NIL	1.70	NIL	15	76	3/31	.66	.39	6/30	NIL	NIL	YES		
1224	Allegheny Techn.	ATI	61.86	◆	4	2	1.80	70-120 (15-95%)	14.4	0.6	4.30	.40	2	6/30	◆.137	.91	6/30	.10	.06	YES			
1246	Allergan, Inc.	AGN	109.46	3	2	3	.85	115-160 (5-45%)	35.3	0.4	3.10	.40	47	3/31	.76	.59	6/30	.10	.10	YES			
696	ALLETE	ALE	48.01	-	2	-	NMF	60-80 (25-65%)	18.5	3.2	2.60	1.55	82	3/31	.68	.64	6/30	.363	.315	YES			
2132	AllianceBernstein Hldg.	AB	60.40	3	3	3	1.35	60-90 (N-50%)	17.7	6.1	3.42	3.70	57	6/30	◆.89	.68	6/30	.78	.56	YES			
697	Alliant Energy	LNT	36.19	3	3	2	.90	30-45 (N-25%)	15.7	3.3	2.30	1.18	82	3/31	.56	.23	9/30	288	263	YES			
545	Alliant Techsystems	ATK	80.36	3	3	3	.75	85-125 (5-55%)	18.6	NIL	4.33	NIL	21	3/31	.79	1.26	6/30	NIL	NIL	YES			
2133	Allied Capital Corp.	ALD	27.55	3	2	3	.85	40-60 (45-120%)	11.0	8.7	2.50	2.40	57	3/31	.70	.89	6/30	◆.60	.57	YES			
352	Allied Waste	AW	10.34	2	4	2	1.30	11-19 (5-85%)	22.0	NIL	.47	NIL	16	3/31	.08	.07	6/30	NIL	NIL	YES			
2223	Allscripts, Inc.	(NDQ) ALOY	9.89	-	4	-	NMF	17-30 (70-205%)	NMF	NIL	d.00	NIL	41	4/30	d.10	d.16	6/30	NIL	NIL	YES			
656	Allcity Healthcare	(NDQ) MDRX	18.00	3	4	1	.95	17-30 (N-65%)	90.0	NIL	.20	NIL	39	3/31	.03	.03	6/30	NIL	NIL	YES			
589	Allstate Corp.	ALL	57.36	2	2	3	.90	65-85 (15-50%)	8.2	2.4	7.00	1.40	42	6/30	2.00	1.68	12/31	.35	.32	YES			
1310	ALLTEL Corp.	AT	54.43	-	1	-	.95	85-105 (55-95%)	15.8	2.9	3.45	1.57	35	3/31	.72	.83	9/30	385	.38	YES			
665	Alnylam Pharm.	(NDQ) ALNY	12.44	-	4	-	NMF	20-35 (60-180%)	NMF	NIL	d.10	NIL	79	6/30	◆.431	d.54	6/30	NIL	NIL	YES			
526	Alpha Natural Res.	ANR	16.40	-	3	-	NMF	30-40 (85-145%)	8.2	NIL	2.00	NIL	8	3/31	.48	.19	6/30	NIL	NIL	YES			
184	ALPHARMA Inc.	ALO	22.41	3	3	4	1.00	30-45 (35-100%)	17.9	0.8	1.25	.18	67	3/31	.37	d.02	9/30	.045	.045	YES			
1050	Altera Corp.	(NDQ) ALTR	16.89	2	3	3	1.55	30-50 (80-195%)	22.5	NIL	.75	NIL	14	3/31	.16	.17	6/30	NIL	NIL	YES			
1572	Altria Group	MO	79.79	4	3	3	.80	80-115 (N-45%)	14.5	4.0	5.50	3.20	85	6/30	◆.129	1.41	9/30	.80	.73	YES			
2224	Amazon.com	(NDQ) AMZN	26.26	3	4	5	1.35	55-90 (110-245%)	40.4	NIL	.65	NIL	41	6/30	◆.05	.12	6/30	NIL	NIL	YES			
2134	Ambac Fin'l Group	ABK	84.70	3	2	3	1.20	95-130 (10-55%)	11.3	0.8	7.50	.65	57	3/31	1.98	1.66	6/30	.15	.125	YES			
1225	AMCOL Int'l	ACO	22.80	2	3	1	.95	30-40 (30-75%)	15.7	2.1	1.45	.48	2	6/30	◆.39	.30	6/30	◆.12	.09	YES			
326	Amdocs Ltd.	DOX	37.75	1	4	1	1.40	40-70 (5-85%)	21.0	NIL	1.80	NIL	37	6/30	.39	.37	12/31	NIL	NIL	YES			
	Amerada Hess			NAME CHANGED TO HESS CORP.																			
698	Ameren Corp.	AEE	51.74	4	1	3	.75	45-55 (N-5%)	17.2	4.9	3.00	2.54	82	3/31	.34	.62	6/30	.635	.635	YES			
782	Amer. Axle	AXL	17.01	◆	4	3	1.25	20-30 (20-75%)	15.5	3.5	1.10	.60	84	3/31	.17	.26	6/30	.15	.15	YES			
1708	Amer. Eagle Outfitters	(NDQ) AEOS	33.05	1	3	1	1.40	40-60 (20-80%)	15.7	1.4	2.10	.45	55	4/30	.42	.35	9/30	◆.113	.075	YES			
699	Amer. Elec. Power	AEP	36.06	3	3	4	1.25	35-50 (N-40%)	13.4	4.3	2.70	1.54	82	3/31	.95	.90	9/30	◆.37	.35	YES			
2135	Amer. Express	AXP	51.75	3	2	3	1.40	60-80 (15-55%)	18.5	1.2	2.80	.60	57	6/30	◆.78	.56	9/30	◆.15	.12	YES			
590	Amer. Financial Group	AFG	41.98	2	3	3	1.00	45-70 (5-65%)	9.9	1.3	4.25	.55	42	3/31	1.08	.90	9/30	.138	.125	YES			
922	Amer. Greetings	AM	22.65	4	3	3	.90	16-25 (N-10%)	18.3	1.4	1.24	.32	61	5/31	.24	.35	9/30	.08	.08	YES			
2136	Amer. Int'l Group	AIG	60.23	3	2	3	1.20	155-210 (155-250%)	10.9	1.1	5.55	.66	57	3/31	1.29	1.21	9/30	◆.165	.15	YES			
1482	Amer. Italian Pasta	PLB		SEE LATEST REPORT																			
1103	Amer. Power Conv.	(NDQ) APCC	17.31	5	3	4	1.35	25-40 (45-130%)	24.7	2.3	.70	.40	43	3/31	.07	.18	6/30	.10	.10	YES			
1376	Amer. Standard	ASD	38.92	3	3	3	.95	50-75 (30-95%)	14.2	1.8	2.75	.72	46	6/30	.93	.89	9/30	.18	.15	YES			
1418	Amer. States Water	AWR	37.99	3	3	3	.75	30-45 (N-20%)	23.7	2.4	1.60	.91	94	3/31	.35	.22	6/30	.225	.225	YES			
974	Amer. Superconductor	(NDQ) AMSC	8.97	3	5	4	1.15	15-30 (65-235%)	NMF	NIL	d.94	NIL	92	3/31	d.34	d.19	6/30	NIL	NIL	YES			
721	Amer. Tower 'A'	AMT	32.41	3	5	3	1.85	35-60 (10-85%)	NMF	NIL	.10	NIL	35	3/31	d.01	d.14	6/30	NIL	NIL	YES			
477	Amer. Vanguard Corp.	AVD	14.85	3	3	3	.80	18-30 (20-100%)	17.5	0.5	.85	.08	45	3/31	.10	.13	6/30	.053	.041	YES			
846	Amer. Woodmark	(NDQ) AMWD	33.29	3	3	1	1.00	40-60 (20-80%)	13.1	0.4	2.55	.12	19	4/30	.83	.44	6/30	.03	.03	YES			

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RANKS

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NAME OF STOCK										Ticker Symbol		Timeliness		Beta														Qtr. Ended		Earns. Per sh.		Year Ago		Qtr. Ended		Latest Div'd		Year Ago		
536	2171	ANSYS, Inc.	(NDQ)	ANSS	45.08	3	3	1	1.20	45-65	(N-45%)	32.2	NIL	1.40	NIL	20	3/31	.38	.29	6/30	NIL	NIL	YES																	
534	2172	Anteon Int'l	(NDQ)	ANT					SEE FINAL SUPPLEMENT																															
2138		Aon Corp.	(NDQ)	AOC	34.80	3	3	3	1.20	35-50	(N-45%)	15.8	1.7	2.20	.60	57	3/31	.57	.58	9/30	♦.15	.15	YES																	
1930		Apache Corp.	(NDQ)	APA	68.71	3	3	4	.90	80-120	(15-75%)	8.7	0.6	7.90	.40	62	6/30	♦.217	1.76	9/30	.10	.10	YES																	
1174		Apartment Investment	(NDQ)	AIV	47.87	3	3	2	.75	30-45	(N-N%)	NMF	5.0	d.50	2.40	93	3/31	d.19	d.27	6/30	.60	.60	YES																	
848		Apogee Enterprises	(NDQ)	APOG	14.35	3	3	4	.95	20-30	(40-110%)	16.7	1.8	.86	.26	19	5/31	.17	.14	9/30	.065	.063	YES																	
1717	1579	Apollo Group 'A'	(NDQ)	APOL	46.63	3	3	2	.65	75-115	(60-145%)	17.3	NIL	2.69	NIL	54	5/31	.77	.77	6/30	NIL	NIL	YES																	
1462	1104	Apple Computer	(NDQ)	APPL	63.87	2	3	5	1.00	80-120	(25-90%)	28.4	NIL	2.25	NIL	43	6/30	.54	.37	6/30	NIL	NIL	YES																	
293		Applebee's Int'l	(NDQ)	APPB	18.06	4	3	3	.85	30-45	(65-150%)	13.9	1.1	1.30	.20	80	6/30	♦.29	.34	6/30	NIL	NIL	YES																	
128		Applied Biosystems	(NDQ)	ABI	32.57	2	3	3	1.20	30-45	(N-40%)	25.1	0.5	1.30	.17	44	6/30	♦.35	.31	9/30	.043	.043	YES																	
1335		Applied Ind'l Techn.	(NDQ)	AIT	23.03	3	3	3	.95	25-40	(10-75%)	13.5	2.1	1.71	.48	23	3/31	.43	.29	9/30	.12	.08	YES																	
1089		Applied Materials	(NDQ)	AMAT	15.05	2	3	3	1.45	30-40	(100-165%)	12.8	1.3	1.18	.20	13	4/30	.26	.18	9/30	.05	.03	YES																	
1053		Applied Micro	(NDQ)	AMCC	2.51	2	4	3	1.85	6-9	(140-260%)	22.8	NIL	.11	NIL	14	3/31	.02	.01	6/30	NIL	NIL	YES																	
509		Applied Signal Techn.	(NDQ)	APSG	14.65	4	3	3	.55	25-35	(70-140%)	21.9	3.4	.67	.50	68	4/30	.13	.20	12/31	.125	.125	YES																	
633		Apria Healthcare	(NDQ)	AHG	18.81	5	3	4	.65	25-40	(35-115%)	11.4	NIL	1.65	NIL	72	6/30	♦.43	.46	6/30	NIL	NIL	YES																	
923		AptarGroup	(NDQ)	ATR	50.47	4	3	3	.95	60-90	(20-80%)	18.0	1.7	2.80	.88	61	6/30	.77	.75	9/30	♦.22	.20	YES																	
1419		Aqua America	(NDQ)	WTR	21.70	5	3	4	.80	20-35	(N-60%)	28.9	2.0	.75	.43	94	3/31	.13	.15	6/30	.107	.098	YES																	
1441		aQuantive, Inc.	(NDQ)	AQNT	20.87	3	3	4	1.05	25-40	(20-90%)	46.4	NIL	.45	NIL	26	3/31	.10	.09	6/30	NIL	NIL	YES																	
700		Aquila, Inc.	(NDQ)	ILA	4.54	3	5	3	1.50	4-7	(N-55%)	NMF	NIL	d.20	NIL	82	3/31	d.05	d.02	6/30	NIL	NIL	YES																	
1790	328	ARAMARK Corp.	(NDQ)	RMK	32.60	-	3	-	.80	35-55	(5-70%)	19.0	0.9	1.72	.29	37	3/31	.32	.28	6/30	.07	.055	YES																	
376		Arbitron Inc.	(NDQ)	ARB	36.37	▲	3	3	.75	40-60	(10-65%)	21.4	1.1	1.70	.40	32	6/30	.24	.34	9/30	.10	.10	YES																	
1797	478	Arch Chemicals	(NDQ)	ARJ	35.29	1	3	3	1.00	35-50	(N-40%)	21.4	2.3	1.65	.80	45	3/31	.25	.15	6/30	.20	.20	YES																	
527		Arch Coal	(NDQ)	ACI	34.54	1	3	5	1.25	55-85	(60-145%)	16.8	0.7	2.05	.24	8	6/30	♦.48	.03	6/30	♦.06	.04	YES																	
1483		Archer Daniels Mid'd	(NDQ)	ADM	42.15	1	3	2	.75	30-50	(N-20%)	20.7	0.9	2.04	.40	93	3/31	.53	.29	6/30	.10	.075	YES																	
1175		Archstone-Smith Tr.	(NDQ)	ASN	52.00	3	2	2	.75	35-45	(N-N%)	18.2	3.5	2.85	1.84	93	6/30	♦.77	.27	6/30	.435	.433	YES																	
1442		Arriba, Inc.	(NDQ)	ARBA	7.88	3	5	2	1.55	12-25	(50-215%)	NMF	NIL	♦.30	NIL	26	6/30	♦.11	d.63	6/30	NIL	NIL	YES																	
246		Arkansas Best	(NDQ)	ABFS	45.05	3	3	3	1.10	45-70	(N-55%)	12.3	1.3	3.65	.60	5	6/30	♦.15	.91	9/30	.15	.15	YES																	
546		Armor Holdings	(NDQ)	AH	52.50	3	3	2	1.10	60-95	(15-80%)	13.1	NIL	4.00	NIL	21	6/30	.92	1.05	6/30	NIL	NIL	YES																	
1024		Arrow Electronics	(NDQ)	ARW	27.75	3	3	3	1.40	50-75	(80-170%)	9.4	NIL	2.95	NIL	15	6/30	♦.77	.54	6/30	NIL	NIL	YES																	
186		Arrow Int'l	(NDQ)	ARRO	31.45	4	2	2	.65	30-40	(N-25%)	23.5	2.2	1.34	.68	67	5/31	.31	.35	6/30	.17	.15	YES																	
187		ArthroCare Corp.	(NDQ)	ARTC	41.66	2	3	4	1.10	55-80	(30-90%)	36.2	NIL	1.15	NIL	67	3/31	.26	.12	6/30	NIL	NIL	YES																	
783		ArvinMentor	(NDQ)	ARM	16.41	3	3	1	1.40	20-30	(20-85%)	10.0	2.4	1.64	.40	84	3/31	.40	.29	6/30	.10	.10	YES																	
407		Ashland Inc.	(NDQ)	ASH	65.24	-	2	-	NMF	75-100	(15-55%)	18.0	1.7	3.62	1.10	18	3/31	.67	.44	9/30	♦.275	.275	YES																	
615		Assoc. Banc-Corp	(NDQ)	ASBC	31.55	4	2	3	.95	45-60	(45-90%)	12.4	3.7	2.55	1.16	77	6/30	♦.63	.57	9/30	♦.29	.27	YES																	
1336		Astec Inds.	(NDQ)	ASTE	21.75	3	3	3	1.05	40-60	(85-175%)	13.6	NIL	1.60	NIL	23	6/30	♦.56	.49	6/30	NIL	NIL	YES																	
1162		Astoria Financial	(NDQ)	AF	29.29	4	2	3	.95	35-45	(20-55%)	14.6	3.3	2.00	.96	87	6/30	.49	.55	9/30	♦.24	.20	YES																	
245	1054	Atmel Corp.	(NDQ)	ATML	4.32	2	5	2	2.40	7-13	(60-200%)	25.4	NIL	.17	NIL	14	3/31	.02	d.09	6/30	NIL	NIL	YES																	
460		Atmos Energy	(NDQ)	ATO	29.09	3	2	3	.75	30-35	(5-20%)	16.0	4.4	1.82	1.28	90	3/31	1.10	1.11	6/30	.315	.31	YES																	
2173		Autodesk, Inc.	(NDQ)	ADSK	31.64	3	3	4	1.15	50-70	(60-120%)	21.8	NIL	1.45	NIL	20	4/30	.32	.30	6/30	NIL	.015	YES																	
784		Autoliv, Inc.	(NDQ)	ALV	55.30	3	3	2	1.10	70-110	(25-100%)	13.8	2.5	4.00	1.40	84	6/30	♦.100	.94	9/30	♦.35	.30	YES																	
2174		Automatic Data Proc.	(NDQ)	ADP	42.63	3	1	3	.95	60-75	(40-75%)	21.4	1.7	1.99	.74	20	3/31	.61	.57	9/30	.185	.155	YES																	
1669		AutoNation, Inc.	(NDQ)	AN	20.46	3	3	3	1.10	35-50	(70-145%)	12.8	NIL	1.60	NIL	28	6/30	♦.42	.40	6/30	NIL	NIL	YES																	
1670		AutoZone Inc.	(NDQ)	AZO	87.55	3	3	2	.85	105-155	(20-75%)	11.3	NIL	7.72	NIL	28	5/31	1.92	1.86	6/30	NIL	NIL	YES																	
1176		AvalonBay Communities	(NDQ)	AVB	115.11	▲	3	2	.75	70-95	(N-N%)	64.0	2.7	1.80	3.16	93	3/31	.42	.35	9/30	.78	.71	YES																	
751		Avaya Inc.	(NDQ)	AV	9.35	3	4	3	1.35	15-25	(60-165%)	16.4	NIL	.57	NIL	24	6/30	♦.10	.14	6/30	NIL	NIL	YES																	
479		Avery Dennison	(NDQ)	AVY	57.69	3	2	2	.95	80-105	(40-80%)	15.8	2.7	3.65	1.58	45	6/30	♦.99	.91	6/30	.39	.38	YES																	
1794	547	Aviall, Inc.	(NDQ)	AVL	47.47	-	3	-	1.25	35-50	(N-5%)	24.3	NIL	1.95	NIL	21	3/31	.45	.38	6/30	NIL	NIL	YES																	
1594		Avid Technology	(NDQ)	AVID	34.61	4	3	4	1.30	50-85	(45-145%)	16.9	NIL	2.05	NIL	91	6/30	♦.34	.43	6/30	NIL	NIL	YES																	
1775		Avista Corp.	(NDQ)	AVA	24.97	3	3	3	.95	17-25	(N-N%)	17.8	2.3	1.40	.58	73	3/31	.64	.21	6/30	.14	.135	YES																	
1025		Avnet, Inc.	(NDQ)	AVT	17.42	2	3	4	1.45	25-40	(45-130%)	7.4	NIL	2.34	NIL	15	3/31	.52	.34	6/30	NIL	NIL	YES																	
801		Avon Products	(NDQ)	AVP	32.12	4	2	2	.60	40-55	(25-70%)	29.2	2.2	1.10	.72	95	3/31	.12	.36	6/30	.175	.165	YES																	
243	1877	Azlar Corp.	(NDQ)	AZR	51.75	-	3	-	1.05	30-40	(N-N%)	31.4	NIL	1.65	NIL	50	6/30	♦.35	.41	6/30	NIL	NIL	YES																	
2103		BB&T Corp.	(NDQ)	BBT	42.11	3	1	3	.95	60-75	(40-80%)	12.8	4.0	3.28	1.68	56	6/30	.79	.70	9/30																				

PAGE NUMBERS

Bold type refers to
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RANKS

Industry Rank

Do Options Trade?

Ratings and Reports; italics to Selection & Opinion																				
Recent Price																				
Safety																				
Technical																				
3-5 year																				
Target Price Range and % appreciation potential																				
Current P/E Ratio																				
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Est'd Earnings 12 mos. to 12-31-06																				
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NAME OF STOCK																				
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692	1423	Bear Stearns	BSC	136.40	1 2 3	1.15	150-205	(10-50%)	10.0	0.8	13.70	1.12	4	5/31	3.72	2.09	9/30	.28	.25	YES
	2176	BearingPoint	BE	7.85	- 4 -	1.50	15-25	(90-220%)	19.6	NIL	.40	NIL	20	12/31	d.29	NA	6/30	NIL	NIL	YES
	863	Beazer Homes USA	BZH	40.51	4 3 5	1.35	45-65	(10-60%)	4.9	1.0	8.35	.40	97	6/30	2.37	2.50	6/30	.10	.10	YES
	1711	bebe stores inc	BEBE	15.52	3 3 1	1.30	20-35	(30-125%)	18.5	1.3	.84	.20	55	3/31	.14	.12	9/30	.05	.08	YES
	191	Beckman Coulter	BEC	55.90	4 3 3	.55	65-95	(15-70%)	19.3	1.1	2.90	.60	67	3/31	.50	.62	9/30	.15	.14	YES
	192	Becton, Dickinson	BDX	63.26	3 1 3	.80	85-100	(35-60%)	19.7	1.4	3.21	.86	67	3/31	.79	.71	9/30	.215	.18	YES
	1712	Bed Bath & Beyond	BBBY	33.53	2 2 2	1.05	60-80	(80-140%)	16.2	NIL	2.07	NIL	55	5/31	.35	.33	6/30	NIL	NIL	YES
	1003	Belden CDT	BDC	31.86	1 3 3	1.40	30-45	(N-40%)	18.7	0.6	1.70	.20	10	3/31	.36	.20	9/30	.05	.05	YES
	724	BellSouth Corp.	BLS	38.42	- 2 -	1.00	35-45	(N-15%)	19.2	3.1	2.00	1.20	35	6/30	.49	.44	9/30	.29	.29	YES
	1861	Belo Corp. 'A'	BLC	15.34	4 3 3	.95	25-40	(65-160%)	11.8	2.6	1.30	.40	53	3/31	.16	.20	6/30	.10	.10	YES
	925	Bemis Co.	BMS	29.51	3 1 2	.95	40-50	(35-70%)	16.0	2.6	1.85	.76	61	6/30	.46	.38	6/30	.19	.18	YES
	1026	Benchmark Electronics	BHE	24.50	1 3 4	1.45	30-45	(20-85%)	15.8	NIL	1.55	NIL	15	6/30	.42	.29	6/30	NIL	NIL	YES
	591	Berkley (W.R.)	BER	36.11	2 3 3	.85	40-60	(10-65%)	11.3	0.4	3.20	.16	42	6/30	.82	.65	6/30	.04	.033	YES
	592	Berkshire Hathaway(j)	BRKA	911.90	2 1 3	.70	1200-1450	(30-60%)	20.0	NIL	45.50	NIL	42	3/31	10.84	9.26	6/30	NIL	NIL	YES
	1931	Berry Petroleum 'A'	BRY	32.30	3 3 4	.80	25-40	(N-25%)	12.9	0.8	2.50	.26	62	3/31	.52	.50	6/30	.065	.06	YES
690	1713	Best Buy Co.	BBY	43.96	2 3 1	1.25	75-110	(70-150%)	17.0	0.9	2.58	.40	55	5/31	.47	.34	12/31	.10	.08	YES
244	1678	Big Lots Inc.	BLI	16.05	2 3 1	1.15	16-25	(N-55%)	34.1	NIL	.47	NIL	31	4/30	.13	.06	6/30	NIL	NIL	YES
1798	193	Bio-Rad Labs. 'A'	BIO	66.13	3 3 3	.95	65-95	(N-45%)	20.7	NIL	3.20	NIL	67	3/31	1.19	1.14	6/30	NIL	NIL	YES
★	1249	Biogen Idec Inc.	BIIB	40.97	3 3 2	1.20	50-70	(20-70%)	NMF	NIL	.40	NIL	47	6/30	d.50	.10	6/30	NIL	NIL	YES
194	194	Biomet	BMET	32.49	3 2 3	.75	65-85	(100-160%)	18.1	0.9	1.80	.30	67	5/31	.46	.41	9/30	.30	.25	YES
	195	Biosite Inc.	BSTE	45.10	4 4 4	1.15	45-75	(N-65%)	21.0	NIL	2.15	NIL	67	6/30	.43	.76	6/30	NIL	NIL	YES
	1250	Biowall Corp.	BVF	23.59	1 3 5	1.20	25-35	(5-50%)	10.3	2.1	2.30	.50	47	3/31	.40	.07	6/30	.125	NIL	YES
	2139	BISYS Group	BSG	12.37	4 3 3	1.15	20-30	(60-145%)	15.9	NIL	.78	NIL	57	9/30	.11	.19	6/30	NIL	NIL	YES
★	120	Black & Decker	BKD	71.15	4 3 3	1.00	105-160	(50-125%)	9.8	2.1	7.25	1.52	71	6/30	.198	1.88	9/30	.38	.28	YES
392	752	Black Box	BBOX	41.01	4 3 3	1.35	55-85	(35-105%)	15.9	0.6	2.58	.24	24	3/31	.26	.28	9/30	.06	.06	YES
	1776	Black Hills	BKH	36.06	4 3 3	1.10	30-40	(N-10%)	17.2	3.7	2.10	1.34	73	3/31	.55	.51	6/30	.33	.32	YES
	2177	Blackboard Inc.	BBB	28.13	- 3 -	NMF	25-40	(N-40%)	NMF	NIL	d.55	NIL	20	3/31	.01	.20	6/30	NIL	NIL	YES
	1714	Blair Corp.	BL	24.96	4 3 3	.80	30-45	(20-80%)	15.6	4.8	1.60	1.20	55	6/30	.06	.91	9/30	.30	.15	YES
	2140	Block (H&R)	HRB	22.95	4 3 2	1.10	30-40	(30-75%)	14.3	2.4	1.60	.54	57	4/30	1.77	1.86	12/31	.135	.125	YES
	1715	Blockbuster Inc.	BBI	4.68	- 4 -	NMF	9-15	(90-220%)	NMF	NIL	d.10	NIL	55	6/30	d.13	d.16	6/30	NIL	.02	YES
	940	Blyth Inc.	BTH	17.73	4 3 3	.85	35-45	(95-155%)	13.6	2.6	1.30	.46	88	4/30	.12	.24	6/30	.23	.21	YES
538	294	Bob Evans Farms	BOBE	27.52	3 3 1	.85	30-45	(10-65%)	17.5	1.7	1.57	.48	80	4/30	.47	.16	6/30	.12	.12	YES
	548	Boeing	BA	79.90	3 2 3	1.10	80-110	(N-40%)	22.8	1.6	3.50	1.25	21	6/30	.54	.79	9/30	.30	.25	YES
	549	Bombardier Inc. 'B'	BBDB.TO	3.20b	3 4 3	1.30	5-8	(55-150%)	21.3	NIL	.15	NIL	21	4/30	.02(b)	NIL(b)	6/30	NIL(b)	NIL(b)	YES
	1716	Bombay Co.	BBA	2.12	5 4 2	1.20	3-5	(40-135%)	NMF	NIL	d.50	NIL	55	4/30	d.43	d.22	6/30	NIL	NIL	YES
	1717	Borders Group	BGP	18.42	5 3 3	1.00	30-50	(65-170%)	11.5	2.2	1.60	.40	55	4/30	d.31	d.07	9/30	.10	.09	YES
	785	BorgWarner	BWA	58.40	3 3 3	1.25	60-90	(5-55%)	13.1	1.1	4.45	.64	84	6/30	.121	1.13	9/30	.16	.145	YES
	2178	Borland Software	BORL	5.45	3 4 4	1.50	8-14	(45-155%)	NMF	NIL	d.25	NIL	20	3/31	.12	.03	6/30	NIL	NIL	YES
1979	1533	Boston Beer 'A'	SAM	29.15	4 3 3	.65	25-35	(N-20%)	27.8	NIL	1.05	NIL	70	3/31	.13	.27	6/30	NIL	NIL	YES
990	196	Boston Scientific	BSX	17.06	4 3 3	.80	35-50	(105-195%)	14.8	NIL	1.15	NIL	67	6/30	.31	.48	6/30	NIL	NIL	YES
	908	Bowater Inc.	BOW	20.67	3 3 4	1.00	35-50	(70-140%)	NMF	3.9	d.30	.80	75	6/30	d.31	d.05	12/31	.20	.20	YES
	1893	Bowne & Co.	BNE	13.45	3 3 3	1.05	15-25	(10-85%)	44.8	1.6	.30	.22	78	3/31	.13	.11	9/30	.055	.055	YES
534	362	Brazil Fund	BZF		SEE FINAL SUPPLEMENT - PAGE 534															
	1337	Briggs & Stratton	BGG	24.77	5 3 4	1.05	35-50	(40-100%)	12.3	3.6	2.02	.90	23	3/31	1.16	1.18	6/30	.22	.34	YES
	1580	Bright Horizons Family	BFAM	35.42	3 3 3	.80	50-80	(40-125%)	23.6	NIL	1.50	NIL	54	3/31	.36	.29	6/30	NIL	NIL	YES
	510	Brightpoint, Inc.	CELL	13.49	3 4 3	1.65	25-40	(85-195%)	15.0	NIL	.90	NIL	68	3/31	.18	.11	6/30	NIL	NIL	YES
	295	Brinker Int'l	EAT	33.75	3 3 3	.85	50-80	(50-135%)	14.7	1.3	2.29	.45	80	3/31	.65	.59	6/30	.10	NIL	YES
	1976	Brink's (The) Co.	BCO	55.67	3 3 3	1.10	50-80	(N-45%)	39.8	0.4	1.40	.25	46	3/31	.42	.28	9/30	.063	.025	YES
	1251	Bristol-Myers Squibb	BMJ	25.99	3 2 3	1.05	30-40	(15-55%)	22.6	4.3	1.15	1.12	47	6/30	.34	.50	9/30	.28	.28	YES
	257	British Airways ADR(g)	BAE	70.28	3 3 3	1.80	55-85	(N-20%)	16.0	NIL	4.39	NIL	3	12/31	d.21	d.22	6/30	NIL	NIL	YES
	1573	British Amer Tobacco ADR	BTI	53.10	3 3 3	.65	50-75	(N-40%)	15.2	2.7	3.50	1.45	85	3/31	.77	.76	6/30	1.211	1.105	YES
	753	Broadcom Corp. 'A'	BRM	22.02	3 3 3	1.65	60-85	(170-285%)	19.1	NIL	1.15	NIL	24	3/31	.22	.13	6/30	NIL	NIL	YES
	1105	Brocade Communic.	BRCD	6.00	2 5 2	1.55	9-16	(50-165%)	30.0	NIL	.20	NIL	43	4/30	.05	.08	6/30	NIL	NIL	YES
	1338	Brooks Automation	BRKS	10.94	2 4 3	2.10	17-30	(55-175%)	19.2	NIL	.57	NIL	23	3/31	.10	d.06	6/30	NIL	NIL	YES
	2141	Brown & Brown	BRO	31.34	2 2 3	.85	35-45	(10-45%)	21.2	0.6	1.48	.20	57	6/30	.32	.27	6/30	.05	.04	YES
	1534	Brown-Forman 'B'	BFB	72.89	3 1 3	.70	75-95	(5-30%)	22.9	1.5	3.18	1.12	70	4/30	.57	.49	9/30	.28	.245	YES
	1895	Brown Shoe	BWS	31.81	3 3 2	1.20	40-60	(25-90%)	13.5	1.0	2.35	.32	58	4/30	.35	.49	9/30	.08	.067	YES
1306	1842	Brunswick Corp.	BC	29.13	5 3 2	1.20	50-70	(70-140%)	11.9	2.1	2.45	.60	81	6/30	.93	1.15	6/30	NIL	NIL	YES
	1227	Brush Engineered	BW	23.39	1 3 3	1.05	30-40	(30-70%)	21.3	NIL	1.10									

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Recent Price										Safety		Technical		3-5 year Target Price Range and % appreciation potential		Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-06	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					
NAME OF STOCK		Ticker Symbol	Timeliness	Safety	Beta	Target	Price Range	% appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-06	(f) Est'd Div'd next 12 mos.	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	YES						
392	593 CNA Fin'l	CNA	34.16	2	2	3	1.05	35-50	(N-45%)	9.8	NIL	3.50	NIL	57	3/31	.84	.67	6/30	NIL	NIL	YES				
	2225 CNET Networks	(NDQ) CNET	8.04	5	5	5	2.10	15-25	(85-210%)	32.2	NIL	.25	NIL	41	6/30	NIL	.05	6/30	NIL	NIL	YES				
	1843 CPI Corp.	CPY	28.50	2	3	2	.75	20-35	(N-25%)	16.3	2.2	1.75	.64	81	4/30	.29	d.25	6/30	.16	.16	YES				
	332 CSG Systems Int'l	(NDQ) CSGS	25.70	2	3	3	1.20	30-45	(15-75%)	19.8	NIL	1.30	NIL	37	6/30	♦.33	.31	6/30	NIL	NIL	YES				
	285 CSX Corp.	CSX	59.09	1	3	3	1.00	70-110	(20-85%)	13.4	1.4	4.40	.80	7	6/30	1.66	.96	9/30	▲.20	.10	YES				
	1027 CTS Corp.	CTS	14.30	2	3	2	1.55	20-30	(40-110%)	19.1	0.8	.75	.12	15	3/31	.17	.09	9/30	.03	.03	YES				
	772 CVS Corp.	CVS	33.00	3	3	2	.90	50-70	(50-110%)	22.0	0.5	1.50	.16	38	3/31	.39	.34	9/30	.039	.036	YES				
	812 Cablevision Sys. 'A'	CVC	21.36	-	5	-	NMF	20-40	(N-85%)	NMF	NIL	d.65	NIL	1	3/31	d.20	d.31	6/30	NIL	NIL	YES				
	1963 Cabot Corp.	CBT	32.61	3	3	3	1.00	45-65	(40-100%)	17.6	2.0	1.85	.64	30	3/31	.46	.62	9/30	.16	.16	YES				
	480 Cabot Microelectr's	(NDQ) CCMP	27.49	3	3	3	1.65	40-60	(45-120%)	19.1	NIL	1.44	NIL	45	6/30	♦.40	.34	6/30	NIL	NIL	YES				
	439 Cabot Oil & Gas 'A'	COG	52.21	3	3	5	1.00	35-50	(N- N%)	12.7	0.3	4.10	.16	51	6/30	♦.96	.67	6/30	.04	.04	YES				
	1538 Cadbury Schweppes(g)	CSG	38.52	4	1	3	.75	50-65	(30-70%)	17.9	2.4	2.15	.94	29	12/31	1.05(p)	1.19(p)	6/30	.63	.634	YES				
	2180 Cadence Design Sys.	(NDQ) CDNS	15.57	2	3	3	1.50	20-30	(30-95%)	22.2	NIL	.70	NIL	20	3/31	.12	.15	6/30	NIL	NIL	YES				
	353 Calgon Carbon	CCC	5.84	3	4	4	1.00	6-11	(5-90%)	NMF	NIL	d.02	NIL	16	6/30	♦d.05	.07	6/30	NIL	.03	YES				
	300 California Pizza	(NDQ) CPKI	26.32	3	3	3	.80	30-45	(15-70%)	22.9	NIL	1.15	NIL	80	3/31	.23	.22	6/30	NIL	NIL	YES				
	1420 California Water	CWT	36.42	4	2	3	.80	30-40	(N-10%)	22.1	3.2	1.65	1.16	94	3/31	.04	.03	6/30	.288	.285	YES				
	1844 Callaway Golf	ELY	12.51	3	3	2	1.15	19-30	(50-140%)	15.6	2.2	.80	.28	81	6/30	♦.38	.30	9/30	.07	.07	YES				
	1964 Cambrex Corp.	CBM	21.67	2	3	4	1.00	30-40	(40-85%)	28.9	0.6	.75	.12	30	3/31	.26	.19	6/30	.03	.03	YES				
	1228 Cameco Corp.	(TSE) CCO.TO	44.16	2	3	4	.85	55-85	(25-90%)	49.1	0.4	.90	.16	2	3/31	.32	.08	9/30	.04	.03	YES				
	★ 1941 Cameron Int'l Corp.	CAM	48.00	▲	2	3	4	1.20	50-75	(5-55%)	19.2	NIL	2.50	NIL	6	6/30	♦.63	.35	6/30	NIL	NIL	YES			
250	1485 Campbell Soup	CPB	36.31	2	2	2	.75	40-55	(10-50%)	19.2	2.0	1.89	.72	63	4/30	.40	.35	9/30	.18	.17	YES				
	1567 Can. Imperial Bank	(TSE) CM.TO	79.00b	4	2	3	.90	90-125	(15-60%)	12.1	3.6	6.53	2.82	66	4/30	1.53(b)	1.41(b)	9/30	▲.70(b)	.68(b)	YES				
	286 Can. National Railway	CNI	39.84	2	2	3	.95	50-70	(25-75%)	14.0	1.5	2.85	.60	7	6/30	♦.80	.63	6/30	.14	.107	YES				
	428 Can. Natural Res.	(TSE) CNQ.TO	60.39	3	3	3	.65	60-90	(N-50%)	17.3	0.5	3.50	.31	25	3/31	.50	.48	9/30	.075	.06	YES				
	287 Can. Pacific Railway	CP	47.48	2	3	3	.90	55-80	(15-70%)	13.8	1.4	3.45	.68	7	6/30	♦.90	.74	9/30	.16	.127	YES				
	1556 Canon Inc. ADR(★)(g)	CAJ	46.81	2	2	4	.95	60-80	(30-70%)	16.4	1.7	2.85	.78	11	3/31	.71	.59	6/30	.38	.248	YES				
	2143 Capital One Fin'l	COF	78.69	4	3	3	1.60	110-165	(40-110%)	10.8	0.1	7.30	.11	57	6/30	♦1.78	2.03	6/30	.027	.027	YES				
	1163 Capitol Fed. Fin'l	(NDQ) CFFN	34.51	3	2	3	.65	25-35	(N- N%)	49.3	5.8	.70	2.00	87	3/31	.19	.24	9/30	♦.50	.50	YES				
	976 Capstone Turbine	(NDQ) CPST	1.85	4	4	4	1.10	3-5	(60-70%)	NMF	NIL	d.42	NIL	92	3/31	d.12	d.11	6/30	NIL	NIL	YES				
	926 Carastar Inds.	(NDQ) CSAR	7.67	3	4	3	1.00	11-18	(45-135%)	19.2	NIL	.40	NIL	61	3/31	d.03	.07	6/30	NIL	NIL	YES				
	197 Cardinal Health	CAH	67.44	3	3	4	.95	85-130	(25-95%)	20.0	0.5	3.37	.36	67	3/31	.83	.94	9/30	▲.09	.03	YES				
	1581 Career Education	(NDQ) CECO	28.92	-	3	-	.75	75-110	(160-280%)	12.9	NIL	2.25	NIL	54	3/31	.60	.59	6/30	NIL	NIL	YES				
	773 Caremark RX	CMX	53.63	3	3	4	.90	65-95	(20-75%)	23.3	0.7	2.30	.40	38	3/31	.51	.43	6/30	▲.10	NIL	YES				
	★ 116 Carlisle Cos.	CSL	81.38	3	2	2	1.05	90-120	(10-45%)	15.2	1.3	5.35	1.04	86	6/30	♦1.76	1.38	6/30	.25	.23	YES				
	817 1671 CarMax, Inc.	KMX	34.39	2	3	2	1.65	50-80	(45-135%)	24.0	NIL	1.43	NIL	28	5/31	.53	.37	6/30	NIL	NIL	YES				
	1845 Carnival Corp.	CCL	40.01	4	3	4	1.20	60-85	(50-110%)	13.8	2.5	2.90	1.00	81	5/31	.46	.49	9/30	.25	.20	YES				
	577 Carpenter Technology	CRS	90.67	1	3	2	1.55	85-125	(N-40%)	10.3	0.7	8.81	.60	17	6/30	♦2.39	1.86	6/30	.15	.125	YES				
	1652 Carter's Inc.(★)	CRI	23.40	3	3	3	.80	40-55	(70-135%)	16.4	NIL	1.43	NIL	64	6/30	♦.15	.09	6/30	NIL	NIL	YES				
	1340 Cascade Corp.	CAE	37.31	5	3	4	.95	40-60	(5-60%)	11.7	1.6	3.20	.60	23	4/30	.84	.95	9/30	.15	.12	YES				
	461 Cascade Natural Gas	CGC	25.78	-	3	-	.85	20-30	(N-15%)	23.4	3.7	1.10	.96	90	3/31	.78	.65	9/30	.24	.24	YES				
819	354 Casella Waste Sys.	(NDQ) CWST	12.23	2	4	2	.75	11-19	(N-55%)	38.2	NIL	.32	NIL	16	4/30	.07	d.01	6/30	NIL	NIL	YES				
	691 1516 Casey's Gen'l Stores	(NDQ) CASY	22.71	3	3	4	.85	25-40	(10-75%)	16.7	0.9	1.36	.20	60	4/30	.22	.15	9/30	▲.05	.045	YES				
	1790 333 Catalina Marketing	POS	28.01	2	3	3	1.05	30-45	(5-60%)	19.6	1.1	1.43	.30	37	6/30	♦.30	.27	6/30	NIL	NIL	YES				
	2239 1341 Caterpillar Inc.	CAT	70.13	2	2	3	1.20	75-100	(5-45%)	12.8	1.7	5.50	1.20	23	6/30	♦1.52	1.08	9/30	▲.30	.25	YES				
	1846 Cedar Fair L.P.	FUN	25.10	4	2	2	.75	35-45	(40-80%)	14.3	7.5	1.75	1.88	81	3/31	d.49	d.44	9/30	.47	.46	YES				
	667 Celera Genomics	CRA	12.85	3	3	3	1.60	14-20	(10-55%)	NMF	NIL	d.82	NIL	39	6/30	♦d.07	d.22	6/30	NIL	NIL	YES				
	1028 Celestica Inc.	CLS	8.10	3	4	4	1.80	25-40	(210-395%)	13.5	NIL	.60	NIL	15	3/31	.08	.15	6/30	NIL	NIL	YES				
	1252 Celgene Corp.	(NDQ) CELG	48.91	2	3	2	1.35	65-100	(35-105%)	NMF	NIL	.40	NIL	47	3/31	.04	.13	6/30	NIL	NIL	YES				
	884 CEMEX ADS(★)	CX	29.01	3	3	5	1.10	25-40	(N-40%)	8.2	2.3	3.53	.67	49	3/31	.72	.69	6/30	.665	.613	YES				
	1379 Cendant Corp.	CD																							
	702 CenterPoint Energy	CNP	13.48	-	3	-	.65	13-19	(N-40%)	13.5	4.6	1.00	.62	82	3/31	.28	.20	6/30	.15	.07	YES				
	864 Centex Corp.	CTX	47.57	▼	4	3	1.30	50-75	(5-60%)	6.6	0.3	♦7.21	.16	97	6/30	♦1.39	1.57	9/30	.04	.04	YES				
	363 Central Europe/Russia	CEE	47.06	3	3	5	.95	50-70	(5-50%)	NMF	0.7	NMF	.33	40	4/30	57.80(q)	31.03(q)	6/30	NIL	NIL	YES				
	941 Central Garden & Pet	(NDQ) CENT	38.88	3	3	3	.90	50-70	(30-80%)	13.5	NIL	2.88	NIL	88	3/31	1.17	1.04	6/30	NIL	NIL	YES				
	334 Central Parking	CPC	15.35	3	3	2	.85	18-25	(15-65%)	26.0	0.4	.59	.06	37	3/31	.11	.19	9/30	.015	.015	YES				
	159 Cen. Vermont Pub. Serv.	CV	21.97	3	3	3	.60	16-25	(N-15%)	20.0	4.2	1.10	.92	76	3/31	.32	d.41	9/30	.23	.23	YES				
	725 CenturyTel Inc.	CTL	36.31	4	3	2	1.00	35-50	(N-40%)	14.0	0.7	2.60	.25	35	6/30	♦.61	.64	6/30	.063	.06	YES				
	1253 Cephalon Inc.	(NDQ) CEPH	65.93	3	3	4	1.30	80-120	(20-80%)	24.0	NIL	2.75	NIL	47	3/31	.57	.46	6/30							

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												Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
595	Cincinnati Financial	(NDQ) CINF	47.46	3	2	3	.90	50- 70	(5- 45%)	15.8	2.9	3.00	1.36	42	3/31	.74	.78	9/30	.335	.305	YES
335	Cintas Corp.	(NDQ) CTAS	35.45	3	3	3	1.05	50- 75	(40-110%)	17.2	1.1	2.06	.38	37	5/31	.55	.48	6/30	NIL	NIL	YES
1724	Circuit City Stores	CC	23.43	1	3	3	1.30	25- 40	(5- 70%)	21.9	0.7	1.07	.16	55	5/31	.03	d.06	12/31	▲.04	.018	YES
1056	Cirrus Logic	(NDQ) CRUS	6.87	▼2	5	3	2.05	11- 20	(60-190%)	18.6	NIL	.37	NIL	14	6/30	♦.09	.05	6/30	NIL	NIL	YES
755	Cisco Systems	(NDQ) CSCO	17.94	2	3	2	1.35	35- 50	(95-180%)	19.9	NIL	.90	NIL	24	4/30	.20	.21	6/30	NIL	NIL	YES
2144	Citigroup Inc.	C	47.53	2	3	3	1.35	50- 70	(5- 45%)	11.9	4.3	4.00	2.04	57	6/30	1.05	.91	9/30	.49	.44	YES
727	Citizens Commun.	CZNX	12.66	3	3	3	1.00	14- 20	(10- 60%)	21.1	7.9	.60	1.00	35	3/31	.13	.12	6/30	.25	.25	YES
2182	Citrix Sys.	(NDQ) CTXS	31.76	2	3	2	1.50	45- 65	(40-105%)	27.6	NIL	1.15	NIL	20	6/30	.24	.27	6/30	NIL	NIL	YES
818	2107 City National Corp.	CYN	66.26	4	2	2	.80	70- 90	(5- 35%)	13.3	2.6	5.00	1.72	56	6/30	1.16	1.13	6/30	.41	.36	YES
1725	Claire's Stores	CLE	24.66	4	3	4	1.15	35- 50	(40-105%)	12.5	1.8	1.97	.44	55	4/30	.30	.30	6/30	.10	.10	YES
928	CLARCOR Inc.	CLC	27.49	3	2	3	.95	35- 45	(25- 65%)	17.6	1.0	1.56	.28	61	5/31	.32	.33	9/30	.068	.064	YES
1292	Clark, Inc.	CLK	12.77	▼4	3	4	1.20	16- 25	(25- 95%)	25.5	1.9	.50	.24	9	6/30	♦.01	.07	12/31	♦.06	.06	YES
1863	Clear Channel	CCU	28.91	2	3	3	1.45	40- 65	(40-125%)	21.4	2.6	1.35	.75	53	3/31	.14	.12	12/31	♦.188	.189	YES
703	Cleco Corp.	CNL	25.00	5	3	3	1.25	18- 25	(N- N%)	19.2	3.6	1.30	.90	82	3/31	.23	.18	9/30	♦.225	.225	YES
578	Cleveland-Cliffs	CLF	34.85	3	3	5	1.20	45- 70	(30-100%)	7.0	1.4	5.00	.50	17	3/31	.69	.48	9/30	.125	.10	YES
943	Clorox Co.	CLX	59.52	4	2	3	.65	75-105	(25- 75%)	19.5	2.0	3.05	1.18	88	3/31	.72	.75	9/30	.29	.28	YES
1726	Coach Inc.	COH	27.31	3	3	2	1.25	45- 70	(65-155%)	20.1	NIL	1.36	NIL	55	3/31	.28	.23	6/30	NIL	NIL	YES
1549	Coachmen Ind.	COA	10.95	3	3	3	1.30	11- 16	(N- 45%)	NMF	2.2	1.0	.24	89	3/31	.03	d.06	6/30	.06	.06	YES
1539	Coca-Cola	KO	44.45	2	1	2	.60	60- 70	(35- 55%)	19.3	2.8	2.30	1.24	29	6/30	.74	.67	12/31	♦.31	.56	YES
1792	1540 Coca-Cola Bottling	(NDQ) COKE	59.30	2	3	2	.70	90-135	(40-130%)	21.2	1.7	2.80	1.00	29	3/31	.09	.08	9/30	♦.25	.25	YES
1541	Coca-Cola Enterprises	CCE	21.59	3	3	2	.60	▲35- 50	(60-130%)	17.3	1.1	1.25	.24	29	6/30	♦.57	.70	9/30	♦.06	.04	YES
130	Cognex Co.	(NDQ) CGNX	22.02	3	3	3	1.45	40- 65	(80-195%)	24.5	1.6	.90	.36	44	6/30	.24	.17	6/30	.08	.08	YES
2183	Cognizant Technology	(NDQ) CTSX	62.80	1	3	2	1.20	65-100	(5- 60%)	44.9	NIL	1.40	NIL	20	3/31	.32	.22	6/30	NIL	NIL	YES
2184	Cognos Inc.	(NDQ) COGN	28.12	5	3	4	1.25	55- 80	(95-185%)	22.5	NIL	1.25	NIL	20	5/31	♦.18	.25	6/30	NIL	NIL	YES
131	Coherent, Inc.	(NDQ) COHR	30.24	3	3	3	1.25	50- 80	(65-165%)	24.0	NIL	1.26	NIL	44	3/31	.27	.31	6/30	NIL	NIL	YES
1727	Coldwater Creek	(NDQ) CWTR	20.13	2	3	2	1.35	35- 55	(75-175%)	31.0	NIL	.65	NIL	55	4/30	.12	.09	6/30	NIL	NIL	YES
944	Colgate-Palmolive	CL	59.45	3	1	3	.55	85-105	(45- 75%)	20.5	2.3	2.90	1.34	88	6/30	♦.72	.67	9/30	.32	.29	YES
1653	Columbia Sportswear	(NDQ) COLM	46.42	4	3	3	1.15	70-105	(50-125%)	14.1	NIL	3.30	NIL	64	3/31	.52	.52	6/30	NIL	NIL	YES
1342	Columbus McKinnon	(NDQ) CMCO	19.00	3	4	5	1.00	30- 50	(60-165%)	10.5	NIL	1.81	NIL	23	6/30	♦.29	.48	6/30	NIL	NIL	YES
813	Comcast Corp.	(NDQ) CMCSK	32.56	▲1	3	2	1.40	40- 65	(25-100%)	40.7	NIL	.80	NIL	1	6/30	♦.22	.19	6/30	NIL	NIL	YES
617	Comerica Inc.	CMA	57.39	4	2	3	1.05	65- 85	(15- 50%)	12.0	4.1	4.80	2.36	77	6/30	1.22	1.29	12/31	♦.59	.55	YES
2108	Commerce Bancorp NJ	CBH	33.64	4	3	2	1.00	50- 75	(50-125%)	17.8	1.4	1.89	.48	56	6/30	.41	.46	9/30	.12	.11	YES
618	Commerce Bancshs.	(NDQ) CBHS	50.43	4	1	3	.85	50- 60	(N- 20%)	15.8	2.0	3.20	1.00	77	6/30	.82	.77	6/30	.245	.229	YES
579	Commercial Metals	(NDQ) CMC	22.04	▼3	3	3	1.10	30- 40	(35- 80%)	8.4	1.1	2.63	.24	17	5/31	.62	.57	9/30	♦.06	.03	YES
728	Commonwealth Tel.	(NDQ) CTCT	32.63	-	3	-	NMF	35- 50	(5- 55%)	13.1	6.1	2.50	2.00	35	3/31	.61	.64	6/30	.50	.50	YES
756	CommScope	CTV	30.60	1	3	1	1.10	35- 55	(15- 80%)	23.5	NIL	1.30	NIL	24	6/30	♦.43	.25	6/30	NIL	NIL	YES
635	Community Health	CYH	37.53	3	3	3	.65	55- 85	(45-125%)	17.1	NIL	2.20	NIL	72	6/30	♦.54	.49	6/30	NIL	NIL	YES
2109	Compass Bancshares	(NDQ) CBSS	59.00	4	2	2	.90	65- 90	(10- 55%)	16.6	2.6	3.55	1.56	56	6/30	.88	.83	9/30	.39	.35	YES
2186	Computer Sciences	CSC	51.93	2	3	2	1.10	75-115	(45-120%)	14.6	NIL	3.56	NIL	20	3/31	1.16	.87	6/30	NIL	NIL	YES
2187	Compuware Corp.	(NDQ) CPWR	6.87	3	4	4	1.40	11- 18	(60-160%)	17.2	NIL	.40	NIL	20	6/30	♦.08	.06	6/30	NIL	NIL	YES
2188	Converse Technology	(NDQ) CMVT	19.07	-	3	-	1.50	45- 70	(135-265%)	22.4	NIL	.85	NIL	20	10/31	.17	.08	6/30	NIL	NIL	YES
267	Con-way Inc.	CNW	50.48	3	3	2	1.10	65-100	(30-100%)	11.5	0.8	4.40	.40	5	6/30	1.27	1.07	9/30	.10	.10	YES
1486	ConAgra Foods	CAG	21.72	3	2	3	.70	25- 35	(15- 60%)	21.3	3.3	1.02	.72	63	5/31	.14	.26	9/30	.18	.273	YES
1057	Conexant Systems	(NDQ) CNXT	2.08	▼3	5	5	2.60	5- 9	(140-335%)	26.0	NIL	.08	NIL	14	3/31	d.02	d.16	6/30	NIL	NIL	YES
199	Conmed Corp.	(NDQ) CNMD	20.33	5	3	4	.95	35- 50	(70-145%)	22.6	NIL	.90	NIL	67	6/30	♦.12	.45	6/30	NIL	NIL	YES
411	ConocoPhillips	COP	68.60	3	2	3	.90	60- 80	(N- 15%)	7.1	2.1	9.70	1.44	18	6/30	♦.309	2.21	9/30	.36	.31	YES
528	CONSOL Energy	CNX	39.54	1	3	5	1.60	50- 80	(25-100%)	16.5	0.7	2.40	.28	8	6/30	♦.57	.22	6/30	.07	.07	YES
160	Consol. Edison	ED	47.19	4	1	3	.70	40- 45	(N- N%)	15.7	4.9	3.00	2.31	76	3/31	.74	.75	9/30	♦.575	.57	YES
1535	Constellation Brands	STZ	24.56	3	3	2	.80	30- 45	(20- 85%)	14.4	NIL	1.70	NIL	70	5/31	.36	.30	6/30	NIL	NIL	YES
161	Constellation Energy	CEG	57.02	-	2	-	1.05	60- 85	(5- 50%)	15.0	2.7	3.80	1.55	76	3/31	.63	.66	9/30	.378	.335	YES
258	Cont'l Airlines	CAL	28.30	1	5	1	2.60	25- 50	(N- 75%)	9.4	NIL	▲3.00	NIL	3	6/30	1.93	.69	6/30	NIL	NIL	YES
336	Convergys Corp.	CVG	18.44	2	3	2	1.45	25- 35	(35- 90%)	16.8	NIL	1.10	NIL	37	6/30	♦.28	.22	6/30	NIL	NIL	YES
NAME CHANGED TO CAMERON INTL CORP.																					
200	Cooper Cos.	COO	44.00	5	3	3	.75	60- 85	(35- 95%)	15.7	0.1	2.81	.06	67	4/30	.30	.59	9/30	.03	.03	YES
1004	Cooper Inds.	CBE	85.80	3	3	3	1.15	85-125	(N- 45%)	17.5	1.7	4.90	1.50	10	6/30	1.27	1.02	9/30	.37	.37	YES
117	Cooper Tire & Rubber	CTB	9.85	4	3	4	1.05	18- 25	(85-155%)	32.8	4.3	.30	.42	86	3/31	d.04	d.01	6/30	.105	.105	YES
1672	Copart, Inc.	(NDQ) CPRT	26.67	3	3	2	1.25	35- 50	(30- 85%)	19.9	NIL	1.34	NIL	28	4/30	.36	.34	6/30	NIL	NIL	YES
1582	Corinthian Colleges	(NDQ) COCO	13.30	3	3	3	.80	1													

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Recent Price										Safety		Technical		3-5 year Target Price Range and % appreciation potential		Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. 12-31-06	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					
NAME OF STOCK		Ticker Symbol	Timeliness	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. 12-31-06	(f) Est'd Div'd next 12 mos.	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago										
202	Cyberonics	(NDQ) CYBX	22.18	5	4	3	.80	55-85 (150-285%)	NMF	NIL	d.59	NIL	67	4/30	d.21	d.27	6/30	NIL	NIL	YES					
1090	Cymer Inc.	(NDQ) CYMI	36.67	▼2	3	2	1.55	30-45 (N-25%)	15.6	NIL	2.35	NIL	13	6/30	◆.55	.30	6/30	NIL	NIL	YES					
1059	Cypress Semic.	CY	14.95	3	4	1	1.85	17-30 (15-100%)	74.8	NIL	.20	NIL	14	6/30	.04	d.01	6/30	NIL	NIL	YES					
1965	Cytec Inds.	CYT	54.17	4	3	2	1.15	70-100 (30-85%)	15.0	0.7	3.60	.40	30	6/30	◆1.00	.91	9/30	◆.10	.10	YES					
203	Cytoc Corp.	(NDQ) CYTC	23.91	3	4	4	1.25	30-50 (25-110%)	22.8	NIL	1.05	NIL	67	3/31	.24	.21	6/30	NIL	NIL	YES					
960	DNP Select Inc. Fund	DNP	10.56	3	2	3	.65	8-10 (N-1%)	21.1	7.5	.50	.79	34	12/31	8.51(q)	8.75(q)	6/30	.195	.195	YES					
704	DPL Inc.	DPL	27.55	4	3	3	1.00	20-35 (N-25%)	19.0	3.7	1.45	1.01	82	3/31	.40	.30	6/30	.25	.24	YES					
551	DRS Technologies	DRS	46.48	3	3	3	.70	65-100 (40-115%)	16.4	0.3	2.84	.12	21	3/31	.79	.58	6/30	.03	.03	YES					
511	DSP Group	(NDQ) DSPG	24.25	4	3	3	1.30	35-55 (45-125%)	28.5	NIL	.85	NIL	68	6/30	.23	.28	6/30	NIL	NIL	YES					
2189	DST Systems	DST	55.89	3	3	3	1.15	55-80 (N-45%)	18.6	NIL	3.00	NIL	20	6/30	◆.70	.65	6/30	NIL	NIL	YES					
1729	DSW Inc.	DSW	34.19	-	3	-	NMF	35-50 (N-45%)	27.4	NIL	1.25	NIL	55	4/30	.40	.29	6/30	NIL	NIL	YES					
705	DTE Energy	DTE	43.21	4	3	3	.75	40-60 (N-40%)	24.7	4.8	1.75	2.06	82	3/31	.76	.72	9/30	.515	.515	YES					
1595	DTS, Inc.	(NDQ) DTSI	18.73	2	3	1	1.25	25-40 (35-115%)	28.8	NIL	.65	NIL	91	3/31	.38	.19	6/30	NIL	NIL	YES					
961	DWS High Income	KHI	6.45	3	4	3	.70	5-8 (N-25%)	9.8	10.4	.66	.67	34	11/30	5.85(q)	6.15(q)	6/30	.168	.165	YES					
204	Dade Behring Hldgs.	(NDQ) DADE	40.45	3	3	3	.90	55-80 (35-100%)	25.3	0.5	1.60	.20	67	6/30	◆.43	.41	6/30	.05	.03	YES					
103	DaimlerChrysler AG	DCX	49.52	3	3	3	1.35	60-90 (20-80%)	11.8	4.0	4.20	1.97	27	3/31	.84	1.02	6/30	1.818	1.929	YES					
1382	Danaher Corp.	DHR	63.98	2	2	3	.95	100-135 (55-110%)	20.0	0.1	3.20	.08	46	6/30	.80	.67	9/30	.02	.015	YES					
817	Darden Restaurants	DRI	34.54	3	3	3	.85	45-70 (30-105%)	15.5	1.2	2.23	.40	80	5/31	.60	.53	6/30	.20	.04	YES					
205	Datascope Corp.	(NDQ) DSCP	29.90	3	3	2	1.15	45-65 (50-115%)	15.8	0.9	1.89	.28	67	3/31	.59	.58	9/30	.07	.07	YES					
637	DaVita Inc.	DVA	51.54	3	3	3	.85	50-75 (N-45%)	21.0	NIL	2.45	NIL	72	3/31	.55	.55	6/30	NIL	NIL	YES					
1488	Dean Foods	DF	37.50	-	2	-	NMF	40-55 (5-45%)	17.4	NIL	2.15	NIL	63	3/31	.40	.40	6/30	NIL	NIL	YES					
1345	Deere & Co.	DE	72.70	3	2	2	1.05	115-160 (60-120%)	11.6	2.1	6.26	1.56	23	4/30	2.17	2.43	9/30	.39	.31	YES					
1489	Del Monte Foods	DLM	10.39	3	3	3	.70	13-19 (25-85%)	14.2	1.5	.73	.16	63	4/30	.21	.23	9/30	.04	NIL	YES					
1463	Dell Inc.	(NDQ) DELL	21.22	4	2	3	1.05	35-50 (65-135%)	20.2	NIL	1.05	NIL	43	4/30	.33	.37	6/30	NIL	NIL	YES					
1202	Delphi Fin'l 'A'	DFG	37.51	3	3	2	.95	35-55 (N-45%)	13.6	0.9	2.75	.32	65	6/30	◆.71	.57	6/30	▲.08	.06	YES					
1149	Deluxe Corp.	DLX	13.75	5	3	5	.80	30-50 (120-285%)	5.0	11.6	2.76	1.60	78	-3/31	.48	.78	6/30	.40	.40	YES					
206	Dentsply Int'l (NDQ)	XYRY	30.74	3	2	2	.70	30-40 (N-30%)	21.8	0.5	1.41	.15	67	6/30	◆.37	.35	12/31	◆.035	.03	YES					
730	Deutsche Telekom ADR	DT	15.40	3	3	3	.95	19-30 (25-95%)	12.3	5.6	1.25	.87	35	3/31	.31	.29	6/30	.91	.795	YES					
440	Devon Energy	DVN	63.80	3	3	5	1.05	75-110 (20-70%)	9.4	0.7	6.80	.45	51	3/31	1.76	1.14	6/30	.113	.075	YES					
1583	DeVry Inc.	DV	21.02	3	3	1	1.10	25-40 (20-90%)	28.0	NIL	.75	NIL	54	3/31	.22	.17	6/30	NIL	NIL	YES					
★ ★	207 Diagnostic Products	DP	79.36	2	3	4	1.10	75-115 (N-45%)	14.7	0.6	5.40	.50	6	3/31	1.06	.23	9/30	◆.125	.125	YES					
1942	Diamond Offshore	DO	36.39	2	3	2	1.15	50-75 (35-105%)	20.2	NIL	1.80	NIL	55	4/30	.21	.23	6/30	NIL	NIL	YES					
2240	Dick's Sporting Goods	DKS	40.52	4	2	1	.95	55-75 (35-85%)	23.2	2.2	1.75	.88	33	6/30	◆.26	.52	6/30	.215	.205	YES					
1130	Diebold, Inc.	DBD	42.55	2	3	1	1.20	40-60 (N-40%)	NMF	NIL	.40	NIL	67	3/31	.12	.08	6/30	NIL	NIL	YES					
1980	Digene Corp.	(NDQ) DIGE	29.87	1	3	3	1.25	30-45 (N-50%)	17.1	0.5	1.75	.16	31	4/30	.77	.46	9/30	.04	.04	YES					
244	Dillard's, Inc.	DDS	58.09	4	3	3	.90	65-100 (20-80%)	24.9	NIL	2.21	NIL	44	3/31	.50	.56	6/30	NIL	NIL	YES					
133	Dionex Corp.	(NDQ) DNEX	17.00	1	3	1	1.25	45-70 (165-310%)	22.7	NIL	.75	NIL	1	3/31	.13	d.03	6/30	NIL	NIL	YES					
814	DIRECTV Group (The)	DTV	29.34	1	3	1	1.35	40-60 (35-105%)	19.3	0.9	1.52	.27	53	3/31	.37	.32	6/30	NIL	NIL	YES					
1864	Disney (Walt)	DIS	11.22	5	3	3	.80	20-30 (80-165%)	11.2	NIL	1.00	NIL	36	3/31	.07	.15	6/30	NIL	NIL	YES					
893	Dixie Group	(NDQ) DXYN	19.79	-	3	-	NMF	20-35 (N-75%)	30.0	NIL	.66	NIL	91	3/31	.25	.10	6/30	NIL	NIL	YES					
1596	Dolby Labs.	DLB	13.07	4	3	3	1.05	30-50 (130-285%)	11.9	1.5	1.10	.20	31	4/30	.15	.20	9/30	.05	.045	YES					
1681	Dollar General Corp.	DG	25.99	3	3	2	1.15	45-70 (75-170%)	14.9	NIL	1.75	NIL	31	4/30	.31	.26	6/30	NIL	NIL	YES					
1682	Dollar Tree Stores	(NDQ) DLTR	78.66	4	2	4	.95	95-130 (20-65%)	15.4	3.6	5.10	2.80	76	3/31	1.53	1.25	6/30	.69	.67	YES					
303	Domino's Pizza	DPZ	22.46	-	3	-	NMF	35-55 (55-145%)	13.6	2.1	1.65	.48	80	6/30	.39	.35	6/30	.12	.10	YES					
909	Domtar Inc.	DTI	32.15	3	2	3	.95	35-50 (10-55%)	19.8	1.0	1.62	.32	23	4/30	.43	.36	6/30	.08	.06	YES					
1346	Donaldson Co.	DCI	29.63	3	2	3	.95	45-60 (50-100%)	12.1	3.5	2.45	1.04	78	3/31	.56	.54	6/30	◆.26	.26	YES					
1895	Donnelley (R.R.) & Sons	RRD	46.34	1	2	3	1.10	55-75 (20-60%)	16.0	1.5	2.90	.68	23	6/30	◆.77	.61	6/30	.17	.16	YES					
1347	Dover Corp.	DOV	37.28	▼4	3	2	1.15	55-85 (50-130%)	8.0	4.1	4.65	1.53	59	6/30	◆1.05	1.20	9/30	.375	.335	YES					
1236	Dow Chemical	DOW	35.31	3	3	3	1.10	65-95 (85-170%)	32.1	2.8	1.10	1.00	83	6/30	.39	.34	9/30	.25	.25	YES					
1906	Dow Jones & Co.	DJ	66.38	▲3	3	3	1.00	75-115 (15-75%)	9.8	0.6	6.80	.40	87	6/30	1.77	2.30	9/30	◆.10	.10	YES					
1164	Downey Fin'l	DSL	21.17	-	3	-	NMF	30-45 (40-115%)	42.3	NIL	.50	NIL	53	3/31	.12	.44	6/30	NIL	NIL	YES					
1885	DreamWorks Animation	DWA	21.93	1	3	3	.85	19-30 (N-35%)	18.4	NIL	1.19	NIL	55	4/30	.29	.17	6/30	NIL	NIL	YES					
1731	Dress Barn	(NDQ) DBRN	23.87	3	3	3	.60	30-45 (25-90%)	12.9	NIL	1.85	NIL	89	3/31	.47	.27	6/30	NIL	NIL	YES					
1550	Drew Industries	DW	40.26	▲2	1	3	1.00	65-80 (60-100%)	13.9	3.7	2.90	1.49	59	6/30	◆1.01	.90	9/30	◆.37	.37	YES					
★ ★	1237 Du Pont	DD	30.61	3	2	3	1.20	30-40 (N-30%)	17.0	4.2	1.80	1.28	76	3/31	.50	.31	9/30	▲.32	.31	YES					
1077	163 Duke Energy	DUK	36.80	4	2	3	.80	35-50 (N-35%)	30.7	5.3	1.20	1.94	93	6/30	◆.16	.28	6/30	.47	.465	YES					
1179	Duke Realty Corp.	DRE	66.21	2	3	3	.80	75-115 (15-75%)	17.0	NIL	3.90	NIL	32	3/31	.81	.70	6/30	NIL	NIL	YES					
380	Dun & Bradstreet	DNB	19.45	-	4	-	-	15-25 (N-30%)	20.5	5.1	.95	1.00	76	3/31	.18	.39	12/31	.25	.25	YES					

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NAME OF STOCK		Ticker Symbol	Timeliness			Beta								Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
1791	1425 Edwards (A.G.)	AGE	52.33	2	3	3	1.35	65-100	(25- 90%)	15.1	1.5	3.46	.80	4	5/31	.91	.66	9/30	.20	.16	YES		
	209 Edwards Lifesciences	EW	43.39	3	3	3	.75	55-85	(25- 95%)	21.3	NIL	2.04	NIL	67	6/30	♦.52	.51	6/30	NIL	NIL	YES		
	443 El Paso Corp.	EP	15.45	1	5	4	2.25	14- 25	(N- 60%)	15.5	1.0	1.00	.16	51	3/31	.33	.12	12/31	♦.04	.04	YES		
	1778 El Paso Electric	EE	21.92	3	3	3	.70	20- 30	(N- 35%)	17.5	NIL	1.25	NIL	73	3/31	.19	.10	6/30	NIL	NIL	YES		
	1091 Electro Scientific	(NDQ) ESIO	17.78	3	3	4	1.50	20- 30	(10- 70%)	25.0	NIL	.71	NIL	13	5/31	.20	.08	6/30	NIL	NIL	YES		
	1597 Electronic Arts	(NDQ) ERTS	47.80	5	3	3	1.05	60- 95	(25-100%)	95.6	NIL	▲.50	NIL	91	3/31	.14	.09	6/30	NIL	NIL	YES		
	2190 Electronic Data Sys.	EDS	23.05	3	4	2	1.55	35- 55	(50-140%)	25.6	0.9	.90	.20	20	3/31	.06	NIL	9/30	.05	.05	YES		
	803 Elizabeth Arden Inc.	RDEN	17.30	4	4	2	1.35	25- 40	(45-130%)	13.0	NIL	1.33	NIL	95	3/31	.04	.19	6/30	NIL	NIL	YES		
	849 ElkCorp	ELK	25.34	4	3	4	1.05	50- 75	(95-195%)	10.5	0.8	2.41	.20	19	3/31	.49	.69	9/30	♦.05	.05	YES		
	337 EMCOR Group	EME	46.97	2	3	3	1.10	45- 65	(N- 40%)	22.4	NIL	2.10	NIL	37	6/30	♦.52	.25	6/30	NIL	NIL	YES		
	1060 EMCORE Corp.	(NDQ) EMKR	6.70	2	5	5	1.50	17- 30	(155-350%)	NMF	NIL	d.09	NIL	14	3/31	d.10	d.10	6/30	NIL	NIL	YES		
	659 Emdeon Corp.	(NDQ) HLTH	11.96	1	3	2	1.15	11- 16	(N- 35%)	47.8	NIL	.25	NIL	39	3/31	.06	.03	6/30	NIL	NIL	YES		
	1006 Emerson Electric	EMR	77.11	3	1	3	1.10	105-130	(35- 70%)	17.4	2.3	4.44	1.78	10	3/31	1.05	.83	6/30	.445	.415	YES		
	706 Empire Dist. Elec.	EDE	21.48	3	3	3	.80	17- 25	(N- 15%)	20.5	6.0	1.05	1.28	82	3/31	.06	d.01	6/30	.32	.32	YES		
	1108 Emulex Corp.	ELX	14.99	4	4	4	1.80	20- 35	(35-135%)	20.0	NIL	.75	NIL	43	3/31	.18	.25	6/30	NIL	NIL	YES		
	429 EnCana Corp.	ECA	53.04	▲2	3	5	.90	55- 80	(5- 50%)	14.0	0.8	3.80	.40	25	6/30	♦.94	.73	9/30	♦.10	.075	YES		
	1932 Encore Acquisition	EAC	29.43	4	3	5	1.05	35- 55	(20- 85%)	14.4	NIL	2.05	NIL	62	3/31	.36	.44	6/30	NIL	NIL	YES		
	986 ENDESA ADR(g)	ELE	31.91	-	3	-	1.05	30- 40	(N- 25%)	10.6	2.9	3.00	.93	-	3/31	.97	.64	9/30	2.625	.555	YES		
	1255 Endo Pharm. Hldgs.	(NDQ) ENDP	31.50	3	3	3	.90	50- 75	(60-140%)	23.3	NIL	1.35	NIL	47	6/30	.43	.38	6/30	NIL	NIL	YES		
	444 Energen Corp.	EGN	42.68	3	3	5	.85	35- 50	(N- 15%)	13.3	1.1	3.20	.46	51	6/30	♦.67	.51	9/30	♦.11	.10	YES		
	945 Energizer Holdings	ENR	62.12	3	3	2	.80	65- 95	(5- 55%)	14.6	NIL	4.25	NIL	88	6/30	♦.83	.73	12/31	NIL	NIL	YES		
	978 Energy Conversion	(NDQ) ENER	34.05	4	5	5	1.40	30- 60	(N- 75%)	NMF	NIL	d.53	NIL	92	3/31	d.17	d.39	6/30	NIL	NIL	YES		
	165 Energy East Corp.	EAS	24.53	4	2	3	.90	25- 30	(N- 20%)	15.3	4.9	1.60	1.21	76	3/31	.90	1.05	9/30	.29	.275	YES		
	1790 Enesco Group	ENCZ	SEE FINAL SUPPLEMENT - PAGE 1790																				
	690 484 Engelhard Corp.	EC	SEE FINAL SUPPLEMENT - PAGE 690																				
	707 Entergy Corp.	ETR	77.95	4	2	3	.85	65- 90	(N- 15%)	16.9	2.8	4.60	2.20	82	3/31	.93	.84	6/30	.54	.54	YES		
	445 Enterprise Products	EPD	27.01	3	3	3	.65	25- 40	(N- 50%)	25.7	6.7	1.05	1.81	51	6/30	♦.25	.14	9/30	▲.453	.42	YES		
	1444 Entrust Inc.	(NDQ) ENTU	2.89	4	4	5	1.50	5- 8	(75-175%)	NMF	NIL	d.02	NIL	26	6/30	d.02	.02	6/30	NIL	NIL	YES		
	668 Enzo Biochem	ENZ	12.52	4	4	3	1.45	15- 25	(20-100%)	NMF	NIL	d.51	NIL	79	4/30	d.11	d.05	6/30	NIL	NIL	YES		
	1795 1256 Enzon Pharm.	(NDQ) ENZN	8.00	2	4	4	1.45	8- 13	(N- 65%)	14.5	NIL	.55	NIL	47	3/31	.18	d.03	6/30	NIL	NIL	YES		
	381 Equifax, Inc.	EFX	32.34	4	3	4	1.05	45- 65	(40-100%)	16.2	0.5	2.00	.16	32	6/30	.51	.45	6/30	.04	.04	YES		
	446 Equitable Resources	EQT	35.42	▲3	2	4	.85	30- 40	(N- 15%)	18.2	2.5	1.95	.88	51	6/30	♦.36	.27	9/30	♦.22	.21	YES		
	1180 Equity Office P'tys	EOP	37.98	4	2	3	.75	30- 40	(N- 5%)	95.0	3.5	.40	1.32	93	3/31	.04	.18	6/30	.33	.50	YES		
	1181 Equity Residential	EQR	46.13	4	2	2	.85	35- 50	(N- 10%)	71.0	3.9	.65	1.79	93	3/31	.06	.09	9/30	.443	.433	YES		
	660 eResearchTechnology	(NDQ) ERES	8.60	4	4	5	1.25	16- 25	(85-190%)	24.6	NIL	.35	NIL	39	3/31	.04	.08	6/30	NIL	NIL	YES		
	757 Ericsson ADR(g)	(NDQ) ERICV	31.34	3	3	4	1.85	40- 65	(30-105%)	16.1	1.9	1.95	.60	24	6/30	♦.48	.47	6/30	.595	.353	YES		
	1383 ESCO Technologies	ESE	53.43	5	3	3	.90	75-110	(40-105%)	32.4	NIL	1.65	NIL	46	3/31	.28	.40	6/30	NIL	NIL	YES		
	1445 eSpeed, Inc.	(NDQ) ESPD	8.54	3	4	3	1.25	7- 11	(N- 30%)	NMF	NIL	.08	NIL	26	3/31	.03	.02	6/30	NIL	NIL	YES		
	552 Esterline Technologies	ESL	42.02	3	3	2	1.15	45- 65	(5- 55%)	16.9	NIL	2.48	NIL	21	4/30	.68	.55	6/30	NIL	NIL	YES		
	894 Ethan Allen Interiors	ETH	37.09	3	3	3	1.10	40- 60	(10- 60%)	13.8	2.2	2.69	.80	36	6/30	♦.66	.56	12/31	♦.20	.15	YES		
	364 European Equity Fund	EEA	10.06	2	3	3	1.20	14- 20	(40-100%)	NMF	1.5	NMF	.15	40	12/31	9.95(q)	9.35(q)	6/30	.09	NIL	YES		
	596 Everest Re Group Ltd.	RE	95.14	4	3	3	1.15	110-170	(15- 80%)	8.0	0.5	11.85	.48	42	6/30	♦.35	3.03	6/30	.12	.11	YES		
	979 Evergreen Solar Inc.	(NDQ) ESLR	10.59	3	4	4	1.10	18- 30	(70-185%)	NMF	NIL	d.35	NIL	92	6/30	♦.11	d.08	6/30	NIL	NIL	YES		
	669 Exelixis, Inc.	(NDQ) EXEL	9.08	3	4	3	1.95	15- 25	(65-175%)	NMF	NIL	d.15	NIL	79	3/31	d.27	d.36	6/30	NIL	NIL	YES		
	166 Exelon Corp.	EXC	59.57	5	1	3	.85	55- 70	(N- 20%)	18.6	3.0	3.20	1.76	76	3/31	.59	.77	12/31	♦.40	.40	YES		
	2230 Expedia Inc.	(NDQ) EXPE	13.72	-	3	-	NMF	20- 30	(45-120%)	22.9	NIL	.60	NIL	41	3/31	.06	.14	6/30	NIL	NIL	YES		
	338 Expeditors Int'l	(NDQ) EXPD	45.65	1	3	1	.90	50- 70	(10- 55%)	39.7	0.5	1.15	.22	37	3/31	.24	.17	6/30	▲.11	.075	YES		
	774 Express Scripts 'A'	(NDQ) ESX	75.72	3	3	4	1.00	95-145	(25- 90%)	23.7	NIL	3.20	NIL	38	6/30	♦.75	.60	6/30	NIL	NIL	YES		
	1109 Extreme Networks	(NDQ) EXTR	3.85	3	4	3	1.95	8- 13	(110-240%)	27.5	NIL	.14	NIL	43	3/31	.02	.01	6/30	NIL	NIL	YES		
	412 Exxon Mobil Corp.	XOM	66.60	▲2	1	4	.90	70- 85	(5- 30%)	11.7	2.0	5.70	1.30	18	6/30	♦.172	1.23	9/30	♦.32	.29	YES		
1791	135 FEI Company	(NDQ) FEIC	21.41	3	3	3	1.55	30- 50	(40-135%)	38.9	NIL	.55	NIL	44	3/31	.14	.11	6/30	NIL	NIL	YES		
	1007 FLIR Systems	(NDQ) FLIR	24.00	3	3	2	.90	35- 50	(45-110%)	20.0	NIL	1.20	NIL	10	6/30	.28	.31	6/30	NIL	NIL	YES		
	1238 FMC Corp.	FMC	62.33	2	3	2	1.15	65-100	(5- 60%)	11.2	1.2	5.55	.72	59	3/31	1.74	1.11	6/30	▲.18	NIL	YES		
	167 FPL Group	FPL	43.20	3	1	4	.80	40- 50	(N- 15%)	15.2	3.5	2.85	1.52	76	3/31	.58	.37	6/30	.375	.355	YES		
	1092 FSI Int'l	(NDQ) FSII	6.02	2	4	3	1.55	8- 14	(35-135%)	NMF	NIL	d.09	NIL	13	5/31	d.08	d.07	6/30	NIL	NIL	YES		
	339 FTI Consulting	FCN	27.21	3	3	3	.95	30- 45	(10- 65%)	19.4	NIL	1.40	NIL	37	3/31	.31	.29	6/30	NIL	NIL	YES		
	382 FactSet Research	FDS	43.50	2	3	4	1.30	50- 75	(15- 70%)	27.0	0.6	1.61	.24	32	5/31	.40	.35	6/30	♦.06	.05	YES		
	2191 Fair Isaac	FIC	34.16	3	3	4	.90	60- 85	(75-150%)	19.3	0.2	1.77	.08	20	6/30	♦.45	.53	6/30	.02	.02	YES		
	1061 Fairchild Semic.	FCS	15.88	2	4	3	1.80	20- 35	(25-120%)	16.7	NIL	.95	NIL	14	6/30	.23	d.02	6/30	NIL	NIL	YES		
	1278 Fairmont Hotels	FHR	SEE FINAL REPORT																				
988	1229 Falconbridge Ltd.	FAL																					

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AGE NUMBERS		RANKS										Industry Rank				Do Options Trade?								
Bold type refers to Ratings and Reports; Italics to Selection & Opinion		Recent Price		Timeliness		Safety		Technical		3-5 year Target Price Range and % appreciation potential		Current P/E Ratio		% Est'd Yield next 12 mos.		Est'd Earnings 12 mos. to 12-31-06		(f) Est'd Div'd next 12 mos.		LATEST RESULTS				
NAME OF STOCK		Ticker Symbol							Beta									Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	
886	Florida Rock	FRK	39.85	3	3	4	1.05	60-90	(50-125%)	11.5	1.5	3.47	.60	49	6/30	♦.87	.69	9/30	.15	.15	YES			
1490	Flowers Foods	FLO	28.35	3	3	3	.90	25-40	(N-40%)	24.7	1.8	1.15	.50	63	3/31	.36	.30	6/30	▲.125	.10	YES			
1348	Florserve Corp.	FLS						SEE LATEST REPORT																
1978	850 Fluor Corp.	FLR	86.12	2	3	3	1.25	75-110	(N-30%)	26.9	0.9	3.20	.80	19	3/31	1.00	.56	9/30	.20	.16	YES			
1732	Foot Locker	FL	26.86	3	3	3	1.15	30-45	(10-70%)	14.9	1.3	1.80	.36	55	4/30	.37	.37	9/30	.09	.075	YES			
1460	105 Ford Motor	F	6.75	4	3	4	1.35	14-20	(105-195%)	67.5	3.0	.10	.20	27	6/30	d.03	.47	9/30	▼.05	.10	YES			
529	Fording Canadian Coal	FDG	26.59	3	3	5	.85	25-35	(N-30%)	6.6	14.9	4.00	3.95	8	3/31	1.21	.33	9/30	.90	.773	YES			
1460	1257 Forest Labs.	FRX	46.02	3	3	3	.80	45-70	(N-50%)	22.7	NIL	2.03	NIL	47	6/30	.62	.52	6/30	NIL	NIL	YES			
1933	Forest Oil	FST	32.63	-	3	-	NMF	35-55	(5-70%)	10.9	NIL	3.00	NIL	62	3/31	.40	.63	6/30	NIL	NIL	YES			
383	Forrester Research (NDQ)	FORR	26.46	3	3	1	1.05	30-45	(15-70%)	40.7	NIL	.65	NIL	32	6/30	♦.17	.15	9/30	NIL	NIL	YES			
1384	Fortune Brands	FO	70.55	3	1	3	NMF	95-115	(35-65%)	13.2	2.2	5.35	1.56	46	6/30	♦1.55	1.33	9/30	▲.39	.36	YES			
268	Forward Air (NDQ)	FWRD	32.72	2	3	3	1.20	50-75	(55-130%)	19.2	0.9	1.70	.28	5	6/30	♦.41	.34	6/30	.07	.12	YES			
1733	Fossil Inc. (NDQ)	FOSL	18.67	4	3	4	1.25	25-40	(35-115%)	17.8	NIL	1.05	NIL	55	3/31	.14	.19	6/30	NIL	NIL	YES			
758	Foundry Networks (NDQ)	FDRY	10.16	▼3	4	5	1.75	20-30	(95-195%)	19.2	NIL	.53	NIL	24	3/31	.12	.07	6/30	NIL	NIL	YES			
1008	Franklin Electric (NDQ)	FELE	47.09	3	3	2	.85	50-75	(5-60%)	17.8	0.9	2.65	.44	10	6/30	.70	.60	9/30	♦.11	.10	YES			
2150	Franklin Resources	BEN	84.34	3	2	3	1.20	85-115	(N-35%)	15.9	0.6	5.29	.51	57	6/30	♦1.44	1.04	9/30	.12	.10	YES			
1581	Freddie Mac	FRE	57.45	4	2	3	.85	105-140	(85-145%)	9.7	3.3	5.90	1.88	57	6/30	1.38	3.89	6/30	.47	.35	YES			
1685	Fred's Inc. 'A' (NDQ)	FRED	11.74	4	3	3	1.10	25-40	(115-240%)	15.7	0.7	.75	.08	31	4/30	.18	.17	9/30	.02	.02	YES			
1230	Freep'sMcMoran C&G	FCX	52.26	3	3	5	1.25	45-70	(N-35%)	8.3	2.4	6.30	1.28	2	6/30	1.74	.91	9/30	.313	.25	YES			
1062	Freescale Semic. 'B'	FSBL	27.88	-	3	-	NMF	35-50	(25-80%)	13.9	NIL	2.00	NIL	14	3/31	.48	.24	6/30	NIL	NIL	YES			
1426	Friedman, Billings	FBR	9.65	▼4	3	3	1.40	13-20	(35-105%)	12.9	8.3	.75	.80	4	3/31	.16	.14	9/30	.20	.34	YES			
413	Frontier Oil	FTO	33.95	2	3	5	.90	30-40	(N-20%)	13.1	0.4	2.60	.12	18	3/31	.51	.31	9/30	▲.03	.02	YES			
277	Frontline Ltd.	FRO	38.88	▲4	3	3	1.15	30-45	(N-15%)	10.4	12.9	3.75	5.00	74	3/31	2.93	3.58	6/30	1.50	3.10	YES			
980	FuelCell Energy (NDQ)	FCEL	8.84	4	4	3	1.70	13-20	(45-125%)	NMF	NIL	d1.51	NIL	92	4/30	d.48	d.35	6/30	NIL	NIL	YES			
1557	Fuji Photo ADR(g) (NDQ)	FUJIY	32.23	3	1	4	.80	50-60	(55-85%)	NMF	0.7	▼.21	22	11	12/31	.45	.38	9/30	.109	.112	YES			
486	Fuiler (H.B.)	FUL	39.22	3	3	1	1.00	50-70	(25-80%)	15.1	1.3	2.60	.50	45	5/31	.65	.56	9/30	.125	.123	YES			
895	Furniture Brands	FBN	21.19	3	3	3	1.30	25-40	(20-90%)	13.7	3.0	1.55	.64	36	6/30	♦.36	.33	6/30	.16	.15	YES			
340	G&K Services 'A' (NDQ)	GKSR	33.70	4	3	3	1.10	55-85	(65-150%)	16.4	0.2	2.06	.07	37	3/31	.49	.49	6/30	.018	.018	YES			
1385	GATX Corp.	GMT	38.48	3	3	3	1.30	50-80	(30-110%)	13.7	2.2	2.80	.84	46	3/31	.83	.52	9/30	♦.21	.20	YES			
136	GSI Group (NDQ)	GSIG	8.48	3	3	4	1.60	16-25	(90-195%)	14.1	NIL	.60	NIL	44	6/30	♦.15	.07	6/30	NIL	NIL	YES			
962	Gabelli Equity	GAB	8.22	2	3	2	1.10	8-11	(N-35%)	NMF	0.6	NMF	.05	34	12/31	8.10(q)	8.69(q)	12/31	.03	.026	YES			
2152	Gallagher (Arthur J.)	AJG	27.70	5	2	4	.90	35-50	(25-80%)	17.8	4.3	1.56	1.20	57	6/30	♦.37	.54	12/31	♦.30	.28	YES			
1574	Gallahue Group ADR	GLH	66.35	4	3	3	.55	40-60	(N- N%)	15.6	3.5	4.25	2.30	85	12/31	2.06(p)	1.97(p)	6/30	1.722	1.573	YES			
1734	GameStop Corp.	GME	40.86	2	3	1	1.25	75-115	(85-180%)	21.5	NIL	1.90	NIL	55	4/30	.15	.19	6/30	NIL	NIL	YES			
1907	Gannett Co.	GCI	52.12	4	1	3	.85	75-90	(45-75%)	10.5	2.4	4.95	1.24	83	6/30	1.31	1.33	12/31	▲.31	.29	YES			
1735	Gap (The), Inc.	GPS	17.01	3	3	1	1.15	25-40	(45-135%)	13.5	1.9	1.26	.32	55	4/30	.28	.31	9/30	.08	.045	YES			
1349	Gardner Denver	GDI	32.73	1	3	2	1.00	25-40	(N-20%)	13.9	NIL	2.35	NIL	23	6/30	♦.62	.30	6/30	NIL	NIL	YES			
1009	Garmin Ltd. (NDQ)	GRMN	98.76	1	3	3	1.05	85-130	(N-30%)	28.6	1.0	3.45	1.00	10	3/31	.80	.43	6/30	NIL	NIL	YES			
384	Gartner Inc.	IT	13.77	1	3	3	1.15	14-20	(N-45%)	30.6	NIL	.45	NIL	32	3/31	.11	.03	6/30	NIL	NIL	YES			
1110	Gateway Inc.	GTW	1.65	3	4	4	1.35	5-9	(205-445%)	16.5	NIL	.10	NIL	43	3/31	NIL	.01	6/30	NIL	NIL	YES			
1879	Gaylord Entertainm.	GET	38.51	3	3	4	1.00	40-60	(5-55%)	NMF	NIL	d.20	NIL	50	3/31	.21	d.04	6/30	NIL	NIL	YES			
1598	Gemstar-TV Guide (NDQ)	GMST	2.78	2	5	3	1.35	▲5-8	(80-190%)	55.6	NIL	.05	NIL	91	3/31	.02	d.01	6/30	NIL	NIL	YES			
670	Gen-Probe (NDQ)	GPRO	52.47	3	3	4	1.00	55-80	(5-50%)	50.0	NIL	1.05	NIL	79	3/31	.27	.26	6/30	NIL	NIL	YES			
1386	GenCorp Inc.	GY	15.11	-	4	-	1.20	12-20	(N-30%)	NMF	NIL	d.50	NIL	46	5/31	d.08	.06	6/30	NIL	NIL	YES			
671	Genentech Inc.	DNA	82.38	3	3	3	.90	100-155	(20-90%)	43.4	NIL	1.90	NIL	79	6/30	.49	.27	6/30	NIL	NIL	YES			
963	Gen'l Amer. invest	GAM	35.83	3	2	3	.95	40-55	(10-55%)	NMF	0.4	.20	.15	34	3/31	40.76(q)	35.10(q)	6/30	NIL	NIL	YES			
1010	Gen'l Cable	BGC	34.88	1	4	2	1.55	30-50	(N-45%)	19.9	NIL	1.75	NIL	10	6/30	♦.80	.27	6/30	NIL	NIL	YES			
553	Gen'l Dynamics	GD	67.99	3	1	3	.80	75-95	(10-40%)	16.2	1.4	4.20	.92	21	6/30	1.03	.85	9/30	.23	.20	YES			
1011	Gen'l Electric	GE	32.68	3	1	3	1.25	60-75	(85-130%)	16.3	3.1	2.00	1.02	10	6/30	.47	.41	9/30	.25	.22	YES			
1491	Gen'l Mills	GIS	52.31	3	1	3	.55	65-75	(25-45%)	17.6	2.7	2.98	1.42	63	5/31	.61	.61	9/30	▲.35	.33	YES			
★	106 Gen'l Motors	GM	32.00	▲2	3	1	1.35	30-40	(N-25%)	42.7	3.1	.75	1.00	27	3/31	.32	d1.48	6/30	.25	.50	YES			
1696	Genesco Inc.	GCO	28.40	3	3	3	1.25	45-65	(60-130%)	10.9	NIL	2.60	NIL	58	4/30	.41	.38	6/30	NIL	NIL	YES			
288	Genesee & Wyoming	GWR	25.58	1	3	2	1.15	30-45	(15-75%)	17.1	NIL	1.50	NIL	7	3/31	.33	.26	6/30	NIL	NIL	YES			

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Industry Rank

Do Options Trade?

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			Qtr. Ended	Earns. Per sh.									Year Ago	Qtr. Ended	Latest Div'd	Year Ago						
819	169	Green Mountain Pwr.	GMP	33.72	- 3	-	.60	25- 35	(N- 5%)	15.7	3.4	2.15	1.15	76	3/31	.67	.56	9/30	♦.28	.25	YES	
	1387	Grifon Corp.	GFF	23.15	4 3	3	1.00	35- 55	(50-140%)	10.9	NIL	2.12	NIL	46	3/31	.23	.13	6/30	NIL	NIL	YES	
	1673	Group 1 Automotive	GPI	57.93	1 3	1	1.35	40- 60	(N- 5%)	16.8	1.0	3.45	.56	28	3/31	.91	.60	6/30	▲.14	NIL	YES	
	1880	GTECH Holdings	GTK	33.22	- 3	-	.90	30- 45	(N- 35%)	19.7	1.0	1.69	.34	50	5/31	.40	.43	9/30	.085	.085	YES	
	1655	Guess Inc.	GES	42.25	1 3	3	.85	30- 45	(N- 5%)	24.7	NIL	1.71	NIL	64	3/31	.34	.18	6/30	NIL	NIL	YES	
	1736	Guitar Center	(NDQ) GTRC	43.02	4 3	3	1.25	70-105	(65-145%)	15.4	NIL	2.80	NIL	55	3/31	.55	.56	6/30	NIL	NIL	YES	
	1737	Gymboree Corp.	(NDQ) GYMB	32.71	1 4	2	1.10	30- 50	(N- 55%)	26.2	NIL	1.25	NIL	55	4/30	.53	.17	6/30	NIL	NIL	YES	
★	638	HCA Inc.	HCA	49.60	- 2	-	.65	60- 80	(20- 60%)	15.3	1.4	3.25	.68	72	6/30	♦.71	.90	9/30	.17	.15	YES	
	598	HCC Insurance Hldgs.	HCC	30.78	3 3	2	.95	35- 50	(15- 60%)	11.4	1.3	2.70	.40	42	3/31	.67	.54	9/30	▲.10	.075	YES	
	896	HNI Corp.	HNI	40.81	5 2	4	.80	50- 70	(25- 70%)	14.6	1.8	2.80	.72	36	6/30	♦.56	.63	6/30	.18	.155	YES	
	212	Haemonetics Corp.	HAE	46.55	3 3	3	.90	60- 90	(30- 95%)	23.6	NIL	1.97	NIL	67	6/30	♦.44	.47	6/30	NIL	NIL	YES	
	1492	Hain Celestial Group	(NDQ) HAIN	21.59	2 3	2	.95	30- 50	(40-130%)	19.5	NIL	1.11	NIL	63	3/31	.25	.19	6/30	NIL	NIL	YES	
	1946	Halliburton Co.(*)	HAL	32.00	3 3	4	1.40	30- 50	(N- 55%)	15.8	0.9	2.03	.30	6	6/30	♦.48	.38	9/30	.075	.063	YES	
	1738	Hancock Fabrics	HKF	3.11	4 4	2	.95	5- 8	(60-155%)	NMF	NIL	d.60	NIL	55	10/31	d.14	.05	6/30	NIL	.06		
	623	Hancock Holding	(NDQ) HBHC	51.39	1 2	1	.85	60- 80	(15- 55%)	18.7	1.7	2.75	.88	77	6/30	.66	.55	6/30	▲.22	.165		
	964	Hancock (J) Patriot Div	PDF	8.17	3 2	3	.60	8- 11	(N- 35%)	12.6	6.7	.65	.55	34	3/31	9.52(q)	9.59(q)	6/30	.138	.138		
	1847	Handelman Co.	HDL	6.89	5 3	3	.95	25- 35	(265-410%)	5.0	4.6	1.38	.32	81	4/30	d.28	.21	9/30	.08	.08	YES	
	599	Hanover Insurance	THG	47.60	2 4	3	1.65	45- 80	(N- 70%)	11.6	0.5	4.10	.25	42	3/31	1.12	.86	6/30	NIL	NIL	YES	
1978	1543	Hansen Natural Corp.	(NDQ) HANS	45.99	1 3	1	.95	▲40- 55	(N- 20%)	46.0	NIL	1.00	NIL	29	3/31	.21	.09	6/30	NIL	NIL		
	1896	Harland (John H.)	JH	40.00	3 3	3	.75	45- 65	(15- 65%)	13.6	1.6	2.95	.64	78	3/31	.78	.62	6/30	.15	.125		
	1848	Harley-Davidson	HDI	55.20	2 3	3	.95	65-100	(20- 80%)	14.5	1.5	3.80	.84	81	6/30	.91	.84	6/30	▲.21	.16	YES	
	1013	Harman Int'l	HAR	82.21	3 3	3	1.15	125-185	(50-135%)	20.0	0.1	4.12	.05	10	10/31	.97	.90	6/30	.013	.013	YES	
	759	Harmonic, Inc.	(NDQ) HLIT	4.25	3 5	4	2.15	7- 12	(65-180%)	85.0	NIL	.05	NIL	24	3/31	d.04	.05	6/30	NIL	NIL	YES	
	1881	Harrah's Entertain.	HET	63.85	3 3	3	1.05	80-125	(25- 95%)	16.4	2.5	3.90	1.50	50	3/31	.95	.87	9/30	▲.40	.363	YES	
	2154	Harris & Harns Group	(NDQ) TINY	9.76	3 3	4	1.40	11- 18	(15- 85%)	21.7	NIL	.45	NIL	57	3/31	5.60(q)	4.20(q)	6/30	NIL	NIL	YES	
	1032	Harris Corp.	HRS	38.69	3 3	3	.90	50- 80	(30-105%)	16.7	0.9	2.31	.34	15	6/30	♦.61	.44	9/30	.08	.06	YES	
	566	Harsco Corp.	HSC	71.21	3 3	3	1.15	90-135	(25- 90%)	16.6	1.9	4.30	1.35	69	6/30	♦.128	.94	9/30	.325	.30		
	1921	Harte-Hanks	HHS	25.56	4 1	3	.90	40- 50	(55- 95%)	17.6	1.0	1.45	.25	48	6/30	♦.37	.33	6/30	.06	.05		
	2155	Hartford Fin'l Svcs.	HIG	85.09	3 3	3	1.30	115-175	(35-105%)	9.3	1.9	9.11	1.60	57	3/31	2.56	1.94	12/31	♦.40	.30	YES	
	1849	Hasbro, Inc.	HAS	19.07	3 3	3	1.00	20- 35	(5- 35%)	16.4	2.5	1.16	.48	81	6/30	♦.07	.13	9/30	.12	.09	YES	
	1739	Haverty Furniture	HVT	15.08	3 3	3	1.35	19- 30	(25-100%)	17.7	1.8	.85	.27	55	3/31	.23	.13	6/30	.068	.063		
	1779	Hawaiian Elec.	HE	28.53	4 2	3	.70	20- 30	(N- 5%)	19.0	4.3	1.50	1.24	73	3/31	.40	.30	6/30	.31	.31	YES	
	981	Headwaters Inc.	HW	20.85	▼ 5	3	.4	85	25- 35	(20- 70%)	11.9	NIL	1.75	NIL	92	3/31	.40	.30	6/30	NIL	NIL	YES
	1183	Health Care Property	HCP	27.15	4 2	3	.65	25- 30	(N- 10%)	24.7	6.3	1.10	1.71	93	3/31	.27	.26	6/30	.425	.42	YES	
	639	Health Mgmt. Assoc.	HMA	21.02	4 3	3	.75	45- 70	(115-235%)	14.5	1.1	1.45	.24	72	6/30	♦.32	NA	6/30	.06	.04	YES	
	640	Health Net	HNT	47.08	3 3	4	.90	60- 90	(25- 90%)	15.4	NIL	3.05	NIL	72	3/31	.65	.56	6/30	NIL	NIL	YES	
	1184	Healthcare R'lty Trust	HR	32.98	4 3	3	.75	30- 45	(N- 35%)	34.7	8.0	.95	2.64	93	3/31	.17	.21	6/30	.66	.655		
	775	HealthExtras Inc.	(NDQ) HLEX	25.92	2 3	4	.95	45- 70	(75-170%)	32.4	NIL	.80	NIL	38	3/31	.14	.13	6/30	NIL	NIL	YES	
	641	Healthways Inc.	(NDQ) HWAY	51.98	3 3	3	1.45	50- 70	(N- 35%)	40.3	NIL	1.29	NIL	72	5/31	.26	.24	6/30	NIL	NIL	YES	
	269	Heartland Express	(NDQ) HTLO	15.13	3 3	2	1.10	13- 20	(N- 30%)	17.8	0.5	.85	.08	5	6/30	.25	.18	9/30	▲.02	.015	YES	
1796	1293	Heidrick & Struggles	(NDQ) HSII	32.05	4 3	3	1.20	50- 70	(55-120%)	17.3	NIL	1.85	NIL	9	3/31	.30	.33	6/30	NIL	NIL	YES	
393	1293	Heinz (H.J.)	HNZ	41.85	2 1	2	.65	▲45- 55	(10- 30%)	18.4	3.4	2.28	1.43	63	4/30	.54	.63	9/30	▲.35	.30	YES	
	804	Helen of Troy Ltd.	(NDQ) HELE	18.16	5 3	2	1.00	30- 45	(65-150%)	10.4	NIL	1.75	NIL	95	5/31	.21	.33	6/30	NIL	NIL	YES	
	1947	Helix Energy Solutions	HLX	39.15	2 3	5	1.10	45- 70	(15- 80%)	11.9	NIL	3.30	NIL	6	3/31	.83	.35	6/30	NIL	NIL	YES	
	1948	Helmerich & Payne(*)	HP	27.69	3 3	4	1.10	40- 60	(45-115%)	10.7	0.7	2.59	.18	6	3/31	.59	.22	9/30	▲.045	.042	YES	
	2194	Henry (Jack) & Assoc.	(NDQ) JKHY	18.32	2 3	3	1.20	35- 55	(90-200%)	16.7	1.2	1.10	.22	20	3/31	.25	.21	6/30	.055	.04	YES	
	487	Hercules Inc.	HPC	14.40	2 3	2	1.15	15- 25	(5- 75%)	13.7	NIL	1.05	NIL	45	6/30	♦.32	.27	6/30	NIL	NIL	YES	
	1494	Hershey Co.	HSY	56.15	4 1	3	.75	75- 95	(35- 70%)	22.0	1.7	2.55	.98	63	6/30	.41	.37	6/30	.245	.22	YES	
	414	Hess Corp.	HES	52.84	3 3	3	.95	45- 65	(N- 25%)	7.9	0.8	6.65	.40	18	6/30	♦.179	.95	6/30	.10	.10	YES	
	1294	Hewitt Associates 'A'	HEW	22.06	3 3	3	.70	40- 60	(80-170%)	16.0	NIL	1.38	NIL	9	3/31	.31	.25	6/30	NIL	NIL	YES	
	1111	Hewlett-Packard	HPQ	31.75	1 3	3	1.40	40- 60	(25- 90%)	15.9	1.0	2.00	.32	43	4/30	.51	.37	12/31	♦.08	.08	YES	
	1967	Hexcel Corp.	HXL	13.99	3 5	3	.90	20- 35	(45-150%)	18.7	NIL	.75	NIL	30	6/30	♦.18	.28	6/30	NIL	NIL	YES	
	1740	Hibbett Sporting Goods	(NDQ) HIBB	19.97	3 3	3	1.10	45- 70	(125-250%)	18.2	NIL	1.10	NIL	55	4/30	.35	.31	6/30	NIL	NIL	YES	
	1388	Hillenbrand Inds.	HB	49.70	3 2	3	.75	65- 90	(30- 80%)	15.7	2.3	3.16	1.14	46	3/31	.81	.86	6/30	.283	.28	YES	
	1882	Hilton Hotels	HLT	25.80	3 3	3	1.20	30- 40	(15- 55%)	24.6	0.6	1.05	.16	50	3/31	.20	.16	9/30	♦.04	.04	YES	
	1558	Hitachi, Ltd. ADR(g)	HIT	61.90	2 3	4	1.00	75-115	(20- 85%)	32.4	1.6	1.91	.96	11	3/31	1.06	d.45	6/30	.487	.509	YES	
NAME CHANGED TO SUN-TIMES MEDIA GROUP																						
	415	Holly Corp.	HOC	50.50	2 3	4	.90	30- 45	(N- N%)	18.0	0.6	2.80	.32	18	3/31	.52	.21	9/30	▲.08	.05	YES	
	879	Home Depot	HD	34.70	1 2	3	1.10	95-130	(175-275%)	11.0</												

PAGE NUMBERS

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Ratings and Reports;
Italics to Selection
& Opinion

AGE NUMBERS			RANKS										Industry Rank										Do Options Trade?
NAME OF STOCK			Recent Price		Safety		Technical		3-5 year Target Price Range and % appreciation potential		Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-06	(f) Est'd Div'd next 12 mos.	LATEST RESULTS								
			Ticker Symbol	Timeliness		Beta									Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
1585	ITT Educational	ESI	64.93	▲2	3	1	1.10	90-135	(40-110%)	24.0	NIL	2.70	NIL	54	6/30	◆.55	.48	6/30	NIL	NIL	YES		
1780	ITT Industries	IDA	37.11	2	3	3	1.00	25-40	(N-10%)	20.1	3.2	1.85	1.20	73	3/31	.60	.55	9/30	◆.30	.30	YES		
1112	IDACORP, Inc.	IDNX	7.40	-	5	-	1.30	5-9	(N-20%)	NMF	NIL	d.05	NIL	43	3/31	d.03	d.02	6/30	NIL	NIL	YES		
1351	identix Inc.	IDEX	42.80	3	3	3	1.00	50-80	(15-85%)	17.8	1.4	2.40	.60	23	6/30	.64	.55	9/30	.15	.12	YES		
213	IDEXX Labs.	IDXX	75.55	▲2	2	3	.75	70-95	(N-25%)	30.2	NIL	2.50	NIL	67	3/31	.55	.51	6/30	NIL	NIL	YES		
1132	IKON Office Solution	IKN	12.90	3	4	2	1.20	10-17	(N-30%)	16.5	1.2	.78	.16	33	6/30	◆.20	.18	6/30	.04	.04	YES		
567	Illinois Tool Works	ITW	44.38	2	1	3	1.05	65-80	(45-80%)	14.6	1.5	3.05	.68	69	6/30	.81	.65	9/30	.165	.14	YES		
214	illumina Inc.	ILMN	39.80	1	4	1	1.40	25-40	(N-N%)	NMF	NIL	.10	NIL	67	6/30	.14	d.07	6/30	NIL	NIL	YES		
1262	ImClone Systems	IMCL	34.89	2	4	2	1.45	25-45	(N-30%)	14.8	NIL	2.35	NIL	47	6/30	.44	.37	6/30	NIL	NIL	YES		
215	Immucor, Inc.	BLUD	19.35	2	3	3	.60	25-40	(30-105%)	28.5	NIL	.68	NIL	67	5/31	◆.17	.11	6/30	NIL	NIL	YES		
1969	Imperial Chem. ADR(g)	ICI	27.53	3	3	3	1.30	25-35	(N-25%)	16.2	2.0	1.70	.56	30	3/31	.25	.17	6/30	.28	.176	YES		
430	Imperial Oil Ltd.	IMO	36.34	2	1	5	.70	25-35	(N-N%)	17.3	0.8	2.10	.29	25	3/31	.51	.37	9/30	.069	.064	YES		
1231	Inco Limited	N	72.86	-	3	-	1.25	65-95	(N-30%)	12.1	0.7	6.00	.50	2	6/30	1.79	1.08	9/30	.125	.10	YES		
673	Incyte Corp.	INCY	4.21	3	5	2	1.90	4-7	(N-85%)	NMF	NIL	d.95	NIL	39	6/30	◆d.24	d.30	6/30	NIL	NIL	YES		
392	Independence Cmnty	ICBC	SEE FINAL SUPPLEMENT - PAGE 392																				
1015	Infocorp Corp.	INFS	2.47	3	5	3	1.60	4-7	(60-185%)	NMF	NIL	d.35	NIL	10	6/30	◆d.30	d.42	6/30	NIL	NIL	YES		
1447	Informatica Corp.	INFA	13.54	2	4	2	1.65	12-20	(N-50%)	45.1	NIL	.30	NIL	26	6/30	◆.09	.09	6/30	NIL	NIL	YES		
2195	Infosys Techn. ADR(●)	INFY	40.30	1	3	4	1.15	55-80	(35-100%)	33.9	0.7	1.19	.30	20	6/30	.31	.22	6/30	.42	.075	YES		
853	InfraSource Services	IFS	18.10	-	3	-	NMF	25-35	(40-95%)	25.9	NIL	.70	NIL	19	3/31	.08	.07	6/30	NIL	NIL	YES		
1352	Ingersoll-Rand	IR	36.47	3	2	3	1.35	50-70	(35-90%)	10.3	2.0	3.55	.72	23	3/31	.79	.66	6/30	.16	.125	YES		
1113	Ingram Micro 'A'	IM	17.31	▼3	3	4	.90	25-40	(45-130%)	10.8	NIL	1.60	NIL	43	6/30	◆.32	.30	6/30	NIL	NIL	YES		
1949	Input/Output	IO	9.47	3	4	2	1.05	10-17	(5-80%)	31.6	NIL	.30	NIL	6	3/31	d.05	d.10	6/30	NIL	NIL	YES		
1742	Insight Enterprises	NSIT	16.69	3	3	3	1.35	30-45	(80-170%)	11.9	NIL	1.40	NIL	55	6/30	◆.53	.31	6/30	NIL	NIL	YES		
854	Insituform Techn.	INSU	21.56	▼3	4	1	1.40	25-45	(15-110%)	27.0	NIL	.80	NIL	19	3/31	.11	.01	6/30	NIL	NIL	YES		
216	Integra LifeSciences	IART	38.06	3	3	4	.85	45-65	(20-70%)	28.2	NIL	1.35	NIL	67	3/31	.37	.26	6/30	NIL	NIL	YES		
1063	Integrated Device	IDTI	15.41	1	4	3	1.90	19-30	(25-95%)	19.3	NIL	.80	NIL	14	6/30	◆.25	.05	6/30	NIL	NIL	YES		
1064	Intel Corp.	INTC	17.50	4	3	4	1.25	30-50	(70-185%)	18.4	2.3	.95	.40	14	6/30	.15	.33	9/30	.10	.08	YES		
386	Interactive Data	IDC	20.45	4	3	3	.90	25-35	(20-70%)	21.5	NIL	.95	NIL	32	3/31	.21	.25	6/30	NIL	NIL	YES		
897	Interface Inc. 'A'	IFSIA	11.53	▼3	5	1	1.20	12-20	(5-75%)	19.2	NIL	.60	NIL	36	3/31	.11	.06	6/30	NIL	NIL	YES		
1309	Intergraph Corp.	INGR	34.29	3	3	5	.85	40-65	(15-90%)	25.4	NIL	1.35	NIL	20	3/31	.26	.24	6/30	NIL	NIL	YES		
691	Intermagetics Gen'l	IMGC	27.08	-	3	-	1.35	20-35	(N-30%)	32.2	NIL	.84	NIL	15	2/28	.19	.17	6/30	NIL	NIL	YES		
513	Intermec Inc.	IN	23.26	4	3	5	1.30	35-50	(50-115%)	35.8	NIL	.65	NIL	68	3/31	.08	.08	6/30	NIL	NIL	YES		
1114	Int'l Business Mach.	IBM	75.83	3	1	3	1.05	130-160	(70-110%)	13.0	1.6	5.85	1.20	43	6/30	1.30	1.12	9/30	◆.30	.20	YES		
488	Int'l Flavors & Frag.	IFF	37.01	3	2	3	.70	35-45	(N-20%)	16.8	2.0	2.20	.74	45	6/30	◆.67	.60	9/30	.185	.185	YES		
1883	Int'l Game Tech.	IGT	38.34	2	3	3	1.00	40-60	(5-55%)	29.0	1.6	1.32	.60	50	6/30	.33	.31	9/30	.125	.12	YES		
911	Int'l Paper	IP	33.14	3	3	3	1.10	30-50	(N-50%)	26.5	3.0	1.25	1.00	75	3/31	.19	.34	9/30	.25	.25	YES		
1065	Int'l Rectifier	IRF	34.34	3	4	2	1.80	55-95	(60-175%)	18.5	NIL	1.86	NIL	14	3/31	.39	.56	6/30	NIL	NIL	YES		
1850	Int'l Speedway 'A'	ISCA	45.14	3	3	2	.70	55-80	(20-75%)	13.9	0.2	3.25	.08	81	5/31	.58	.50	6/30	▲.08	.06	YES		
1448	Internet Security	ISSX	23.95	2	4	2	1.60	30-50	(25-110%)	34.2	NIL	.70	NIL	26	3/31	.15	.16	6/30	NIL	NIL	YES		
1922	Interpublic Group	IPG	7.99	3	3	3	1.40	14-20	(75-150%)	NMF	NIL	d.05	NIL	48	3/31	d.43	d.35	6/30	NIL	NIL	YES		
1066	Intersil Corp. 'A'	ISIL	21.98	2	3	3	1.70	30-45	(35-105%)	20.9	1.0	1.05	.21	14	6/30	◆.30	.15	6/30	.05	.04	YES		
1449	Interwoven, Inc.	IWOV	9.63	2	5	3	1.95	8-16	(N-65%)	NMF	NIL	.05	NIL	26	6/30	◆.03	d.01	6/30	NIL	NIL	YES		
2197	Intuit Inc.(●)	INTU	31.29	2	3	3	.95	40-60	(30-90%)	26.1	NIL	1.20	NIL	20	4/30	.90	.78	6/30	NIL	NIL	YES		
217	Intuitive Surgical	ISRG	111.44	2	3	4	1.20	100-155	(N-40%)	65.6	NIL	1.70	NIL	67	3/31	.38	.25	6/30	NIL	NIL	YES		
218	Invacare Corp.	IVC	25.16	5	3	4	.85	50-75	(100-200%)	13.2	0.2	1.90	.05	67	6/30	◆.24	.40	9/30	.013	.013	YES		
1428	Investment Techn.	ITG	49.72	2	3	3	1.35	50-75	(N-50%)	25.5	NIL	1.95	NIL	4	3/31	.49	.31	6/30	NIL	NIL	YES		
219	Invitrogen Corp.	IVGN	63.51	3	3	3	.90	70-110	(10-75%)	25.9	NIL	2.45	NIL	67	3/31	.35	.82	6/30	NIL	NIL	YES		
555	iRobot Corp.	IRBT	16.22	-	3	-	NMF	20-30	(25-85%)	NMF	NIL	.03	NIL	21	3/31	d.12	d.42	6/30	NIL	NIL	YES		
341	Iron Mountain	IRM	35.77	3	3	3	1.00	45-65	(25-80%)	37.7	NIL	.95	NIL	37	3/31	.20	.17	6/30	NIL	NIL	YES		
674	Isis Pharm.	ISIS	6.06	2	5	1	1.35	11-20	(80-230%)	NMF	NIL	d.95	NIL	79	3/31	d.24	d.52	6/30	NIL	NIL	YES		
514	Itron Inc.	ITRI	52.38	▼2	3	1	1.10	55-80	(5-55%)	24.4	NIL	2.15	NIL	68	3/31	.54	.33	6/30	NIL	NIL	YES		
1034	JDS Uniphase	JDSU	2.25	▼3	5	5	1.50	3-5	(35-120%)	NMF	NIL	.02	NIL	15	3/31	NIL	d.02	6/30	NIL	NIL	YES		
1353	JLG Industries	JLG	18.50	3	3	4	1.30	30-45	(60-145%)	12.6	0.1	1.47	.02	23	4/30	.35	.24	6/30	.005	.003	YES		
1463	2111 JPMorgan Chase	JPM	44.65	1	3	3	1.40	50-75	(10-70%)	12.4	3.0	3.60	1.36	56	6/30	.98	.66	9/30	.34	.34	YES		
690	1035 Jabil Circuit	JBL	23.15	4	3	4	1.60	50-70	(115-200%)	16.8	1.2	1.38	.28	15	5/31	.33	.33	6/30	▲.07	NIL	YES		
305	Jack in the Box	JBX	40.04	3	3	1	.90	45-65	(10-50%)	14.9	NIL	2.68	NIL	80	3/31	.61	.55	6/30	NIL	NIL	YES		
855	Jacobs Engineering	JEC	79.04	3	3	3	1.05	90-135	(15-70%)	25.5	NIL	3.10	NIL	19	6/30	◆.84	.68	6/30	NIL	NIL	YES		
2156	Janus Capital Group	JNS	16.94	3	3	2	1.60	18-25	(5-50%)	21.2	0.2	.80	.04	57	3/31	.17	.09	6/30	.04	NIL	YES		
365	Japan Equity Fund	JEQ	7.77	3	3	4	.95	13-19	(65-145%)	NMF	0.8	NMF	.06	40	4/30	9.30(q)	6.41(q)						

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Industry Rank

Do Options Trade?

Ratings and Reports;			Recent Price			Technical			3-5 year			Current			Est'd			Est'd			LATEST RESULTS																							
NAME OF STOCK			Ticker Symbol			Timeliness			Beta			Target Price Range and % appreciation potential			P/E Ratio			Yield next 12 mos.			Earnings 12 mos. to 12-31-06			Div'd next 12 mos.			Qtr. Ended			Earnings Per sh.			Year Ago			Qtr. Ended			Latest Div'd			Year Ago		
1295	Kelly Services 'A'	(NDQ)	KELYA	26.73	1	3	3	1.10	40- 60	(50-125%)	17.2	1.5	1.55	40	9	6/30	◆.35	.26	6/30	.10	.10	YES																						
1036	KEMET Corp.		KEM	8.38	1	3	2	1.55	25- 35	(200-320%)	17.5	NIL	.48	NIL	15	3/31	.12	d.19	6/30	NIL	NIL	YES																						
568	Kennametal Inc.		KMT	54.11	3	3	3	1.10	65- 95	(20- 75%)	12.9	1.4	4.19	.76	69	3/31	1.17	.92	6/30	.19	.17	YES																						
1698	Kenneth Cole 'A'		KCP	22.69	▲4	3	2	1.35	45- 65	(100-185%)	16.8	3.2	1.35	.72	58	3/31	.15	.37	6/30	.18	.16	YES																						
817	416 Kerr-McGee Corp.		KMG	69.82	-	3	-	1.05	50- 80	(N- 15%)	14.2	0.4	4.90	.25	18	3/31	1.20	.78	12/31	.031	.025	YES																						
1884	Kerzner Int'l Ltd.		KZL	79.86	-	3	-	.70	75-115	(N- 45%)	23.8	NIL	3.35	NIL	50	3/31	1.27	1.30	6/30	NIL	NIL	YES																						
2112	KeyCorp		KEY	36.74	3	3	2	1.00	35- 55	(N- 50%)	12.9	3.8	2.85	1.39	56	6/30	.75	.70	9/30	◆.345	.325	YES																						
462	KeySpan Corp.		KSE	40.48	-	2	-	.90	35- 50	(N- 25%)	19.3	4.6	2.10	1.86	90	3/31	1.18	1.40	9/30	.465	.455	YES																						
791	Keystone Automotive	(NDQ)	KEYS	41.70	3	3	1	.85	40- 60	(N- 45%)	25.6	NIL	1.63	NIL	84	3/31	.46	.24	6/30	NIL	NIL	YES																						
898	Kimball Int'l 'B'	(NDQ)	KBALB	18.36	2	3	1	.80	14- 20	(N- 10%)	27.4	3.5	.67	.64	36	3/31	.17	.07	9/30	.16	.16	YES																						
946	Kimberly-Clark		KMB	61.00	▲3	1	3	.70	80- 95	(30- 55%)	15.6	3.2	3.90	1.96	88	6/30	◆.95	.95	9/30	.49	.45	YES																						
1186	Kimco Realty		KIM	38.57	4	2	2	.80	40- 55	(5- 45%)	25.7	3.5	1.50	1.36	93	6/30	◆.36	.33	6/30	.33	.305	YES																						
447	Kinder Morgan		KMI	102.91	-	3	-	.95	100-155	(N- 50%)	20.6	3.4	5.00	3.50	51	6/30	1.05	.99	9/30	◆.875	.75	YES																						
448	Kinder Morgan Energy		KMP	46.13	4	2	4	.70	45- 60	(N- 30%)	19.6	7.0	2.35	3.25	51	6/30	.50	.50	9/30	◆.81	.78	YES																						
221	Kinetic Concepts		KCI	43.70	-	3	-	NMF	55- 85	(25- 95%)	16.5	NIL	2.65	NIL	67	3/31	.66	.51	6/30	NIL	NIL	YES																						
1263	King Pharm.		KG	17.25	2	3	3	1.10	14- 20	(N- 15%)	11.1	NIL	1.55	NIL	47	3/31	.44	.31	6/30	NIL	NIL	YES																						
278	Kirby Corp.		KEX	33.48	1	3	2	1.05	30- 50	(N- 50%)	18.6	NIL	1.80	NIL	74	6/30	◆.44	.36	6/30	NIL	NIL	YES																						
1429	Knight Capital Group	(NDQ)	NITE	15.58	2	3	1	1.35	18- 25	(15- 60%)	13.5	NIL	1.15	NIL	4	6/30	.24	d.06	6/30	NIL	NIL	YES																						
987	1910 Knight Ridder		KRI		SEE FINAL SUPPLEMENT - PAGE 987																																							
1686	Kohl's Corp.		KSS	54.36	1	3	1	.90	90-130	(65-140%)	18.7	NIL	2.90	NIL	31	4/30	.48	.36	6/30	NIL	NIL	YES																						
367	Korea Fund		KF	35.50	3	4	4	1.00	45- 70	(25- 95%)	NMF	1.4	NMF	.50	40	12/31	39.20(q)	25.80(q)	6/30	NIL	NIL	YES																						
1137	Korn/Ferry Int'l		KFY	18.10	2	3	1	1.25	30- 45	(65-150%)	14.7	NIL	1.23	NIL	9	4/30	.31	.26	6/30	NIL	NIL	YES																						
1497	Kraft Foods		KFT	32.28	▲2	1	2	.65	50- 60	(55- 85%)	16.5	2.9	1.96	.92	63	6/30	◆.51	.47	9/30	.23	.205	YES																						
306	Krispy Kreme		KKD		SEE LATEST REPORT																																							
1518	Kroger Co.		KR	23.08	3	3	3	1.15	25- 40	(10- 75%)	16.5	1.1	1.40	.26	60	4/30	.42	.40	9/30	.065	NIL	YES																						
1306	141 Kronos Inc.	(NDQ)	KRON	29.51	▼5	3	3	1.25	55- 80	(85-170%)	19.5	NIL	1.51	NIL	44	3/31	.31	.34	6/30	NIL	NIL	YES																						
1093	Kulicke & Soffa	(NDQ)	KLIC	6.77	2	5	2	2.05	12- 25	(75-270%)	12.3	NIL	◆.55	NIL	13	6/30	◆.24	d.02	6/30	NIL	NIL	YES																						
1559	Kyocera Corp. ADR(g)		KYQ	76.75	2	3	3	1.00	80-120	(5- 55%)	19.9	1.0	▲.385	.74	11	3/31	2.04(p)	23(p)	9/30	.429	.446	YES																						
222	Kyphon Inc.	(NDQ)	KYPH	34.20	▼4	3	4	1.15	55- 80	(60-135%)	40.2	NIL	.85	NIL	67	6/30	◆.21	.18	6/30	NIL	NIL	YES																						
556	L-3 Commun. Hldgs.		LLL	76.23	3	3	3	.90	120-180	(55-135%)	15.4	1.0	4.95	.75	21	3/31	1.13	.86	9/30	.188	.125	YES																						
223	LCA-Vision	(NDQ)	LCAV	42.24	2	4	2	1.00	75-120	(80-185%)	22.2	1.1	1.90	.48	67	6/30	◆.51	.36	6/30	.12	.08	YES																						
1067	LSI Logic		LSI	8.06	1	4	3	2.05	19- 30	(135-270%)	17.9	NIL	.45	NIL	14	3/31	.09	.06	6/30	NIL	NIL	YES																						
536	La-Z-Boy Inc.		LZB	13.27	4	3	2	1.20	20- 30	(50-125%)	20.1	3.6	.66	.48	36	4/30	.22	.35	6/30	▲.12	.11	YES																						
643	Laboratory Corp.		LH	64.17	▲2	3	3	.95	60- 85	(N- 30%)	20.7	NIL	3.10	NIL	72	6/30	◆.87	.76	6/30	NIL	NIL	YES																						
463	Laclede Group		LG	34.95	4	2	2	.85	30- 40	(N- 15%)	15.7	4.1	2.22	1.43	90	3/31	1.05	1.06	9/30	.355	.345	YES																						
2239	Lafarge No. America		LAF		SEE FINAL SUPPLEMENT - PAGE 2239																																							
1094	Lam Research	(NDQ)	LRCX	38.40	2	3	2	1.90	65- 95	(70-145%)	12.0	NIL	3.20	NIL	13	6/30	.84	.47	12/31	NIL	NIL	YES																						
1923	Lamar Advertising	(NDQ)	LAMR	49.48	3	3	3	1.25	60- 90	(20- 80%)	90.0	NIL	.55	NIL	48	3/31	.01	.05	6/30	NIL	NIL	YES																						
1016	Lamson & Sessions		LMS	25.88	2	4	5	1.05	30- 45	(15- 75%)	11.3	NIL	2.30	NIL	10	6/30	◆.87	.35	6/30	NIL	NIL	YES																						
947	Lancaster Colony	(NDQ)	LANC	37.75	5	1	3	.80	40- 45	(5- 20%)	19.2	2.8	1.97	1.07	88	3/31	.35	.46	6/30	.26	.25	YES																						
1498	Lance, Inc.	(NDQ)	LNCE	21.74	4	3	3	.80	20- 30	(N- 40%)	29.0	2.9	.75	.64	63	3/31	.01	.11	6/30	.16	.16	YES																						
307	Landry's Restaurants		LDY	28.89	3	3	2	1.10	40- 60	(40-110%)	13.8	0.7	2.10	.20	80	3/31	.32	.29	9/30	.05	.05	YES																						
1068	Lattice Semiconductor	(NDQ)	LSCC	5.96	2	5	3	1.80	6- 10	(N- 70%)	NMF	NIL	.03	NIL	14	6/30	◆.02	d.07	6/30	NIL	NIL	YES																						
805	Lauder (Estee)		EL	36.60	3	2	1	.90	65- 85	(80-130%)	18.2	1.1	2.01	.40	95	3/31	.44	.46	6/30	NIL	NIL	YES																						
1586	Laureate Education	(NDQ)	LAUR	46.85	3	3	4	.95	75-115	(60-145%)	23.4	NIL	2.00	NIL	54	6/30	◆.73	.43	6/30	NIL	NIL	YES																						
569	Lawson Products	(NDQ)	LAWS	35.04	4	2	3	.80	45- 60	(30- 70%)	13.7	2.4	2.55	.84	69	3/31	.55	.56	9/30	.20	.20	YES																						
1852	LeapFrog Enterpr. 'A'		LF	10.14	3	3	3	1.10	17- 25	(70-145%)	33.8	NIL	.30	NIL	81	3/31	d.38	d.32	6/30	NIL	NIL	YES																						
792	Lear Corp.		LEA	24.41	4	3	4	1.30	25- 40	(N- 65%)	20.3	NIL	1.20	NIL	84	3/31	.08	d.03	6/30	▼.12	.25	YES																						
1587	Learning Tree Int'l	(NDQ)	LTRE	8.32	4	3	4	1.00	11- 16	(30- 90%)	NMF	NIL	▼.07	NIL	54	3/31	d.11	d.05	6/30	NIL	NIL	YES																						
1911	Lee Enterprises		LEE	24.98	5	2	3	.80	50- 65	(100-160%)	12.0	2.9	2.08	.72	83	6/30	.61	.61	9/30	.18	.18	YES																						
900	Leggett & Platt		LEG	22.96	3	2	1	1.05	35- 45	(50- 95%)	13.9	3.0	1.65	.68	36	6/30	◆.45	.41	9/30	▲.17	.16	YES																						
1979	1430 Legg Mason		LM	83.25	3	3	4	1.25	155-235	(85-180%)	16.4	1.0	5.07	.84	4	6/30	◆.108	.93	12/31	▲.21	.18	YES																						
1431	Lehman Bros. Holdings		LEH	62.44	3	3	3	1.35	100-145	(60-130%)	9.6	0.8	6.50	.48	4	5/31	1.69	1.13	6/30	.12	.10	YES																						
868	Lennar Corp.		LEN	45.20	4	3	4	1.20	45- 65	(N- 45%)	5.8	1.4	7.80	.64	97	5/31	2.00	1.42	9/30	.16	.138	YES																						
1133	Lexmark Int'l 'A'		LXK	51.42	3	3	2	1.05	80-115	(55-125%)	13.7	NIL	3.75	NIL	33	6/30	◆.107	1.06	6/30	NIL	NIL	YES																						
948	Libbey, Inc.		LBV	6.56	3	4	3	.90	17- 25	(180-280%)	43.7	1.5	.15	.10	88	3/31	.04	.03	9/30	◆.025	.10	YES																						
965	Liberty All-Star		USA	7.36	3	2	3	1.10	9- 12	(20- 65%)	NMF	0.1	NMF	.01	34	12/31	8.85(q)	9.30(q)	12/31	NIL	NIL	YES																						
1867	Liberty Media 'A'		L		SEE FINAL REPORT																																							
1187	Liberty Property		LYR	46.60	4	2	3	.80	45- 60	(N- 30%)	28.2	5.4	1.65	2.50	93	6/30	◆.58	.43	9/30	.615	.61	YES																						
224	LifeCell Corp.	(NDQ)	LIFC	28.86	▲1	3	1	1.10	30- 45	(5- 55%)	46.5	NIL	▲.62	NIL	67	6/30	◆.15	.11	6/30	NIL	NIL	YES																						
1264	Lilly (Eli)		LLY	55.52	3	1	4	.85	70- 85	(25- 55%)	17.6	3.0	3.15	1.66	47																													

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NAME OF STOCK		Ticker Symbol	Timeliness	Safety	Beta	3-5 year Target Price Range and % appreciation potential		Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-06	(f) Est'd Div'd next 12 mos.	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago										
1306	869 M.D.C. Holdings	MDC	44.40	4	3	4	1.30	50- 75 (15- 70%)	4.3	2.3	10.30	1.00	97	6/30	1.66	2.25	9/30	◆25	.18	YES							
	1781 MDU Resources(★)	MDU	24.29	3	1	4	1.00	20- 30 (N- 25%)	14.5	2.2	1.67	.53	73	3/31	.29	.19	9/30	.126	.12	YES							
	966 MFS Multimarket	MMT	5.82	3	4	3	.50	5- 8 (N- 35%)	16.6	6.5	.35	.38	34	10/31	6.74(q)	6.94(q)	6/30	.094	.096								
	709 MGE Energy	MGE	32.04	4	1	3	.70	30- 35 (N- 10%)	17.8	4.3	1.80	1.38	82	3/31	.56	.40	6/30	.345	.342								
	2159 MGIC Investment	MTG	58.27	3	3	3	1.35	80-120 (35-105%)	8.3	1.7	7.00	1.00	57	6/30	1.75	1.76	6/30	.25	.15	YES							
	1885 MGM Mirage	MGM	36.99	3	3	3	1.15	65- 95 (75-155%)	19.5	NIL	1.90	NIL	50	3/31	.49	.43	6/30	NIL	NIL	YES							
	1095 MKS Instruments	MKSI	18.65	2	4	2	1.75	25- 45 (35-140%)	12.0	NIL	1.55	NIL	13	3/31	.35	.15	6/30	NIL	NIL	YES							
	1297 MPS Group	MPS	11.97	2	3	3	1.15	19- 30 (60-150%)	17.1	NIL	.70	NIL	9	6/30	◆18	.12	6/30	NIL	NIL	YES							
	1357 MSC Industrial Direct	MSM	40.74	2	3	3	1.05	70-100 (70-145%)	19.4	1.4	2.10	.56	23	5/31	.54	.44	9/30	.14	.12								
	2199 MSC Software	MNSC						SEE LATEST REPORT																			
	142 MTS Systems	MTSC	34.31	3	3	2	1.00	35- 50 (N- 45%)	17.5	1.2	1.96	.40	44	3/31	.58	.47	9/30	.10	.08								
1064	490 MacDermid Inc.	MRD	27.23	3	3	2	.90	40- 65 (45-140%)	14.3	1.0	1.90	.28	45	3/31	.43	.38	9/30	.06	.06								
	1188 Mack-Cali R'ty	CLI	47.92	4	2	3	.70	40- 55 (N- 15%)	36.9	5.3	1.30	2.54	93	3/31	.31	.35	9/30	.63	.63	YES							
1794	1599 Macrovision Corp.	MVSN	20.58	3	3	2	1.65	30- 45 (45-120%)	21.7	NIL	▲.95	NIL	91	3/31	.06	.11	6/30	NIL	NIL	YES							
	1699 Madden (Steven) Ltd.	SHOO	30.32	1	3	2	.80	25- 40 (N- 30%)	18.4	NIL	1.65	NIL	58	3/31	.33	.05	6/30	NIL	NIL	YES							
	793 Magna Int'l 'A'	MGA	74.20	3	2	3	1.00	105-140 (40- 90%)	10.1	2.0	7.35	1.52(h)	84	3/31	1.99	1.68	6/30	.38	.38	YES							
	1978 Magnetek, Inc.	MAG						SEE FINAL SUPPLEMENT - PAGE 1148																			
	2200 Manhattan Assoc.	MANH	21.05	3	4	3	1.80	25- 40 (20- 90%)	27.0	NIL	.78	NIL	20	6/30	◆25	.10	6/30	NIL	NIL	YES							
	1358 Manitowoc Co.	MTW	37.75	1	3	2	1.25	45- 70 (20- 85%)	14.8	0.4	2.55	.15	23	3/31	.48	.21	6/30	.035	.035	YES							
	645 Manor Care	HCR	48.92	3	3	2	.90	50- 75 (N- 55%)	21.3	1.3	2.30	.64	72	3/31	.54	.50	6/30	.16	.15	YES							
	1298 Manpower Inc.	MAN	59.26	2	3	2	1.20	75-110 (25- 85%)	17.4	1.0	3.40	.60	9	6/30	.91	.70	6/30	.27	.20	YES							
	2201 ManTech Int'l 'A'	MANT	27.61	2	3	3	.90	40- 60 (45-115%)	16.2	NIL	1.70	NIL	20	3/31	.39	.39	6/30	NIL	NIL	YES							
	1148 Manugistics Group	MANU						SEE FINAL SUPPLEMENT - PAGE 1148																			
	1205 Manulife Fin'l	MFC	32.21	3	1	3	.95	30- 40 (N- 25%)	16.1	2.0	2.00	.65	65	3/31	.53	.41	6/30	.151	.119	YES							
	417 Marathon Oil Corp.	MRO	90.85	2	2	4	1.00	75-100 (N- 10%)	9.6	1.8	9.50	1.60	18	3/31	2.13	.94	9/30	◆40	.33	YES							
	1886 Marcus Corp.	MCS	20.86	-	3	-	.90	20- 30 (N- 45%)	17.5	1.4	1.19	.30	50	2/28	.10	.06	9/30	.075	.055								
	600 Markel Corp.	MKL	334.67	3	2	3	.80	350-475 (5- 40%)	13.5	NIL	24.80	NIL	42	3/31	5.69	6.32	6/30	NIL	NIL								
	1887 Marriott Int'l	MAR	36.50	3	3	3	1.05	40- 60 (10- 65%)	23.5	0.8	1.55	.29	50	6/30	.43	.43	9/30	▲.063	.053	YES							
	625 Marshall & Isley	MI	47.08	3	1	3	1.00	55- 65 (15- 40%)	14.9	2.4	3.15	1.11	77	6/30	.79	.81	6/30	▲.27	.24	YES							
	2160 Marsh & McLennan	MMC	27.05	3	3	4	1.10	45- 70 (65-160%)	16.2	2.5	1.67	.68	57	3/31	.43	.52	9/30	.17	.17	YES							
535	675 Martek Biosciences	MATK	27.58	3	3	1	1.15	45- 65 (65-135%)	37.3	NIL	.74	NIL	79	4/30	.19	.11	6/30	NIL	NIL	YES							
	949 Martha Stewart	MSO	16.99	4	4	3	1.55	18- 30 (5- 75%)	NMF	NIL	d.10	NIL	88	6/30	◆d.01	d.32	6/30	NIL	NIL	YES							
	887 Martin Marietta	MLM	80.95	3	3	3	1.10	95-145 (15- 80%)	14.5	1.2	5.60	1.00	49	3/31	.63	.17	6/30	.23	.20	YES							
	1853 Marvel Entertainment	MVL	17.91	3	3	2	1.25	25- 40 (40-125%)	32.6	NIL	.55	NIL	81	3/31	.19	.31	6/30	NIL	NIL	YES							
991	762 Marvell Technology	MRVL	17.34	3	3	4	1.50	50- 75 (190-335%)	18.3	NIL	.95	NIL	24	4/30	.11	.14	6/30	NIL	NIL	YES							
	856 Masco Corp.	MAS	26.34	4	3	3	1.05	55- 80 (110-205%)	10.8	3.3	2.45	.88	19	3/31	.53	.47	9/30	.22	.20	YES							
	531 Massey Energy	MEE	30.24	4	3	5	1.35	40- 60 (30-100%)	15.9	0.6	1.90	.17	8	3/31	.08	.39	9/30	.04	.04	YES							
	491 Material Sciences	MSC	9.81	4	3	3	.90	15- 25 (55-155%)	21.8	NIL	.45	NIL	45	5/31	.15	.19	6/30	NIL	NIL								
	1560 Matsushita Elec. ADP(g)	MC	19.89	▼3	2	3	.95	25- 30 (25- 50%)	25.5	0.9	.78	.17	11	6/30	◆.14	.13	9/30	.086	.068	YES							
1461	1854 Mattel, Inc.	MAT	17.82	2	3	2	.75	25- 35 (40- 95%)	15.5	3.1	1.15	.55	81	6/30	.08	.05	6/30	NIL	NIL	YES							
	1393 Matthews Int'l	MATW	33.84	3	3	3	.75	45- 65 (35- 90%)	15.7	0.6	2.15	.20	46	6/30	◆.55	.50	9/30	◆.05	.045								
	1070 Maxim Integrated	MXIM	28.38	3	3	4	1.50	60- 85 (110-200%)	18.0	1.8	1.58	.50	14	3/31	.36	.37	6/30	.125	.10	YES							
991	342 MAXIMUS Inc.	MMS	26.72	5	3	3	1.05	40- 65 (50-145%)	43.1	1.5	.82	.40	37	3/31	.43	.44	9/30	.10	.10	YES							
	2202 McAfee, Inc.	MFE	23.94	▼4	4	4	1.70	25- 40 (5- 65%)	21.8	NIL	1.10	NIL	20	3/31	.25	.27	6/30	NIL	NIL	YES							
	1912 McClatchy Co.	MNI	41.98	5	1	3	.75	70- 85 (65-100%)	13.8	1.7	3.05	.72	83	6/30	.94	.94	9/30	.18	.18	YES							
	1499 McCormick & Co.	MKC	34.87	3	2	3	.50	30- 45 (N- 30%)	21.1	2.1	1.65	.72	63	5/31	.32	.30	9/30	.18	.16	YES							
1113	1115 MCDATA Corp. 'A'	MCDTA	3.38	2	4	3	1.50	10- 16 (195-375%)	11.3	NIL	.30	NIL	43	4/30	.04	.03	6/30	NIL	NIL	YES							
	1394 McDermott Int'l	MDR	44.72	1	4	4	1.65	55- 95 (25-110%)	20.8	NIL	2.15	NIL	46	6/30	.48	.19	6/30	NIL	NIL	YES							
	309 McDonald's Corp.	MCD	34.45	3	1	3	1.05	50- 60 (45- 75%)	15.7	1.9	2.20	.67	80	6/30	◆.59	.51	6/30	NIL	NIL	YES							
	1897 McGraw-Hill	MHP	54.16	3	1	2	.80	75- 95 (40- 75%)	19.3	1.3	2.80	.73	78	6/30	◆.63	.51	9/30	◆.182	.165	YES							
	225 McKesson Corp.	MCK	50.27	4	3	3	.90	50- 75 (N- 50%)	19.9	0.5	2.53	.24	67	3/31	.68	.85	12/31	◆.06	.06	YES							
	930 MeadWestvaco	MWV	25.97	2	3	3	1.10	25- 35 (N- 35%)	22.6	3.5	1.15	.92	61	3/31	.02	d.02	9/30	.23	.23	YES							
	1265 Medarex, Inc.	MEDX	9.80	4	4	4	2.15	25- 40 (155-310%)	NMF	NIL	d.135	NIL	47	3/31	d.32	d.44	6/30	NIL	NIL	YES							
	777 Medco Health Solutions	MHS	60.44	3	2	4	.85	75-100 (25- 65%)	26.9	NIL	2.25	NIL	38	3/31	.47	.47	6/30	NIL	NIL	YES							
	1913 Media General 'A'	MEG	36.09	4	3	2	.85	65- 95 (80-165%)	12.7	2.4	2.85	.88	83	6/30	.77	.80	6/30	.22	.21								
	1266 Medicis Pharm.	MRX	26.02	4	3	4	1.10	35- 50 (35- 90%)	32.5	0.5	.80	.14	47	3/31	.11	.30	9/30	.03	.03	YES							
	1267 MedImmune Inc.	MEDI	25.95	5	3	4	1.10	45- 70 (75-170%)	NMF	NIL	.20	NIL	47	6/30	d.26	d.18	6/30	NIL	NIL	YES							
	982 Medis Technologies	MDTL	22.71	3	4	3	1.05	50- 80 (120-250%)	NMF	NIL	d.100	NIL	92	3/31	d.21	d.18	6/30	NIL	NIL	YES							
	226 Medtronic, Inc.	MDT	49.90	2	1	3	.70	90-110 (80-120%)	21.0	0.9	2.38	.44	67	4/30	.62	.53	9/30	▲.11	.096	YES							
	2114 Mellon Financial Corp.	MEL	34.66	3	3	3	1.30	40- 60 (15- 75%)	16.5	2.6	2.10	.90	56	6/30	.55	.49	9/30	.22	.20	YES							
2241	1745 Men's Wearhouse	MW	30.65	2	3	1	1.30	50- 70 (65-130%)	13.3	0.7	2.30	.20	55	4/30	.53	.46	6/30	.05	.17	YES							
	227 Mentor Corp.	MNT	43.16	5	3	3	.85	50- 80 (15- 85%)	36.9	1.7	1.17	.75	67	3/31	.37	.42	9/30	.18	.17	YES							

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Recent Price										Technical		3-5 year		Current		Est'd		(f) Est'd		LATEST RESULTS															
NAME OF STOCK										Timeliness		Beta		Target Price Range and % appreciation potential		P/E Ratio		Yield next 12 mos.		Earnings 12 mos. to 12-31-06		Div'd next 12 mos.		Qtr. Ended		Earnings Per sh.		Year Ago		Qtr. Ended		Latest Div'd		Year Ago	
TICKER SYMBOL																																			
901	Miller (Herman)	(NOC)	MLHR	28.03	3	3	3	.95	30-50	(5-80%)	17.7	1.1	1.58	32	36	5/31	.38	.31	9/30	.08	.073	YES													
1970	Millipore Corp.		MIL	61.65	3	3	3	.95	70-105	(15-70%)	22.0	NIL	2.80	NIL	30	6/30	♦.72	.60	6/30	NIL	NIL	YES													
1359	Mine Safety Appliance		MSA	39.64	3	3	2	.85	50-75	(25-90%)	18.4	1.8	2.15	.72	23	3/31	.52	.56	6/30	.18	.14	YES													
492	Minerals Techn.		MTX	50.02	5	2	3	.95	60-85	(20-70%)	18.5	0.4	2.70	.20	45	3/31	.64	.73	9/30	♦.05	.05	YES													
794	Modine Mfg.		MOD	23.40	4	3	5	1.20	35-55	(50-135%)	14.3	3.0	1.64	.70	84	6/30	.51	.60	9/30	.175	.175	YES													
902	Mohawk Inds.		MHK	67.26	▲	3	3	1.20	105-155	(55-130%)	10.8	NIL	6.20	NIL	36	3/31	1.04	1.03	6/30	NIL	NIL	YES													
2206	Moldflow Corp.	(NOC)	MFLO	12.07	4	4	3	.95	16-25	(35-105%)	22.8	NIL	.53	NIL	20	3/31	.13	.17	6/30	NIL	NIL	YES													
229	Molecular Devices	(NOC)	MDCC	22.70	3	3	3	1.05	35-55	(55-140%)	22.8	NIL	1.00	NIL	67	6/30	♦.22	.21	6/30	NIL	NIL	YES													
1038	Molex Inc.	(NOC)	MOLX	31.30	1	3	2	1.25	40-60	(30-90%)	21.1	1.0	1.48	.30	15	3/31	.33	.24	9/30	▲.075	.038	YES													
1536	Molson Coors Brewing		TAP	71.38	-	3	-	NMF	85-130	(20-80%)	17.2	1.8	4.15	1.28	70	3/31	d.01	.17	6/30	.32	.32	YES													
1552	Monaco Coach		MNC	11.14	5	3	2	1.35	118-25	(60-125%)	31.8	2.2	▼.35	.24	89	6/30	♦.01	.08	6/30	.06	.06	YES													
1971	Monsanto Co.(*)		MON	42.66	2	3	3	1.00	45-65	(5-50%)	31.8	0.9	1.34	.40	30	5/31	.61	.54	9/30	.10	.085	YES													
1924	Monstar Worldwide	(NOC)	MNST	36.26	2	4	2	2.05	60-95	(65-160%)	26.8	NIL	1.26	NIL	48	6/30	♦.31	.21	6/30	NIL	NIL	YES													
388	Moody's Corp.		MCO	54.76	3	1	4	.75	65-80	(20-45%)	26.7	0.5	2.05	.28	32	3/31	.49	.39	6/30	.07	.055	YES													
558	Moog Inc. 'A'		MOGA	36.58	2	3	2	.90	35-55	(N-50%)	17.6	NIL	2.08	NIL	21	3/31	.53	.40	6/30	NIL	NIL	YES													
817	Morgan Stanley		MS	64.45	1	3	3	1.55	105-155	(65-140%)	9.9	1.7	6.50	1.08	4	5/31	1.85	.86	9/30	.27	.27	YES													
1461	Motorola, Inc.		MOT	21.85	2	3	3	1.10	35-50	(60-130%)	17.8	0.9	1.23	.20	14	6/30	.33	.26	12/31	♦.05	.04	YES													
571	Mueller Inds.		MLI	35.33	-	3	-	NMF	50-75	(40-110%)	10.4	1.1	3.40	.40	69	6/30	♦.157	.46	6/30	.10	.10	YES													
418	Murphy Oil Corp.		MUR	53.20	3	3	4	1.00	45-70	(N-30%)	14.6	0.8	3.65	.45	18	6/30	♦.93	1.28	6/30	.113	.113	YES													
1395	Myers Inds.		MYE	15.51	3	3	2	.85	25-35	(60-125%)	13.5	1.4	1.15	.21	46	3/31	.31	.22	9/30	.05	.05	YES													
★	1269 Mylan Labs.		MYL	22.29	▲	2	3	.70	25-40	(10-80%)	16.9	1.1	▲1.32	.24	47	6/30	♦.35	.16	9/30	.06	.06	YES													
1270	Myogen, Inc.	(NOC)	MYOG	32.00	3	4	5	.65	35-60	(10-90%)	NMF	NIL	d2.40	NIL	47	3/31	d.42	d.52	6/30	NIL	NIL	YES													
677	Myriad Genetics	(NOC)	MYGN	24.55	3	4	3	1.85	35-55	(45-125%)	NMF	NIL	d.93	NIL	79	3/31	d.24	d.32	6/30	NIL	NIL	YES													
1747	NBTY, Inc.		NTY	24.92	▲	2	3	1.10	40-45	(20-80%)	16.8	NIL	1.48	NIL	55	3/31	.31	.30	6/30	NIL	NIL	YES													
1118	NCR Corp.		NCR	34.63	3	3	3	1.15	45-65	(30-90%)	16.9	NIL	2.05	NIL	43	6/30	♦.42	.37	6/30	NIL	NIL	YES													
1561	NEC Corp. ADR(g)		NIPNY	SEE LATEST REPORT																															
1797	678 NPS Pharm.	(NOC)	NPSP	4.09	5	5	5	1.40	11-20	(170-390%)	NMF	NIL	d3.35	NIL	79	3/31	d.83	d.16	6/30	NIL	NIL	YES													
870	NVR, Inc.	(ASE)	NVR	470.00	3	3	4	1.15	895-1345	(90-185%)	4.7	NIL	100.00	NIL	97	6/30	NA	NA	6/30	NIL	NIL	YES													
1434	NYSE Group, Inc.		NYX	61.84	-	3	-	NMF	55-85	(N-35%)	58.9	NIL	1.05	NIL	4	6/30	♦.39	NA	6/30	NIL	NIL	YES													
1950	Nabors Inds.		NBR	34.09	3	3	5	1.20	40-60	(15-75%)	11.4	NIL	3.00	NIL	6	6/30	♦.82	.41	6/30	NIL	NIL	YES													
1435	Nasdaq Stock Market	(NOC)	NDAQ	27.68	3	3	4	1.10	40-60	(45-115%)	42.6	NIL	.65	NIL	4	6/30	♦.13	.13	6/30	NIL	NIL	YES													
1527	Nash Finch Co.	(NOC)	NAFC	21.21	5	4	3	.80	35-55	(65-160%)	10.1	3.4	▼2.10	.72	96	6/30	.53	.72	9/30	.18	.18	YES													
1568	Nat'l Bank of Canada	(TSE)	NAT.O	60.20b	3	2	3	.75	▲55-75	(N-25%)	11.9	3.5	5.08	2.08	66	4/30	1.23(b)	1.08(b)	9/30	▲.50(b)	.44(b)	YES													
626	National City Corp.		NCC	36.74	4	1	2	1.00	50-60	(35-65%)	11.9	4.2	3.10	1.56	77	6/30	.77	.97	9/30	▲.39	.37	YES													
2161	Nat'l Fin'l Partners		NFP	44.92	3	3	3	1.30	65-100	(45-125%)	31.0	1.3	1.45	.60	57	3/31	.24	.16	9/30	.15	.12	YES													
449	National Fuel Gas		NFG	37.06	3	2	4	.95	20-30	(N- N%)	15.4	3.2	2.41	1.20	51	3/31	.91	.84	9/30	▲.30	.29	YES													
144	National Instruments	(NOC)	NATI	25.80	3	3	4	1.25	35-55	(35-115%)	31.9	0.9	.81	.24	44	3/31	.14	.14	6/30	.06	.05	YES													
1951	National Oilwell Varco		NOV	62.87	-	3	-	NMF	90-130	(45-105%)	20.0	NIL	3.15	NIL	6	3/31	.68	.33	6/30	NIL	NIL	YES													
121	National Presto Ind.		NPK	SEE LATEST REPORT																															
1074	National Semic.		NSM	21.51	3	3	4	1.40	40-60	(85-180%)	14.5	0.6	1.48	.12	14	5/31	.41	.27	9/30	.03	.02	YES													
1207	Nationwide Fin'l		NFS	44.84	3	3	3	1.30	40-60	(N-35%)	11.5	2.1	3.90	.92	65	3/31	.94	.93	9/30	.23	.19	YES													
1748	Nautilus Inc.		NLS	12.84	4	4	3	1.35	17-30	(30-135%)	17.1	3.1	.75	.40	55	3/31	.16	.28	6/30	.10	.10	YES													
343	Naviant Consulting		NCI	18.75	2	3	3	1.20	35-50	(85-165%)	15.9	NIL	1.18	.37	6/30	6/30	♦.26	.24	6/30	NIL	NIL	YES													
108	Navistar Int'l		NAV	22.32	3	3	3	1.55	60-85	(170-280%)	3.8	NIL	5.85	NIL	27	7/31	.83	.64	6/30	NIL	NIL	YES													
389	NAVTEQ		NVT	34.76	-	3	-	NMF	50-75	(45-115%)	27.8	NIL	1.25	NIL	32	6/30	♦.25	.27	6/30	NIL	NIL	YES													
1065	1271 Nektar Therapeutics	(NOC)	NKTR	16.67	4	4	2	1.65	25-40	(50-140%)	NMF	NIL	d.95	NIL	47	3/31	d.38	d.31	6/30	NIL	NIL	YES													
★	2232 Netflix, Inc.	(NOC)	NFLX	19.03	▼	3	4	1.45	40-65	(110-240%)	38.1	NIL	▼.50	NIL	41	6/30	♦.24	.09	6/30	NIL	NIL	YES													
1148	NetIQ Corp.		NTIQ	SEE FINAL SUPPLEMENT - PAGE 1148																															
1119	Network Appliance	(NOC)	NTAP	30.14	2	4	2	1.80	40-65	(35-115%)	43.7	NIL	.69	NIL	43	4/30	.23	.17	6/30	NIL	NIL	YES													
2241	1272 Neurocrine Biosci.	(NOC)	NBIX	9.23	5	4	5	1.05	20-35	(115-280%)	NMF	NIL	d3.10	NIL	47	6/30	d.73	d.15	6/30	NIL	NIL	YES													
464	New Jersey Resources		NJR	50.05	4	2	3	.80	50-65	(N-30%)	18.5	2.9	2.70	1.46	90	3/31	2.14	1.84	12/31	.36	.34	YES													
1189	New Plan Excel R'lty		NXL	26.02	3	1	2	.80	25-30	(N-15%)	23.7	5.0	1.10	1.30	93	3/31	.31	.32	9/30	.313	.413	YES													
1167	New York Community		NYB	16.45	4	3	3	1.00	20-30	(20-80%)	15.7	6.1	1.05	1.00	87	6/30	♦.24	.33	6/30	.25	.25	YES													
1914	New York Times		NYT	21.97	3	1	2	.90	45-55	(105-150%)	13.7	3.2	1.60	.70	83	6/30	♦.46	.46	9/30	.175	.165	YES													
950	Newell Rubbermaid		NWL	25.06	▼	3	3	.90	30-50	(20-100%)	14.7	3.4	1.70	.84	88	6/30	♦.46	.30	6/30	.21	.21	YES													
450	Newfield Exploration		NFX	48.96	3	3	5	.95	60-95	(25-95%)	10.4	NIL	4.70	NIL	51	6/30	♦.91	1.05	6/30	NIL	NIL	YES													
1219	Newmont Mining		NEM	53.03	▼	3																													

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Recent Price															Safety		3-5 year Target Price Range and % appreciation potential		Current P/E Ratio		% Est'd Yield next 12 mos.		Est'd Earnings 12 mos. to 12-31-06		(f) Est'd Div'd next 12 mos.		Qtr. Ended					Earnings Per sh.					Year Ago					Qtr. Ended					Latest Div'd					Year Ago				
NAME OF STOCK															Ticker Symbol		Timeliness		Beta																																					
535	1096	Novellus Sys.	(NDQ)	NVLS	24.02	2	3	3	1.55	40- 60	(65-150%)	17.2	NIL	1.40	NIL	13	3/31	.25	.22	6/30	NIL	NIL	YES																																	
1275		Novo Nordisk ADR(g)		NVO	62.29	3	3	2	.80	85-130	(35-110%)	19.5	1.6	3.20	1.00	47	3/31	.60	.60	6/30	NIL	NIL	YES																																	
171		NSTAR		NST	30.05	▲	1	3	.80	30- 35	(N- 15%)	15.4	4.1	1.95	1.24	76	3/31	.41	.43	9/30	.303	.29	YES																																	
807		Nu Skin Enterprises		NUS	14.16	5	3	3	.75	25- 35	(75-145%)	17.7	2.8	.80	.40	95	3/31	.14	.25	6/30	.10	.09	YES																																	
580		Nucor Corp.		NUE	51.60	2	3	2	1.35	55- 80	(5- 55%)	11.0	4.7	4.70	2.40	17	6/30	◆1.45	1.02	9/30	.60	.20	YES																																	
967		Nuveen Muni Value Fund		NUV	9.62	3	2	3	.35	8- 11	(N- 15%)	NMF	3.2	NMF	.31	34	4/30	10.14(q)	10.23(q)	6/30	.117	.117	YES																																	
1075		NVIDIA Corp.	(NDQ)	NVDA	20.25	2	3	3	1.75	30- 45	(50-120%)	19.3	NIL	1.05	NIL	14	4/30	.23	.18	6/30	NIL	NIL	YES																																	
711		OGE Energy		OGE	37.97	3	2	2	.75	25- 35	(N- N%)	17.7	3.6	2.15	1.35	82	3/31	.27	.05	9/30	.333	.333	YES																																	
493		OM Group		OMG	33.42	2	4	2	1.25	45- 75	(35-125%)	13.6	NIL	2.45	NIL	45	3/31	.62	.41	6/30	NIL	NIL	YES																																	
279		OMI Corp.		OMM	21.85	3	3	3	1.25	25- 35	(15- 60%)	9.3	1.8	2.35	.40	74	6/30	◆.78	.55	9/30	.10	.08	YES																																	
310		OSI Restaurant Partners		OSI	31.90	5	2	3	.90	50- 70	(55-120%)	16.8	1.6	1.90	.52	80	3/31	.51	.67	6/30	.13	.13	YES																																	
1396		Oakley Inc.		OO	16.18	4	3	3	1.15	25- 35	(55-115%)	23.1	1.0	.70	.16	46	6/30	◆.31	.35	6/30	NIL	NIL	YES																																	
419		Occidental Petroleum		OXY	106.57	2	1	3	.95	90-110	(N- 5%)	9.6	1.7	11.05	1.76	18	3/31	2.87	2.16	12/31	▲.44	.31	YES																																	
311		O'Charleys Inc.	(NDQ)	CHUX	15.88	4	3	2	.90	25- 35	(55-120%)	16.7	NIL	.95	NIL	80	3/31	.31	.44	6/30	NIL	NIL	YES																																	
646		Odyssey Healthcare	(NDQ)	ODSY	17.23	3	3	3	.85	20- 30	(15- 75%)	23.0	NIL	.75	NIL	72	3/31	.17	.15	6/30	NIL	NIL	YES																																	
1134		Office Depot		ODP	37.27	2	3	2	1.20	50- 80	(35-115%)	20.7	NIL	1.80	NIL	33	3/31	.48	.37	6/30	NIL	NIL	YES																																	
1135		OfficeMax		OMX	42.92	-	3	-	NMF	45- 65	(5- 50%)	29.6	1.4	1.45	.60	33	3/31	.77	.20	9/30	.15	.15	YES																																	
602		Ohio Casualty	(NDQ)	OCAS	28.42	▼	4	3	.90	25- 40	(N- 40%)	11.4	1.3	2.50	.36	42	6/30	◆.50	.49	6/30	.09	.06	YES																																	
628		Old Nat'l Bancorp		ONB	19.44	3	2	3	.75	25- 35	(30- 80%)	15.6	4.4	1.25	.86	77	6/30	◆.30	.37	6/30	.21	.19	YES																																	
603		Old Republic		ORI	21.75	4	2	3	1.10	25- 35	(15- 60%)	10.4	2.8	2.10	.61	42	6/30	◆.54	.51	6/30	▲.15	.136	YES																																	
1242		Olin Corp.		OLN	16.53	3	3	3	1.05	16- 25	(N- 50%)	9.2	4.8	1.80	.80	59	3/31	.47	.44	9/30	◆.20	.20	YES																																	
778		Omnicare, Inc.		OCR	48.77	▼	4	3	.95	70-105	(45-115%)	15.0	0.2	3.25	.09	38	6/30	◆.67	.59	6/30	.023	.023	YES																																	
1925		Omnicom Group		OMC	88.56	2	3	3	1.15	120-175	(35-100%)	18.2	1.1	4.86	1.00	48	6/30	◆1.42	1.24	12/31	◆.25	.25	YES																																	
1600		OmniVision Techn.	(NDQ)	OVTI	18.30	2	3	3	1.95	40- 65	(120-255%)	11.2	NIL	▲1.63	NIL	91	4/30	.39	.30	6/30	NIL	NIL	YES																																	
1299		On Assignment	(NDQ)	ASGN	8.70	2	3	5	1.30	13- 20	(50-130%)	51.2	NIL	.17	NIL	9	3/31	.01	d.11	6/30	NIL	NIL	YES																																	
2233		1-800-FLOWERS.COM	(NDQ)	FLWS	5.58	3	3	4	1.05	14- 20	(150-260%)	27.9	NIL	.20	NIL	41	3/31	d.02	d.03	6/30	NIL	NIL	YES																																	
451		ONEOK Inc.		OKE	37.73	3	3	3	1.00	35- 55	(N- 45%)	16.1	3.4	2.35	1.28	51	3/31	1.17	.97	9/30	▲.32	.28	YES																																	
1450		Open Text Corp.	(NDQ)	OTEX	13.54	3	3	4	1.25	20- 30	(50-120%)	24.2	NIL	.56	NIL	26	3/31	.14	.21	6/30	NIL	NIL	YES																																	
1148		Openwave Systems	(NDQ)	OPWL	6.43	▼	5	4	2.30	19- 30	(195-365%)	NMF	NIL	d.08	NIL	68	3/31	.10	d.04	6/30	NIL	NIL	YES																																	
2208		Oracle Corp.	(NDQ)	ORCL	15.02	1	3	2	1.15	30- 45	(100-200%)	17.7	NIL	.85	NIL	20	5/31	.29	.26	6/30	NIL	NIL	YES																																	
1979		Orbotech Ltd.	(NDQ)	ORBK	21.24	2	3	4	1.30	30- 50	(40-135%)	12.9	NIL	1.65	NIL	44	3/31	.43	.32	6/30	NIL	NIL	YES																																	
1674		O'Reilly Automotive	(NDQ)	ORLY	28.80	▼	3	3	.95	35- 55	(20- 90%)	18.0	NIL	1.60	NIL	28	6/30	◆.43	.39	6/30	NIL	NIL	YES																																	
983		Ormat Technologies		ORA	35.01	-	3	-	NMF	40- 60	(15- 70%)	33.3	0.5	1.05	.16	92	3/31	.25	.12	6/30	.07	.06	YES																																	
110		Oshkosh Truck		OSK	43.15	2	3	2	.90	45- 65	(5- 50%)	14.9	1.0	2.90	.44	27	3/31	.67	.52	6/30	.10	.044	YES																																	
230		Osteotech, Inc.	(NDQ)	OSTE	3.77	3	5	5	1.30	10- 19	(165-405%)	NMF	NIL	d.05	NIL	67	3/31	.01	d.05	6/30	NIL	NIL	YES																																	
712		Otter Tail Corp.	(NDQ)	OTTR	29.01	3	2	3	.65	25- 35	(N- 20%)	17.6	4.0	1.65	1.17	82	3/31	.50	.37	6/30	.288	.28	YES																																	
280		Overseas Shipholding		OSG	63.19	4	3	3	1.10	70-110	(10- 75%)	8.8	1.6	7.20	1.00	74	3/31	3.32	4.18	9/30	.25	.175	YES																																	
231		Owens & Minor		OMI	30.38	4	3	3	.90	30- 45	(N- 50%)	16.9	2.0	1.80	.60	67	6/30	.43	.40	6/30	.15	.13	YES																																	
931		Owens-Illinois		OI	15.36	5	4	3	1.15	25- 45	(65-195%)	12.8	NIL	1.20	NIL	61	6/30	◆.31	.56	6/30	NIL	NIL	YES																																	
1659		Oxford Inds.		OXM	35.63	4	3	3	.95	60- 85	(70-140%)	9.7	1.7	3.69	.60	64	2/28	.82	.80	6/30	.15	.12	YES																																	
1749		PC Connection	(NDQ)	PCCC	5.74	2	4	3	1.30	11- 18	(90-215%)	12.8	NIL	.45	NIL	55	3/31	.09	.04	6/30	NIL	NIL	YES																																	
1276		PDL BioPharma	(NDQ)	PDLI	17.99	5	4	4	1.45	30- 50	(65-180%)	NMF	NIL	d.75	NIL	47	3/31	d.23	d.04	6/30	NIL	NIL	YES																																	
312		P.F. Chang's	(NDQ)	PFCH	31.31	▼	5	3	1.05	65- 95	(110-205%)	28.5	NIL	▼1.10	NIL	80	6/30	◆.30	.34	6/30	NIL	NIL	YES																																	
1782		PG&E Corp.	(NDQ)	PCG	41.44	4	2	3	1.15	35- 50	(N- 20%)	16.6	3.3	2.50	1.36	73	3/31	.60	.54	9/30	.33	.30	YES																																	
1076		PMC-Sierra	(NDQ)	PMCS	5.35	2	5	3	2.25	16- 30	(200-460%)	13.4	NIL	.40	NIL	14	6/30	◆.09	.04	6/30	NIL	NIL	YES																																	
604		PMI Group		PMI	42.44	3	3	2	1.15	50- 80	(20- 90%)	9.3	0.5	4.55	.21	42	3/31	1.09	.98	9/30	.053	.045	YES																																	
2117		PNC Financial Serv.		PNC	68.95	3	2	2	1.05	80-110	(15- 60%)	13.8	3.2	5.00	2.20	56	6/30	1.28	.98	9/30	.55	.50	YES																																	
1783		PNM Resources		PNM	27.05	5	2	3	1.00	25- 30	(N- 10%)	16.4	3.3	1.65	.88	73	3/31	.38	.50	9/30	.22	.20	YES																																	
172		PPL Corp.		PPL	34.12	3	2	3	1.05	35- 50	(5- 45%)	14.8	3.3	2.30	1.13	76	3/31	.73	.45	9/30	.275	.23	YES																																	
1460		PPG Inds.		PPG	62.60	2	2	2	1.10	70-100	(10- 60%)	11.9	3.1	5.25	1.92	30	6/30	1.68	1.34	9/30	◆.48	.47	YES																																	
111		PACCAR Inc.	(NDQ)	PCAR	78.95	3	3	2	1.20	70-110	(N- 40%)	9.6	4.1	8.25	3.20	27	6/30	◆2.21	1.76	9/30	.30	.21	YES																																	
992		Pacific Cap. Bancorp	(NDQ)	PCBC	29.41	4	3	3	.85	40- 60	(35-105%)	13.4	3.0	2.20	.88	56	3/31	1.43	1.29	9/30	.22	.20	YES																																	
984		Pacific Ethanol	(NDQ)	PEIX	18.40	-	4	-	NMF	19- 30	(5- 65%)	NMF	NIL	d.10	NIL	92	3/31	d.02	d.05	6/30	NIL	NIL	YES																																	
1750		Pacific Sunwear	(NDQ)	PSUN	17.47	4	3	2	1.10	40- 55	(130-																																													

THE NUMBERS

type refers to
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NAME OF STOCK		Ticker Symbol				Beta	and % appreciation potential		P/E Ratio	next 12 mos.	10 12-31-06	12 mos.	Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
1675	Pep Boys	PBY	11.00	3	3	4	1.40	19- 30	(75-175%)	NMF	2.5	d.05	27	28	4/30	d.03	d.04	9/30	.068	.068	YES
173	Pepco Holdings	POM	24.55	3	3	3	.90	20-30	(N-20%)	15.3	4.3	1.60	1.05	76	3/31	.27	.24	6/30	.26	.25	YES
1544	Pepsi Bottling Group	PBG	33.56	2	3	2	.80	50-75	(50-125%)	17.7	1.3	1.90	44	29	6/30	.61	.59	6/30	▲.11	.08	YES
1545	PepsiAmericas Inc.	PAS	22.35	4	3	3	.80	30-50	(35-125%)	15.7	2.2	1.42	50	29	6/30	♦.50	.47	12/31	.125	.085	YES
1546	PepsiCo, Inc.	PEP	63.63	2	1	3	.70	80-100	(25-55%)	21.6	1.9	2.95	120	29	6/30	.80	.70	9/30	♦.30	.26	YES
663	Per-Se Technologies	(NDQ) PSTI	23.70	3	3	3	.95	35- 50	(50-110%)	20.6	NIL	1.15	NIL	39	3/31	.24	.29	6/30	NIL	NIL	YES
1528	Performance Food	(NDQ) PFPG	27.80	3	3	3	.60	40- 60	(45-115%)	22.2	NIL	1.25	NIL	96	3/31	.16	.10	6/30	NIL	NIL	YES
147	PerkinElmer Inc.	(NDQ) PKI	20.71	3	3	3	1.00	35- 50	(70-140%)	17.6	1.4	1.18	28	44	3/31	.21	.15	12/31	♦.07	.07	YES
1279	Perrigo Co.	(NDQ) PRGO	15.62	3	3	3	.85	20- 35	(30-125%)	19.0	1.3	.82	20	47	3/31	.22	.15	6/30	.043	.04	YES
1752	PETCO Animal	(NDQ) PETC	28.09	3	3	3	1.05	35- 50	(25- 80%)	20.8	NIL	1.35	NIL	55	4/30	.19	.29	6/30	NIL	NIL	YES
432	Petro-Canada	PCZ	45.92	3	2	4	.70	55- 75	(20- 65%)	11.2	0.7	4.10	34	25	3/31	.80	.70	9/30	.086	.065	YES
420	Petroleo Brasileiro ADR	PBR	90.03	2	3	4	.95	65-100	(N-10%)	8.0	0.6	11.25	58	18	3/31	2.83	1.72	6/30	.579	NIL	YES
1753	PetSmart, Inc.	(NDQ) PETM	23.71	3	3	1	.95	45- 65	(90-175%)	16.9	0.5	1.40	13	55	4/30	.30	.27	9/30	.03	.03	YES
1280	Pfizer, Inc.	PFE	25.11	3	1	3	.85	40- 50	(60-100%)	12.4	4.0	2.02	100	47	6/30	.50	.46	9/30	.24	.19	YES
1281	Pharmac. Product	(NDQ) PPDI	39.47	2	3	3	1.00	35- 55	(N-40%)	30.4	0.3	1.30	10	47	6/30	.31	.20	6/30	.025	NIL	YES
1232	Phelps Dodge	PD	77.82	3	3	5	1.40	65- 95	(N-20%)	8.8	1.0	8.80	81	2	6/30	♦2.32	2.26	9/30	.20	.188	YES
1562	Philips Electronics NV(g)	PHG	31.86	3	3	4	1.70	40- 60	(25- 90%)	24.5	1.7	1.30	54	11	6/30	♦.31	.22	6/30	.54	.514	YES
1660	Phillips-Van Heusen	PVH	35.16	2	3	3	1.10	40- 60	(15- 70%)	16.0	0.4	2.20	15	64	4/30	.74	.46	6/30	.038	.038	YES
148	Photon Dynamics	(NDQ) PHTN	11.09	4	4	3	1.60	40- 65	(260-485%)	24.6	NIL	♦.45	NIL	44	6/30	♦.26	d.22	6/30	NIL	NIL	YES
1097	Photonics Inc.	(NDQ) PLAB	14.24	3	4	3	1.70	20- 35	(40-145%)	13.6	NIL	1.05	NIL	13	4/30	.30	.28	6/30	NIL	NIL	YES
468	Piedmont Natural Gas	PNY	25.95	4	2	3	.85	30- 40	(15- 55%)	19.4	3.7	1.34	96	90	4/30	.57	.52	9/30	.24	.23	YES
1754	Pier 1 Imports	PIR	6.77	5	3	1	1.15	14- 20	(105-195%)	NMF	5.9	d.38	40	55	5/31	.26	d.10	9/30	.10	.10	YES
1500	Pilgrim's Pride	PPC	25.31	5	3	5	.75	25- 40	(N-60%)	NMF	0.4	▲d.74	.09	63	3/31	d.48	.73	6/30	.023	.015	YES
1784	Pinnacle West Capital	PNW	43.69	3	1	3	1.00	40- 50	(N-15%)	15.6	4.7	2.80	205	73	6/30	♦1.03	.88	9/30	♦.50	.475	YES
1935	Pioneer Natural Res.	PXD	44.67	4	3	5	.95	40- 60	(N-35%)	22.3	0.5	2.00	24	62	3/31	d.01	.58	6/30	.12	.10	YES
1136	Pitney Bowes	PBI	41.18	3	1	3	.90	50- 70	(20- 70%)	15.0	3.1	2.75	129	33	6/30	♦.64	.67	9/30	.32	.31	YES
1977	Pixar	PIXR	SEE FINAL SUPPLEMENT - PAGE 1977																		
1601	Pixelworks Inc.	(NDQ) PXLW	2.42	5	5	5	1.35	11- 20	(355-725%)	NMF	NIL	♦d.65	NIL	91	3/31	d.16	.02	6/30	NIL	NIL	YES
1040	Plantronics Inc.	PLT	15.38	5	3	3	1.00	40- 60	(160-290%)	10.1	1.3	1.52	20	15	6/30	♦.28	.44	9/30	♦.05	.05	YES
1899	Playboy Enterprises 'B'	PLA	9.75	3	3	4	1.05	20- 35	(105-260%)	19.5	NIL	.50	NIL	78	3/31	.02	d.39	6/30	NIL	NIL	YES
808	Playtex Products	PYX	9.96	5	3	5	.85	13- 20	(30-100%)	22.1	NIL	.45	NIL	95	3/31	.19	.21	6/30	NIL	NIL	YES
1041	Plexus Corp.	(NDQ) PLXS	33.60	2	3	2	1.70	40- 60	(20- 80%)	16.0	NIL	2.10	NIL	15	6/30	♦.53	.16	6/30	NIL	NIL	YES
914	Plum Creek Timber	PCL	34.30	4	2	3	.85	35- 50	(N-45%)	20.2	4.7	1.70	160	75	6/30	♦.34	.37	6/30	.40	.38	YES
1936	Pogo Producing	PPP	44.15	3	3	5	1.00	55- 85	(25- 95%)	8.4	0.7	5.25	30	62	3/31	1.16	.63	6/30	.075	.063	YES
1855	Polaris Inds.	PJI	39.88	5	2	3	1.10	65- 90	(65-125%)	12.7	3.1	3.15	124	81	6/30	.53	.68	9/30	♦.31	.28	YES
1661	Polo Ralph Lauren 'A'	RL	56.44	3	3	3	1.05	50- 80	(N-40%)	18.4	0.4	3.06	20	64	3/31	.58	.81	9/30	.05	.05	YES
785	Polycorn, Inc.	(NDQ) PLCM	22.12	2	3	1	1.40	30- 45	(35-105%)	26.0	NIL	.85	NIL	24	6/30	.17	.18	6/30	NIL	NIL	YES
915	Pope & Talbot	POP	5.15	4	5	1	1.10	8- 14	(55-170%)	NMF	NIL	d.150	NIL	75	3/31	d.79	d.04	6/30	NIL	.08	YES
2119	Popular Inc.	(NDQ) BPOP	18.03	5	2	3	.80	30- 45	(65-150%)	10.0	3.8	1.80	68	56	6/30	.34	.48	9/30	.16	.16	YES
1415	POSCO ADR(g)	PKX	59.92	3	3	3	1.05	60- 90	(N-50%)	7.0	1.7	8.60	100	52	6/30	♦4.14(p)	7.19(p)	6/30	NIL	NIL	YES
1243	Potash Corp.	POT	87.60	2	3	1	.90	110-160	(25- 85%)	17.2	0.8	5.10	66	59	3/31	1.07	1.15	9/30	.15	.15	YES
916	Potlatch Corp.	PCH	35.00	3	3	3	NMF	35- 55	(N-55%)	25.0	5.6	1.40	196	75	3/31	.35	.13	9/30	♦.49	.15	YES
017	Power-One	(NDQ) PWER	6.02	3	4	4	2.00	8- 13	(35-115%)	NMF	NIL	.04	NIL	10	6/30	♦.02	d.11	6/30	NIL	NIL	YES
517	Powerware Techn.	(NDQ) PWAV	7.75	3	4	4	1.70	18- 30	(130-285%)	12.9	NIL	.60	NIL	68	3/31	.08	.05	6/30	NIL	NIL	YES
496	Praxair Inc.	PX	55.55	3	2	3	1.00	65- 90	(15- 60%)	19.8	1.8	2.80	100	45	6/30	♦.75	.63	9/30	♦.25	.18	YES
560	Precision Castparts	PCP	59.98	2	3	4	1.35	65-100	(10- 65%)	19.2	0.2	3.13	12	21	6/30	♦.86	.58	9/30	.03	.015	YES
162	Price (T. Rowe) Group(e)(NDQ)	TROW	37.05	3	3	3	1.40	40- 65	(10- 75%)	21.2	1.5	1.75	56	57	6/30	♦.49	.38	9/30	.14	.115	YES
234	priceline.com (NDQ)	PCLN	26.59	3	4	1	2.25	25- 40	(N-50%)	40.9	NIL	.65	NIL	41	3/31	d.02	.12	6/30	NIL	NIL	YES
163	Principal Fin'l Group	PFQ	54.00	3	2	2	1.00	50- 70	(N-30%)	15.7	1.2	3.45	65	57	3/31	.85	.68	6/30	NIL	NIL	YES
951	Procter & Gamble	PG	56.67	4	1	3	.60	75- 95	(30-70%)	20.5	2.2	2.77	124	88	3/31	.63	.59	9/30	.31	.28	YES
174	Progress Energy	PGN	43.99	3	2	3	.85	35- 50	(N-15%)	13.7	5.6	3.20	246	76	3/31	.51	.43	9/30	.605	.59	YES
606	Progressive (Ohio)	PGR	24.65	3	2	4	.90	25- 35	(N-40%)	12.6	0.1	1.95	.03	42	6/30	.53	.49	6/30	.008	.008	YES
191	Prologis	PLD	54.33	3	2	3	.70	45- 60	(N-10%)	28.6	3.1	1.90	170	93	6/30	♦.47	.44	6/30	.40	.37	YES
390	ProQuest Co.	PQE	SEE LATEST REPORT																		
208	Protective Life	PL	45.88	4	2	3	.95	55- 75	(20- 65%)	11.8	1.9	3.90	88	65	3/31	.90	.88	6/30	▲.215	.195	YES
209	Prudential Fin'l	PRU	77.97	2	2	3	1.10	100-135	(30- 75%)	13.9	1.2	5.60	90	65	3/31	1.36	1.18	6/30	NIL	NIL	YES
175	Public Serv. Enterprise	PEG	69.56	3	3	3	.95	55- 80	(N-15%)	19.6	3.3	3.55	228	76	3/31	.79	1.18	9/30	.57	.56	YES
192	Public Storage	PSA	78.12	3	1	2	.65	70- 90	(N-15%)	37.2	2.7	2.10	210	93	3/31	.48	.38	6/30	.50	.45	YES
785	Puget Energy Inc.	PSD	22.39	3	3	3	.80	18- 30	(N-35%)	16.0	4.5	1.40									

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Recent Price		Safety		Technical		3-5 year		Current		% Est'd		Est'd		(f) Est'd											
NAME OF STOCK		Ticker	Timeliness	Beta		Target Price Range and % appreciation potential		P/E Ratio		Yield next 12 mos.		Earnings 12 mos. to 12-31-06		Div'd next 12 mos.		Qtr. Ended	Earns. Per. sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
1436	Raymond James Fin'l	RJF	27.22	3	3	3	1.35	30-45	(10-65%)	14.7	1.2	1.85	.32	4	6/30	♦.44	.29	9/30	.08	.053	YES				
917	Rayonier Inc.	RYN	39.45	4	3	3	1.00	40-60	(N-50%)	23.2	4.8	1.70	1.88	75	6/30	♦.55	.45	9/30	♦.47	.413	YES				
561	Raytheon Co.	RTN	45.96	2	3	2	.80	50-70	(10-50%)	17.3	2.2	2.65	.99	21	6/30	♦.65	.51	9/30	.24	.22	YES				
1901	Reader's Digest	RDA	13.81	2	3	3	1.25	14-20	(N-45%)	16.2	2.9	.85	.40	78	3/31	.01	.05	6/30	.10	.05	YES				
2235	RealNetworks, Inc.	(NDQ) RNWK	9.70	2	4	4	1.70	15-25	(55-160%)	12.9	NIL	.75	NIL	41	3/31	.14	NIL	6/30	NIL	NIL	YES				
2213	Red Hat, Inc.	(NDQ) RHAT	23.77	3	4	5	1.00	25-40	(5-70%)	56.6	NIL	.42	NIL	20	5/31	.07	.07	6/30	NIL	NIL	YES				
1791	1361 Regal-Beloit	(ASE) RBC	39.18	3	3	2	1.05	50-75	(30-90%)	12.8	1.4	3.05	.56	23	6/30	♦.99	.62	12/31	♦.14	.13	YES				
679	Regeneron Pharm.	(NDQ) REGN	12.66	4	4	4	1.60	15-25	(20-95%)	NMF	NIL	d2.15	NIL	79	3/31	d.36	d.07	6/30	NIL	NIL	YES				
2120	Regions Financial	RF	36.77	3	1	3	1.00	40-45	(10-20%)	13.1	3.9	2.80	1.42	56	6/30	.75	.53	9/30	♦.35	.34	YES				
809	Regis Corp.	RGS	34.15	5	3	3	.90	45-70	(30-105%)	15.3	0.5	2.23	.16	95	3/31	.48	.47	6/30	.04	.04	YES				
1210	Reinsurance Group	RGA	49.09	3	2	3	1.00	45-65	(N-30%)	11.3	0.7	4.35	.36	65	6/30	♦1.11	.32	9/30	♦.09	.09	YES				
582	Reliance Steel	RS	36.99	2	3	3	1.20	30-50	(N-35%)	8.2	0.8	4.50	.24	17	6/30	1.33	.74	9/30	▲.06	.05	YES				
985	Reliant Energy	RRI	12.46	5	5	4	1.70	7-12	(N-N%)	NMF	NIL	d.60	NIL	92	3/31	d.46	d.35	6/30	NIL	NIL	YES				
1462	1588 Renaissance Learning	(NDQ) RLRN	11.78	5	3	4	1.00	25-35	(110-195%)	19.6	1.7	.60	.20	54	6/30	.16	.24	9/30	♦.05	.05	YES				
1757	Rent-Way Inc.	RWY	8.25	3	5	2	1.15	13-25	(60-205%)	21.2	NIL	.39	NIL	55	3/31	.06	d.06	6/30	NIL	NIL	YES				
421	Repsol-YPF ADR(g)	REP	28.59	4	3	4	.90	30-50	(5-75%)	7.8	2.5	3.65	.72(h)	18	3/31	.86	.86	9/30	.382	.295	YES				
355	Republic Services	RSG	39.67	▲	3	3	.75	35-50	(N-25%)	20.3	1.4	1.95	.56	16	6/30	♦.52	.44	9/30	.14	.12	YES				
519	Research in Motion Ltd	(NDQ) RIMM	65.37	2	3	3	1.50	80-120	(20-85%)	22.9	NIL	2.85	NIL	68	5/31	.68	.56	6/30	NIL	NIL	YES				
233	ResMed Inc.	RMD	45.22	2	3	3	.90	50-75	(10-65%)	32.1	NIL	1.41	NIL	67	3/31	.35	.25	6/30	NIL	NIL	YES				
234	Resproics Inc.	(NDQ) RESP	36.60	3	3	4	.95	40-65	(10-80%)	25.1	NIL	1.46	NIL	67	6/30	♦.40	.36	6/30	NIL	NIL	YES				
393	1902 Reuters ADR(g)	(NDQ) RTSY	44.19	▲	2	3	4	1.30	45-70	(N-60%)	22.7	2.5	▲ 1.95	1.11	78	3/31	NIL(p)	NIL(p)	6/30	.682	.702	YES			
810	Revlon Inc. 'A'	REV	0.94	3	5	4	1.25	5-8	(430-750%)	NMF	NIL	d.25	NIL	95	3/31	d.15	d.13	6/30	NIL	NIL	YES				
1575	Reynolds American	RAI	63.95	2	3	3	.95	45-70	(N-10%)	15.2	4.7	▲ 4.20	3.00	85	6/30	♦1.28	.85	12/31	▲.75	.525	YES				
1137	Reynolds & Reynolds	REY	34.62	3	3	3	.95	30-45	(N-30%)	21.2	1.3	1.63	.44	33	6/30	♦.43	.37	6/30	.11	.11	YES				
779	Rite Aid Corp.	RAD	4.41	3	5	2	1.00	4-7	(N-60%)	NMF	NIL	d.01	NIL	38	5/31	.01	.05	6/30	NIL	NIL	YES				
1362	Robbins & Myers	RBN	26.57	2	3	3	.95	35-50	(30-90%)	42.2	0.8	.63	.22	23	5/31	.25	.02	9/30	.055	.055	YES				
1300	Robert Half Int'l	RHI	32.06	3	3	3	1.45	50-80	(55-150%)	20.0	1.0	1.60	.32	9	6/30	♦.39	.33	6/30	.08	.07	YES				
934	Rock-Tenn 'A'	RKT	17.18	3	3	3	1.10	20-30	(15-75%)	16.5	2.1	1.04	.36	61	3/31	.20	.05	6/30	.09	.09	YES				
1018	Rockwell Automation	ROK	60.50	2	3	3	1.10	65-95	(5-55%)	18.3	1.5	3.30	.90	10	6/30	♦.83	.68	9/30	.225	.225	YES				
562	Rockwell Collins	COL	55.20	2	3	3	1.10	50-75	(N-35%)	20.0	1.2	2.76	.64	21	6/30	♦.70	.56	6/30	▲.16	.12	YES				
1042	Rogers Corp.	ROG	53.75	2	3	2	1.15	70-105	(30-95%)	18.2	NIL	2.95	NIL	15	3/31	.74	.30	6/30	NIL	NIL	YES				
499	Rohm and Haas	ROH	44.46	3	3	3	1.10	65-95	(45-115%)	13.5	3.0	3.30	1.32	45	6/30	♦.87	.77	9/30	♦.33	.29	YES				
345	Rollins, Inc.	ROL	21.33	▲	3	3	.85	19-30	(N-40%)	23.7	1.2	.90	.25	37	3/31	.16	.17	9/30	♦.063	.05	YES				
1363	Roper Inds.	ROP	43.71	2	3	3	1.10	50-75	(15-70%)	21.3	0.5	2.05	.24	23	3/31	.42	.33	9/30	.059	.053	YES				
1758	Ross Stores	(NDQ) ROST	25.28	3	3	3	1.00	35-55	(40-120%)	15.8	1.0	1.60	.26	55	4/30	.41	.34	6/30	.06	.05	YES				
1953	Rowan Cos.	RDC	34.15	3	3	3	1.15	45-70	(30-105%)	9.5	1.2	3.60	.40	6	6/30	♦.84	.33	9/30	♦.10	NIL	YES				
1569	Royal Bank of Canada	(TSE) RYTO	47.83 b	3	2	3	.70	45-60	(N-25%)	14.2	3.0	3.36	1.44	66	4/30	.86(b)	.69(b)	9/30	.36(b)	.305(b)	YES				
1856	Royal Caribbean Cruises	RCL	36.05	▼	3	3	1.35	55-80	(55-120%)	11.8	1.7	3.05	.80	81	6/30	♦.57	.72	6/30	.15	.13	YES				
422	Royal Dutch Shell 'A'	RDSA	69.50	2	1	4	1.00	75-95	(10-35%)	9.9	3.6	7.00	2.52	18	6/30	♦2.26	1.56	6/30	.631	.591	YES				
534	857 Royal Group Ltd.	(TSE) RYGT	12.45	-	4 -	-	.75	20-35	(60-180%)	NMF	NIL	.05	NIL	19	3/31	d.21	d.12	6/30	NIL	NIL	YES				
968	Royce Value Trust	RVT	19.02	3	3	3	1.05	18-25	(N-30%)	NMF	NIL	.03	NIL	34	12/31	18.87(q)	18.95(q)	6/30	NIL	NIL	YES				
316	Ruby Tuesday	RI	21.98	3	3	3	.95	40-60	(80-175%)	12.5	2.3	1.76	.50	80	5/31	.53	.40	9/30	▲.25	.023	YES				
1520	Ruddick Corp.	RDK	23.64	4	3	2	.85	30-40	(25-70%)	15.0	1.9	1.58	.44	60	3/31	.42	.40	9/30	.11	.11	YES				
1662	Russell Corp.	RML	18.00	-	3 -	-	.95	25-40	(40-120%)	15.7	0.9	1.15	.16	64	12/31	.36	.31	6/30	.04	.04	YES				
★	317 Ryan's Restaurant	(NDQ) RYAN	15.69	-	3 -	-	.90	11-16	(N-N%)	18.5	NIL	.85	NIL	80	3/31	.25	.28	6/30	NIL	NIL	YES				
271	Ryder System	R	51.16	1	3	1	1.15	60-85	(15-65%)	13.3	1.4	3.85	.72	5	6/30	♦1.02	.86	9/30	♦.18	.16	YES				
583	Ryerson Inc.	RYI	26.59	3	3	4	1.40	30-40	(15-50%)	8.1	0.8	3.30	.20	17	3/31	1.12	1.37	9/30	.05	.05	YES				
872	Ryland Group	RYL	40.12	5	3	4	1.40	45-65	(10-60%)	4.9	1.2	8.25	.48	97	6/30	2.03	2.10	9/30	.12	.06	YES				
2214	SAP AG	SAP	44.31	2	3	3	1.45	65-100	(45-125%)	24.5	0.8	1.81	.35	20	6/30	.42	.28	6/30	.434	.347	YES				
520	SBA Communications	(NDQ) SBAC	22.87	3	4	2	2.20	25-50	(10-120%)	NMF	NIL	d.30	NIL	68	3/31	d.11	d.33	6/30	NIL	NIL	YES				
2215	SEI Investments	(NDQ) SEIC	47.20	1	3	2	1.45	60-90	(25-90%)	21.8	0.5	2.17	.24	20	6/30	♦.57	.43	6/30	▲.12	.11	YES				
469	SEMCO Energy	SEN	6.02	3	4	3	.80	6-11	(N-85%)	20.1	NIL	.30	NIL	90	3/31	.30	.38	6/30	NIL	NIL	YES				
2164	SLM Corporation	SLM	50.46	3	1	3	.70	85-105	(70-110%)	17.7	2.0	2.85	1.00	57	6/30	.72	.62	9/30	▲.25	.22	YES				
1200	SPX Corp.	SPW	52.80	3	3	3	1.25	50-80	(N-50%)	18.2	1.9	2.90	1.00	46	3/31	.42	.06	9/30	.25	.25	YES				
2216	SRA Int'l Inc.	SRX	24.68	3	3	3	.75	40-60	(60-145%)	22.4	NIL	1.10	NIL	20	3/31	.26	.26	6/30	NIL	NIL	YES				
346	Sabre Holdings	TSG	20.51	3	3	4	1.65	30-45	(45-120%)	12.4	2.0	1.65	.40	37	3/31	.24	.37	6/30	.10	.09	YES				
1463	608 SAFECO Corp.	(NDQ) SAFC	53.43	3	3	3	.85	60-95	(10-80%)	9.															

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NAME OF STOCK			Ticker Symbol		Timeliness		Beta												Qtr. Ended		Earns. Per sh.		Year Ago		Qtr. Ended		Latest Div'd		Year Ago	
2241	935	Sealed Air	SEE		46.30	3	3	3	.70	70-105	(50-125%)	15.4	1.3	3.00	.60	61	6/30	♦.70	.66	6/30	.15	NIL	YES	6/30	.15	NIL	YES			
	1691	Sears Holdings	(NDQ) SHLD	134.86	-	3	-	-	NMF	115-170	(N-25%)	18.0	NIL	7.50	NIL	31	4/30	1.14	.64	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES			
	903	Select Comfort	(NDQ) SCSS	20.61	1	3	1	1.00	30-45	(45-120%)	21.0	NIL	.98	NIL	36	6/30	♦.19	.13	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	610	Selective Ins. Group	(NDQ) SIGI	51.89	3	3	3	.95	60-85	(15-65%)	11.2	1.9	4.65	1.00	42	6/30	♦1.36	1.01	6/30	.22	.19	YES	6/30	.22	.19	YES				
	1098	Semitool, Inc.	(NDQ) SMTL	8.37	3	3	4	1.85	15-25	(80-200%)	20.4	NIL	.41	NIL	13	6/30	♦.07	.05	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
1308	1786	Sempra Energy	SRE	48.07	4	2	3	1.05	50-70	(5-45%)	13.4	2.5	3.60	1.22	73	3/31	.91	.92	9/30	.30	.29	YES	9/30	.30	.29	YES				
	1079	Semtech Corp.	(NDQ) SMTC	12.18	3	4	4	1.65	25-35	(105-185%)	17.9	NIL	.68	NIL	14	4/30	.17	.14	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	680	Senomyx, Inc.	(NDQ) SNMX	13.01	-	4	-	-	NMF	25-45	(90-245%)	NMF	NIL	d.80	NIL	79	6/30	♦d.21	d.20	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES			
	1503	Sensient Techn.	(NDQ) SXT	20.26	2	3	3	.90	20-35	(N-75%)	14.5	3.0	1.40	.60	63	6/30	.39	.34	9/30	.15	.15	YES	9/30	.15	.15	YES				
	1284	Sepracor, Inc.	(NDQ) SEPR	49.09	3	4	2	1.40	50-85	(N-75%)	39.3	NIL	1.25	NIL	47	6/30	♦1.0	d.07	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
1307	1401	Sequa Corp. 'A'	SQAA	79.34	3	3	1	1.10	100-155	(25-95%)	15.9	NIL	5.00	NIL	46	3/31	.93	.96	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	1402	Service Corp. Int'l	SCI	7.71	3	4	3	1.15	8-14	(5-80%)	24.1	1.3	.32	.10	46	3/31	.10	.12	9/30	.025	.025	YES	9/30	.025	.025	YES				
	347	ServiceMaster Co.	SVM	9.95	3	3	3	.85	17-25	(70-150%)	15.3	4.4	.65	.44	37	3/31	.04	.04	6/30	.11	.11	YES	6/30	.11	.11	YES				
	1759	Sharper Image	(NDQ) SHRP	10.70	4	3	2	.95	10-14	(N-30%)	NMF	NIL	d.60	NIL	55	4/30	d.84	d.30	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	818	Shaw Commun. 'B'	(TSE) SJRB.TO	33.52 b	2	3	2	1.15	40-60	(20-80%)	39.9	1.8	.84	.60	1	2/28	.23(b)	.16(b)	9/30	▲.14(b)	.07(b)	YES	9/30	▲.14(b)	.07(b)	YES				
1309	572	Shaw Group	SGR	20.43	5	4	4	1.60	30-50	(45-145%)	16.3	NIL	1.25	NIL	69	5/31	.16	.23	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	433	Shell Canada	(TSE) SHC.TO	39.00 b	3	2	4	.65	35-45	(N-15%)	16.6	1.1	2.35	.44	25	3/31	.53(b)	.43(b)	6/30	.11(b)	.083(b)	YES	6/30	.11(b)	.083(b)	YES				
	501	Sherwin-Williams	SHW	49.42	2	2	3	1.00	70-95	(40-90%)	12.2	2.1	4.05	1.06	45	6/30	1.33	1.08	9/30	.25	.205	YES	9/30	.25	.205	YES				
	1787	Sierra Pacific Res.	SRP	14.19	2	3	3	1.15	14-20	(N-40%)	20.3	NIL	.70	NIL	73	3/31	.01	d.08	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	502	Sigma-Aldrich	(NDQ) SIAL	67.92	3	2	3	.85	75-105	(10-55%)	17.6	1.2	3.85	.84	45	6/30	♦1.04	.91	6/30	.21	.19	YES	6/30	.21	.19	YES				
1306	936	Silgan Holdings	(NDQ) SLGN	38.66	4	4	3	.65	30-50	(N-30%)	14.3	1.3	2.70	.52	61	6/30	♦.53	.59	6/30	.12	.10	YES	6/30	.12	.10	YES				
	1603	Silicon image	(NDQ) SIMG	9.30	3	4	2	1.90	11-19	(20-105%)	26.6	NIL	.35	NIL	91	6/30	♦.11	.12	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	767	Silicon Labs	(NDQ) SLAB	37.30	3	4	2	1.25	40-65	(5-75%)	43.9	NIL	.85	NIL	24	6/30	♦.18	.32	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	1123	Silicon Storage	(NDQ) SSTI	3.68	3	5	4	2.15	4-8	(10-115%)	24.5	NIL	.15	NIL	43	3/31	.11	d.14	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	1193	Simon Property Group	SPG	85.01	3	2	3	.80	55-80	(N- N%)	47.2	3.6	1.80	3.04	93	3/31	.47	.26	6/30	.76	.70	YES	6/30	.76	.70	YES				
1305	1869	Sinclair Broadcast	(NDQ) SBGI	8.48	2	3	4	1.10	11-16	(30-90%)	18.8	4.7	.45	.40	53	3/31	.10	.07	9/30	.10	.075	YES	9/30	.10	.075	YES				
	1857	Six Flags, Inc.	SIX	5.50	4	5	4	1.05	9-18	(65-225%)	NMF	NIL	d.35	NIL	81	3/31	d.94	d.132	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	1701	Skechers U.S.A.	SKX	24.51	▼2	3	2	1.60	25-35	(N-45%)	18.9	NIL	1.30	NIL	58	6/30	♦.40	.38	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	1589	SkillSoft ADR	(NDQ) SKIL	5.62	2	5	5	1.70	▼5-9	(N-60%)	31.2	NIL	▼.18	NIL	54	4/30	.04	.02	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	1309	1522 Smart & Final	SMF	15.63	3	3	2	.90	▼12-18	(N-15%)	24.0	NIL	▼.65	NIL	60	6/30	.18	.25	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
1304	1365	Smith (A.O.)	AOS	42.53	3	3	2	.75	60-90	(40-110%)	17.0	1.6	2.50	.68	23	6/30	.71	.47	9/30	▲.17	.16	YES	9/30	▲.17	.16	YES				
	1955	Smith Int'l Inc.	SII	43.35	2	3	3	1.15	40-60	(N-40%)	19.3	0.7	2.25	.32	6	6/30	♦.57	.34	12/31	♦.08	.06	YES	12/31	♦.08	.06	YES				
	1504	Smithfield Foods	SFD	29.12	4	3	4	.85	35-55	(20-90%)	19.4	NIL	1.50	NIL	63	4/30	.09	.73	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	1505	Smucker (J.M.)	SJM	45.63	3	2	4	.70	55-75	(20-65%)	16.2	2.5	2.82	1.12	63	4/30	.68	.58	9/30	♦.28	.27	YES	9/30	♦.28	.27	YES				
	937	Smurfit-Stone Cont.	(NDQ) SSCC	10.17	3	3	3	1.25	14-20	(40-95%)	NMF	NIL	d.05	NIL	61	6/30	♦d.03	NIL	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
1303	1366	Snap-on Inc.	SNA	40.30	▲2	2	3	1.00	35-50	(N-25%)	21.2	2.7	1.90	1.08	23	6/30	♦.20	.46	6/30	.27	.25	YES	6/30	.27	.25	YES				
	1044	Solertron Corp.	SLR	2.99	3	4	3	1.75	7-12	(135-300%)	17.6	NIL	.17	NIL	15	5/31	.04	.04	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	318	Sonic Corp.	(NDQ) SONC	19.71	3	3	2	.70	20-30	(N-50%)	21.4	NIL	.92	NIL	80	5/31	.27	.24	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	938	Sonoco Products	SON	32.68	2	2	2	1.00	40-50	(20-55%)	15.6	2.9	2.10	.96	61	6/30	.51	.45	9/30	.24	.23	YES	9/30	.24	.23	YES				
	1563	Sony Corp. ADR(g)	SNE	42.95	2	3	3	1.00	55-80	(30-85%)	35.5	0.5	1.21	.22	11	3/31	d.54	d.55	6/30	.11	.115	YES	6/30	.11	.115	YES				
1302	1760	Sotheby's	BID	27.97	2	3	2	1.35	25-40	(N-45%)	22.4	NIL	1.25	NIL	55	3/31	d.07	d.16	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	348	SOURCECORP	SRCP	29.75	5	2	3	.70	30-40	(N-35%)	16.1	3.1	1.85	.92	90	3/31	.93	.96	9/30	.225	.213	YES	9/30	.225	.213	YES				
	470	South Jersey Inds.	SJI	33.80	▲3	1	3	.65	35-40	(5-20%)	15.7	4.6	2.15	1.56	76	6/30	♦.52	.52	9/30	.388	.373	YES	9/30	.388	.373	YES				
	177	Southern Co.	SO	27.50	3	3	3	1.05	30-45	(10-65%)	15.7	1.5	1.75	.40	90	3/31	.82	.82	6/30	.10	NIL	YES	6/30	.10	NIL	YES				
	471	Southern Union	SUG	17.85	1	3	3	1.20	20-30	(10-70%)	22.3	0.1	.80	.02	3	6/30	.33	.20	9/30	♦.005	.005	YES	9/30	♦.005	.005	YES				
1301	472	Southwest Gas	SWX	33.24	3	3	3	.85	35-50	(5-50%)	19.6	2.5	1.70	.82	90	3/31	1.11	.88	9/30	.205	.205	YES	9/30	.205	.205	YES				
	1421	Southwest Water	(NDQ) SWWC	12.34	4	3	3	.70	12-18	(N-45%)	33.4	1.7	.37	.21	94	3/31	.03	d.01	9/30	.052	.048	YES	9/30	.052	.048	YES				
	453	Southwestern Energy	SWN	33.25	3	3	5	1.00	25-40	(N-20%)	26.6	NIL	1.25	NIL	51	3/31	.34	.22	6/30	NIL	NIL	YES	6/30	NIL	NIL	YES				
	1169	Sovereign Bancorp.	SOV	20.35	5	3																								

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AGE NUMBERS		RANKS										Industry Rank						Do Options Trade?					
Bold type refers to Ratings and Reports; italics to Selection & Opinion		Recent Price		Safety		Technical		3-5 year Target Price Range and % appreciation potential		Current P/E Ratio		% Est'd Yield next 12 mos.		Est'd Earnings 12 mos. to 12-31-06		(f) Est'd Div'd next 12 mos.		LATEST RESULTS					
NAME OF STOCK		Ticker Symbol	Timeliness	Beta										Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
796	Superior Inds. Int'l	SUP	18.40	4	3	3	1.05	20-35	(10-90%)	52.6	3.6	.35	.66	84	3/31	.05	.34	9/30	.16	.16	YES	YES	
1529	SUPERVALU INC.	SVU	28.75	5	3	2	1.00	35-55	(20-90%)	12.8	2.3	2.24	.66	96	5/31	.57	.64	6/30	.163	.153	YES	YES	
503	SurModics, Inc.	(NDQ) SRDX	35.50	3	3	2	1.05	60-90	(70-155%)	24.5	NIL	1.45	NIL	45	6/30	.34	.32	6/30	NIL	NIL	YES	YES	
272	Swift Transportation	(NDQ) SWFT	26.09	1	3	1	1.25	40-60	(55-130%)	13.0	NIL	2.00	NIL	5	6/30	.60	.41	6/30	NIL	NIL	YES	YES	
370	Swiss Helvetia Fund	SWZ	16.99	3	3	3	.85	18-25	(5-45%)	NMF	0.9	NMF	.15	40	12/31	17.47(q)	16.79(q)	9/30	.028	NIL	YES	YES	
2217	Sybase Inc.	SY	20.98	3	3	4	1.15	25-40	(20-90%)	20.0	NIL	1.05	NIL	20	6/30	.29	.17	6/30	NIL	NIL	YES	YES	
2239	Sybron Dental Specialist	SYD		SEE FINAL SUPPLEMENT - PAGE 2239																	YES		
768	Sycamore Networks	(NDQ) SCMR	3.76	2	5	4	1.30	6-11	(60-195%)	25.1	NIL	.15	NIL	24	4/30	.04	NIL	6/30	NIL	NIL	YES	YES	
2218	Symantec Corp.	(NDQ) SYMC	15.80	▲	4	3	4	1.05	25-35	(60-120%)	31.6	NIL	▲.50	NIL	20	6/30	.09	.23	6/30	NIL	NIL	YES	YES
521	Symbol Technologies	SBL	11.06	3	3	4	1.50	14-20	(25-80%)	24.6	0.2	.45	.02	68	3/31	.10	.09	6/30	.01	.01	YES	YES	
504	Symyx Technologies	(NDQ) SMMX	24.03	3	3	3	1.20	25-40	(5-65%)	80.1	NIL	.30	NIL	45	6/30	.02	.05	6/30	NIL	NIL	YES	YES	
2219	Synopsys, Inc.	(NDQ) SNPS	17.57	3	3	3	1.20	30-45	(70-155%)	48.8	NIL	.36	NIL	20	4/30	.10	.09	6/30	NIL	NIL	YES	YES	
2123	Synovus Financial	SNV	28.11	2	2	3	1.05	35-50	(25-80%)	15.2	2.8	1.85	.80	56	6/30	.47	.42	9/30	.195	.183	YES	YES	
1530	Sysco Corp.	SY	28.54	4	1	3	.80	50-60	(75-110%)	19.3	2.4	1.48	.68	96	3/31	.30	.34	9/30	.17	.15	YES	YES	
629	TCF Financial	TCB	27.10	4	3	3	.95	35-55	(30-105%)	13.6	3.4	2.00	.92	77	6/30	.52	.53	9/30	.23	.213	YES	YES	
1438	TD Ameritrade Holding	(NDQ) AMTD	16.40	-	3	-	NMF	30-45	(85-175%)	17.6	NIL	.93	NIL	4	6/30	.23	.20	6/30	NIL	NIL	YES	YES	
2124	TD Banknorth Inc.	BNK	29.67	-	3	-	.90	25-40	(N-35%)	12.9	3.0	2.30	.88	56	6/30	.56	.63	6/30	.22	.22	YES	YES	
178	TECO Energy	TE	16.10	3	3	3	1.05	14-20	(N-25%)	16.1	4.7	1.00	.76	76	3/31	.26	.25	9/30	.19	.19	YES	YES	
1604	THQ Inc.	(NDQ) THQI	22.55	▲	3	3	1.45	40-55	(75-145%)	40.3	NIL	▼.56	NIL	91	3/31	d.12	.16	6/30	NIL	NIL	YES	YES	
1761	TJX Companies	TJX	24.47	3	2	3	1.00	35-45	(45-85%)	16.9	1.1	1.45	.28	55	4/30	.34	.28	9/30	.07	.06	YES	YES	
713	TXU Corp.	TXU	63.16	2	3	4	1.10	50-70	(N-10%)	11.2	2.8	5.65	1.75	82	3/31	1.09	d.13	9/30	.413	.282	YES	YES	
371	Taiwan Fund	TWN	14.75	▼	3	4	1.05	15-25	(N-70%)	NMF	0.3	NMF	.05	40	2/28	16.67(q)	14.98(q)	6/30	NIL	NIL	YES	YES	
1081	Taiwan Semic. ADR	TSM	8.45	2	3	4	1.55	18-30	(115-255%)	10.6	4.5	.80	.38	14	3/31	.19	.10	9/30	.383	NIL	YES	YES	
987	1605 Take-Two Interactive	(NDQ) TTWO	10.93	5	3	3	1.10	25-40	(130-265%)	NMF	NIL	▼d.14	NIL	91	4/30	d.47	d.12	6/30	NIL	NIL	YES	YES	
2241	1762 Talbots Inc.	TLB	20.64	4	3	3	1.05	35-45	(70-120%)	12.1	2.5	1.70	.52	55	4/30	.51	.63	6/30	.13	.12	YES	YES	
435	Talisman Energy	(TSE) TLM.TO	19.27 b	3	3	4	.95	13-20	(N-5%)	11.5	0.8	1.68	.15	25	3/31	.17(b)	.23(b)	6/30	.075(b)	.057(b)	YES	YES	
1692	Target Corp.	TGT	45.87	3	3	3	1.05	70-110	(55-140%)	14.6	1.0	3.15	.48	31	4/30	.63	.55	9/30	.12	.10	YES	YES	
1506	Tasty Baking	(NDQ) TSTY	8.13	3	3	2	.75	8-12	(N-50%)	27.1	2.5	.30	.20	63	3/31	.12	.06	6/30	.05	.05	YES	YES	
243	1125 Tech Data	(NDQ) TECD	36.63	3	3	4	1.05	35-55	(N-50%)	18.8	NIL	1.95	NIL	43	4/30	.32	.55	6/30	NIL	NIL	YES	YES	
681	Techne Corp.	(NDQ) TECH	49.37	3	3	4	1.10	75-110	(50-125%)	24.1	NIL	2.05	NIL	79	3/31	.52	.45	6/30	NIL	NIL	YES	YES	
1045	Technitrol Inc.	TNL	19.62	1	3	2	1.30	30-45	(55-130%)	14.0	1.8	1.40	.35	15	3/31	.33	.16	9/30	.088	.088	YES	YES	
★	1233 Teck Cominco Ltd. 'B'	(TSE) TCKB.TO	72.07 b	2	3	4	1.00	60-90	(N-25%)	9.6	2.8	7.50	2.00	2	6/30	2.95(b)	1.11(b)	9/30	1.00(b)	NIL(b)	YES	YES	
1368	Tecumseh Products 'A'	(NDQ) TECUA	17.31	3	5	3	.95	35-70	(100-305%)	NMF	NIL	d.125	NIL	23	3/31	d.88	d.67	6/30	NIL	.32	YES	YES	
282	Teekay Shipping	TK	41.93	4	3	3	1.10	50-70	(20-65%)	11.8	2.0	3.55	.83	74	3/31	1.38	3.19	9/30	.208	.138	YES	YES	
149	Tektronix, Inc.	TEK	27.49	3	3	3	1.15	35-55	(25-100%)	18.4	0.9	1.49	.24	44	5/31	.43	.24	9/30	.06	.06	YES	YES	
735	Telecom N. Zealand	NZT	20.48	4	2	5	.60	30-40	(45-95%)	9.1	8.8	2.25	1.80	35	3/31	.61	.76	6/30	.476	.506	YES	YES	
736	Telecom. de Chile ADR(g)	CTC	6.40	-	3	-	NMF	11-16	(70-150%)	42.7	10.2	.15	.65	35	3/31	.01	.06	6/30	.42	.747	YES	YES	
1405	Teleflex Inc.	TFX	52.54	5	2	3	1.05	80-110	(50-110%)	13.8	2.2	3.80	1.14	46	3/31	.78	.77	6/30	.285	.25	YES	YES	
737	Telefonica SA ADR(g)	TEF	50.05	2	3	3	.95	65-100	(30-100%)	13.5	3.6	3.70	1.80	35	3/31	.95	.64	6/30	.954	.838	YES	YES	
738	Telefonos de Mexico ADR	TMX	23.90	3	3	5	.85	30-45	(25-90%)	9.4	3.5	2.55	.83	35	3/31	.65	.48	6/30	.179	.177	YES	YES	
739	Telephone & Data	(ASE) TDS	41.58	3	3	2	1.05	50-75	(20-80%)	27.7	0.9	1.50	.37	35	9/30	.36	.18	6/30	.093	.088	YES	YES	
349	TeleTech Holdings	(NDQ) TTEC	12.56	2	4	4	1.10	14-25	(10-100%)	27.9	NIL	.45	NIL	37	3/31	.08	.04	6/30	NIL	NIL	YES	YES	
769	Tellabs, Inc.	(NDQ) TLAB	11.00	2	3	3	1.30	14-20	(25-80%)	20.0	NIL	.55	NIL	24	6/30	.16	.13	6/30	NIL	NIL	YES	YES	
740	TELUS Corporation	(TSE) T.TO	48.75	3	3	4	.90	65-95	(35-95%)	19.9	2.3	2.45	1.10	35	3/31	.60	.66	9/30	.275	.20	YES	YES	
918	Temple-Inland	TIN	41.82	3	3	4	1.20	45-70	(10-65%)	14.4	2.4	2.90	1.00	75	6/30	.98	.60	6/30	.25	.225	YES	YES	
372	Templeton Emerg'g	EMF	18.18	3	4	4	1.00	20-35	(10-95%)	NMF	2.1	NMF	.39	40	2/28	20.50(q)	17.30(q)	6/30	NIL	NIL	YES	YES	
905	Tempur-Pedic	TPX	15.18	1	3	1	1.30	20-30	(30-100%)	11.7	NIL	1.30	NIL	36	6/30	.30	.25	6/30	NIL	NIL	YES	YES	
650	Tenet Healthcare	THC		SEE LATEST REPORT																	YES		
1369	Tennant Co.	TNC	23.61	3	2	4	.95	30-40	(25-70%)	16.3	1.9	1.45	.44	23	3/31	.24	.20	6/30	.11	.11	YES	YES	
797	Tenneco Inc.	TEN	20.95	3	5	3	1.80	17-30	(N-45%)	13.1	NIL	1.60	NIL	84	6/30	.73	.77	6/30	NIL	NIL	YES	YES	
454	TEPPCO Partners L.P.	TPP	36.34	4	3	3	.65	35-55	(N-50%)	20.2	7.6	1.80	2.78	51	3/31	.43	.54	9/30	.675	.675	YES	YES	
1099	Teradyne Inc.	TER	12.67	▼	3	4	1.15	30-50	(135-295%)	12.7	NIL	1.00	NIL	13	6/30	.31	d.19	6/30	NIL	NIL	YES	YES	
1370	Terex Corp.	TEX	43.02	1	3	2	1.25	55-85	(30-100%)	12.0	NIL	3.60	NIL	23	6/30	1.00	.79	6/30	NIL	NIL	YES	YES	
424	Tesoro Corp.	TSO	74.31	3	3	5	1.55	35-55	(N-9%)	10.6	0.5	7.00	.40	18	3/31	.61	.49	6/30	.10	.05	YES	YES	
1792	1082 Tessera Technologies Inc(NDQ)	TSRA	31.90	4	3	2	1.75	60-90	(90-180%)	70.9	NIL	.45	NIL	14	3/31	.03	.25	6/30	NIL	NIL	YES	YES	
357	Tetra Tech	(NDQ) TTEK	15.59	3	3	3	1.10	25-35	(60-125%)	21.1	NIL	.74	NIL	16	3/31	.14	d.32	6/30	NIL	NIL	YES	YES	
1956	TETRA Technologies	(NDQ) TTI	27.22	1	3	3	1.15	30-50	(10-85%)	19.4	NIL	1.40	NIL	6	3/31	.14	.08	6/30	NIL	NIL	YES	YES	
1285	Teva Pharm. (ADR)	(NDQ) TEVA	32.49	3	3	4	.85	55-80	(70-145%)	17.6													

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AGE NUMBERS		RANKS										Industry Rank										Do Options Trade?	
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NAME OF STOCK		Ticker Symbol	Timeliness	Beta										Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
1211	Torchmark Corp.	TMK	60.77	4	1	3	1.00	70- 85	(15- 40%)	12.4	0.9	4.90	.52	65	6/30	♦1.22	1.14	9/30	▲.13	.11	YES		
122	Toro Co.	TTC	41.49	2	2	3	.95	45- 60	(10- 45%)	14.2	0.9	2.93	.36	71	4/30	1.56	1.33	9/30	.09	.03	YES		
1570	Toronto-Dominion	(TSE) TD.TO	59.66b	3	2	3	.80	65- 85	(10- 40%)	13.1	3.0	4.55	1.76	66	4/30	1.01(b)	.86(b)	9/30	.44(b)	.40(b)	YES		
425	Total ADR	TOT	66.98	3	1	4	.95	75- 90	(10- 35%)	9.8	3.1	6.85	2.10	18	3/31	1.74	1.61	6/30	1.109	.943	YES		
2165	Total System Svcs.	TSS	20.56	3	3	3	1.00	25- 40	(20- 95%)	20.0	1.4	1.03	.28	57	6/30	.29	.26	9/30	▲.07	.06	YES		
112	Toyota Motor ADR(g)	TM	101.76	3	2	4	.90	110-160	(10- 55%)	12.9	1.2	7.86	1.25	27	3/31	2.11	1.66	9/30	.943	.731	YES		
881	Tractor Supply	(NDQ) TSCO	46.20	3	3	1	1.25	70-110	(50-140%)	19.7	NIL	2.35	NIL	22	6/30	♦1.05	.87	6/30	NIL	NIL	YES		
1765	Trans World Entertain	(NDQ) TWMC	5.73	3	3	1	1.00	6- 9	(5- 55%)	38.2	NIL	.15	NIL	55	4/30	.26	d.03	6/30	NIL	NIL	YES		
1040	2220 Transaction Sys. 'A'	(NDQ) TSAI	35.49	1	3	3	1.20	45- 65	(25- 85%)	24.3	NIL	1.46	NIL	20	6/30	♦.34	.26	6/30	NIL	NIL	YES		
436	TransAlta Corp.	(TSE) TA.TO	23.44b	3	3	4	.60	20- 35	(N- 50%)	21.3	4.3	1.10	1.00	25	6/30	♦.16(b)	.13(b)	9/30	.25(b)	.25(b)	YES		
611	Transatlantic Hldgs.	TRH	55.85	3	2	3	.80	85-115	(50-105%)	9.2	1.1	6.05	.60	42	6/30	♦1.58	1.21	9/30	▲.135	.12	YES		
437	TransCanada Corp.	TRP	30.16	3	2	4	.50	25-35	(N- 15%)	18.3	3.6	1.65	1.10	25	3/31	.40	.34	9/30	.275	.262	YES		
1958	Transocean Inc.	RIG	77.47	3	3	4	1.15	125-190	(60-145%)	23.8	NIL	3.25	NIL	6	3/31	.49	.24	6/30	NIL	NIL	YES		
505	Tredegar Corp.	TG	15.43	3	3	2	.95	15- 20	(N- 30%)	17.1	1.0	.90	.16	45	3/31	.21	.14	9/30	.04	.04	YES		
1508	TreeHouse Foods	THS	23.99	-	3	-	NMF	▲30- 45	(25- 90%)	25.3	NIL	.95	NIL	63	3/31	.24	.31	6/30	NIL	NIL	YES		
858	Trex Co.	TWP	24.00	2	3	4	1.05	40- 60	(65-150%)	30.0	NIL	.80	NIL	19	6/30	♦.47	d.07	6/30	NIL	NIL	YES		
970	Trn-Continental	TY	19.55	2	2	3	1.00	20- 30	(N- 55%)	65.2	1.4	.30	.28	34	12/31	21.16(q)	21.87(q)	6/30	.07	.06	YES		
651	Triad Hospitals	TRI	39.87	3	3	3	.60	60- 85	(50-115%)	14.0	NIL	2.85	NIL	72	3/31	.79	.82	6/30	NIL	NIL	YES		
321	Triarc Cos. 'A'	TRY	15.44	4	3	3	.70	14- 20	(N- 30%)	77.2	5.0	.20	.77	80	3/31	d.05	.04	6/30	.08	.065	YES		
1917	Tribune Co.	TRB	29.05	3	1	2	.90	55- 65	(90-125%)	14.2	2.5	2.04	.72	83	6/30	.55	.60	9/30	♦.18	.18	YES		
1020	Trimble Nav. Ltd.	(NDQ) TRMB	46.33	▲1	3	3	1.00	55- 85	(20- 85%)	27.3	NIL	1.70	NIL	10	6/30	♦.55	.44	6/30	NIL	NIL	YES		
574	Trinity Inds.	TRN	32.41	3	3	3	1.05	40- 60	(25- 85%)	14.7	0.7	2.20	.24	69	3/31	.47	.08	9/30	▲.06	.04	YES		
1084	TriQuint Semic.	(NDQ) TQNT	4.25	2	4	2	1.70	6- 10	(40-135%)	42.5	NIL	.10	NIL	14	6/30	♦.04	d.01	6/30	NIL	NIL	YES		
1195	Trizec Properties	TRZ	28.84	-	3	-	.90	16- 25	(N- N%)	38.5	2.8	.75	.81	93	3/31	.28	.16	6/30	.20	.20	YES		
953	Tupperware Brands	TUP	17.11	4	3	3	1.05	25- 40	(45-135%)	11.0	5.1	1.55	.88	88	6/30	♦.41	.46	9/30	.22	.22	YES		
123	TurboChef Technologies(NDQ)	OVEN	10.36	4	4	4	.75	1- 2	(N- N%)	NMF	NIL	d.60	NIL	71	3/31	d.17	.05	6/30	NIL	NIL	YES		
1764	Tween Brands	TWB	35.36	▼2	3	1	1.05	40- 65	(15- 85%)	19.1	NIL	1.85	NIL	55	4/30	.35	.21	6/30	NIL	NIL	YES		
1766	Tweeter Home	(NDQ) TWTR	4.27	▼3	5	1	1.30	9- 16	(110-275%)	NMF	NIL	d.16	NIL	55	6/30	♦.57	d.31	6/30	NIL	NIL	YES		
612	21st Century Ins. Group	TW	14.83	▲2	3	4	.90	16- 25	(10- 70%)	14.8	2.2	1.00	.32	42	6/30	♦.33	.25	6/30	.08	.04	YES		
1407	Tyco Int'l Ltd.	TYC	25.64	4	3	4	1.55	35- 50	(35- 95%)	13.4	1.6	1.91	.40	46	3/31	.45	.48	9/30	.10	.10	YES		
1509	Tyson Foods 'A'	TSN	14.34	4	3	4	.70	▲19-30	(30-100%)	NMF	1.1	▲d.01	.16	63	3/31	d.26	.21	9/30	.04	.04	YES		
263	UAL Corp.	(NDQ) UAAU	27.38	-	4	-	NMF	40- 65	(45-135%)	NMF	NIL	.10	NIL	3	3/31	d2.66	d2.62	6/30	NIL	NIL	YES		
473	UGI Corp.	UGI	25.64	▲3	2	2	.90	20- 30	(N- 15%)	15.9	2.8	1.61	.71	90	6/30	♦.18	.10	12/31	♦.176	.169	YES		
179	UIL Holdings	UIL	35.02	3	3	2	.90	30- 40	(N- 15%)	21.2	4.9	1.65	1.73	76	3/31	.09	.13	12/31	♦.432	.432	YES		
859	USG Corp.	USG																					
SEE LATEST REPORT																							
1576	UST Inc.	UST	49.53	▲3	3	3	.90	40- 65	(N- 30%)	15.0	4.6	3.30	2.28	85	6/30	♦.83	.82	6/30	.57	.55	YES		
1664	Unifi, Inc.	UFI	2.87	3	4	2	1.05	6- 11	(110-285%)	NMF	NIL	d.06	NIL	64	3/31	NIL	d.04	6/30	NIL	NIL	YES		
350	UniFirst Corp.	UNF	30.53	5	3	2	.75	35- 50	(15- 65%)	15.2	0.5	2.01	.15	37	5/31	.57	.61	9/30	.038	.038	YES		
1510	Unilever NV (NY Shs)(g)	UN	23.31	▲3	1	4	.85	35- 45	(50- 95%)	13.3	3.6	1.75	.85	63	3/31	.37	.40	6/30	.561	.537	YES		
1511	Unilever PLC ADR(g)	UL	23.33	▲3	1	3	.85	35- 45	(50- 95%)	13.3	3.6	1.75	.85	63	3/31	.37	.40	6/30	.558	.439	YES		
291	Union Pacific	UNP	83.10	3	1	3	.90	95-115	(15- 40%)	15.5	1.4	5.35	1.20	7	6/30	1.44	.88	9/30	.30	.30	YES		
1788	UniSource Energy	UNS	33.08	3	3	3	.75	25- 35	(N- 5%)	18.4	2.6	1.80	.86	73	3/31	.52	d.11	6/30	.21	.19	YES		
1127	Unisys Corp.	UIS	5.20	3	4	3	1.35	8- 14	(55-170%)	NMF	NIL	d.60	NIL	43	6/30	d.57	d.08	6/30	NIL	NIL	YES		
1196	United Dominion R'tly	UDR	27.66	4	2	2	.75	25- 30	(N- 10%)	NMF	4.5	d.05	1.25	93	3/31	d.05	.02	9/30	.313	.30	YES		
1980	563 United Industrial Corp.	UIC	44.30	2	3	3	.70	45- 70	(N- 60%)	14.1	0.9	3.15	.40	21	3/31	.69	.57	6/30	.10	.10	YES		
1512	United Natural Foods	(NDQ) UNFI	30.64	3	3	3	.80	40- 60	(30- 95%)	25.7	NIL	1.19	NIL	63	4/30	.29	.26	6/30	NIL	NIL	YES		
2236	United Online	(NDQ) UNFD	10.71	3	4	5	1.30	13- 20	(20- 85%)	13.4	7.5	.80	.80	41	3/31	.20	.25	6/30	.20	.20	YES		
★	264 United Parcel Serv.	UPS	67.83	▼3	1	3	.75	115-140	(70-105%)	17.6	2.2	3.85	1.52	3	6/30	♦.97	.88	6/30	.38	.33	YES		
1371	United Rentals	URI	26.82	2	4	2	1.40	35- 55	(30-105%)	11.7	NIL	2.30	NIL	23	3/31	.19	.11	6/30	NIL	NIL	YES		
630	U.S. Bancorp	UBI	31.88	2	3	2	1.15	40- 60	(25- 90%)	12.3	4.3	2.60	1.38	77	6/30	.66	.60	9/30	.33	.30	YES		
741	U.S. Cellular	(ASE) USM	60.62	3	3	2	1.05	50- 75	(N- 25%)	41.8	NIL	1.45	NIL	35	9/30	.39	.25	6/30	NIL	NIL	YES		
★	1416 U.S. Steel Corp.	X	62.48	3	3	3	1.45	65- 95	(5- 50%)	5.7	1.0	▲11.00	.60	52	6/30	♦3.22	1.91	9/30	♦.15	.10	YES		
1140	United Stationers	(NDQ) USTR	48.57	4	3	3	1.05	60- 85	(25- 75%)	15.4	NIL	3.15	NIL	33	3/31	.78	.79	9/30	NIL	NIL	YES		
1408	United Technologies	UTX	61.77	3	1	3	1.15	75- 90	(20- 45%)	16.9	1.7	3.65	1.06	46	6/30	1.02	.86	9/30	.265	.22	YES		
1791	682 United Therapeutics	(NDQ) UTHR	59.08	4	3	3	1.15	80-120	(35-105%)	84.4	NIL	.70	NIL	79	3/31	.09	.81	6/30	NIL	NIL	YES		
652	UnitedHealth Group	UNH	50.53	3	2	5	.65	75-100	(50-100%)	17.4	0.1	2.90	.03	72	6/30	.70	.61	6/30	▲.03	.015	YES		
2166	Unitrn, Inc.	UTR	40.83	3	2	4	1.00	65- 90	(60-120%)	12.2	4.5	3.34	1.84	57	3/31	.84	.91	6/30	.44	.425	YES		
1577	Universal Corp.	UVV	35.95	5	2	4	.75	50- 65	(40- 80%)	11.3	4.8	▼3.18	1.72	85	3/31	.23	1.31	9/30	.43	.42	YES		
1136	660 Universal Forest	(NDQ) UFPI	51.32	2	3	3	1.05	50- 75	(N- 45%)	11.8	0.2	4.35	.11	19	6/30	1.41	1.20	6/30	.055	.05</			

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NAME OF STOCK			Ticker Symbol	Timeliness			Beta													Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago
1793	522	ViaSat, Inc.	(NDQ) VSAT	23.85	3	3	4	1.35	30- 50	(25-110%)	20.9	NIL	1.14	NIL	68	3/31	.19	.24	6/30	NIL	NIL	YES			
	1046	Visnay Intertechnology	VSH	13.86	2	3	2	1.70	20- 30	(45-115%)	12.1	NIL	1.15	NIL	15	3/31	.25	.06	6/30	NIL	NIL	YES			
	798	Visteon Corp.	VC	6.84	3	4	3	1.50	9- 15	(30-120%)	NMF	NIL	d.60	NIL	84	3/31	.05	d1.43	6/30	NIL	NIL	YES			
	2240	Vitesse Semiconductor	VTSS	SEE FINAL SUPPLEMENT - PAGE 987																					
	743	Vodafone Group ADR(g)	VOD	21.52	3	3	3	.95	25- 40	(15- 85%)	NMF	3.9	d2.45	.85	35	3/31	d1.14(p)	d1.18(p)	6/30	NIL	NIL	YES			
536	1301	Volt Info. Sciences	VOL	43.21	1	3	1	1.20	35- 55	(N- 25%)	23.1	NIL	1.87	NIL	9	4/30	.59	.29	6/30	NIL	NIL	YES			
	113	Volvo AB ADR(g)	(NDQ) VOLV	51.28	▲ 2	3	4	1.15	45- 65	(N- 25%)	10.7	3.4	4.80	1.75	27	6/30	▲1.57	1.21	6/30	1.845	1.56	YES			
	744	Vonage Holdings	VG	6.93	- 5 -	NMF	15- 25	(115-260%)	NMF	NIL	d2.35	NIL	35	3/31	d.55	NA	6/30	NIL	NIL	YES					
	889	Vulcan Materials	VMC	69.52	3	2	3	1.15	90-120	(30- 75%)	15.1	2.2	4.60	1.52	49	3/31	.70	.21	9/30	.37	.29	YES			
	1308	954 WD-40 Co.	(NDQ) WDFC	32.01	4	3	2	.80	30- 45	(N- 40%)	18.8	2.7	1.70	.88	88	5/31	.42	.38	9/30	.22	.22	YES			
1306	474	WGL Holdings Inc.	WGL	29.96	▲ 4	1	3	.80	30- 35	(N- 15%)	16.4	4.5	1.83	1.35	90	3/31	1.16	1.63	9/30	.338	.333	YES			
	1890	WMS Industries	WMS	27.06	3	3	3	1.20	35- 50	(30- 85%)	22.0	NIL	1.23	NIL	50	3/31	.26	.21	6/30	NIL	NIL	YES			
	1927	WPP Group ADR	(NDQ) WPPGY	58.06	2	3	3	1.30	75-115	(30-100%)	20.0	1.2	2.90	.72	48	12/31	1.62(p)	1.20(p)	9/30	.581	.463	YES			
	715	WPS Resources	WPS	52.19	5	2	4	.80	45- 60	(N- 15%)	13.9	4.4	3.75	2.30	82	3/31	1.48	1.73	9/30	▲.575	.565	YES			
	1372	Wabtec Corp.	WAB	25.26	3	3	3	.85	40- 60	(60-140%)	14.9	0.2	1.70	.04	23	6/30	▲.44	.32	6/30	.01	.01	YES			
1978	2125	Wachovia Corp.	WB	53.14	3	2	2	1.10	65- 85	(20- 60%)	11.2	3.8	4.75	2.04	56	6/30	1.18	1.04	6/30	.51	.46	YES			
	1693	Wal-Mart Stores	WMT	43.67	2	1	2	.80	75- 90	(70-105%)	14.8	1.5	2.95	.67	31	4/30	.63	.55	6/30	.168	.15	YES			
	780	Walgreen Co.	WAG	47.54	2	1	2	.80	80-100	(70-110%)	27.2	0.7	1.75	.31	38	5/31	.46	.40	9/30	▲.078	.065	YES			
	1411	Waller Inds.	WLT	48.23	▼ 3	4	3	1.35	70-115	(45-140%)	8.3	0.3	5.80	1.16	46	3/31	.98	.41	9/30	▲.04	.04	YES			
	1666	Wamaco Group	(NDQ) WRNC	18.12	5	3	3	1.10	25- 40	(40-120%)	17.3	NIL	1.05	NIL	64	3/31	.34	.63	6/30	NIL	NIL	YES			
1979	1873	Warner Music Group Corp.	WMG	25.21	- 4 -	NMF	25- 40	(N- 60%)	NMF	2.1	.24	.52	53	3/31	d.05	d.28	9/30	.13	NIL	YES					
	1170	Washington Federal	(NDQ) WFSL	22.32	5	1	3	.85	25- 35	(10- 55%)	13.4	3.7	1.67	.82	87	6/30	.40	.39	9/30	▲.205	.20	YES			
	861	Washington Group Int'l	(NDQ) WGII	53.30	3	3	3	.90	60- 85	(15- 80%)	20.5	NIL	2.60	NIL	19	3/31	.62	.60	6/30	NIL	NIL	YES			
	1171	Washington Mutual	WM	45.73	3	2	3	1.00	50- 65	(10- 40%)	11.6	4.7	3.95	2.14	87	6/30	.38	.95	9/30	▲.52	.48	YES			
	1918	Washington Post	WPO	760.99	3	1	3	.70	1130-1380	(50- 80%)	21.1	1.0	36.00	7.80	83	3/31	7.95	6.87	9/30	1.95	1.85	YES			
358	1197	Washington R.E.I.T.	WRE	37.70	4	2	3	.80	30- 40	(N- 5%)	37.0	4.4	1.02	1.66	93	6/30	.23	.21	6/30	▲.413	.403	YES			
	358	Waste Connections	WCN	35.92	4	3	2	.95	45- 70	(25- 95%)	20.0	NIL	1.80	NIL	16	6/30	▲.45	.45	6/30	NIL	NIL	YES			
	359	Waste Management	WMI	34.54	1	3	2	.95	40- 55	(15- 60%)	20.1	2.5	1.72	.88	16	3/31	.35	.26	6/30	.22	.20	YES			
	154	Waters Corp.	WAT	40.59	2	3	2	1.05	65- 95	(60-135%)	19.3	NIL	2.10	NIL	44	6/30	▲.48	.46	6/30	NIL	NIL	YES			
	882	Watsco, Inc.	WSO	43.50	3	3	3	.90	60- 95	(40-120%)	14.3	2.3	3.05	1.00	22	6/30	1.03	.81	9/30	.25	.14	YES			
1979	1287	Watson Pharm.	WPI	22.00	4	3	4	.85	45- 65	(105-195%)	17.6	NIL	1.25	NIL	47	3/31	.23	.32	6/30	NIL	NIL	YES			
	1373	Watts Water Techn.	WTS	28.62	3	3	2	.90	45- 65	(55-125%)	14.0	1.4	2.05	.40	23	3/31	.46	.37	6/30	.09	.08	YES			
	919	Wausau Paper	WPP	11.73	3	3	3	1.20	19- 30	(60-155%)	43.4	2.9	.27	.34	75	6/30	▲.07	.07	9/30	.085	.085	YES			
	1959	Weatherford Int'l	WFT	46.87	1	3	3	1.15	50- 75	(5- 60%)	19.1	NIL	2.45	NIL	6	6/30	.53	.33	6/30	NIL	NIL	YES			
	1455	WebEx Communic.	(NDQ) WEBX	32.45	2	4	1	1.20	45- 70	(40-115%)	34.2	NIL	.95	NIL	26	6/30	▲.22	.29	6/30	NIL	NIL	YES			
1148	1456	webMethods, Inc.	(NDQ) WEBM	6.70	3	4	3	1.65	12- 20	(80-200%)	NMF	NIL	d.04	NIL	26	3/31	.15	d.01	6/30	NIL	NIL	YES			
	1457	WebSense Inc.	(NDQ) WBSN	18.47	▼ 4	3	4	1.55	40- 60	(115-225%)	26.4	NIL	.70	NIL	26	6/30	▲.17	.18	6/30	NIL	NIL	YES			
	2126	Webster Fin'l	WBS	47.58	4	3	3	.90	45- 65	(N- 35%)	13.8	2.3	3.45	1.08	56	6/30	▲.84	.88	6/30	.27	.25	YES			
	1769	Weight Watchers	WTW	40.00	3	3	3	.95	65-100	(65-150%)	18.6	1.8	2.15	.70	55	3/31	.56	.50	9/30	.175	.14	YES			
	1198	Weingarten Realty	WRI	39.74	4	2	3	.75	40- 50	(N- 25%)	24.8	4.8	1.60	1.89	93	3/31	.38	.38	6/30	.465	.44	YES			
1523	507	Weis Markets	WMK	39.49	4	1	3	.80	40- 50	(N- 25%)	17.6	3.0	2.25	1.18	60	6/30	.57	.54	9/30	.29	.28	YES			
	507	Wellman Inc.	WLM	3.39	5	5	3	1.05	11- 20	(225-490%)	NMF	5.9	d.15	.20	45	6/30	▲d.48	d.82	6/30	.05	.05	YES			
	654	WellPoint, Inc.	WLP	77.62	3	3	3	.80	120-175	(55-125%)	16.9	NIL	4.60	NIL	72	6/30	▲1.17	1.00	6/30	NIL	NIL	YES			
	2127	Wells Fargo	WFC	70.86	2	1	3	.85	100-120	(40- 70%)	14.2	3.2	5.00	2.24	56	6/30	1.23	1.12	9/30	▲.56	.52	YES			
	322	Wendy's Int'l	WEN	60.00	4	2	3	.75	55- 75	(N- 25%)	26.1	1.1	2.30	.68	80	3/31	.44	.45	6/30	.17	.135	YES			
394	273	Werner Enterprises	(NDQ) WERN	17.66	3	3	3	1.10	20- 30	(15- 70%)	13.1	1.0	1.35	.18	5	6/30	.35	.31	9/30	▲.045	.04	YES			
	745	West Corp.	(NDQ) WSTC	47.77	- 3 -	3	-	1.05	55- 85	(15- 80%)	20.8	NIL	2.30	NIL	35	6/30	▲.52	.53	6/30	NIL	NIL	YES			
	1770	West Marine	(NDQ) WMAR	12.55	4	3	2	1.45	14- 20	(10- 60%)	62.8	NIL	.20	NIL	55	3/31	d.44	d.26	6/30	NIL	NIL	YES			
	241	West Pharm. Svcs.	WST	38.16	2	3	3	.75	30- 50	(N- 30%)	20.6	1.3	1.85	.48	67	3/31	.54	.41	9/30	.12	.12	YES			
	716	Westar Energy	WR	23.36	2	2	3	.95	20- 25	(N- 5%)	14.2	4.4	1.65	1.02	82	3/31	.30	.18	9/30	.25	.23	YES			
817	1128	Western Digital	WDC	16.85	2	4	3	1.80	20- 35	(20-110%)	9.7	NIL	1.73	NIL	43	3/31	.45	.32	6/30	NIL	NIL	YES			
	455	Western Gas Res.	WGR	60.59	- 3 -	1	-	1.10	35- 55	(N- N%)	20.2	0.5	3.00	.31	51	3/31	.81	.26	9/30	.075	.05	YES			
	1874	Westwood One	WON	6.74	5	3	5	1.10	18- 25	(165-270%)	13.5	5.9	.50	.40	53	3/31	d.04	.17	6/30	.10	.10	YES			
	1771	Wet Seal 'A'	(NDQ) WTSLSA	4.60	3	5	1	1.30	8- 12	(75-160%)	13.1	NIL	.35	NIL	55	4/30	d.22	d.09	6/30	NIL	NIL	YES			
	920	Weyerhaeuser Co.	WY	58.50	4	3	4	1.15	80-120	(35-105%)	16.0	4.1	3.65	2.40	75	6/30	▲1.26	1.34	9/30	▲.60	.50	YES			
124	124	Whirlpool Corp.	WHR	78.24	3	3	2	1																	

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♦ New figure this week.
(b) Canadian Funds.
d Deficit.

- (f) The estimate may reflect a probable increase or decrease.
If a dividend boost or cut is possible but not probable,
two figures are shown, the first is the more likely.
(g) Dividends subject to foreign withholding tax for U.S. residents.

- (h) Est'd Earnings & Est'd Dividends after conversion to U.S.
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(p) 6 months (q) Asset Value
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Asymmetric Stock Market Volatility and the Cyclical Behavior of Expected Returns*

Antonio Mele
London School of Economics

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Abstract

Recent explanations of aggregate stock market fluctuations suggest that countercyclical stock market volatility is consistent with rational asset evaluations. In this paper, I develop a framework to study the causes of countercyclical stock market volatility. I find that countercyclical risk premia do not imply countercyclical return volatility. Rather, countercyclical stock volatility occurs if risk premia increase more in bad times than they decrease in good times, thereby inducing price-dividend ratios to fluctuate more in bad times than in good. The business cycle asymmetry in the investors' attitude towards discounting future cash-flows plays a novel and critical role in many rational explanations of asset price fluctuations.

JEL classification: G12

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1 Introduction

Why does stock market volatility vary over time? Economists have been intrigued by this issue for decades. For example, Schwert (1989a) finds that the *volatility* of no single macroeconomic variable could help explain low frequency movements of aggregate stock market volatility. Yet stock market volatility *is* related to the business cycle. Indeed, a number of empirical studies confirm Schwert's (1989a and 1989b) further findings that the volatility of stock returns is higher in bad times than in good times (see, e.g., Brandt and Kang, 2004, and the additional evidence provided here). This paper addresses an important but still unanswered question: Why is stock market volatility asymmetric over the business cycle?

My central result is that in economies with rational expectations, return volatility is countercyclical because risk premia (i.e. the compensation investors require to invest in the stock market) change *asymmetrically* in response to variations in economic conditions. That risk premia are countercyclical has been a widely known empirical fact since the seminal contributions of Fama and French (1989) and Ferson and Harvey (1991). However, the main message of this paper is not a simple statement that risk premia must be countercyclical to generate countercyclical return volatility. Rather, the crucial point is that to induce countercyclical return volatility, risk premia must increase more in bad times than they decrease in good times, a new hypothesis which I support with substantial empirical evidence.

So why do asymmetric risk premia fluctuations translate into countercyclical return volatility? Consider Figure 1, in which I assume that the investors' risk-adjusted discount rates are inversely and asymmetrically related to some variable y that tracks the state of the economy. This asymmetry implies that in good times investors do not significantly alter the discount rates used to evaluate future dividends. Consequently, price-dividend ratios do not fluctuate widely in good times. In bad times, however, the investors' discount rates are extremely sensitive to changes in economic conditions. Therefore, variations in the price-dividend ratios become increasingly volatile as economic conditions deteriorate. The main result of this paper is that these asymmetric movements of the price-dividend ratios occur when the asymmetry in discounting is *sufficiently* pronounced. Precisely, I calculate a theoretical lower bound for the asymmetric movements of the risk premia that triggers the previous asymmetric variations in the price-dividend ratios. This bound can be tight: for example, economies exist in which risk premia are countercyclical but do not satisfy this bound, and consequently induce price-dividend ratios to fluctuate more in good times than in bad.

Naturally, countercyclical return volatility may also emerge because the volatility of the state variables in the economy is inherently countercyclical. Alternatively, the conditions developed here

highlight the mechanism through which countercyclical return volatility is endogenously induced by rational fluctuations of the price-dividend ratio. Moreover, empirical evidence suggests that price-dividend ratios exhibit the pattern predicted in this paper. I find that over the last fifty years, price-dividend ratios movements in the US have been asymmetric over the business cycle: downward changes occurring in recessions have been far more severe than upward changes during expansions.

In the economy I study, dividend growth is independent and identically distributed, while interest rates and risk premia are driven by a state variable that is interpreted as an index of the state of the economy. This economy is rich enough to include many model examples in the literature. The distinctive feature of this article is the way I deal with interest rates and risk premia. The standard approach is to link interest rates and risk premia to markets, preferences and technology (e.g., Basak and Cuoco, 1998; Campbell and Cochrane, 1999; Jermann, 2005), or in general to make use of higher level assumptions about the exact relations among interest rates, risk premia and the primitives of the economy (e.g., Brennan, Wang, and Xia, 2004; Lettau and Wachter, 2005).

In this paper, I take an opposite approach. Rather than making assumptions on interest rates and risk premia, I look for pricing kernels that make return volatility countercyclical. It is this search process that leads to the predictions summarized in Figure 1. One additional contribution of the paper is to use these new predictions to understand when, why and how models with time-varying discount rates may predict countercyclical volatility. For example, in a seminal contribution Campbell and Cochrane (1999) find that models with external habit formation might lead to countercyclical volatility. This paper explains the rationale behind this important result. At the same time, the predictions developed here go well beyond the case of habit formation.

Countercyclical stock volatility is an empirical observation related to the so-called feedback effect - the effect by which asset returns and return volatility are negatively correlated. Indeed, this paper shows that a pronounced asymmetric behavior of the risk premia leads return volatility to be higher in bad times (when ex-post returns are low) than in good (when ex-post returns are high). Moreover, the asymmetric behavior of the risk premia may help explain why return volatility increases after prices fall. According to the explanations summarized in Figure 1, return volatility increases precisely after a price drop, i.e. when the price-dividend ratios enter the volatile region in Figure 1.

Campbell and Hentschel (1992) develop the first partial equilibrium explanation for the feedback effect. But, their explanation relies on a different channel. In the Campbell and Hentschel economy, the negative correlation between return volatility and returns arises through the combination of two inextricable effects: first, risk premia rise (and hence prices fall) with the volatility of dividend news; second, return volatility increases with the volatility of dividend news. Thus, in the Campbell and Hentschel economy the feedback effect arises because (i) there is fluctuating economic uncertainty

(i.e. dividend volatility is random), and (ii) investors fear this uncertainty.

Wu (2001), Bansal and Yaron (2004) and Tauchen (2005) reconsider this channel of fluctuating economic uncertainty. Bansal and Yaron, and Tauchen, show that in general equilibrium, investors with a preference for early resolution of uncertainty require compensation for economic uncertainty, thereby inducing negative co-movements between ex-post returns and return volatility. This explanation of the feedback effect is not inconsistent with my explanation based on an asymmetric behavior of the risk premia. In fact, the last contribution of this paper is an extension of my previous analysis to economies in which the fundamentals are surrounded by fluctuating uncertainty.

I consider two sources of volatility for the fundamentals of the economy. One is related to uncertain consumption growth volatility while the other, suggested by Tauchen (2005), relates to higher order uncertainty about consumption growth (the “volatility of volatility”). I show when and how the risk premia for these sources of uncertainty make prices fall after a rise in economic uncertainty. I provide a new role for the price-dividend ratio. For example, the relation between prices and the volatility of volatility is not uniquely tied down by the level of the volatility risk premia. It also depends on how asymmetrically the price-dividend ratio reacts to changes in consumption growth volatility. Moreover, I show that if investors have a preference for early resolution of uncertainty, an increase in the economic uncertainty can actually lower the risk-free rate, thereby producing a positive relation between asset prices and economic uncertainty. In particular, I show that the feedback effect arises when the volatility of volatility is not too responsive to changes in volatility, thereby dampening the effects associated with the preference for early resolution of uncertainty. I use these novel insights to shed new light on previous models of fluctuating economic uncertainty.

The main scope of this paper is to isolate the business cycle determinants of return volatility. Its focus is on channels of asymmetric volatility that are markedly distinct from the “leverage effects” - the effects by which an increase in the debt/equity ratio boosts firms’ volatility. Instead, the general equilibrium analysis of leverage effects is in Aydemir, Gallmeyer, and Hollifield (2005), who conclude that these effects have marginal quantitative implications at the market level.

The paper is organized as follows. In the next section, I develop the core analysis. Section 3 hinges upon this analysis and provides examples of economies with countercyclical stock volatility. It also contains a calibration experiment to illustrate the key quantitative implications of the paper. Section 4 develops extensions and identifies conditions under which fluctuating economic uncertainty induces asset returns and volatility to co-move negatively. Section 5 concludes. The appendix contains technical details and proofs.

2 The dynamics of volatility under general no-arbitrage restrictions

This section develops the main result of the paper. In Section 2.1, I describe the economic environment. In Sections 2.2 and 2.3, I present and discuss general test conditions under which the volatility of asset returns is countercyclical.

2.1 The economy

I consider a pure exchange, frictionless economy endowed with a single consumption good. Let the process $\{D_t\}_{t \geq 0}$ be the instantaneous rate of consumption. I assume that consumption equals the dividends paid by a long-lived asset. Accordingly, the terms “consumption” and “dividends” are used interchangeably. Let $\{y_t\}_{t \geq 0}$ be an additional state variable. I assume that (D_t, y_t) forms a diffusion process. A long-lived asset is an asset which promises to pay $\{D_t\}_{t \geq 0}$. Let $\{P_t\}_{t \geq 0}$ be the corresponding asset price process. As is well-known, the absence of arbitrage opportunities implies that there exists a positive pricing kernel $\{\xi_t\}_{t \geq 0}$ such that

$$P_t \xi_t = E_t \left[\int_t^\infty \xi_s D_s ds \right], \quad t \geq 0, \quad (1)$$

where $E_t[\cdot]$ denotes the expectation operator conditional on the information available at time t .¹ Bubbles are not considered in this paper. Moreover, I assume that the total consumption endowment D_t is generated by a geometric Brownian motion

$$\frac{dD_t}{D_t} = g_0 dt + \sigma_0 dW_{1t}, \quad (2)$$

where W_1 is a standard Brownian motion and g_0 and σ_0 are positive constants. Finally, the state variable y_t is a stationary process. It solves

$$dy_t = m(y_t) dt + v_1(y_t) dW_{1t} + v_2(y_t) dW_{2t}, \quad (3)$$

where W_2 is another independent standard Brownian motion, and m, v_1 and v_2 ($v_i > 0$, $i = 1, 2$) are given functions that guarantee a strong solution to the previous equation. It is well-known (e.g., Duffie, 2001) that in this environment the pricing kernel ξ_t in Eq. (1) is the solution to

$$\frac{d\xi_t}{\xi_t} = -R_t dt - \lambda_{1t} dW_{1t} - \lambda_{2t} dW_{2t}, \quad (4)$$

¹The conditional expectation in Eq. (1) is taken with respect to the filtration generated by the Brownian motions driving the dynamics of (D_t, y_t) (see Eqs. (2) and (3) below), augmented by the null sets. Proposition 1 shows that under Assumption 1 stated below, the relevant conditioning information at time t is the state (D_t, y_t) at time t .

for some processes R_t and λ_{it} . The economic interpretation of R and λ_i is also standard. In Eq. (4), R is the instantaneous interest rate and $\lambda = [\lambda_1 \ \lambda_2]^\top$ is the vector of unit prices of risk related to the sources of risk W_1 and W_2 . I now formulate the main assumption in this paper.

Assumption 1 (Scale-invariant economies). The instantaneous interest rate R , and the unit prices of risk λ_i are functions of the state variable y only. That is, $R_t = R(y_t)$ and $\lambda_{it} = \lambda_i(y_t)$, where the functions $R(y)$, $\lambda_1(y)$ and $\lambda_2(y)$ are twice continuously differentiable.

Assumption 1 guarantees that the price-dividend ratio P_t/D_t is a function p of the state variable y_t only,

$$\frac{P_t}{D_t} = p(y_t),$$

whence the “scale-invariant” terminology. In many existing models, y_t is a variable related to the general state of the economy, i.e. an “expansion” state variable summarizing the business cycle conditions (see Section 3). This is also the interpretation of y_t here. Accordingly, I will refer to the state variable y_t as the state of the economy and to any variable positively (negatively) correlated with y_t as procyclical (countercyclical).

Which properties of the price-dividend ratio p are we looking for in this model? As explained in the introduction, we want that the price-dividend ratio p react asymmetrically to changes in y_t . Precisely, we want that the price-dividend ratio decrease more in bad times (when y_t is low) than it increase in good times (when y_t is high). A key observation at this juncture is that to satisfy this property, the price-dividend ratio must be increasing and *concave* in y_t , as Figure 1 suggests.

To formalize this intuition, let $p'(y) \equiv \frac{d}{dy}p(y)$ and $p''(y) \equiv \frac{d^2}{dy^2}p(y)$ denote the first and second order derivatives of the price-dividend ratio with respect to y , and consider the standard pricing equation $0 = \xi_t D_t dt + E_t[d(\xi_t P_t)]$. Under regularity conditions,² an application of Itô’s lemma to the definition of returns $(\frac{dP_t + D_t dt}{P_t})$ yields

$$\text{Returns}_t = \mathcal{E}(y_t) dt + \text{Vol}_1(y_t) dW_{1t} + \text{Vol}_2(y_t) dW_{2t}, \quad (5)$$

where

$$\mathcal{E}(y) = \text{Expected returns} = R(y) + \beta_{\text{CF}} \lambda_1(y) + \beta_{\text{P/D}}(y) \cdot \lambda(y) \quad (6)$$

$$\text{Vol}(y) = [\text{Vol}_1(y) \ \text{Vol}_2(y)] = \text{Return volatility} = \left[\beta_{\text{CF}} + \beta_{\text{P/D},1}(y) \ \beta_{\text{P/D},2}(y) \right] \quad (7)$$

²The basic regularity conditions in this paper are that the price-dividend ratio p is indeed twice differentiable, and that it and its derivatives admit the Feynman-Kac representation. See Mele (2003, 2005) for technical details and references related to the feasibility of these conditions in both finite and infinite horizon settings.

and the two components of $\beta_{P/D}$ (i.e. $\beta_{P/D,1}$, $\beta_{P/D,2}$) and β_{CF} are given by

$$\beta_{P/D,i}(y) = v_i(y) \frac{p'(y)}{p(y)}, \quad i = 1, 2; \quad \text{and} \quad \beta_{CF} = \sigma_0.$$

For reasons developed below, it is also important to analyze the determinants of the price-dividend ratio volatility. By another application of Itô's lemma, we have that

$$dp(y_t) = E_t[dp(y_t)] + \text{Vol}_1^p(y_t) dW_{1t} + \text{Vol}_2^p(y_t) dW_{2t},$$

where

$$\text{Vol}^p(y) = [\text{Vol}_1^p(y) \quad \text{Vol}_2^p(y)] = \text{Price-dividend ratio volatility} = [v_1(y) \quad v_2(y)] \cdot p'(y). \quad (8)$$

As is clear, return volatility in Eq. (7) is affected by the two volatility components $v_i(y_t)$ of y_t (which are exogenous), and by the term $\frac{p'(y_t)}{p(y_t)}$ (which is endogenous). The endogenous term $\frac{p'(y_t)}{p(y_t)}$ is the *price-induced* component of return volatility. It is decreasing in y_t , and thus countercyclical, whenever the price-dividend ratio p is increasing and concave in y_t , i.e. $p'(y_t) > 0$ and $p''(y_t) \leq 0$. The intuition here is that asymmetric fluctuations in the price-dividend ratio induce return volatility to increase on the downside. However, because the price-dividend ratio is endogenous, not all possible primitives in the economy lead to this asymmetry. We therefore need to figure out the “right” primitives (m , v_1 and v_2), interest rates and risk premia that do create the desired asymmetric pattern.

The following definition summarizes the key features needed from the price-dividend ratio to induce asymmetric movements in return volatility.

Definition 1 (Asymmetric return volatility). *Return volatility is asymmetric if the two volatility components of $\text{Vol}(y) = [\text{Vol}_1(y) \quad \text{Vol}_2(y)]$ in Eq. (7) are countercyclical, i.e. if $\text{Vol}_i(y)$ is decreasing in y for $i = 1, 2$. Moreover:*

- a) *The price-induced component of return volatility in Eq. (7) is asymmetric if the price-elasticity $E_p(y) \equiv \frac{p'(y)}{p(y)}$ is countercyclical, i.e. if $E_p(y)$ is decreasing in y .*
- b) *The price-induced component of the price-dividend ratio volatility in Eq. (8) is asymmetric if the price-sensitivity $S_p(y) \equiv p'(y)$ is countercyclical, i.e. if $S_p(y)$ is decreasing in y .*

Eq. (7) shows that return volatility is asymmetric if the “price-dividend betas” $\beta_{P/D,i}(y_t) = \frac{p'(y_t)}{p(y_t)} v_i(y_t)$ are countercyclical. This property occurs if the volatilities of y_t , $v_i(y_t)$, and the price-elasticity $E_p(y_t)$ are both countercyclical. Since the volatilities $v_i(y_t)$ are exogenous, they play a

relatively straightforward role in this paper. The more ambitious purpose here is to focus on channels of asymmetric volatility arising through no-arbitrage, countercyclical movements of the price-elasticity and the price-sensitivity.³

The condition that the price-sensitivity $S_p(y_t)$ be countercyclical is important for at least two reasons. First, there is strong evidence in the US that the price-dividend ratios decrease more in bad times (during recessions) than they increase in good times (during expansions) (see Section 3.3). A satisfactory explanation of asymmetric volatility must be consistent with this important empirical regularity. Second, the empirical evidence in this paper suggests that variations in the *level* of the price-dividend ratios display countercyclical volatility in the US. Both of these empirical regularities can be made consistent with rational asset evaluation if the price-sensitivity $S_p(y_t)$ is countercyclical.

2.2 The cyclical properties of price-dividend ratios and return volatility

I now proceed to state the main result of the paper. To prepare the discussion of this result, it is useful to introduce two fundamental concepts. First, let us define

$$\bar{m}(y_t) = m(y_t) - \sum_{i=1}^2 \lambda_i(y_t) v_i(y_t) + \sigma_0 v_1(y_t). \quad (9)$$

In short, $\bar{m}(y_t)$ equals the risk-adjusted drift $\frac{d}{dt} \mathbb{E}_t(y_\tau) \big|_{\tau=t} = m(y_t) - \sum_{i=1}^2 \lambda_i(y_t) v_i(y_t)$, plus the instantaneous covariance between dividend growth $\frac{dD_t}{D_t}$ and changes in the state dy_t , i.e. $\text{cov}_t\left(\frac{dD_t}{D_t}, dy_t\right) \equiv \frac{d}{dt} E_t \left[\left(\frac{D_\tau - D_t}{D_t} \right) (y_\tau - y_t) \right] \bigg|_{\tau=t} = \sigma_0 v_1(y_t)$. The conditional expectation $\mathbb{E}_t(\cdot)$ is taken under the risk-neutral probability, defined through the standard risk-neutral evaluation equation $\mathbb{E}_t(dP_t) + D_t dt = R_t P_t dt$. Note that I am not assuming that the risk-neutral probability is unique in the model. Rather, I am looking for pricing kernels (and, hence, risk-neutral probabilities) that make return volatility asymmetric.

The second important definition relates to the expected returns in Eq. (6), which I decompose as

$$\mathcal{E}(y) = \text{Disc}(y) + \beta_{P/D}(y) \cdot \lambda(y),$$

where

$$\text{Disc}(y) = R(y) + \beta_{CF} \lambda_1(y) \quad (10)$$

are the discount rates adjusted for cash-flow risk (concisely, the “risk-adjusted discount rates”), and $\beta_{P/D}(y) \cdot \lambda(y)$ is the additional compensation for the risk of fluctuations in the price-dividend ratio.

³The price-elasticity $E_p(y)$ in Definition 1a parallels the notion of relative basis risk for a discount bond introduced by Cox, Ingersoll and Ross (1979, p. 56). I refer to $E_p(y)$ as “elasticity” rather than “semi-elasticity” to simplify the exposition.

Note that both $\lambda_1(y)$ and the cash-flow beta β_{CF} are exogenous in this model. Therefore, the discount rates $\text{Disc}(y)$ are also exogenous. In contrast, the vector of price-dividend betas $\beta_{P/D}(y)$ is endogenous as it depends on the properties of the price-dividend ratio.

The following proposition isolates the key properties of the price-dividend ratio along with their implications on the volatility components in Definition 1.

Proposition 1. *Let the endowment process be as in Eq. (2), interest rates and unit-risk premia be as in Assumption 1, and $\{y_t\}_{t \geq 0}$ be the solution to Eq. (3). Then, the price P_t is such that $P_t = D_t \cdot p(y_t)$, where p is a positive function satisfying the following properties:*

a) *Suppose that the risk-adjusted discount rates $\text{Disc}(y)$ are countercyclical, i.e. $\frac{d}{dy}\text{Disc}(y) < 0$. Then, the price-dividend ratio is procyclical, i.e. $\frac{d}{dy}p(y) > 0$. Moreover, suppose that:*

a.1) $\frac{d^2}{dy^2}\text{Disc}(y) > 0$ (Asymmetric discount rates);

a.2) $\mathcal{A}(y) \equiv \frac{d^2}{dy^2}\bar{m}(y) - 2\frac{d}{dy}\text{Disc}(y) < 0$ (Asymmetric expectations).

Then, the price-dividend ratio reacts asymmetrically to variations in the state of the economy, i.e. it is concave in y : $\frac{d^2}{dy^2}p(y) < 0$. Consequently, (i) the price-induced components of volatility in Definition 1 are asymmetric and (ii) the return volatility $\text{Vol}(y)$ in Eq. (7) is countercyclical for all values of the state y on which the volatilities of the state $v_i(y)$ are not increasing.

b) *Suppose that $y \in (\underline{y}, \bar{y})$ for two constants $\underline{y}$ and $\bar{y}$, and assume that one of the two following conditions holds true: (i) $\lim_{y \rightarrow \underline{y}} \text{Disc}(y) = \infty$ (Large discounting); (ii) the risk-adjusted discount rates $\text{Disc}(y)$ are bounded and decreasing in y for all $y \in (\underline{y}, \bar{y})$, but $\lim_{y \rightarrow \underline{y}} \frac{d}{dy}\text{Disc}(y) = -\infty$ (Large asymmetry in discounting). Then, under the technical regularity conditions in the appendix (conditions H1), there exists a threshold level of the state $y^* > \underline{y}$ such that the conclusions of the previous part hold true for all $y \in (\underline{y}, y^*)$.*

Conversely, suppose that the discount rates $\text{Disc}(y)$ are countercyclical and that the price-induced components of volatility in Definition 1 are asymmetric. Then, either condition a.1 or condition a.2, or both, hold on some range of the state y having strictly positive probability.

Proposition 1 identifies necessary and sufficient conditions leading to asymmetric volatility through countercyclical movements of the price-elasticity $E_p(y_t)$ and the price-sensitivity $S_p(y_t)$. In Section 3.3, I produce a calibration experiment to assess the extent to which these conditions are consistent with the empirical evidence on risk premia and the price-dividend ratios in the US. I now develop the economic interpretation of the conditions in Proposition 1.

2.3 Discussion

Proposition 1 imposes joint restrictions on the price-dividend ratio, the law of motion for the state variable y_t (i.e. on m , v_1 , and v_2) and the risk-adjusted discount rates $\text{Disc}(y_t)$ introduced in Eq. (10). The first restriction in Part a) formalizes a well-known concept. If risk-adjusted discount rates are countercyclical, price-dividend ratios are procyclical. For example, suppose that investors become more risk-averse during recessions. Then, in bad times investors discount future cash flows more heavily, thereby driving price-dividend ratios down.

Proposition 1a isolates the conditions under which the price-dividend ratio reacts *asymmetrically* to changes in the state of the economy. It imposes two basic conditions. The first condition, a.1, requires that the discount rates increase more in bad times than they decrease in good times. The economic intuition underlying this condition has been developed in the introduction (see Figure 1). While somewhat technical, the second condition, a.2, is also economically important. Consider the evaluation formula in Eq. (1). Under the risk-neutral probability,

$$\begin{aligned} \frac{P_0}{D} &= \mathbb{E} \left[\int_0^\infty e^{-\int_0^t R(y_u) du} \frac{D_t}{D} dt \middle| y_0 = y \right] \\ &= \mathbb{E} \left[\int_0^\infty e^{-\int_0^t R(y_u) du} \cdot e^{(g_0 - \frac{1}{2}\sigma_0^2)t - \int_0^t \sigma_0 \lambda_1(y_u) du + \sigma_0 \hat{W}_{1,t}} dt \middle| y_0 = y \right], \end{aligned} \quad (11)$$

where the second equality follows by applying Itô's lemma to Eq. (2), $\hat{W}_1$ is a standard Brownian motion under the risk-neutral probability Q (say), and the risk-adjustment term $\int_0^t \sigma_0 \lambda_1(y_u) du$ arises as the conditional expectation $\mathbb{E}[\cdot | y_0 = y]$ is taken under the risk-neutral probability.⁴ By replacing the definition of $\text{Disc}(y) \equiv R(y) + \sigma_0 \lambda_1(y)$ in Eq. (10) into the previous equation, we can rewrite the price-dividend ratio $\frac{P_0}{D} = p(y)$ as follows,

$$p(y) = \mathbb{E} \left[\int_0^\infty \frac{D_t^*}{D} \cdot e^{-\int_0^t \text{Disc}(y_u) du} dt \middle| y_0 = y \right], \quad \frac{D_t^*}{D} \equiv e^{(g_0 - \frac{1}{2}\sigma_0^2)t + \sigma_0 \hat{W}_{1,t}}. \quad (12)$$

Eq. (12) is a present value formula in which a fictitious risk-unadjusted dividend growth $\frac{D_t^*}{D}$ is discounted using the *risk-adjusted* rates $\text{Disc}(y)$. According to Eq. (12), changes in prices reflect the investors' risk-adjusted expectation about the future state of the economy, and hence, the discount rates to prevail in the future. In addition, the future state of the economy is correlated with dividend growth. Therefore, changes in prices should also factor in the covariance between dividend growth and changes in the state of the economy, $\text{cov}_t \left(\frac{dD_t}{D_t}, dy_t \right)$.

⁴Proposition 1 states that the price-dividend ratio is a function of the current value of the state y only. Thus, $y_0 = y$ is the relevant conditioning information for the expectation in Eq. (11).

Condition a.2 in Proposition 1a formalizes the intuition that the price-dividend ratio in (12) is affected by the risk-neutral *expectation* of the state *and* the covariance between dividend growth and changes in the state. Indeed, let us recall the definition of $\mathcal{A}(y)$ in condition a.2,

$$\mathcal{A}(y) = \frac{d^2}{dy^2} \bar{m}(y) - 2 \frac{d}{dy} \text{Disc}(y).$$

By definition, $\bar{m}(y_t)$ is the sum of the risk-adjusted expectation of the instantaneous changes in y_t , $\frac{d}{dt} \mathbb{E}_t(y_\tau) \big|_{\tau=t}$, and the covariance $\text{cov}_t \left(\frac{dD_t}{D_t}, dy_t \right)$ (see Eq. (9)). Thus, $\bar{m}(y)$ summarizes the expectation about changes in the state of the economy *and* the co-movements of the state with dividend growth. The function $\bar{m}(y)$ can also be interpreted as follows. Let us rewrite the expectation in Eq. (12) as

$$p(y) = \bar{\mathbb{E}} \left[\int_0^\infty e^{g_0 t - \int_0^t \text{Disc}(y_u) du} dt \middle| y_0 = y \right], \quad (13)$$

where $\bar{\mathbb{E}}[\cdot]$ is the conditional expectation taken under a new probability $\bar{Q}$ defined by the Radon-Nikodym derivative $d\bar{Q}/dQ = \exp(-\frac{1}{2}\sigma_0^2 t + \sigma_0 \hat{W}_{1t})$ (see Eq. (A.5) in the appendix for the derivation). Eq. (13) is still a present value formula, in which a fictitious *deterministic* dividend growth $e^{g_0 t}$ is discounted using the risk-adjusted rates $\text{Disc}(y)$, under $\bar{Q}$. Compared with the density of y under Q , the density of y under $\bar{Q}$ is right-shifted to reflect the positive covariance $\text{cov}_t \left(\frac{dD_t}{D_t}, dy_t \right)$. Then, $\bar{m}(y)$ is the drift of y under $\bar{Q}$, and condition a.2 is satisfied if $\bar{m}(y)$ is sufficiently concave, i.e. $\frac{d^2}{dy^2} \bar{m}(y) < 2 \frac{d}{dy} \text{Disc}(y) < 0$, where the last inequality follows by the proposition's assumption that the risk-adjusted discount rates are countercyclical.

What does this concavity mean economically? Figure 2 illustrates it. In Case a, the *expected* changes in y_t are more volatile in bad times; in Case b, the *expected* changes in y_t are volatile in both bad and good times. In both cases, the investors' expectation about their own future discount rates fluctuates more in bad times than in good times.⁵ These asymmetric *expectation* shifts amplify the asymmetric fluctuations of the *current* discount rates induced by condition a.1. Therefore, they accentuate the asymmetric behavior of the price-dividend ratio, and contribute to countercyclical variation in the price-induced components of volatility in Definition 1.

These expectation asymmetries take place under the probability $\bar{Q}$ in Eq. (13). Thus, they may arise for at least two reasons: (i) the expectation of the future state of the economy under the physical

⁵This statement is formally shown in the appendix (see Corollary 1). Intuitively, we have that in Case a, the volatile expectations of y_t in bad times translate to volatile *expectations* of future discount rates. In contrast, in Case b, the volatile expectations of y_t in good times do not translate to volatile expectations of future discount rates. This is because in good times, investors expect declining rates of growth in the economic activity y_t (see Case b, Figure 2) - hence they do not expect their discount rates to fall significantly in the future.

probability is inherently asymmetric; (ii) investors are risk-averse. To isolate the effects associated with risk-aversion, consider the extreme situation in which the expectation of the future state of the economy is not asymmetric at all, as in Case a of Figure 2 (the dashed line). To make the same expectation asymmetric under the probability $\bar{Q}$ (the solid line in Figure 2, Case a), investors should require a risk-aversion correction that is more pronounced in bad times than in good. In other words, condition a.2 imposes that the risk-aversion correction be sufficiently asymmetric to generate the drift distortion in Figure 2. In turn, this distortion alters the strength of mean-reversion of y_t in bad times. Precisely, it makes bad times more persistent than good times under the risk-neutral probability, thereby implying a slow decay rate for the price of Arrow-Debreu securities paying off in future bad states.

Finally, Part b) of Proposition 1 deals with the extreme situation in which the discount rates are large (or change quite asymmetrically) in bad times. Intuitively, this part of the proposition follows from Eq. (12). If bad times worsen, the proposition's conditions imply that investors raise their discount rates to the extent that the price-dividend ratio collapses to very low values. As a result, the price-elasticity $E_p(y_t)$ and sensitivity $S_p(y_t)$ increase in bad times. The next section shows that such an extreme asymmetry in discounting can occur in economies with external habit formation or restricted stock market participation.

3 Examples

Proposition 1 provides general insights into the cyclical determinants of stock return volatility. These same insights can be used to interpret the empirical success or failure of previous existing models of aggregate stock market fluctuations. In Sections 3.1 and 3.2, I use Proposition 1 to analyze and compare economies with external habit formation and economies with restricted stock market participation. In Section 3.3, I produce a calibration experiment to illustrate the quantitative content of the theory developed in this paper.

3.1 External habit formation

The following example contains a well-known model that can be analyzed with the tools introduced in this paper.

Example 1 (Campbell and Cochrane, 1999). Consider an infinite horizon economy in which a representative agent has discounted utility $e^{-\rho t} u(c, x) = e^{-\rho t} \frac{1}{1-\eta} [(c - x)^{1-\eta} - 1]$, where ρ is the subjective discount rate, c is consumption and x is the habit stock. Let $y_t \equiv (c_t - x_t)/c_t$ be the

“surplus consumption ratio”. By assumption, y_t is the solution to

$$dy_t = y_t \left[\kappa(\bar{y} - \log y_t) + \frac{1}{2} \sigma_0^2 l(y_t)^2 \right] dt + \sigma_0 y_t l(y_t) dW_{1t},$$

where $\kappa > 0$, $\bar{y} \in \mathbb{R}$, $l(y) = \frac{1}{\bar{Y}} \sqrt{1 + 2(\bar{y} - \log y)} - 1$, $y \in (0, \bar{Y} \cdot e^{\frac{1}{2}(1 - \bar{Y}^2)})$, and $\bar{Y} = \exp(\bar{y}) = \sigma_0 \sqrt{\eta/\kappa}$. In equilibrium, (i) $c_t = D_t$ for all t , (ii) the interest rate R is constant, and (iii) the unit risk premia are $\lambda_2(y) = 0$ and $\lambda_1(y) = \eta \sigma_0 [1 + l(y)]$.

Campbell and Cochrane identified the habit formation mechanics that lead to pricing kernel properties in line with empirical facts. The message of their model, however, is far more general. For example, Guvenen (2005) showed that models with restricted stock market participation have a reduced-form which is similar to the habit formation model of Campbell and Cochrane. (See, also, the similarities in Section 3.2 below.)

In the Campbell and Cochrane’s economy, return volatility is such that $\text{Vol}_2(y_t) = 0$ and $\text{Vol}(y_t) \equiv \text{Vol}_1(y_t)$, where, by Eq. (7),

$$\text{Vol}(y_t) = \sigma_0 [1 + E_p(y_t) y_t l(y_t)], \quad (14)$$

and $E_p(y_t)$ is the price-elasticity introduced in Definition 1. Campbell and Cochrane demonstrated numerically that in a discrete time version of Example 1, the return volatility in Eq. (14) is decreasing in the surplus consumption ratio, y_t . There are two reasons for this result.

First, in the empirically relevant range of variation, the volatility of the fundamentals, $\sigma_0 y_t l(y_t)$, is decreasing in y_t . Second, the price-dividend ratio collapses to zero as the surplus consumption ratio goes to zero. Note that the second effect arises through the channel identified by Proposition 1b. In the Campbell and Cochrane economy, the discount rates $\text{Disc}(y_t)$ react asymmetrically to changes in y_t . In particular, they become *large* and *infinitely convex* as the surplus ratio gets smaller (two properties labeled “large discounting” and “large asymmetry in discounting” in Proposition 1b). Therefore, even if the volatility of fundamentals $\sigma_0 y_t l(y_t)$ approaches zero as the surplus ratio approaches zero,⁶ the extremely high discounting in bad times makes the price-dividend ratio very small, thereby inducing the price-sensitivity $S_p(y_t)$ and the price-elasticity $E_p(y_t)$ to blow up. As a result, the return volatility, $\text{Vol}(y_t)$, is such that $\text{Vol}(y_t) > \sigma_0$ for small values of y_t .⁷

⁶As the surplus ratio y_t approaches zero, the surplus volatility $\sigma_0 y_t l(y_t)$ also approaches zero. This condition guarantees that y_t remains positive, a requirement consistent with the preferences specification underlying the habit formation mechanics.

⁷Wachter (2005) uses new numerical methods and shows in detail the concavity property that emerges by Proposition 1b. It is also possible to show that with the parameter values used by Campbell and Cochrane, condition a.2 in Proposition 1a is not satisfied, although the same condition is satisfied with different parameter values.

Do habit models always predict that price-dividend ratios change asymmetrically in response to variations of the surplus consumption ratio? Consider the following example.

Example 2. Assume that in the habit formation economy of Example 1, the representative agent has instantaneous utility $u(c_t, x_t) = \frac{1}{1-\eta}[(c_t - x_t)^{1-\eta} - 1]$, but that the surplus consumption ratio $y_t \equiv (c_t - x_t)/c_t$ is such that $G_t \equiv y_t^{-\gamma}$ is the solution to

$$dG_t = k(\bar{G} - G_t)dt - \alpha(G_t - l)\sigma_0 dW_{1t},$$

for some positive constants $k, \bar{G}, \alpha$ and l .

Example 2 generalizes two models in the literature: one, developed by Menzly, Santos, and Veronesi (2004) (MSV henceforth), in which the authors set $\gamma = \eta = 1$ (see, also, Buraschi and Jiltsov, 2006); the other, proposed by Santos and Veronesi (2006), in which $\gamma = \eta$. These parameter restrictions lead to closed-form solutions for the price-dividend ratio. For example, in the MSV economy, the price-dividend ratio for the aggregate consumption claim is linear in y . A natural question is: What happens in this economy if the preference parameters are such that $\gamma = 1$ (as in MSV), but the local utility curvature η is different from one? The answer can be obtained by applying the test conditions in Proposition 1a. It is summarized in Table 1.⁸

The economic intuition behind the restrictions in Table 1 stems from the asymmetric behavior of the risk-adjusted discount rates $\text{Disc}(y_t) = R(y_t) + \sigma_0 \lambda_1(y_t)$. In this economy, the interest rate $R(y)$ and the unit risk premia are such that $\lambda_2(y) = 0$, and

$$\begin{aligned} \lambda_1(y) &= \eta \sigma_0 [1 + (1 - ly)\alpha]; \quad \text{and} \\ R(y) &= \rho + \eta g_0 - \frac{1}{2} \sigma_0^2 \eta (\eta + 1) + \eta k (1 - \bar{G}y) - \eta^2 \sigma_0^2 \alpha (1 - ly) - \frac{1}{2} \eta (1 - ly)^2 \alpha^2 \sigma_0^2 (\eta - 1). \end{aligned} \quad (15)$$

While the risk premium $\lambda_1(y)$ is always decreasing and linear in the surplus consumption y_t , the asymmetric behavior of the discount rates $\text{Disc}(y)$ is affected by the local utility curvature η .

If $\eta = 1$, the discount rates $\text{Disc}(y)$ are decreasing and linear in y , i.e. they react *symmetrically* to changes in y_t . As a result, the price-dividend ratio is also increasing and linear in y_t . This property implies that the price-sensitivity $S_p(y_t) = p'(y_t)$ is constant, and that the price-elasticity $E_p(y_t) = \frac{p'(y_t)}{p(y_t)}$ is countercyclical, with the countercyclical effect arising through the “denominator”. In other words, the price-sensitivity $S_p(y_t)$ is not countercyclical and so the price-induced component of the price-dividend ratio volatility is symmetric.

⁸The derivation of the restrictions in Table 1 through Proposition 1a is available upon request from the author.

When is the price-sensitivity countercyclical? Proposition 1 identifies a precise condition: either the discount rates or the risk-adjusted expectations about the future state of the economy (or both) must behave asymmetrically over some range of y_t . In this economy, the discount rates $\text{Disc}(y)$ have the desired property if $\eta \in (0, 1)$. This result follows because of the last term in the expression for the interest rate R in Eq. (15). This term reflects precautionary motives which become less important as the utility curvature parameter η decreases. Precisely, if η is less than one, the interest rate is decreasing and convex in the surplus ratio, i.e. it fluctuates more in bad times than in good. According to the explanations given in the introduction (see Figure 1), this asymmetry translates to *countercyclical* variation in the price-sensitivity, under the additional condition in Table 1.⁹ This is precisely the prediction in the first row of Table 1.

The last row in Table 1 can be interpreted similarly: if the utility curvature parameter η is greater than one, the interest rate is decreasing and concave in y . This precautionary-induced asymmetry now makes the interest rate fluctuate more in good times than in bad, thereby leading to a *procyclical* variation in the price-sensitivity. Therefore, this model may or may not generate countercyclical variation in the price-sensitivity. According to Proposition 1a, this property crucially depends on the magnitude of the utility curvature η .

3.2 Restricted stock market participation

Countercyclical stock volatility may also arise in economies without habit formation. Consider the Basak and Cuoco (1998) model of restricted stock market participation. In this model, there are two agents. The first agent invests in the stock market and has an instantaneous utility function with constant relative risk-aversion equal to η . The second agent is prevented from investing in the stock market and has logarithmic preferences over consumption. The two agents have the same subjective discount rate ρ .

The marginal rate of substitution of the stock market participant is tied down to the pricing-kernel in Eq. (4) by the following relation,

$$\left(\frac{c_{p,t}}{c_{p,0}} \right)^{-\eta} = \kappa_p e^{\rho t} \xi_t, \quad (16)$$

where $c_{p,t}$ is his optimal consumption and κ_p is a constant. The marginal utility of the agent *not* participating in the stock market is $\left(\frac{c_{n,t}}{c_{n,0}} \right)^{-1} = \kappa_n e^{\rho t} e^{-\int_0^t R_s ds}$, where $c_{n,t}$ is his optimal consumption and κ_n is another constant. By expanding the left and right hand sides of Eq. (16), by identifying

⁹The additional condition in Table 1 follows by applying condition a.2 in Proposition 1a.

terms, and by using the market clearing condition $c_{p,t} = D_t - c_{n,t}$, one finds that $\lambda_2(y) = 0$ and

$$\lambda_1(y_t) = \eta \cdot \text{Vol} \left(\frac{dc_{p,t}}{c_{p,t}} \right) = \eta \cdot \sigma_0 \frac{1}{y_t},$$

where $y_t \equiv \frac{c_{p,t}}{D_t}$ is the market participant's consumption share, and $\text{Vol} \left(\frac{dc_{p,t}}{c_{p,t}} \right) = \sigma_0 \frac{1}{y_t}$ is the instantaneous standard deviation of the market participant's consumption growth in equilibrium.

Intuitively, in this economy the stock market participant (the "marginal investor") is bearing the entire macroeconomic risk. The risk premium he requires to invest in the stock market is large when his consumption share y_t is small. Moreover, the risk-adjusted discount rates $\text{Disc}(y_t) = R(y_t) + \sigma_0 \lambda_1(y_t)$ may display a similar property. Indeed, by Basak and Cuoco (1998, Corollary 1 p. 323),

$$R(y_t) = \rho + \frac{\eta g_0}{\eta - (\eta - 1)y_t} - \frac{1}{2} \eta (\eta + 1) \sigma_0^2 \frac{1}{\eta y_t - (\eta - 1)y_t^2}.$$

A simple computation reveals that if $\eta > 1$, the discount rates $\text{Disc}(y)$ are convex in y and $\lim_{y \rightarrow 0} \text{Disc}(y) = \infty$, as in the Campbell and Cochrane habit formation economy of Example 1. In this economy with restricted stock market participation, the investor's evaluation of future cash flows is quite asymmetric. According to Proposition 1b, this asymmetry makes the price-dividend ratio fluctuate more on the downside, thereby producing asymmetric return volatility. Thus, both the Campbell and Cochrane (1999) economy and the Basak and Cuoco (1998) economy have an interesting property that helps illustrate the point of this paper: that countercyclical return volatility is induced by a pronounced asymmetry in the investors' attitude to discounting future cash flows.

3.3 Quantitative implications

I perform a calibration experiment to illustrate the quantitative implications of the theory. Table 2 displays the empirical benchmark for the calibration, based on a sample of 660 monthly observations from January 1948 through December 2002. The table reports the average and standard deviation for the price-dividend ratio on the S&P Composite index (P/D henceforth), the monthly changes $P/D_{t+1} - P/D_t$, the percentage changes of the P/D, defined as $\log(\frac{P/D_{t+1}}{P/D_t})$, the continuously compounded (real) returns, the riskless interest rate (the real one-month Treasury bill rate), and the excess return volatility.¹⁰ I compute the excess return volatility as of month t through the Officer's (1973) moving standard deviation estimator, $\hat{\sigma}_t = \frac{1}{12} \sum_{i=1}^{12} |\text{Exc}_{t+1-i}|$, where Exc_t are the excess returns at month t . Then, I convert this volatility measure into $\widehat{\text{Vol}}_t \equiv \sqrt{\frac{\pi}{2}} \sqrt{12} \hat{\sigma}_t$. The $\sqrt{12}$ factor

¹⁰The data on the P/D ratio are obtained from Robert Shiller's website. The remaining data are from the CRSP database, with the exception of the seasonally adjusted Industrial Production, obtained from the FRED[®] database. Real returns and interest rates are obtained by deflating their nominal counterparts with the Consumer Price Index.

is used to annualize $\hat{\sigma}_t$; the $\sqrt{\frac{\pi}{2}}$ factor was suggested by Schwert (1989a, p. 1118) to correct a bias related to estimating the standard deviation through the absolute value of the excess returns.

Table 2 also reports descriptive statistics for the previous variables during NBER-dated expansions and recessions. Return volatility is clearly countercyclical, as is the volatility of the P/D changes. For example, the excess return volatility is 0.14 on average (annualized). It increases by 22% during recessions and decreases by 4% during expansions. The P/D is procyclical, but moves asymmetrically over the business cycle. According to the statistics in Table 2, the P/D is 32 on average, increases by 4% during expansions and decreases by 18% during recessions. The volatility of the P/D changes is also asymmetric. It is 4.48 on average, increases by 26% during recessions and decreases by 7% during expansions. Finally, the absolute value of the average of both the P/D changes and the P/D percentage changes is nearly twice as severe during recessions than expansions.

The main point of this paper is that these properties can be explained by the asymmetric behavior of the risk premia over the business cycle. To provide empirical evidence in support of this theoretical finding, I use the Fama and French (1989) measurement procedure for estimating expected returns. I regress S&P returns (deflated by the Consumer Price Index) on to the default-premium (Baa yield minus 10 year Government bond yield), the term-premium (10 year Government bond yield minus 3-month Treasury Bill yield), and the return volatility $\widehat{\text{Vol}}_t$. The estimate of the expected returns at time t , $\hat{\mathcal{E}}_t$ say, is the fitted value at time t of this regression. Finally, I define one-year moving averages of the industrial production growth as $\text{IP}_t \equiv \frac{1}{12} \sum_{i=1}^{12} \text{Ind}_{t+1-i}$, where Ind_t is the real, seasonally adjusted industrial production growth as of month t .

The left-hand side of Figure 3 plots the estimated expected returns $\hat{\mathcal{E}}_t$ against the industrial production growth IP_t . The right-hand side displays the fitted values of the least absolute deviations regression,

$$\hat{\mathcal{E}}_t = \underset{(0.15)}{8.56} - \underset{(0.30)}{4.05} \cdot \text{IP}_t + \underset{(0.31)}{1.18} \cdot \text{IP}_t^2 + w_t,$$

where w_t is a residual term and robust standard errors are in parenthesis.¹¹ The evidence from Figure 3 is striking. In good times, expected returns (a reasonable proxy for risk premia) do not vary much. In bad times, however, their fluctuations are more pronounced.

3.3.1 The benchmark economy

I now illustrate how the theory of this paper helps explain these large swings in the expected returns and return volatility. I use the habit formation economy in Example 2 to implement a calibration

¹¹I run a least absolute deviations regression because this methodology is known to be more robust to the presence of outliers than ordinary least squares (see, e.g., Bloomfield and Steiger, 1983).

experiment. I specialize this economy to the case analyzed by Santos and Veronesi (2006), in which $\gamma = \eta$. In this economy, the interest rate $R(y)$ and the prices of risk are such that $\lambda_2(y) = 0$, and

$$R(y) = \rho + \eta g_0 - \frac{1}{2} \sigma_0^2 \eta (\eta + 1) + k (1 - \bar{G} y^\eta) - \eta \alpha \sigma_0^2 (1 - l y^\eta); \quad \text{and} \quad \lambda_1(y) = \sigma_0 [\eta + \alpha (1 - l y^\eta)].$$

If $\eta < 1$, the risk-adjusted discount rates $\text{Disc}(y) = R(y) + \sigma_0 \lambda_1(y)$ increase more in bad times than they decrease in good times, i.e. they are decreasing and convex in the surplus ratio y .¹² Moreover, the sensitivity of the discount rates to changes in y_t can get arbitrarily large in bad times. Formally, if $\eta < 1$, then $\lim_{y \rightarrow 0} \frac{d}{dy} \text{Disc}(y) = \infty$, a property labeled “large asymmetry in discounting” in Proposition 1b.

According to Proposition 1, the previous properties translate to countercyclical movements in the price-elasticity and the price-sensitivity. This is confirmed analytically. The solution for the price-dividend ratio is

$$p(y) = b_1 + b_2 y^\eta,$$

where b_1 and b_2 are two positive constants. That is, provided $\eta < 1$, the price-dividend ratio is concave in y and so the price-elasticity and the price-sensitivity are both countercyclical.

3.3.2 Calibration

I simulate the model discussed in Section 3.3.1 with 100 samples of 50 years. I choose the model’s parameters so as to match its key *unconditional* population moments to the empirical counterparts in Table 2. These moments are the mean of the S&P Composite price-dividend ratio, the standard deviation of the price-dividend ratio changes and log-changes and, finally, the mean and standard deviation of the continuously compounded returns and the risk-free rate. Table 3 reports the parameter values along with the calibration results. To generate countercyclical variation in the price-sensitivity, the utility curvature parameter η must be less than one, as discussed in Section 3.3.1. I use $\eta = \frac{1}{2}$. With the exception of this parameter, all parameter values are comparable with those in Santos and Veronesi (2006). The results in Table 3 show that the model generates figures for the average risky returns, the return volatility, and the mean and standard deviation of the risk-free rate, which are all very close to their empirical counterparts. Moreover, it successfully explains the level of the price-dividend ratio, along with the volatility of its changes.

Next, I look at the *conditional* moments implications of the model. I proceed as follows. First, I compute the certainty equivalent for the price-dividend ratio, defined as $\hat{y} : p(\hat{y}) = E[p(y_t)]$, where

¹²Intuitively, λ_1 is always decreasing and convex. Moreover, low values of the utility curvature η make R fluctuate more in bad times than in good, due to (weak) intertemporal substitution effects (the fourth term in the expression for R). At the same time, low values of η mitigate the precautionary effects (the last term in the expression for R).

$E[\cdot]$ denotes the unconditional expectation operator. I define the “average states” of the economy as the states for which the surplus consumption ratio $y_t \in [y_-, y_+]$, where $y_{\mp} = \hat{y} \mp \frac{1}{2}\text{Std}(y)$ and $\text{Std}(y)$ is the unconditional standard deviation of y_t . I find that $\hat{y} = 1.97\%$ and $\text{Std}(y) = 0.59\%$. Next, I define the “good states” as those in which $y_t \in [y_+, y_+ + \Delta]$, where $\Delta = 0.50\%$. Finally, I define three levels of “bad states”. The less severe “bad states” occur when $y_t \in [y_- - \Delta, y_-]$ (bad states “B1”); the intermediate “bad states” occur when $y_t \in [y_- - 2\Delta, y_- - \Delta]$ (bad states “B2”); the most severe “bad states” occur when $y_t \in [y_- - 3\Delta, y_- - 2\Delta]$ (bad states “B3”).

Table 4 displays the key conditional population moments of the model. The oscillations of the price-dividend ratio from good states to bad are quite asymmetric and mimic the swings in the data. The model predicts that as the price-dividend ratio moves away from the average states, it increases by 8% in the good states and decreases by 13% in the bad states B1. In particular, the price-sensitivity $S_p(y_t)$ increases by 18% in the bad states B1 and decreases by 8% in the good states. This asymmetry becomes more pronounced in the more severe states B2 and B3. Eventually, the price-sensitivity blows up as the surplus consumption ratio gets small. Intuitively, in this economy the representative agent modifies his discount rates dramatically as bad times deteriorate (the “large asymmetry in discounting” property discussed in Section 3.3.1), thereby inducing the price-sensitivity to change dramatically as well (Eq. (A.8) in the appendix formalizes this intuition).

The asymmetric behavior of the price-elasticity $E_p(y_t)$ is even more pronounced. This property accounts for the large movements in the expected returns documented in Table 4. This is because a large price-elasticity translates to a high price-dividend beta, and so to large expected returns in Eq. (6). Finally, the model generates countercyclical return volatility, along with countercyclical variation in the volatility of the price-dividend ratio changes. The results in Table 4 reveal that the asymmetric movements in the price-sensitivity are quantitatively responsible for the bulk of variation in the volatility of the price-dividend ratio changes. To summarize, in this economy the discount rates react asymmetrically to changes in economic conditions; furthermore, this asymmetry becomes more pronounced as bad times worsen. Importantly, the calibration exercise reveals that the theoretical issues this paper associates with such asymmetries can have substantial quantitative implications on the dynamics of expected returns and volatility.

4 Economies with fluctuating uncertainty

How do the restrictions in this paper work in a world with fluctuating economic uncertainty? I now analyze economies in which consumption growth is surrounded by varying uncertainty.

4.1 The dynamics of fundamentals and asset prices

I consider an economy in which expected consumption growth and consumption volatility are both time-varying,

$$\frac{dD_t}{D_t} = x_t dt + \sigma_D(s_t) dW_{1t}, \quad (17)$$

where D_t is the consumption endowment, x_t is the expected consumption growth, and s_t is a state variable affecting consumption volatility $\sigma_D(s_t)$, for some positive function σ_D increasing in s_t . Both expected consumption growth and consumption volatility are predictable:

$$\begin{aligned} dx_t &= \gamma(\bar{x} - x_t) dt + \sigma_x dW_{2t} \\ ds_t &= \kappa(\bar{s} - s_t) dt + \sigma_s(s_t, q_t) dW_{3t} \\ dq_t &= \beta(\bar{q} - q_t) dt + \sigma_q(q_t) dW_{4t} \end{aligned} \quad (18)$$

for some additional Brownian motions W_2 , W_3 and W_4 , some positive constants γ , $\bar{x}$, σ_x , κ , $\bar{s}$, β and $\bar{q}$, and some functions σ_s and σ_q , which are assumed to be increasing in their arguments.

These assumptions about consumption volatility are the continuous-time counterpart to Tauchen's (2005). Tauchen's assumptions about volatility extend upon those in Bansal and Yaron (2004) because the function $\sigma_s(s_t, q_t)$ may depend on s_t and some additional "volatility of volatility" state variable q_t . In turn, the previous model is a slight generalization of Tauchen's as it includes variation in the expected consumption growth x_t . However, the expected growth x_t does not play any role in the analysis below.

As in Section 2, I assume that the interest rate and risk premia are independent of the level of aggregate consumption D_t . Therefore, the pricing kernel ξ_t is the solution to

$$\frac{d\xi_t}{\xi_t} = -R(\mathbf{y}_t) dt - \boldsymbol{\lambda}(\mathbf{y}_t) \cdot d\mathbf{W}_t, \quad (19)$$

where $\mathbf{y}_t = [x_t, s_t, q_t]^\top$, $\mathbf{W} = [W_1, \dots, W_4]^\top$ and, finally, $\boldsymbol{\lambda} = [\lambda_D, \lambda_x, \lambda_s, \lambda_q]$ is the vector of unit prices of risk. These assumptions imply that the price-dividend ratio $\frac{P_t}{D_t} = p(\mathbf{y}_t)$, for some function p . I assume that R and $\boldsymbol{\lambda}$ are twice continuously differentiable, and that the price-dividend ratio p satisfies the same regularity conditions as in Section 2. To keep the presentation simple, I also assume that every unit price of risk λ_i only depends on the variables that affect the volatility of the state variable i ($i = D, x, s, q$), i.e. $\lambda_D \equiv \lambda_D(s)$, $\lambda_x \equiv \lambda_x(x)$, $\lambda_s \equiv \lambda_s(s, q)$ and $\lambda_q \equiv \lambda_q(q)$.¹³

¹³Notice that the interest rate and the risk premia in Eq. (19) do not depend on some additional index tracking the state of the economy (such as that in Eq. (3)). Adding this would lead to the same analysis as in Section 2, without affecting the results in this section.

Which conditions should the pricing kernel satisfy to make returns inversely related to the volatility of fundamentals s_t and the volatility of volatility q_t ? By the definition of asset returns,

$$\text{Returns}_t = \frac{dP_t + D_t dt}{P_t} = \mathcal{E}(y_t) dt + \text{Vol}(y_t) \cdot dW_t, \quad (20)$$

where $\text{Vol} = [\text{Vol}_1, \dots, \text{Vol}_4]$, $\text{Vol}_1 = \sigma_D$, $\text{Vol}_i = \frac{p_i}{p} \sigma_i$ ($i = x, s, q$), subscripts on the price-dividend ratio p denote partial derivatives (for example, $p_s \equiv \frac{\partial p(x, s, q)}{\partial s}$) and, finally, the expected returns in Eq. (20) are obtained similarly as in Eq. (6) in Section 2; they are:

$$\mathcal{E}(y_t) = \underbrace{R(y_t) + \sigma_D(s_t) \lambda_D(s_t)}_{\equiv \text{Disc}(y_t)} + \sum_{i=x, s, q} \text{Vol}_i(y_t) \lambda_i(y_t). \quad (21)$$

By Eqs. (18) and (20),

$$E_t(\text{Returns}, d\ell_t) = \frac{p_t(y_t)}{p(y_t)} \sigma_i(y_t)^2 dt, \quad \ell_t = s_t \text{ or } q_t.$$

Thus, ex-post returns co-move negatively with the volatility factors s_t and q_t if the price-dividend ratio p decreases with s_t and q_t , i.e. $p_s < 0$ and $p_q < 0$. The next proposition develops conditions under which such inverse relations do occur.

Proposition 2. *Let the endowment process be as in Eq. (17) and suppose that the risk-adjusted discount rates in Eq. (21) are increasing in the volatility of fundamentals s , i.e. $\frac{\partial}{\partial s} \text{Disc}(y) > 0$. The following statements hold true under the assumptions in this section:*

- a) *The price-dividend ratio reacts negatively to changes in the volatility of fundamentals s , i.e. $p_s(y) < 0$. Hence, the asset returns in Eq. (20) and s_t are negatively correlated.*
- b) *Assume that the volatility risk premia are negative and increasing in q , i.e. $\lambda_s(s, q) < 0$ and $-\frac{\partial[\lambda_s(s, q)\sigma_s(s, q)]}{\partial q} > 0$, and that one of the two following conditions holds true:*
 - b.1) *The discount rates are increasing in the volatility of volatility q , i.e. $\frac{\partial}{\partial q} \text{Disc}(y) > 0$. In addition, (i) the volatility of fundamentals $s \in (\underline{s}, \bar{s})$, for two positive constants $\underline{s}$ and $\bar{s}$, and (ii) the price-dividend ratio reacts asymmetrically to changes in s , i.e. it is concave in s .*
 - b.2) *$-\frac{\partial \text{Disc}}{\partial q} p - \frac{\partial(\lambda_s \sigma_s)}{\partial q} p_s + \frac{1}{2} \frac{\partial \sigma_s^2}{\partial q} p_{ss} < 0$ (Large negative volatility risk premia).*

Then, the price-dividend ratio is decreasing in the volatility of volatility q , i.e. $p_q(y) < 0$. Hence, the asset returns in Eq. (20) and q_t are negatively correlated.

Conversely, suppose that the price-dividend ratio is decreasing in the volatility of fundamentals s (resp. the volatility of volatility q). Then, the discount rates $\text{Disc}(\mathbf{y})$ must be increasing in s (resp. Condition b.2 must hold) on some sets of $\mathbf{y}$ having strictly positive probability.

As in Sections 2 and 3, the discount rates $\text{Disc}(\mathbf{y}_t)$ in Eq. (21) play a critical role. Consider Part a) of Proposition 2. It relies on the assumption that after a positive shock to the volatility of fundamentals s_t , investors raise the discount rates they use to evaluate future dividends. Under this condition, an increase in the volatility of fundamentals lowers the price-dividend ratio and induces a negative relation between asset returns and the volatility of fundamentals.

Part b) of Proposition 2 relates asset returns to higher order properties of the economic fundamentals. When is the price-dividend ratio inversely related to the volatility of volatility q_t ? *First*, volatility risk should be *negatively* priced, i.e. $\lambda_s < 0$. Intuitively, if prices are negatively affected by volatility, a negative volatility risk premium is required to make Arrow-Debreu state prices high in the poor states of the world (i.e. when volatility is high).¹⁴ *Second*, the volatility risk premia should increase with the volatility of volatility q , i.e. $\frac{\partial}{\partial q}(-\lambda_s \sigma_s) > 0$. In other words, following a positive shock to q_t , the compensation for volatility fluctuations should increase, thus lowering the asset price and returns. These two basic conditions are actually not sufficient to make the price-dividend ratio decreasing in q_t . Proposition 2 identifies two additional sets of conditions.

- Condition b.1 is a sufficient condition. It requires that (i) the discount rates $\text{Disc}(\mathbf{y}_t)$ be increasing in q_t , and (ii) the price-dividend ratio be decreasing and concave in the volatility of fundamentals s_t . Intuitively, the concavity property means that the price-dividend ratio dampens low realizations of s_t and exaggerates higher realizations of s_t . As a result, a positive spread in the uncertainty surrounding the volatility s_t (i.e. an increase in the volatility of the volatility q_t) lowers the price-dividend ratio - a conclusion consistent with second-order stochastic dominance. In turn, the proof of Proposition 2 reveals that the following conditions guarantee that the price-dividend ratio is concave in s :

$$\frac{\partial^2}{\partial s^2} \text{Disc}(\mathbf{y}) > 0 \quad (\text{Asymmetric discount rates}) \quad (22)$$

$$-\frac{\partial^2}{\partial s^2} [\lambda_s(s, q) \sigma_s(s, q)] > 2 \frac{\partial}{\partial s} \text{Disc}(\mathbf{y}) \quad (\text{Asymmetric volatility risk premium}) \quad (23)$$

These conditions require that the discount rates $\text{Disc}(\mathbf{y}_t)$ and the volatility risk premia $-\lambda_s(s_t, q_t) \sigma_s(s_t, q_t)$ increase more in bad times (when the volatility s_t is high) than they

¹⁴This effect works similarly to how the “negative risk premium” does within the standard one-factor term-structure models in which bond prices are negatively affected by the short-term rate.

decrease in good times (when the volatility s_t is low). Similarly as in Sections 2 and 3, this kind of asymmetry implies that the price-dividend ratio p fluctuates more in bad times than in good, i.e. it is decreasing and *concave* with respect to s .

- Condition b.2 holds under condition b.1, but the converse is clearly not true. Moreover, the last part of Proposition 2 states that the necessary condition for the price-dividend ratio to be decreasing in q is that condition b.2 holds on some sets of $\mathbf{y}$ having positive probability. In particular, condition b.2 is satisfied if the volatility risk premia are sufficiently responsive to changes in q_t (i.e. if the sensitivity $-\frac{\partial(\lambda_s \sigma_s)}{\partial q}$ is sufficiently large). The next subsection provides examples of economies in which volatility risk premia behave in the manner prescribed by condition b.2.

Finally, the feedback effect discussed in the introduction arises if the return volatility components in Eq. (20) increase after a positive shock in s_t and in q_t . In all the economies I consider in the next subsection, this property arises under the same conditions stated in Proposition 2.

4.2 An application to non-expected utility

I use Proposition 2 to analyze the economies considered by Bansal and Yaron (2004) and Tauchen (2005). In these two papers, the primitives satisfy a discrete-time version of Eqs. (17) and (18), and a representative investor is endowed with the Epstein and Zin (1989) and Weil (1989) non-expected, but recursive utility. Consumption growth satisfies,

$$\log D_{t+\Delta t} - \log D_t = \left(x_t - \frac{1}{2} \sigma_D (s_t)^2 \right) \Delta t + \sigma_D (s_t) \varepsilon_{1,t+\Delta t} \sqrt{\Delta t}, \quad (24)$$

where $\Delta t > 0$, $\varepsilon_{1,t}$ is independent and identically distributed as a standard normal variable, and expected consumption growth x_t , consumption volatility s_t , and the volatility of volatility q_t are the discrete-time counterparts to Eqs. (18) (see Eqs. (A.10) in the appendix).

4.2.1 The risk-free rate and the risk premia

The asset price P_t satisfies the Euler equation, $\xi_t P_t = E_t [\xi_{t+\Delta} (P_{t+\Delta t} + D_t \cdot \Delta t)]$, where the pricing kernel ξ_t is defined recursively as $\xi_{t+\Delta t} \equiv M_{t+\Delta t} \xi_t$ (with $\xi_0 = 1$) and M_t is the stochastic discount factor. In the Epstein-Zin-Weil environment, the stochastic discount factor satisfies

$$\log \xi_{t+\Delta t} - \log \xi_t = \log M_{t+\Delta t} = -\theta \rho \Delta t - \frac{\theta}{\psi} \log \left(\frac{D_{t+\Delta t}}{D_t} \right) + (\theta - 1) \log \left(\frac{P_{t+\Delta t} + D_t \Delta t}{P_t} \right), \quad (25)$$

where $\theta \equiv \frac{1-\eta}{1-\frac{1}{\psi}}$, ρ is the subjective discount rate, η is the relative risk-aversion for static gambles, and ψ is the intertemporal elasticity of substitution (IES, henceforth). In the standard expected utility framework, $\eta = \psi^{-1}$.

In the appendix, I show that in the continuous-time limit, the pricing kernel in Eq. (25) satisfies Eq. (19), where the interest rate is

$$R(y_t) = \rho + \frac{1}{\psi}x_t - \frac{1}{2}\eta \left(1 + \frac{1}{\psi}\right) \sigma_D(s_t)^2 - \frac{1}{2}(1-\theta) \sum_{i=x,s,q} \left(\sigma_i(y_t) \frac{p_i(y_t)}{p(y_t)}\right)^2, \quad (26)$$

and the vector of unit-risk premia $\lambda = [\lambda_D, \lambda_x, \lambda_s, \lambda_q]$, with $\lambda_D = \eta\sigma_D$ and $\lambda_i = (1-\theta)\sigma_i \frac{p_i}{p}$ ($i = x, s, q$). Therefore, in this economy, the discount rates in Eq. (21) are:

$$\text{Disc}(y_t) = \rho + \frac{1}{\psi}x_t + \frac{1}{2}\eta \left(1 - \frac{1}{\psi}\right) \sigma_D(s_t)^2 - \frac{1}{2}(1-\theta) \sum_{i=x,s,q} \left(\sigma_i(y_t) \frac{p_i(y_t)}{p(y_t)}\right)^2. \quad (27)$$

These expressions for the interest rate and the risk premia appear to be new to the literature. I now use them to check the test conditions in Proposition 2.

4.2.2 Ex-post returns and return volatility

I relate ex-post returns and return volatility to changes in the volatility of fundamentals s_t and in the volatility of volatility q_t .

The volatility of fundamentals

When are prices inversely related to the volatility of fundamentals s_t ? According to Proposition 2a, this property arises if the discount rates $\text{Disc}(y_t)$ are increasing in s_t . Consider, for example, the expected utility case in which $\eta = \frac{1}{\psi}$ and, hence, $\theta = 1$. Eq. (27) reveals that if precautionary motives are not too strong (i.e. if the IES $\psi > 1$), the investor raises his discount rates after a positive shock to the volatility s_t , thereby inducing an inverse relation between s_t and ex-post returns. Moreover, by continuity, the same inverse relation obtains for a fixed IES $\psi > 1$ and some values of η higher than $\frac{1}{\psi}$.¹⁵

To further analyze the case $\theta < 1$, we need to understand how the last term in the right hand side of Eq. (27) changes with s_t . Consider a log-linear expansion of the price-dividend ratio such that

¹⁵The result that $p_s < 0$ for $\theta = 1$ differs from those in Bansal and Yaron, and Tauchen. The difference arises because to make Eq. (24) consistent with its continuous time counterpart (17), I corrected expected consumption growth for Jensen's inequality effects through the additional term $\frac{1}{2}\sigma_D(s_t)^2$.

$\sigma_i \frac{p_i}{p} \approx \sigma_i A_i$, for three positive constants A_i , $i = s, q, x$. By substituting this approximation into Eq. (27),

$$\text{Disc}(\mathbf{y}_t) = \rho + \frac{1}{\psi} x_t + \frac{1}{2} \eta \left(1 - \frac{1}{\psi}\right) \sigma_D(s_t)^2 - \frac{1}{2} (1 - \theta) \sum_{i=x,s,q} A_i^2 \sigma_i(\mathbf{y}_t)^2. \quad (28)$$

The difference $1 - \theta = (1 - \frac{1}{\psi})^{-1} (\eta - \frac{1}{\psi})$ plays a crucial role in Eq. (28). Let the IES $\psi > 1$ (the case $\psi < 1$ can be analyzed in a similar way). If the risk-aversion parameter $\eta > 1$, the last term on the right hand side of Eq. (28) decreases with the volatility s_t .

What is the economic intuition for this result? From the work of Kreps and Porteus (1978) and Epstein and Zin (1989), we know that if $\eta > \frac{1}{\psi}$, the investor has a preference for early resolution of uncertainty. This preference induces him to accelerate his consumption plan in response to increased uncertainty. In general equilibrium, this fall in his (planned) expected consumption growth is possible with a fall in the interest rate in Eq. (26) and hence in the discount rates in Eqs. (27) and (28). Therefore, to make discount rates increasing in the volatility s (as required by Proposition 2), the term $\sum_{i=x,s,q} A_i^2 \sigma_i(\mathbf{y}_t)^2$ in Eq. (28) should be relatively insensitive to changes in s . Equivalently, the discount rates in Eq. (28) are increasing in s_t when the volatility risk premium $\lambda_s = (1 - \theta) \sigma_s \frac{p_s}{p} \approx A_s (1 - \theta) \sigma_s$ is not too responsive to changes in s .

These properties arise if the volatility of volatility function $\sigma_s(s, q)$ is independent of s , as in Bansal and Yaron (2004) and in the two-factor setting in Tauchen (2005, Section 3). They also arise in the one-factor model of Tauchen (2005, Section 2), in which $\sigma_D(s) \equiv \sqrt{s}$ and $\sigma_s(s, q) \equiv \phi_s \sqrt{s}$, provided the positive constant ϕ_s is not too large.¹⁶ Note that under these conditions, variation in s also leads to the volatility feedback. This is because by Eq. (20), the return volatility component related to s is approximately $(\frac{p_s}{p} \sigma_s)^2 \approx A_s^2 \sigma_s^2$, and is increasing in s .

The volatility of volatility

How do prices react to changes in the volatility of the volatility q_t ? Note that by Eq. (28), the preference for early resolution of uncertainty implies that the discount rates are increasing in q_t ! Therefore, condition b.1 in Proposition 2b does not hold. Instead, the price-dividend ratio is decreasing in q_t if condition b.2 holds. In turn, condition b.2 is satisfied if the sensitivity of the volatility risk premia with respect to changes in q_t , $-\frac{\partial(\lambda_s \sigma_s)}{\partial q}$, is large enough to dwarf the previous uncertainty resolution effects.

Volatility risk premia can have this property in the Tauchen's two-factor model, in which $\sigma_s(s, q) = \sqrt{q}$, $\sigma_q(q) = \phi_q \sqrt{q}$ and $\lambda_s(s, q) \approx A_s (1 - \theta) \sqrt{q}$. In this model, the sensitivity $\frac{\partial(\lambda_s \sigma_s)}{\partial q} \approx \frac{1}{2} (1 - \theta) A_s$

¹⁶It is easily seen that in the Tauchen's one factor model, $\frac{\partial}{\partial s} \text{Disc} > 0$ iff $\frac{1}{2} \eta (1 - \frac{1}{\psi}) - \frac{1}{2} (1 - \theta) A_s^2 \phi_s^2 > 0$, i.e. iff ϕ_s is not too large and $\lim_{\phi_s \rightarrow 0} A_s^2 \phi_s^2 = 0$.

and should be large compared to the “uncertainty” parameter ϕ_q .¹⁷ Indeed, Proposition 2b predicts that in this case, ex-post returns decrease after a positive shock to the volatility of the volatility q_t . Moreover, changes in q_t raise return volatility as the volatility component related to q is approximately $(\frac{\partial \lambda}{\partial q} \sigma_q)^2 \approx A_q^2 \sigma_q^2$, and is increasing in q . Hence, Proposition 2b predicts that in this economy, the feedback effect can be induced by variation in the *volatility of volatility*. By the previous discussion, this effect arises when the reaction of the *volatility* risk premium to changes in q_t is large enough to mitigate the effects of a preference for early resolution of uncertainty.

5 Conclusion

Why is stock market volatility higher in bad times than in good times? One possible explanation is that the economy is frequently hit by shocks with the same properties as those we ultimately observe in the asset prices. Another possibility is that stock market volatility is countercyclical as a result of rational asset evaluation. The explanations provided in this article rely upon some fundamental facts which underlie rational asset evaluation. I found that countercyclical return volatility is induced by large swings of risk premia that occur when the economy moves away from good states. The logic behind this explanation is intuitive. If asset prices are risk-adjusted, discounted expectations of future dividends, then these expectations are worse in bad times than in good times. If changes in these discounted expectations (and hence, in the risk premia) are also more *pronounced* in bad times than in good times, then price volatility is countercyclical.

This channel of asymmetric volatility relies on a framework in which (i) the uncertainty about fundamentals of the economy is fixed, and (ii) countercyclical stock market volatility is induced by asymmetric movements of the risk premia. But I also analyzed economies in which the fundamentals are surrounded by fluctuating uncertainty, and studied if and how the risk premia for this uncertainty lead return volatility to be higher in bad times than in good.

My results hold for a fairly rich class of dynamic economies. For this reason, they accomplish two tasks. First, they provide fresh directions into the search process for the determinants of asymmetric volatility. Second, they highlight new asymmetric volatility channels that any model should feature to be consistent with rational asset evaluation. Models which do not activate these channels are likely to fail on one important dimension of actual stock market fluctuations: the systematic occurrence of countercyclical movements in return volatility.

¹⁷Indeed, by replacing the expressions for σ_s , σ_q and λ , and the log-linear approximation $p_i \approx A_i p$ into condition b.2, I find that this condition holds if $\frac{1}{2}(1-\theta)A_q^2\phi_q^2 - \frac{1}{2}(1-\theta)A_s^2 + \frac{1}{2}A_s^2 < 0$, i.e. if the parameter ϕ_q is not too large and $\lim_{\phi_q \rightarrow 0} A_q^2\phi_q^2 = 0$. Tauchen emphasized the importance of a similar condition.

Appendix

Notation. In this appendix, I make use of the following notation. For any function f of a single variable x , I let $f'(x) \equiv \frac{d}{dx}f(x)$ and $f''(x) \equiv \frac{d^2}{dx^2}f(x)$. Moreover, for any vector $a \equiv [a_1 \cdots a_N]$, I let $\|a\|^2 \equiv a_1^2 + \cdots + a_N^2$.

Derivation of Eq. (6). To pin down $\mathcal{E}(y)$ in Eq. (6), I develop the pricing equation $0 = \xi_t D_t dt + E_t[d(\xi_t P_t)]$, obtaining,

$$\begin{aligned} E_t \left(\frac{dP_t + D_t dt}{P_t} \right) &= R(y_t) dt - \text{cov}_t \left(\frac{dP_t}{P_t}, \frac{d\xi_t}{\xi_t} \right) \\ &= R(y_t) dt - \text{cov}_t \left(\frac{dD_t}{D_t}, \frac{d\xi_t}{\xi_t} \right) - \text{cov}_t \left(\frac{dp(y_t)}{p(y_t)}, \frac{d\xi_t}{\xi_t} \right) \\ &= \left[R(y_t) + \beta_{CF} \lambda_1(y_t) + \beta_{P/D}(y_t) \cdot \lambda(y_t) \right] dt \end{aligned}$$

where the second line follows by the definition of the price-dividend ratio $p(y_t) = \frac{P_t}{D_t}$, the third line follows by Eqs. (4) and (5), and β_{CF} and $\beta_{P/D}$ are as in the main text. ■

The proof of Proposition 1 in Section 2 relies on the following preliminary result.

Lemma 1. *Let $\{y_t\}_{t \geq 0}$ be the (strong) solution to,*

$$dy_t = b(y_t) dt + a(y_t) d\hat{W}_t, \quad (\text{A.1})$$

where $\hat{W}$ is a multidimensional Q -Brownian motion, and b and a are some given functions (a is vector-valued). Let ρ and ψ be two positive twice continuously differentiable functions, and define,

$$c(y, T) \equiv \mathbb{E} \left[\exp \left(- \int_0^T \rho(y_t) dt \right) \psi(y_T) \middle| y_0 = y \right]. \quad (\text{A.2})$$

The following statements are true:

a) If $\psi' > 0$, c is increasing in y whenever $\rho' \leq 0$. If $\psi' = 0$, c is decreasing in y whenever $\rho' > 0$.

b) If $\psi'' \leq 0$ (resp. $\psi'' \geq 0$) and c is increasing (resp. decreasing) in y , c is concave (resp. convex) in y whenever $b'' < 2\rho'$ (resp. $b'' > 2\rho'$) and $\rho'' \geq 0$ (resp. $\rho'' \leq 0$). Finally, if $b'' = 2\rho'$, c is concave (resp. convex) in y whenever $\psi'' < 0$ (resp. > 0) and $\rho'' \geq 0$ (resp. ≤ 0).

Proof. Let $c(y, T-s) \equiv \mathbb{E}[\exp(-\int_s^T \rho(y_t) dt) \cdot \psi(y_T) \mid y_s = y]$. The function c is solution to,

$$\begin{cases} 0 = -c_2(y, T-s) + \mathcal{L}c(y, T-s) - \rho(y)c(y, T-s), & \forall (y, s) \in \mathbb{R} \times [0, T) \\ c(y, 0) = \psi(y), & \forall y \in \mathbb{R} \end{cases} \quad (\text{A.3})$$

where $\mathcal{L}c(y, u) = \frac{1}{2} \|a(y)\|^2 c_{yy}(y, u) + b(y)c_y(y, u)$, $c_2(y, u) \equiv c_u(y, u)$, and subscripts denote partial derivatives. By differentiating Eq. (A.3) twice with respect to y , I find that $c^{(1)}(y, t) \equiv c_y(y, t)$ and $c^{(2)}(y, t) \equiv c_{yy}(y, t)$ are solutions to the following partial differential equations,

$$\begin{aligned} 0 = & -c_2^{(1)}(y, T-s) + \frac{1}{2} \|a(y)\|^2 c_{yy}^{(1)}(y, T-s) + \left[b(y) + \frac{1}{2} \frac{d}{dy} \|a(y)\|^2 \right] c_y^{(1)}(y, T-s) \\ & - [\rho(y) - b'(y)] c^{(1)}(y, T-s) - \rho'(y) c(y, T-s), \end{aligned} \quad (\text{A.4})$$

where $c^{(1)}(y, 0) = \psi'(y)$, and,

$$\begin{aligned} 0 = & -c_2^{(2)}(y, T-s) + \frac{1}{2} \|a(y)\|^2 c_{yyy}^{(2)}(y, T-s) + \left[b(y) + \frac{d}{dy} \|a(y)\|^2 \right] c_{yy}^{(2)}(y, T-s) \\ & - \left[\rho(y) - 2b'(y) - \frac{1}{2} \frac{d^2}{dy^2} \|a(y)\|^2 \right] c^{(2)}(y, T-s) - [2\rho'(y) - b''(y)] c^{(1)}(y, T-s) - \rho''(y) c(y, T-s), \end{aligned}$$

where $c^{(2)}(y, 0) = \psi''(y)$.

By the Feynman-Kac theorem, the solution to Eq. (A.4) is,

$$c^{(1)}(y, T-s) = \mathbb{E} \left[\int_s^T \kappa(s, \tau) (-\rho'(y_\tau)) c(y_\tau, T-\tau) d\tau \middle| y_s = y \right] + \mathbb{E} [\kappa(s, T) \psi'(y_T) | y_s = y],$$

where $\kappa(s, \tau) = \exp\{-\int_s^\tau [\rho(y_u) - b'(y_u)] du\}$, and y is the solution to Eq. (A.1), but with drift equal to $b + \frac{1}{2} \frac{d}{dy} \|a\|^2$ (which is the drift multiplying $c_y^{(1)}$ in Eq. (A.4)). Hence, $c^{(1)}(y, T-s) > 0 \forall (y, s) \in \mathbb{R} \times [0, T)$ whenever $\rho'(y) < 0$ and $\psi'(y) > 0 \forall y \in \mathbb{R}$. This completes the proof of part a) of the lemma. The proof of part b) is obtained similarly. ■

Proof of Proposition 1 (Part a). By Eq. (1), the price-dividend ratio satisfies,

$$p(y) = \int_0^\infty B(y, t) dt, \quad (\text{A.5})$$

where

$$\begin{aligned} B(y, t) &= \mathbb{E} \left[\beta_t \cdot \exp \left(- \int_0^t (R(y_u) + \sigma_0 \lambda(y_u) - g_0) du \right) \middle| y_0 = y \right] \\ &\equiv \bar{\mathbb{E}} \left[\exp \left(- \int_0^t (R(y_u) + \sigma_0 \lambda(y_u) - g_0) du \right) \middle| y_0 = y \right], \end{aligned}$$

$\mathbb{E}[\cdot]$ is the expectation under the risk-neutral probability Q , $\bar{\mathbb{E}}[\cdot]$ is the expectation taken under a new measure $\bar{Q}$ defined as $d\bar{Q}/dQ = \beta_t \equiv \exp(-\frac{1}{2}\sigma_0^2 t + \sigma_0 \bar{W}_{1t})$, and $\bar{W}_1$ is the Brownian motion under Q , defined as $\bar{W}_1 = W_1 + \int \lambda_1(y_t) dt$. Under $\bar{Q}$, y_t is the solution to,

$$dy_t = \left[m(y_t) - \sum_{i=1}^2 \lambda_i(y_t) v_i(y_t) + \sigma_0 v_1(y_t) \right] dt + v_1(y_t) d\bar{W}_{1t} + v_2(y_t) d\bar{W}_{2t},$$

where $\bar{W}_1$ is a $\bar{Q}$ -Brownian motions and $\bar{W}_2 = \hat{W}_2$. In Eq. (A.5), $\{B(y, t)\}_{t \geq 0}$ is a collection of bond prices in a fictitious economy where the instantaneous interest rate is $\rho(y) \equiv R(y) + \sigma_0 \lambda_1(y) - g_0$, and the risk-neutral probability measure is $\bar{Q}$. By Lemma 1a, for all t , $B_y(y, t) > 0$ whenever $\rho'(y) = R'(y) + \sigma_0 \lambda_1'(y) < 0$, i.e. whenever the risk-adjusted discount rates are countercyclical. Finally by Lemma 1b, for all t , $B_{yy}(y, t) < 0$ whenever $\frac{d^2}{dy^2}[m(y) + \sigma_0 v_1(y) - \sum_{i=1}^2 \lambda_i(y) v_i(y)] < 2\rho'(y)$ and $\rho''(y) > 0$, for all y . By the definition of ρ , these two inequalities are exactly those given in conditions a.1 and a.2 of Proposition 1a. ■

To ease notation, let $\mathcal{R}(y) \equiv \text{Disc}(y) = R(y) + \sigma_0 \lambda_1(y)$, $\hat{m} \equiv m(y) - \sum_{i=1}^2 \lambda_i(y) v_i(y)$ and $\bar{m}(y) \equiv \hat{m}(y) + \sigma_0 v(y)$. One set of technical regularity conditions required in the main text is:

H1: *The functions $\mathcal{R}$, $\bar{m}$, $\hat{m}$ and v satisfy the following conditions:*

i: $\min_{y \in (\underline{y}, \bar{y})} \mathcal{R}(y) > g_0 > 0$.

ii: $\lim_{y \rightarrow \underline{y}} \bar{m}(y) \geq 0$.

iii: *The functions $[\bar{m}(y) + v_i(y)] \frac{|\mathcal{R}'(y)|}{\mathcal{R}(y)}$ ($i = 1, 2$) and $\|v(y)\|^2 \frac{|\mathcal{R}''(y)|}{\mathcal{R}(y)}$ are bounded.*

iv: *The functions $\left| \frac{d}{dy} \bar{m}(y) \right|$, $\left| [\hat{m}(y) + v_i(y)] \frac{\mathcal{R}''(y)}{\mathcal{R}'(y)} \right|$ ($i = 1, 2$) and $\|v(y)\|^2 \left| \frac{\mathcal{R}'''(y)}{\mathcal{R}'(y)} \right|$ are bounded.*

Condition H1-i is an integrability condition. Condition H1-ii requires that under the measure $\bar{Q}$ introduced in Eqs. (13) and (A.5), y is mean reverting in a neighborhood of $\underline{y}$. Finally, condition H1-iii (resp., H1-iv) bounds the rate of explosion of $\mathcal{R}(y)$ (resp., $\mathcal{R}'(y)$) to infinity. I now prove part b of Proposition 1.

Proof of Proposition 1 (Part b). By assumption, $\mathcal{R}(y)$ is strictly positive. Hence $\mathcal{R}(y_t) = \mathcal{R}(y_0) w_t(\alpha, \beta)$, $w_t(\alpha, \beta) \equiv \exp \left\{ \int_0^t \left[\alpha(y_s) - \frac{1}{2} \left(\beta_1(y_s)^2 + \beta_2(y_s)^2 \right) \right] ds + \int_0^t \sum_{i=1,2} \beta_i(y_s) d\bar{W}_{is} \right\}$, where $\bar{W}_i$ ($i = 1, 2$) are $\bar{Q}$ -Brownian motions and,

$$\alpha(y) \equiv \bar{m}(y) \frac{\mathcal{R}'(y)}{\mathcal{R}(y)} + \frac{1}{2} \|v(y)\|^2 \frac{\mathcal{R}''(y)}{\mathcal{R}(y)} \quad \text{and} \quad \beta_i(y) \equiv v_i(y) \frac{\mathcal{R}'(y)}{\mathcal{R}(y)}, \quad i = 1, 2.$$

By Eq. (A.5), the price-dividend ratio $p(y)$ is the solution to the following differential equation,

$$0 = \frac{1}{2} \|v\|^2 p'' + (m + \sigma_0 v_1 - \lambda \cdot v) p' - (R - g_0 + \sigma_0 \lambda_1) p + 1, \quad (\text{A.6})$$

where $v \equiv [v_1 \ v_2]$. The Feynman-Kac representation of p in Eq. (A.6) is,

$$p(y) = \mathbb{E} \left[\int_0^\infty e^{g_0 t - \int_0^t \mathcal{R}(y_u) du} dt \middle| y_0 = y \right] = \mathbb{E} \left[\int_0^\infty e^{g_0 t - \mathcal{R}(y) \int_0^t w_u(\alpha, \beta) du} dt \middle| y_0 = y \right].$$

where $\bar{\mathbb{E}}$ denotes expectation under $\bar{Q}$. By assumption, $\lim_{y \rightarrow \underline{y}} \mathcal{R}(y) = \infty$ (“Large discounting”). By H1-i, $\min_{y \in (\underline{y}, \bar{y})} \mathcal{R}(y) > g_0$. Hence by dominated convergence and H1-iii, $\lim_{y \rightarrow \underline{y}} p(y) = 0$. By Eq. (A.6),

$$\frac{1}{2} \|v\|^2 p'' = -1 + (\mathcal{R} - g_0) p - (m + \sigma_0 v_1 - \lambda \cdot v) p'. \quad (\text{A.7})$$

Now suppose that $\lim_{y \rightarrow \underline{y}} p'(y) = \infty$. This implies that $\lim_{y \rightarrow \underline{y}} p''(y) < 0$. Alternatively, assume that $\lim_{y \rightarrow \underline{y}} p'(y) < \infty$. By H1-ii, $\lim_{y \rightarrow \underline{y}} (m(y) + \sigma_0 v_1(y) - (\lambda \cdot v)(y)) \geq 0$. As demonstrated above, $\lim_{y \rightarrow \underline{y}} p(y) = 0$. Hence, Eq. (A.7) implies that for small y , $\frac{1}{2} \|v\|^2 p'' \leq -1 + \mathcal{R}p$. Hence, $\lim_{y \rightarrow \underline{y}} p''(y) < 0$ whenever $\lim_{y \rightarrow \underline{y}} \mathcal{R}(y) p(y) = 0$. But again $\inf_t (\mathcal{R}(y_t)) > g_0$, and the result follows by H1-iii and dominated convergence,

$$\begin{aligned} \lim_{y \rightarrow \underline{y}} \mathcal{R}(y) p(y) &= \lim_{y \rightarrow \underline{y}} \bar{\mathbb{E}} \left[\int_0^\infty e^{g_0 t} \mathcal{R}(y) e^{-\int_0^t \mathcal{R}(y_u) du} dt \middle| y_0 = y \right] \\ &= \lim_{y \rightarrow \underline{y}} \bar{\mathbb{E}} \left[\int_0^\infty e^{g_0 t} \left(\mathcal{R}(y) e^{-\mathcal{R}(y) \int_0^t w_u(\alpha, \beta) du} \right) dt \middle| y_0 = y \right] = 0. \end{aligned}$$

Next, suppose that $\text{Disc}(y)$ is bounded, but that $\mathcal{R}'(y) < 0$ and that $\lim_{y \rightarrow \underline{y}} \mathcal{R}'(y) = -\infty$ (“Large asymmetry in discounting”). Since $\mathcal{R}'(y)$ is strictly negative, it satisfies $\mathcal{R}'(\hat{y}_t) = \mathcal{R}'(y) w_t(\hat{\alpha}, \hat{\beta})$, where now $w_t(\hat{\alpha}, \hat{\beta}) \equiv \exp \left\{ \int_0^t \left[\hat{\alpha}(y_s) - \frac{1}{2} (\hat{\beta}_1(y_s)^2 + \hat{\beta}_2(y_s)^2) \right] ds + \int_0^t \sum_{i=1,2} \hat{\beta}_i(y_s) d\tilde{W}_{is} \right\}$ and

$$\hat{\alpha}(y) \equiv \hat{m}(y) \frac{\mathcal{R}''(y)}{\mathcal{R}'(y)} + \frac{1}{2} \|v(y)\|^2 \frac{\mathcal{R}'''(y)}{\mathcal{R}'(y)} \quad \text{and} \quad \hat{\beta}_i(y) \equiv v_i(y) \frac{\mathcal{R}''(y)}{\mathcal{R}'(y)}, \quad i = 1, 2.$$

Moreover, by differentiating Eq. (A.7), and applying the Feynman-Kac representation to the solution of the resulting differential equation (similarly as in the proof of Lemma 1), I find that

$$p'(y) = -\mathbb{E} \left[\int_0^\infty \kappa_t \mathcal{R}'(y_t) p(y_t) dt \middle| y_0 = y \right] = -\mathcal{R}'(y) \mathbb{E} \left[\int_0^\infty \kappa_t w_t(\alpha, \beta) p(y_t) dt \middle| y_0 = y \right], \quad (\text{A.8})$$

where the second line follows by the solution for $\mathcal{R}'(y)$, the process κ_t is such that $-\frac{d}{dt} \log \kappa_t = \mathcal{R}(y_t) - g_0 - \frac{d}{dy_t} (m(y_t) + \sigma_0 v_1(y_t) - \lambda(y_t) \cdot v(y_t))$ and, finally, y_t is the solution to,

$$dy_t = M(y_t) dt + v(y_t) \cdot d\tilde{W}_t, \quad y_0 = y,$$

where $M = m + \sigma_0 v_1 - \lambda \cdot v + \frac{1}{2} (\frac{d}{dy} \|v\|^2)$. By $\lim_{y \rightarrow \underline{y}} \mathcal{R}'(y) = -\infty$ and $\mathcal{R}$ bounded, $\lim_{y \rightarrow \underline{y}} p'(y) = \infty$, and hence, $\lim_{y \rightarrow \underline{y}} p''(y) < 0$. ■

Proof of Proposition 1 (Necessary conditions for countercyclical sensitivity $S_p(y) = p'(y)$). By differentiating Eq. (A.7) twice and applying the Feynman-Kac representation to the solution of the resulting differential equation (similarly as in the proof of Lemma 1 and Prop. 1b),

$$p''(y) = \mathbb{E} \left[\int_0^\infty z_t (\mathcal{A}(y_t) p'(y_t) - \mathcal{R}''(y_t) p(y_t)) dt \middle| y_0 = y \right], \quad (\text{A.9})$$

where z_t is some strictly positive adapted process, and the function $\mathcal{A}(y)$ has been defined in Proposition 1b. Because discount rates are countercyclical, $p' > 0$ by the proof of Proposition 1a. Then suppose that p is concave (i.e. $p'' < 0$). By Eq. (A.9), there must be a set of values of y with strictly positive measure on which either $\mathcal{A}(y) < 0$ or $\mathcal{R}''(y) > 0$, or both. ■

Finally, I provide a proof of a claim made in Section 2.2 (in fact, a direct corollary to Lemma 1). Under risk-aversion corrections comparable to those discussed in Section 2.2, the investors' expectation of the future discount rates $\text{Disc}(y_t)$ fluctuates more in bad times than in good times. Precisely, we have:

Corollary 1. *Suppose that the discount rates are countercyclical but not necessarily asymmetric, i.e. $\frac{d^2}{dy^2}\text{Disc}(y) < 0$ and $\frac{d^2}{dy^2}\text{Disc}(y) \geq 0$, and that under the probability $\bar{Q}$ in Eq. (13), the expectation of the instantaneous changes in y_t is concave in the current state y , i.e. $\frac{d^2}{dy^2}\bar{m}(y) < 0$. Then the expectation under $\bar{Q}$, $\bar{\mathbb{E}}[\text{Disc}(y_t)|y_0 = y]$ is decreasing and convex in y , for all t .*

Proof. Follows by Lemma 1, after setting $\psi(y) \equiv \text{Disc}(y)$, $\rho(y) \equiv 0$ and $b(y) \equiv \bar{m}(y)$. ■

Proof of Proposition 2. The proof is similar to the proof of Lemma 1 and Proposition 1. For space reasons, it will be sketched. By no-arbitrage, the price-dividend ratio p satisfies,

$$\begin{aligned} 0 = & \frac{1}{2}\sigma_x^2 p_{xx} + [\gamma(\bar{x} - x) - \lambda_x \sigma_x] p_x + \frac{1}{2}\sigma_s^2 p_{ss} + [\kappa(\bar{s} - s) - \lambda_s \sigma_s] p_s \\ & + \frac{1}{2}\sigma_q^2 p_{qq} + [\beta(\bar{q} - q) - \lambda_q \sigma_q] p_q - (R + \lambda_D \sigma_D - x)p + 1. \end{aligned}$$

By differentiating the previous equation twice with respect to s and once with respect to q leaves three differential equations taking the form $L^i w^i - \rho^i w^i + h^i = 0$, where $w^1 = p_s$, $w^2 = p_{ss}$, $w^3 = p_q$, and ρ^i and h^i are some functions of x , s and q . By the same arguments used for the proof of Lemma 1, the sign of w^i is inherited by the sign of the functions h^i . The functions h^i are,

$$\begin{aligned} h^1 & \equiv -\frac{\partial \text{Disc}}{\partial s} p \\ h^2 & \equiv -\left[2\frac{\partial \text{Disc}}{\partial s} + \frac{\partial^2(\lambda_s \sigma_s)}{\partial s^2}\right] p_s - \frac{\partial^2 \text{Disc}}{\partial s^2} p \\ h^3 & \equiv -\frac{\partial \text{Disc}}{\partial q} p - \frac{\partial(\lambda_s \sigma_s)}{\partial q} p_s + \frac{1}{2}\frac{\partial \sigma_s^2}{\partial q} p_{ss} \end{aligned}$$

Part a) of the proposition follows by the expression for h^1 and the assumption that $\frac{\partial}{\partial s}\text{Disc} > 0$. As regards Part b), we have that $p_q < 0$ whenever $h^3 < 0$. Since $\frac{\partial}{\partial s}\text{Disc} > 0$, then $p_s < 0$. Hence, if $-\frac{\partial(\lambda_s \sigma_s)}{\partial q} > 0$, as assumed in Part b), then $p_q < 0$ under condition b.1. Moreover, if $-\frac{\partial(\lambda_s \sigma_s)}{\partial q} > 0$,

then condition b.1 $\implies$ condition b.2 because, again, $\frac{\partial}{\partial s} \text{Disc} > 0$ and hence $p_s < 0$. Finally, notice that the conditions in Eqs. (22)-(23) in the main text imply that $h^2 < 0$ and hence, $p_{ss} < 0$. ■

Interest rate and risk premia in a non-expected utility environment (Eq. (25)). By assumption, consumption growth is solution to Eq. (24), and expected consumption growth x_t , consumption volatility s_t , and the volatility of volatility q_t are mean-reverting processes:

$$\begin{aligned} x_{t+\Delta t} - x_t &= \gamma(\bar{x} - x_t) dt + \sigma_x \varepsilon_{2,t+\Delta t} \sqrt{\Delta t} \\ s_{t+\Delta t} - s_t &= \kappa(\bar{s} - s_t) dt + \sigma_s(s_t, q_t) \varepsilon_{3,t+\Delta t} \sqrt{\Delta t} \\ q_{t+\Delta t} - q_t &= \beta(\bar{q} - q_t) dt + \sigma_q(q_t) \varepsilon_{4,t+\Delta t} \sqrt{\Delta t} \end{aligned} \quad (\text{A.10})$$

where $\varepsilon_t = [\varepsilon_{1t}, \dots, \varepsilon_{4t}]^\top$ is a vector of independent and identically distributed standard normal variables (ε_{1t} has been defined in Eq. (24)). Let $\tilde{R}_{t+\Delta t}$ be the arithmetic return in Eq. (25),

$$\tilde{R}_{t+\Delta t} \equiv \frac{P_{t+\Delta t} + D_{t+\Delta t} \Delta t - P_t}{P_t} = \mathcal{E}_t \Delta t + \text{Vol}_t \cdot \varepsilon_{t+\Delta t} \sqrt{\Delta t}, \quad (\text{A.11})$$

where $\mathcal{E}_t$ are the expected returns, and Vol_t is the vector of return volatilities. ($\mathcal{E}_t$ and Vol_t will be pinned down below.) The log-pricing kernel in Eq. (25) satisfies,

$$\log \xi_{t+\Delta t} - \log \xi_t = -\theta \rho \Delta t - \frac{\theta}{\psi} \log \left(\frac{D_{t+\Delta t}}{D_t} \right) + (\theta - 1) \log \left(1 + \tilde{R}_{t+\Delta t} \right),$$

where

$$\log \left(1 + \tilde{R}_{t+\Delta t} \right) = \tilde{R}_{t+\Delta t} - \frac{1}{2} \|\text{Vol}_t \cdot \varepsilon_{t+\Delta t}\|^2 \Delta t + O_p \left(\Delta t^{\frac{3}{2}} \right).$$

Taking the limit $\Delta t \rightarrow 0$, and applying the Itô's multiplication rule,

$$d \log \xi_t = -\theta \rho dt - \frac{\theta}{\psi} d \log D_t + (\theta - 1) \left[\frac{dP_t + D_t dt}{P_t} - \frac{1}{2} \|\text{Vol}_t\|^2 dt \right],$$

where D_t is as in Eq. (17). For small Δt , the return in Eq. (A.11) satisfies,

$$\frac{dP_t + D_t dt}{P_t} = \mathcal{E}_t dt + \text{Vol}_t \cdot dW_t,$$

where $\mathcal{E}$ is as in Eq. (21) and, by Itô's lemma applied to the price function $P(D, x, s, q) = D \cdot p(x, s, q)$, the vector $\text{Vol} = [\text{Vol}_1, \dots, \text{Vol}_4]$ is as in Eq. (20). Therefore, by Itô's lemma,

$$\begin{aligned} \frac{d\xi_t}{\xi_t} &= \left[-\theta \rho - \frac{\theta}{\psi} \frac{dE(\log D_t)}{dt} + (\theta - 1) \mathcal{E}_t - \frac{1}{2} (\theta - 1) \|\text{Vol}_t\|^2 + \frac{1}{2} \eta^2 \sigma_{D,t}^2 + \frac{1}{2} (1 - \theta)^2 \|\text{Vol}_t^*\|^2 \right] dt \\ &\quad - \frac{\theta}{\psi} \sigma_{D,t} dW_{1,t} + (\theta - 1) \text{Vol}_t \cdot dW_t, \end{aligned}$$

where $\sigma_{D,t} = \sigma_D(s_t)$ and $\text{Vol}^* = [\text{Vol}_2, \text{Vol}_3, \text{Vol}_4]$. The expressions for the risk premia λ_i in the main text follow immediately. The solution for the interest rate is obtained by plugging Eq. (21) into the drift of the previous equation, by identifying the drift in Eq. (19), and by rearranging terms. (Detailed computations are available upon request.)

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Tables

Table 1
Price-dividend ratios and surplus consumption for the economy in Example 2

This table summarizes qualitative properties of the continuous-time economy in Example 2. In this economy, a representative agent has habit formation preferences, with instantaneous utility $u(c, x) = (c - x)^\eta$, where η is the local curvature of the instantaneous utility, c is consumption, x is the habit stock, and $G_t \equiv y_t^{-\gamma}$ is solution to

$$dG_t = k(\bar{G} - G_t)dt - \alpha(G_t - l)\sigma_0 dW_{1t},$$

where W_{1t} is a Brownian motion, $y_t \equiv \frac{c_t - x_t}{c_t}$ is the surplus consumption ratio, σ_0 is consumption growth volatility, and $\gamma, k, \bar{G}$ and α are additional preference parameters related to the habit formation process. The properties in this table hold for $\gamma = 1$. They are obtained by applying the test conditions in Proposition 1a of this paper. The first column displays parameter restrictions. The second column lists qualitative features of the price-dividend ratio corresponding to the restrictions in the first column. The third column reports when the price-induced component of both return volatility and the price-dividend ratio volatility is asymmetric.

parameter restriction	price-dividend ratio	price-induced asymmetric volatility
$\eta \in (0, 1)$ and $k\bar{G} > \alpha l \sigma_0^2 (\alpha + \eta - 1)$	increasing and concave in y	yes
$\eta = 1$	increasing and linear in y	no
$\eta > 1$ and $k\bar{G} > \alpha l \sigma_0^2 \max \{\alpha + \eta - 1, (1 + \alpha)(\eta - 1)\}$	increasing and convex in y	no

Table 2
Business cycle properties of P/D ratios and returns

P/D is the S&P Comp. price-dividend ratio. Real returns $\tilde{R}_t$ are (log)returns on the S&P Comp. return deflated by the Consumer Price Index. 12-months real returns as of month t are defined as $\sum_{i=1}^{12} \tilde{R}_{t-i}$. Excess returns are returns in excess of the real (one month) risk-free rate and are computed similarly. Volatility is the excess return volatility, computed as $\widehat{\text{Vol}}_t \equiv \sqrt{\frac{\pi}{2}} \sum_{i=1}^{12} \frac{|\text{Exc}_{t+i-1}|}{\sqrt{12}}$, where Exc_t is the return in excess of the 1-month bill return as of month t . Data are sampled monthly and cover the period from January 1948 through December 2002. All figures are annualized percent, with the exception of the P/D ratio levels, and the changes $P/D_{t+1} - P/D_t$, which are only annualized.

	total		NBER expansions		NBER recessions	
	average	std dev	average	std dev	average	std dev
P/D	31.99	15.88	33.21	15.79	26.20	14.89
$P/D_{t+1} - P/D_t$	0.66	4.48	1.33	4.17	-2.54	5.64
$\log \frac{P/D_{t+1}}{P/D_t}$	2.01	12.13	3.95	10.81	-7.28	16.79
real returns	8.22	14.94	9.70	13.82	1.17	19.28
12-months returns (real)	8.59	15.86	12.41	13.04	-9.45	15.49
real risk-free rate	1.02	2.48	1.03	2.43	0.97	2.69
excess return volatility	14.18	4.86	13.50	4.49	17.38	5.18

Table 3

Parameter values and basic calibration results for the model in Example 2

This table reports the basic calibration results for the infinite horizon, continuous-time economy in Example 2. **Panel A:** Annualized parameter values used to match the basic moments of data reported in Panel B. The parameters g_0 and σ_0 are the instantaneous average and standard deviation of consumption growth. The remaining parameters affect the preferences of a representative agent with habit formation: ρ is the subjective discount rate, and η is the local curvature of the instantaneous utility $u(c, x) = (c - x)^\eta$, where c is consumption, x is the habit stock, and $G_t \equiv y_t^{-\gamma}$ is solution to

$$dG_t = k(\bar{G} - G_t)dt - \alpha(G_t - l)\sigma_0 dW_{1t},$$

where W_{1t} is a Brownian motion and $y_t \equiv \frac{c_t - x_t}{c_t}$ is the surplus consumption ratio. In this calibration experiment, γ is set equal to η . **Panel B:** Calibration results for: the average S&P Comp. price-dividend ratio, P/D; the standard deviation of the P/D changes, $\text{Std}(P/D_{t+1} - P/D_t)$; the standard deviation of the log-P/D changes, $\text{Std}\left(\log \frac{P/D_{t+1}}{P/D_t}\right)$; the average real (log)return on the S&P Comp. return (deflated by the CPI 12-months returns), $E(\tilde{R})$; the standard deviation of returns, $\text{Std}(\tilde{R})$; the average real (one month) risk-free rate $E(r^f)$; and the standard deviation of the risk-free rate, $\text{Std}(r^f)$. All figures in Panel B are annualized percent, with the exception of the P/D ratio levels, and the changes $P/D_{t+1} - P/D_t$, which are only annualized.

Panel A: Consumption and preference parameters

g_0	σ_0	η	ρ	$\bar{G}$	k	l	α
0.020	0.015	$\frac{1}{2}$	0.045	8.36	0.16	6.01	73.85

Panel B: Basic moments of data and moments implied by the model

	$E(P/D)$	$\text{Std}(P/D_{t+1} - P/D_t)$	$\text{Std}\left(\log \frac{P/D_{t+1}}{P/D_t}\right)$	$E(\tilde{R})$	$\text{Std}(\tilde{R})$	$E(r^f)$	$\text{Std}(r^f)$
Data	31.99	4.48	12.13	8.22	14.94	1.02	2.48
Model	32.27	3.75	13.45	7.27	14.95	2.08	3.51

Table 4
Conditional moments implied by the calibrated model in Example 2

This table reports conditional moments implications of the economy in Example 2. Consumption and preference parameters are fixed at the values in Table 3, Panel A. The P/D sensitivity is the sensitivity of the price-dividend (P/D) ratio to changes in the surplus consumption ratio y and is computed as $p'(y)$, where p is the P/D ratio. The P/D elasticity is the elasticity of the P/D ratio to changes in y , computed as $\frac{p'(y)}{p(y)}$. The P/D volatility is the volatility of the instantaneous changes in the P/D ratio, computed as $p'(y) v(y)$, where $v(y)$ is the instantaneous volatility of y . The (log)P/D volatility is the volatility of the instantaneous changes in the *log*-P/D, computed as $\frac{p'(y)}{p(y)} v(y)$. Surplus volatility is the instantaneous volatility of the surplus ratio, $v(y)$. The risk-adjusted rates are the discount rates adjusted for cash-flow risk. The table reports expectations conditional on the surplus ratio y belonging to pre-specified states. For each variable, its expectation in the ‘average states’ is the expectation conditional on y belonging to the interval $[y_-, y_+]$, where: $y_{\mp} = \hat{y} \mp \frac{1}{2} \text{Std}(y)$; $\text{Std}(y)$ is the standard deviation of y (with $\text{Std}(y) = 0.59 \cdot 10^{-2}$); and $\hat{y}$ is the certainty equivalent for the P/D ratio, defined as $\hat{y} : p(\hat{y}) = E[p(y_t)]$ (with $\hat{y} = 1.97 \cdot 10^{-2}$). For each variable, the expectation in the ‘good states’ is the expectation conditional on y belonging to $[y_+, y_+ + \Delta]$, where $\Delta = 0.50 \cdot 10^{-2}$. Finally, the expectation in the ‘bad states’ B1, B2 and B3 is the expectation conditional on y belonging to $[y_- - n\Delta, y_- - (n-1)\Delta]$, for $n = 1$ (the bad states B1), $n = 2$ (the bad states B2), and $n = 3$ (the bad states B3). The figures for (log)P/D volatility, return volatility, risk-adjusted rates, and expected returns are annualized percent.

	<i>good states</i>	<i>average states</i>	<i>bad states</i>		
P/D	35.52	32.62	B1	B2	B3
P/D sensitivity	618.18	675.56	796.52	976.03	1450.21
P/D elasticity	17.33	20.46	27.72	40.15	81.52
P/D volatility	1.72	4.02	6.89	8.48	8.57
(log)P/D volatility	4.86	12.27	24.02	34.96	47.06
surplus volatility	$2.81 \cdot 10^{-3}$	$5.97 \cdot 10^{-3}$	$8.66 \cdot 10^{-3}$	$8.68 \cdot 10^{-3}$	$5.87 \cdot 10^{-3}$
return volatility	6.36	13.79	25.52	36.52	48.80
risk-adjusted rates	0.53	2.61	5.68	8.87	13.31
expected returns	1.36	6.81	16.76	31.73	49.61

Figures

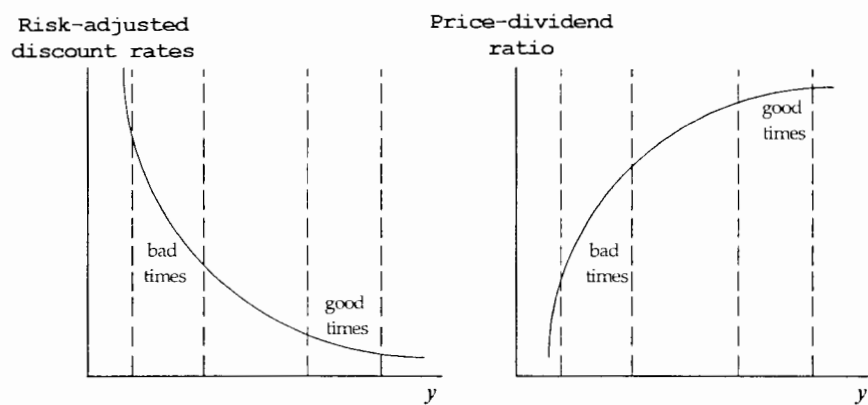


Fig. 1 (Countercyclical return volatility) If price-dividend ratios are concave in some state variable y tracking the state of the economy, return volatility increases on the downside and is consequently countercyclical. According to the theory in this article, price-dividend ratios are concave in y if the risk-adjusted discount rates are decreasing and sufficiently convex in y .

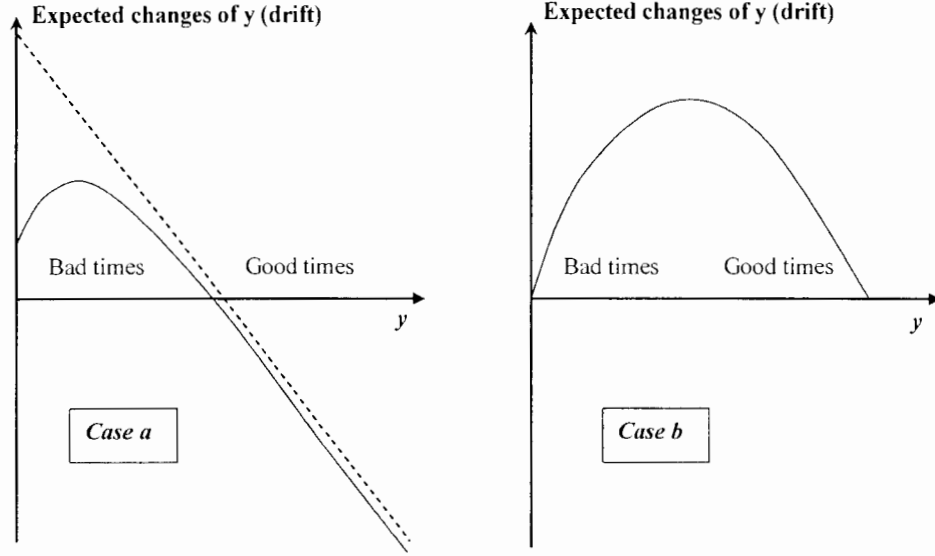


Fig. 2 (Expected changes in the state of the economy) In this picture, y is a state variable tracking the state of the economy. The left hand panel (Case a) depicts the drift function $\tilde{m}(y_t) = \frac{d}{d\tau} \tilde{\mathbb{E}}_t(y_\tau) \big|_{\tau=t}$ that makes the volatility of the expected changes in y more volatile in bad times than in good times (solid line). The expectation $\tilde{\mathbb{E}}$ is taken under the probability $\bar{Q}$ in Eq. (13). The dashed line depicts one example of the expectation $\frac{d}{d\tau} E_t(y_\tau) \big|_{\tau=t}$ taken under the physical probability. The right hand panel (Case b) depicts the drift function $\tilde{m}(y_t)$ that makes the volatility of the expected changes in y as volatile in good as in bad times.

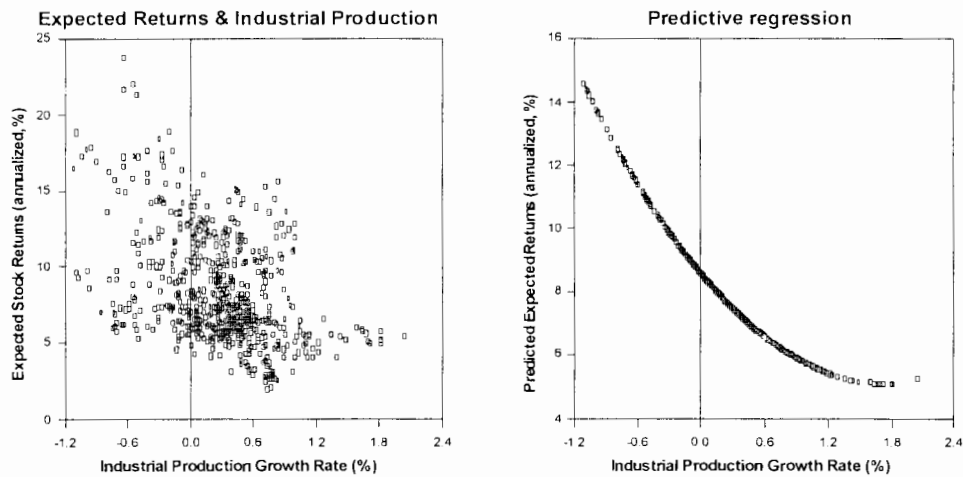


Fig. 3 (Expected returns and business cycle conditions) The left-hand side of this picture plots estimates of the expected returns (annualized, percent) ($\hat{\mathcal{E}}_t$ say) against one-year moving averages of the industrial production growth (IP_t). The expected returns are estimated through the predictive regression of S&P returns on to default-premium, term-premium and return volatility defined as $\widehat{Vol}_t \equiv \sqrt{\frac{\pi}{2} \sum_{i=1}^{12} \frac{|Exc_{t+1-i}|}{\sqrt{12}}}$, where Exc_t is the return in excess of the 1-month bill return as of month t . The one-year moving average of the industrial production growth is computed as $IP_t \equiv \frac{1}{12} \sum_{i=1}^{12} Ind_{t+1-i}$, where Ind_t is the real, seasonally adjusted industrial production growth as of month t . The right-hand side of this picture depicts the prediction of the static Least Absolute Deviations regression: $\hat{\mathcal{E}}_t = \underset{(0.15)}{8.56} - \underset{(0.30)}{4.05} \cdot IP_t + \underset{(0.31)}{1.18} \cdot IP_t^2 + w_t$, where w_t is a residual term, and standard errors are in parenthesis. Data are sampled monthly, and span the period from January 1948 to December 2002.

COMMONWEALTH OF PENNSYLVANIA
BEFORE THE PUBLIC UTILITY COMMISSION

Application of Pennsylvania-American	:	
Water Company for Approval of a Change in	:	
Control to be Effected Through a Public	:	Docket No. A-212285F0136
Offering of the Common Stock of American	:	
Water Works Company, Inc.	:	

Direct Testimony of
Scott J. Rubin

on behalf of

Office of Consumer Advocate

*** Non-Proprietary Version ***

September 29, 2006

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1. Introduction

Q. Please state your name and business address.

A. My name is Scott J. Rubin. My business address is 3 Lost Creek Drive, Selinsgrove, PA.

Q. By whom are you employed and in what capacity?

A. I am an independent consultant and an attorney. My practice is limited to matters affecting the public utility industry.

Q. What is the purpose of your testimony in this case?

A. I have been asked by the Office of Consumer Advocate (OCA) to review, and make recommendations concerning, the Application filed by Pennsylvania-American Water Company (PAWC). The application seeks approval for a proposed merger between Thames Water Aqua US Holdings, Inc. (TWAUSHI) and American Water Works Company, Inc. (AWW), with AWW as the surviving company, to be followed by an Initial Public Offering (IPO) of the common stock of AWW. At the conclusion of the IPO, AWW would be an independent, publicly traded company. At the present time, AWW's common stock is owned by TWAUSHI; TWAUSHI's common stock is owned by Thames Water Aqua Holdings GmbH (Thames); and Thames' common stock is owned by RWE AG (RWE).

Q. What are your qualifications to provide this testimony in this case?

A. I have testified as an expert witness before utility commissions or courts in the District of Columbia and in the states of Arizona, Delaware, Kentucky, Illinois, Maine, Maryland, New Jersey, New York, Ohio, Pennsylvania, and West Virginia. I also have testified as an expert witness before two committees of the U.S. House of Representatives and one

1 committee of the Pennsylvania House of Representatives. I also have served as a
2 consultant to the staffs of two state utility commissions, several national utility trade
3 associations, and state and local governments throughout the country. Prior to
4 establishing my own consulting and law practice, I was employed by the OCA from 1983
5 through January 1994 in increasingly responsible positions. From 1990 until I left that
6 Office, I was one of two senior attorneys at the OCA. Among my other responsibilities
7 in that position, I had a major role in setting their policy positions on water and electric
8 matters. In addition, I was responsible for supervising the technical staff of that Office. I
9 also testified as an expert witness for the OCA on rate design and cost of service issues.

10 In addition, from 1990 until 1994, I chaired the Water Committee of the National
11 Association of State Utility Consumer Advocates (NASUCA). In that position, I served
12 as the liaison between NASUCA members and various industry and government
13 associations, including the National Association of Water Companies, the American
14 Water Works Association, and the U.S. Environmental Protection Agency. I was
15 frequently called upon by those organizations to provide the consumer perspective on
16 various water-industry issues, including customer service.

17 Throughout my career, I developed substantial expertise in matters relating to the
18 economic regulation of public utilities. I have published articles, contributed to books,
19 written speeches, and delivered numerous presentations, on both the national and state
20 level, relating to regulatory issues. I have attended numerous continuing education
21 courses involving the utility industry. I also periodically participate as a faculty member
22 in utility-related educational programs for the Institute for Public Utilities at Michigan

1 State University, the American Water Works Association (AWWA), and the
2 Pennsylvania Bar Institute. Appendix A to this testimony is my curriculum vitae.

3 **Q. Do you have any experience that is particularly relevant to the issues in this case?**

4 A. Yes, I do. Over the years, I have been involved, either as an attorney or an expert
5 witness, in numerous utility merger or reorganization proceedings, including the
6 following:

- 7 • Allegheny Energy – Duquesne Light
- 8 • Alltel – Valor – Windstream
- 9 • Duke – Cinergy
- 10 • Exelon - PSEG
- 11 • FirstEnergy – GPU
- 12 • Long Island Lighting – Keyspan – Long Island Power Authority
- 13 • MCI – Sprint
- 14 • PSC – Consumers Water
- 15 • RWE – Thames – American Water Works
- 16 • SBC – AT&T
- 17 • Sprint-Nextel – Embarq
- 18 • Verizon – MCI

19 Of particular note, I was an expert witness and consultant for the public advocates
20 in four states (Kentucky, New Jersey, Pennsylvania, and West Virginia) when RWE
21 acquired AWW in 2003.

1 **Q. Are you also working for a group of public advocates concerning the transaction**
2 **that is proposed in this case?**

3 A. Yes, I am. I have been retained by public advocates in five states (Illinois, Kentucky,
4 New Jersey, Pennsylvania, and West Virginia) to assist in regulatory commission
5 proceedings concerning the proposed IPO of AWW.

6 **Q. Are you familiar with PAWC?**

7 A. Yes, I am. In addition to my involvement in the Pennsylvania proceeding where RWE
8 acquired AWW, I also testified in PAWC's most recent rate case on cost of service and
9 rate design issues.

10 **2. Overview**

11 **Q. Please provide an overview of the issues that you will be addressing.**

12 A. I will be discussing the proposed transaction and its potential impacts on the financial,
13 managerial, and technical capabilities of AWW and PAWC to provide safe and reliable
14 utility service. I also will propose various conditions that are necessary in order for the
15 proposed transaction to be in the public interest.

16 **Q. Does your testimony represent the entire position of the OCA in this case?**

17 A. No, it does not. The OCA also is sponsoring the testimony of Dr. J. Randall Woolridge
18 who may have other recommendations.

19 **3. Summary**

20 **Q. Please summarize your major findings and conclusions.**

21 A. I summarize my major findings and conclusions as follows:

- 1 • RWE has decided to sell AWW, after just three years, because of
2 AWW's lackluster operating performance, inefficient operations
3 (including high levels of lost water), high capital requirements, and
4 ineffective management.
- 5 • AWW faces serious challenges and projects it will need to greatly
6 increase its level of capital expenditures during the next few years in
7 order to stem the level of water losses and come into regulatory
8 compliance. PAWC faces some of these same challenges.
- 9 • AWW has allowed its pension plan to become seriously under-funded
10 during RWE's ownership. At year-end 2005, AWW's unfunded
11 pension liability stood at \$343.5 million – more than tripling the
12 unfunded liability that existed when AWW was acquired by RWE.
13 Restoring the pension plan to fiscal health will serve as a further drain
14 on AWW's cash resources.
- 15 • The proposed IPO will not raise any capital for AWW. The IPO and
16 divestiture from RWE will do nothing to help AWW and PAWC meet
17 these challenges. In fact, the IPO process itself will cost AWW
18 millions of dollars, raise AWW's cost of capital, and distract
19 management from addressing AWW's real problems. As such, the
20 proposed IPO will have a negative impact on AWW, PAWC, and
21 PAWC's customers.
- 22 • Given the challenges faced by AWW and PAWC as a result of the
23 proposed transaction and information I have obtained about AWW
24 customer service difficulties in several jurisdictions, including
25 Pennsylvania, I am concerned about the potential impact on the quality
26 of service received by PAWC's customers.
- 27 • I conclude, that given the costs and detriments of the proposed IPO to
28 AWW, that AWW should receive at least 20% of the proceeds of the
29 IPO. RWE should not be permitted to just walk away from its
30 commitments, receive billions of dollars, and leave AWW with
31 increased costs, reduced access to capital, increasing capital
32 requirements, and other serious challenges.
- 33 • I also conclude that the Commission should condition its approval of
34 the proposed transaction in several ways that are designed to put
35 PAWC back on the right track and maintain the quality of its customer
36 service.

4. Background

Q. When did RWE and Thames acquire AWW?

A. On September 17, 2001, RWE and Thames announced that they had reached an agreement with AWW to purchase all of AWW's common stock. The total transaction had a value of approximately \$7.6 billion (the stock purchase was valued at approximately \$4.6 billion, with an additional \$3.0 billion of assumed debt). It took more than a year for the regulatory approval process to be completed, so the transaction did not close until January 10, 2003.

Q. Did the Pennsylvania Public Utility Commission review and approve that transaction?

A. Yes, on, September 4, 2002, this Commission entered an order approving the transaction, with conditions (Docket No. A-212285F0096, 221 PUR4th 487). The Commission adopted 10 conditions. For ease of reference, I have reproduced the list of conditions from that order in Schedule SJR-1.

Q. What is RWE now proposing?

A. RWE is now proposing to sell its interest in AWW. In essence, RWE is not happy with the deal it made less than five years ago and it wants to sell AWW. RWE attempted to find a single buyer (or group of buyers) for AWW, but was unable to find one at a price it found desirable. As a result, RWE is proposing to sell the common stock of AWW to the public through an IPO.

5. Reasons RWE is Trying to Sell AWW

Q. Why is RWE trying to sell AWW?

A. According to the minutes of meetings of RWE's board of directors (known as the Supervisory Board), there appear to be three major reasons for RWE's decisions. First, RWE is clearly dissatisfied with AWW's operations and performance. One major area of concern is the performance of AWW's unregulated operations, about which RWE's board states: "growth in non-regulated business was well below expectations due to the weak distribution [sales] team." Minutes of RWE Supervisory Board meeting of September 16, 2005 (Public Version) (attached as Schedule SJR-2), page 3. At a subsequent meeting, RWE's board was told that, at AWW, "rises in efficiency were not implemented as planned." Minutes of RWE Supervisory Board meeting of November 4, 2005 (Public Version) (attached as Schedule SJR-3), page 4.

Second, RWE is disheartened by the level of on-going capital investment that is required to run AWW because, among other reasons, "tougher environmental standards ... would require ever higher capital spending." Schedule SJR-2, page 4. The public version of the presentation at that meeting referred to AWW's infrastructure as being "outdated." Schedule SJR-4. Later, RWE's board was told that the "water business had a disproportionately high need for capital without offering correspondingly high return." Schedule SJR-3, page 2.

Third, RWE's board also expressed serious concern with the level of water that is being lost within the AWW system – water that is costly to purchase or treat but that never results in revenue because it does not reach the customer. Thus, the board minutes

1 state: “Mr. Roels [RWE’s CEO] then explained in depth the risks that arise for Thames
2 Water and American Water from distribution losses. In Thames Water’s case, for
3 example, the distribution losses ... currently amounted to some 30% of production. ...
4 The corresponding value at American Water was about 19%.” Schedule SJR-2, page 4.
5 At the board’s November meeting, this was further explained as follows:

6 In connection with the discussions about the most recent planning by
7 American Water’s management, it had become clear that leakage
8 problems in the US would tend to worsen in future. For instance, the
9 share of water production in New Jersey that is lost by leakage had risen
10 from 15% to currently 18%. The comparable value for Pennsylvania
11 stood at 30%. While replacing Thames Water’s entire pipe system would
12 take 125 years at the current renewal rate, the corresponding figure for
13 American Water was over 200 years. The reason for this extraordinarily
14 high value was that American Water, across a period of several years, had
15 not met regulatory stipulations in various US states. In part, this was due
16 to insufficient investment by American Water in the previous 10 years
17 prior to RWE acquiring its holding. In view of this renewal backlog, there
18 ought to be no investment restraint in dealing with these defects. The
19 elimination of major deviations from regulators’ stipulations is likely to
20 last into the year 2008.

21 Schedule SJR-3, page 8 (emphasis added).

22 **Q. Are there other indications that AWW’s management and unregulated operations**
23 **are adversely affecting AWW?**

24 A. Yes, in a presentation to AWW dated May 2, 2006, AWW’s financial advisor, Goldman
25 Sachs, notes the following concern with AWW’s credit: “Non-regulated water and
26 wastewater operations introduce more business risk than the regulatory operations.”
27 Selected pages from the presentation are attached as Schedule SJR-5; this quote appears
28 on page 13 of the presentation (page 2 of Schedule SJR-5).

1 **Q. Are there other indications that AWW's capital spending needs are adversely**
2 **affecting AWW?**

3 A. Yes, the same presentation from Goldman Sachs also lists as a concern the "high level of
4 capital expenditure spending necessary to upgrade and maintain water systems in
5 compliance with regulatory standards." Schedule SJR-5, page 2.

6 Further, a presentation dated March 2, 2006, apparently prepared by AWW's
7 Chief Financial Officer, Ellen Wolf, notes that AWW's capital expenditures for
8 maintenance are expected to grow at a rate of 15% per year from 2011 through 2020. The
9 relevant page from this presentation is attached as Schedule SJR-6. This is a very high
10 growth rate, which would indicate that AWW's plant is deteriorating significantly and/or
11 that AWW has not been investing adequately in maintaining its facilities. This projected
12 spending level confirms the concerns of RWE's board that AWW has not been properly
13 maintaining its facilities.

14 Moreover, this projected increase in capital expenditures apparently is coming on
15 top of expenditures that already are at a high level. In a December 12, 2005, presentation
16 Goldman Sachs amplified this concern, noting that "capital expenditure has averaged
17 close to \$500mm [million] over the last three years, 3x higher than that of its closest
18 competitor." The relevant page from this presentation is attached as Schedule SJR-7.

19 **Q. Are there allegedly confidential documents that shed further light on the magnitude**
20 **of AWW's projected capital expenditures?**

21 A. Yes, there are, and those documents also show a troubling pattern of AWW continually
22 revising its projected capital expenditures. Specifically, in a December 5, 2005,

1 presentation, AWW projected capital expenditures from 2006-2010 of {begin
2 **confidential** **end confidential**}. Two weeks later, on December 20, AWW
3 was projecting capital expenditures for the same five years of {begin **confidential**
4 **end confidential**}. A similar presentation on March 12, 2006, showed capital
5 expenditures for this same period dropping to {begin **confidential** **end**
6 **confidential**}. On June 12, 2006, the projection for 2006-2010 had increased somewhat
7 to {begin **confidential** **end confidential**}. In other words, within just a few
8 months, AWW's capital expenditure estimates have fluctuated by {begin **confidential**
9 **end confidential**}.

10 **Q. What do these continual changes in projected capital spending indicate to you?**

11 A. It seems that AWW does not have a solid understanding of the level and type of capital
12 spending that it will require over the next five years. This is troubling because most
13 water utility investments take several years to plan, finance, and construct. Historically
14 AWW's operating companies consistently prepared five-year capital plans, so each
15 operating utility and AWW as a whole would have a good idea of the capital spending
16 needs over a reasonable planning horizon. For the capital expenditure number to
17 fluctuate so frequently during a six-month time period certainly makes me wonder
18 whether the same level of diligent capital planning is being conducted now at AWW and
19 its operating companies.

20 **Q. How does capital spending in the range of {begin confidential**
21 **end confidential} compare to AWW's historic level of capital spending?**

22 A. The projected level of capital spending is significantly higher than historic levels of
23 spending. From 2001 through 2005, AWW's capital spending ranged from a low of \$381

1 million in 2001 to a high of \$519 million in 2003. During those five years, capital
2 spending totaled \$2.34 billion. The figures that are being discussed in these presentations
3 show a marked increase in capital spending for 2006-2010 – **{begin confidential**
4 **end confidential}** the level of capital expenditures over the
5 previous five years. Further, as I discussed above, AWW projects further large increases
6 (15% per year) in capital spending after 2010.

7 **Q. What is the most recent information you have seen about AWW's capital program?**

8 A. On September 21, 2006, AWW issued a press release in which it described some of its
9 on-going capital projects. That press release (attached as Schedule SJR-8) also states that
10 during 2006, AWW expects to spend \$640 million on capital projects. This represents a
11 24% increase over the level of capital expenditures in 2005.

12 **Q. What do these increases indicate?**

13 A. Increases of this magnitude are fully consistent with indications in the minutes of RWE's
14 board meetings that AWW's infrastructure needs have been neglected, resulting in lack
15 of compliance and unacceptably high levels of unaccounted for water.

16 **Q. Other than the three problems highlighted by RWE's board, does AWW face other**
17 **significant challenges?**

18 A. Yes, while there may be others, I will highlight one additional concern. According to the
19 May 2, 2006, Goldman Sachs presentation, AWW's pension and Other Post-Employment
20 Benefit (OPEB) plans are "under-funded ... with a low pension funding ratio." Schedule
21 SJR-5, page 2. In December 2005, Goldman Sachs quantified the level of under-funding,
22 based on year-end 2004 data, stating that the pension fund was under-funded by \$277
23 million and OPEBs were under-funded by \$177 million. Schedule SJR-7. That

document also shows that the pension funding ratio (that is, the percentage of the pension obligation that was funded) stood at only 60% compared to an industry average of 90%.

Id.

The 2004 figures, as well as data for year-end 2005 that were not available when the Goldman Sachs document was prepared, are shown in more detail in a note to AWW's financial statement for 2005 (the relevant portion is attached as Schedule SJR-9). The exhibit shows that at December 31, 2005, AWW's pension obligation was \$789.1 million, but AWW's pension assets had a value of only \$445.6 million, a shortfall of \$343.5 million. That is, during 2005 AWW's pension funding position worsened further, so that it had a pension funding ratio of only 56%.

Q. When RWE acquired AWW, was AWW's pension plan so poorly funded?

A. No, it was not. According to AWW's annual report for the year ending December 31, 2001, AWW's pension plan at that time was under-funded by \$110.8 million - assets of \$365.9 million compared to a benefit obligation of \$476.8 million (a pension funding ratio of 77%). The relevant pages from AWW's 2001 annual report are attached as Schedule SJR-10.

Thus, in the four years since RWE acquired AWW, AWW and RWE have allowed the funding of AWW's pension plan to deteriorate significantly. Funding has not even come close to keeping up with the increases in pension liability. During RWE's ownership, the pension benefit obligation has increased by \$312.3 million, but the plan's assets have increased by just \$79.7 million.

1 **Q. For regulatory purposes, why does the pension funding ratio matter?**

2 A. At some point, the pension will need to be fully funded so that AWW can meet its
3 obligations to its employees and retirees. That money has to come from somewhere – it
4 may come out of needed capital or maintenance spending, or it may come from higher
5 rates paid by customers. In any event, moving from 56% funding to 100% funding over
6 time will place yet a further strain on AWW's future cash flows and its ability to provide
7 safe, efficient, and reliable service to the public. In fact, under a new federal pension law
8 (the Pension Protection Act of 2006, signed into law in August 2006), it appears that
9 AWW will be required to make up its pension funding shortfall by 2015.

10 **6. Impact of an IPO on AWW's Problems**

11 **Q. Will the proposed IPO help AWW address any of the challenges you discussed?**

12 A. No, the IPO as proposed would not help AWW address any of these challenges. Indeed,
13 it is likely that the IPO would worsen AWW's ability to raise the capital that it needs to
14 make significant progress in these areas.

15 **Q. Will the IPO raise additional capital for AWW?**

16 A. No, as it is currently structured, all the proceeds of the IPO will go to RWE; AWW
17 would not receive a penny from the IPO. In fact, AWW projects that it will spend
18 \$14 million on financial advisors and attorneys to make the IPO happen (Schedule
19 SJR-11). In addition, according to a document filed by AWW in the New Jersey
20 approval proceeding, AWW is projecting that it will spend \$18.1 million to comply with
21 new responsibilities for publicly traded companies in the United States, including

1 Sarbanes Oxley (Schedule SJR-12). Thus, AWW will actually have a net loss of cash as a
2 result of the IPO.

3 In addition, as Dr. Woolridge discusses in his testimony, AWW is being required
4 to refinance all of the debt and preferred stock that RWE holds, but AWW will receive no
5 new funds as a result.

6 **Q. Will removing AWW from the RWE / Thames corporate family help AWW address**
7 **the fundamental problems in AWW's business that RWE has highlighted?**

8 A. No, it will not. Making AWW a stand-alone company will not solve anything, and will
9 actually remove a level of corporate oversight that could be important in rehabilitating
10 AWW's operations. The types of problems that RWE identified – ineffective
11 management, inadequate ability to engage in and value unregulated activities, and
12 inefficient and inadequate maintenance and capital replacement practices – are systemic
13 in nature and will require a serious change of direction and focus at AWW. AWW needs
14 to become more efficient, better utilize its capital, reduce waste, and focus its attention on
15 customer service and operational efficiency. These are tremendous challenges that will
16 require the full attention of AWW's management. Unfortunately, the IPO will be
17 diverting management's attention away from these problems – not only during the next
18 year when the IPO process takes place, but beyond that as management copes with the
19 new responsibilities of being a publicly traded company.

20 In addition, removing RWE and Thames from the picture is likely to have two
21 additional adverse consequences. First, it is likely to increase AWW's cost of capital, as

1 Dr. Woolridge demonstrates, making it more difficult and expensive for AWW to raise
2 the capital it needs to address its deficiencies.

3 Second, if the IPO is approved as proposed, AWW will lose the expertise and
4 oversight of RWE and Thames. That expertise was one of the major benefits that AWW
5 touted when it first announced the sale to RWE in 2001.

6 **Q. Can you be more specific about what you mean by management being distracted?**

7 A. Yes. That is just a shorthand way of referring to how AWW would set priorities, with
8 and without the IPO. A prime example of this is the effect of the IPO on prioritizing
9 AWW's information technology (IT) investments. Rather than using its IT resources and
10 personnel to reduce costs, improve efficiency, or enhance customer service, AWW has
11 redirected its efforts to becoming compliant with the Sarbanes Oxley Act – a process
12 designed to protect stockholders of publicly traded companies; not one to help customers.

13 Indeed, in response to a data request in the Kentucky proceeding (AG set 2, no.
14 17), AWW states that it has put a project on hold that would consist of “enhancements to
15 system information technology to replace aging information and data handling systems
16 and to improve operational efficiency. Implementation of such systems has been delayed
17 due to resource constraints associated with ensuring that AWW is Sarbanes-Oxley
18 compliant.” This is precisely the type of problem I am referring to when I talk about
19 management being distracted by the IPO.

1 **Q. But isn't the proposed transaction just returning AWW to the way it was before**
2 **2002?**

3 A. No, it is not. Before the RWE acquisition, AWW was controlled by the family of the
4 company's founder, John Ware, and a few key officers. Collectively, this group owned
5 28.6% of AWW's common stock and they controlled the board of directors.¹ After the
6 RWE acquisition, AWW lost many of its key people. Moreover, there appears to have
7 been a change in corporate culture, which used to take great pride in the quality of service
8 received by customers. In its place, we have increasing evidence of a company that
9 seems to lack direction. Its investments in unregulated operations are failing (as Dr.
10 Woolridge explains), it is losing tremendous amounts of water, it has serious billing and
11 customer service concerns, and it is failing to adequately invest in and maintain its
12 distribution system.

13 In short, you cannot just snap your fingers and restore AWW to the way it used to
14 be. It is more like trying to put Humpty Dumpty back together again – the company
15 bears little resemblance to what it was before its acquisition by RWE.

16 **Q. What do you conclude about the impact of the IPO on AWW?**

17 A. I conclude that the proposed IPO would be detrimental to AWW. The IPO will not help
18 AWW address any of its serious problems. Further, the IPO actually will make it even
19 more difficult for AWW to remedy those problems. Simply, AWW will lose access to
20 RWE's and Thames's expertise, oversight, supervision, and lower cost capital. Further,

¹ AWW Proxy Statement for the Special Meeting of Stockholders on Jan. 17, 2002 (issued Dec. 5, 2001), p. 3.

the IPO process itself will serve as a major distraction to AWW's management and will cost AWW millions of dollars that could be better spent elsewhere.

7. Effect on PAWC and its Customers

Q. What effect will the IPO have on PAWC?

A. It appears that PAWC is experiencing some of the same problems that plague AWW as a whole. For example, RWE singled out PAWC as having a very serious problem with non-revenue water, stating that PAWC has a level of unaccounted for water of 30%, which is extraordinarily high. Addressing a problem of this magnitude through a system as extensive as PAWC's will require significant amounts of capital.

Q. Have you been able to verify if the information about PAWC from RWE's board minutes is accurate?

A. Yes. On page 500 of PAWC's 2005 annual report to this Commission, PAWC reports that it produced or purchased 79,784,608,000 gallons during 2005, but it delivered only 52,520,704,000 gallons to customers. This means that during 2005 PAWC lost 27,263,904,000 gallons, or more than 34% of its production.

Q. Why is this important in this case?

A. As RWE's board noted, PAWC has a very serious problem with water losses, and I expect it will take large capital investments to address this problem. At the same time PAWC faces an apparently large need for capital, the cost of debt is likely to increase over what it would be if RWE remained an active owner in AWW. In addition, PAWC will lose access to the expertise and oversight that RWE or Thames might be able to provide in planning a project of this magnitude.

1 In short, PAWC and its customers will not receive any benefits from the IPO.

2 Indeed, as is the case with AWW, PAWC and its customers are likely to be made worse
3 off by the IPO, through higher capital costs, reduced access to capital, management
4 distraction, and increased costs associated with supporting a publicly traded company.

5 **Q. What do you conclude about the effects of the proposed IPO on PAWC and its**
6 **customers?**

7 A. I conclude that the proposed IPO would be detrimental to PAWC and its customers.

8 **8. Financial Fall-out of IPO: Preferred Stock**

9 **Q. Does the proposed IPO have any other financial consequences for AWW?**

10 A. Yes, it does. If RWE is permitted to sell its common stock in AWW, that results in the
11 automatic call of approximately \$1.75 billion in AWW preferred stock that is owned by
12 another RWE company, Thames Water International Luxemburg (TWIL). This is part of
13 a more complex financial arrangement, involving other RWE subsidiaries, designed to
14 shield RWE from tax liability. Simply, one immediate consequence of the IPO is that
15 AWW will have to come up with \$1.75 billion in cash to redeem the AWW preferred
16 stock held by another RWE company.

17 **Q. Why was the preferred stock issued?**

18 A. The preferred stock was issued in June 2003 to “help fund the acquisition of American
19 Water” by RWE. Schedule SJR-5, page 3. In other words, it was part of the financing
20 package that was put in place by RWE to fund its initial purchase of AWW.

1 **Q. Why is this preferred stock important?**

2 A. Financing the preferred stock redemption appears to be a significant concern for AWW,
3 as Dr. Woolridge discusses in his testimony.

4 **9. Customer Service Impacts**

5 **Q. Does the proposed transaction raise other concerns?**

6 A. Yes, it does. As I discussed earlier, the proposed transaction has negative impacts on
7 AWW and PAWC: it will divert management's attention, as well as significant amounts
8 of money, away from serious deficiencies that AWW and PAWC need to address. It also
9 is likely to increase AWW's and PAWC's cost of capital at a time when they need to
10 make significant capital expenditures. Further, AWW will need to address its vastly
11 under-funded pension plan, which will further diminish its financial resources. I am
12 concerned that with all of this going on, PAWC and AWW may look to save money by
13 reducing the level of customer service.

14 **Q. What do you mean by the "level" of customer service?**

15 A. I am referring to the quality of service provided by AWW's call center, such as its ability
16 to answer calls within a reasonable period of time and its ability to resolve calls promptly.
17 In addition, I am referring to other basic types of customer service, such as providing
18 actual meter readings and accurately producing bills each month.

19 **Q. Does PAWC have internal goals and reports for these types of customer service**
20 **parameters?**

21 A. Yes, it does. PAWC provided copies of the reports for each month from 2003 through
22 2005 in response to interrogatory OCA set 1, no. 7. I have summarized the data for two

of the parameters that I consider particularly important – percentage of calls answered within 30 seconds and percentage of bills that have estimated meter readings – on Schedule SJR-13.

Q. What do these data show?

A. The data show that PAWC's performance on both of these customer-service parameters significantly worsened during 2005. On the percent of calls answered within 30 seconds, PAWC has an internal goal of 80%. During 2004, it met or exceeded this goal in 10 of 12 months. During 2005, it never met or exceeded its goal. Indeed, in August and September 2005, it only answered about one-half of its calls within 30 seconds.

PAWC's performance on obtaining actual meter readings became significantly worse in 2004 and continued at unacceptable levels during 2005. PAWC's internal goal is to have 0% estimated meter readings. It is not realistic to expect no estimated readings ever (since equipment can malfunction or an employee can become sick), but PAWC is right in expecting a very low level of estimated meter reading. In fact, one recent utility industry benchmarking study found that the average water utility estimated fewer than 2% of its meter readings.² During 2003, PAWC achieved a moderately low level of estimated reads, with estimated readings of 5.1% or less in 11 of 12 months. In 2004 and 2005, however, PAWC's performance deteriorated to unacceptable levels. During 2004, PAWC estimated between 13.7% and 16.9% of its meter readings in 10 of 12 months. In 2005, its performance was even worse, with estimated reads above 14.5% in every month, peaking at more than 20% in September and October.

² *Meter Reading Profiles and Best Practices 2005*, published by The Ascent Group, June 2005.

1 **Q. How does this performance compare to PAWC's performance before AWW was**
2 **acquired by RWE?**

3 A. Data for call center performance before mid-2002 is not readily comparable because
4 PAWC changed from having a stand-alone call center to being serviced by AWW's new
5 system-wide call center. For estimated meter readings, PAWC stated in response to OCA
6 set 1 no. 7 that in 2000 it had 15,883 estimated bills out of 5,805,051 total bills issued.
7 This equates to estimating only 0.3% of meter readings.

8 **Q. What do you conclude?**

9 A. I conclude that PAWC's customer service performance has deteriorated significantly
10 during the past year or two. I do not know the cause of the deterioration, but it is clear
11 that there is something very wrong. I cannot tell whether it is a change in corporate
12 priorities, a diversion of funding to other areas (or to paying dividends to RWE), or some
13 other reason. But PAWC's current level of performance – at least by these two important
14 measures of customer service – is not acceptable. PAWC is not meeting its own goals for
15 service and it is very far indeed from meeting water industry standards.

16 **Q. What do you recommend?**

17 A. At a minimum, I recommend that the Commission require PAWC to file monthly reports
18 with the Commission and the OCA in the same form as the reports provided in response
19 to OCA set 1 no. 7. To ease the administrative burden on PAWC, it would be acceptable
20 to me if PAWC made quarterly filings, with each filing containing three monthly reports.

21 I also would recommend that the Commission fully investigate the reasons for
22 PAWC's poor performance in these areas and work with PAWC to find ways to fix these

serious problems. Such an investigation could occur in a formal proceeding or as part of a management audit.

Q. Why are you raising these issues in this proceeding?

A. When RWE acquired AWW, we were told that the transaction would either have no effect or a positive effect on the quality of PAWC's service to its customers. We were told that RWE and Thames would impart water industry "best practices" on AWW and PAWC and that customers would benefit. In fact, it appears that PAWC's quality of service has deteriorated significantly under RWE's ownership. If AWW and PAWC are serious about providing benefits to customers as a result of the proposed transaction, then there must be some assurances that service levels are restored to acceptable levels. Monthly reporting and a Commission investigation are very conservative ways to try to achieve this goal. In the face of these data, however, I believe that the Commission must act now to restore PAWC's customer service to acceptable levels. As an absolute minimum, of course, it must ensure that PAWC's service quality does not deteriorate even further as a result of the proposed transaction (which, as I discussed above, will divert management's attention and tens of millions of dollars away from addressing these types of serious deficiencies).

10. IPO Recommendation

Q. Do you have any recommendations concerning RWE's sale of its entire interest in AWW?

A. Yes, I am troubled by RWE's lack of commitment to AWW and AWW's customers, as well as RWE's apparent failure to understand the long-term nature and capital intensity

1 of the water business. In 2001, RWE made a commitment to AWW and its customers.
2 In September 2005, less than three years after RWE took ownership of AWW, RWE
3 decided that it no longer wanted the responsibility of running a major water utility. RWE
4 seemed to be surprised by the problems it found at AWW – problems that should have
5 been readily apparent in the performance of due diligence. Issues like water losses,
6 capital requirements, main replacement practices, and the ability of management to
7 execute plans should have been identified and addressed during due diligence. As RWE
8 was quick to tell us in 2002, Thames is one of the largest water utilities in the world and
9 has tremendous expertise in these areas. It is troubling that RWE proposes to just walk
10 away from its commitments because it didn't realize how hard it would be. But I also do
11 not like the idea of keeping an owner in place that does not want to be there and that is
12 not willing to devote further capital to the enterprise.

13 **Q. If RWE can just sell out, then can anything be done to help AWW address its**
14 **serious problems?**

15 A. Yes, there is a way that the IPO process can be used to help AWW. I recommend that
16 RWE be required to pay 20% of the proceeds from the IPO to AWW. By providing
17 AWW with some of the funds generated through the IPO, it would serve to improve
18 AWW's credit rating and reduce the amount of debt it needs to issue. It also would
19 permit AWW to at least try to recover some of the up-front costs it will be incurring for
20 the IPO and public-company compliance programs, have funds available for capital
21 improvements and restoring customer-service levels, and allow AWW to start making
22 more reasonable contributions toward its pension plan.

1 **Q. How did you determine that 20% was a reasonable amount?**

2 A. I based this amount on the level of capital investment that AWW will require and the
3 failure of AWW and RWE to make adequate contributions to AWW's pension fund
4 during RWE's tenure. In a sense, the carve-out of 20% of the proceeds that I recommend
5 is a way for RWE to make good on some of the commitments it made when it acquired
6 AWW – commitments that have not been met, such as improving the safety, reliability,
7 and efficiency of service.

8 Specifically, when RWE purchased AWW, it paid approximately \$4.6 billion for
9 the common stock. During the year ending December 31, 2005, RWE wrote off €759
10 million (approximately \$900 million) of that investment. Schedule SJR-14. At this
11 point, then, RWE's equity investment in AWW is valued at approximately \$3.7 billion.
12 If the IPO is able to raise that amount of money, then 20% of the proceeds would be
13 approximately \$750 million. This amount would provide AWW with the funds to cover
14 its pension funding shortfall during RWE's tenure (\$232.6 million)³ and enough to fund
15 one year (or less) of AWW's capital spending.⁴

16 The effect of my recommendation, then, would be to require RWE to pay the
17 shortfall in AWW's pension funding that RWE allowed to occur, and to provide
18 transitional funding for about one year or less of AWW's capital program from funds
19 generated through the IPO.

³ An increase in pension liability of \$312.3 million, but an increase in pension assets of only \$79.7 million, as I discussed above.

⁴ As I discussed above, AWW's capital budget for 2006 is \$640 million, and it is expected to remain at or above that level for the next 10 years or more.

11. Benefits of Currency Hedge

Q. Are there any other aspects to the proposed transaction that have not been fully disclosed in the Joint Petition?

A. Yes, there is another aspect to the transaction that would result in a substantial financial gain to RWE, but that does not appear in any of the documents provided with the Joint Petition. Specifically, RWE entered into a hedging transaction when it purchased AWW to insulate itself from the risk of currency exchange rate changes.

At the time the transaction was announced, in September 2001, a U.S. dollar was worth about 1.10 euros (€).⁵ So for every dollar earned by AWW, RWE would see earnings on its books of €1.10. In the past four years, the exchange rates have changed dramatically. During September 2006, \$1 was worth only about €0.79. So for RWE to earn €1.10 from its investment in AWW, AWW would need to earn \$1.28. That is, in order for RWE's earnings to stay the same in euros, AWW's earnings would have had to increase by 28% in dollars.

As a sophisticated, multi-national company, RWE was obviously aware of the potential risk to its earnings from exchange rate fluctuations. So RWE protected its original investment in AWW by entering into a hedging transaction. This transaction is described in a note to the financial statement of Thames Water Aqua Holdings GmbH, a German subsidiary of RWE that is the intermediate holding company of both Thames Water and AWW (the relevant portion is attached as Schedule SJR-15).

⁵ This and the other currency cross-rates (or exchange rates) discussed here are from < <http://www.x-rates.com> >, as of September 22, 2006.

1 **Q. How does the Thames Water Aqua Holdings financial statement describe the**
2 **hedging transaction?**

3 A. The document states that yet another RWE subsidiary, Thames Water Aqua International
4 GmbH, borrowed money in U.S. dollars in 2003 that provided the hedge. In other words,
5 RWE borrowed the money in U.S. dollars that it used to purchased AWW's common
6 stock. As I understand the financial statement, when RWE sells its interest in AWW and
7 TWAUSHI, it will pay back the loans that provided the hedge. It is important to
8 understand that this was a risk-management transaction (a hedge) and not speculation in
9 currency markets. RWE was attempting to ensure that the value of its investment in
10 euros would not change significantly because of changes in the exchange rates. RWE
11 will then offset the gain on the loans "against the acquisition cost of the investment in
12 TWAUSHI." Schedule SJR-15, page 2.

13 **Q. Has the hedging transaction been successful?**

14 A. Yes, it has. According to the financial statement, the remaining value of the loans is
15 €3,224,153,238.80. In January 2003, \$1 was worth €0.94, so the U.S. dollar value of the
16 loan would be approximately \$3.43 billion. At today's exchange rate of \$1 = €0.79, it
17 would take only €2.71 billion to pay off that loan. Thus, even though the value of RWE's
18 investment in AWW has declined, that decline in value was partially offset by the
19 currency hedge, which has generated a profit for RWE in the amount of approximately
20 €510 million (or about \$650 million).

21 **Q. What happens to that \$650 million gain?**

22 A. That money goes directly to RWE. In essence, under RWE's proposal, RWE will obtain
23 cash from four sources if it is allowed to sell AWW: (1) AWW's refinancing of debt

1 held by RWE or an affiliate; (2) AWW's redemption of preferred stock held by TWIL;
2 (3) the proceeds of the IPO that sells AWW's common stock; and (4) the gain on the
3 currency hedging transaction entered into by Thames Water Aqua International GmbH.
4 Dr. Woolridge estimates these amounts will total in excess of {begin confidential
5 end confidential}.

6 **Q. Is that a reasonable result?**

7 A. It may be reasonable for RWE to obtain the benefit of the currency hedging transaction
8 standing on its own, but it is not reasonable for RWE to receive 100% of the cash from
9 all of these sources, leaving AWW with nothing. This provides further support for my
10 proposal to provide AWW with some gain from the transaction.

11 12. Further Recommendations

12 **Q. Do you have any other recommendations?**

13 A. Yes, I do. In addition to my earlier recommendation, I also recommend conditions to
14 protect PAWC's customers from the effects of the proposed IPO. Specifically, I
15 recommend the following conditions:

- 16 • For the next five years, in any PAWC rate case the cost of capital
17 should be adjusted as Dr. Woolridge explains in his testimony. This
18 will insulate PAWC's customers from the adverse effect on AWW's
19 bond ratings from its divestiture from RWE.
- 20 • PAWC should adopt new procedures to closely monitor lost water.
21 These are all designed to address one of the key problems that is
22 leading RWE to abandon AWW: the high level of lost water and the
23 failure to maintain distribution systems.
- 24 • PAWC should be required to file quarterly water loss reports with the
25 Commission. The reports should show detailed calculations of
26 unaccounted-for water, including the source of any adjustments and
27 the basis for any such adjustments.

- AWW should not be permitted to charge its regulated subsidiaries more than \$1 million per year (adjusted for inflation) for Sarbanes Oxley compliance costs. AWW should be held to its estimate of these costs and should not permit these shareholder-protection costs to erode spending on projects that could help PAWC and its customers.
- Neither PAWC nor its ratepayers, directly or indirectly, should incur any additional costs, liabilities, or obligations in conjunction with TWUS, Thames or RWE's divestiture of AWWC.
- The payment for AWWC stock should not be recorded on PAWC's books.
- RWE, Thames and TWUS's divestiture of AWWC should not affect the accounting and ratemaking treatments of PAWC's excess deferred income taxes.
- No early termination costs, change in control payments, or retention bonuses paid to a PAWC or AWWC employee as a result of the proposed transaction should be allocated to PAWC or recovered from PAWC's ratepayers.
- PAWC should not bear any costs incurred to comply with any law, regulation, standard, or practice of the United Kingdom, Federal Republic of Germany, or European Community necessary to complete the proposed transaction.
- PAWC's equity-to-capital ratio should be maintained between 35 to 45 percent. If the equity-to-capital ratio exceeds this range, AWWC and PAWC should notify the Commission in writing within 30 days of this development and should submit to the Commission a detailed plan of action to return PAWC's equity-to-capital ratio to this range.
- AWWC and PAWC should notify the Commission in writing within 30 days of any downgrading of the bonds of AWWC or any AWWC subsidiary and will include with such notice the complete report of the issuing bonding agency.
- AWWC and PAWC should obtain Commission approval prior to PAWC's payments of any dividend or transfers of any funds within a calendar year that collectively represent more than 5 percent of PAWC's retained earnings as of December 31 of the prior calendar year to AWWC.
- AWWC or PAWC should file the following reports with the Commission: AWWC's quarterly interim reports to its shareholders; AWWC's annual reports to its shareholders; and AWWC's and PAWC's annual audit reports.

- Beginning for calendar year 2006 and for the next 5 years thereafter, PAWC should include in its annual report to the Commission a table that shows each water quality standard, the number of water service interruptions, the average employee response time to water service interruptions, the number of customer complaints, and the customer inquiry response time for that calendar year.
- AWWC should semi-annually submit written reports to the Commission on the actual cumulative costs of the proposed divestiture. The reports should be for reporting periods ending June 30 and December 31 and submitted within 45 days of the end of the reporting period.
- PAWC customers should experience no material adverse change in utility service due to the divestiture.
- AWWC and PAWC should adequately fund and maintain PAWC's treatment, transmission, and distribution systems; comply with all applicable Pennsylvania statutes and administrative regulations; and supply the service needs of PAWC customers.
- At least 30 days prior to any planned reduction of 5 percent or more in PAWC's work force, AWWC or PAWC should notify the Commission in writing of the planned reduction and will include with such notice a written study of the reduction's expected effects on service and PAWC's plan for maintaining service quality at the reduced work force level.
- AWWC should work to restore AWWC's and PAWC's levels of commitment to high quality utility service.

13. Conclusion

Q. Does this conclude your direct testimony?

A. Yes, it does.

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SURVEY OF PROFESSIONAL FORECASTERS

Release Date: February 13, 2007

FIRST QUARTER 2007

Forecasters Provide Views on New Measures of Inflation and Long-Term Expectations for Inflation Decline

Two measures of core inflation in the U.S. economy will decelerate in 2007 and hold nearly steady over the following two years, according to 49 forecasters surveyed by the Federal Reserve Bank of Philadelphia. Measured on a fourth-quarter over fourth-quarter basis, core CPI inflation will fall to 2.3 percent this year and hold steady at that rate in 2008 and 2009. An alternative measure of core inflation, the rate of change in the price index for personal consumption expenditures (PCE), is also expected to decelerate, to 2.0 percent, in 2007 before rising to 2.1 percent in 2009. Core inflation measures the rate of change in a price index that excludes the prices of food and energy. This is the first Survey of Professional Forecasters to report projections for core inflation.

This survey also incorporates, for the first time, projections for inflation in the headline PCE price index. Like the headline CPI, which has been included in the survey since 1981, this index incorporates food and energy prices. The forecasters see headline PCE inflation averaging 2.1 percent this year before falling to 2.0 percent in 2008 and 2009. A difference in the outlook for inflation in a headline price index and the corresponding core price index reflects the influence of recent past or expected future changes in the prices of food and energy. The table below summarizes the current outlook for inflation and shows little difference between the headline and core forecasts in 2008 and 2009. On an annual basis, only the projection for core PCE inflation shows a hint of acceleration, with the projection rising from 2.0 percent in 2008 to just 2.1 percent in 2009. Notably, the forecasters have trimmed their forecasts for headline CPI inflation in this survey. Previously, they thought this measure would average 2.6 percent in 2007 (not shown in the table) and 2.5 percent in 2008 (not shown).

	CPI (%)		PCE Price Index (%)	
	Headline	Core	Headline	Core
<i>Quarterly data:</i>				
2007: Q1	2.4	2.2	1.7	2.0
Q2	2.6	2.3	2.2	2.0
Q3	2.5	2.4	2.2	2.0
Q4	2.4	2.3	2.0	2.0
2008: Q1	2.3	2.2	2.0	2.0
<i>Fourth-quarter over fourth-quarter data:</i>				
2007	2.5	2.3	2.1	2.0
2008	2.3	2.3	2.0	2.0
2009	2.3	2.3	2.0	2.1
<i>Long-run projections:</i>				
2007-2011	2.40	N.A.	2.10	N.A.
2007-2016	2.35	N.A.	2.00	N.A.

The preceding table also shows the forecasters' views on inflation at longer horizons. Over the next five years, they expect headline CPI inflation to average 2.40 percent (annual rate). The forecasters peg CPI inflation over the next 10 years at an annual rate of 2.35 percent, down from the rate of 2.50 percent they reported in the last survey. Readers of this survey know that this is a surprising revision because the forecasters have been projecting 10-year annual average inflation of 2.50 percent since 1998. Using the responses of each forecaster available on our web page, we conducted an investigation of the revision by comparing the responses of this survey to those of the last one. There were 38 forecasters who participated in both surveys. Of these 38, seven raised their estimates in this survey, but 16 cut their estimates. The mean and median amounts by which the seven raised their estimates were 0.21 and 0.10 percentage point, respectively. The mean and median amounts by which the 16 lowered their estimates were 0.17 and 0.10 percentage point, respectively. When we recomputed the median estimate for each survey, using only the 38 responses of those who participated in both surveys, we found a long-run projection of 2.50 percent in the survey of 2006 Q4, the same estimate we reported last quarter for the full sample, and 2.40 percent in this survey, very close to the median estimate of 2.35 percent in this survey's full sample. We conclude that changing views on the long-run inflation outlook among those participants who submitted projections in both surveys accounts for some of the downward revision to the full-sample median estimates. Notably, eight forecasters participated in this survey who did not also participate in the previous one. The median estimate of these eight forecasters is 2.05 percent. This suggests that a changing composition of the panel of forecasters over the last two surveys also contributes to the downward revision to the consensus long-term CPI inflation outlook.

Headline PCE inflation is expected to average 2.10 percent over the next five years. Ten-year average PCE inflation will be 2.00 percent.

The current survey also marks the beginning of two new questions on probability ranges. We now ask the forecasters to provide their estimates of the chance that fourth-quarter over fourth-quarter core CPI and PCE inflation will fall into each of 10 different ranges in the each of the next two years. This helps analysts to assess the degree of uncertainty surrounding the forecasters' annual estimates of core inflation, discussed above. As the table below shows for core PCE inflation, the forecasters think there is a 38 percent chance inflation will be between 2.0 and 2.4 percent in 2007. There is also a substantial chance, nearly 35 percent, inflation will average between 1.5 percent and 1.9 percent.

Mean Probability Attached to Core PCE Inflation

	06Q4 TO 07Q4	07Q4 TO 08Q4
4 percent or more	0.14	0.12
3.5 to 3.9 percent	0.54	0.64
3.0 to 3.4 percent	2.30	2.42
2.5 to 2.9 percent	12.35	13.06
2.0 to 2.4 percent	38.00	37.79
1.5 to 1.9 percent	34.97	31.06
1.0 to 1.4 percent	8.89	11.39
0.5 to 0.9 percent	2.08	2.58
0.0 to 0.4 percent	0.67	0.76
Will decline	0.06	0.18

Forecasters See Higher Growth, Stronger Labor Market in 2007

The forecasters have raised their estimates for real GDP growth this year. On a year-over-year basis, real GDP is seen growing 2.8 percent this year, up from the forecasters' previous estimate of 2.6 percent. A slightly stronger labor market will accompany the outlook for growth. Nonfarm payroll employment will increase at a rate of 135,000 jobs per month in 2007, up slightly from 119,000 previously, while the unemployment rate will average 4.7 percent, down from 4.8 percent.

As the table below shows, the forecasters see real GDP growing 3.0 percent in 2008 and the unemployment rate rising to 4.8 percent.

	Real GDP (%)		Unemployment Rate (%)		Payrolls (000s/month)	
	Previous	New	Previous	New	Previous	New
<i>Quarterly data:</i>						
2007:Q1	2.7	2.6	4.7	4.6	117.2	136.6
Q2	2.9	2.7	4.8	4.7	99.4	116.5
Q3	2.9	3.0	4.8	4.7	118.7	115.8
Q4	2.9	3.2	4.9	4.8	118.1	131.1
2008:Q1	N.A.	3.1	N.A.	4.8	N.A.	130.2
<i>Annual average data:</i>						
2007	2.6	2.8	4.8	4.7	119.0	135.1
2008	N.A.	3.0	N.A.	4.8	N.A.	131.2

Forecasters Trim Estimates for Long-Run Growth in Output and Productivity

In first-quarter surveys, the forecasters provide their long-run projections for an expanded set of variables, including growth in output and productivity, as well as returns on financial assets. Over the next 10 years, the forecasters now think real GDP will grow at an annual rate of 3.00 percent, down from their previous estimate of 3.20 percent. Labor productivity is seen growing 2.20 percent at an annual rate over the same period, down from 2.44 percent. The forecasters have raised their estimate of the returns to stocks and Treasury bills, to 7.50 percent and 4.50 percent, respectively, but they continue to think 10-year Treasury bonds will return 5.00 percent.

	Long-Term (10-year) Forecasts (%)	
	First Quarter 2006	Current Survey
<i>Real GDP Growth</i>	3.20	3.00
<i>Productivity Growth</i>	2.44	2.20
<i>Stock Returns (S&P 500)</i>	7.00	7.50
<i>Bond Returns (10-year)</i>	5.00	5.00
<i>Bill Returns (3-month)</i>	4.25	4.50

The Federal Reserve Bank of Philadelphia thanks the following forecasters for their participation in recent surveys:

Scott Anderson, Wells Fargo and Company; **Robert J. Barbera**, ITG Inc.; **David W. Berson**, Fannie Mae; **Joseph Carson**, Alliance Capital Management; **Gary Ciminero**, CFA, Rhode Island House Policy Office; **Richard DeKaser**, National City Corporation; **Rajeev Dhawan**, Georgia State University; **Doug Duncan**, Mortgage Bankers Association; **Michael R. Englund**, Action Economics, LLC; **Gerard F. Fuda**, Independent Economist; **Stephen Gallagher**, Societe Generale; **James Glassman**, JP Morgan Chase & Co.; **Global Insight**; **Keith Hembre**, First American Funds; **David Huether**, National Association of Manufacturers; **William B. Hummer**, Wayne Hummer Investments; **Saul Hymans**, **Joan Crary**, and **Janet Wolfe**, RSQE, The University of Michigan; **Fred Joutz**, Benchmark Forecasts and Research Program on Forecasting, George Washington University; **Kurt Karl**, Swiss Re; **Dr. Irwin Kellner**, Hofstra University/MarketWatch/North Fork Bank; **Thomas Lam**, UOB Group; **L. Douglas Lee**, Economics from Washington; **Mickey D. Levy**, Bank of America; **Joseph Liro**, Stone & McCarthy Research Associates; **John Lonski**, Moody's Investors Service; **Dean Maki**, Barclays Capital; **Drew Matus**, Lehman Brothers; **Edward F. McKelvey**, Goldman Sachs; **Jim Meil**, Eaton Corporation; **Anthony Metz**, Pareto Optimal Economics; **Michael Moran**, Daiwa Securities America; **Joel L. Naroff**, Naroff Economic Advisors; **Mark Nielson, Ph.D.**, MacroEcon Global Advisors; **Michael P. Niemira**, International Council of Shopping Centers; **Martin A. Regalia**, U.S. Chamber of Commerce; **David Resler**, Nomura Securities International, Inc.; **David Rosenberg**, Merrill Lynch; **John Ryding**, Bear, Stearns, and Company, Inc.; **David F. Seiders**, National Association of Home Builders; **Xiaobing Shuai, Ph.D.**, Chmura Economics & Analytics; **Allen Sinai**, Decision Economics, Inc; **Tara M. Sinclair**, Research Program on Forecasting, George Washington University; **Sean M. Snaith, Ph.D.**, University of Central Florida; **Constantine G. Soras, Ph.D.**, Verizon Communications; **Neal Soss**, Credit Suisse; **Stephen Stanley**, RBS Greenwich Capital; **Susan M. Sterne**, Economic Analysis Associates, Inc.; **Thomas Kevin Swift**, American Chemistry Council; **David Teolis**, General Motors Corporation; **Lea Tyler**, Oxford Economics USA, Inc.; **Albert M. Wojnilower**; **Richard Yamarone**, Argus Research Group; **Mark Zandi**, Economy.com; **Ellen Beeson Zentner**, Bank of Tokyo-Mitsubishi UFJ, Ltd.

This is a partial list of participants. We also thank those who wish to remain anonymous.

SUMMARY TABLE
SURVEY OF PROFESSIONAL FORECASTERS
MAJOR MACROECONOMIC INDICATORS, 2007-2009

	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2007 (YEAR-OVER-YEAR)	2008	
PERCENT GROWTH AT ANNUAL RATES								
1. REAL GDP (BILLIONS, CHAIN WEIGHTED)	2.6	2.7	3.0	3.2	3.1	2.8	3.0	
2. GDP PRICE INDEX (PERCENT CHANGE)	2.4	2.2	2.1	2.1	2.2	2.1	2.1	
3. NOMINAL GDP (\$ BILLIONS)	5.1	4.9	5.3	5.4	5.1	5.0	5.3	
4. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE)	1.2	1.0	1.0	1.2	1.1	1.2	1.1	
(AVG MONTHLY CHANGE)	136.6	116.5	115.8	131.1	130.2	135.1	131.2	
VARIABLES IN LEVELS								
5. UNEMPLOYMENT RATE (PERCENT)	4.6	4.7	4.7	4.8	4.8	4.7	4.8	
6. 3-MONTH TREASURY BILL (PERCENT)	5.0	5.0	5.0	4.9	4.9	5.0	4.9	
7. 10-YEAR TREASURY BOND (PERCENT)	4.8	4.8	4.9	5.0	5.0	4.9	5.0	
	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2007 (Q4-OVER-Q4)	2008	2009
INFLATION INDICATORS								
8. CPI (ANNUAL RATE)	2.4	2.6	2.5	2.4	2.3	2.5	2.3	2.3
9. CORE CPI (ANNUAL RATE)	2.2	2.3	2.4	2.3	2.2	2.3	2.3	2.3
10. PCE (ANNUAL RATE)	1.7	2.2	2.2	2.0	2.0	2.1	2.0	2.0
11. CORE PCE (ANNUAL RATE)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1

THE FIGURES ON EACH LINE ARE MEDIANS OF 49 INDIVIDUAL FORECASTERS.

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.
SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2007.

SURVEY OF PROFESSIONAL FORECASTERS

First Quarter 2007

Tables

Note: Data in these tables listed as "actual" are the data that were available to the forecasters when they were sent the survey questionnaire on January 31; the tables do not reflect subsequent revisions to the data. All forecasts were received on or before February 8, 2007.

TABLE ONE
MAJOR MACROECONOMIC INDICATORS, 2007-2008
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST					ACTUAL	FORECAST	
		2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2006 ANNUAL	2007 ANNUAL	2008 ANNUAL
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	48	13487.2	13655.3	13819.3	13999.1	14182.9	14359.9	13253.9	13913.6	14648.1
2. GDP PRICE INDEX (2000=100)	48	116.89	117.59	118.22	118.83	119.45	120.10	116.05	118.50	121.02
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	34	N.A.	1207.1	1225.0	1241.8	1260.0	1293.5	N.A.	1233.3	1308.8
4. UNEMPLOYMENT RATE (PERCENT)	49	4.5	4.6	4.7	4.7	4.8	4.8	4.6	4.7	4.8
5. NONFARM PAYROLL EMPLOYMENT (THOUSANDS)	44	136051	136461	136811	137158	137551	137941	135374	136995	138569
6. INDUSTRIAL PRODUCTION (2002=100)	46	112.2	112.8	113.6	114.5	115.3	116.2	111.3	114.2	117.6
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	42	1.56	1.54	1.55	1.55	1.58	1.62	1.82	1.56	1.65
8. 3-MONTH TREASURY BILL RATE (PERCENT)	46	4.90	5.00	5.00	4.95	4.90	4.90	4.73	4.98	4.85
9. AAA CORPORATE BOND YIELD (PERCENT)	41	5.39	5.50	5.62	5.70	5.78	5.85	5.59	5.64	5.88
10. 10-YEAR TREASURY BOND YIELD (PERCENT)	47	4.63	4.79	4.83	4.87	4.98	5.00	4.79	4.87	5.00
11. REAL GDP (BILLIONS, CHAIN WEIGHTED)	49	11541.6	11614.9	11693.5	11780.3	11872.7	11962.6	11422.4	11741.3	12099.1
12. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	48	8199.2	8264.0	8319.2	8378.6	8437.4	8497.4	8092.3	8351.0	8587.3
13. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	46	1332.8	1357.1	1379.1	1399.0	1417.3	1434.6	1314.7	1388.9	1458.2
14. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	46	540.7	526.3	518.5	519.7	518.4	521.1	582.5	522.4	530.0
15. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	44	747.1	750.9	754.9	757.5	760.4	763.7	741.9	756.0	766.9
16. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	44	1270.5	1278.4	1286.0	1293.0	1300.0	1306.0	1256.8	1290.0	1313.7
17. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	46	35.3	30.0	32.5	35.0	35.0	37.0	46.4	32.9	39.5
18. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	46	-581.4	-589.6	-587.8	-590.5	-587.4	-582.8	-617.8	-591.0	-578.4

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA. SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2007.

TABLE TWO
MAJOR MACROECONOMIC INDICATORS, 2007-2008
PERCENTAGE CHANGES AT ANNUAL RATES

	NUMBER OF FORECASTERS	Q4 2006 TO Q1 2007	Q1 2007 TO Q2 2007	Q2 2007 TO Q3 2007	Q3 2007 TO Q4 2007	Q4 2007 TO Q1 2008	2006 TO 2007	2007 TO 2008
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	48	5.1	4.9	5.3	5.4	5.1	5.0	5.3
2. GDP PRICE INDEX (2000=100)	48	2.4	2.2	2.1	2.1	2.2	2.1	2.1
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	34	9.8	6.1	5.6	6.0	11.1	8.1	6.1
4. UNEMPLOYMENT RATE (PERCENT)	49	0.1	0.1	0.0	0.1	0.0	0.1	0.1
5. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE)	44	1.2	1.0	1.0	1.2	1.1	1.2	1.1
(AVG MONTHLY CHANGE)	44	136.6	116.5	115.8	131.1	130.2	135.1	131.2
6. INDUSTRIAL PRODUCTION (2002=100)	46	2.2	3.0	3.0	3.0	2.9	2.6	3.0
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	42	-6.6	2.5	1.1	8.4	10.6	-14.2	6.0
8. 3-MONTH TREASURY BILL RATE (PERCENT)	46	0.10	-0.00	-0.04	-0.05	0.00	0.24	-0.13
9. AAA CORPORATE BOND YIELD (PERCENT)	41	0.11	0.12	0.08	0.08	0.07	0.05	0.24
10. 10-YEAR TREASURY BOND YIELD (PERCENT)	47	0.16	0.04	0.04	0.11	0.01	0.08	0.13
11. REAL GDP (BILLIONS, CHAIN WEIGHTED)	49	2.6	2.7	3.0	3.2	3.1	2.8	3.0
12. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	48	3.2	2.7	2.9	2.8	2.9	3.2	2.8
13. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	46	7.5	6.6	5.9	5.3	5.0	5.6	5.0
14. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	46	-10.2	-5.8	1.0	-1.0	2.0	-10.3	1.5
15. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	44	2.1	2.1	1.4	1.5	1.7	1.9	1.4
16. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	44	2.5	2.4	2.2	2.2	1.9	2.6	1.8
17. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	46	-5.3	2.5	2.5	0.0	2.0	-13.5	6.6
18. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	46	-8.2	1.8	-2.7	3.1	4.6	26.8	12.6

NOTE: FIGURES FOR UNEMPLOYMENT RATE, TREASURY BILL RATE, AAA CORPORATE BOND YIELD,
AND 10-YEAR TREASURY BOND YIELD ARE CHANGES IN THESE RATES, IN PERCENTAGE POINTS.
FIGURES FOR CHANGE IN PRIVATE INVENTORIES AND NET EXPORTS ARE CHANGES IN BILLIONS OF CHAIN-WEIGHTED DOLLARS.
ALL OTHERS ARE PERCENTAGE CHANGES AT ANNUAL RATES.

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA. SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2007.

TABLE THREE
MAJOR PRICE INDICATORS, 2007-2009
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST(Q/Q)					ACTUAL	FORECAST(Q4/Q4)		
		2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2006 ANNUAL	2007 ANNUAL	2008 ANNUAL	2009 ANNUAL
1. CONSUMER PRICE INDEX (ANNUAL RATE)	46	-2.2	2.4	2.6	2.5	2.4	2.3	2.0	2.5	2.3	2.3
2. CORE CONSUMER PRICE INDEX (ANNUAL RATE)	43	1.8	2.2	2.3	2.4	2.3	2.2	2.7	2.3	2.3	2.3
3. PCE PRICE INDEX (ANNUAL RATE)	36	-0.8	1.7	2.2	2.2	2.0	2.0	1.9	2.1	2.0	2.0
4. CORE PCE PRICE INDEX (ANNUAL RATE)	38	2.1	2.0	2.0	2.0	2.0	2.0	2.3	2.0	2.0	2.1

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA. SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2007.

TABLE FOUR
ESTIMATED PROBABILITY OF DECLINE IN REAL GDP

ESTIMATED PROBABILITY (CHANGES IN 100)	Q4 2006 T0 Q1 2007	Q1 2007 T0 Q2 2007	Q2 2007 T0 Q3 2007	Q3 2007 T0 Q4 2007	Q4 2007 T0 Q1 2008
NUMBER OF FORECASTERS					
10 OR LESS	40	29	23	20	20
11 TO 20	3	11	16	17	14
21 TO 30	0	4	5	7	8
31 TO 40	2	1	1	1	1
41 TO 50	0	0	1	1	1
51 TO 60	0	0	0	0	0
61 TO 70	1	1	0	0	0
71 TO 80	0	0	0	0	0
81 TO 90	0	0	0	0	0
91 AND OVER	0	0	0	0	0
NOT REPORTING	3	3	3	3	5
MEAN AND MEDIAN					
MEDIAN PROBABILITY	5.00	10.00	11.25	15.00	13.50
MEAN PROBABILITY	8.28	13.14	13.82	14.93	15.00

NOTE: TOTAL NUMBER OF FORECASTERS REPORTING IS 46.
SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.
SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2007.

TABLE FIVE
MEAN PROBABILITY OF CHANGES IN GDP AND PRICES
2006-2007 AND 2007-2008

MEAN PROBABILITY ATTACHED TO POSSIBLE
PERCENT CHANGES IN REAL GDP:

	2006-2007	2007-2008
6.0 OR MORE	0.09	0.29
5.0 TO 5.9	0.37	1.19
4.0 TO 4.9	3.61	7.19
3.0 TO 3.9	28.04	39.57
2.0 TO 2.9	50.91	34.64
1.0 TO 1.9	12.78	10.48
0.0 TO 0.9	2.78	4.40
-1.0 TO -0.1	1.00	1.67
-2.0 TO -1.1	0.26	0.38
LESS THAN -2.0	0.15	0.19

MEAN PROBABILITY ATTACHED TO POSSIBLE
PERCENT CHANGES IN GDP PRICE INDEX:

	2006-2007	2007-2008
8.0 OR MORE	0.07	0.07
7.0 TO 7.9	0.09	0.08
6.0 TO 6.9	0.13	0.17
5.0 TO 5.9	0.30	0.63
4.0 TO 4.9	2.00	2.93
3.0 TO 3.9	13.57	15.37
2.0 TO 2.9	52.26	45.80
1.0 TO 1.9	27.72	29.29
0.0 TO 0.9	3.50	4.95
WILL DECLINE	0.37	0.71

NOTE: TOTAL NUMBER OF FORECASTERS REPORTING IS 46.
SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.
SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2007.

TABLE SIX
 MEAN PROBABILITY OF CORE CPI AND CORE PCE INFLATION (Q4/Q4)
 2006Q4 TO 2007Q4 AND 2007Q4 TO 2008Q4

MEAN PROBABILITY ATTACHED TO CORE CPI INFLATION:

	06Q4 TO 07Q4	07Q4 TO 08Q4
4 PERCENT OR MORE	0.14	0.32
3.5 TO 3.9 PERCENT	1.02	1.16
3.0 TO 3.4 PERCENT	6.71	6.13
2.5 TO 2.9 PERCENT	26.67	23.45
2.0 TO 2.4 PERCENT	40.57	39.24
1.5 TO 1.9 PERCENT	18.24	21.53
1.0 TO 1.4 PERCENT	5.10	6.24
0.5 TO 0.9 PERCENT	1.24	1.55
0.0 TO 0.4 PERCENT	0.29	0.37
WILL DECLINE	0.02	0.03

MEAN PROBABILITY ATTACHED TO CORE PCE INFLATION:

	06Q4 TO 07Q4	07Q4 TO 08Q4
4 PERCENT OR MORE	0.14	0.12
3.5 TO 3.9 PERCENT	0.54	0.64
3.0 TO 3.4 PERCENT	2.30	2.42
2.5 TO 2.9 PERCENT	12.35	13.06
2.0 TO 2.4 PERCENT	38.00	37.79
1.5 TO 1.9 PERCENT	34.97	31.06
1.0 TO 1.4 PERCENT	8.89	11.39
0.5 TO 0.9 PERCENT	2.08	2.58
0.0 TO 0.4 PERCENT	0.67	0.76
WILL DECLINE	0.06	0.18

NOTE: TOTAL NUMBER OF FORECASTERS REPORTING IS 42.
 SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.
 SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2007.

TABLE SEVEN
LONG-TERM (5-YEAR AND 10-YEAR) FORECASTS

ANNUAL AVERAGE OVER THE NEXT 5 YEARS: 2007-2011

=====

CPI INFLATION RATE		PCE INFLATION RATE	
-----		-----	
MINIMUM	1.90	MINIMUM	1.50
LOWER QUARTILE	2.20	LOWER QUARTILE	1.90
MEDIAN	2.40	MEDIAN	2.10
UPPER QUARTILE	2.60	UPPER QUARTILE	2.30
MAXIMUM	3.50	MAXIMUM	3.30
MEAN	2.45	MEAN	2.13
STD. DEVIATION	0.38	STD. DEVIATION	0.37
N	46	N	42
MISSING	3	MISSING	7

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2007-2016

=====

CPI INFLATION RATE		PCE INFLATION RATE	
-----		-----	
MINIMUM	1.69	MINIMUM	1.50
LOWER QUARTILE	2.20	LOWER QUARTILE	1.90
MEDIAN	2.35	MEDIAN	2.00
UPPER QUARTILE	2.60	UPPER QUARTILE	2.30
MAXIMUM	4.00	MAXIMUM	3.20
MEAN	2.41	MEAN	2.12
STD. DEVIATION	0.40	STD. DEVIATION	0.39
N	46	N	42
MISSING	3	MISSING	7

REAL GDP GROWTH RATE		PRODUCTIVITY GROWTH RATE	
-----		-----	
MINIMUM	2.50	MINIMUM	1.20
LOWER QUARTILE	2.81	LOWER QUARTILE	2.00
MEDIAN	3.00	MEDIAN	2.20
UPPER QUARTILE	3.20	UPPER QUARTILE	2.30
MAXIMUM	3.50	MAXIMUM	3.00
MEAN	3.01	MEAN	2.15
STD. DEVIATION	0.22	STD. DEVIATION	0.32
N	44	N	38
MISSING	5	MISSING	11

STOCK RETURNS (S&P 500)		BOND RETURNS (10-YEAR)		BILL RETURNS (3-MONTH)	
-----		-----		-----	
MINIMUM	5.00	MINIMUM	2.00	MINIMUM	3.00
LOWER QUARTILE	6.40	LOWER QUARTILE	5.00	LOWER QUARTILE	4.00
MEDIAN	7.50	MEDIAN	5.00	MEDIAN	4.50
UPPER QUARTILE	8.13	UPPER QUARTILE	5.20	UPPER QUARTILE	4.68
MAXIMUM	15.00	MAXIMUM	6.00	MAXIMUM	6.00
MEAN	7.68	MEAN	5.00	MEAN	4.33
STD. DEVIATION	2.05	STD. DEVIATION	0.60	STD. DEVIATION	0.67
N	32	N	39	N	39
MISSING	17	MISSING	10	MISSING	10

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.
SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2007.

**Joint Report by NASD and the NYSE
On the Operation and Effectiveness of the
Research Analyst Conflict of Interest Rules**

December 2005

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EXHIBITS

Exhibit A – SRO Rules

NYSE Rules 472 and 472(k) Interpretation, 351, 344 and 344 Interpretation, and 345A

NASD Rules 2711, 1050 and 1120

Exhibit B – July 2002 Joint Memorandum

NYSE Information Memo No. 02-26 (June 26, 2002) and NASD *Notice to Members* 02-39 (July 2002)

Exhibit C – March 2004 Joint Memorandum

NYSE Information Memo No. 04-10 (Mar. 9, 2004) and NASD *Notice to Members* 04-18 (Mar. 2004)

Exhibit D – Chart Comparing SRO Rules and Global Settlement

INTRODUCTION

Beginning in 2002, the New York Stock Exchange (“NYSE”) and NASD (together, “the SROs”) implemented a series of rule changes (“SRO Rules”) to improve objectivity and transparency in equity research and provide investors with more reliable and useful information to make investment decisions. The rules were intended to restore public confidence in the validity of research and the veracity of research analysts, who are expected to function as unbiased intermediaries between issuers and the investors who buy and sell their securities. The trustworthiness of research had eroded due to the pervasive influences of investment banking and other conflicts that had manifest themselves during the market boom of the late 1990s.

Generally, the SRO Rules require clear, comprehensive and prominent disclosure of conflicts of interest in research reports and public appearances by research analysts. The rules further prohibit certain conduct – investment banking personnel involvement in the content of research and determination of analyst compensation, for example – where the conflicts are considered too pronounced to be cured by mere disclosure. Together with the Securities and Exchange Commission’s (“SEC” or the “Commission”) Regulation Analyst Certification and the settlement terms of certain enforcement proceedings, including the “Global Settlement” among the SROs, the Commission, the North American Securities Administrators Association (“NASAA”) and ten¹ of the largest investment banks, the SRO Rules have resulted in sweeping changes to the way firms produce research, utilize and compensate research analysts, and structure the operations of their research and investment banking departments. Evidence suggests that these reforms have resulted in more objective, reliable and valuable research for investors. However, the new rules also have added costs and administrative burdens to firms and contributed to a reduction in research coverage and analyst compensation.

The SEC has requested that the SROs submit this joint report on the operation and effectiveness of the SRO Rules, including any staff recommended changes to the current rule provisions.² The report contains six sections. Section I provides background on the conflicts that gave rise to the SRO Rules and sets forth the history of the SRO rulemaking and other regulatory initiatives with respect to research-related activity. Section II discusses the registration and qualification requirements for research analysts and their supervisors, including statistics concerning the levels of registration and qualification. Section III contains a review of SRO examinations, sweeps and enforcement activity since the SRO Rules became effective. Section IV discusses the impact of the SRO Rules as reported in academic studies and media reports and commentary. Section V contains a detailed review of the SRO Rule provisions, including member feedback and recommended changes. Finally, Section VI is the Conclusion.

¹ In August 2004, two additional firms settled with regulators under the same terms as the April 2003 Global Settlement.

² The views provided in this report are solely those of the NASD and NYSE staffs and have not been endorsed by the Board of Governors of NASD or the Board of Directors of the NYSE.

I. BACKGROUND

A. Conflicts that Led to Regulation

Prior to implementation of the SRO Rules, research analysts were subject to a host of pressures and influences that could – and in many instances, did – compromise the objectivity of their research. The primary biasing forces came from investment bankers who pressured research analysts to speak favorably of current and prospective clients and, with management acquiescence, linked analysts' compensation directly to their role in landing lucrative investment banking deals. In the succinct words of a retired Wall Street research analyst who testified before Congress in the summer of 2001: "Investment banking now dominates equity research."³ Other conflicts also existed, most notably analysts' personal financial interest in the securities they covered and their firms' ownership positions in covered securities. In addition, research analysts were subject to pressure from subject companies and their major shareholders to maintain favorable ratings.⁴

In testimony before the House Subcommittee on Capital Markets, Insurance, and Government Sponsored Enterprises (the "Subcommittee"), SEC Acting Chair Laura Unger identified a number of then commonplace practices that illustrated the conflicts of interest faced by research analysts.⁵ First, research analysts were compensated based on their contributions in support of investment banking transactions and the profitability of that unit. To that end, research analysts typically consulted on possible transactions, participated in road shows and initiated favorable coverage on current and prospective investment banking clients. Moreover, investment bankers at some firms evaluated research analysts for compensation purposes, particularly bonuses.

Second, research analysts provided research reports on companies underwritten by the analysts' firms. Third, research analysts invested in pre-initial public offering ("IPO") private placements of companies they subsequently covered and for which their firms had acted as underwriters. Fourth, research analysts provided investment bankers with prior notice of changes in recommendations. Fifth, research analysts issued "booster-shot" research reports or "buy" recommendations close to expiration of the lock-up period. Such reports served to generate buying interest in the stock and help increase the price while the firm, its clients, or the analysts sold their shares. Sixth, research analysts owned securities in the companies they covered and either failed to disclose those interests or did so in an opaque manner. In some cases, analysts executed trades for their personal accounts that were contrary to the recommendations in their research reports.⁶ Finally, analysts rarely revealed any conflicts of interest to investors during

³ *Analyzing the Analysts: Hearings Before the H. Comm. On Capital Markets, Insurance, and Government Sponsored Enterprises of the Comm. On Financial Services*, 107th Cong., at 243 (2001) (prepared testimony of Ronald Glantz, retired) ("Glantz Testimony").

⁴ *See, e.g., Analyzing the Analysts* at 251 (prepared testimony of Charles L. Hill, Director of Financial Research, Thomson Financial/First Call) ("analyst objectivity is subject to pressure from four different places": (1) analysts themselves; (2) investment banking; (3) public companies; and (4) institutional shareholders).

⁵ *Analyzing the Analysts* at 227-240 (written testimony of Laura S. Unger, Acting Chair of the Securities and Exchange Commission) ("Unger Testimony").

⁶ *Id.* at 233. *See also, e.g., Analyzing the Analysts* at 160 (prepared testimony of Gregg Hymowitz, Founder and Principal of EnTrust Capital Inc.); Glantz Testimony, *supra* note 3; *Analyzing the Analysts* at 266

media appearances in which they routinely recommended securities, and while most firms affirmatively stated that they acted as an underwriter or market maker, others merely stated that they “may” have acted in that capacity.⁷

While these conflicts were not new, they had deepened in the existing market environment. As another witness who testified before the Subcommittee observed:

[T]he pressures on the analyst have escalated in an environment where penny changes in earnings-per-share forecasts make dramatic differences in share price, where profits from investment-banking activities outpace profits from brokerage and research, where the demographics of the investors who use and rely on sell-side research have shifted, and where investment research and recommendations are now prime-time news.⁸

The industry itself seemed to recognize that the conflicts in research had intensified. As the SROs began rulemaking, discussed in Section I.B below, the industry took steps on its own to address these conflicts. Several firms amended or adopted policies regarding research analysts’ ownership of securities of covered companies.⁹

In addition, in June 2001, the Securities Industry Association (“SIA”) endorsed a compilation of “best practices”¹⁰ designed to restore the integrity of research and “reaffirm that the securities analyst serves only one master: The investor.”¹¹ The practices were compiled by an ad hoc committee of senior research professionals from the SIA’s largest member firms, and included several key recommendations focused on analyst compensation and stock ownership, relations

(prepared testimony of Adam Lashinsky, Silicon Valley Columnist, TheStreet.com); *Id.* at 253 (prepared testimony of Matt Winkler, Editor-in-Chief, Bloomberg News).

⁷ Unger Testimony, *supra* note 5, at 234.

⁸ *Analyzing the Analysts* at 196 (statement of Thomas A. Bowman, CFA, President and Chief Executive Officer, The Association for Investment Management and Research).

⁹ For example, Merrill Lynch, Edward Jones and Credit Suisse First Boston announced new policies prohibiting analysts from owning shares in companies they follow. *See id.* at 120 (opening statement of Honorable Paul Kanjorski). Goldman Sachs initiated a policy that would permit analysts to own shares in companies they cover under the following conditions: (1) approval of management and the firm’s compliance committee would be required for purchases; (2) purchases would be subject to a minimum 30-day holding period; (3) analysts would be permitted to purchase only stocks that were rated a “trading buy” or already on the firm’s recommended list; (4) analysts would be prohibited from selling securities unless they were rated below a “trading buy”; and (5) there would be a twenty-four hour restriction imposed after a change in the rating of a company. *See Adam Lashinsky, Wall Street’s Discovery of Ethics Is Too Little, Too Late*, TheStreet.com, July 10, 2001, <http://www.thestreet.com/markets/adamlashinsky/1486552.html>.

Prior to this time, Robertson Stephens had implemented a policy in September 2000 pursuant to which: (1) analysts cannot own stock in companies they cover, and (2) if they already own shares in a company they want to cover, they are required to sell their shares or place them in a blind trust. *Id.*

¹⁰ *See Best Practices for Research*, June 2001, and Press Release, *SIA Endorses “Best Practices” To Ensure Ongoing Integrity of Research* (June 21, 2001); *Analyzing the Analysts* at 172 (statement of Marc E. Lackritz, President, SIA).

¹¹ *See Best Practices for Research*, June 2001, and Press Release, *supra* note 10.

with investment banking units and disclosures: (1) research departments should not report to investment banking or any other business units that might compromise their independence, and there should be no outside or investment banking approval of the analyst's opinions or recommendations; (2) analysts' compensation should not be directly linked to specific investment banking transactions, sales and trading revenues or asset management fees; (3) personal financial interests in covered securities should be disclosed; and (4) analysts should not trade contrary to their recommendations, except after consultation with research department, legal and/or compliance personnel.¹²

Similarly, in July 2001, the Association for Investment Management and Research ("AIMR"), which is now named the CFA Institute, released a white paper discussing a wide range of potential influences on the objectivity of brokerage-firm research.¹³ The white paper also set forth recommendations for a more objective research environment, including: (1) brokerage firm management must foster a corporate culture that fully supports independence and objectivity; (2) firms must establish or reinforce separate reporting structures so that investment banking can never influence a research report or investment recommendation; (3) firms should implement compensation arrangements that do not link analysts' compensation to investment banking work; and (4) firms should require public disclosure of actual conflicts of interest to investors.¹⁴

However, the guidelines set forth by the industry associations lacked the force and effect of law. Moreover, some lawmakers felt the voluntary industry efforts were inadequate in scope. As Congressman Richard Baker remarked on the second day of hearings before the Subcommittee, "[T]he existing industry association best-practices proposal doesn't go far enough to address the problems, nor, I might add, do subsequent actions taken by individual firms"¹⁵ Congressman John LaFalce expressed that "more disclosure of these conflicts, in itself will not suffice to protect the individual investor."¹⁶

B. Summary of Rule Filings and Other Regulatory Actions

1. NASD/NYSE Rule Filings

The SROs enacted the research analyst conflict rules in two primary tranches and, more recently, adopted additional amendments prohibiting analysts from participating in road shows. *See* Exhibit A for the complete text of the SRO Rules. In addition, the SROs supplemented their rulemaking with two joint memoranda that provided interpretive guidance to their members on a number of issues. *See* Exhibits B and C for the joint interpretive memoranda. The NASD and NYSE rules and interpretations are virtually identical and are intended to operate uniformly.

¹² *Id.*

¹³ *See Preserving The Integrity of Research*, Association for Investment Management and Research (July 2001), and CFA Institute Press Release, *Global Investment Association AIMR Issues Report On Analyst Objectivity* (July 11, 2001).

¹⁴ *Id.*

¹⁵ *Analyzing the Analysts* at 210 (opening statement of Honorable Richard H. Baker, Chairman).

¹⁶ *Id.* at 219 (statement of Honorable John J. LaFalce, Ranking Committee Member).

Round 1 Amendments

In February 2002, the SROs filed the first round of proposed SRO Rules (“Round 1 Amendments”) – amendments to NYSE Rules 351 (“Reporting Requirements”) and 472 (“Communications with the Public”) and new NASD Rule 2711 (“Research Analysts and Research Reports”) ¹⁷ – which implemented basic reforms to separate research from investment banking and to provide more extensive disclosure of conflicts of interest in research reports and public appearances.

Generally, the Round 1 Amendments, approved by the SEC on May 10, 2002, ¹⁸ achieved the following:

- imposed structural reforms to increase analyst independence, including prohibiting investment banking personnel from supervising analysts or approving research reports;
- prohibited offering favorable research to induce investment banking business;
- prohibited research analysts from receiving compensation based on a specific investment banking transaction;
- required disclosure of financial interests in covered companies by the analyst and the firm;
- required disclosure of existing and potential investment banking relationships with subject companies;
- imposed quiet periods for the issuance of research reports after securities offerings managed or co-managed by a member;
- restricted personal trading by analysts;
- required disclosure in research reports of data and price charts that help investors track the correlation between an analyst’s rating and the stock’s price movements; and
- required disclosure in research reports of the distribution of buy/hold/sell ratings and the percentage of investment banking clients in each category.

The Round 1 Amendments were phased-in incrementally to provide members time to implement necessary policies, procedures, systems and other measures to comply with the new

¹⁷ On February 8, 2002, NASD filed SR-NASD-2002-021. The NYSE filed SR-NYSE-2002-09 on February 27, 2002. On March 7, 2002, NASD filed Amendment No. 1 to SR-NASD-2002-021. The proposals were published for comment in the Federal Register on March 14, 2002. See Securities Exchange Act Release No. 45526 (Mar. 8, 2002), 67 FR 11526 (Mar. 14, 2002). On May 1, 2002, NASD filed Amendment No. 2 to SR-NASD-2002-021, and the NYSE filed Amendment No. 1 to SR-NYSE-2002-09.

¹⁸ See Securities Exchange Act Release No. 45908 (May 10, 2002), 67 FR 34968 (May 16, 2002) (order approving SR-NYSE-2002-09 and SR-NASD-2002-021).

requirements. Most provisions of the SRO Rules went into effect on July 9, 2002; others became effective on September 9, 2002 or November 6, 2002.¹⁹

Round 2 Amendments and Sarbanes-Oxley

On July 29, 2003, the SEC approved a second set of amendments to the SRO Rules (“Round 2 Amendments”)²⁰ that achieved two purposes. First, the Round 2 Amendments implemented SRO initiatives to further promote analyst objectivity and transparency of conflicts in research reports. The need for some of these additional measures had come to light in the course of joint sweeps undertaken by the SROs and SEC to examine members’ research practices for compliance with industry regulations.²¹ Among the most significant SRO initiatives included in the Round 2 Amendments were provisions that:

- further insulated analyst compensation from investment banking influence by requiring that a compensation committee, without investment banking representation, review and approve compensation of research analysts and that such compensation be based on the quality of research produced;
- prohibited analysts from participating in the solicitation of investment banking business;
- prohibited analysts from issuing a research report or making a public appearance concerning a subject company around the time of a lock-up expiration, termination or waiver;
- required members to publish a final research report when they terminate coverage of a subject company and provide notice of such termination;
- imposed registration, qualification and continuing education requirements on research analysts (detailed in Section II below); and
- created an exemption from certain rule provisions for firms that engage in limited underwriting activity.

Second, the Round 2 Amendments implemented changes mandated by the Sarbanes-Oxley Act of 2002 (“Sarbanes-Oxley”).²² Sarbanes-Oxley required adoption by July 30, 2003 of rules “reasonably designed to address conflicts of interest that can arise when securities analysts recommend equity securities in research reports and public appearances,” and set forth certain specific rules to be promulgated. Many of those rules had already been adopted in the first round

¹⁹ Certain small firms with limited underwriting activity were granted delayed effectiveness from certain provisions of the SRO Rules until July 2003, at which time a limited exemption was adopted and codified.

²⁰ Securities Exchange Act Release No. 48252 (July 29, 2003), 68 FR 45875 (Aug. 4, 2003) (order approving SR-NYSE-2002-49 and SR-NASD-2002-154).

²¹ In April 2002, the SROs and the SEC established a Joint Task Force to review practices of designated firms with regard to research reports and recommendations on issuers for which firms had provided or sought investment banking services from January 1999 through April 2002.

²² See Section 15D(a) of the Exchange Act, 15 U.S.C. 78o-6.

of SRO rulemaking. The Round 2 Amendments therefore implemented those specific Sarbanes-Oxley rules that did not already exist and conformed the language of the SRO Rules as necessary. Most notably, the Round 2 Amendments satisfied the following Sarbanes-Oxley requirements:

- modified the definition of “research report” to delete the requirement that the communication contain a recommendation;
- extended quiet periods after securities offerings to all firms that participated in the offering as an underwriter or dealer;
- required disclosure of a client relationship and non-investment banking compensation received by a firm from a covered company; and
- prohibited retaliation against research analysts for publishing unfavorable research on an investment banking client.

As with the Round 1 Amendments, the Round 2 Amendments were phased-in incrementally. Most provisions went into effect on September 29, 2003, while certain other provisions did not become effective until October 27, 2003 or January 26, 2004.²³

Recent Amendment Prohibiting Analyst Participation in Road Shows

On April 21, 2005, the Commission approved an amendment to the SRO Rules that prohibits research analysts from participating in a road show related to an investment banking services transaction and from communicating with current or prospective customers in the presence of investment banking department personnel or company management about such an investment banking services transaction.²⁴ Additionally, the amendment prohibits investment banking personnel from directing a research analyst to engage in sales and marketing efforts and other communications with a current or prospective customer about an investment banking services transaction.

By prohibiting research analysts from participating in road shows and communicating with customers in the presence of investment bankers or company management, the amendment further reduces pressure on research analysts to give an overly optimistic assessment of a particular transaction. It also removes any suggestion to investors in attendance at a road show that the analyst will give positive coverage to the issuer or that the analyst endorses all of the views expressed by the company or investment banking department personnel.

²³ In 2004, the SROs delayed the effectiveness of certain disclosure provisions in the rules until April 26, 2004. See Securities Exchange Act Release No. 49119 (Jan. 23, 2004), 69 FR 4337 (Jan. 29, 2004) (notice of immediate effectiveness of SR-NASD-2004-003 and SR-NYSE-2004-01).

²⁴ Securities Exchange Act Release No. 51593 (Apr. 21, 2005), 70 FR 22168 (Apr. 28, 2005) (order approving SR-NASD-2004-141 and SR-NYSE-2005-24). As defined under NASD Rule 2711(a)(2) and NYSE Rule 472.20, “investment banking services” includes, without limitation, acting as an underwriter in an offering for the issuer; acting as a financial adviser in a merger or acquisition; providing venture capital, equity lines of credit, PIPEs (private investment, public equity transaction), or similar investments; or serving as placement agent for the issuer.

The amendment expressly permits research analysts to educate investors and member personnel about a particular offering or other transaction, provided the communication occurs outside the presence of company management and investment banking department personnel. Such permissible communications to investors and internal personnel must be fair, balanced and not misleading, taking into account the overall context in which such communications are made.²⁵

The amendment became effective on June 6, 2005.

2. Joint Memoranda and Interpretations

The Commission noted in its approval order of May 10, 2002 that the SROs would provide interpretive guidance on certain provisions of the SRO Rules. Accordingly, contemporaneous with the first effective date of the new rules, the SROs issued a joint memorandum (“July 2002 Joint Memorandum”) providing interpretive guidance on a number of topics, including: the definitions of “investment banking services” and “research report”; public appearances; quiet periods; the applicability of the SRO Rules to third-party research; the prohibition on certain forms of research analyst compensation; restrictions on personal trading by analysts; and requisite disclosures, including the distribution of ratings and price charts (*see* Exhibit B).²⁶

In March 2004, the SROs issued a second joint memorandum (“March 2004 Joint Memorandum”) to provide further interpretive guidance on the amended SRO Rules (*see* Exhibit C).²⁷ That memorandum generally addressed issues related to the definition of “research report”; the applicability of the “gatekeeper,” blackout and quiet periods provisions; and the scope and prominence of certain disclosure requirements.

The SROs continue to work together on interpretive issues.

3. Other Regulatory Initiatives

Regulation AC

On February 6, 2003, the SEC adopted Regulation Analyst Certification (“Regulation AC”), which took effect on April 14, 2003.²⁸ Regulation AC generally requires broker-dealers to include in a research report certifications by the analysts who are principally responsible for

²⁵ The prohibition on research analysts’ participation in road shows does not prohibit certain analysts’ communications that are permitted under the federal securities laws. *See* 17 CFR 230.137, 230.138 and 230.139 (research reports issued in accordance with Rules 137, 138 and 139 under the Securities Act of 1933).

²⁶ *See* NYSE Information Memo No. 02-26 (June 26, 2002), and NASD *Notice to Members* 02-39 (July 2002).

²⁷ *See* NYSE Information Memo No. 04-10 (Mar. 9, 2004), and NASD *Notice to Members* 04-18 (Mar. 2004).

²⁸ *See* Regulation Analyst Certification, Securities Exchange Act Release No. 47384 (Feb. 20, 2003), 68 FR 9482 (Feb. 27, 2003). In August 2003 and April 2005, the SEC staff issued additional guidance regarding Regulation AC in a series of questions and answers on the SEC Web site. *See* SEC Responses to Frequently Asked Questions Concerning Regulation Analyst Certification, <http://www.sec.gov/divisions/marketreg/mregacfaq0803.htm>.

preparing the report (1) that the recommendations or views expressed in the research report accurately reflect the analysts' personal views about the subject securities and issuers, and (2) whether any part of the analysts' compensation was, is, or will be directly or indirectly related to any specific recommendations or views expressed in the research report. In addition, research analysts must certify to the accuracy of statements made in public appearances and that no part of the research analysts' compensation is tied to statements made during the public appearance. If the broker-dealer does not obtain such certification by the analysts, it must disclose this fact and promptly notify its designated examining authority. The SROs continue to examine for compliance with Regulation AC.

Unlike the SRO Rules, Regulation AC applies to both fixed-income and equity research reports and the analysts who are primarily responsible for preparing those reports. Similar to the SRO Rules, Regulation AC broadly defines a "research report" as "a written communication (including an electronic communication) that includes an analysis of a security or an issuer and provides information reasonably sufficient upon which to base an investment decision."

4. Enforcement Proceedings

As the SROs engaged in rulemaking to manage and eradicate existing research conflicts, regulators brought enforcement proceedings to redress past misconduct in the area.

Merrill Lynch Settlement

In May 2002, as part of a settlement with the New York Attorney General, Merrill Lynch agreed to adopt certain changes to its equity research and investment banking activities. Among other things, Merrill Lynch agreed to completely separate analyst compensation from investment banking, prohibit investment banking input into analysts' compensation and disclose in all research reports whether it has received or is entitled to receive any compensation from a covered company over the past 12 months.

The Global Settlement

On April 28, 2003, the SEC, NYSE, NASD, NASAA and the New York Attorney General's Office announced that they had reached an agreement (the "Global Settlement") with ten investment banking firms settling actions alleging fraudulent or misleading research. The United States District Court for the Southern District of New York approved the Global Settlement on October 31, 2003²⁹ and an amendment to the agreement was approved in September 2004.³⁰

The Global Settlement differs in structure from the SRO Rules. The former generally prohibits all communications between research and investment banking personnel, with certain express exceptions. In contrast, the SRO Rules permit all communications that are not expressly prohibited. But the key provisions of the Global Settlement and the SRO Rules are essentially

²⁹ See SEC Litigation Release No. 18438, 2003 SEC LEXIS 2601 (Oct. 31, 2003).

³⁰ See 03 Civ. 2941 (WHP), 2004 U.S. Dist. LEXIS 19149 (S.D.N.Y. Sept. 24, 2004) (amendments to Addendum A).

the same; the few differences are noted below. A chart comparing the provisions is included as Exhibit D.

The common provisions include prohibitions on review and approval of research by investment banking; prohibitions on research analysts from soliciting investment banking business and participating in sales and marketing activities; requirements for the termination of coverage; general requirements that the compensation of a research analyst primarily responsible for the preparation of the substance of a research report be reviewed and approved by a member firm committee without investment banking representation that reports to the Board of Directors or the senior chief executive officer; and increased disclosure and transparency of potential and actual conflicts of interests and of issues related to the performance of research analysts, such as ratings, price targets and an explanation of the firm's rating system.

Some Global Settlement terms have not been explicitly or implicitly incorporated into the SRO Rules. For example, the Global Settlement requires that the work of the compensation committee be reviewed by an oversight committee of research management. Other Global Settlement requirements not incorporated by the SROs are physical separation between research analysts and investment banking; the requirement that research have its own dedicated legal and compliance staff; and requirements for firms to procure and make available for their clients independent research on listed companies that they cover.

Additionally, comparable SRO Rules and Global Settlement definitions differ in degree and scope. The definitions of "research reports" and "research analysts" are illustrative. The SRO Rules, for example, apply to all research reports produced by the SROs' members, irrespective of where or to whom they are distributed; however, the Global Settlement limits its definition of "research report" to communications furnished to investors in the United States. Also, the SRO Rules' definition of "research analyst" – the same as mandated by the Sarbanes-Oxley Act – is broader than the Global Settlement's definition of "Research Personnel," which is limited to those individuals whose primary job is the preparation of research reports.

The SRO staffs address in Section V whether they recommend incorporating additional Global Settlement terms into the SRO Rules or making any other conforming changes.

II. REGISTRATION AND QUALIFICATION REQUIREMENTS

A. Series 86/87 Examinations

As part of the Round 2 Amendments, the SEC approved rules requiring registration and qualification requirements for research analysts. The SRO Rules require an associated person³¹ who functions as a research analyst on behalf of a member to register as such and pass a qualification examination. Those rules are intended to ensure that research analysts possess a certain competency level to perform their jobs effectively and in accordance with applicable rules and regulations. In the context of this requirement, the SRO Rules define "research analyst" as "an associated person who is primarily responsible for the preparation of the

³¹ See SR-NYSE-2005-24 amending the definition of "research analyst" in NYSE Rules 344.10 and 472.40 to include "associated persons." NASD rules already separately defined "associated person."

substance of a research report or whose name appears on a ‘research report,’” as that term is defined in the SRO Rules.

The SROs jointly developed and implemented the Research Analyst Qualification Examination (Series 86/87). The examination consists of an analysis part (Series 86) and a regulatory part (Series 87). Prior to taking either the Series 86 or 87, a candidate also must have passed the General Securities Registered Representative Examination (Series 7), the Limited Registered Representative Examination (Series 17), or the Canada Module of Series 7 (Series 37 or 38). Persons who were functioning as research analysts on the effective date of March 30, 2004 and submitted a registration application to NASD by June 1, 2004, had until April 4, 2005 to meet the registration requirements. There was no grandfather provision. The one-year grace period was intended to provide these analysts sufficient time to study and pass the examination without causing undue disruption in carrying out their responsibilities to their member firm and its customers.

B. Exemptions

The SRO Rules provide three exemptions from the Series 86 examination. First, there is an exemption for research analysts who have passed Levels I and II of the Chartered Financial Analyst (“CFA”) examination and have either (1) completed the CFA Level II within 2 years of application or registration, or (2) functioned as a research analyst continuously since having passed the CFA Level II.³² A second exemption is available to research analysts who have passed Levels I and II of the Chartered Market Technician Examination and produce only “technical research reports” as that term is defined under the SRO Rules.³³

A third exemption – from both the Series 86 and Series 87 – is available to “associated persons” of a member who are employed by that member’s foreign affiliate but who produce research on behalf of the U.S. member. The SROs created this third exemption in response to requests from some members with global research operations that had difficulty ascertaining whether certain foreign research analysts whose work contributed to the member’s research report were “associated persons” who must meet the registration and qualification requirements under the SRO Rules.

To be eligible for the exemption, three primary conditions must be met: (1) a foreign analyst must comply with the registration and qualification requirements or other standards in an SRO-approved foreign jurisdiction whose regulatory scheme reflects a recognition of principles that are consonant with the SRO Rules and qualification standards; (2) the U.S. member must apply all of the other SROs rules and other member firm standards to the research produced by the foreign affiliate and foreign research analysts that qualify for, and rely upon, the exemption; and (3) the U.S. member must include a specific disclosure that the research report has been prepared in whole or part by foreign research analysts who may be associated persons of the member who are not registered/qualified as a research analyst with the NYSE or NASD, but instead have

³² See Securities Exchange Act Release No. 49464 (Mar. 24, 2004), 69 FR 16628 (Mar. 30, 2004) (order approving SR-NYSE-2004-03 and SR-NASD-2004-020).

³³ See Securities Exchange Act Release No. 51240 (Feb. 23, 2005), 70 FR 10451 (Mar. 3, 2005) (notice of immediate effectiveness of SR-NYSE-2005-12 and SR-NASD-2005-022).

satisfied the registration/qualification requirements or other research-related standards of a foreign jurisdiction that have been recognized for these purposes by the NYSE and NASD.

Eligibility for the exemption in no way bears upon whether the foreign research analyst is an associated person of the member. And to the extent that a member can determine that a foreign research analyst is *not* an “associated person,” there is no requirement to satisfy any of the SRO Rules, including the registration and qualification requirements.

Currently, the following jurisdictions satisfy the applicable SRO standards noted above: China, Hong Kong, Japan, Malaysia, Singapore, Thailand and the United Kingdom. The SROs only considered those jurisdictions submitted by the members that requested the exemption but agreed to consider additional jurisdictions on a case-by-case basis, as requested.³⁴

C. Supervisory Requirements

NASD has an additional rule that requires supervisors of research analysts to pass the Series 87 examination or the NYSE Series 16 Supervisory Analyst Examination. Those who oversee the *content* of research reports must have passed either the Series 87 or the Series 16 examination. A registered principal (Series 24) who has also passed either the Series 87 or the Series 16 examination must supervise the conduct of both the Series 16 Supervisory Analyst and the research analyst. The rule became effective on August 2, 2005.³⁵ NYSE Rule 472(a)(2) requires that a supervisory analyst acceptable under NYSE Rule 344 approve research reports.

D. Statistics

Between April 1, 2004 and November 30, 2005, 5,599 research analysts and 418 research principals had satisfied the applicable registration and qualification requirements. The Series 86 exam was attempted 6,158 times, with an overall pass rate of 74.9%, and the Series 87 exam was attempted 8,259 times, with an overall pass rate of 89.6%. During the same period, 2,375 CFA exemptions and 34 technical analyst exemptions were granted.

III. EXAMINATIONS, SWEEPS AND ENFORCEMENT ACTIONS

The SROs continue to closely examine for compliance with the SRO Rules and rigorously pursue enforcement actions for violations of these rules. The area of research analyst conflicts remains a high priority component of the SROs’ examination and enforcement programs.

A. NASD Summary

1. Member Regulation

³⁴ The SROs will notify their membership in the event additional jurisdictions are approved.

³⁵ Securities Exchange Act Release No. 50162 (Aug. 6, 2004), 69 FR 50406 (Aug. 16, 2004) (order approving SR-NASD-2004-078).

As the SRO Rules became effective, NASD's Member Regulation Department incorporated into its routine examination program an inspection for compliance with NASD Rule 2711 and SEC Regulation AC.

Between July 2002 and November 30, 2005, NASD initiated 467 examinations reviewing firms for compliance with Rule 2711 and Regulation AC. In the course of these examinations, NASD found 110 violations of Rule 2711 and 25 violations of Regulation AC. Specifically, the Rule 2711 violations have involved: (1) failure to have adequate procedures in place to supervise the activities of research analysts with respect to conflicts of interest, in violation of Rule 2711(i) (47 of 467 examinations); (2) failure to adequately comply with the disclosure requirements regarding research reports and public appearances, in violation of Rule 2711(h) (24 of 467 examinations); (3) failure to file the Annual Attestation, in violation of Rule 2711(i) (20 of 467 examinations); (4) personal trading of the subject companies' securities in the analyst's account within the restricted time period, in violation of Rule 2711(g) (10 of 467 examinations); and (5) failure to comply with restrictions on communications with the subject company, in violation of Rule 2711(c) (9 of 467 examinations).

Of the 135 violations of Rule 2711 and Regulation AC found to date, 27 have resulted or are expected to result in an Acceptance, Waiver and Consent, seven have resulted in a formal complaint, 18 have resulted in a compliance conference, 81 have resulted in a Letter of Caution, and two remain under investigation.

2. Enforcement

As of November 30, 2005, NASD Enforcement has settled 29 cases involving Rule 2711 violations and two cases involving violations of Rule 1050, the analyst registration rule. By far, the vast majority of settled Enforcement actions have involved violations of the disclosure requirements of Rule 2711(h), encompassing over 265 research reports. Specific violations of this provision include: (1) failure to disclose ownership of shares of subject companies; (2) failure to disclose compensation for investment banking services from the subject company; (3) failure to disclose market making activity; (4) use of conditional language in making the requisite disclosures; (5) failure to provide sufficient price charts; (6) failure to disclose the distribution of buy, hold and sell recommendations; (7) failure to provide information about the valuation methods used; (8) failure to define recommendations; and (9) failure to provide disclosures required by Rule 2210.

Other settled Enforcement cases have involved such violations of Rule 2711 as (1) failure to maintain supervisory procedures pursuant to Rule 2711(i) (113 research reports); (2) communications with subject companies in violation of Rule 2711(c) (17 research reports); and (3) failure to abide by the personal trading restrictions under Rule 2711(g) (21 research reports). In addition, two cases involved analysts offering favorable research reports in exchange for compensation in violation of Rule 2711(e), and one case involved a firm's failure to provide notice of termination of coverage and issue final research reports with respect to seven subject companies, in violation of Rule 2711(f).

Sanctions in the settled Enforcement cases have included fines ranging from \$10,000 to \$50,000, disgorgement, suspensions and bars in all capacities. In addition, NASD Enforcement has settled

with two firms for failure to timely apply for research analyst designation in violation of Rule 1050. These two cases involved 56 analysts and 325 research reports, and each firm was censured and fined (one in the amount of \$100,000; the other, \$150,000).

There are currently two pending complaints against firms and a number of open investigations involving suspected violations of Rule 2711. These matters involve many of the same compliance issues discussed above, including allegations of failure to meet disclosure obligations and of transgressing the personal trading restrictions. In addition, in summer 2005, the SROs launched a joint sweep of 30 firms to review their compliance with NASD Rules 2711 and 1050 and NYSE Rule 344 in the context of research prepared on behalf of the members by foreign analysts. That review is ongoing.

3. Advertising

Although members need not file research reports with NASD's Advertising Regulation Department, they do constitute "communications with the public" under NASD's advertising rules. As such, NASD's Advertising Regulation Department has conducted two sweeps since NASD Rule 2711 was implemented. In 2002, a sweep of 28 firms was conducted to determine whether firms had made a good faith effort to comply with Rule 2711 and identify any new interpretive issues that might arise. Firms were notified of any compliance shortcomings, with the expectation that those deficiencies promptly would be remedied.

In 2004, NASD's Advertising Regulation Department conducted a second sweep of the ten Global Settlement firms and specifically requested information about their equity research reports (including access to their Web sites), samples of each type of report they used and explanatory material about their ratings. As part of this second sweep, examiners revisited the spot check conducted in 2002 to determine whether firms had made revisions as indicated.

This subsequent review revealed continued deficiencies in several areas. First, some firms were unclear in describing their ratings methodology. For example, some firms failed to explain a two-pronged approach they employed to assess a sector and an individual issuer within that sector. Examiners flagged such reports for failure to comply with the clarity requirement of Rule 2711(h)(10) because the absence of clear ratings descriptions could lead to misconceptions by investors about the firm's actual view of the issuer. Second, some members failed to provide clear disclosure presentations; for example, they used complex systems of footnotes inconsistently and indefinite disclosures (e.g., "may conduct investment banking"). Examiners also identified such practices as violations of Rule 2711's clarity standard. Third, some members failed to use the terms "buy," "hold," and "sell" in the ratings distribution chart, as required by Rule 2711(h)(5). Finally, some members used language that seemed to disclaim responsibility for information in the report about the member firm, including required disclosures of certain conflicts.

NASD's Advertising Regulation Department does not have authority to bring formal actions against members and thus referred to NASD Enforcement those cases where it recommended that further action be considered.

B. NYSE Summary

1. Member Firm Regulation

The NYSE currently has 348 members and member organizations of which 217 are conducting a public business and/or issuing research. The NYSE incorporated the SRO Rule requirements into its exam scope for routine examinations of members and member organizations by Member Firm Regulation (“MFR”), following the effective dates of the SRO Rules in 2002 and 2003.³⁶

MFR examiners conducted a series of reviews investigating member and member organization compliance with the SRO Rules and SEC Regulation AC. Between August 2002 and October 2005, MFR conducted a total of 296 examinations.³⁷ NYSE examiners cited a total of 75 firms with a total of 271 findings for non and/or partial compliance with the SRO Rules and Regulation AC.³⁸ The findings were distributed as follows: 26 in 2002; 62 in 2003; 152 in 2004; and 31 in 2005.

Specifically, the NYSE examination findings included: (1) failure to clearly and prominently state in research reports in the proper format the disclosures required by the SRO Rules; (2) failure to adhere to the disclosure and record maintenance requirements for associated persons making public appearances; (3) failure to comply with record maintenance requirements evidencing the disclosures in connection with recommendations of securities in print media, interviews, newspaper articles or broadcasts; (4) failure to comply with restrictions on trading activities for associated persons; (5) failure to have legal or compliance personnel intermediate written communications between non-research personnel and research personnel concerning the content of research reports; (6) inclusion of price targets, rating summaries or research ratings information in a draft of a research report sent to a subject company; (7) executing changes to research reports after sending the report to a subject company without proper approval by legal and compliance; (8) allowing research analysts to work under the supervision or control of investment banking department personnel; (9) offering favorable research for business; (10) failure to maintain written procedures for compliance with the SRO Rules; and (11) failure to have a committee in place to review and approve analyst compensation.

2. Enforcement

Between August 2002 and November 2005, 13 examination findings were referred to Enforcement from MFR for SRO Rule violations.³⁹ As discussed in more detail below, many of

³⁶ Only members and member organizations that conducted a public business and/or issued research were examined for compliance with the SRO Rules.

³⁷ The breakdown of examinations was as follows: 21 firms in 2002, 85 firms in 2003, 140 firms in 2004 and 50 firms in 2005. In many instances the same firm was examined in successive years.

³⁸ Of the 271 findings, 22 involved Regulation AC. The 22 Regulation AC findings involved: failures by member organizations to maintain clear and prominent disclosures of research analyst certifications; failures to maintain records regarding public appearances of research analysts; failures to specify on the front page of reports the pages on which analyst certifications can be found; failures to have written policies and procedures to prevent inappropriate influences over research analysts; expired or missing certifications; failures with respect to terminated coverage; and missing attestations.

³⁹ There were also referrals based on findings for Rule 472 prior to its amendment.

these findings are currently the subject of NYSE Enforcement investigation/action, and many have been completed. Recently, a Hearing Panel Decision (“HPD”)⁴⁰ announced a disciplinary action involving violations of the SRO Rules gatekeeper provisions.⁴¹ This case resulted in consent to censure and a \$150,000 fine. Additionally, a member organization has recently consented in a Stipulation of Facts and Consent to Penalty to a fine of \$1.5 million in a matter that included, among other things, having a research analyst participate in a road show, and a research analyst giving statements that were not fair and balanced.

There are a number of cases that are now under investigation by NYSE Enforcement. The cases include: research analysts selectively disclosing material non-public information; improper disclosures in research reports; research analysts trading in securities in violation of the SRO Rule blackout prohibitions; research analysts expressing opinions privately about securities they cover that were inconsistent with their published research reports; improper influence of investment banking on research compensation; lack of supervisory analyst qualifications; initiating coverage of a stock during a quiet period; violations of information barrier provisions; violations of the gatekeeper provisions; and books and records violations.

As noted above, there is also an investigation of approximately 30 firms being jointly conducted by the SROs to determine whether firms are in compliance with the requirement to register foreign research analysts who participate in the preparation of member research.

IV. IMPACT OF RULES: ACADEMIC STUDIES AND MEDIA REPORTS

Academic studies and media reports provide both empirical and anecdotal evidence regarding the impact of the SRO Rules,⁴² and most have concluded that the rules have helped to address the conflict-of-interest issues that previously compromised the objectivity and reliability of research. Indeed, as the author of one study states:

[T]he new regulations were successful in their objectives of curbing the excessive optimism driven by the conflicts of interest The distribution of recommendations is now very balanced between buy and sell recommendations . . . and the link between the presence of underwriting business and excess optimism in recommendations was removed.⁴³

⁴⁰ See Exchange HPD 04-136 (NYSE Aug. 11, 2004).

⁴¹ The firm was in violation of NYSE Rule 472(b)(4), which prohibits member firms from providing a subject company with draft research reports containing the research summary, rating or price target information.

⁴² We note that some studies and news articles refer only to the impact of the Global Settlement. Since the key provisions of the Global Settlement closely track those of the SRO Rules, we believe those studies and news articles that address the impact of the settlement terms are a fair proxy for the impact of the SRO Rules.

⁴³ Leonardo Madureira, *Conflicts of Interest, Regulations, and Stock Recommendations*, at 4 (Nov. 2004) (Working paper, Wharton School, University of Pennsylvania) (the “Madureira Study”). See also, e.g., Ohad Kadan, Tzachi Zach & Rong Wang, *Are Analysts Still Biased? The Effect of the Global Settlement and Regulation FD*, Abstract (Mar. 2005) (Working paper, John M. Olin School of Business, Washington

While many other studies and media stories similarly support the effectiveness of the SRO Rules, some contend that the impact has been minimal and that certain conflicts persist. Briefly summarized below are findings and conclusions from a survey of pertinent studies and news articles.

Research Is More Balanced

(a) Changes in ratings distributions

Several academic studies have found that the percentage of buy recommendations decreased and the percentage of sell and hold recommendations increased following adoption of the SRO Rules and Global Settlement. These ratings distribution trends suggest that research analysts are issuing more balanced stock recommendations.

For example, one study found that the percentage of buy recommendations peaked at 74% of all recommendations at the end of the second quarter of 2000 and decreased to 42% of all recommendations at the end of June 2003.⁴⁴ During the same period, sell recommendations increased from 2% to 17% of all recommendations, while hold recommendations increased from 24% to 41%.⁴⁵

The Barber Study concludes that “taking a closer look at the trends in 2002 makes clear that [the SRO Rules]⁴⁶ likely did play a role in analysts’ shift away from buy recommendations.”⁴⁷ Indeed, the study notes that the most pronounced changes in ratings distributions occurred during the weeks leading up to the September 9, 2002 deadline for implementing the ratings distribution disclosure requirement under the SRO Rules.⁴⁸ The single biggest change occurred on Sunday, September 8, 2002 when buy recommendations decreased from 57% to 53% and sell recommendations increased from 8% to 11%.⁴⁹ Adjusting for certain factors, the authors calculate that there was a greater decrease in the percentage of buys and a greater increase in the percentage of sells and holds following implementation of the SRO Rules than otherwise would have been expected.⁵⁰

University) (the “Kadan Study”) (“the Global Settlement was effective in reducing conflicts of interests [sic] between research and investment banking departments in financial services firms”).

⁴⁴ Brad Barber, Reuven Lehavy, Maureen McNichols & Brett Trueman, *Buys, Holds, And Sells: The Distribution Of Investment Banks’ Stock Ratings And The Implications For The Profitability Of Analysts’ Recommendations*, at 3, 12 (Sept. 2005) (Working paper, Graduate School of Management, University of California, Davis, Ross School of Business, University of Michigan, Graduate School of Business, Stanford University and Anderson Graduate School of Management, University of California, Los Angeles) (the “Barber Study”).

⁴⁵ *Id.*

⁴⁶ While the authors refer solely to NASD Rule 2711, they state that all conclusions apply to NYSE Rule 472 as well. *Id.* at 1, n.1.

⁴⁷ *Id.* at 13.

⁴⁸ *Id.*

⁴⁹ *Id.* at 13-14.

⁵⁰ *Id.* at 15.

The Madureira Study found similar results. That study looked at analyst recommendations for the period July 1995 through December 2003 and found that prior to the SRO Rules and Global Settlement, the bulk of consensus recommendations were concentrated in the strong buy and buy categories (accounting for 60% or more of the stocks in the sample) and sell recommendations were “virtually absent.”⁵¹ However, from July 2002 through December 2003, “a completely different pattern emerges.”⁵² For example, in September 2002, the fraction of stocks in the pessimistic category (sell and strong sell) jumped from 3% to approximately 20%.⁵³ The author found similar patterns with respect to initiation of coverage and ratings upgrades and downgrades, finding that brokerage houses leaned less toward optimistic ratings after the new regulations took effect.⁵⁴

Both the Madureira and Kadan studies found the most decided changes in ratings distributions at firms that maintained or pursued investment banking transactions with covered companies. The Madureira Study found that, prior to the SRO Rules and Global Settlement, the presence of an underwriting business with the subject company implied a 50% increase in the odds that a new recommendation would be optimistic.⁵⁵ However, the study found that the effect has “largely disappeared” after the new regulations took effect.⁵⁶

The Kadan Study similarly found that regulatory measures enacted to separate research from investment banking have resulted in less optimistic research by analysts whose firms had or sought investment banking business with companies the analyst covered (an “affiliated” analyst). The study found that prior to the Global Settlement, affiliated analysts generated more optimistic recommendations and long-term growth forecasts than their unaffiliated counterparts; however, those differences have now been eliminated.⁵⁷ Consistent with the Barber and Madureira studies, the Kadan Study found a decrease in the percentage of affiliated analysts’ buy recommendations and an increase in their hold and sell recommendations following the Global Settlement.⁵⁸ The authors found a similar but less dramatic shift in ratings distribution with respect to unaffiliated analyst recommendations.⁵⁹

In a subsequent paper combining the Madureira and Kadan studies, the authors explained that analysts changed their behavior in an asymmetric way after adoption of the SRO Rules.⁶⁰

⁵¹ Madureira Study at 17-18.

⁵² *Id.* at 18.

⁵³ *Id.*

⁵⁴ *Id.* at 21.

⁵⁵ *Id.* at 4.

⁵⁶ *Id.*

⁵⁷ Kadan Study at 4, 26.

⁵⁸ *Id.* at 21-22, Table 6.

⁵⁹ *Id.* at 22.

⁶⁰ Ohad Kadan, Leonardo Madureira, Rong Wang & Tzachi Zach, *Conflicts of Interest and Stock Recommendations - The Effects of the Global Settlement and Recent Regulations*, at 25 (July 2005) (Working paper, John M. Olin School of Business, Washington University and Weatherhead School of Management, Case Western Reserve University).

Analysts now behave similarly when deciding whether to post an optimistic recommendation, and the likelihood of receiving an optimistic recommendation no longer depends on whether the analyst's firm participated in an equity offering for the subject company.⁶¹ However, affiliated analysts are still reluctant to issue pessimistic recommendations for companies that have had a recent equity offering.⁶²

One recent academic study found lesser changes in ratings distributions since the Global Settlement.⁶³ The author analyzed data for each of the ten Global Settlement firms and found that prior to the settlement, between 28.4% (in 2002) to 39.8% (in 2000) of recommendations across the ten firms carried a firm's highest rating. After the settlement, top recommendations comprised between 31.8% (in 2003) and 39% (in 2004) of all recommendations.⁶⁴ The percentage of the most negative recommendations decrease from a pre-settlement range of 24.1% (in 2000) to 32.4% (in 2002) to a post-settlement range of 18.8% (in 2003) and 12.8% (in 2004).⁶⁵ The author notes that the numbers may be explained by factors other than bias, such as analysts' accurate and unbiased expectation of investment value in the post-settlement period or the fact that analysts may intentionally have skewed their coverage post-settlement to stocks that they expect will outperform the market.⁶⁶

A number of news articles buttress the conclusion that sell-side analysts are less biased after implementation of the SRO Rules and/or the Global Settlement and now are more prone to issue downgrades and sell recommendations. According to a recent article, "sell-side analysts do appear to be more discerning," noting that sell ratings, which accounted for less than 2% of the ratings published on Wall Street in 2002, were up to between 10% and 15% of the ratings at all major brokerages.⁶⁷ Another article reported in August 2003 that sell recommendations represented 15-25% of overall opinions, attributing the trend at least in part to adoption of the SRO Rules.⁶⁸ According to *The Wall Street Journal*, at one point in 2000, 95% of the stocks in the S&P 500 had no sells at all and no stock had more than one sell rating; today, only 38% are without sell recommendations, 62% have at least one sell and 9% have five sells or more.⁶⁹

⁶¹ *Id.*

⁶² *Id.* at 25-26.

⁶³ Leslie Boni, *Analyzing the Analysts After the Global Settlement*, at 5 (Aug. 25, 2005) (Working paper, University of New Mexico) (the "Boni Study").

⁶⁴ *Id.* at 13.

⁶⁵ *Id.*

⁶⁶ *Id.* at 14.

⁶⁷ Nat Worden, *Mixed Returns on Spitzer Research Settlement*, The Street.com, Apr. 22, 2005, <http://www.thestreet.com/markets/natworden/10218183.html>. See also Dan Ackman, *Wall Street Tries To Say 'Sell'*, Forbes.com, June 20, 2003, http://www.forbes.com/2003/06/20/cx_da_0620topnews_print.html (in June 2003, 43% of recommendations were buy, 46.6% were hold and 10.5% were sell, compared with June 2000, when 74.6% of all recommendations were buy and only 0.7% were sell); *Facts Without Fiction*, Crystal Research Assoc., LLC, Issue 3 (Winter 2005); *Analysts Say 'Sell' A Lot More Often*, Reuters News Service, May 18, 2003, <http://www.chron.com/dispatch/story.mpl/business/mym/1914061.html>.

⁶⁸ Andrew Leckey, *Dumping Stock Shouldn't Be Such A Hard Sell*, Chicago Tribune, Aug. 12, 2003, at C4.

⁶⁹ E.S. Browning, *Analysts Keep Misfiring With 'Sell' Ratings*, Wall St. J., Apr. 11, 2005, at C1.

Some news stories also report that bias still exists, particularly at larger firms with investment banking businesses.⁷⁰ According to one report, the top ten Wall Street firms give a higher percentage of buy ratings – 46% versus 40% – to those companies with which they do investment banking business.⁷¹ Another article reports that many firms still maintain only 0-6% sell recommendations.⁷² Finally, one news article reports that small firms may be slightly more likely to issue buy recommendations than the Global Settlement firms.⁷³

(b) *Correlation between recommendations and earnings forecasts*

A recent academic study attempted to measure research bias after the SRO Rules by examining the relationship between earnings forecasts and recommendation profitability across three groups of sell-side analysts: “top-tier” analysts at the top investment banks, other investment bank analysts and non-investment bank analysts.⁷⁴ Absent bias, the authors believe that there should be a strong correlation between accuracy in predicting earnings and profiting from following analyst recommendations since most recommendations are derived from earnings analysis. The authors further posit that bias is more likely to appear in recommendations than earnings forecasts because analysts’ reputations are tied more closely to accurately predicting earnings.

During the 1993 to 2000 period, the study found a “positive and significant association” between forecast accuracy and recommendation profitability for non-investment bank analysts, but no such relation for top-tier analysts and other investment bank analysts.⁷⁵ The authors suggest that this finding demonstrates that before the SRO Rules, the presence of conflicts at investment banks resulted in overly optimistic recommendations disconnected from earnings forecasts.⁷⁶ However, in the period following the Global Settlement and implementation of the SRO Rules, the study found such positive correlation between earnings forecast accuracy and recommendation profitability for analysts employed by top-tier investment banks, suggesting that “the increased awareness of the conflicts of interest and the regulatory changes might have had their desired effect.”⁷⁷

⁷⁰ See, e.g., Amey Stone, *Yes, Wall Street Research Is Better*, BusinessWeek Online, June 28, 2004, http://businessweek.com/bwdaily/dnflash/jun2004/nf20040628_1253_db014.htm (“some might conclude that bias still exists”).

⁷¹ *Id.*

⁷² Joseph McCafferty, *Reform of Sell-side Research is Creating A Variety of New Headaches for Corporations*, CFO Magazine, May 2003. See also Leckey, *supra* note 68.

⁷³ Susanne Craig, *Research Rules Trickle Down To Small Firms*, Wall St. J. Online, Jan. 18, 2004, <http://online.wsj.com/article/o,,SB107446466140004574,00.html>.

⁷⁴ Yonca Ertimur, Jayanthi Sunder & Shyam V. Sunder, *Measure for Measure: An Examination of the Association between Forecast Accuracy and Recommendation Profitability of Sell-Side Analyst* (Mar. 2005) (Working paper, Graduate School of Business, Stanford University and Kellogg School of Management, Northwestern University) (the “Ertimur Study”).

⁷⁵ *Id.* at 4.

⁷⁶ *Id.* at 2.

⁷⁷ *Id.* at 19.

Research Is More Reliable, Accurate And Informative For Investors

Recent studies and a number of news articles suggest that the quality of research and value to investors has improved since adoption of the SRO Rules. For example, one article reports that the “most important change for the better is in the quality of analysis . . . written commentary in stock reports is more independent, more thought-provoking, and better represents the upside and downside potential for a stock than the bubble era’s much-hyped reports.”⁷⁸ And in numerous interviews, portfolio managers attest to the improvement.⁷⁹ Another article reports that “the investment community is now benefiting from more diverse research strategies, with access to reports that are less restricted and more user-friendly.”⁸⁰ As discussed in more detail below, research has also become more trusted by the market and more reliable and meaningful for investors.

(a) Ratings reflect their plain meanings

The SRO Rules require that ratings be consistent with their plain meanings, and several studies have concluded that ratings indeed are now truer and therefore more predictive for investors. For example, the Kadan Study found that following the Global Settlement, the price reaction in the market to buy recommendations has been “significantly more positive” and the price reaction to hold recommendations has been “significantly less negative.”⁸¹ In other words, the market now accepts ratings at face value and stocks trade consistent with the plain meanings of the recommendations. According to the Kadan Study, these results suggest that buy and hold recommendations are now “more informative to investors.”⁸² As for sell recommendations, the Kadan Study found more mixed results.⁸³ The Madureira Study also found that firms now generally seem to “mean what they say” when issuing hold and sell recommendations,⁸⁴ concluding that “brokerage houses no longer are disguising pessimistic recommendations as neutral ratings.”⁸⁵ In contrast, before the SRO Rules and Global Settlement, a hold rating often was tantamount to a sell recommendation,⁸⁶ which would generate far greater negative price reaction in the market than the author has found since implementation of the regulations.

⁷⁸ Stone, *supra* note 70 (in the “bad old days,” research on the same company was “often barely distinguishable” among research firms).

⁷⁹ *Id.* See also McCafferty, *supra* note 72 (most experts expect analysts to “dig deeper into the companies they cover”).

⁸⁰ *Facts Without Fiction*, *supra* note 67, at 1 (noting that research is now “a competitive marketplace of versatile and diverse research providers”). See also *SIA Research Management Conference: Reflections on Two Years Since the Global Settlement*, SIA Research Reports, Vol. VI, No. 9 (Sept. 30, 2005) (“panelists agreed that there is a far greater variety of research products and services available today”).

⁸¹ Kadan Study at 20.

⁸² *Id.*

⁸³ *Id.*

⁸⁴ Madureira Study at 3, 25-26.

⁸⁵ *Id.* at 25, 26. The study did, however, find some negative market reactions to hold recommendations issued by non-settling firms.

⁸⁶ Madureira Study at 2.

However, one recent academic study has found that investors are less responsive to analyst recommendations. The Boni Study found that market participants on average respond less to recommendation changes made by the ten settlement firms after the Global Settlement (*i.e.*, stock prices increase less on upgrades and decrease less on downgrades than they did prior to the Global Settlement).⁸⁷ The author notes that it is possible that retail investors react to analyst recommendations as they did before the settlement but institutional investors respond less.⁸⁸

(b) *Recommendations may be more accurate and predictive of investment profitability*

Reports suggest that research has become more accurate following implementation of the SRO Rules and the Global Settlement, which served “as a wake-up call for many sell-side research professionals As a result, broker/dealers and investment banks are now paying much more attention to the accuracy of their research recommendations.”⁸⁹

And there is evidence that investors who follow recommendations may be seeing improved returns. For example, the Barber Study concluded that the disclosure requirements in the SRO Rules provide investors with helpful information to assess the value of a research analyst’s recommendation and to predict profitability by investing consistent with those recommendations. The authors found that prior to the implementation of the SRO Rules, upgrades from brokers with the highest percentage of pessimistic ratings outperformed by an average of 50 basis points those brokers that tended to have a more optimistic ratings distribution.⁹⁰ The obverse also held true: downgrades to hold or sell from the more optimistic brokers significantly outperformed investments in stocks downgraded by brokers with more pessimistic ratings distributions.⁹¹ The authors note that these differences have effectively evaporated after implementation of the SRO Rules, leading to their conclusion that the ratings distribution disclosure requirement has made research more transparent for investors.⁹²

According to Starmine, a firm that rates analyst performance, following analysts’ advice would have had a slightly negative impact on portfolios on average in 2002; however, in 2003, it would have added 2.2 percentage points to returns.⁹³ In 2004, analysts outperformed benchmarks by

⁸⁷ Boni Study at 19.

⁸⁸ *Id.* However, this seems inconsistent with the author’s observation that according to polls, most institutional investors said that they largely ignored analysts’ recommendation ratings prior to the Global Settlement. *Id.* at 3.

⁸⁹ Integrity Research Assoc. & Meghan Leerskov, *Gauging The Independent Edge*, Buyside, June 2004, at 61, 66. See also Stone, *supra* note 70 (quoting a senior analyst at First Call as saying that research over the prior two years “has become more objective, more original, and more accurate”).

⁹⁰ Barber Study at 6, 31.

⁹¹ *Id.*

⁹² *Id.* at 36.

⁹³ Stone, *supra* note 70. See also Daniel Gross, *The Best Stock Tips in Town - Buy When These Guys Say Buy, Not When Those Guys Say Buy*, Aug. 4, 2004, <http://slate.msn.com/id/2104760> (according to a Smith Barney study, investors who heeded consensus advice from mid-2001 through mid-2003 would have lost money, including a loss of more than 35% in the fourth quarter of 2001; however, there were two straight

1.3 percentage points.⁹⁴ In addition, by 2005, five of the top ten best-performing research shops were sell-side brokerages, as opposed to two years ago, when independent analysts occupied nine of the top ten spots.⁹⁵

On the other hand, the Boni Study found very little change in the performance of analyst recommendations. The Boni Study found that stocks that received the strongest recommendations of settling firm analysts outperformed the S&P 500 index both before and after the Global Settlement.⁹⁶ The study found the same to be true for stocks that received the analysts' worst ratings and in fact, more often than not, such stocks outperformed those stocks that received analysts' strongest recommendations both before and after the Global Settlement.⁹⁷ In discussing these findings, the author noted that both before and after the Global Settlement, recommended stocks that outperformed the S&P 500 index did so at least in part because they are riskier investments on average.⁹⁸

Some news reports also have suggested that the accuracy of research has not improved appreciably as a result of the SRO Rules. An analysis performed for *The Wall Street Journal* indicates that analysts are doing no better a job of picking stocks than they were before the research scandals.⁹⁹ The article reported that since 2000, "even though Wall Street supposedly has become more discriminating," stocks with large proportions of sell ratings are performing better than those with buy and hold ratings.¹⁰⁰ In 2003-2004, stocks with the most sell ratings rose 36% on average, while those with the most buys rose just over 25%.¹⁰¹

Research Ratings Have Been Simplified

The SRO Rules also have led to widespread adoption of simplified ratings systems. As the Madureira Study explained, the new ratings systems are simplified in terms of the number of ratings categories and the meaning among analysts is "very uniform."¹⁰² Eight of the ten Global Settlement firms adopted new ratings system in 2002, and many of the next largest brokerage

quarters of positive performance in the second half of 2003); Melissa Lee & John Metaxas, *Change Comes Slowly To Wall St. Research*, Apr. 26, 2004, <http://msnbc.msn.com/id/4816690/print/1/displaymode/1098>.

⁹⁴ Matt Krantz, *Analysts Deliver Better Advice*, Feb. 9, 2005, <http://www.investars.com/articles20050209.asp>; Jane J. Kim, *Stock Research Gets More Reliable*, Wall St. J., June 7, 2005, at D1.

⁹⁵ Worden, *supra* note 67. See also Kim, *supra* note 94 (some of the brokerage firms that were part of the Global Settlement have climbed higher in rankings of the best-performing research shops).

⁹⁶ Boni Study at 5.

⁹⁷ *Id.*

⁹⁸ *Id.* at 5-6.

⁹⁹ Browning, *supra* note 69.

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² Madureira Study at 13. The author noted that the changes in ratings systems came about in response to the SRO Rules, which "express[ed] the regulators' concern about ratings systems that were loosely defined and perhaps not properly understood by the research's clients." *Id.* at 11.

houses began to adopt new systems around the same time.¹⁰³ Only one of the new ratings systems was adopted before the SRO Rules became effective in July 2002, and many came on line contemporaneous with the September 9, 2002 implementation date of the SRO Rules ratings distribution requirements.¹⁰⁴ Most large brokerage houses now use a three-tier ratings system, and every new ratings system adopted after 2001 is a three-tier system.¹⁰⁵

Some news articles indicate that research can still be confusing for investors, since not all brokerages have adopted new ratings systems, and there is no mandated or accepted uniform ratings system for those that have them.¹⁰⁶

Conflicts Of Interest Have Been Reduced But Not Eliminated

Numerous articles provide anecdotal evidence that the conflicts of interest arising from the close relationship of research and investment banking have been mitigated following implementation of the SRO Rules and Global Settlement. For example, one investment bank had to drop out of a large IPO in May 2005 after its top media research analyst told the firm's senior bankers that they were overpricing the shares.¹⁰⁷ In another example, analysts at two firms that launched a recent hot IPO began coverage on the stock with an "underperform" rating.¹⁰⁸

However, a December 2004 *Newsweek* article reports that despite the regulatory changes and Global Settlement, the "big financial firms are still rife with conflicts that put their own interests, and those of big banking clients, ahead of everyone else's."¹⁰⁹ The article cites as evidence of such conflicts the fact that analysts can still meet with executives around the time they are considering which investment bankers to hire and investment banking fees continue to flow into a pool of money used to pay analysts.¹¹⁰ Another article reports that "at some firms, banking and research were still a little too cozy" and companies looking for underwriters "still want to be sure they'll get positive research coverage once their stock is issued."¹¹¹ According to the article,

¹⁰³ *Id.* at 11.

¹⁰⁴ *Id.* at 13; *see also* Barber Study at 14.

¹⁰⁵ Madureira at 13. The result of the change in ratings system was that many outstanding recommendations were downgraded. *Id.* at 14. More than 90% of the stocks newly rated pessimistic were rated at least neutral under the old system, and more than 40% of the stocks newly rated neutral were rated at least buy/strong buy under the old system. *Id.*

¹⁰⁶ Susanne Craig & Ann Davis, *Analyze This: Research Is Fuzzier Than Ever*, Wall St. J., Apr. 26, 2004 at C1 (ratings are not comparable across firms because the SRO rules do not require a uniform methodology).

¹⁰⁷ Andrew Ross Sorkin & Jeff Leeds, *Has Wall Street Changed Its Tune?*, June 19, 2005, <http://boycott-riaa.com/article/17252> (stating that "[t]hroughout Wall Street, research analysts at major investment banks are increasingly showing a new sense of independence"). *See also* Joseph Nocera, *Wall Street on the Run*, June 14, 2004, http://www.pbs.org/wsw/news/fortunearticle_20040614_02.html (reporting that there have been "plenty of stories about analysts, freed from pressure from bankers, who vetoed important underwriting deals").

¹⁰⁸ Matt Krantz, *IPO underwriters' ratings get tougher, Baidu.com hit*, USA Today, Sept. 14, 2005.

¹⁰⁹ Charles Gasparino, *The Street's Dark Side*, Newsweek (U.S. Edition), Dec. 20, 2004, at 40.

¹¹⁰ *Id.*

¹¹¹ Nocera, *supra* note 107.

research continues to be used to attract banking business.¹¹² Another article suggests that “change has come more slowly to smaller securities firms.”¹¹³ The article tells the story of one analyst who, after adoption of the SRO Rules, received a voice mail from a banker scolding him for a negative report and threatening that the analyst’s compensation is still determined by investment banking revenue.¹¹⁴

A Harvard Business School professor who has studied research analysts said in an interview that even where research is separated from investment banking, conflicts of interest persist.¹¹⁵ These conflicts arise because (1) sell-side analysts have incentives to hype stocks to generate trading business through large institutional investors who may be clients of the brokerage firm, and (2) once a sell-side analyst has prompted an institutional client to take a large position in a stock recommended by the analyst, the analyst faces a disincentive to downgrade the stock and thereby impact the value of the client’s position.¹¹⁶

In addition, while the SRO Rules may have lessened the internal pressure on analysts, there have been a number of reports indicating that analysts are coming under external pressure – retaliation by issuers against analysts who have downgraded their stock.¹¹⁷ Some say that the regulatory reforms splitting investment banking from stock research could shift the source of pressures from investment banking to the issuers.¹¹⁸

Research Coverage Has Diminished

Several press accounts report that the number of companies covered by research analysts has decreased since the implementation of the Global Settlement and SRO Rules. A recent report says that since 2002, 691 companies have lost analyst coverage altogether and 99% of the

¹¹² *Id.* See also *Timing of Stock Issuance Raises Eyebrows After Upgrade*, Wall St. J., Sept. 14, 2005, at C1 (within two days after research analyst upgraded stock, employing firm won the right to lead a stock issue for the company).

¹¹³ Craig, *supra* note 73.

¹¹⁴ *Id.*

¹¹⁵ Ann Cullen, *The Bias of Wall Street Analysts*, Oct. 18, 2004, http://hbswk.hbs.edu/tools/print_item.jhtml?id=4430&t=entrepreneurship.

¹¹⁶ *Id.*

¹¹⁷ Gretchen Morgenson, *You'll Never Do Research in This Town Again*, N.Y. Times, July 31, 2005, at BU 1 (fear of retaliation from the companies they follow may explain analysts' unreasoned optimism); Adrienne Baker, *Leader: Spitzer's Next Challenge?* Apr. 2005, <http://ironthenet.com/feature.asp?current=1&articleID=4048> (in a survey of 732 analysts, 40% said they felt shut out by a firm after they downgraded its equity and another 6% said that companies had threatened to suspend banking relationships following a downgrade); Melissa Lee & John Metexas, *When Companies Behave Badly To Analysts*, Apr. 29, 2004, <http://msnbc.msn.com/id/4816980/print/1/displaymode/1098/>; Richard J. Wayman, *Are Analysts 'Too' Independent? Apparently The French Think So*, Jan. 30, 2004, <http://www.researchstock.com/cgi-bin/rview.cgi?c=bulls&rsrc=RC-20040130-F>; Deborah Solomon & Robert Frank, *'You Don't Like Our Stock? You Are Off The List'*, Wall St. J., June 19, 2003, at C1; *Corporate Retaliation on Analysts*, Apr. 8, 2003, <http://www.ironthenet.com/static/disclosure/USCanada/CorporateRetaliation0403.htm>.

¹¹⁸ Solomon & Frank, *supra* note 117.

companies that have lost coverage are smaller companies with a stock market value of less than \$1 billion.¹¹⁹ According to Reuters Research, as of January 2004, 666 companies in its database of 4,075 had been “orphaned” by sell-side analysts, while in 2002, only 85 companies were left without analyst coverage.¹²⁰ Of the companies that have not been orphaned, 380 are down to a pair of analysts, while 473 companies have just one.¹²¹ Similarly, a recent academic study has found that the number of stocks covered by the ten Global Settlement firms has dropped an average of 14% relative to 2000 and 20% relative to 2001.¹²² However, three of the ten firms show little change or even an increase in the number of companies they covered pre- and post-settlement.¹²³

On the other hand, at least one article indicates that there has been no loss in coverage. In June 2004, First Call, which monitors and distributes analysts’ reports, said that as much research coverage is being generated and that 4,158 companies were being covered, down from 4,257 in June 2002.¹²⁴

To the extent that coverage has diminished, some of the cutback has been attributed to the new regulatory environment, while others say that it is not clear that the new regulations are wholly to blame,¹²⁵ and some blame “long-term economic forces.”¹²⁶

¹¹⁹ Susanne Craig, *Firm To Research Stock ‘Orphans’*, Wall St. J., June 7, 2005, at C3. See also SIA Research Reports, Vol. VI, No. 9, at 12 (“Panelists also agreed that there appears to be a decline in the coverage of smaller stocks (those with market capitalization lower than \$1 billion), which has a negative impact on capital formation.”); Robert Scott Martin, *Issuer-Paid Research Comes of Age*, Buyside (2005), <http://www.buyside.com/archives/2005/0501/0501fidea.asp> (64% of all publicly traded companies do not have sell-side coverage and if over-the-counter stocks are included, the number jumps to 80%); Ritu Kalra, *Paid-For Research Scores With Investors*, Reuters, July 17, 2004, http://www.boston.com/business/articles/2004/07/17/paid_for_research_scores_with_investors/ (for companies whose market capitalization is less than \$500 million, overall coverage is down by more than 35% since 2001 and nearly 60% of all publicly traded companies in the U.S. get no coverage at all); Lee & Metaxas, *supra* note 93 (Morgan Stanley cut stocks covered in North America by 26% and Merrill by 30%); Landon Thomas Jr., *Changed Smith Barney Is Thin on Analysts*, N.Y. Times, June 13, 2003, at C1 (Smith Barney discontinued coverage – at least temporarily – of close to 250 companies); McCafferty, *supra* note 72 (in 1998, 6,100 companies drew coverage from at least one analyst, but by May 2003, that number was down 30%, to 4,300).

¹²⁰ Marie Leone, *The Flight of The Sell-Side Analyst*, July 8, 2004, <http://www.cfo.com/printable/article.cfm/3015019?f=options>.

¹²¹ *Id.*

¹²² Boni Study at 4.

¹²³ *Id.* at 12.

¹²⁴ Stone, *supra* note 70 (noting that this decline may reflect the absence of IPOs and merger activity rather than research changes).

¹²⁵ Rachel McTague, *Goldschmid Concerned About Reduction In Broker-Dealers’ Budgets For Research*, BNA, Inc., Sept. 21, 2004.

¹²⁶ Martin, *supra* note 119.

Research Industry Has Changed

There have been many reports that the “old research model is dead,”¹²⁷ although little consensus has emerged as to the new models. Summarized below are some additional reported changes in the research industry, not discussed elsewhere in this section, since the implementation of the SRO Rules and Global Settlement.

- Institutional investors are diverting equity commission dollars away from Wall Street’s traditional research to securing access to analysts and company management.¹²⁸
- There has been a decrease in sell-side research staff and budgets in light of the separation of research from investment banking revenue.¹²⁹
- Sell-side analysts are migrating to the buy-side/money management firms.¹³⁰

¹²⁷ Nocera, *supra* note 107. See also Kyle L. Brandon, *Update on Research Analysts Related Issues*, SIA Research Reports, Vol. VI, No. 5, at 8 (May 27, 2005) (to date, “sell-side firms have not come up with an answer to the question ‘what is the new business model after the global settlement?’”).

¹²⁸ James Langton, *Study Shows Institutions Moving Away From Wall St. Research*, July 13, 2005, <http://www.investmentexecutive.com/client/en/News/ImprimerDetail.asp?Id=29645&IdSe>.

¹²⁹ SIA Research Reports, Vol. VI, No. 9, at 11 (one panelist estimated that research lost half of its funding with the loss of investment banking revenues at the same time that commission revenue fell by 30%); Mara Der Hovanesian & Amy Borrus, *Can The Street Make Research Pay? In The Eliot Spitzer Era, It's Looking More and More Like An Expensive Luxury*, Jan. 31, 2005, <http://www.capco.com/print.aspx?page=%2fpress.aspx%3fid%3d536> (research budgets at the seven biggest U.S. securities firms have fallen by more than 40% since 2000); McTague, *supra* note 125 (research budgets are down by as much as one-third at some broker-dealer firms); Leone, *supra* note 120 (the number of sell-side analysts has decreased by 15-20% over the last few years); Adam Piore, *Can Investors Get An Honest Stock Tip On (Or Off) Wall Street?*, Newsweek Int’l, Mar. 2004, <http://www.msnbc.msn.com/id/4468645> (HSBC announced that it would stop picking stocks altogether, declaring the old research model “broken”); Ann Davis, *Increasingly, Stock Research Serves The Pros, Not ‘Little Guy’*, Wall St. J., Mar. 5, 2004, at A1; Daniel Dunaief, *Analysts Abandon Wall St.*, N.Y. Daily News, Feb. 24, 2003, <http://www.nydailynews.com/business/v-pfriendly/story/61941p-57842c.html> (analysts are leaving Wall Street and research has become more bureaucratic in light of new regulations).

¹³⁰ Greg Crawford, *Money Managers Beefing Up Their Research Staffs; Search For New Ideas Spurs Firms Into Action*, Investment News, June 20, 2005, at 15 (money managers are beefing up their research staffs and between early 2003 and early 2005, the average research staff at U.S. buy-side institutions increased from 9.3 to 10.5 people); Bill Slocum, *Is There A Future For Wall Street Research?*, June 27, 2003, <http://www.researchstock.com/cgi-bin/rview.cgi?c=outside&rsrc=RA-20030627-F> (in-house equity analysts are being asked to cover more industries and companies than ever before); *Sell Side Gets A Boost*, June 23, 2003, <http://www.ironthenet.com/newsarticle.asp?current=1&articleID=2761> (reporting on the increased pressure on buy-side analysts to cover more industries); Paula Lace, *Sell-Side Analysts Make A Break For The Buy Side*, TheStreet.com, Mar. 5, 2003, <http://www.thestreet.com/markets/paulalace/10072239.html> (the shift to the buy-side could result in making the research industry “even more clubby”).

- Many companies are outsourcing research staff to foreign countries, such as India.¹³¹
- Research is not going to the small investor, whom the regulations were designed to protect, but to institutional investors.¹³²
- Issuer-paid research is on the rise as a result of the loss of coverage.¹³³

V. REVIEW OF RULE PROVISIONS

A. Analytical Framework for Review

The SRO staffs have conducted a section-by-section review of the SRO Rules to determine whether any additions, deletions or amendments are warranted. In evaluating each provision, the SRO staffs have been guided by several analytical touchstones. First, the SRO staffs looked to the principles that underpinned the original rule development to see if a provision is accomplishing its intended purpose. Second, the SRO staffs reviewed findings from examinations, sweeps and enforcement actions. Third, the SRO staffs considered interpretive requests and member questions. Fourth, the SRO staffs compared the rules to the provisions of the Global Settlement. Fifth, the SRO staffs considered potential gaps or overbreadth in the existing rules. Finally, the SRO staffs considered suggestions from industry groups and members.

B. Section-by-Section Review

Set out below is a discussion of those provisions for which the SRO staffs recommend amendments or further interpretation to the rules. The SRO staffs believe that the other provisions of the SRO Rules are operating effectively and efficiently in achieving their purpose,

¹³¹ Der Hovanesian & Borrus, *supra* note 129; Davis, *supra* note 129; Khozem Merchant & David Wells, *Banks Move Analysts' Work To India*, Financial Times (London), Aug. 20, 2003, at 1.

¹³² Davis, *supra* note 129 (“the most pioneering, market-moving research is going exclusively to big mutual funds and the private investment pools known as hedge funds”).

¹³³ SIA Research Reports, Vol. VI, No. 9, at 12 (summarizing panel discussion on the issue of “made-to-order” research tailored to meet client requests); Martin, *supra* note 119 (paid-for researchers “have taken strict measures to keep their work as independent as humanly possible”); Kalra, *supra* note 119 (portfolio managers are overcoming their skepticism of issuer-paid research, citing impressive performance and access to information on companies large Wall Street investment banks do not cover); Melissa Lee & John Metaxas, *Beware of Wall St. 'Research For Hire'*, Apr. 28, 2004, <http://www.msnbc.msn.com/id/4816907/print/1/displaymode/1098/> (current regulations are not strong enough to protect investors vis-à-vis research for hire and if an analyst is not associated with a broker-dealer, perhaps “caveat emptor” should apply); Ann Davis, *Wall Street, Companies It Covers, Agree on Honesty Policy*, Wall St. J., Mar. 11, 2004, at C1 (discussing best practices guidelines that were a joint effort between the Association for Investment Management and Research and the National Investor Relations Institute); Lynn Cowan, *Research-For-Hire Shops Growing, Seeking Legitimacy*, Wall St. J. Online, July 7, 2003, http://online.wsj.com/article_print/0,,BT_CO_20030707_001632,00.html; Thomas S. Mulligan, *Ignored by Wall St., Firms Turn To Research-For-Hire Outfits; As The Fee-Based Industry Tries To Fill The Gap Left By The Withdrawal of Analyst Coverage, Some Experts Have Reservations*, Los Angeles Times, June 3, 2003; McCafferty, *supra* note 72.

and therefore no changes are recommend to those provisions at this time. In making the recommendations, the SRO staffs are mindful that consideration must be given to the mandates of Sarbanes-Oxley and that, in certain instances, implementing the recommendation may require an exemption from the SEC. The SRO staffs did not attempt to address every interpretive issue that may be outstanding and will continue to entertain interpretive requests on a case-by-case basis and to publish, as warranted, additional joint memoranda setting forth key interpretations.

1. Definitions

Current Rules

The SRO Rules currently include the following defined terms:

“Public appearance” means any participation in a seminar, forum (including an interactive electronic forum), radio, television or print media interview, or other public speaking activity, or the writing of a print media article, in which a research analyst makes a recommendation or offers an opinion concerning an equity security.

“Research report” means a written or electronic communication that includes an analysis of equity securities of individual companies or industries, and that provides information reasonably sufficient upon which to base an investment decision.

“Research analyst” means the associated person who is primarily responsible for, and any associated person who reports directly or indirectly to such a research analyst in connection with, preparation of the substance of a research report, whether or not any such person has the job title of “research analyst.”

Recommended Changes

The SRO staffs recommend several changes to the definitions in NASD Rule 2711 and NYSE Rule 472 to make certain interpretations express in the rule language and to circumscribe the scope of communications subject to the SRO Rules.

“Public Appearance”

The SRO staffs recommend amending the definition of “public appearance” to codify an interpretation consistent with SEC Regulation AC that the term applies only to appearances involving 15 or more separate investors. The SRO staffs further recommend that the definition also codify an exception to that interpretation contained in NASD *Notice to Members* 04-18 and NYSE Information Memo 04-10: that it excludes password-protected Webcasts, conference calls and similar events with 15 or more existing customers, provided that the participants previously received the most current research report or other documentation that includes the disclosures required by the SRO Rules and that the research analyst making the appearance corrects or updates any disclosures that are inaccurate, misleading or no longer applicable.

“Research Report”

The SRO staffs recommend several amendments to the definition of “research report.”

First, the SRO staffs suggest codifying the various exceptions to the definition set forth in the two joint interpretive memoranda.¹³⁴ These exceptions essentially parallel those in SEC Regulation AC and the Global Settlement and are set forth below:

- reports discussing broad-based indices, such as the Russell 2000 or S&P 500 index;
- reports commenting on economic, political or market (including trading) conditions;
- technical or quantitative analysis concerning the demand and supply for a sector, index or industry based solely on trading volume and price;
- reports that recommend increasing or decreasing holdings in particular industries or sectors or types of securities;
- statistical summaries of multiple companies' financial data and broad-based summaries or listings of recommendations or ratings contained in previously-issued research reports, provided that such summaries or listings do not include any narrative discussion or analysis of individual companies; and
- notices of ratings or price target changes that do not contain any narrative discussion or analysis of the subject company, provided that the member simultaneously directs the readers of the notice as to where to obtain the most recent research report on the subject company that includes the disclosures required by the rule, and the notice does not refer to a research report that contains materially misleading disclosure, such as where the disclosures are outdated or no longer applicable.

In addition, the SRO staffs recommend codifying two other exceptions to the definition of "research report" contained in the March 2004 Joint Memorandum and SEC Regulation AC. These exceptions exclude certain communications even if they include information reasonably sufficient upon which to base an investment decision or a recommendation or rating of individual securities or companies:

- any communication delivered to fewer than 15 persons; and
- periodic reports, solicitations or other communications prepared for current or prospective investment company shareholders (or similar beneficial owners of trusts and limited partnerships) or discretionary investment account clients that discuss individual securities, provided that such communications discuss past performance or the basis for previously made discretionary investment decisions.

Second, the SRO staffs recommend explicitly excluding from the definition sales material regarding registered investment companies and direct participation programs ("DPPs"). Since investment companies and DPPs are "equity securities" as defined in Section 3(a)(11) of the Securities Exchange Act of 1934, related sales material that contains an analysis of those

¹³⁴ See NASD *Notices to Members* 02-39 (July 2002) and 04-18 (Mar. 2004) and NYSE Information Memos 02-26 (June 26, 2002) and 04-10 (Mar. 9, 2004).

securities and information sufficient upon which to base an investment decision technically is covered by the definition. Yet sales material regarding investment companies is already subject to a separate regulatory regime, including NASD Rule 2210, NYSE Rule 472 and SEC Rule 482, and all advertisements and sales literature regarding investment companies and DPPs must be filed with the NASD Advertising Regulation Department. Moreover, the SRO staffs do not believe that the conflicts underpinning the SRO Rules are manifest to the same extent with respect to research on investment companies and DPPs.

Third, the SRO staffs recommend codifying a longstanding interpretation that communications that constitute prospectuses under the Securities Act of 1933, including free-writing prospectuses as defined under the SEC's recent Securities Offering Reform rules,¹³⁵ are not considered "research reports," even if they meet the definitional elements. Such prospectuses facilitate differing purposes from research reports and are subject to a separate comprehensive regulatory scheme.

"Research Analyst"

Several industry members have urged the SROs to amend the definition of "research analyst" to exclude any member personnel who are not principally engaged in the preparation or publication of research reports – a limitation contained in the Global Settlement. The SRO Rules, in accordance with the mandates of Sarbanes-Oxley, are constructed such that the author of a communication that meets the definition of a "research report" is a "research analyst," irrespective of his or her title or primary job. This prevents firms from circumventing the rules by redirecting through other channels, such as registered representatives or traders, potentially biased research that is not subject to the SRO objectivity safeguards.

The SRO staffs believe it is important to maintain such communications as research reports subject to the rules and those principally responsible for their preparation as research analysts. However, the SRO staffs recommend consideration of a limited exemption from the registration requirements for non-research personnel that produce research reports. The SRO staffs believe that the registration and qualification requirements were intended for those individuals whose principal job function is to produce research, while the balance of the SRO Rules are intended to foster objective analysis of equity securities and transparency of certain conflicts and to provide beneficial information to investors.

2. Restrictions on Investment Banking Department Relationship with Research Department

Current Rules

The SRO Rules permit investment banking and other non-research employees, other than legal and compliance personnel, to review a research report before publication only to verify the factual accuracy of information in the report or identify a potential conflict of interest. The rules further require that an authorized legal or compliance official act as intermediary for all such permissible communications.

¹³⁵ Securities Offering Reform, Securities Act Release No. 8591 (July 19, 2005), 70 FR 44722 (Aug. 3, 2005).

Recommended Changes

The SRO staffs recommend eliminating the provision that permits pre-publication review of research by investment banking and other non-research personnel, other than by legal and compliance. The SRO staffs believe that review of facts in a report by investment banking personnel is unnecessary in light of the numerous other sources available to verify factual information and only raises concerns about the objectivity of the report. Such review may invite pressure on a research analyst from investment banking personnel that could be difficult to monitor.¹³⁶

The SRO staffs note that such factual review is not permitted under the terms of the Global Settlement. Moreover, legal and compliance can adequately perform a conflict review without sharing draft research reports with investment banking personnel.

3. Restrictions on Solicitation of Investment Banking Business

Current Rules

The SRO Rules prohibit research analysts from participating in efforts to solicit investment banking business, including pitch meetings with prospective clients.

Recommended Changes

This provision, which mirrors language in the Global Settlement, strikes at a core conflict that can compromise research analysts' objectivity when they and their research are utilized to win business rather than provide dispassioned analysis. While the SRO staffs believe this provision is operating effectively, some members have asked for additional guidance regarding references to research analysts and research in pitch books and related meetings. The SRO staffs note that the SEC has provided interpretive guidance to the parallel provisions of the Global Settlement and concluded that it would be inconsistent with the purpose of the solicitation ban to include in a pitch book or related presentation materials any information regarding an analyst employed by a firm or an analyst's views. The SRO staffs generally agree with that guidance and intend to address this area in more detail in a future interpretive memorandum.

4. Restrictions on Sales and Marketing Activities

Current Rules

The SRO Rules prohibit research analysts from participating in road shows related to investment banking services transactions and from engaging in any communications regarding investment banking services transactions with current or prospective customers in the presence of investment banking personnel or company management. Investment banking personnel also are prohibited from directing a research analyst to engage in sales or marketing efforts or to engage in any communication with a current or prospective customer related to investment banking transactions.

¹³⁶ See, e.g., Craig, *supra* note 73.

Recommended Changes

This provision, which is substantially the same as a comparable provision in the Global Settlement, seeks to address potential conflicts of interest during the period that firms market securities offerings for issuers. While the SRO staffs believe this provision is operating effectively, some members have asked for additional guidance on whether research analysts can listen to or view an investment banking or company-sponsored road show or other presentation to investors or the analysts' sales force.

The SRO staffs note that the SEC has provided interpretive guidance on the parallel provision of the Global Settlement and concluded that it would not be inconsistent with this provision to permit research analysts to listen to ("listen-only" mode, not identified as being present), or view a live Webcast of a road show or other widely attended presentation to investors or the sales force, so long as access is from a remote location (*i.e.*, not at the same address as investment banking, investors or the sales force). The SEC has further stated that if the road show or other widely attended presentation to investors or the sales force is conducted at the firm's offices, research personnel may listen-in from the same address as investment banking, investors or the sales force, but may not be in the same room as investment banking, investors or the sales force. The SRO staffs generally agree with that guidance and intend to address this area in more detail in a future interpretive memorandum.

5. Restrictions on Publishing Research Reports and Public Appearances

Current Rules

The SRO Rules set forth, in accordance with the mandates of Sarbanes-Oxley, "quiet periods" during which a member is prohibited from publishing or otherwise distributing a research report and a research analyst is prohibited from making a public appearance. These quiet periods apply in two circumstances: (1) after a public offering of securities and (2) before and after the expiration, waiver or termination of a lock-up agreement entered into by a member with a subject company that restricts the sale of securities by that company or its shareholders.

With respect to the former, the SRO Rules establish different quiet periods depending on whether the offering is an IPO or secondary offering and whether the member acted as manager or co-manager. A member that acted as a manager or co-manager of an IPO may not publish or otherwise distribute research for 40 calendar days following the date of the offering; all other members that participated as an underwriter or dealer in the offering are subject to a 25-day quiet period. A ten-day quiet period applies only to the manager and co-manager of a secondary offering.

The rules contain an exception that permits publication and distribution of research or a public appearance concerning the effects of "significant news or a significant event on the subject company" during the quiet period. The SRO staffs have interpreted this exception to apply only to news or events that have a material impact on, or cause a material change to, a company's operation, earnings or financial condition. Another exception to the secondary offering quiet period permits publication or distribution of research pursuant to SEC Rule 139 regarding a subject company with "actively-traded securities" as defined in SEC Regulation M.

Recommended Changes

The SRO staffs recommend several changes to the quiet periods surrounding public offerings and lock-up expirations. In some cases, the SRO staffs offer alternative recommendations to address these issues.

(a) Quiet periods following public offerings of securities

The SRO staffs recommend unifying the IPO quiet periods for all underwriters and dealers participating in the offering and tying them to the SEC's rules regarding publication and distribution of research. As such, the SRO staffs recommend amending the rules to apply a 25-day quiet period to managers, co-managers, underwriters and dealers that participate in an IPO, unless publication or distribution of the report or the public appearance is permitted by SEC rule or interpretation.

The lengthier quiet period for managers and co-managers was intended to allow other voices to publicly analyze and value a subject company before managers and co-managers – those members vested with the greatest interest in seeing the stock price of the subject company go up – weighed in with their reports and public appearances. At the time this provision was enacted, it had been commonplace for managers and co-managers to initiate coverage with a positive rating on a company they just brought public, irrespective of whether the stock price had already risen well beyond the public offering price.

However, the SRO staffs recently have observed more circumstances where managers and co-managers have been neutral or even negative with their initial post-quiet period report based on price appreciation or other factors. Accordingly, the SRO staffs believe that the objectivity safeguards of the SRO Rules and the certification requirement of SEC Regulation AC have obviated the need for a longer quiet period for managers and co-managers than other underwriters and dealers participating in an IPO. The SRO staffs also believe the change would promote more information flow to investors and consistency with SEC regulations.

For some of the same reasons, the SRO staffs also recommend eliminating the quiet periods following a secondary offering. Coupled with the protections of SEC Regulation AC and other SRO Rule provisions, the SRO staffs believe that repeal of this provision would advance the SEC's purpose in its Securities Offering Reform rules to expand the ability of issuers to release more information regarding their prospects and financial condition, without sacrificing the reliability of the research. Along those lines, the existing SRO Rules already provide exceptions for research reports on issuers with "actively-traded securities" as defined in SEC Regulation M.

(b) Quiet periods around releases of lock-up agreements

The NASD staff recommends eliminating the quiet periods around the expiration, waiver or termination of a lock-up agreement, provided members include an additional statement as part of their SEC Regulation AC certification – or, alternatively, a separate certification – for research issued during such periods. The quiet periods surrounding lock-up releases are intended to prevent abusive "booster shot" reports by members to raise the stock price of a company just before previously locked-up shares become freely saleable into the market by a company or its major shareholders. While the SRO staffs continue to share the concern expressed by the former

Acting Chair of the SEC¹³⁷ that these periods pose heightened concerns about biased research, the changes to internal structure of investment banks and the other safeguards imposed by the rules appear to the NASD staff to have addressed these concerns, and have obviated the need for a quiet period that inhibits the flow of information to the marketplace. Moreover, the NASD staff believes that practical limitations inhibit effective administration of the provision. Most notably, the SRO Rules do not require lock-up agreements, and the SROs often have no jurisdiction over parties to them, including the subject company and its non-member shareholders. The SROs therefore cannot always be the arbiter of whether certain facts constitute, for example, a waiver or termination of a lock-up – a significant impediment to the SROs' ability to enforce this provision.

The NASD staff notes that under no circumstances are overly optimistic reports acceptable, whether or not they occur around the expiration of a lock-up. To that end, the SRO Rules require a reasonable basis for any recommendation or price target and the valuation method used to determine a price target, while SEC Regulation AC requires certification that any such recommendation or price target be genuinely held. Accordingly, the NASD staff believes an effective alternative to the quiet periods would be to require that members include under Regulation AC, or separately, an additional certification to having a bona fide reason for issuing research within 15 days before and after a lock-up expiration.

On the other hand, the NYSE staff believes that the quiet period surrounding the expiration, termination or waiver of a lock-up agreement should be maintained but perhaps reduced from the current 15-day period to a five-day period. The NYSE staff believes that the regulatory concerns that precipitated the promulgation of the prohibitions are still present. That is, the NYSE staff is concerned that, absent a quiet period around the release of lock-up agreements, member firms may issue "booster shot" reports that are intended to raise the stock price of a company just before locked-up shares become freely saleable into the market by a company or its major shareholders. The NYSE staff believes that, while the certification requirement of SEC Regulation AC may have obviated the need for a longer quiet period for managers and co-managers than other underwriters and dealers participating in an IPO, it does not support the elimination of quiet periods around the release of lock-up agreements.

With respect to operational issues, the NYSE staff observes that the comments and concerns initially made at the time of the rule proposal have not materialized. In this regard, there have not been instances when the NYSE staff has found co-managers to have inadvertently published research in violation of the quiet periods surrounding the waiver of lock-up agreements granted by lead managers.¹³⁸

¹³⁷ Unger Testimony, *supra* note 5, at 229, 235.

¹³⁸ The NYSE/NASD IPO Advisory Committee made the following recommendations: (1) require prospectuses to include a clear description of lock-up agreements and whether the underwriter expects to grant exceptions relating to hedging or other transactions; and (2) require improved disclosure regarding exemptions by an underwriter to an IPO lock-up agreement, by mandating that underwriters notify issuers prior to granting any exemption to a lock-up, and require issuers to file a current report on Form 8-K at least one business day prior to the time the insider commences the transaction, and also that prior to the transaction, the lead underwriter announces the exemption by broad communications to the investment community through a major news service. *See also* Securities Exchange Act Release No. 50896 (Dec. 20,

Moreover, the NYSE staff notes that while the NYSE may not have jurisdiction over some of the participants to such agreements (e.g., the company and its shareholders), it does retain jurisdiction over its member organizations that can issue research and as such can limit the potential for any untoward conduct by maintaining this prohibition.

Lastly, the NYSE staff notes the recent strength of the IPO market¹³⁹ and that such offerings generally contain lock-up agreements. Accordingly, it believes that at this juncture it is appropriate to maintain a form of prohibition absent some compelling empirical data/evidence to the contrary.

(c) *Exceptions to quiet periods*

As noted above, the rules contain an exception that permits publication and distribution of research or a public appearance concerning the effects of “significant news or a significant event on the subject company” during the quiet period. The SRO staffs have interpreted this exception to apply only to news or events that have a material impact on, or cause a material change to, a company’s operations, earnings or financial condition and that generally would trigger the filing requirements of SEC Form 8-K. The SROs have not interpreted the exception to include earnings announcements absent some other significant news or significant event because it was felt that they generally are not a causal event or news items that materially affects a company’s operations, earnings or financial condition.

The NYSE staff believes that exceptions to quiet periods should be consistent with SEC requirements for the filing of Forms 8-K. In this regard, Item 2.02 (Results of Operations and Financial Conditions) of Form 8-K requires, in part, a filing of such form if a registrant makes any public announcement or release (including any update of an earlier announcement or release) disclosing material non-public information regarding its results of operations or financial condition. Accordingly, the NYSE staff recommends including an announcement of earnings as an exception to the quiet periods as it will be consistent with SEC requirements and maintain a flow of potentially sensitive information to the market and investors in a timely manner.¹⁴⁰ The NYSE staff also believes that an announcement of a change to earnings will, in all likelihood, be accompanied by an announcement of some type of causal events. Further, earnings announcements and guidance are necessary pipelines of information for research analysts to support the basis of their investment recommendations.

2004), 69 FR 77804 (Dec. 28, 2004) (notice of filing of proposed NYSE Rule 470 and NASD Rule 2712 which would codify, in part, the above recommendations) (SR-NYSE-2004-12 and SR-NASD-2003-140).

¹³⁹ In 2005, there have been 61 IPOs so far that have listed on the NYSE. In 2004, there were 69 NYSE-listed IPOs. Further, in a recent *Wall Street Journal* article, it was noted that “there are 115 initial public offerings of stock valued at \$20.9 billion waiting to price in the U.S. in 2006, according to data from deal tracker Dealogic LLC.” Lynn Cowan, *IPO Market Looks Strong in 2006*, Wall St. J., Dec. 19, 2005, at C4.

¹⁴⁰ The SEC recognized the importance of timely dissemination of information to the marketplace in its recent amendments to Form 8-K in which it shortened the filing deadline to four business days after the occurrence of an event triggering the disclosure requirements of the form. See Securities Act Release No. 8400 and Securities Exchange Act Release No. 49424 (Mar. 16, 2004), 69 FR 15594 (Mar. 25, 2004).

The NASD staff does not believe it is necessary to revise the quiet period exceptions to include any event that triggers the filing of a Form 8-K. The NASD staff continues to believe that earnings announcements are not causal occurrences that, in and of themselves, connote significant news or significant events that materially impact a subject company's financial condition or operations. Moreover, in the NASD staff's experience, abolition of the quiet periods around releases of lock-up agreements would largely obviate the need to expand the "significant news" exception. These issues have arisen mainly because an earnings announcement has occurred or will occur within 15 days of the expiration, waiver or termination of a lock-up agreement. As noted above, the NASD staff further believes that abolition of the quiet periods around releases of lock-up agreements would increase information flow to the marketplace.

6. Restrictions on Personal Trading by Research Analysts

Current Rules

NASD Rule 2711(g) and NYSE Rule 472(e) generally restrict the trading of securities by "research analyst accounts."¹⁴¹ Specifically, NASD Rule 2711(g) and NYSE Rule 472(e) prohibit any research analyst account from:

- purchasing or receiving any securities before the issuer's initial public offering if the issuer is principally engaged in the same types of business as companies that the research analyst follows;
- purchasing or selling any security issued by a company that the research analyst follows, or any option or derivative of such a security, for a period beginning 30 days before and ending five days after the publication of a research report concerning the company or a change in a rating or price target of the company's securities; and
- purchasing or selling any security or option or derivative of such a security in a manner inconsistent with the analyst's most recent recommendation.

The rules include exceptions to these trading restrictions for certain trades that:

- are due to unanticipated significant changes in an analyst's personal financial circumstances;
- occur within the 30-day/five-day trading blackout around the publication of a report if the report is issued due to a significant news event;

¹⁴¹ NASD Rule 2711(a)(6) defines the term "research analyst account" to include any account in which a research analyst or member of the analyst's household has a financial interest, or over which the analyst has discretion or control, other than an investment company registered under the Investment Company Act of 1940. The term does not include a "blind trust" account that is controlled by a person other than the research analyst or household member and neither the analyst nor any household member knows of the account's investments or investment transactions. Although NYSE Rule 472 does not employ the term "research analyst account," the trading restrictions of NYSE Rule 472(e) and NASD Rule 2711(g) are coterminous. See NYSE Rule 472.40.

- occur within 30 days after an analyst initiates coverage of a company;
- involve shares of diversified registered investment companies; and
- involve interests in an investment fund over which neither the analyst nor a household member has any investment discretion or control, the research analyst accounts collectively own no more than 1% of the fund's assets, and the fund invests no more than 20% of its assets in securities of issuers principally engaged in the same types of business as companies that the analyst follows.

NASD Rule 2711(g) and NYSE Rule 472(e) also require legal or compliance personnel to pre-approve all trades of persons who oversee research analysts to the extent such trades involve equity securities of subject companies covered by the analysts they oversee.

Recommended Changes

Members have suggested the SROs make two principal changes to the personal trading restrictions. First, members have urged the SROs to expand the exceptions to the personal trading restrictions to include any investments in funds not controlled by the research analyst or member of his or her household, regardless of whether the fund is registered as an investment company and regardless of its holdings. Second, some members that wish to go beyond the SRO Rules and ban ownership of securities covered by their analysts have asked the SROs to provide a means for those analysts to divest their holdings without violating the blackout period and trading against recommendation prohibitions.

The SRO staffs generally agree with these comments and therefore recommend the following changes to the exceptions to the SRO Rules' personal trading restrictions.

First, the SRO staffs recommend revising the exceptions to the personal trading restrictions for investment funds. The current rules do not apply the personal trading restrictions to investments in diversified registered investment companies and funds that meet certain percentage-of-assets tests. The SRO staffs recommend that the personal trading restrictions instead not apply to investments in any fund so long as neither the analyst nor a member of his or her household is aware of the fund's holdings or transactions other than through periodic shareholder reports and sales material based on such reports, and provided that the research analyst account owns no more than 1% of the assets of the fund.

This would simplify the ability of analysts to invest in mutual funds, variable insurance products and hedge funds that do not disclose their holdings other than through periodic reports or sales material based on such reports. The SRO staffs believe that absent discretion or control of an account or the contemporaneous knowledge of the account's transactions, a minimal investment by a research analyst will not tempt the analyst to compromise research objectivity to benefit the account.

Second, the SRO staffs recommend creating an exemption for firms that voluntarily choose to prohibit their analysts from owning shares of the companies they cover. The exemption would allow such a firm to adopt policies that permit research analysts to divest their holdings in an

orderly and controlled way with the oversight of the firm's legal and compliance personnel. The SRO staffs permitted firms to allow their analysts to divest their holdings in the same manner when the rule first became effective by delaying for a certain time period implementation of the personal trading restrictions for firms that wished to ban ownership. With the recommended change, the rule would allow firms that adopt ownership bans to implement the same divestiture procedures regardless of when they adopted such a policy.

7. Disclosure Requirements

Current Rules

NASD Rule 2711(h) and NYSE Rule 472(k) impose a number of disclosure requirements on member research reports and research analyst public appearances in which the analyst makes a recommendation or offers an opinion concerning an equity security. The rules require specific disclosures of conflicts of interest, including where the member firm, the research analyst or a member of the analyst's household has a financial interest in the subject company's securities or the member or its affiliates have received compensation from the subject company. The rules also require a number of non-conflicts related disclosures in research reports, including the meanings of ratings used in the member's rating system, the distribution of buy, hold, and sell ratings assigned by the member, and a price chart that plots the assignment or changes of the analyst's ratings and price targets for the subject company against the movement of the subject company's stock price over time.

Recommended Changes

The SRO staffs have found that these required disclosures promote transparency and provide important information to enable investors to assess the value of the research in making their investment decision. However, the SRO staffs are concerned that the sheer volume of the disclosures may obscure the overall message that the disclosures are attempting to convey: that the member or research analyst faces conflicts of interest with respect to the subject company. This problem is compounded by the fact that many members include additional disclosures required by other jurisdictions, as well as sometimes lengthy disclaimers for their own purposes. The SRO staffs believe that it would be more effective and useful to investors to know immediately whether the member firm or research analyst producing the research report is conflicted, while providing the reader the means to learn more about these conflicts if he or she chooses to do so.

To accomplish this result, the SRO staffs recommend amending the rules to require that, in lieu of publication in the research report itself, member firms disclose their conflicts of interest related to research reports by including a prominent warning on the cover of a research report that such conflicts of interest exist, together with information on how the reader may obtain more detail about these conflicts on the member's Web site. A member would then be required to include detailed conflicts information on its Web site. The SRO staffs believe that this disclosure system would be more effective to warn the reader of such conflicts than the current system of disclosing all conflicts in the back of the report.

The SEC has considered using this approach elsewhere to disclose the existence of conflicts of interest to investors. For example, the SRO staffs understand that in its mutual fund point-of-sale disclosure proposal,¹⁴² the SEC staff found that most investors only want to know about whether a conflict exists, rather than receiving quantitative or lengthy disclosure about the precise nature of those conflicts. For that reason, the SEC has proposed requiring a “Yes/No” disclosure of whether a dealer receives revenue sharing or pays differential compensation with respect to the sale of mutual funds. The SEC would require that more detailed disclosure about the nature of any conflicts be provided separately on a mutual fund’s Web site.

Similarly, in commenting on the SEC point-of-sale disclosure proposal, the NASD Mutual Fund Task Force recommended Internet delivery of point-of-sale documents and prospectuses, a recommendation that NASD supports.¹⁴³ The Task Force argued that Internet delivery would enable investors to obtain the level of disclosure that they wanted in electronic form.

The SRO staffs believe that the research analyst conflict of interest rules similarly lend themselves to a more targeted means of disclosure. The SRO staffs therefore suggest amending the SRO Rules to require conflicts of interest disclosure along the lines of the SEC’s point-of-sale proposal and NASD’s Internet delivery recommendations for mutual fund related disclosures. This disclosure requirement would ensure that investors obtain prominent disclosure that a research-related conflict exists, and would permit investors to find additional information about the conflict on the member’s Web site. It is possible that a similar approach could be used for disclosure of conflicts in public appearances, as long as the existence of such conflicts is clearly communicated.

The SRO staffs generally do not believe that vague, so-called “health warnings” that conflicts of interest “may or may not” exist are useful or effective. In this regard, the SRO Rules would still require disclosure based on actual conflicts of interest, rather than the possibility of such conflicts.

The SRO staffs do not recommend Web site disclosure for the non-conflicts related disclosures, such as the meanings of the member’s ratings and the price chart showing the subject company’s price movements against the analyst’s assignments of ratings and price targets. The SRO staffs believe that these disclosures provide useful information that should be readily available to investors, particularly since they would not be encompassed by the recommended conflict warning on the cover of the report.

Finally, the SRO staffs recommend the inclusion of non-substantive, technical changes to certain disclosure requirements in order either to codify past SRO interpretations of the rules or to clarify the rules’ intent. For example, a research report is required to disclose the meanings of ratings used in the member’s ratings system only if the report actually includes a rating of the subject company. Similarly, a price chart is not required for reports that do not include a rating or price target. In addition, the SRO staffs recommend including the disclosure requirements for third-party research reports, which are discussed in NASD *Notices to Members* 02-39 (July

¹⁴² Securites Act Release No. 8544 (Feb. 28, 2005), 70 FR 10521 (Mar. 4, 2005).

¹⁴³ Report of the Mutual Fund Task Force: Mutual Fund Distribution (Mar. 2005), http://www.nasd.com/web/groups/rules_regs/documents/rules_regs/nasdw_013690.pdf.

2002) and 04-18 (Mar. 2004) and NYSE Information Memos 02-26 (June 26, 2002) and 04-10 (Mar. 9, 2004), in the SRO Rules' text.

8. Prohibition on Retaliation Against Research Analysts

Current Rules

The SRO Rules currently prohibit any member and any employee of a member who is involved with the member's investment banking activities from directly or indirectly retaliating against a research analyst as a result of an unfavorable research report or public appearance that may adversely affect the member's current or prospective investment banking relationship with a subject company.

Recommended Changes

The SRO staffs believe that under no circumstances is retaliation appropriate against a research analyst who expresses his or her truly held beliefs about a subject company. As such, the SRO staffs recommend amending this provision to extend the retaliation prohibition to all employees, not just those involved in investment banking activities.

9. Prerequisites for the Research Analyst Qualification Examination

Current Rules

As detailed in Section II, the SRO Rules require an associated person who functions as a research analyst on behalf of a member to register as such and pass the Research Analyst Qualification Examination (Series 86/87) or qualify for an exemption. Prior to taking either the Series 86 or 87, a candidate also must have passed the General Securities Registered Representative Examination (Series 7), the Limited Registered Representative Examination (Series 17), or the Canada Module of Series 7 (Series 37 or 38).

The SRO staffs believe it is important for those functioning as research analysts to be familiar with general industry rules and practices, particularly those of registered representatives, who are a primary source for distributing research. The SRO staffs believe that the topics on the Series 7 and other eligible prerequisite examinations further develop a sensitivity in research analysts to the interests of public customers who are the end users of their work product. The SRO staffs note that a committee of research analysts who were consulted in the development of the Series 86/87 examination program unanimously recommended that research analysts be required to pass the Series 7 in addition to a more job-specific research analyst qualification examination.

Recommended Changes

Several industry members have asked the SROs to consider eliminating the Series 7 or alternative prerequisite exam. These firms argue that research analysts should only be tested on job-specific requirements, and that relevant topics on the Series 7 examination should instead be imported to the Series 86/87 examinations. The SRO staffs recommend considering this suggestion, as well as the possibility of substituting for the Series 7 prerequisite a new Capital Market Professional Examination that is being developed jointly by NASD, the NYSE and

regulators in the United Kingdom. While the content of the latter examination has not yet been precisely determined, it is anticipated that the concepts tested may provide an adequate foundation of general industry rules and practices for research analysts. The SRO staffs will be better situated to evaluate this alternative once the new examination has been fully developed and approved by the SEC.

C. Other Issues

1. Fixed-Income Research

On May 19, 2004, The Bond Market Association (“BMA”) issued its “Guiding Principles to Promote the Integrity of Fixed Income Research,” which are voluntary principles designed to help firms manage potential conflicts of interest that may arise in their fixed-income research activities.¹⁴⁴ According to the BMA, its Guiding Principles were designed to recognize the significant differences between fixed-income research and equity research, as well as the important differences in research regarding individual fixed-income asset classes.

The SRO staffs do not believe it is appropriate at this time to codify any of these principles or amend the SRO Rules to extend their provisions to fixed-income research. Instead, the SROs are monitoring the extent to which firms have adopted the BMA Guiding Principles and will consider further rulemaking after assessing the effectiveness of voluntary compliance. Meanwhile, the SRO staffs believe that the anti-fraud statutes, as well as existing SRO rules, such as NASD Rule 2110’s requirement that members “observe high standards of commercial honor and just and equitable principles of trade” and similar obligations under NYSE Rules 401 and 476(a)(6), can reach any egregious conduct involving fixed-income research.

2. Issuer Retaliation

As noted above, the source of analysts’ conflicts was not limited solely to their investment banking relationships, but also included pressure stemming from issuer retaliation. Issuer retaliation can consist of limiting an analyst’s access to company management or participation in conference calls, and interfering with other company relationships (such as by prohibiting the analyst’s firm from managing an issuer’s pension plan). The SRO Rules have insulated analysts from internal pressures from investment banking personnel by prohibiting retaliation by a member against a research analyst for issuing an unfavorable research report that adversely affects a firm’s investment banking relationship with an issuer. The prohibition against investment banking personnel’s supervising or controlling analysts or participating in the determination of analyst compensation also protects the analyst from retaliation by the investment banking department.

Protection from retaliation by an issuer rather than the investment bank is a more difficult problem to solve. The issue could be addressed through listing standards. However, the NYSE does not believe amendments to its listing standards and its limited ability to enforce such standards by delisting is practicable. In this regard, issuer retaliation, unlike other prohibited

¹⁴⁴ See Guiding Principles To Promote Integrity of Fixed Income Research, May 2004, http://www.bondmarkets.com/assets/files/Guiding_Principles_for_Research.pdf.

firm conduct, is very fact specific, qualitative rather than quantitative in nature and difficult to evaluate and discern with absolute certainty.

Accordingly, the NYSE would like to see the practical impact of the CFA/NIRI “Best Practice Guidelines Governing Analyst/Corporate Issuer Relations” which it has endorsed and communicated to its listed companies.¹⁴⁵ It will continue to monitor the impact of such Best Practices and will continue to engage the SEC in dialogue to explore other practical ways to address this issue.

3. Foreign Regulatory Initiatives

In addition to the SROs, regulators in such jurisdictions as the United Kingdom,¹⁴⁶ Canada,¹⁴⁷ Japan,¹⁴⁸ and Australia¹⁴⁹ have implemented or proposed research analyst conflict of interest rules in some form. Organizations such as the International Organization of Securities Commissions (“IOSCO”) also have issued guidelines and best practices for their members.¹⁵⁰ And the European Union Forum Group (“EU”) released a set of recommendations involving research analyst conflicts to be included in a directive targeting market abuse and promoting uniform regulations among the different European Union securities markets.¹⁵¹

These regulatory models share a common goal of reducing bias in the production and dissemination of research. At the same time, the various initiatives by these regulatory groups demonstrate that there are a number of approaches to eliminating research analyst conflicts: some organizations, like IOSCO and the EU, recommend best practices but do not impose

¹⁴⁵ The NYSE recently issued a letter to its listed companies encouraging them to consider implementing CFA/NIRI Best Practice Guidelines Governing the Relationship between Analysts and Corporate Issuers. See letter dated October 11, 2005 from Richard G. Ketchum, Chief Regulatory Officer, NYSE, to Exchange Listed Companies.

¹⁴⁶ Regulations by the Financial Services Authority, “Discussion Paper No. 15” and “Consultation Paper 171,” July 2002 and December 2003, respectively.

¹⁴⁷ Report issued by Securities Industry Committee on Analyst Standards, which was established by the Toronto Stock Exchange, the Investment Dealers Association (“IDA”) and the Canadian Venture Exchange. The report, entitled “Setting Analyst Standards: Recommendations for the Supervision and Practice of Canadian Securities Industry Analysts” was released in November 2001. IDA “Policy 11, Analyst Standards,” was issued in June and December 2002.

¹⁴⁸ Japanese Securities Dealers Association, “Rules for Handling Analysts’ Reports,” January 2002, revised January 2003.

¹⁴⁹ Securities Institute of Australia and the Securities and Derivatives Industry Association, “Best Practices Guidelines for Research Integrity,” November 2001.

¹⁵⁰ IOSCO is an international organization whose members cooperate to promote high standards of regulation to protect investors and ensure that markets are fair, efficient and transparent. In September 2003, the Technical Committee of IOSCO issued a Statement of Principles to guide securities regulators and others in addressing the conflicts of interest securities analysts may face. These principles are combined with certain more specific measures designed to eliminate or manage analysts’ conflicts of interest. The Statement of Principles can be found at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD150.pdf>.

¹⁵¹ This group issued a Report and the “Market Abuse Directive” to implement a uniform system of regulation to handle market abuses in the European Union. The Market Abuse Directive was first issued in December 2002.

regulations, while the SRO Rules and rules promulgated by the other regulators take a more prescriptive approach. These diverse regulatory models sometimes result in differing requirements that can pose challenges for firms with global research operations.

The SRO staffs support ongoing discussions with their members and international regulatory groups to promote the most effective and efficient means to manage research analyst conflicts of interest and to ensure reliable and objective research throughout the world.

VI. CONCLUSION

The SRO staffs believe that the SRO Rules have been effective in helping to restore integrity to research by minimizing the influences of investment banking and promoting transparency of other potential conflicts of interest. Evidence also suggests that investors are benefiting from more balanced and accurate research to aid their investment decisions. The SRO staffs believe that certain changes to the SRO Rules would further improve their effectiveness by striking an even better balance between ensuring objective and reliable research on the one hand and permitting the flow of information to investors and minimizing costs and burdens to members on the other.

NBER WORKING PAPER SERIES

DIVIDEND TAXES AND CORPORATE BEHAVIOR:
EVIDENCE FROM THE 2003 DIVIDEND TAX CUT

Raj Chetty
Emmanuel Saez

Working Paper 10841
<http://www.nber.org/papers/w10841>

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Dividend Taxes and Corporate Behavior: Evidence from the 2003 Dividend Tax Cut
Raj Chetty and Emmanuel Saez
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ABSTRACT

This paper analyzes the effects of dividend taxation on corporate behavior using the large tax cut on individual dividend income enacted in 2003. Using data spanning 1980 to 2004-Q2, we document a sharp and widespread surge in dividend payments following the tax cut, along several dimensions. First, an unprecedented number of firms initiated regular dividend payments after the reform. As a result, the number of publicly traded firms paying dividends, after having declined continuously for more than two decades, began to increase precisely in 2003. Second, many firms that were already paying dividends prior to the reform raised regular dividend payments significantly. Third, special dividends also rose. All of these effects are robust to introducing controls for profits and other firm characteristics. Additional evidence for specific groups of firms suggests that the tax cut induced increases in total payout rather than substitution between dividends and repurchases. The tax response was confined to firms with lower levels of forecasted growth, consistent with an improvement in capital allocation efficiency. The response to the tax cut was strongest in firms with strong principals whose tax incentives changed (presence of large taxable institutional owners or independent directors with large share holdings), and in firms where agents had stronger incentives to respond (large executive ownership and low levels of executive stock-options outstanding). These findings show that principal-agent issues play a central role in corporate responses to taxation.

Raj Chetty
Department of Economics
University of California, Berkeley
521 Evans Hall #3880
Berkeley, CA 94720
and NBER
chetty@econ.berkeley.edu

Emmanuel Saez
Department of Economics
University of California, Berkeley
549 Evans Hall #3880
Berkeley, CA 94720
and NBER
saez@econ.berkeley.edu

1 Introduction

The taxation of dividend income has generated much interest and controversy both in the public economics literature and among tax policy makers, largely because it creates a particularly stark version of the equity-efficiency tradeoff. Dividend income, and especially taxable dividend income, accrues very disproportionately to wealthy individuals.¹ Hence, taxing dividends seems desirable for redistributive reasons. However, taxing dividend income may also generate large efficiency costs. Dividend taxes reduce the net return to investors, potentially reducing savings and the capital stock in the economy. In addition, taxing dividend income at the individual level could induce firms to reduce their tax burdens by retaining earnings rather than distributing dividends. If agency problems lead to inefficient investment of retained earnings (as suggested by e.g., Jensen 1986, Scharfstein and Stein 2000, LaPorta et al., 2000), dividend taxation could reduce the efficiency of capital allocation in addition to distorting the amount of investment.² In view of this tradeoff, it is important to know firms' behavioral responses to taxation to evaluate optimal dividend taxation. Despite extensive research, the effects of taxation on dividend policies and corporate behavior more generally remain disputed, largely because of the lack of a sharp tax experiment, and therefore of a fully convincing research design (see Auerbach (2003) and Allen and Michaely (2003) for recent surveys).

The Jobs and Growth Tax Relief Reconciliation Act of 2003 in the United States (hereafter, the "2003 tax reform") provides a unique opportunity to understand the effects of dividend taxation on corporate behavior. One of the key provisions of the reform was to introduce favorable treatment for individual dividend income whereby dividends are taxed at a rate of 15% instead of facing the regular progressive individual income tax schedule with a top rate of 35%.³ This tax change effectively gave to dividend income the same favorable tax treatment

¹Individual Income Tax Statistics for year 2000 (U.S. Treasury Department, 2003) show that about two thirds of taxable dividends are earned by the top 10% income taxpayers. More than half of American families now hold stock through pension or college funds but returns on those assets are exempted from income taxes and hence not affected by the 2003 tax reform.

²Indeed, Corporate America has traditionally lobbied for corporate tax reductions but not dividend tax reductions, suggesting that managers of large corporations might prefer to retain earnings rather than distribute dividends.

³More precisely, taxpayers in the bottom two income tax brackets (facing a regular marginal tax rate of 10% or 15%) face a new dividend tax rate of only 5%, while taxpayers in the top four brackets (facing marginal tax rates of 25, 28, 33, or 35%) face a new dividend tax rate is 15%. Taxpayers on the Alternative Minimum Tax schedule (flat rate of 28%) benefit as well from the reduced 15% tax rate on their dividend income.

as realized capital gains income.⁴ The tax reform was officially signed into law at the end of May 2003, but was first proposed by the Bush administration on January 7, 2003.⁵ The tax cut on dividend income was made retroactive to the beginning of 2003. Therefore, during the first two quarters of 2003, corporations knew that dividends would face lower taxes with substantial probability. Starting in June 2003, this became certain. The tax cut is scheduled to expire by 2009, but the actual duration is contingent on political developments.⁶

This paper uses the 2003 dividend tax cut to estimate the effect of dividend taxes on dividend payments by publicly traded corporations. The leading example for both the incentive and distributional consequences of the tax cut is Microsoft, the company with the largest accumulated cash holdings in the U.S. Microsoft initiated regular dividend payments for the first time in 2003. In July 2004, Microsoft announced an additional special one-time dividend payment of \$32 billion to be paid in December 2004, an amount that far exceeds any dividend payment previously made by a single U.S. corporation. The tax-savings associated with these payments will clearly benefit wealthy taxpayers disproportionately, starting with Bill Gates the richest person in the United States, but they might also affect the investment decisions of Microsoft and other companies. The goal of this paper is to examine whether Microsoft's behavior is an anomaly or whether it is representative of a broader shift in payout policies associated with the tax cut. We investigate this issue using data on dividend payments by publicly traded corporations, currently available up to the second quarter of 2004 from the Center for Research in Security Prices (CRSP).

We find that the level of total regular dividends has surged by approximately 20% since the beginning of 2003, the point at which the lower tax rate was first proposed and ultimately retroactively applied. We need to surmount two important econometric challenges in order to identify a causal link between this change and the tax reform. First, dividend payments are extremely concentrated. The top 20 payers account for more than half of total dividends

⁴Individual dividend income earned through tax favored instruments such as IRAs, 401(k)s and other pension and college funds was not affected by the tax change. Dividend income earned by government agencies, nonprofit organizations, and corporations was not affected either.

⁵Auerbach and Hassett (2004) discuss the timing of the tax reform legislative process in detail. They find that the reduction of dividend taxation was not discussed seriously before the end of December 2002. It was not mentioned in the Bush 2000 campaign platform either, suggesting that there was no anticipation that such a tax change would take place before the very end of 2002.

⁶If President Bush wins again in 2004, the tax cut might well be made permanent. If Senator Kerry wins, as Congress is predicted to almost certainly remain Republican, gridlock and no further change is the most plausible outcome.

paid out by publicly traded firms. Consequently, the level of total (or mean) dividends is driven by a few big payers, making it difficult to make statistically robust inferences about the effects of the tax change without analyzing other moments of the distribution that are less sensitive to outliers. Second, the size and composition of our sample of firms listed on the NYSE, AMEX, or NASDAQ exchanges fluctuates heavily in the years preceding the tax reform. As a result, deliberate changes in dividend behavior are confounded with changes in sample composition due to entry and exit.⁷ In view of these problems, we control for composition effects by analyzing the properties of entrants and leavers, focusing on within-firm changes in dividend payments. We also divide our analysis of the response to the tax reform into three margins that are more robust to outliers than means: (1) the extensive margin (initiations and terminations of regular dividend payments); (2) the intensive margin (frequency of increases or decreases in payment amounts by firms already paying); and (3) special payments (one time distributions). Our main findings are as follows.

First, we find an unprecedented large surge in dividend initiations exactly in the quarters following enactment of the reform. This constitutes strong evidence that this change in behavior was tax driven. As a result and as the frequency of dividend terminations fell slightly after the tax cut, the fraction of traded companies paying dividends, which had declined continuously over the last two decades (see Fama and French 2001), has increased significantly from a low of 20% in 2002Q4 to almost 25% in 2004Q2. Second, dividend paying firms were significantly more likely to increase their regular dividend payments after the reform. Third, we find that the number of special (i.e., one time, non-recurring) dividend payments also increased following the 2003 tax reform but the effects on special dividend amounts are driven by a handful of large payers. All of these results are robust to controlling for a variety of potential confounding factors such as levels and lags of profits, assets, cash holdings, industry, and firm age.⁸ In addition, we provide robustness checks of the causality of the tax cut by showing that there is no change in dividend initiations for U.S. corporations whose largest shareholder is a non-taxable institution such as a pension fund, or for Canadian corporations. By aggregating the changes in amounts along the extensive and intensive margins, we obtain

⁷These two econometric issues explain the sharp differences between our results and the recent studies of the 2003 tax cut by Blouin, Raedy, and Shackelford (2004) and Julio and Ikenberry (2004), which we discuss in detail below.

⁸Importantly, we find no pre-reform decline in dividends, suggesting that the reform was indeed unanticipated and that our estimates are not biased by intertemporal substitution (re-timing) of dividend payments.

a relatively precise estimate of the change in total regular dividends due to the tax cut of \$5 billion per quarter (20%). This implies an elasticity of regular dividend payments with respect to the marginal tax rate on dividend income of -0.5.

Having established a link between the tax cut and dividend payments, we explore the mechanism of the tax response by analyzing the heterogeneity of the effect across firms. We find that the dividend response was concentrated among firms with strong incentives for agents to increase dividend payments or with powerful principals whose incentives to demand dividend income changed significantly with the reform. Firms where top executives held more shares and fewer unexercised stock-options were much more likely to initiate dividend payments, revealing the importance of top executives' self-interests in determining corporate responses to taxation.⁹ In addition, firms with high taxable institutional ownership or large independent shareholders on the board of directors were also more likely to raise dividends, especially when top executives have weak incentives to do so. These findings indicate that agency issues should be a central element in the analysis of optimal corporate tax policy, and call for a tighter connection between traditional tax efficiency analysis in public economics and the agency theory of the firm in corporate finance.

The heterogeneity of the tax response also provides suggestive evidence of an improvement in capital allocation toward firms with better investment opportunities. Dividend initiations and increases were confined to firms with moderate forecasted earnings growth. In contrast, firms with high expected growth in earnings did not respond to the tax cut at all. Of course, capital allocation could only have improved if total payout rose after the tax cut; if the surge in dividend payments simply substituted for share repurchases, no net reallocation would have occurred. We therefore explore the degree of substitution between share repurchases and additional dividend payouts. Unfortunately, the volatility of share repurchases in the aggregate makes it difficult to determine whether substitution occurred in the full sample of firms. If we restrict attention to groups of firms where the tax response was strongest – e.g., those with high executive share ownership and high institutional ownership – we are able to show that the fraction of firms using either share repurchases or dividends to pay out earnings rose sharply after the reform. In addition, for those companies who initiated dividends after

⁹These findings do not necessarily imply that managers are hurting shareholders by manipulating corporate decisions. It is possible that managers' contracts were written so that the management's self-interest is aligned with shareholders' interests.

the reform, total payout (dividends plus share repurchases) increased significantly. Hence, the tax reform does indeed appear to have induced an increase in total payout rather than simply a “relabelling” of repurchases as dividends.

The remainder of the paper is organized as follows. Section 2 provides some background on payout policies and previous work. Section 3 describes the data and defines the variables of interest. Section 4 describes our methodology and presents the main results on the change in dividend payments induced by the tax reform. Section 5 examines the heterogeneity of the response, and section 6 investigates whether new dividend payments crowded out share repurchases. Section 7 offers concluding remarks.

2 Background on Payout Policies and Existing Literature

2.1 Payout Policies

Corporations distribute profits to shareholders in two main forms: dividends and share repurchases. In a world without taxes and with perfect information, share repurchases and dividends are equivalent. Under U.S. tax law, because realized capital gains have traditionally been taxed more lightly than dividend income, share repurchases were a more tax efficient way of distributing profits. Share repurchases started becoming more common in the early 1980s following a SEC ruling in 1982 which clarified the rules under which corporations could legally make share repurchases without being subject to dividend taxation (Grullon and Michaely, 2002). However, despite the rise in share repurchases, dividends have remained an important conduit for distributing profits.¹⁰ The reason why dividends have not been entirely replaced by share repurchases has been termed the “dividend puzzle,” and a number of theories and explanations have been proposed to explain this phenomenon (see Michaely and Allen, 2003). The 2003 tax reform almost eliminated the tax disadvantage of dividends relative to repurchases.

There are two broad categories of dividend payments: regular dividends and special dividends. Regular dividends are periodic and recurrent (in general quarterly but sometimes annual, semi-annual, or more rarely monthly). As noted by Fama and French (2001), the fraction of publicly traded firms making these regular dividend payments is fairly low (less than

¹⁰Over the last decade, total dividend payouts are about the same size as total share repurchases for publicly traded U.S. corporations (see Michaely and Allen, 2003) and Section 6 below. Grullon and Michaely (2002) argue that share repurchases have, to some extent, crowded out dividend payments.

25%) in the recent past. It is fairly common for firms to increase regular dividend payments – 11% of firms initiated or raised dividends in the average quarter. Decreases are much rarer (less than 2% per quarter), consistent with DeAngelo and DeAngelo’s (1990) finding that only severely distressed firms lower or terminate dividend payments. Regular dividends are thus extremely persistent over time.¹¹ Hence, an initiation of a regular payment (as by Microsoft in 2003) is a strong signal that the firm intends to maintain a dividend payment of equal or greater value permanently.

In contrast to regular dividends, special dividends are one-time, non-recurring events. Special payments are made by very few firms (0.8% of our sample). Special dividends are also generally of minor importance in terms of amounts relative to regular dividends, accounting for less than 2.5% of total dividends on average.

2.2 Previous Work

Most of the early work on the effects of taxation on dividend payments used time series analysis rather than focusing on a single tax reform. The evidence from this literature is controversial, and is typically divided into the “old view” and the “new view.”¹²

The old view, implicit in Feldstein (1970), says that dividend taxes reduce the net return on investment and hence reduce the supply of investment. Therefore, when taxes on dividends are cut, individuals are more willing to save and invest their money in stocks, spurring business investment, profits, and dividend distributions in the long run. Poterba and Summers (1985), using time series evidence from the United Kingdom found that, consistent with the old view, dividend payments and investment were higher when the tax rate on dividends was lower. More recently, Poterba (2004) uses U.S. time series data from 1929 to 2002 and finds a negative association between dividend payments and the dividend tax rates relative to taxes on capital gains. His point estimates imply that the 2003 tax reform should increase dividend payments by 20% in the long run, but that the adjustment process will be very slow, with only a quarter of the long-run effect taking place within three years.¹³

¹¹Section 3 gives formal definitions of initiations and terminations.

¹²A large related literature studies the effects of taxes on other corporate behaviors such as investment (Cummins et al. 1994, Desai and Goolsbee, 2004), capital structure (Gordon and Lee, 2001), and organizational form choices (Gordon and MacKie-Mason, 1990, Goolsbee, 1998, 2004).

¹³Our estimates also point toward a 20% increase in dividend payments but the response we document happens much faster than the one predicted by Poterba’s estimates.

In contrast, the new view on dividend taxation, implicit among critics of the 2003 tax reform, assumes that marginal investments are entirely financed by retained earnings rather than new share issues (Auerbach (1979), King (1977), and Bradford (1981)). Under this assumption, the tax on dividends should not affect the investment decisions of firms, and profits and dividend payments therefore should not change either.¹⁴ In this case, the dividend tax cut is irrelevant for corporate decisions and simply benefits individual investors by reducing their tax burden. Using U.S. data from 1981 to 1998, Auerbach and Hassett (2003), show that consistent with the new view, dividend payments are sensitive to changes in investment at the firm level, suggesting that retained earnings are indeed the marginal source of investment funds. Auerbach (2001) critically reviews the time series empirical literature and concludes that the evidence for a large dividend payout response to dividend taxation is at best mixed.

In light of the difficulties with time series analysis, another strand of the literature has attempted to use the variation in tax rates induced by the Tax Reform Act of 1986 (TRA-86) to study these issues, but has also found mixed results. TRA-86 cut the top income tax rate from 50% to 28% while increasing the tax rate on capital gains from 20% to 28%. Bolster and Janjigian (1991) find no discernible effect of TRA-86 on aggregate dividend payments by publicly traded firms. However, in an innovative study, Perez-Gonzalez (2003) showed that there was a small response of dividend payments among a subsample of firms with large individual shareholders, which is masked in the aggregate. Our analysis shows that TRA-86 generated a short-term spurt of special dividend payments concentrated among a very small number of firms but, in contrast to the 2003 tax reform, had no discernible effect on regular dividend payments.¹⁵ Consistent with Perez-Gonzalez's (2003) evidence for TRA-86, we also find that the response to the 2003 tax reform is larger for companies with large shareholders on the board of directors or among top executives.

Finally, a few very recent studies have also investigated the effect of the 2003 tax reform on dividend policies.¹⁶ We discuss how our study differs, complements, or disagrees with these

¹⁴However, as pointed out by Auerbach and Hassett (2003), if the tax reform not only changes dividend income taxation but also interest income taxation (as in the Tax Reform Act of 1986) or if the tax reform is not permanent but temporary (as might be the case with the 2003 tax reform), then even under the new view dividend payments may change following a dividend tax change.

¹⁵We discuss reasons why TRA-86 may have had different effects than the 2003 reform in section 4.

¹⁶With the exception of Blouin et. al (2004), these studies were completed at roughly the same time as our own study, and were brought to our attention after we circulated our preliminary results in Chetty and Saez (2004).

concurrent studies in this subsection as well as in the context of our results in section 4.

First, Blouin, Raedy, and Shackelford (2004) examined dividend payments in the three months immediately after the tax reform was passed (May 23 to August 22, 2003). They compared dividend payments in this post-reform period with dividends in the same period in 2002 (May 23 to Aug. 22, 2002) and the three month period immediately preceding enactment of the reform. Blouin et. al. concluded that virtually all the increase in dividend payments after the tax reform was due solely to 17 firms who paid special dividends, and found no statistically significant changes in regular dividend amounts. Their results differ from our results for a number of reasons. First, they choose their sample by selecting all firms alive from 2001-Q4 to 2003-Q3 that paid dividends in the three months after enactment. This sample selection is based on the endogenous post-reform dividend choice and is likely to bias their results. Second, they focus on the level of dividends payments (and then separate regular and special dividends), rather than other moments of the distribution. As emphasized above, analyzing the effect of the tax cut on regular dividend levels is a difficult statistical problem because of the large outliers that drive the means.¹⁷ Indeed, when analyzing our data at a monthly level, we find that the surge in the *frequency* of regular dividend initiations and increases began precisely in the post-reform period studied by Blouin et. al. Third, they do not look back at the historical data before 2002. Again, since aggregate regular dividends are a noisy time series, it is difficult to assess the magnitude of the response induced by the tax change without making further historical comparisons. Finally, three more quarters of post-reform data have become available since their study. The additional data show that the rapid growth in regular dividend payments that began during the period examined by Blouin et. al. has continued in subsequent quarters.

Second, Julio and Ikenberry (2004) extend the influential time series analysis of Fama and French (2001) up to the first quarter of 2004. They show that the secular downward trend in the fraction of listed firms paying dividends makes a reversal starting in late 2000. Julio and Ikenberry argue that the Bush dividend tax cut cannot explain the reversal, as it starts well before tax reform occurred. They propose various explanations for the pre-tax rebound, including corporate accounting scandals and the maturity of technology firms. In contrast,

¹⁷Blouin et al. also find similar results for dividends per share, but this is not an economically relevant normalization as the number of shares in public corporations is to a very large extent arbitrary.

we show that the reversal in 2000 in the fraction of publicly traded firms paying dividends is entirely due to changes in the composition of the sample due to the de-listing of many young technology firms during the stock market crash of 2000-2001. These firms generally did not pay dividends, mechanically raising the fraction of payers. When controlling explicitly for these entry and exit effects, we find that the reversal in the secular decline in the number of payers takes place exactly in 2003. This result is not surprising in light of our finding that initiations surge only in 2003 while terminations remain stable.¹⁸

Finally, Nam, Wang, and Zhang (2004) show that executive ownership is correlated with dividend increases in 2003 but that there was no such relation in previous years. Their results are consistent with our findings about the importance of principal-agent issues in determining the tax response. However, Nam et. al. limit their analysis to executive share and stock-option ownership compiled from Execucomp data for about 1,500 firms every year since 1992, and only to firms already paying dividends.¹⁹ In this paper, we focus on the dividend initiation margin, along which the tax response was by far the most striking. We also consider heterogeneity along other dimensions, such as large shareholders (individual and institutional, taxable versus non-taxable). We also collect executive share and stock-option ownership for a much larger set of firms from proxy statements in order to obtain estimates for the full sample of publicly traded firms. These additional data also allow us to provide results on interaction effects between executive share ownership and the strength of principals that are not evident in the selected sample of firms listed in ExecuComp.

3 Data

We use quarterly data from the CRSP, which reports dividend, stock price, and share information for all companies listed on the NYSE, AMEX, and NASDAQ stock exchanges. The data we use span 1980-Q1 to 2004-Q2, the last quarter for which data are currently available. Following Fama and French (2001) and Auerbach and Hassett (2003), we exclude all foreign firms and all firms whose most recent industry classification is in utilities (SIC codes between 4900 and 4949) or the financial sector (SIC code between 6000 and 6999) because these com-

¹⁸Consistent with our results, Julio and Ikenberry (2004) also find that there was a surge in dividend initiations only in 2003 and not at the time of the 2000 reversal.

¹⁹More recently, Brown, Liang, Weisbenner (in progress, no draft yet available) have also noticed that executive ownership is related to dividend initiations and dividend increases after the tax reform.

panies are regulated and often have legal distribution requirements. Their dividend payments may therefore be determined by law rather than by shareholder decisions.²⁰ The sample of firms that satisfy the preceding criteria constitute our “core sample.”

The number of firms in the core sample in each quarter varies between less than 4,000 in the early 1980s and about 6,000 in the late 1990s (see Appendix Table A1 in and Figure 6, Panel B for a graphical depiction). There are large variations in the number of listed firms because of waves of new lists during some periods (in general during economic booms) and waves of de-listing in some other periods (in general during recessions and stock market crashes). The large variation over time in the number of firms in the core sample raises important issues in the empirical analysis. As we show below, it is often useful for comparability to keep the same number of firms in each quarter. To obtain the largest possible constant-size sample of firms, we focus on a sample of the top 3,807 firms ranked by market capitalization in each quarter, which we term the “constant number of firms” sample.²¹

For our regression and heterogeneity analysis, we merge our CRSP sample with the Compustat database, losing some firms because not all firms listed in CRSP are covered by Compustat. Compustat data were available only up to 2004-Q1 when this study was completed. The left half of Table 1 gives summary statistics for the core and the constant number of firms samples between 1981-Q3 and 2004-Q1.²² All dollar amounts in this and subsequent tables and graphs are in real 2004 dollars (deflated using the Consumer Price Index). We also merge our data with various other databases that contain other covariates of interest. The I/B/E/S database gives analysts’ earnings forecasts for approximately 60% of the companies in our sample. Execucomp provides detailed executive compensation, stock and stock-option ownership for approximately one-third of the firms in our sample every year since 1992. Thompson Financial database provides detailed institutional ownership information for most of the firms in our sample. Dlugosz, Fahlenbrach, Gompers, and Metrick (2004) provide information on large shareholders (individuals or entities who hold more than 5% of shares), collected from proxy statements, for about 1,500 firms for the period 1996-2001. Because Execucomp and the Dlugosz, et. al. database cover only about a third of the CRSP-Compustat firms, we augment

²⁰We also examined utilities and financial firms separately and our results for those firms are available upon request.

²¹3,807 is the total number of firms which meet our selection criteria in 2004-Q2, the last quarter available. For all previous quarters, the CRSP data always contains at least 3,807 firms.

²²Lagged data requirements for our subsequent analysis force us to begin with 1981-Q3.

these data sources for our principal-agent heterogeneity analysis by collecting some variables directly from SEC proxy statements for an additional 347 firms, as described in Section 5.

We define regular dividends as monthly, quarterly, semi-annual, and annual taxable dividends in the CRSP data. We also reclassify “other frequency” taxable dividends as regular dividend payments when those other-frequency payments are followed by regular payments of similar magnitude.²³ Some forms of liquidation can generate non-taxable dividend events that we ignore in this study. We define all other taxable dividends besides regular distributions as “special” dividends. More precisely, we define special dividends as the sum of special, one-time, unspecified and other frequency dividends (those which were not followed by regular payments of similar magnitude) in the CRSP data. Virtually all payments in our broader definition of special dividends are accounted for by CRSP’s “special dividend” category.

We define a firm as initiating regular dividend payments in quarter t if it pays positive regular dividends in quarter t and did not pay dividends in the previous four quarters. We define a firm as terminating regular dividend payments in quarter t if it paid regular dividends previously and stops paying from quarter t on. In practice, our definitions are slightly more complex to accommodate the case of annual and semi-annual payers as well as the issue of censoring (for terminations only) at the end of the sample. The exact definitions are presented in appendix.

4 Effect of the Tax Cut on Dividend Payments

Our empirical analysis is organized as follows. The first subsection examines the change in aggregate dividend amounts following the 2003 tax change and demonstrates the need to examine other moments of the dividend distribution to make reliable inferences about the effects of the tax reform. Subsections 2-4 provide such an analysis along three margins: (1) the extensive margin (initiations and terminations of regular dividend payments); (2) the intensive margin (increases or decreases in payment amounts by firms already paying); and (3) special dividends. Subsection 5 shows that dividing the analysis into these margins allows a fairly precise assessment of the contribution of each of the three margins to total dividend amounts, and reports an elasticity of dividend payments with respect to the dividend tax rate using this

²³This other-frequency dividends are extremely rare and thus our results are not sensitive to the way we treat them.

method. Finally, we discuss robustness checks of the causality of the tax cut in subsection 6.

4.1 Aggregate Dividends

Figure 1 plots aggregate regular dividends for the core sample between 1981-Q3 and 2004-Q2 in real 2004 dollars (using the CPI deflator). Total regular dividends rose from \$25 billion in 2002 to a peak of almost \$30 billion at the end of 2003. Note that most of the increase takes place in the last two quarters of 2003 after the tax cut was signed into law in July, 2003. These are the largest increases during the sample period. If the post-2003 increases in aggregate dividends are due exclusively to the tax cut, these values suggest that the reform raised regular aggregate dividends by about 20% in the six quarters after the reform relative to the level in 2002-Q4. Unfortunately, it is difficult to determine whether this surge in aggregate dividends is tax-driven simply by examining changes in mean dividend amounts paid by publicly traded firms. The econometric problem can be easily illustrated using data in the years around the tax reform with regressions of the following form:

$$totdiv_{i,t} = \alpha + \beta refdum_{i,t} + \gamma X_{i,t} + \varepsilon_{i,t} \quad (1)$$

The dependent variable is total dividends paid by firm i in quarter t . The regressor of interest is the reform dummy: $refdum_{i,t} = 0$ in the four quarters before discussion of the reform (2002-Q1 to 2002-Q4), while $refdum_{i,t} = 1$ in the four quarters after enactment (2002-Q1 to 2002-Q4).²⁴ Without controls (no X s), the OLS estimate of $\hat{\beta} = 1.58$ (s.e. = 0.23).²⁵ In contrast, introducing a linear control for after tax earnings gives $\hat{\beta} = 0.62$ (s.e. = 0.62), and an additional control for assets changes the estimate to $\hat{\beta} = -0.06$ (s.e. = 0.3).

This fragility of the estimate of the tax response arises from the extreme concentration of dividend payments. Figure 1, which also plots regular dividend amounts paid by the top 20 payers in each quarter, shows that the dividends from the top 20 payers account for half of all dividends paid by all firms in our core sample. The fact that this concentration is the source of the imprecision in $\hat{\beta}$ becomes evident when we change the dependent variable in (1) to dividend yield (total dividends divided by mktcap). In the dividend yield regressions, which

²⁴For simplicity, we ignore all other quarters in this exercise. However, inclusion of the full data from 1980-Q1 to 2004-Q2 along with appropriate controls for year trends does not change our conclusions: the point estimates of β remain statistically insignificant and fragile as soon as controls are introduced.

²⁵Standard errors reported here are clustered by quarter to allow for aggregate shocks. Standard errors under the i.i.d. error assumption are even larger than those reported here.

are simply re-weighted versions of 1) with less weight on large firms, we obtain very stable estimates of the β coefficient that are statistically significant at the 1% level, irrespective of controls. Intuitively, mean dividends are driven in large part by very few top payers, creating a small sample problem that makes statistical inference about the level of aggregate dividends difficult. In view of this problem, we must turn to other moments of the dividend distribution to obtain more credible evidence on whether the 2003 tax reform changed corporate payout behavior.

4.2 Extensive Margin

One straightforward way of reducing the influence of very large payers is to examine a firm's decision to initiate or terminate dividend payments rather than looking at the amounts paid. We first examine changes in initiations and terminations, and then discuss implications for the overall fraction of dividend payers.

4.2.1 Initiations and Terminations

Figure 2 plots the fraction of initiations and terminations of dividend payments in the constant number of firms sample. It is clear that the frequency of initiations rose when the reform was proposed (2003-Q1) and surged very sharply after it was enacted. Strikingly, the number of initiations in the three quarters following enactment (2003-Q3, 2003-Q4, and 2004-Q1) are the three highest among the 80 quarters we consider (see Appendix Table A2 for the full time series of initiations and other variables of interest). Importantly, there is no sign of a decline in initiations prior to the reform, suggesting that the sharp surge in initiations reflects real behavioral responses to an unanticipated change rather than a timing effect due to firms that were delaying initiations in anticipation of the tax reform. Meanwhile, the number of terminations remained very low and, if anything, fell slightly after the reform.

The initiations were widespread across industries and sizes of firms. Table 2 lists the post-reform initiating firms among the largest 100 firms in our sample (ranked by market capitalization in 2004-Q2). It shows that large initiators were not concentrated in a single sector and that the dividend yields in the first year were not trivial, although lower than for established payers among the top 100.

Table 3 summarizes the magnitude of the effect by comparing dividend initiations during

a short window around the reform-period. The pre-reform period is taken as the six quarters before the reform 2001-Q3 to 2002-Q4 and the post-reform period includes the six post reform quarters, 2003-Q1 to 2004-Q2. The first row of Table 3 shows that the average number of initiations surged from 4.3 per quarter in the pre-reform period to 29 after the reform. The difference is highly statistically significant (t-statistic over 10). Of course, the conclusion that this change was entirely due to the tax reform is predicated on the assumption that no other unobservable determinant of dividend payments changed contemporaneously. To examine the validity of this assumption, we evaluate the robustness of our results to the inclusion of a rich set of control variables identified as determinants of dividend policy by Lintner (1956) and summarized more recently in Brav, Graham, Harvey, and Michaely (2002). We run the following semi-parametric regression specification for initiations:

$$Init_{i,t} = \sum_{s=1}^T \beta_s \cdot 1(t=s) + \mu^a a_{i,t} + \sum_{s=0}^8 \mu_s X_{i,t-s} + \sum_{s=0}^8 v_s^S SIC_{i,t}^s + \varepsilon_{i,t} \quad (2)$$

where $Init_{i,t}$ is an initiation dummy which takes value 1 if firm i initiates dividend payments in quarter t and zero otherwise, $1(t=s)$ are a full set of quarter dummies. The additional firm-level covariates are: (1) total current assets, $a_{i,t}$; (2) the level and eight lags of quarterly profits/assets, market capitalization/assets, and cash holdings/assets, (vector $X_{i,t}$); and (3) First-digit SIC industry dummies, $SIC_{i,t}^s$ that indicate whether the first digit of firm i 's SIC code is s in 2004.

Figure 3 shows that the surge in initiations is extremely robust to adding these controls by plotting the $\{\beta_s\}$ coefficients from the regression along with the mean estimates of initiation rates displayed in Figure 2.²⁶ In addition, the fourth column of Table 3 shows that adding controls does affect the estimate of the change in dividend initiations between the six-quarter pre and post reform periods. The estimates reported in this column are from a regression specification equivalent to (2) except that the quarter dummies are replaced with a single post-reform dummy. Therefore, the surge in initiations cannot be explained by changes in firms' balance sheets or investment prospects in the post-reform period.²⁷ We also examine

²⁶The regression estimates end in 2004-Q1 because Compustat data are not yet available for 2004-Q2.

²⁷The results are also robust to trends in mergers and acquisitions that could lead to changes in dividend policy. Among all initiators in the post reform period, only one firm acquired another company just before initiating dividends. In addition, controlling for forecasted growth prospects using I/B/E/S data on analysts' forecasts has no effect on the results.

whether the innovative “catering theory” of dividend initiations recently proposed by Baker and Wurgler (2004a,b) may explain our results. We find that their leading measure of the markets’ preference for the dividends – the dividend premium, which is defined as the log difference in market to book ratios for dividend payers and non-payers – does not predict the recent surge.²⁸ These results confirm that observable trends are not responsible for the recent surge in dividend initiations; we defer discussion of bias from unobservable trends to section 4.6.

To contrast our results with Blouin et al. (2004), who found no evidence of increases along the regular dividend margin, we examine the data at a monthly frequency in the months around the passage of the reform. Figure 4 plots the number of initiations per month between 2001 and 2004. It is clear that the surge in initiations occurred shortly after the reform was enacted, during the three month period examined by Blouin et. al. Hence, although the addition of three more quarters of data has made the increase in regular dividend payments after the tax cut clearer, the primary reason that our conclusions differ from those of Blouin et. al. is the difference in methodology. Changes in regular dividend amounts are difficult to detect because of the extreme values problem, but changes in the number of payers are much easier to see.

4.2.2 Fraction of Payers

We expect the surge in initiations in the post reform period accompanied with no increase in terminations to lead to an increase in the fraction of firms paying dividends. This is confirmed in Figure 5 which plots the fraction of dividend payers in the constant number of firms sample between 1981-Q3 and 2004-Q2. As discussed in Fama and French (2001), the fraction of dividend payers has declined steadily over the past two decades, from more than 40% in the early 1980s to less than 20% in 2000.²⁹ The decline in the fraction of payers stops precisely

²⁸This is because the dividend premium fell sharply during the dot-com boom and rose back to its original level during the subsequent dot-com bust. We verify that this temporary fluctuation does not predict the surge in initiations a year later by regressing the initiation rate on the dividend premium and finding that the residuals from this regression spike up sharply after the tax reform. Note that we cannot directly include the dividend premium in the semi-parametric specification in (2) because there is no within-quarter variation in the dividend premium.

²⁹DeAngelo, DeAngelo, and Skinner (2003) emphasize that while the number of payers among publicly traded firms has fallen, dividends are not “disappearing” because total aggregate dividends have actually risen (as shown in Figure 1). This is because the distribution of dividend payments is more concentrated now than it was in 1980.

until the last quarter of 2002, at which point the fraction of payers begins to rise. Figure 5 also plots the tax preference parameter computed by Poterba (2004), which equals the net return to investors from a dollar paid in dividends instead of capital gains.³⁰ The largest change in the tax preference parameter during the sample period occurs at the end of 2003, after which dividend payments become start to become more common.

As mentioned in Section 2.2, a recent study by Julio and Ikenberry (2004) argues that the reversal in the fraction of firms paying dividends takes place in late 2000 rather than in 2003, and hence cannot be attributed to the tax reform. It is therefore critical to understand the difference between their findings and ours. We start by reviewing Julio and Ikenberry's (2004) evidence. Figure 6, Panel A displays the fraction of regular dividend payers in the core CRSP sample and for the top 1,000 firms (ranked by market capitalization in each quarter). Indeed, in these two samples, the reversal takes place in 2001-Q1 and 2000-Q2 respectively.

Figure 6, Panel B displays the time series of the total number of firms as well as the total number of regular dividend payers in the core CRSP sample. The total number of dividend payers starts to increase (after a secular decline) only in 2003-Q1, exactly when the tax reform takes place, and accelerates after enactment. However, the number of firms in the core sample falls precipitously starting in 2000-Q4 (from 5,306 in 2000-Q3 down to 3,807 in 2004-Q4), exactly at the time the early reversal takes place for the full sample on Panel A. Only 2% of the 2,000 firms which exit the core CRSP sample from 2000-Q4 to 2004-Q4 are dividend payers. Thus, what drives the pre-2003 reversal for the full sample is a fall in the denominator (total number of firms) and not an increase in the numerator (number of payers). Therefore, this early reversal cannot be attributed to active behavioral changes in corporate payout policy.

In the case of the top 1,000 firms, the denominator is fixed, and hence the preceding story clearly cannot explain the early reversal effect for this sample. Figure 7 explores compositional changes among the top 1,000 firms. It plots, for each quarter, the number of entrants into the top 1000 which are regular dividend payers and the number of leavers which were regular dividend payers. The graph shows that there are more dividend payers which leave the top 1,000 group in 1998 and 1999 than dividend payers which enter the sample. In 2000-2002 the

³⁰Formally, the tax parameter is defined as the dollar weighted average (across individual and institutional investors) of $(1 - \tau_{div}) / (1 - \tau_{cg})$ where τ_{div} is the marginal tax rate on dividend income and τ_{cg} is the marginal tax rate on capital gains.

situation is reversed: more dividend payers enter the sample than dividend payers leave.³¹ Through these composition effects, the number of dividend payers among the top 1,000 falls quickly in 1998 and 1999 and then recovers in 2000-2002, explaining the Julio-Ikenberry reversal effect for the top 1000 depicted on Figure 6, Panel A.

Figure 8, Panel A makes this point more formally. The first curve depicts the number of payers among the top 1,000. The “cumulative net payers listed” curve depicts the cumulative difference (from 1982-Q1) between the number of regular dividend payers who entered the top 1,000 firms and the number of regular dividend payers who left the top 1,000 firms.³² This curve captures the change in the number of dividend payers due to changes in the composition of the top 1,000 firms sample over time. As described above, the cumulative net payers listed falls in 1998 and 1999 and then rebounds in 2000-2002. The third “deliberate payers” curve is simply the difference between the first two curves. This series reflects the number of “deliberate” payers because movements in this series only come from active changes in dividend policy by firms, given that entry and exits effects have been netted out. The number of deliberate payers declines slowly until 2002-Q4 and starts increasing exactly in 2003-Q1, at the time the reform takes place. The number of deliberate payers rises by 10% from 2002-Q4 to 2004-Q2.

Figure 8, Panel B graphs the number of deliberate payers for two other samples of interest: the core sample (all firms in the CRSP which meet our criteria) and the constant number of firms sample (the top 3,807 firms in each quarter ranked by market capitalization). For both of these samples as well, once we control for composition effects, the number of payers starts to increase in 2003-Q1, when the reform takes place, and the increase accelerates sharply in 2003-Q3, after enactment of the reform. The increase in the fraction of deliberate payers after the reform is also around 10-12% for these groups.

These results show that the early reversal findings of Julio-Ikenberry are fully explained by composition effects. Once these effects are controlled for, the reversal takes place exactly

³¹Examining the characteristics of the entrants and leavers, we find that the spike in dividend leavers is due to the surge in the stock prices in 1998 and 1999 of new technology firms that never paid dividends, which entered the top 1,000 and displaced older, more traditional firms (many of which paid dividends). Symmetrically, the spike in entrants is due to technology stock market crash in 2000-2002 during which new technology firms (predominantly less than 3 years old and with SIC 7370) are displaced by the original, older firms.

³²This graph is equal to the integral of the difference between the two graphs (dividend payers entering and dividend payers leaving) depicted on Figure 7.

after the 2003 reform is implemented, implying that deliberate changes in corporate payout behavior began only after the tax reform.³³ Notably, for our constant number of firms sample (the top 3,807 firms in each quarter), composition effects cancel out and the timing and size of the surge in the number of payers and deliberate payers are almost identical.³⁴ This justifies our focus on this group as a simple but valid way to control for entry and exit effects.

4.3 Intensive Margin

Given the extreme values problem that plagues the analysis of levels, we begin our study of the intensive margin by examining the effect of the tax cut on the probability that a firm increases or decreases dividend payments by more than 20% in nominal terms.³⁵ In order to avoid double counting, initiations (terminations) are not counted as dividend increases (decreases). The appendix gives the exact definition of increases and decreases we use.

Figure 9, Panel A, plots the fraction of firms in the constant number of firms sample that increased or decreased dividends by 20% or more along the intensive margin. There is a sharp surge in the number of firms which increase dividends when the tax cut is enacted in 2003-Q3. The number of these large intensive margin increases jumped from 19 in the pre-reform period (2001-Q3 to 2002-Q4) to 50 per quarter in the post-reform period (2003-Q1 to 2004-Q2), as shown in Table 3. Analysis of the data at a monthly frequency (not reported) shows that the pattern of dividend increases coincides very closely with the pattern of dividend initiations. In particular, it began in the three month period immediately after the reform examined by Blouin et. al., and remains strong through the end of the sample period. Meanwhile, the frequency of dividend decreases remained small and essentially unchanged after the tax cut.

Figure 9, Panel B shows that controlling for observable variables from Compustat does not modify our conclusion that this increase was tax-driven. The coefficients plotted in this Figure

³³ An alternative way of purging composition bias is to control for firm fixed effects. Reassuringly, this method also yields similar results (the increase in the fraction of payers coincides precisely with the reform). We focus on the “deliberate payers” approach here primarily because it is much more parsimonious, giving a simple illustration of why sample composition bias leads to a pre-tax reversal.

³⁴ This can be seen formally in appendix Table A2 which displays the key quarterly series for the constant number of firms sample, including the number of dividend payers among entrants and leavers.

³⁵ Other cutoffs, such as 0%, 10%, or 50% also yield similar results. We focus on the 20% here cutoff because these changes are both relatively frequent and sufficiently large that they are likely to signal a substantial shift in a corporation’s distribution policy. Note that Julio and Ikenberry (2004) argue that the number of 0% increases started to rise in 2002, but this conclusion is fully driven by the functional form of their data smoothing algorithm. Semi-parametric analysis shows that the surge in increases begins only after the reform was enacted.

are obtained by running a regression analogous to (2) with an intensive increase dummy as the dependent variable. It should be noted, however, that the evidence of a tax effect on the intensive margin is weaker than that for initiations because there were periods in the 1980s where the fraction of firms increasing dividend payments was higher than in the post-reform period. Table 3 shows that the change pre-post reform of intensive increases is also robust to adding controls.

Figure 10 gives a more complete view of the changes in dividend behavior on the intensive margin by displaying various percentiles of the dividend distribution among the top 3,807 firms (including the zeros). The level of each percentile has been normalized to one in 1998-Q1. There is clear evidence of a sharp increase in dividends for all percentiles below the percentile 99.5. The noise in the 99.5 percentile is so large that it is impossible to determine whether the changes after the reform are anything more than a random fluctuation. But the 99.5 percentile is very important for amounts, given the concentration of dividend payments: About half of all dividends are paid out by the top 0.5% dividend payers (the top 19 payers in our constant number of firms sample). The fact that the amounts are driven to a significant extent by a few big payers whose aggregate dividend payments fluctuate sharply over time explains why it is so difficult to obtain reliable estimates of the effect of taxes on mean levels. It also underscores the importance of examining other, more stable moments of the dividend distribution.

4.4 Special Dividends

We now turn to special, one-time dividend distributions. Figure 1 plots the total amounts of special dividends paid out. Special dividend amounts increased after enactment of the 2003 reform but there are other periods (such as the late 1980s) when special dividends were substantially higher. Indeed, TRA-86 does appear to have generated a temporary surge in the total *amount* of special dividends in the late 1980s much larger (and concentrated among very few firms) than after the 2003 tax reform.³⁶ Figure 11 plots the fraction of special dividend

³⁶It is striking that TRA-86, a permanent tax change, created only a short-term response along the special margin, while the 2003 tax change, whose duration remains somewhat uncertain, has generated substantial increases in regular dividends that are likely to be long-term. Candidate explanations for the different responses include: (1) TRA-86 changed the tax rate on interest and dividend income simultaneously, perhaps inducing broader shifts in capital structure toward debt that necessitated large one-time distributions but made increased regular dividends undesirable; (2) Average cash holdings were unusually high before the 2003 reform relative to prior years, giving firms the resources necessary to raise dividends; (3) Highly publicized cases of corporate mismanagement such as Enron may have raised the signal value of dividends, giving firms a strong reason to raise dividends as soon as the cost of doing so was lowered. Further research is required to determine which of

payers in the constant number of firms sample. There is a clear surge in the fraction of special payers immediately after the reform, and this change is robust to the inclusion of controls as above. As shown in Table 3, an average of 18 firms per quarter paid special dividends after the reform, significantly greater than the average of 7 in the six quarters before. However, there are an average of 40 special dividend payments per quarter in the entire sample between 1981 and 2003. Hence, while the frequency of special payments rose after the reform relative to the recent past, it does not exceed the level of special payments in earlier periods such as the late 1980s and early 1990s.

4.5 Changes in Amounts and Elasticity Estimates

How much did each of the three margins discussed above contribute to the surge in aggregate dividends? To obtain a statistically precise answer to this question, we focus on deliberate changes in dividend amounts along each margin in the constant number of firms sample, and exclude firms who acquired another company in the previous quarter in order to avoid imputing dividend increases to the acquisition of a dividend paying company.

Figure 12A depicts the amounts (in real 2004 dollars) of regular dividends initiated in each quarter from 1990-Q1 to 2004-Q2.³⁷ The amounts raised from dividend initiations surged sharply after the reform, from \$13 million per quarter in the pre-reform period to an average of \$205 million per quarter after the reform (see Table 3). Strikingly, the 6 largest initiation amounts since 1990 take place exactly in the last 6 post reform quarters. This difference is highly significant and robust to introducing the rich set of controls used in (2), as shown in Table 3. Note that there is no dip in the amount of dividends from initiations prior to the reform, suggesting that our estimates are unlikely to be biased by re-timing effects.

Figure 12A also depicts the change in regular intensive dividends for firms previously paying regular dividends. The change is estimated as the current payment less the previous regular payment (initiations and terminations are excluded). If the firm did not exist in the prior period, or drops out of the sample, the change is defined as 0. Defining changes in this way is analogous to controlling for sample composition, because the change in the level of dividends due to entry and exit effects is ignored. The series of aggregate changes along the intensive

these explanations is most relevant.

³⁷Annual dividends are divided by four and semi-annual dividends divided by two in order to normalize changes at the quarterly level.

margin also displays a sharp increase in levels in the 6 quarters following the reform: 4 of the 5 largest intensive increases took place in the 6 post reform quarters. Table 3 shows that intensive changes surged from \$130 million per quarter on average before the reform to \$740 million after. As with the extensive margin, the change does not reflect intertemporal substitution of dividend payments, since the series is flat in the years preceding the reform. The intensive margin change is also statistically significant and robust to introducing controls.³⁸ It follows that once entry, exit and merging effects are controlled for, we can obtain relatively precise estimates of the changes in the *growth rate* of dividend amounts along both the intensive and extensive margin.³⁹

Panel B depicts the cumulated (from 1990-Q1) amounts of regular dividend initiations (integral of the initiation graph in Panel A) and the amounts of special dividends on the left scale. Cumulated amounts (from 1990-Q1) of regular dividend intensive changes are shown on the right scale (integral of the change in intensive margin dividends in Panel A). This figure shows that the extensive margin has contributed about \$1.2 billion to aggregate quarterly dividends since the reform.⁴⁰ Total cumulated dividends from the intensive margin also surged sharply between 2002-Q4 and 2004-Q2. The graph displays a clear break in the slope in the pre and post reform periods (the quarterly slopes are given by the levels in Panel A). This figure and Table 3 show that by 2004-Q2, six quarters after the reform, \$3.6 billion in dividends have been raised from the intensive margin (subtracting out the trend in the previous years).

Finally, special dividend payments are on average \$0.6 billion per quarter higher in the post-reform quarters relative to the six pre-reform quarters (see Table 3). However, this increase is driven by a very small set of firms, as noted by Blouin et. al. (2004). More than 80% of the increase is accounted for by eight payers who made special dividend payments in excess of \$100 million in one of the quarters after the reform was enacted.⁴¹ Hence, if regular

³⁸The t-statistic for the intensive change is substantially lower than for the initiation amount, because dividend changes along the intensive margin are much more concentrated than along the extensive margin.

³⁹It is important to distinguish changes in levels from changes in the growth rate. As noted above, we cannot directly obtain reliable estimates of the change in the level of dividends induced by the reform. However, as Figure 12 shows, the effect of the tax reform on the growth rate of dividends is clear once compositional biases are eliminated. The importance of detrending the data is intuitive given that corporations take time to adjust their dividend policies after the change in tax regime.

⁴⁰Microsoft, the largest initiator, accounted for about 20% of the total effect but the rest of initiations are not extremely concentrated, explaining the precision on the estimate in Table 3.

⁴¹More than 30% of the increase is driven by telecommunications giant Southwestern Bell Corporation, which

dividend payments remain as persistent as they have historically, special dividend payments are likely to be a short-term fluctuation in the time series relative to the change in regular dividend amounts induced by the 2003 tax reform.⁴²

The changes along the extensive and intensive margins add up to a total regular dividends increase of \$4.8 billion on average by 2004-Q2 (relative to the pre-reform trend). Starting from a base of approximately \$25 billion in 2002-Q4, total regular dividends have therefore risen by roughly 20% for our sample of non-financial, non-utility publicly traded firms. Note that the short-run increase in total dividends exceeds 20% because of the surge in special, one-time distributions. According to calculations by Poterba (2004), the average tax rate on dividends (including both taxable and non-taxable dividends distributed directly or indirectly to individuals) fell from 29% to 17%, a 40% reduction. Therefore, the implied elasticity of regular dividend amounts with respect to the dividend tax rate is roughly -0.5 as of 2004-Q2, only one and a half years after the reform.⁴³ This elasticity implies that the tax revenue from dividend taxation that was lost because of the tax cut is only 50% of the revenue loss assuming no behavioral response.⁴⁴

It is interesting to note that the response to the tax change is far more rapid than that predicted by “old view” time series estimates, which imply a slow adjustment process (Poterba 2004). Since firms have chosen to increase regular (rather than special) dividend payments, which historically are rarely cut and extremely persistent, this sharp change is likely to reflect a long-term shift in payout policies that may grow even larger over time as the adjustment process continues.

4.6 Robustness Checks

Our identification strategy relies on the assumption that no other event apart from the tax cut generated a surge in dividend payments exactly in 2003. One possible alternative story is the exposition of several corporate scandals in 2001-2003. These scandals originated primarily

made two special dividend payments of approximately \$335 million each in 2003-Q3 and 2003-Q4.

⁴²Of course, the \$32 billion special dividend from Microsoft in 2004-Q4 will clearly create a short-lived blip of unprecedented magnitude in the special dividend series.

⁴³Of course, the long-run response could be even larger, given that the adjustment process may not be complete.

⁴⁴However, it is possible that the increase of dividends paid out reduces other forms of taxable income such as realized capital gains from share repurchases. It is critical to assess the effect of the tax change on total tax revenue (and not only revenue from taxing dividends) in order to assess the deadweight burden of taxation (see Gordon, Kalambokidis, and Slemrod, 2003 and Saez, 2004 for a recent exposition of this point).

from serious accounting fraud among well known corporations such as Xerox, Enron, and WorldCom, and may have created distrust among shareholders about management of large U.S. corporations in general. Shareholders may have therefore pressured management to increase dividends even in the absence of the tax cut. The timing of the surge in initiations suggests that the corporate scandals were not responsible for the surge in dividends because they were first publicized much before 2003-Q2.⁴⁵ Nonetheless, we conduct three additional empirical tests to rule out this and other alternative stories about changes in unobservables.

First, and most important, we exploit the fact that only dividend income distributed to individuals through non-tax-favored accounts was affected by the reform. For instance, dividend income earned through pension funds was not affected by the tax change. Consequently, if the tax cut was responsible for the surge in aggregate dividends, we would not expect to see a response among firms who are controlled by such non-affected entities. To test this hypothesis, we first isolate a subset of institutional investors that are definitely not affected by the reform – pension funds, insurance companies, nonprofit organizations, non financial corporations, and government agencies – in the Thomson financial institutional ownership database.⁴⁶ We then divide the sample of firms that are alive in our core sample in all quarters between 1998-Q1 and 2004-Q2 into two groups.⁴⁷ The “control” group consists of firm-quarter pairs where the largest institutional owner is a non-affected entity.⁴⁸ The “treatment” group includes all other firm-quarter pairs.

Table 4 reports the annual initiation rates among nonpayers in these two groups of firms in the pre-reform period (1998-Q1 to 2002-Q4) and the post-reform period (2003-Q1 to 2004-Q2). The initiation rate was very similar for both groups before the reform. However, the initiation

⁴⁵ Enron’s scandal appeared in October 2001, WorldCom’s in March 2002, and Tyco’s in May 2002. While it is unlikely that these scandals were solely responsible for the surge in dividends, it is possible that they magnified the extent of the response to the tax cut.

⁴⁶ Most large institutional shareholders (e.g., Fidelity) are partly affected by the reform, because they manage funds on behalf of taxable individuals as well as non-taxable clients such as individual retirement accounts, pensions, and nonprofits.

⁴⁷ Details about the definition of this sample and more general breakdowns by size of institutional ownership are given in section 5.2 below.

⁴⁸ Previous papers such as Perez-Gonzalez (2003) and Blouin et. al. (2004) have used companies owned by large institutional shareholders as control groups, without distinguishing non-taxable and partly taxable institutions as we do here. We find that only 15% of institutional owners (dollar weighted) are fully non-taxable. This point is particularly important because our analysis in Section 5 shows that firms with larger institutional ownership are much *more* responsive to the reform, implying that many institutions behave in the interests of their individual taxable clients. Therefore, raw institutional ownership is clearly not a valid proxy for nontaxable status when analyzing the effects of taxes on corporate behavior.

rate surged by a factor of 5 after the reform for the treatment group, while remaining virtually constant for the control group. As a result, the post-reform initiation rates are significantly different across the two groups, and the difference-in-differences estimate of the causal effect of the tax cut is also highly statistically significant. These estimates are fully robust to a regression with controls for assets, market capitalization, profits, and industry codes, and interactions of these controls with a tax reform dummy, as in equation (3) below (with a t-statistic of 4 for the difference-in-differences). In addition, the results cannot be explained away by changing tax clienteles of shareholders: if we form the treatment and control groups using institutional ownership data from one or two quarters prior to the current quarter, the results remain very similar.⁴⁹ The lack of change in the payout behavior of firms controlled by non-affected entities during the reform strongly suggests that the recent surge in dividend payments was entirely tax-driven, since there is no other obvious reason that dividend payout patterns should have diverged across these two groups at exactly the time of the reform.

Second, we use Compustat data for Canadian corporations to perform a placebo test. Canadian corporations are not affected by the tax cut unless they are owned by U.S. individuals. Although U.S. ownership of Canadian corporations is not trivial, it is likely to be small relative to U.S. ownership of U.S. corporations.⁵⁰ Figure 13 plots the fraction of U.S. and Canadian firms initiating dividends in each quarter from 1994-Q1 to 2004-Q1. In sharp contrast to the United States, Canadian firms do not display a surge in dividend initiations around the 2003 reform. Therefore, if unobservable shocks such as corporate scandals affected corporate behavior in Canada as in the U.S., the evidence from Figure 13 suggests that the surge in dividends in the U.S. was indeed tax driven.

Finally, we also examine the press releases of the firms that initiated dividends after the reform was enacted and find that more than a quarter of the firms explicitly cite the tax cut as one of their motives for initiating dividends in their first announcement. This figure is likely

⁴⁹Changing clienteles could potentially pose a problem because taxable institutional holders might start to purchase more shares of companies that initiated dividends after the reform because of the lower tax rate. In this case, we might find a difference in the initiations rates across our treatment and control groups even if corporate behavior was unchanged by the tax cut. The fact that pre-initiation institutional ownership predicts initiation rates in the same way rules out this hypothesis.

⁵⁰Moreover, as we show in section 5 below, the tax response in the U.S. is confined primarily to firms with high executive share ownership, whose personal tax incentives changed because of the reform. Since Canadian corporations are unlikely to have top executives who are U.S. residents, we would not expect to see a tax response among these firms even if they have many diffuse U.S. based shareholders.

to greatly understate the actual number of tax-motivated dividend changes because firms have strong incentives to avoid attributing their dividend decision to the tax cut, instead claiming that they are raising dividends given signs of strong future earnings.⁵¹

5 Which Firms Responded to the Tax Change?

In this section, we document two important forms of heterogeneity in the dividend response that shed light on the mechanism of the tax response. First, we show that the response is heavily influenced by agents' incentives and powerful principals' interests. On the agent side, firms with high executive share ownership and low executive stock-options holding were most likely to initiate dividend payments. On the principal side, firms with large share ownership among independent directors and high taxable institutional ownership responded more strongly to the tax cut. When neither the high level agents nor principals have strong incentives to push for a dividend policy change, the response to the tax cut is virtually zero. Hence, existing "old view" and "new view" models of corporate taxation in the public finance literature appear to miss a central determinant of the behavioral response to taxation by abstracting from agency problems.

Second, we provide some suggestive evidence about the efficiency effects of the tax cut. Of course, the fact that the tax cut caused a sharp surge in dividend payments does not itself imply that the efficiency of capital allocation was improved. The ideal way to estimate the efficiency effects of the tax cut would be to directly identify its effects on investment and profits. Unfortunately, this approach is infeasible because both investment and profits are very volatile, making it difficult to detect whether changes in behavior along those margins are associated with the tax cut. We provide indirect evidence of the improvement in capital allocation by showing that firms with high forecasted earnings growth did not respond to the tax cut. This suggests that funds might have been channelled away from lower growth firms toward those with better investment opportunities through external capital markets.

In addition to these cuts, we also briefly discuss heterogeneity along a large set of other dimensions, such as profits, assets, cash holdings, age, and debt levels.

⁵¹Interestingly, 13% of nonpaying companies surveyed in Brav et al. (2004) said that they would initiate dividend payments following the tax cut, a number consistent with our finding that up to 2004-Q2, about 10% of nonpaying firms have initiated dividends.

5.1 Self-interested agents: Executive share and stock-option ownership

A large literature in corporate finance has focused on the tension between principals' (shareholders) objectives and agents' (executives) interests. One hypothesis that has received substantial attention is that high degrees of pay-for-performance sensitivity, e.g. from large executive stock and options holdings, can have significant effects on executives' decisions about corporate policy. In this subsection, we analyze the impact of executive share and options holdings on the payout response to the tax cut.

We test for such an association without imposing strong functional form assumptions on the data, since the relevant effects could be non-linear, and outliers could be very influential. We use a semi-parametric strategy for classifying firms into quintiles based on executive share and option ownership, and compare the size of the dividend response across the quintiles. As in the preceding analysis of the overall dividend response, we must be careful to address biases that arise from changing sample composition during the dot-com boom and bust. Therefore, in this and all subsequent heterogeneity analyzes, we restrict attention to the set of 2,551 firms in the core sample that are alive between 1998-Q1 and 2004-Q2.⁵²

Our primary data source for the share ownership and options data is ExecuComp. The shortcoming of ExecuComp data is that it covers only about one-third of the companies listed in CRSP, and these companies are not a random subsample of the CRSP firms. In particular, ExecuComp tends to cover only larger firms, which have a higher propensity to pay dividends and differ from uncovered firms along many other dimensions (e.g. large shareholder ownership) as well. To improve the precision of our estimates and obtain results that apply to the full universe of publicly traded firms, we expanded our data on share ownership by hand-collecting data for an additional 347 firms from SEC proxy filings. The 347 firms include all the firms that initiated dividends, which are of greatest interest for the present study, as well as an additional 147 firms that constitute a 10% random sample of the non-Execucomp firms that did not initiate dividends within our 1998-2004Q2 sample frame. Sampling probability weights are used to account for the under-representation of non-Execucomp non-initiating firms. The construction of the random sample is described in detail in the appendix.

⁵²We chose a relatively long pre-reform time frame (1998-2003) in order to make the total number of dividend initiations in the pre-reform period similar to that in the post-reform period. We focus primarily on heterogeneity in dividend initiations here. Results for dividend increases are generally quite similar.

We begin by analyzing the relationship between executive shareownership and dividend initiations. An executive who holds a large stake in his company experiences a large change in his personal tax burden from a dividend payment, since a considerable fraction of the total dividend payout would accrue to the executive himself.⁵³ At the other extreme, the personal tax incentives of an executive who owns no shares are unchanged by the 2003 reform. To analyze whether the personal tax burden of executives has an impact on the tax response of corporations, we classify firms into five quintiles of executive share ownership as follows. We first identify the largest shareholder among the company’s executives in a given year. We then define a stable set of quintiles using the average fraction of shares held by the largest executive shareholder during our sample frame if the firm does not initiate dividends during this period, and using share ownership as the time of initiation if the firm does initiate dividends. This procedure ensures that firms do not move across quintiles over time. The advantage of having a stable set of firms in each quintile is that it eliminates the bias that can arise if the distribution of executive share ownership changes in a manner that is correlated with dividend behavior.

Figure 14A shows the frequency of initiations among non-payers across the five quintiles of executive share ownership in the pre- and post-reform periods. The pre-reform period is defined as 1998-Q1 to 2002-Q4 and the post-reform period is 2003-Q1 to 2004-Q2. Initiations surged much more sharply in firms where at least one executive owned a substantial fraction of the company’s shares.⁵⁴ The post-reform annual initiation rate among firms in the highest quintile of executive share ownership is 9.5%, in contrast with 3.5% in the lowest quintile. The difference between the change in the initiation rate in the fifth quintile and the first quintile is statistically significant with a p-value of 0.03 (see Appendix Table A3 for means and standard errors for each quintile, as well as the difference between the change in initiation rates between the first and fifth quintiles). The pattern for dividend increases (not reported) is also quite similar.⁵⁵

⁵³It can be difficult for top executives in publicly traded firms to obtain cash by selling shares because share sales must be publicly reported and are likely to be interpreted as a negative signal by the market. Previous studies have found mixed results on the correlation between large executive ownership and dividend payments. Rozeff (1982) found no correlation, but a recent study by Fenn and Liang (2001) found a positive correlation. Those studies, however, do not use tax changes to identify this link.

⁵⁴Both the dollar amount of shares held by the largest executive shareholder and the fraction of shares held are positively associated with the size of the tax response. The share holdings of all other executives besides the largest executive shareholder are unrelated to the tax response.

⁵⁵In independent work, Nam, Wang, and Zhang (2004) and Brown, Liang, and Weisbenner (in progress), have also identified a relationship between executive ownership and dividend increases after the tax cut using

In order to control for other covariates that may also influence the dividend response to the tax cut, we run a regression analogous to (2), linearly interacting each of the covariates and the five quintile dummies of interest with a tax reform dummy, d_T .⁵⁶

$$Init_{i,t} = \sum_{T=0}^1 \left\{ \sum_{j=1}^5 \beta_{T,j} d_T * q_{shrown_{i,t}}^j + d_T * X_{i,t} \right\} + \varepsilon_{i,t} \quad (3)$$

Here $T = 0$ denotes the pre-reform period and $T = 1$ denotes the post-reform period. The set of covariates X consists of the following variables, which are averaged over the 1998-2004Q2 sample frame: assets, cash/assets, debt/assets, profits/assets, mktcap/assets, percent of shares held by institutions, largest executive unexercisable option holding as a percentage of total shares outstanding, and largest executive exercisable option holding as a percentage of total shares outstanding. In this regression, the $\{\beta_{1,j}\}_{j=1}^5$ coefficients reveal the heterogeneity in the dividend response along the executive share ownership margin, conditioning on the possible heterogeneity of responses along all the other observable margins. The estimates of the $\{\beta_{1,j}\}_{j=1}^5$ coefficients are reported in Appendix Table A4, along with the p-values and difference-in-difference estimates of the change in initiation rates between the first and fifth quintiles. The pattern and statistical significance of the regression coefficients is essentially unaffected by the inclusion of covariates, suggesting that executive share ownership is indeed causally associated with the dividend response to the tax cut.

Next, we examine the effect of unexercisable stock-options holdings by top executives on the tax response. Lambert, Lanen, and Larker (1989) noted that executives with large options holdings are hurt by dividend payments, because the strike prices of their options are typically not adjusted for dividends.⁵⁷ By paying money out of the firm and thereby reducing the price of the shares outstanding, executives make their unexercised options less valuable. To examine whether these incentives matter for the tax response, we follow the same methodology

ExecuComp data. Our hand-collected data permits a more precise characterization of the non-linear effect of executive share ownership on the tax response, and allows us to analyze the interaction between agent and principal incentives, as discussed in section 5.3.

⁵⁶Less parametric regressions with quintile dummies for all the covariates generally yield the same pattern of coefficients; however, the large number of coefficients causes the standard errors to rise relative to our more parsimonious linear specification for controls.

⁵⁷More recently, Fenn and Liang (2001) and Weisbenner (2000) have shown that there is a negative relation between the number of stock options owned by management and dividend payments and a positive relation between options and share repurchases. This suggests that firms where top executives own many stock options are substituting dividends for share repurchases. Those studies, however, do not use tax changes to identify those links.

as above and classify firms into five quintiles based on the unexercisable options holdings (as a fraction of total shares outstanding) of the executive who owns the largest number of such options.

Figure 14B shows that firms where one or more executives had a large *unexercisable* option holding were significantly less likely to respond to the tax cut. The annual initiation rate was 8.4% among firms whose executives were in the lowest quintile of options holdings, in contrast with 4% in the highest quintile. These differences are statistically significant with a p-value of 0.03 (Table A3). The pattern of the initiation rates is also robust to controls based on a regression specification analogous to (3) that substitutes maximum executive share ownership for unexercisable options ownership in the set of controls X (Table A4). Consistent with the hypothesis that it is mainly unexercised option holdings that make dividend payments unattractive, we find a much weaker and less robust relationship between executives' *exercisable* options holdings and the tax response (see Tables A3 and A4).

Table 5a illustrates the interaction between executive incentives through share and option holdings by cross-tabulating the post-reform initiation rate by thirds of share ownership and unexercisable options ownership. The importance of executive incentives is striking. Only 1.6% of the firms in the lowest third of share ownership and highest third of option ownership initiated dividends in the six quarters after the reform. In contrast, 11.4% of the firms at the other extreme – highest third of share ownership and lowest third of options – have initiated dividend payments since that point. Despite the fact that the variation in share and options holdings is purely cross-sectional, it is difficult to formulate a non-agency story that would explain the share ownership, unexercisable options, and exercisable options results simultaneously. In short, there is strong evidence that executives behave in a self-interested (although not necessarily inefficient) manner when making decisions about corporate payout policy for their shareholders.⁵⁸

⁵⁸While the evidence of self-interested behavior is consistent with the view that corporations cannot be expected to maximize shareholder value, it does not necessarily imply that there is an inefficiency that ought to be corrected. Since executives' compensation and decision power is contracted upon with shareholders ex-ante, it is conceivable that such self-serving behavior emerges as the efficient ex-post outcome of an optimal contract that is well understood by all parties.

5.2 Powerful principals: Institutional shareholders and directors

We now turn to the other side of the principal-agent relationship, and examine the effect of having powerful principals on the response to the tax cut. An extensive literature in corporate finance has found an association between the presence of large individual and institutional shareholders and the degree to which firms behave in value-maximizing fashion (see Shleifer and Vishny (1997) for a review). To analyze the impact of these variables on the dividend response, we quantify the power of principals in two ways: the percent of shares controlled by institutions (e.g. mutual funds, trusts, banks, etc.) and whether there is at least one independent (non-officer) director with large share holdings (over 5% of shares).

We obtain data on institutional ownership from Thompson Financial’s Institutional Ownership database, which covers nearly 90% of the firms in our sample. Our primary data source for the number of large shareholders is a dataset compiled by Dlugosz et. al. (2004) which corrects a series of mistakes in Compact-Disclosure data on large shareholders compiled from firms’ SEC filings. Since this dataset covers only the firms tracked by the Investor Responsibility Research Center (roughly the 1,500 largest companies in the U.S.), we augment this dataset by hand-collecting information from proxy statements for an additional set of firms. We follow the same methodology as for the executive share ownership data, collecting data for all the firms that initiated dividend payments and a 10% random sample of non-IRRC, non-initiating firms. With appropriate sampling probability weights, these additional data allow us to obtain estimates for the full universe of publicly traded firms in CRSP.

We begin by analyzing the impact of institutional ownership on the tax response. We classify firms into five quintiles based on the average fraction of shares held by institutions over the sample frame. Figure 15A shows that among firms previously not paying dividends, those with higher institutional ownership are much more likely to begin paying after the reform. The statistical significance and robustness of this conclusion to the usual set of controls (excluding institutional share ownership) used in (3) are again confirmed in Tables A3 and A4. Consistent with our results on taxable and non-taxable institutional holdings reported in section 4.6, there is no association between the fraction shares held by non-taxable institutions and the magnitude of the tax response (not reported). Only the fraction held by partially or fully taxable institutional owners matters. These findings suggest that partially

taxable institutional owners increase their demand for dividends from the corporations in which they invest after the tax reform, and that corporations respond to these demands, perhaps because many institutions play an active role in influencing corporate boards. In addition, the fact that only taxable institutions induce a response is consistent with related studies in the corporate finance literature (reviewed in Shleifer and Vishny, 1997) showing that powerful principals are themselves self-interested, potentially acting at the expense of more diffuse minority shareholders who are less influential.

We now turn to the analysis of the impact of large-shareholding independent directors on the tax response. We classify firms into two categories: those who never had an independent large-shareholding director during the sample period, and those with at least one such director. We also cut the data into two groups by institutional ownership (below or above the sample median). Figure 15B shows that for firms with low institutional ownership, the presence of a large-shareholding independent director significantly increases the probability of initiating dividends. Table A3 shows that the director effect is significant at the 5% level without controls. Table A4 shows that the magnitude of the director effect is larger with controls, but the standard errors rise and make the difference marginally significant ($p\text{-value} = 0.097$). In contrast with these results, for firms with high institutional ownership, the presence of an independent director has no effect (right side of Figure 15B). Hence, quite intuitively, powerful principals appear to substitute for each other: the presence of one powerful principal with strong incentives to demand dividends reduces the marginal impact of other powerful principals with similar interests.

Unlike directors and institutions, large “outside” (non-director) individual shareholders, have no effect on the response to the tax cut, along either the extensive or intensive margins (see Tables A3 and A4). The most likely reason for this is that dividend policy is set exclusively by the board of directors and is not typically voted upon by shareholders. Hence, large external individual shareholders may have less direct influence over the short-run payout decisions of corporations.

Table 5b illustrates the interaction between executive incentives and the power of principals. It cross-tabulates three groups ranked by top executive share ownership by three groups ranked by total institutional ownership. This table shows that executive incentives and powerful principals are also to some extent substitutes: Firms with neither executive incentives nor

powerful principals hardly respond to the tax change, while firms with one of the two elements are 6-10 times more likely to initiate dividends in response to the tax cut. These findings show that principal-agent issues play a first-order role in determining behavioral responses to taxation, and should be included explicitly in models of optimal dividend taxation.

5.3 Capital allocation efficiency: Forecasted earnings growth

We now examine whether there is evidence of an efficiency improvement in capital allocation associated with the 2003 tax reform. To do so, we test for an association between forecasted growth prospects and the dividend response to the tax cut. We define forecasted growth prospects using I/B/E/S data on analysts' earnings forecasts as follows. We first compute the expected change in earnings per share as the mean earnings per share forecast for a two year forecast period minus the actual earnings per share in the current year. We then multiply this figure by the total number of shares outstanding and divide by total assets to arrive at a normalized measure of earnings growth per dollar of assets.⁵⁹ Finally, we define five quintiles of earnings growth over the sample of firm-quarter pairs where the firm was not previously a dividend payer (and is therefore a candidate to initiate dividend payments).

Figure 16 shows the frequency of initiations among non-payers across the five quintiles of forecasted earnings growth in the pre- and post-reform periods. The effect of forecasted growth appears to be slightly non-linear, consistent with the hypothesis that firms that have less need for cash respond more to the tax cut. Some of the firms in quintile 1 are in distress, as their earnings are expected to fall sharply, so they respond less on average than those in quintile 2, who have more moderate earnings forecasts. Firms with the best growth prospects (quintile 5) responded very little to the tax cut. As shown in Table A3, the difference between the fifth quintile and second quintile is highly statistically significant. The general pattern of these estimates is robust to the inclusion of our standard set of covariates, as shown in Table A4, although the magnitudes of the differences are slightly attenuated and the standard errors are somewhat larger.⁶⁰

⁵⁹We obtain similar results when defining earnings growth as a simple percentage change in EPS; the advantage of normalizing by assets is that it permits us to include the many firms that have negative forecasted or current EPS.

⁶⁰The fact that the inclusion of controls slightly weakens the effect of earnings growth on initiation rates is not surprising in view of the fact that many of our controls are highly correlated with future earnings growth (e.g. mktcap/assets , profits/assets).

These results provide suggestive evidence that the dividend tax cut made the capital market reshuffle funds out of lower growth firms.⁶¹ A large set of studies have argued that free cash flow within such firms is not always put toward value-maximizing ventures because of principal-agent problems (see e.g., Jensen 1986, Rajan, Servaes, and Zingales 2000, Scharfstein and Stein 2000). Since the reduction in dividend taxes reduced executives’ incentives to hoard earnings, the funds released from these lower-growth firms might have been redirected through the external capital market toward other ventures with equal or greater expected value.⁶²

These findings are a first step toward understanding the welfare implications of dividend taxation. If the dividend tax cut had not induced payouts from lower-growth firms, it would be hard to imagine that it yielded real gains in economic efficiency. The results therefore call for further research on investment behavior to quantify the welfare benefits of the tax cut, as we discuss in the conclusion.

5.4 Other Dimensions

We have also examined the heterogeneity of the tax response along several other dimensions, following a quintile-classification and regression methodology analogous to that above. Some of these results are summarized in Appendix Tables A3 and A4. Unsurprisingly, we find that the tax response was stronger among firms that are in healthy, stable financial condition, i.e., those with higher levels of profits and assets and lower levels of debt. More interestingly, cash holdings are unrelated to the dividend response. This contradicts the “new view” prediction that firms with high levels of cash holdings, who presumably finance investment out of retained earnings, should not have changed payout policies after the tax cut.

6 Substitution with Share Repurchases

As noted in Section 2.1, it is possible for companies to leave total payout unchanged while raising dividends by reducing their share repurchases. If the tax cut simply induced firms to substitute share repurchases by dividends without raising total payout, it would be unlikely that the tax cut had large efficiency benefits because the total amount of capital recirculation

⁶¹We show in section 6 that the dividend response appears to reflect an increase in total payout, not just substitution between share repurchases and dividends.

⁶²We cannot directly document this transfer because cash holdings fluctuate tremendously over time, making it impossible to determine whether the high growth firms obtained more funds after the reform.

would remain unchanged. It is therefore very important to understand the degree to which share repurchases were crowded out by increased dividend payments.

Unfortunately, this exercise is again very difficult because of the volatility of share repurchases over time. Figure 17 illustrates the problem. Panel A depicts aggregate share repurchases (along with aggregate regular dividend payments) by firms in the core sample which have share repurchase information from Compustat from 1984-Q1 to 2004-Q1 (the most recent quarter for which Compustat data are available). The figure shows that share repurchases have exceeded dividend payments since 1997, and that they vary much more from quarter to quarter than dividends. This greater time variability makes it much harder to estimate the effects of the 2003 reform on share repurchases.⁶³ The figure shows that share repurchases have increased substantially over the last 3 quarters but, in view of the historical record, it is clearly possible that share repurchases could have increased even more absent the tax change. Hence, it is impossible to draw any reliable conclusions about the effect of the reform on total payout (total dividends + total repurchases) in the aggregate sample.

Panel B of Figure 17 shows that looking at other moments of the total payout distribution in the full sample does not make the statistical inference problem any easier. Panel B displays the total number of firms which repurchase more than 0.1% of their shares (along with the number of firms paying regular dividends) in the core sample. The number of firms repurchasing shares is also very noisy over time, making it impossible to infer the effect of the tax cut on the total number of firms paying out in some form (either dividends or repurchases).

In order to make progress on the substitution question, we therefore focus on narrower samples where the noise in repurchases is small relative to the change in dividend behavior. From Section 5, one such sample is the set of firms with large executive share ownership, which experiences a very large surge in dividend initiations. Panel A of Figure 18 displays the fraction of regular dividend payers, the fraction repurchasing at least 0.1% of their shares, and the fraction of firms paying out in some form (either paying regular dividends or repurchasing at least 0.1% of their shares) from 2000-Q1 to 2004-Q1 for the sample of firms where a top executive owns at least 20% of the shares, which represents 12% of our sample. The fraction paying dividends in this group jumped from around 25% before the reform to over 35% by 2004-

⁶³Controlling for observable variables or removing the largest share repurchasers does not smooth the time series of share repurchases.

Q1. Interestingly, the increase in the fraction of firms paying out (either through dividends or share repurchases) is quite similar in magnitude, from around 45% before the reform to almost 55% by 2004-Q1. The fraction of firms repurchasing shares is fairly stable over the period and falls modestly from 25% to 21% from 2002-Q3 to 2004-Q1. This graph suggests fairly convincingly that firms with large executive ownership did not simply substitute dividend payments for share repurchases after the reform, implying that the tax cut had real effects on total payout.

Unfortunately, the series of amounts paid out in the form of repurchases is too noisy to allow us to obtain a more precise estimate of the degree of substitution in amounts even for the high response group in Panel A. Panel B therefore directly examines the sample of firms that initiated dividends after the 2003 tax reform. It shows the amounts of dividends and share repurchases of this subset of firms from 2000-Q1 to 2004-Q1.⁶⁴ Unsurprisingly, the amount of dividends is virtually zero before the reform and increases smoothly to almost \$1 billion by 2004-Q1. The figure also shows that, for this group, the amounts of share repurchases actually increased as well during the last 3 quarters, confirming that firms initiating dividends after the reform are not reducing their share repurchase levels relative to the pre-reform level in order to pay dividends. Furthermore, about 35% of the firms which initiated dividends after the reform never repurchased shares in 2002. In addition, among the firms initiating dividends after the reform, the fraction of firms repurchasing at least 0.1% of their shares fell only from 39% in the 2002 quarters on average to about 35% in 2004-Q1.

It should be noted that while the results from Panel B show that firms did not simply “relabel” repurchases as dividends after the reform, they do not necessarily rule out more general forms of substitution. This is because the selection of this group is endogenous (being based on the choice of initiating dividends). It is conceivable that absent the reform, the firms that initiated dividends would have repurchased more shares instead.

7 Conclusion

Aggregate quarterly dividend payments from publicly traded corporations surged by around \$5 billion, or 20%, during the six quarters following the 2003 tax reform. Unfortunately, the time series of the level of dividend amounts is too noisy to immediately conclude that

⁶⁴The figure excludes the largest initiating firm, Microsoft, in order to obtain smoother time series.

this sharp increase was a systematic change associated with the dividend tax cut rather than a random event. However, the time series of dividend amounts masks several systematic, detectable changes in dividend behavior following the tax cut. The tax reform induced a large, widespread set of firms to initiate regular dividend payments or raise the payments they were already making, across all percentiles of the dividend distribution. The sharp rise in regular dividend payments along both intensive and extensive margins, both in frequencies and amounts, is unprecedented in the record of publicly traded U.S. corporations in the last three decades, and offers perhaps the clearest evidence thus far in the literature that tax policy does matter for dividend payments by large corporations.⁶⁵

There is considerable heterogeneity in the dividend response, which sheds light on the mechanism through which dividend taxation affects corporate behavior. Firms with high executive share ownership and low executive stock-options holding were most likely to initiate dividend payments after the tax cut. Firms with large shareholding independent directors and high taxable institutional ownership also responded more strongly to the tax cut, while firms controlled by nontaxable institutions (who tax incentives were unchanged by the reform) did not respond. Corporations that had neither strong agent incentives (low share and high options ownership) nor large principals to induce a dividend policy change were virtually unresponsive to the tax reform. These findings show that the tax incentives of key players – powerful agents and large shareholding principals – are a first-order determinant of corporate responses to taxation. In this sense, existing “old view” and “new view” models of corporate taxation in the public finance literature appear to miss an important element of the behavioral response to taxation by abstracting from agency problems. Developing a theory of dividend taxation that explicitly incorporates a principal-agent relationship could allow for a more precise assessment of the efficiency costs of dividend taxation and the optimal design of corporate and individual income tax policy.

The heterogeneity of the tax response also yields suggestive evidence about the efficiency effects of the tax cut. The tax response was concentrated among low or moderate-growth firms; firms with high forecasted earnings growth did not change payout policies in response to the tax cut. Moreover, the surge in dividend payments does not appear to have been a pure

⁶⁵Since regular dividends are generally cut only in times of severe distress, it is likely that the sharp increases in dividends signal a long-term change in payout behavior.

substitution for share repurchases. This suggests that funds may have been channelled away from lower growth firms toward those with better investment opportunities through external capital markets, potentially improving welfare.

Of course, in order to quantify the welfare consequences of the tax reform, it would be most interesting to analyze the effect of the reform on investment behavior directly. Unfortunately, this does not appear to be feasible because the time series of investment is extremely volatile and of much larger magnitude than dividend payments. As a result, it is impossible to estimate the effects of the tax reform on any moment of the investment distribution of publicly traded corporations with reasonable confidence intervals using the flexible, semi-parametric methods employed above. A promising avenue for future research is to study closely held corporations and compare subchapter C firms (which face the corporate income tax on profits) to subchapter S firms (which do not face the corporate tax and are unaffected by the 2003 reform). As the universe of such firms is much larger, and S-corporations offer a natural control group, estimation of other behavioral responses such as investment and debt policy might be possible.⁶⁶

The sharp variations induced by the 2003 tax cut also offer the opportunity to revisit other important questions in corporate taxation beyond those addressed in this paper. One issue of particular relevance for distinguishing agency and signalling theories of dividends is the market response to dividend announcements. Bernheim and Wantz (1995) show formally and empirically that if dividends serve a signalling purpose, the market premium for increasing or initiating dividends will be larger when the tax rate is higher. Bernheim and Wantz's empirical findings have been subsequently challenged by Bernhardt, Robertson, and Farrow (1994) and Grullon and Michaely (2001), who found using different methods and data that higher tax rates were actually associated with lower dividend announcement premiums. Much of the dispute in this literature stems from the lack of sharp, credible variation in tax rates and dividend behavior. In future work, we plan to examine whether the premium for announcing dividends fell after the 2003 tax cut.

⁶⁶In contrast to publicly traded corporations, closely held corporations are not required to publicly report their accounting balance sheets and dividend payments. Therefore, such a project would require using non-public corporate tax return data, available through the Treasury or the Internal Revenue Service.

Appendix

• Definition of Initiations and Terminations

We define a firm as initiating dividend payments in quarter t if it pays positive regular dividends in quarter t and did not pay dividends in the previous four quarters ($t-1$, $t-2$, $t-3$, and $t-4$). If the firm pays annual dividends in quarter t (or paid such an annual dividend in quarter $t-5$ or $t-6$), we require in addition that the firm did not pay any dividends in quarters $t-5$ and $t-6$ as well. We impose this condition to accommodate cases where annual dividend payers change the quarter in which they distribute their annual dividend payments, which can create 5 or 6 consecutive quarters with no payments but with no materially relevant interruption in regular dividend payments.

We define a firm as terminating regular dividend payments in quarter t if it pays positive regular dividends in quarter $t-1$ and does not pay dividends in the next four quarters (t , $t+1$, $t+2$, and $t+3$).⁶⁷ Because our data is censored after quarter 2004-Q2, we do not observe the full vector of future dividend payments for observations from 2003-Q2 to 2004-Q2. To describe how we handle these cases, let T denote the last quarter available in the data (2004-Q1). In those cases where $t \geq 2003\text{-Q2}$, we define a firm as terminating regular dividends if one of the following three conditions hold: (1) the firm was a quarterly payer in quarter $t-1$ and paid dividends in all quarters $t-2$, $t-3$, $t-4$, but does not pay in quarters t to T ; (2) the firm was a semi-annual payer in quarter $t-1$, but does not pay for at least two consecutive quarters starting in t ; or (3) the firm was an annual payer in quarter $t-1$, but does not pay for at least four consecutive quarters starting in t . This definition of termination is the closest prediction we can obtain of actual terminations that would be observed if the data were not censored.

• Definition of Intensive Increases and Decreases

We define a firm as increasing its regular dividend payment on the intensive margin by 20% in quarter t if two conditions are met: (1) the firm is *not* initiating payments in quarter t by the definition given above; (2) regular dividends in quarter t exceed regular dividends in quarter $t-1$ and quarter $t-4$ by at least 20%.⁶⁸ The definition for decreasing dividends by

⁶⁷In the case of annual payers in quarter $t-1$ (or quarters $t+4$ or $t+5$), we impose in addition that the firm does not pay any dividends in quarters $t+4$ and $t+5$ as well, for the same reason as above.

⁶⁸The requirement that dividends in quarter t exceed dividends in quarter $t-4$ ensures that annual or semi-annual payers are not artificially classified as increasers every time they make a dividend payment.

20% on the intensive margin is analogous. Note that terminations are not counted as decreases to avoid double counting, given their inclusion in the extensive analysis. Every firm is assigned a value of 0 for both the increase and decrease dummy variables in their first four quarters in the sample, since there is inadequate historical information to apply our definition in these cases. Firms not paying or initiating dividends in period t are always assigned a value of 0 for both dummy variables.

• **Supplementary data collected from SEC proxy filings**

We collected data on executive stock and option ownership following the definitions in Execucomp and large blockholder ownership ($>5\%$) following the definitions in Dlugosz, Fahlenbrach, Gompers, and Metrick (2004) for 347 additional firms not covered in these datasets. These firms included 200 firms that initiated dividends between 1998-Q1 and 2004-Q2, for whom we collected proxy data in the year of initiation. The remaining 147 firms are a random sample of the non-initiating firms not covered by one of Execucomp or Dlugosz et. al. We obtained this sample by randomly drawing the name of 10% of the firms (163 firms) in this subset, along with a random date between 1998-Q1 and 2004-Q2 for which we collected proxy data. In constructing the random sample of dates, we required that fifty percent of the dates were chosen in the post-reform period (after 2003-Q1) given the importance of precision in the post-reform period. We were unable to obtain proxy statements for 16 of the 163 firms in our random sample, giving us an ultimate random sample size of 147. The under-representation of firms in the non-Execucomp, non-Dlugosz, non-initiating group is corrected for in our heterogeneity analysis by probability weighting these observations by the sampling probability, so that they receive more weight in all computations.

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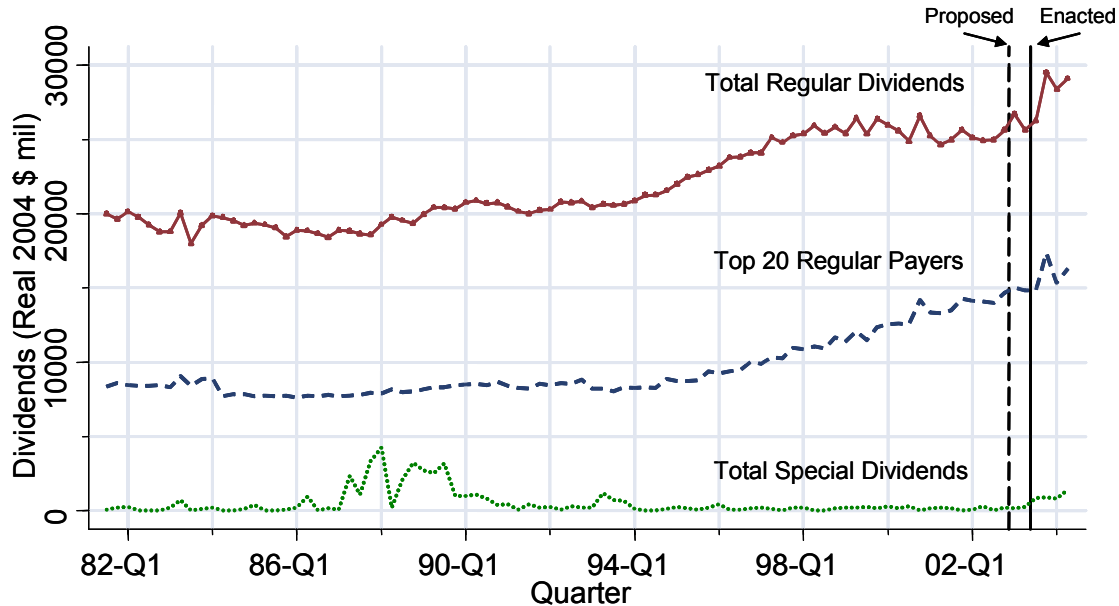
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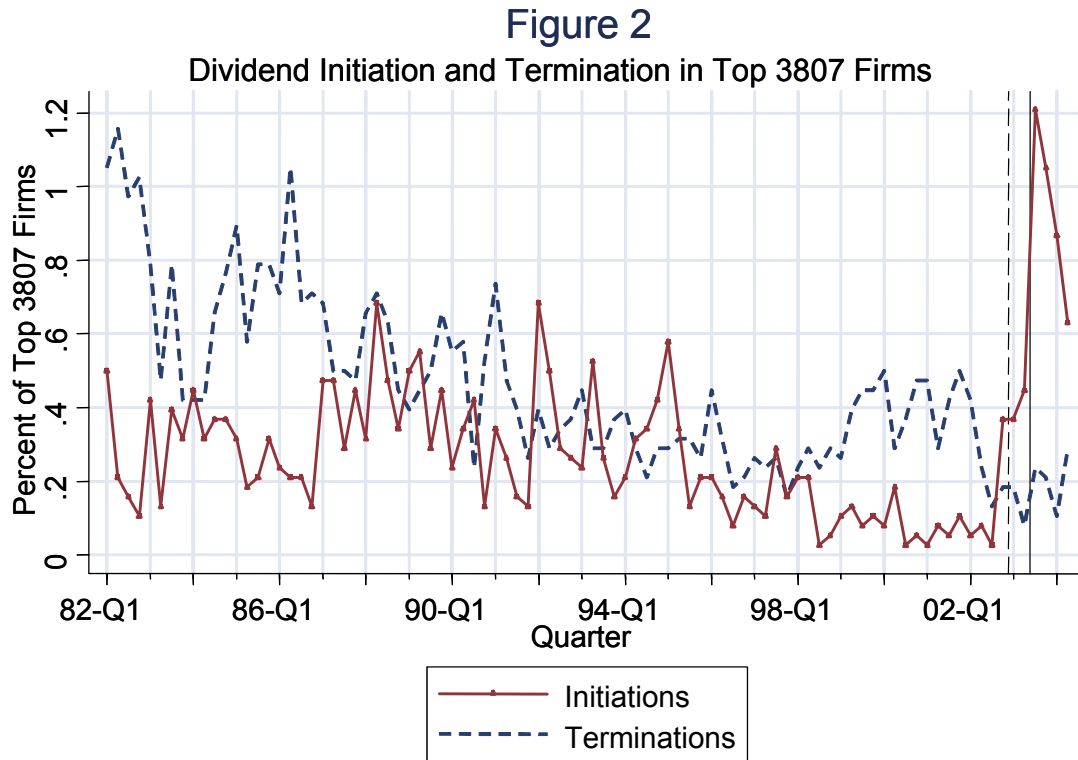
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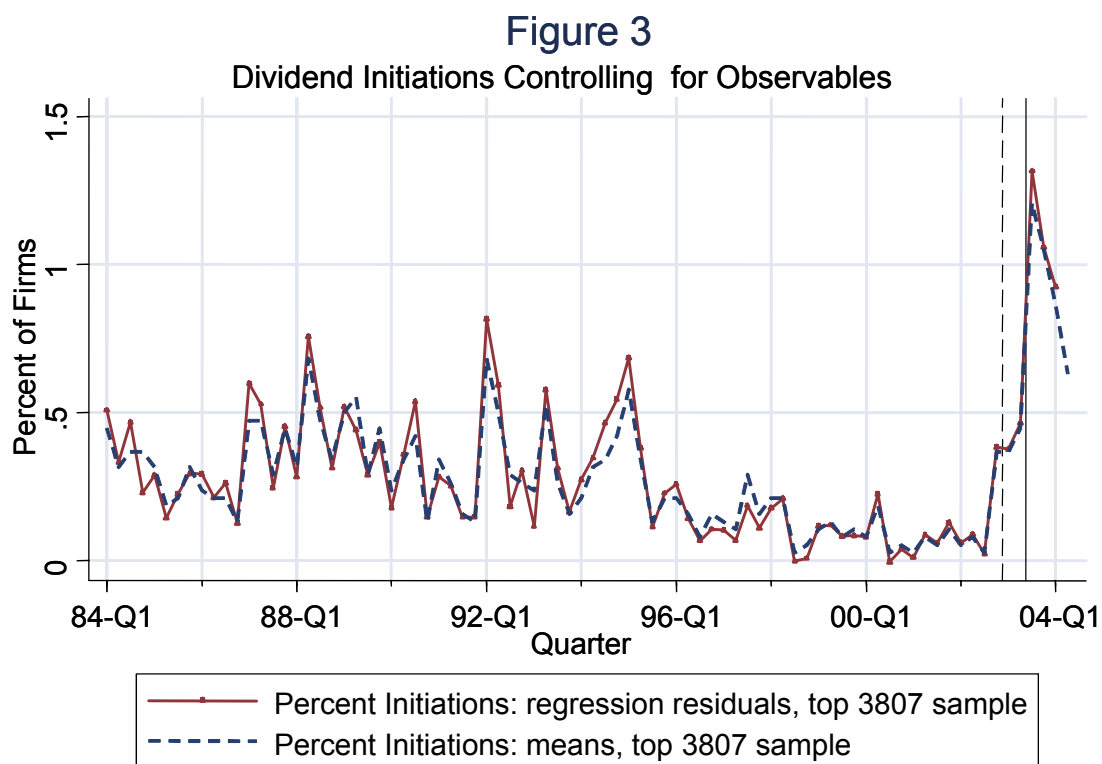
Figure 1
Total Regular and Special Dividends and Top Dividend Payers



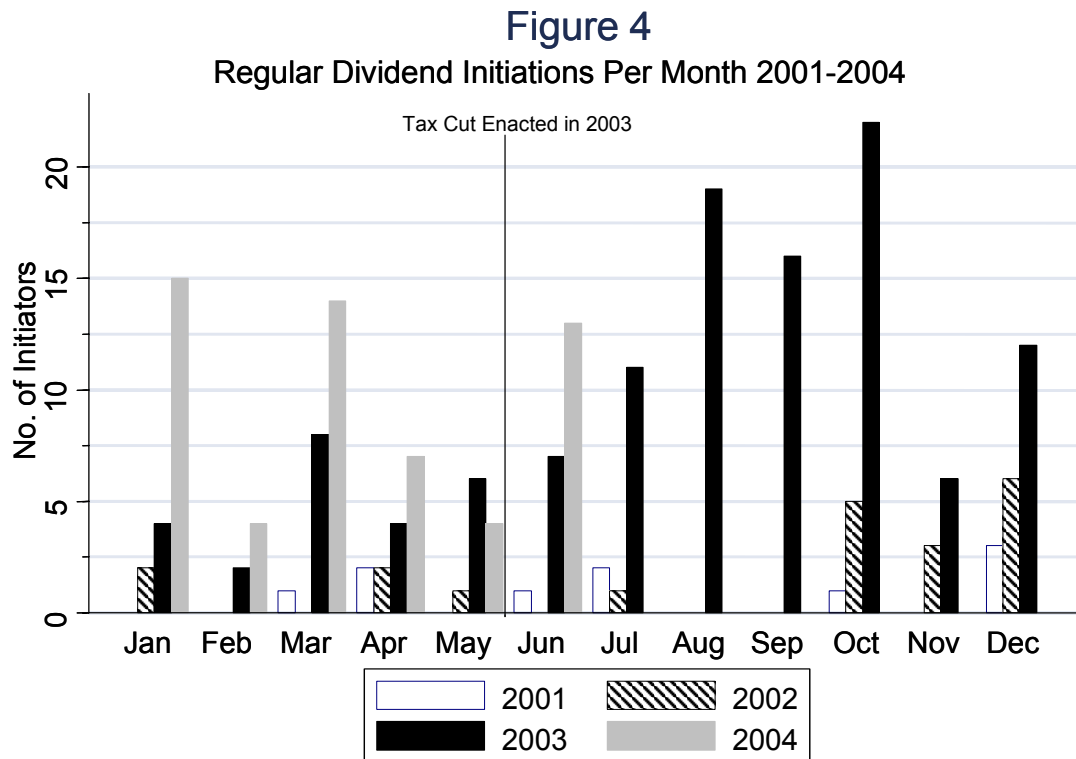
This figure depicts aggregate regular dividend payments, aggregate special dividend payments, and total regular dividend payments made by the largest 20 regular dividend payers for each quarter from 1981-Q3 to 2004-Q2. The sample consists of all firm-quarters in the CRSP database that are non financial, non utility, and non foreign in their last quarter (the “core” sample). Regular dividends are defined as monthly, quarterly, semi-annual, annual taxable dividends. Regular dividends also include other and unknown frequency taxable dividends that are followed by regular payments (see text). Special dividends are defined as special and all remaining other and unknown frequency taxable dividends listed in CRSP. The solid vertical line (separating quarters 2003-Q2 and 2003-Q3) denotes the time at which the 2003 tax reform was enacted (end of May 2003). The dashed vertical line (separating quarters 2002-Q4 and 2003-Q1) denotes the time at which the lower tax rate on dividend income was proposed and started (retrospectively) to apply.



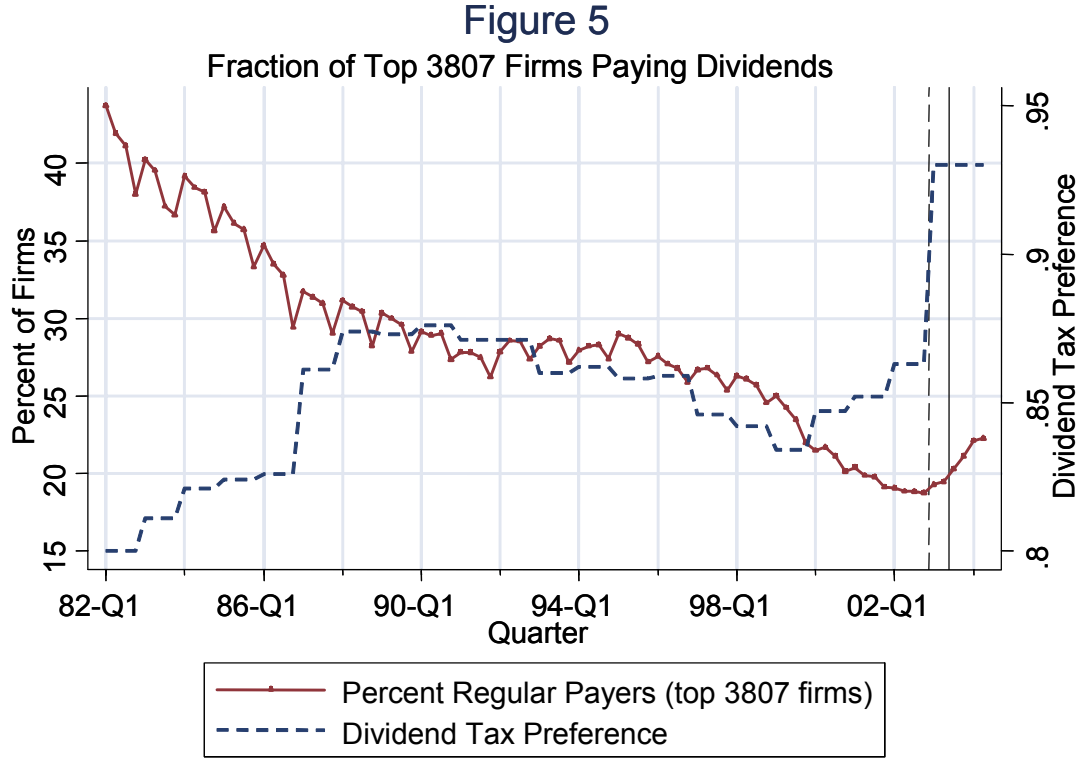
This figure depicts the fraction of firms initiating and terminating regular dividend payments for each quarter from 1984-Q1 to 2004-Q2. The data sample consists, in each quarter, of the top 3,807 firms (ranked by market capitalization in each quarter) in the CRSP database which are non financial, non utility, and non foreign in their last quarter (constant number of firms sample). Initiation is defined as starting to pay regular dividends after having been in the sample and not paying regular dividends for at least four quarters. Termination is defined as stopping to pay regular dividend payments for at least four quarters. Skipping a dividend payment is not considered a termination (see text for complete details).



This figure depicts the fraction of firms initiating dividend payments with and without control variables for each quarter from 1984-Q1 to 2003-Q4. In the case with no controls, the data sample consists as in Figure 2 of the firms in the constant number of firms sample. The no-controls curve reports the fraction of those firms initiating dividend payments. In the case with controls, the data sample is same with the additional requirement that variables assets, after-tax profits, cash from Compustat are available. The regression residuals curve reports the quarter dummy coefficients of an OLS regression of the initiation dummy on a full set of quarter dummies, dummies for first digit industry code, assets, and levels and eight quarterly lags of after-tax profits/assets, marketcap/assets, and cash/assets (see specification (2) in text).



This figure depicts the number of firms initiating dividend payments for each month from January 2001 to June 2004. The data sample consists as in Figure 2, in each month, of the top 3,807 firms (ranked by market capitalization in each corresponding quarter) in the CRSP database which are non financial, non utility, and non foreign in their last quarter (constant number of firms sample). Initiation is defined as starting to pay regular dividends after having been in the sample and not paying regular dividends for at least four quarters (see text for complete details).



This figure depicts the fraction of firms paying regular dividend payments for each quarter from 1984-Q1 to 2004-Q2 (with scale on the left vertical axis). The data sample consists, in each quarter, of the top 3,807 firms (ranked by market capitalization in each quarter) in the CRSP database which are non financial, non utility, and non foreign in their last quarter (constant number of firms sample). Regular dividends are defined as monthly, quarterly, semi-annual, annual taxable dividends. Regular dividends also include other and unknown frequency taxable dividends which are followed by regular payments (see text). The figure also depicts (with scale on the right vertical axis) the dividend tax preference parameter from Poterba (2004). This parameter is defined as the dollar weighted average across all investors (individuals and institutional) of $(1 - \tau_{div}) / (1 - \tau_{cg})$ where τ_{div} is the marginal tax rate on dividend income and τ_{cg} the average marginal tax rate on capital gains in the U.S. economy.

Figure 6a

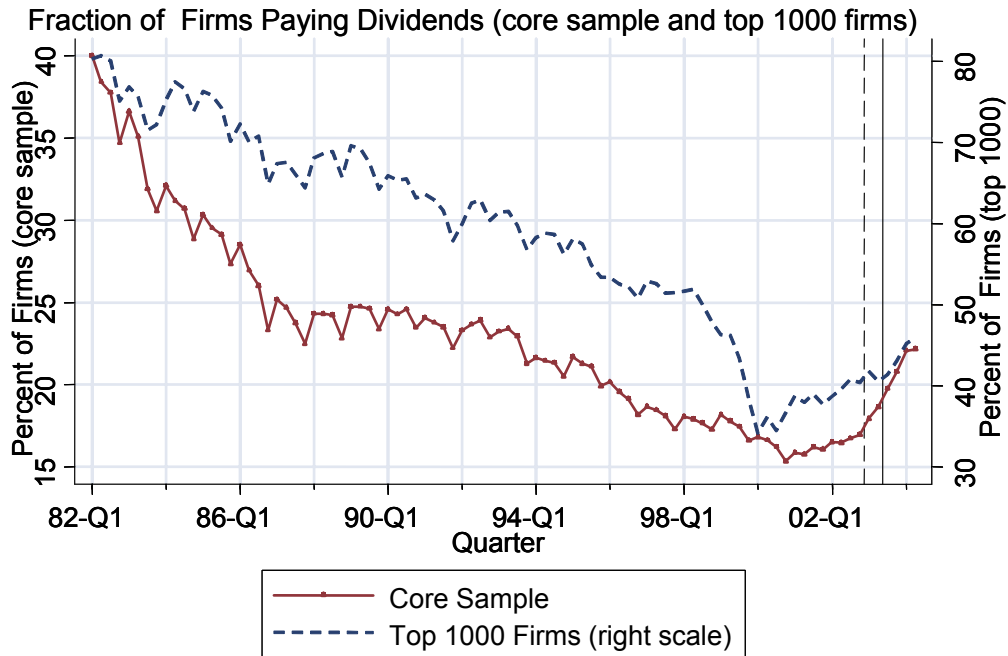
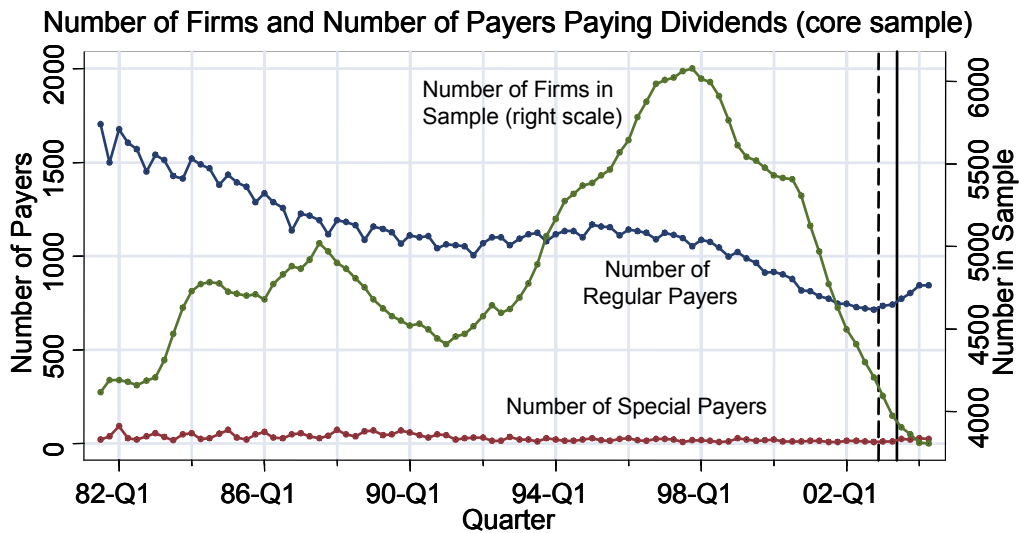
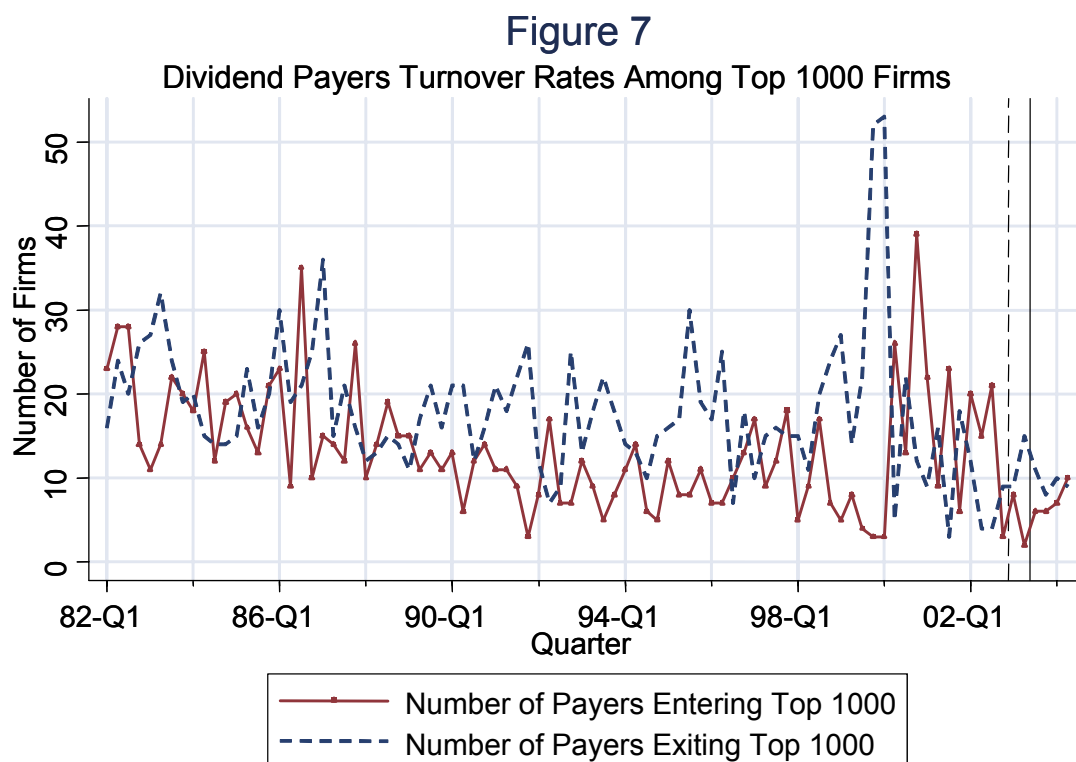


Figure 6b

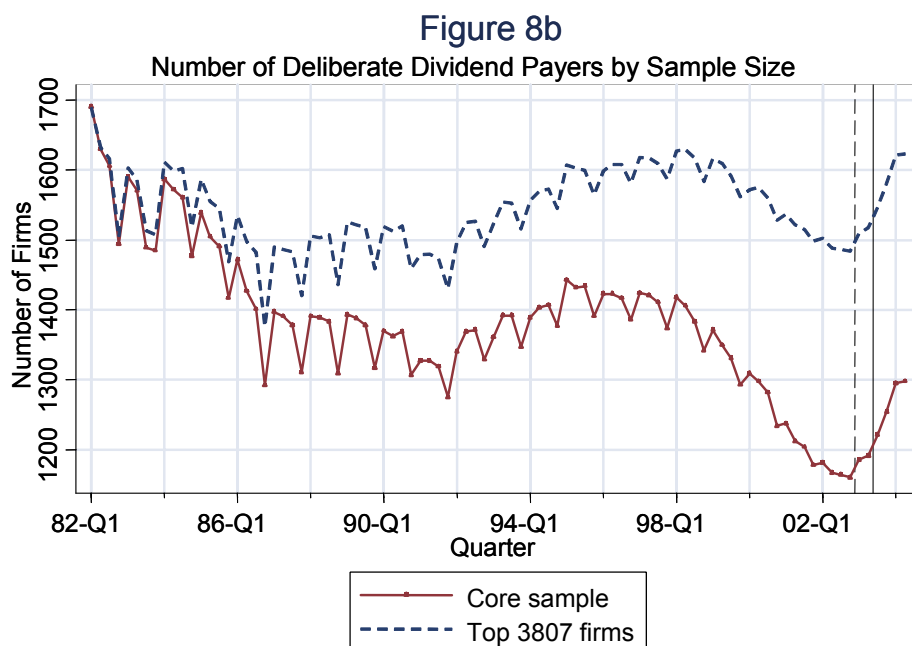
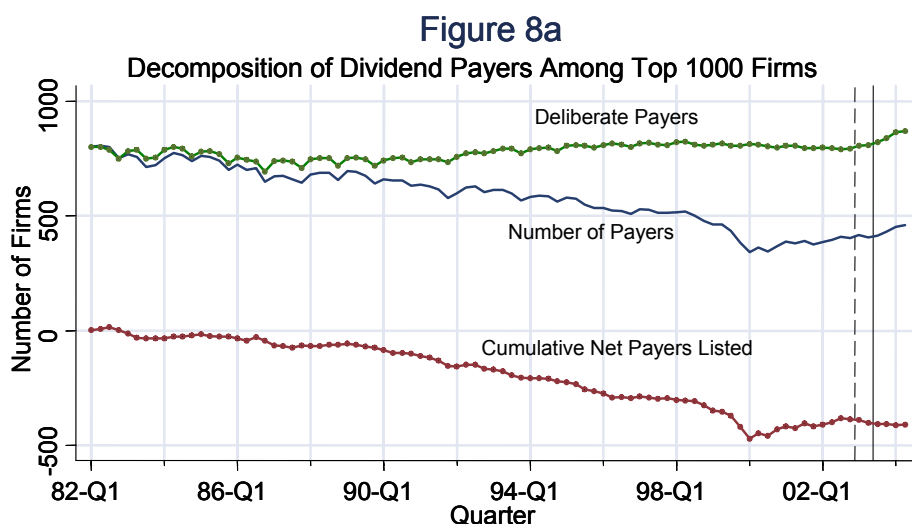


Panel A depicts the fraction of firms paying regular dividend payments for each quarter from 1982-Q1 to 2004-Q2. In the first curve, the sample consists, in each quarter, of all firms in the CRSP database which are non financial, non utility, and non foreign in their last quarter (core sample). In the second curve, the sample of firms is limited to the top 1,000 firms ranked in each quarter by market capitalization. Regular dividends are defined as in Figure 1.

Panel B depicts the total number of firms (right scale) and the number of regular dividend payers and special dividend payers (left scale) for each quarter from 1982-Q1 to 2004-Q2. For all three curves, the data sample consists, in each quarter, of all firms in the core sample.



The sample consists, in each quarter, of the top 1,000 firms (ranked by market capitalization in each quarter) in the CRSP database which are non financial, non utility, and non foreign in their last quarter. The first curve depicts the number of regular dividend payers that entered the sample of the top 1,000 firms in quarter t . The second depicts the number of regular dividend payers that exited the sample of the top 1,000 firms in quarter t .



In Panel A, the sample consists, in each quarter, of the top 1,000 firms (ranked by market capitalization in each quarter) in the CRSP database which are non financial, non utility, and non foreign in their last quarter. The first curve depicts the number of the top 1,000 firms paying regular dividends. The second depicts, the cumulative difference (from 1982-Q1) between the number of regular dividend payers who entered the top 1,000 firms and the number of regular dividend payers who left the top 1,000 firms. The third curve is the difference between the first two, and captures the number of “deliberate” payers among the top 1,000 firms controlling for entry and exit effects.

Panel B plots the third (deliberate payers) curve in Panel A for the core sample (all non utility, non financial, non foreign CRSP firms) and the constant number of firms sample (top 3,807 firms in each quarter ranked by market capitalization). These two graphs capture the evolution of the number of dividend payers firms controlling for entry and exits effects in these two samples.

Figure 9a

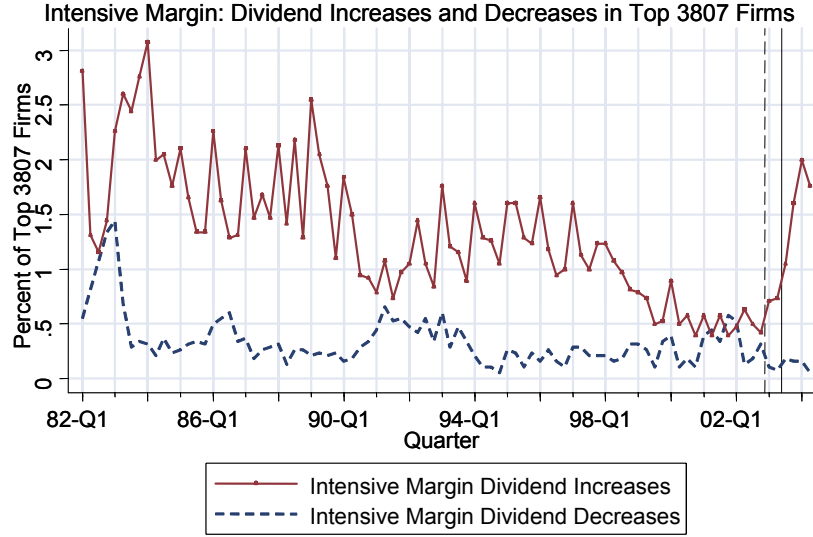
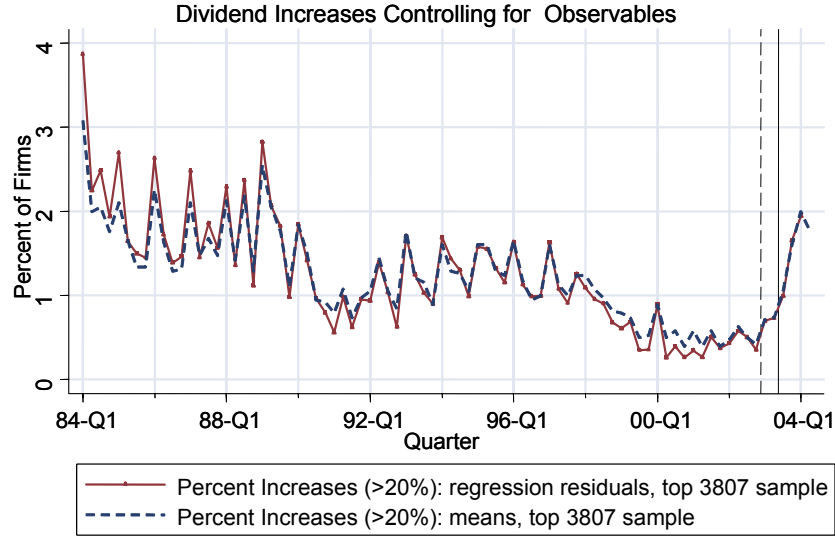
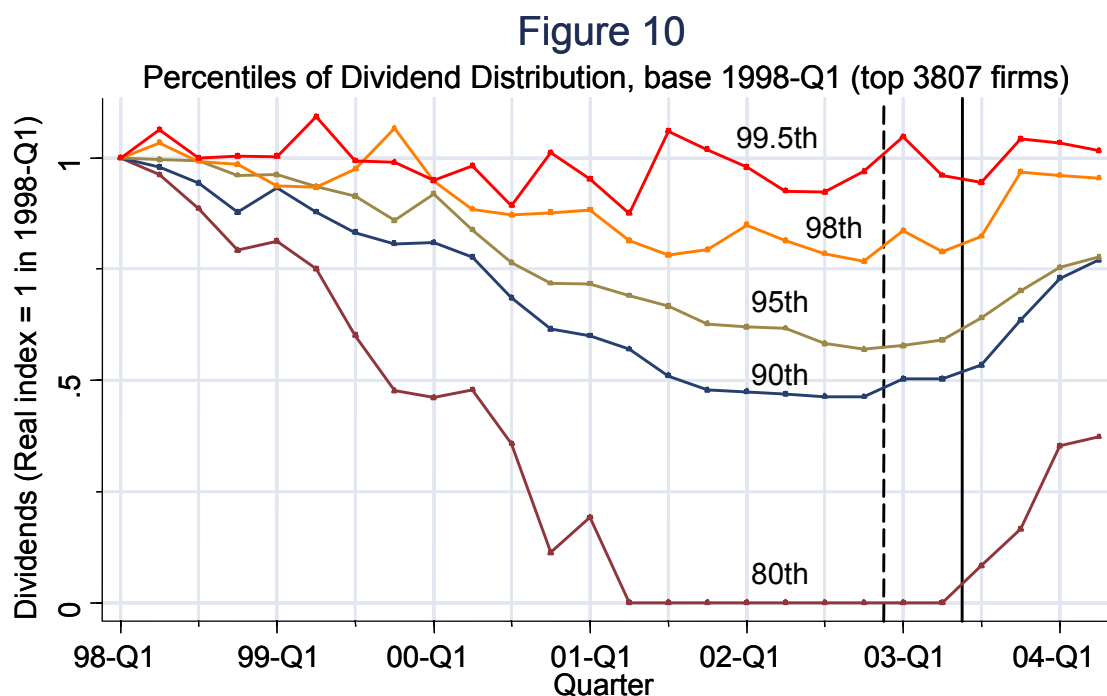


Figure 9b



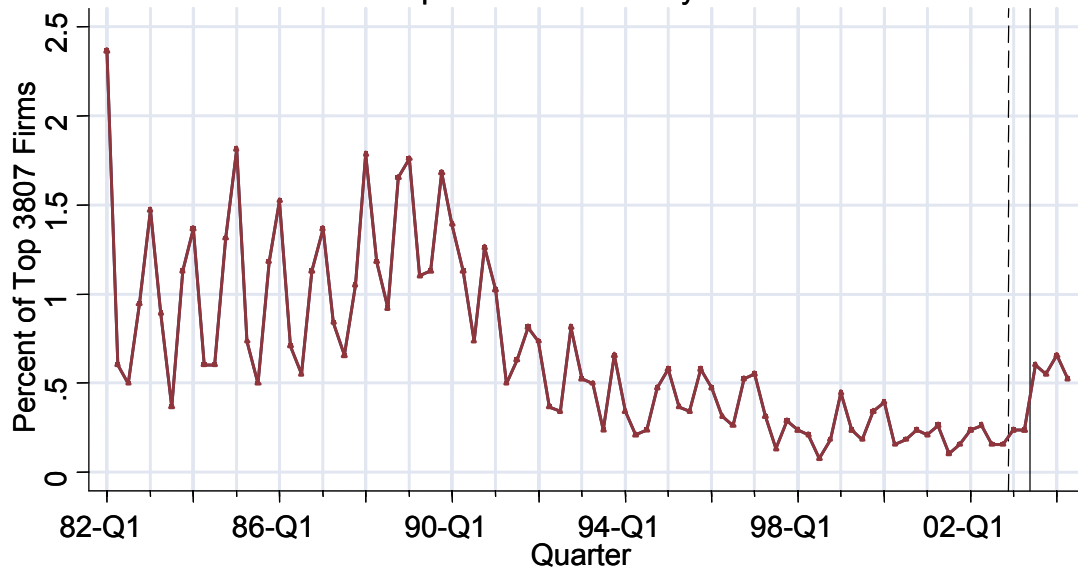
Panel A depicts the fraction of firms increasing and decreasing regular dividend payments by more than 20% in a given quarter in the constant number of firms sample. An increase in dividend payments by 20% in quarter t occurs when the firm (1) does not initiate dividend payments in quarter t , (2) pays dividends in quarter t larger in real terms by 20% than dividends paid in quarters $t - 1$ and $t - 4$. Decreases in dividends payments are defined in an analogous way. (see text for further details).

Panel B depicts the fraction of firms increasing dividend payments in the core sample without controls (as in Panel A), and the corresponding curve controlling for covariates. In the case with controls, the sample is the set of firms that satisfy the additional requirement that assets, post-tax profits, market to book ratios, and cash from Compustat are available. The regression residuals curve reports the quarter dummy coefficients of an OLS regression of the >20% increase dummy on a full set of quarter dummies, dummies for first digit industry code, assets, and levels and eight quarterly lags of after-tax profits/assets, marketcap/assets, and cash/assets (see specification (2) in text).



This figure depicts various percentiles of the regular dividend distribution at each quarter from 1998-Q1 to 2004-Q2. The zeros (non dividend payers) are included in the distribution. The percentiles are normalized so that they are all equal to one in 1998-Q1. The sample consists, in each quarter, of the top 3,807 firms (ranked by market capitalization in each quarter) in the CRSP database which are non financial, non utility, and non foreign in their last quarter (constant number of firms sample).

Figure 11
Special Dividend Payers



This figure shows the fraction of firms paying special dividends. Special dividends are defined as special and all remaining other and unknown frequency taxable dividends listed in CRSP. The sample consists, in each quarter, of the top 3,807 firms (ranked by market capitalization in each quarter) in the CRSP database which are non financial, non utility, and non foreign in their last quarter (constant number of firms sample).

Figure 12a

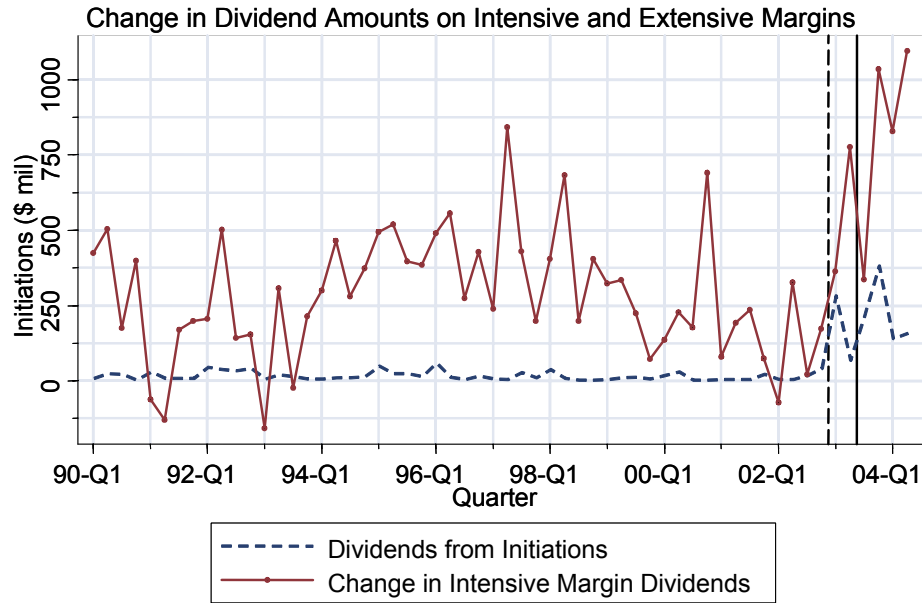
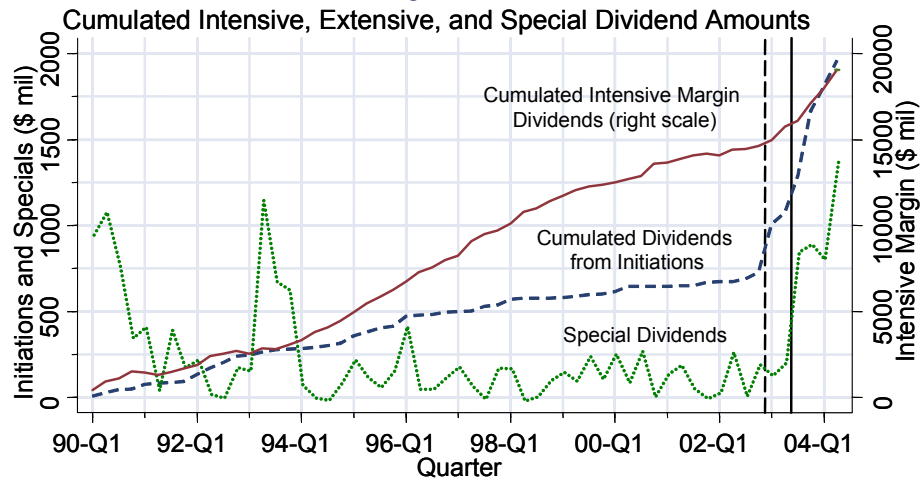
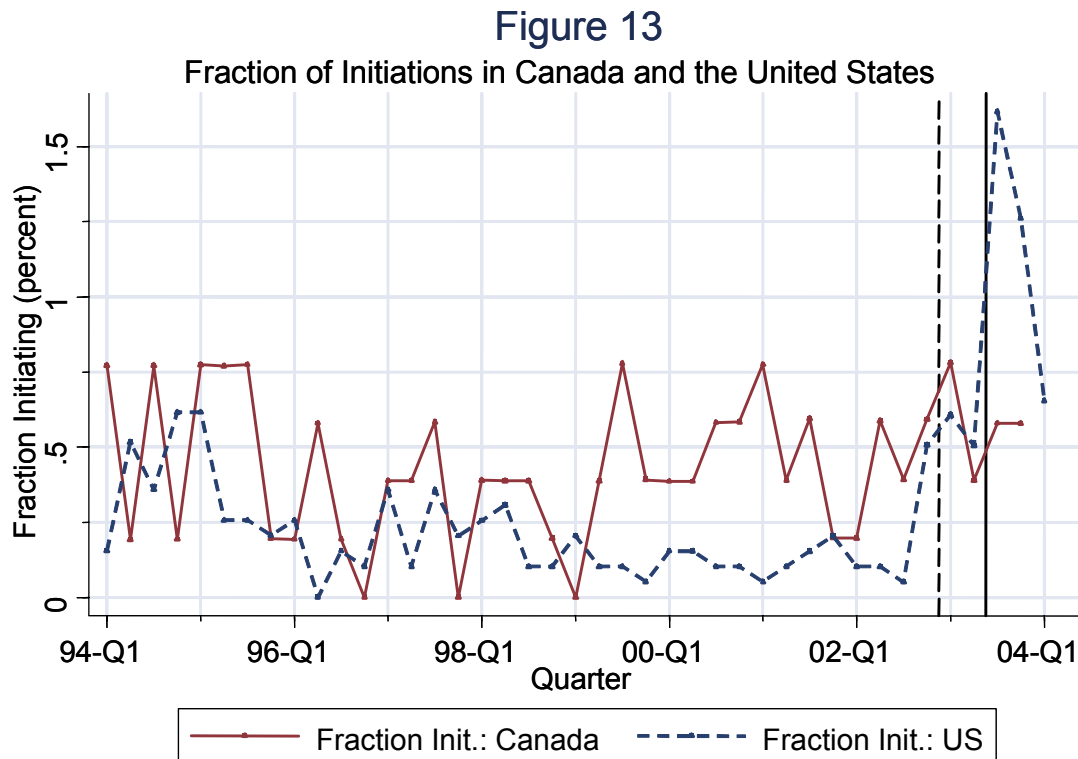


Figure 12b



The sample consists of those firms in the constant number of firms sample that did not acquire another company in previous quarter. Panel A depicts the amounts (in real 2004 dollars) of regular dividends initiated in each quarter and the change in regular dividends on the intensive margin for firms paying regular dividends both in the current and previous quarter (initiations and terminations are excluded from this series).

Panel B depicts the cumulated (from 1990-Q1) amounts of regular dividend initiations (integral of the initiation graph in Panel A) and the amounts of special dividends on the left scale. It also shows the cumulated amounts (from 1990-Q1) of regular dividend intensive changes on the right scale (integral of the change in intensive margin dividends in Panel A).



This figure depicts the fraction of firms initiating dividend payments in Canada and the United States. For Canada, the sample consists of Compustat Canada firms which are non financial, non utility, and incorporated in Canada in the last quarter and which remain in the sample from 1994-Q1 and 2004-Q2. For the United States, the data sample consists of CRSP firms which are non financial, non utility, and non foreign in the last quarter and which remain in the sample from 1994-Q1 and 2004-Q2. Initiation of dividends is defined as in Figure 2.

Figure 14a

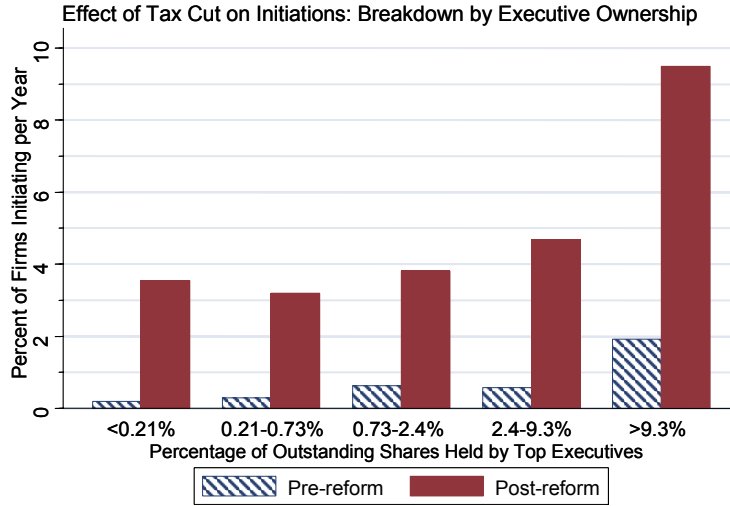
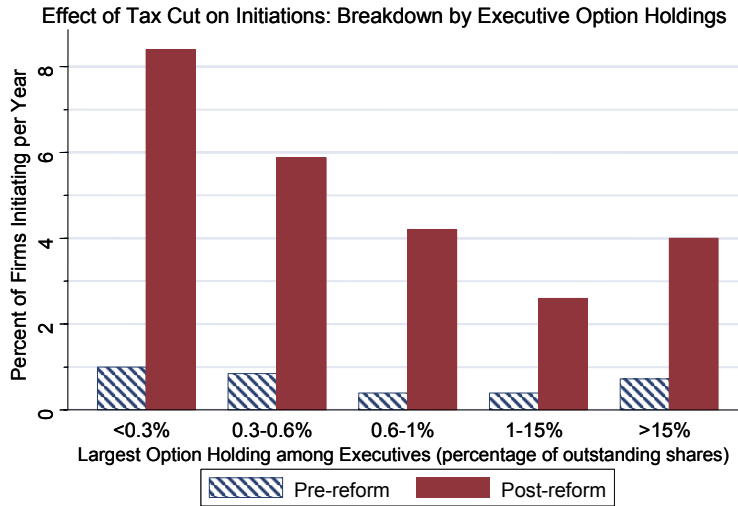


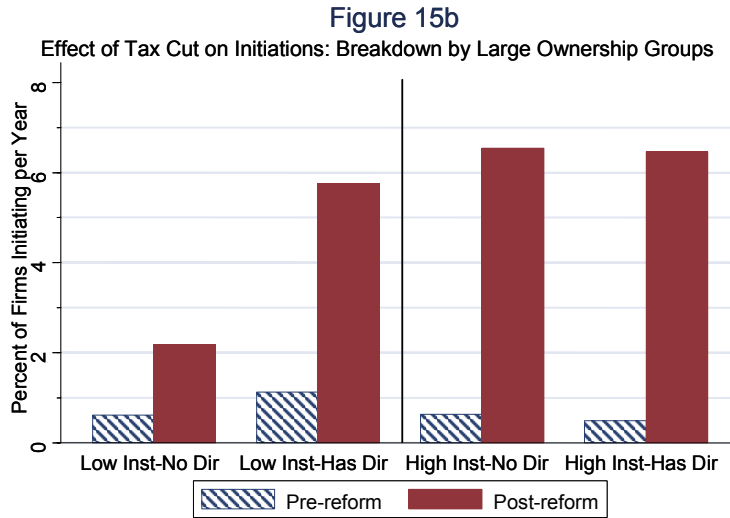
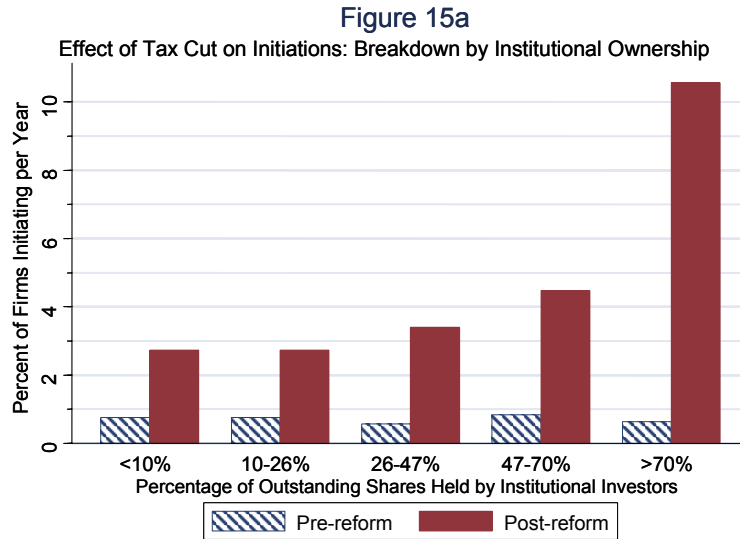
Figure 14b



In both panels, the sample consists of all firms present in CRSP in each quarter from 1998-Q1 to 2004-Q2. All firms-quarters (i, t) for which firm i paid regular dividends in any of the previous four quarters $(t - 1, t - 2, t - 3, t - 4)$ are discarded from the sample (to focus only on firms not paying dividends previously).

Panel A depicts the percentage of firms initiating dividends at an annualized rate pre-reform (from 1998-Q1 to 2002-Q4) and post-reform (from 2003-Q1 to 2004-Q2) by quintiles of executive ownership. Executive ownership is defined by the share of the company owned by the executive with the largest share ownership. Executive share ownership is obtained from Execucomp data or directly collected from SEC proxy filings, as described in the appendix. The horizontal axis shows, for each quintile, the percentage range of shares owned by the largest executive owner.

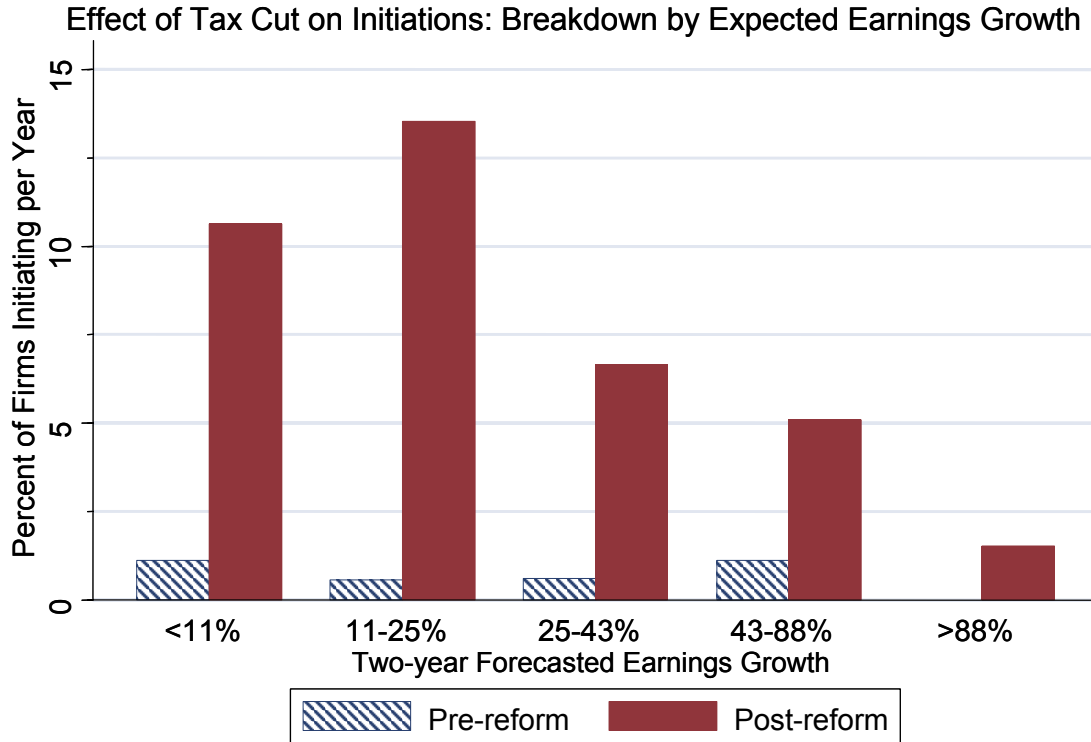
Panel B depicts the percentage of firms initiating dividends (as in Panel A) by analogous quintiles of executive option holding. Executive option holding is defined by the fraction of shares of the company owned in the form of unexercisable stock-options (options which have been granted but are not yet vested and hence cannot yet be exercised) by the executive who has the largest unexercisable options holdings.



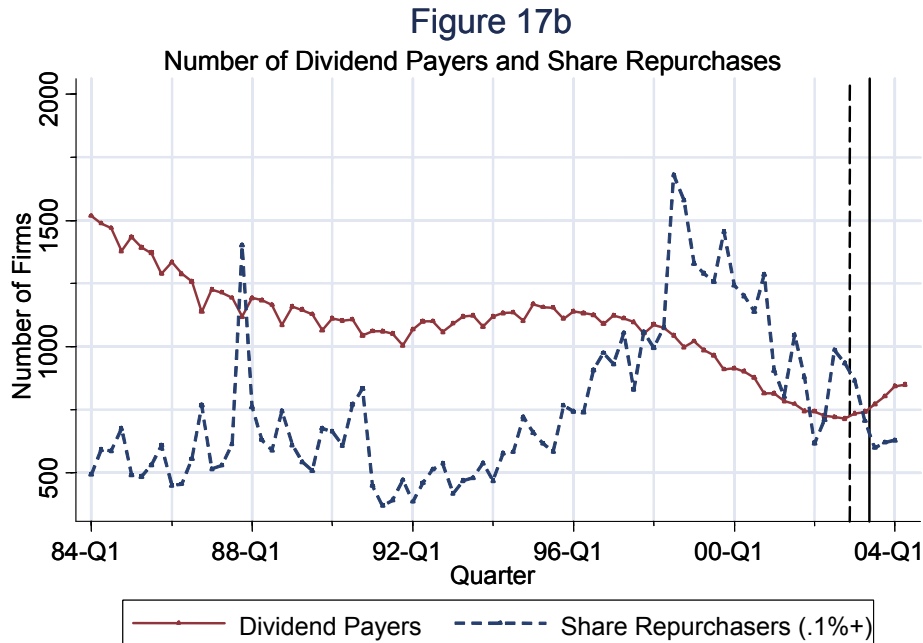
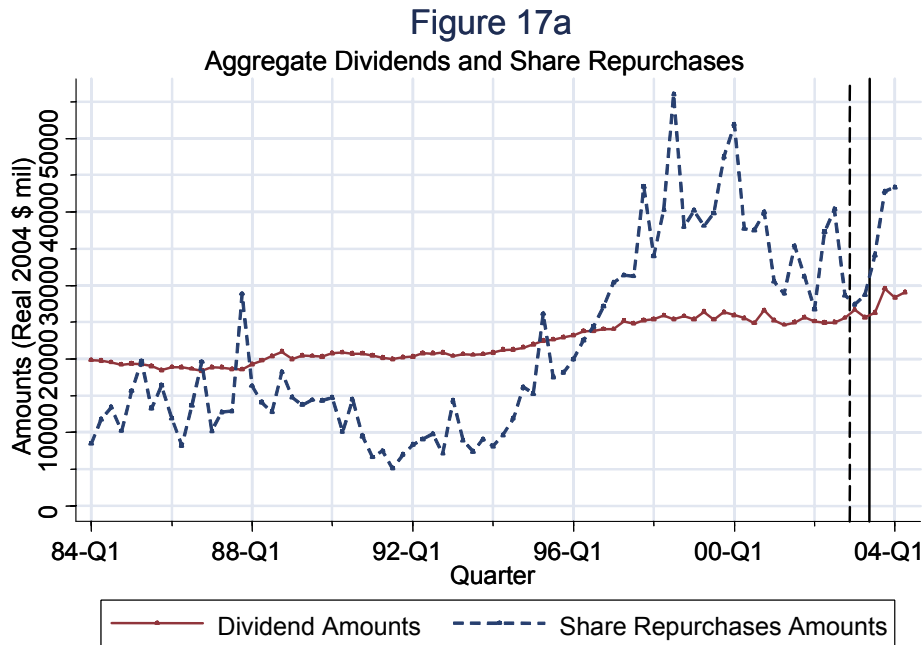
For both panels, the sample is the same as in Figure 14. Panel A depicts the percentage of firms initiating dividends at an annualized rate pre-reform (from 1998-Q1 to 2002-Q4) and post-reform (from 2003-Q1 to 2004-Q2) by quintiles of institutional share ownership. Institutional share ownership (from the Thomson financial database) is defined as the fraction of the firm owned by institutions such as mutual funds. The horizontal axis depicts, for each quintile, the percentage range of institutional share ownership.

Panel B breaks down the initiation rates by institutional ownership and large-shareholding independent directors. The “low inst” category consists of all firms with below-median institutional shareholding during sample period, and the “high inst” category consists of the rest. The “No Dir” category contains firms that do not have a large-shareholding independent director on their board; the “Has Dir” category contains the rest of the firms. The figure shows pre- and post-reform initiation rates for the four categories of firms across these two dimensions. Large-shareholding independent directors are defined as individuals on the board of directors who own at least 5% of the company and who are not officers. Data on large shareholders is obtained from the Dlugosz, Fahlenbrach, Gompers, and Metrick (2004) database and also supplemented by data from SEC proxy statements as described in the appendix.

Figure 16



This figure depicts the percentage of firms initiating dividends at an annualized rate pre-reform (from 1998-Q1 to 2002-Q4) and post-reform (from 2003-Q1 to 2004-Q2) by quintiles of expected earnings growth. The sample is the same as in Figures 14. Expected earnings growth is defined using I/B/E/S data on analysts' earnings forecasts as follows. We first compute the expected change in earnings per share as the mean earnings per share forecast for a two year forecast period minus the actual earnings per share in the current year. We then multiply this figure by the total number of shares outstanding and divide by total assets to arrive at a normalized measure of earnings growth per dollar of assets. The five quintiles of earnings growth are defined over the sample of firm-quarter pairs (therefore, the quintiles are not constant overtime). The horizontal axis depicts, for each quintile, the percentage range of earnings growth forecast.



Panel A shows total regular dividend payments and total share repurchases (in real 2004-Q1 dollars). For regular dividends, the sample consists of all firm-quarters in the CRSP database which are non financial, non utility, and non foreign in their last quarter (core sample). For share repurchases, the sample is same as above but with the additional requirement that the firm appears in the quarterly compustat database and that the compustat variable share repurchase (item data93 in quarterly file: purchases of common and preferred stock) exists.

Panel B depicts the total number of firms making regular dividend payments and total number of firms repurchasing at least 0.1% of their shares from 1984-Q1 to 2004-Q2. The sample is the same as in Panel A.

Figure 18a

Fraction of Dividend Payers and Share Repurchases (High Ownership Sample)

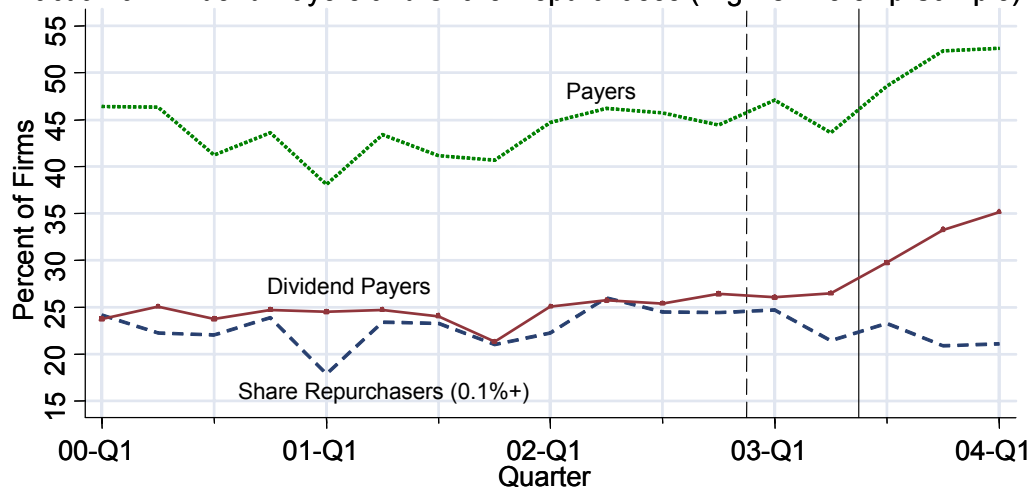
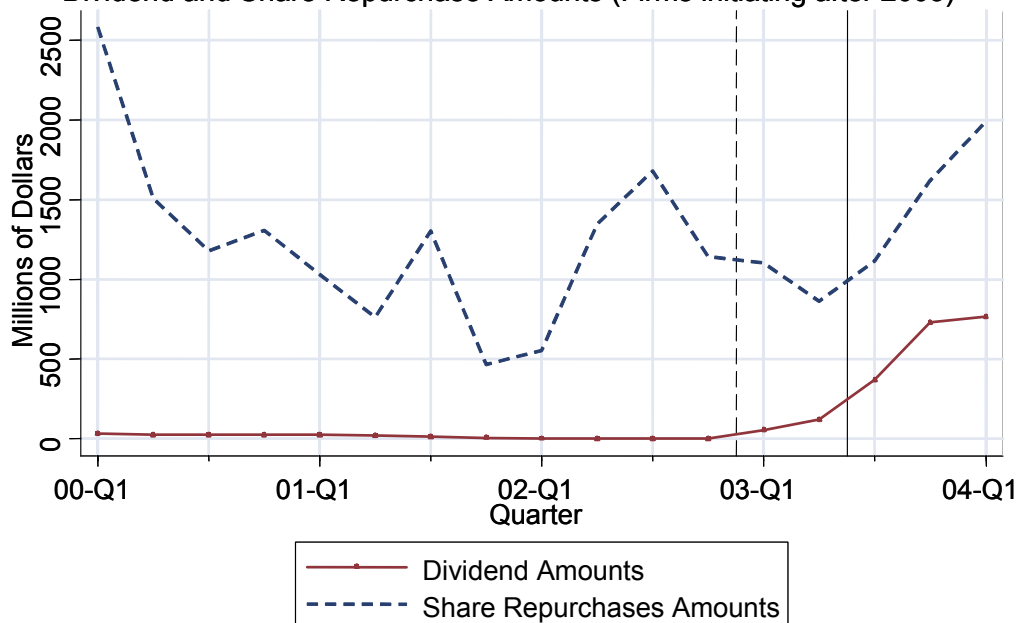


Figure 18b

Dividend and Share Repurchase Amounts (Firms initiating after 2003)



Panel A depicts the fraction of regular dividend payers and the fractions of firms either paying regular dividends or repurchasing at least 0.1% of their shares for each quarter from 1998-Q1 to 2004-Q1. The sample consists of all firms in the core sample that are alive in all quarters from 1998-Q1 to 2004-Q1 and have one or more top executives who own at least 20% of their company's shares.

Panel B depicts the amount of regular dividends paid and the amount of share repurchases for the set of firms in the core sample who initiate regular dividend payments after the 2003 reform (between 2003-Q1 to 2004-Q2), and which have Compustat data on share repurchases. Microsoft is excluded from the sample in order to obtain smoother series that are not driven by an outlier.

Table 1
Summary Statistics

Variables	Core Sample (All Firms in CRSP)		Constant Number of Firms Sample (Top 3,807 firms)	
	Mean	St. Dev.	Mean	St. Dev.
Average Regular Dividends	4.52	40.44	5.81	45.78
Average Special Dividends	0.10	10.36	0.13	11.74
Average Share Repurchase	5.32	64.72	6.88	73.52
Fraction paying regular divs	22.68%	41.88%	28.34%	45.07%
Fraction paying special divs	0.59%	7.63%	0.67%	8.17%
Fraction Initiations	0.24%	4.91%	0.29%	5.38%
Fraction Terminations	0.46%	6.77%	0.46%	6.79%
Fraction Increases (20%+)	1.15%	10.65%	1.43%	11.88%
Fraction Decreases (20%+)	0.17%	4.17%	0.21%	4.62%
Fraction Repurchasing (0.1%+)	15.09%	35.80%	16.72%	37.32%
Average Market Capitalization	1125.82	8285.92	1444.76	9373.65
Assets	1148.76	8176.02	1456.16	9212.09
Cash and liquid assets	80.01	568.36	101.15	640.29
After-Tax Profits	9.89	161.13	12.91	181.11
# firm-quarter observations	<u>CRSP</u> 440,772	<u>CRSP-COMP</u> 396,026	<u>CRSP</u> 342,630	<u>CRSP-COMP</u> 310,328

NOTE-Core sample includes all firm-quarters in CRSP that are non utility, non financial and non foreign in their last quarter from 1982-Q1 to 2004-Q2. Constant number of firms sample keeps only the top 3,807 firms ranked by market capitalization. All dollar amounts are in real 2004-Q1 millions of dollars. All variables are from CRSP sample except assets, cash, share repurchases, and profits, which are from COMPUSTAT.

Table 2**Post Reform Initiations among Top 100 Largest Companies**

(1)	(2)	(3)	(4)	(5)	(6)
Company Name	Industry	Market Cap Rank in 2004- Q2	Market Cap. at Initiation (\$mil)	Dividends in first year (\$mil)	Annual Dividend Yield
1. Microsoft	Software	2	260,047	2610	1.00%
2. Viacom	Entertainment	28	67,162	392	0.58%
3. Qualcomm	Wireless Equipment	31	28,962	192	0.66%
4. Clear Channel Com.	Radio, Television	73	26,769	244	0.91%
5. Guidant	Medical Equipment	94	13,144	112	0.85%
6. Costco Wholesale	Discount Stores	96	17,728	182	1.03%
7. Analog Devices	Semiconductors	98	17,315	74	0.43%
8. Best Buy	Electronic Stores	100	18,764	196	1.04%
All dividend payers among top 100 companies					1.98%

NOTE-The table lists all the companies among the top 100 (ranked by market capitalization in 2004-Q2) in the CRSP non financial, non utility, non foreign data which have initiated regular dividend payments from 2003-Q1 to 2004-Q2.

Annual dividend yield and annual dividends based on payments made during first four quarters after initiation. (payments are extrapolated based on current payments if less than 4 quarters of data are available after initiation). Average yield among top 100 companies is not weighted by market capitalization.

Table 3
Summary of Results

	Pre-reform (01-Q3 - 02-Q4) (1)	Post-reform (03-Q1- 04-Q2) (2)	Change (3)	Change with Controls (4)
# Regular dividend Initiations per quarter	4.33 (0.85)	29.00 (2.19)	24.67 (2.32)	26.82 (2.87)
# Regular dividend increases (>20%)	19.00 (1.78)	49.83 (2.86)	30.83 (3.22)	29.66 (3.83)
# Special dividend payers	6.83 (1.07)	17.83 (1.72)	11.00 (2.03)	9.50 (2.30)
Change in regular dividends (per quarter) due to initiations (real \$ mil)	13.22 (4.83)	205.39 (48.35)	192.17 (48.51)	232.39 (66.34)
Change in regular dividends (per quarter) due to intensive margin (real \$ mil)	126.65 (99.26)	739.48 (127.43)	612.82 (167.81)	560.70 (217.01)
Special dividend amounts (per quarter) (real \$ mil)	112.50 (45.98)	729.94 (151.40)	617.44 (203.48)	371.21 (233.99)

This table reports the average value pre-reform (6 quarters from 2001-Q3 to 2002-Q4) and post-reform (from 2003-Q1 to 2004-Q2), as well as the change post-pre reform (with no controls and with controls) for a number of variables of interest. The change with controls is obtained from an OLS regression including assets, levels and eight lags of profits/assets, cash/assets, mktcap/assets, and SIC dummies, as in specification (2) in the text. Standard errors are reported in parenthesis below the estimates. The sample is the top 3,807 firms in CRSP (ranked by market capitalization) in each quarter (excluding utilities, financial, and foreign). The number of regular dividend initiations is defined as firms starting to pay regular dividends after not having paid for 4 quarters (6 quarters if annual payer). The number of regular dividend increases is defined as those firms increasing regular dividend payments by at least 20% in nominal terms in quarter t (relative to the previous dividend payment). Dividend initiations are not counted as intensive increases or decreases. Change in regular dividends due to initiations defined as the dividend amount (normalized to quarterly) for regular dividend initiators. Change in regular dividends due to intensive margin defined as the change in dividend amount (normalized to quarter and relative to previous regular dividend payment) for firms paying dividends.

Table 4
Initiation Rates by Tax Status of Largest Institutional Holder

	Control (Not Affected)	Treatment (Affected)	Difference bet. Groups
	(1)	(2)	(3)
Fraction payers	31.23%	27.24%	-3.99%
Pre-reform (1998-Q1 to 2002-Q4)	1.10 (0.60)	0.83 (0.16)	-0.27 (0.64)
# obs.	1,822	27,977	
Post-reform (2003-Q1 to 2004-Q2)	1.02 (1.32)	5.11 (0.28)	4.09 (2.28)
# obs.	394	8,065	
Difference: Post-Pre	-0.08 (1.48)	4.28 (0.32)	4.36 (1.48)

NOTE-The sample is all CRSP firms present in all quarters from 1998-Q1 to 2004-Q2 (excluding utilities, financial, and foreign).

Control group (not affected) is defined as the firms whose largest institutional owner is not affected by the reform (either a pension fund, an insurance company, a nonprofit organization, a non-financial corporation, or a government agency).

The treatment group (affected) are all other firms.

The table displays in row 1 the fraction of regular dividend payers among the two groups (average over the period).

The table displays the annual regular dividend initiation rate (among non payers) per quarter before and after the reform for the two groups as well as the difference between groups and before and after the reform. Standard errors are in parenthesis.

Table 5a
Interaction of Executive Incentives
Post-Reform Annual Initiation Rate by Share and Option Holding Groups

		Largest Shareholding Among Top Executives		
		< 0.5%	0.5-3.3%	> 3.3%
Largest Unexercisable Option Holding Among Executives	< 0.5%	5.00	3.31	11.42
	0.5-1.2%	4.95	2.76	7.04
	> 1.2%	1.58	4.65	6.38

Table 5b
Interaction between Agents and Principals
Post-Reform Annual Initiation Rate by Executive and Institutional Shareholding

		Percentage of Shares Held by Institutional Investors		
		< 35%	35-63%	> 63%
Largest Shareholding Among Top Executives	<0.5%	1.21	1.24	6.66
	0.5-3.3%	1.35	0.30	9.34
	>3.3%	7.12	6.19	10.94

The tables report the annual dividend initiation rate after the reform (from 2003-Q1 to 2004-Q2) for firms alive from 1998-Q1 to 2004-Q2 in various groups. Groups are defined by size of option holdings and executive ownership in Panel A and executive ownership and institutional ownership in Panel B. See Figures 14 and 15 for description of sample and variable definitions.

Table A1
Aggregate Time Series for Core Sample

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Quarter	Poterba (2004) tax pref.	CPI	Regular dividends (\$ mn)	Special dividends (\$ mn)	Share repurchases (\$ mn)	Market Cap. (\$ bn)	# firms	# regular dividend payers	# special payers	# initiations	# terminations	# intensive increase (20%+)	# intensive decrease (20%+)	# share repurch. (0.1%+)	# entrants paying dividends	# leavers who paid dividends	cumulative net change in payers	# deliberate dividend payers	Reg. Div. Initiations (\$ mn)	Intensive changes in dividends (\$mn)
1981-Q3	0.748	0.535	19,980	63		1,849	4,117	1,703	22	5		110	14					1,703	2	369
1981-Q4	0.748	0.543	19,601	217		1,804	4,191	1,499	39	5	38	71	13			7	-7	1,506	3	465
1982-Q1	0.800	0.550	20,131	265		1,638	4,190	1,676	91	20	44	109	22		2	10	-15	1,691	29	413
1982-Q2	0.800	0.556	19,748	20		1,579	4,177	1,605	26	9	46	50	31		0	10	-25	1,630	7	118
1982-Q3	0.800	0.564	19,243	11		1,577	4,158	1,570	19	6	43	45	41		0	11	-36	1,606	6	98
1982-Q4	0.800	0.571	18,766	34		1,900	4,185	1,452	36	4	40	56	52		3	9	-42	1,494	2	-103
1983-Q1	0.811	0.576	18,793	190		2,096	4,206	1,540	56	16	37	86	56		0	8	-50	1,590	32	119
1983-Q2	0.811	0.581	20,037	725		2,365	4,311	1,513	34	5	21	99	26		2	10	-58	1,571	11	442
1983-Q3	0.811	0.588	17,974	12		2,357	4,470	1,426	16	16	36	93	11		0	5	-63	1,489	117	307
1983-Q4	0.811	0.592	19,181	90		2,338	4,629	1,415	48	13	21	106	14		2	9	-70	1,485	9	589
1984-Q1	0.821	0.599	19,853	207	8,435	2,245	4,728	1,518	55	18	21	120	13	331	3	2	-69	1,587	61	472
1984-Q2	0.821	0.605	19,734	22	11,761	2,104	4,770	1,488	25	13	21	76	8	464	0	15	-84	1,572	77	-972
1984-Q3	0.821	0.609	19,520	10	13,405	2,138	4,783	1,469	26	17	35	78	14	478	3	11	-92	1,561	35	329
1984-Q4	0.821	0.613	19,200	96	10,204	2,127	4,775	1,378	52	14	39	73	11	545	1	8	-99	1,477	56	64
1985-Q1	0.824	0.620	19,351	382		2,285	4,725	1,433	73	12	39	80	11	402	0	7	-106	1,539	72	230
1985-Q2	0.824	0.624	19,265	21	19,640	2,316	4,712	1,392	30	8	29	63	13	393	1	8	-113	1,505	9	403
1985-Q3	0.824	0.628	19,034	15	13,237	2,294	4,702	1,370	21	8	30	51	14	427	4	12	-121	1,491	5	52
1985-Q4	0.824	0.633	18,446	68	16,350	2,400	4,709	1,288	48	12	34	51	15	483	0	8	-129	1,417	7	109
1986-Q1	0.826	0.638	18,874	191	11,878	2,637	4,677	1,334	61	9	36	87	19	367	1	10	-138	1,472	113	369
1986-Q2	0.826	0.638	18,847	943		2,887	4,771	1,287	30	8	49	63	21	365	4	6	-140	1,427	7	297
1986-Q3	0.826	0.643	18,653	29	13,635	2,753	4,828	1,257	26	8	34	49	23	440	1	5	-144	1,401	7	227
1986-Q4	0.826	0.648	18,393	154	19,598	2,774	4,879	1,138	47	5	34	50	15	607	1	11	-154	1,292	16	200
1987-Q1	0.861	0.655	18,871	72	10,146	3,200	4,863	1,225	56	19	36	81	16	419	2	20	-172	1,397	99	387
1987-Q2	0.861	0.661	18,830	2,354	12,734	3,334	4,917	1,214	37	19	24	56	8	432	3	8	-177	1,391	45	484
1987-Q3	0.861	0.667	18,627	1,070	12,857	3,610	5,021	1,193	28	12	25	64	12	493	1	9	-185	1,378	36	323
1987-Q4	0.861	0.673	18,573	3,339	28,852	2,601	4,969	1,118	41	18	26	58	11	1,143	0	8	-193	1,311	48	335
1988-Q1	0.874	0.679	19,254	4,261	16,329	2,786	4,898	1,192	73	12	27	81	13	628	1	7	-199	1,391	16	488
1988-Q2	0.874	0.686	19,765	207	14,044	2,818	4,863	1,183	48	26	33	56	5	515	0	7	-206	1,389	426	744
1988-Q3	0.874	0.694	19,540	2,067	12,764	2,762	4,806	1,165	38	18	28	83	10	478	1	13	-218	1,383	16	259
1988-Q4	0.874	0.701	19,343	3,240	18,207	2,752	4,752	1,085	66	14	25	49	11	606	3	9	-224	1,309	14	274
1989-Q1	0.873	0.710	19,938	2,735	14,761	2,832	4,677	1,157	70	19	20	98	8	504	0	12	-236	1,393	13	760
1989-Q2	0.873	0.719	20,431	2,535	13,726	3,003	4,625	1,145	46	21	19	78	10	447	0	7	-243	1,388	44	713
1989-Q3	0.873	0.723	20,396	3,174	14,423	3,224	4,576	1,128	48	11	25	67	9	417	2	9	-250	1,378	26	159
1989-Q4	0.873	0.729	20,313	991	14,314	3,145	4,549	1,064	67	17	29	42	10	552	0	3	-253	1,317	19	428
1990-Q1	0.876	0.740	20,753	971	14,710	2,966	4,519	1,111	57	9	26	70	6	551	1	7	-259	1,370	6	653
1990-Q2	0.876	0.748	20,886	1,103	10,048	3,114	4,531	1,101	45	13	23	57	7	502	2	4	-261	1,362	21	505
1990-Q3	0.876	0.758	20,671	787	14,454	2,854	4,498	1,107	31	16	10	36	11	642	1	2	-262	1,369	20	174
1990-Q4	0.876	0.767	20,732	370	9,457	2,691	4,442	1,043	49	5	22	35	13	701	3	5	-264	1,307	1	404
1991-Q1	0.871	0.773	20,450	435	6,614	3,096	4,408	1,061	43	13	29	30	18	378	1	3	-266	1,327	28	-58
1991-Q2	0.871	0.777	20,151	66	7,478	3,256	4,455	1,060	20	10	19	42	25	307	0	1	-267	1,327	6	-119
1991-Q3	0.871	0.783	19,993	417	5,100	3,372	4,471	1,051	27	7	18	28	21	323	1	2	-268	1,319	5	169
1991-Q4	0.871	0.789	20,205	198	6,940	3,444	4,515	1,004	31	6	11	37	21	389	0	3	-271	1,275	6	306
1992-Q1	0.871	0.795	20,281	242	8,302	3,650	4,579	1,068	31	26	16	40	19	325	1	2	-272	1,340	42	208
1992-Q2	0.871	0.800	20,766	42	9,032	3,602	4,643	1,099	15	19	12	55	18	386	2	0	-270	1,369	36	512
1992-Q3	0.871	0.806	20,739	315	9,781	3,601	4,599	1,100	14	12	13	42	21	431	1	2	-271	1,371	31	174
1992-Q4	0.871	0.811	20,838	199	7,082	3,744	4,620	1,058	33	10	21	32	15	452	0	0	-271	1,329	40	159
1993-Q1	0.860	0.815	20,410	179	14,313	3,859	4,692	1,091	22	9	17	67	25	361	1	0	-270	1,361	5	-158
1993-Q2	0.860	0.820	20,643	1,171	8,869	3,889	4,775	1,118	21	20	14	48	13	400	0	4	-274	1,392	18	308
1993-Q3	0.860	0.823	20,568	702	7,388	4,007	4,890	1,122	10	14	15	47	19	406	5	1	-270	1,392	13	-23
1993-Q4	0.860	0.828	20,647	651	9,047	4,208	5,061	1,078	26	6	21	36	17	450	2	1	-269	1,347	10	215
1994-Q1	0.862	0.831	20,864	98	8,100	4,278	5,165	1,118	19	9	19	63	9	407	0	2	-271	1,389	4	368
1994-Q2	0.862	0.835	21,226	22	9,596	4,090	5,275	1,132	12	14	14	50	5	497	0	0	-271	1,403	9	465
1994-Q3	0.862	0.843	21,263	9	11,881	4,236	5,316	1,135	12	14	9	50	6	503	1	2	-272	1,407	8	284
1994-Q4	0.862	0.847	21,545	120	16,141	4,252	5,369	1,101	21	18	14	44	5	617	0	4	-276	1,377	13	462

1995-Q1	0.858	0.851	21,982	242	15,275	4,423	5,382	1,168	26	26	14	68	11	575	1	0	-275	1,443	54	500
1995-Q2	0.858	0.855	22,459	139	26,157	4,812	5,431	1,156	17	16	21	64	11	525	0	1	-276	1,432	161	574
1995-Q3	0.858	0.859	22,625	83	17,493	5,231	5,464	1,154	15	9	17	53	9	494	1	5	-280	1,434	22	402
1995-Q4	0.858	0.863	22,930	180	18,130	5,499	5,570	1,110	25	8	16	53	10	624	1	2	-281	1,391	12	425
1996-Q1	0.859	0.868	23,208	443	19,952	5,830	5,644	1,139	27	11	22	69	10	617	2	5	-284	1,423	57	555
1996-Q2	0.859	0.874	23,774	71	22,517	6,263	5,784	1,132	16	8	19	49	12	608	1	8	-291	1,423	9	639
1996-Q3	0.859	0.877	23,813	73	24,341	6,075	5,876	1,125	13	4	13	41	8	737	2	3	-292	1,417	2	285
1996-Q4	0.859	0.883	24,072	141	27,126	6,591	5,985	1,089	23	8	17	44	5	774	4	9	-297	1,386	15	455
1997-Q1	0.846	0.887	24,080	202	30,385	6,821	6,007	1,122	25	9	14	66	11	779	4	9	-302	1,424	4	300
1997-Q2	0.846	0.889	25,131	99	31,387	7,338	6,021	1,112	19	5	11	48	12	865	0	7	-309	1,421	2	858
1997-Q3	0.846	0.891	24,798	16	31,258	8,262	6,060	1,097	8	13	17	41	8	664	1	6	-314	1,411	27	466
1997-Q4	0.846	0.894	25,252	199	43,447	8,256	6,076	1,052	16	7	18	52	9	820	4	12	-322	1,374	7	523
1998-Q1	0.842	0.895	25,370	193	34,032	9,042	6,015	1,087	17	9	12	52	11	813	0	9	-331	1,418	34	414
1998-Q2	0.842	0.896	25,920	32	40,261	9,659	5,996	1,074	14	10	22	44	8	851	2	3	-332	1,406	7	689
1998-Q3	0.842	0.899	25,416	27	56,033	8,819	5,910	1,044	6	2	20	40	10	1,341	0	7	-339	1,383	1	128
1998-Q4	0.842	0.903	25,834	131	38,026	9,950	5,763	997	9	2	18	33	13	1,253	0	6	-345	1,342	8	534
1999-Q1	0.834	0.905	25,377	176	40,207	10,952	5,614	1,021	27	6	18	31	15	1,102	1	6	-350	1,371	17	507
1999-Q2	0.834	0.911	26,412	218	38,110	11,566	5,544	986	20	5	29	29	14	1,029	0	14	-364	1,350	8	390
1999-Q3	0.834	0.916	25,360	265	39,856	11,509	5,519	964	12	3	22	22	9	987	3	6	-367	1,331	9	282
1999-Q4	0.834	0.921	26,371	163	47,491	13,089	5,475	910	18	6	23	21	14	1,120	1	17	-383	1,293	4	115
2000-Q1	0.847	0.929	25,951	277	51,913	14,344	5,431	914	21	6	27	37	15	1,006	0	12	-395	1,309	17	1,312
2000-Q2	0.847	0.934	25,566	146	37,725	13,978	5,413	901	11	8	17	22	7	950	1	3	-397	1,298	28	299
2000-Q3	0.847	0.938	24,880	294	37,517	14,128	5,408	877	11	2	21	23	9	892	0	8	-405	1,282	0	-77
2000-Q4	0.847	0.942	26,588	35	39,967	12,305	5,306	815	11	3	26	16	7	1,004	2	16	-419	1,234	1	720
2001-Q1	0.852	0.950	25,231	174	30,538	11,089	5,125	814	12	2	33	28	17	746	0	4	-423	1,237	2	80
2001-Q2	0.852	0.956	24,634	213	28,861	10,891	4,968	784	12	4	18	16	17	646	1	6	-428	1,212	2	148
2001-Q3	0.852	0.957	24,974	161	35,401	9,778	4,772	773	8	3	18	22	13	845	1	4	-431	1,204	2	324
2001-Q4	0.852	0.959	25,630	17	31,227	9,727	4,629	744	7	5	28	16	23	702	1	4	-434	1,178	22	137
2002-Q1	0.863	0.961	25,111	58	26,747	9,849	4,497	743	14	2	19	18	20	512	0	4	-438	1,181	2	136
2002-Q2	0.863	0.967	24,916	290	37,256	9,015	4,407	726	13	3	9	25	5	584	1	4	-441	1,167	2	353
2002-Q3	0.863	0.972	24,965	31	40,367	7,473	4,300	721	9	2	6	19	7	818	0	2	-443	1,164	16	113
2002-Q4	0.863	0.976	25,604	214	28,669	7,692	4,207	714	6	14	8	16	12	766	0	3	-446	1,160	38	303
2003-Q1	0.930	0.983	26,700	149	27,402	7,190	4,092	735	10	14	7	27	4	734	0	4	-450	1,185	281	394
2003-Q2	0.930	0.985	25,629	225	28,699	8,086	3,975	741	9	17	5	28	3	594	1	1	-450	1,191	66	779
2003-Q3	0.930	0.989	26,269	874	34,071	8,646	3,902	772	24	46	9	40	7	500	1	0	-449	1,221	213	338
2003-Q4	0.930	0.992	29,514	915	42,790	9,396	3,861	803	21	40	8	61	6	501	0	2	-451	1,254	379	1,036
2004-Q1	0.930	1.000	28,357	826	43,363	9,802	3,812	843	26	33	4	77	6	485	1	3	-453	1,296	139	833
2004-Q2	0.930	1.008	29,094	1,392		9,763	3,807	848	20	24	11	67	2		0	1	-454	1,302	158	1,136

Notes: Data sample consists all CRSP firms which are non financial, non utilities, and non foreign in their last quarter. For share repurchase variables, the firms must also have share repurchase information in COMPUSTAT (data93)

Col. (2) is the tax preference parameter from Poterba (2004). It is defined as the average of $(1-tdiv)/(1-tcg)$ where $tdiv$ is marginal tax rate on dividend income and tcg is the marginal tax rate on capital gains.

Col. (3) is the Consumer Price Index (base 1 in 2004-Q1). All amounts are expressed in real 2004-Q1 dollars. Col. (4) is the total amount of regular dividends. Col. (5) is the total amount of special dividends.

Col. (6) is the total amount of share repurchases computed with data93 item in the COMPUSTAT quarterly data (purchases of common and preferred stock). Col. (7) is market capitalization (in \$bn).

Col. (8) is the number of firms, col. (9) is the number of regular dividend payers, col. (10) is the number of special dividend payers.

Col. (11) is the number of regular dividend initiations defined as starting to pay regular dividends after not having paid for 4 quarters (6 quarters if annual payer).

Col. (12) is the number of regular dividend terminations defined as stopping regular dividends payments (see text for details).

Col. (13) (resp. (14)) are the number of intensive reg. div. increases (resp. decreases) by at least 20% in real terms in quarter t (relative to quarters $t-1$ and $t-4$). Dividend initiations are not counted as intensive increases or decreases.

Col. (15) is the number of firms repurchasing at least 0.1% of their shares in the quarter.

Col. (16) is the number of firms which enter the core sample and are paying regular dividends. Col. (17) is the number of firms leaving the core sample and which were regular dividend payers.

Col. (18) is the cumulated difference between columns (16) and (17). Column (19) is col. (9) minus col. (18): it captures the number of payers controlling for entry and exit effects.

Col. (20) is the amounts of regular dividend initiations defined as starting to pay regular dividends after not having paid for 4 quarters (6 quarters if annual payer).

Col. (21) is the intensive change in regular dividend payments relative to previous payment (in \$Mn) for firms present in the data and paying dividends currently and in previous quarter (initiations and terminations excluded).

The solid line marks the time at which the tax reform was enacted (end of May 2003) and the dashed line the time at which the tax reform was retrospectively applied (January 1st, 2003)

Table A2
Aggregate Time Series for Constant Number of Firms Sample

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Quarter	Poterba (2004) tax pref.	CPI	Regular dividends (\$ mn)	Special dividends (\$ mn)	Share repurchas es (\$ mn)	Market Capit. (\$ bn)	# firms	# regular dividend payers	# special payers	# initiations	# terminations	# intensive increase (20%+)	# intensive decrease (20%+)	# share repurch. (0.1%+)	# entrants paying dividends	# leavers who paid dividends	cumulative net change in payers	# deliberate dividend payers	Reg. Div. Initiations (\$ mn)	Intensive changes in dividends (\$mn)
1981-Q3	0.748	0.535	19,951	63		1,849	3,807	1,695	21	5		109	13					1,695	2	369
1981-Q4	0.748	0.543	19,595	216		1,803	3,807	1,489	37	5	29	70	13			16	-15	1,504	3	465
1982-Q1	0.800	0.550	20,129	261		1,637	3,807	1,664	90	19	40	107	21		4	14	-25	1,689	29	412
1982-Q2	0.800	0.556	19,746	20		1,578	3,807	1,596	23	8	44	50	31		2	13	-36	1,632	7	118
1982-Q3	0.800	0.564	19,240	11		1,576	3,807	1,566	19	6	37	44	41		3	17	-50	1,616	6	98
1982-Q4	0.800	0.571	18,746	34		1,900	3,807	1,447	36	4	39	55	51		5	12	-57	1,504	2	-103
1983-Q1	0.811	0.576	18,776	190		2,095	3,807	1,532	56	16	30	86	55		3	17	-71	1,603	32	119
1983-Q2	0.811	0.581	20,036	725		2,364	3,807	1,505	34	5	18	99	26		2	12	-81	1,586	11	442
1983-Q3	0.811	0.588	17,973	12		2,354	3,807	1,417	14	15	30	93	11		1	16	-96	1,513	117	307
1983-Q4	0.811	0.592	19,180	87		2,333	3,807	1,396	43	12	16	105	13		2	17	-111	1,507	9	589
1984-Q1	0.821	0.599	19,843	207	8,432	2,240	3,807	1,491	52	17	16	117	12	307	4	13	-120	1,611	61	472
1984-Q2	0.821	0.605	19,728	22	11,749	2,099	3,807	1,463	23	12	16	76	8	420	2	18	-136	1,599	77	-972
1984-Q3	0.821	0.609	19,514	9		2,133	3,807	1,452	23	14	25	78	14	443	5	19	-150	1,602	35	329
1984-Q4	0.821	0.613	19,196	96	10,194	2,123	3,807	1,356	50	14	29	67	9	491	4	16	-162	1,518	56	64
1985-Q1	0.824	0.620	19,347	381	15,617	2,281	3,807	1,416	69	12	34	80	10	354	5	14	-171	1,587	72	230
1985-Q2	0.824	0.624	19,263	18	19,633	2,313	3,807	1,375	28	7	22	63	12	356	3	14	-182	1,557	9	403
1985-Q3	0.824	0.628	19,031	14	13,226	2,291	3,807	1,360	19	8	30	51	13	387	8	13	-187	1,547	5	52
1985-Q4	0.824	0.633	18,442	66	16,349	2,397	3,807	1,269	45	12	30	51	12	428	0	15	-202	1,471	7	109
1986-Q1	0.826	0.638	18,872	190	11,861	2,633	3,807	1,321	58	9	27	86	19	329	1	15	-216	1,537	113	369
1986-Q2	0.826	0.638	18,846	943	8,167	2,883	3,807	1,275	27	8	40	62	21	329	5	13	-224	1,499	7	297
1986-Q3	0.826	0.643	18,652	28	13,626	2,748	3,807	1,248	21	8	26	49	23	399	2	14	-236	1,484	7	227
1986-Q4	0.826	0.648	18,368	153	19,509	2,769	3,807	1,120	43	5	27	50	13	541	2	24	-258	1,378	16	201
1987-Q1	0.861	0.655	18,854	71	10,127	3,195	3,807	1,208	52	18	26	80	14	362	2	28	-284	1,492	99	386
1987-Q2	0.861	0.661	18,825	2,353	12,726	3,327	3,807	1,194	32	18	19	56	7	381	3	13	-294	1,488	45	484
1987-Q3	0.861	0.667	18,624	1,070	12,835	3,602	3,807	1,179	25	11	19	64	10	441	2	14	-306	1,485	36	323
1987-Q4	0.861	0.673	18,562	3,339	28,770	2,597	3,807	1,105	40	17	18	56	11	1,031	4	15	-317	1,422	48	335
1988-Q1	0.874	0.679	19,253	4,260	16,283	2,781	3,807	1,186	68	12	25	81	12	574	4	9	-322	1,508	16	488
1988-Q2	0.874	0.686	19,764	206	14,044	2,814	3,807	1,170	45	26	27	54	5	456	0	13	-335	1,505	426	743
1988-Q3	0.874	0.694	19,538	2,064	12,756	2,758	3,807	1,159	35	18	24	83	10	434	2	17	-350	1,509	16	259
1988-Q4	0.874	0.701	19,335	3,239	18,201	2,749	3,807	1,074	63	13	17	49	10	557	6	20	-364	1,438	14	274
1989-Q1	0.873	0.710	19,935	2,733	14,740	2,829	3,807	1,155	67	19	15	97	8	459	3	12	-373	1,528	13	760
1989-Q2	0.873	0.719	20,427	2,533	13,726	3,001	3,807	1,142	42	21	17	78	9	417	0	9	-382	1,524	44	713
1989-Q3	0.873	0.723	20,357	3,173	14,424	3,222	3,807	1,127	43	11	19	67	8	392	2	13	-393	1,520	26	199
1989-Q4	0.873	0.729	20,313	991	14,307	3,143	3,807	1,061	64	17	25	42	9	524	0	7	-400	1,461	19	428
1990-Q1	0.876	0.740	20,740	970	14,709	2,965	3,807	1,109	53	9	21	70	6	528	1	13	-412	1,521	6	653
1990-Q2	0.876	0.748	20,886	1,103	9,949	3,112	3,807	1,100	43	13	22	57	7	467	2	4	-414	1,514	21	505
1990-Q3	0.876	0.758	20,670	785	14,452	2,852	3,807	1,105	28	16	9	36	11	615	1	4	-417	1,522	20	174
1990-Q4	0.876	0.767	20,731	368	9,457	2,690	3,807	1,041	48	5	20	35	13	678	3	6	-420	1,461	1	404
1991-Q1	0.871	0.773	20,433	434	6,613	3,095	3,807	1,059	39	13	28	30	17	353	1	3	-422	1,481	28	-58
1991-Q2	0.871	0.777	20,151	66	7,477	3,254	3,807	1,058	19	10	18	41	25	287	0	2	-424	1,482	6	-119
1991-Q3	0.871	0.783	19,993	415	5,098	3,371	3,807	1,046	24	6	15	28	20	296	2	7	-429	1,475	5	169
1991-Q4	0.871	0.789	20,203	198	6,904	3,442	3,807	998	31	5	10	37	21	367	0	5	-434	1,432	6	306
1992-Q1	0.871	0.795	20,281	242	8,301	3,647	3,807	1,060	28	26	15	40	18	296	2	6	-438	1,498	42	208
1992-Q2	0.871	0.800	20,765	42	9,024	3,599	3,807	1,088	14	19	11	55	16	341	2	2	-438	1,526	36	512
1992-Q3	0.871	0.806	20,738	19	9,744	3,598	3,807	1,086	13	11	13	40	21	392	1	5	-442	1,528	31	174
1992-Q4	0.871	0.811	20,836	199	7,099	3,741	3,807	1,042	31	10	14	32	13	411	0	9	-451	1,493	40	159
1993-Q1	0.860	0.815	20,409	178	14,310	3,854	3,807	1,073	20	9	17	67	23	326	2	3	-452	1,525	5	-158
1993-Q2	0.860	0.820	20,640	1,170	8,862	3,882	3,807	1,092	19	20	11	46	11	356	0	12	-464	1,556	18	308
1993-Q3	0.860	0.823	20,564	696	7,375	3,997	3,807	1,088	9	10	11	44	18	346	6	8	-466	1,554	12	-23
1993-Q4	0.860	0.828	20,640	650	9,028	4,194	3,807	1,034	25	6	14	34	13	378	3	20	-483	1,517	10	215
1994-Q1	0.862	0.831	20,856	95	8,084	4,261	3,807	1,064	13	8	15	61	8	342	2	13	-494	1,558	4	368
1994-Q2	0.862	0.835	21,219	21	9,561	4,072	3,807	1,074	8	12	11	49	4	417	2	4	-496	1,570	9	465
1994-Q3	0.862	0.843	21,254	7	11,849	4,218	3,807	1,077	9	13	8	48	4	410	4	5	-497	1,574	8	284
1994-Q4	0.862	0.847	21,536	107	16,118	4,233	3,807	1,043	18	16	11	40	2	509	4	10	-503	1,546	13	461

1995-Q1	0.858	0.851	21,966	241	15,252	4,404	3,807	1,104	22	22	11	61	10	483	6	7	-504	1,608	47	500
1995-Q2	0.858	0.855	22,445	139	26,127	4,791	3,807	1,094	14	13	12	61	9	443	3	10	-511	1,605	161	574
1995-Q3	0.858	0.859	22,526	82	17,458	5,205	3,807	1,078	13	5	12	49	4	408	3	16	-524	1,602	21	402
1995-Q4	0.858	0.863	22,905	179	18,081	5,471	3,807	1,035	22	8	10	47	9	518	5	12	-531	1,566	12	424
1996-Q1	0.859	0.868	23,191	435	19,887	5,797	3,807	1,049	18	8	17	63	6	505	3	24	-552	1,601	57	556
1996-Q2	0.859	0.874	23,742	71	22,438	6,218	3,807	1,030	12	6	12	45	10	489	2	30	-580	1,610	9	638
1996-Q3	0.859	0.877	23,790	71	24,227	6,030	3,807	1,019	10	3	7	36	6	596	6	17	-591	1,610	2	285
1996-Q4	0.859	0.883	24,046	140	24,654	6,542	3,807	985	20	6	8	38	4	600	12	19	-598	1,583	14	454
1997-Q1	0.846	0.887	24,040	201	30,280	6,771	3,807	1,016	21	5	10	61	11	636	10	16	-604	1,620	3	300
1997-Q2	0.846	0.889	24,952	90	31,312	7,290	3,807	1,020	12	4	9	43	11	678	10	5	-599	1,619	2	858
1997-Q3	0.846	0.891	24,770	14	31,125	8,206	3,807	1,003	5	11	10	38	8	523	8	18	-609	1,612	26	466
1997-Q4	0.846	0.894	25,229	194	43,155	8,198	3,807	966	11	6	6	47	8	643	10	24	-623	1,589	7	523
1998-Q1	0.842	0.895	25,342	190	33,909	8,988	3,807	1,000	9	8	9	47	8	642	10	16	-629	1,629	34	414
1998-Q2	0.842	0.896	25,895	5	40,078	9,603	3,807	993	8	8	11	41	6	680	4	14	-639	1,632	7	690
1998-Q3	0.842	0.899	25,399	26	55,884	8,780	3,807	978	3	1	9	37	7	1,103	13	15	-641	1,619	1	209
1998-Q4	0.842	0.903	25,788	124	37,861	9,917	3,807	935	7	2	11	31	12	986	7	17	-651	1,586	8	534
1999-Q1	0.834	0.905	25,334	171	40,062	10,920	3,807	952	17	4	10	30	12	900	2	17	-666	1,618	2	507
1999-Q2	0.834	0.911	26,386	119	37,974	11,533	3,807	923	9	5	15	28	10	817	1	24	-689	1,612	8	390
1999-Q3	0.834	0.916	25,298	263	39,319	11,478	3,807	893	7	3	17	19	4	783	7	19	-701	1,594	9	282
1999-Q4	0.834	0.921	25,949	129	47,326	13,057	3,807	837	13	4	17	20	13	877	2	28	-727	1,564	3	115
2000-Q1	0.847	0.929	25,917	275	51,756	14,303	3,807	818	15	3	19	34	15	791	2	31	-756	1,574	16	1,311
2000-Q2	0.847	0.934	25,407	108	37,534	13,945	3,807	826	6	7	11	19	4	744	12	7	-751	1,577	28	307
2000-Q3	0.847	0.938	24,554	292	37,414	14,096	3,807	803	7	1	14	22	7	706	6	14	-759	1,562	0	-76
2000-Q4	0.847	0.942	26,499	27	39,529	12,285	3,807	766	9	2	18	15	4	804	16	21	-764	1,530	0	720
2001-Q1	0.852	0.950	25,217	160	30,482	11,073	3,807	776	8	1	18	22	15	605	11	10	-763	1,539	2	79
2001-Q2	0.852	0.956	24,630	212	28,823	10,879	3,807	757	10	3	11	15	17	533	5	9	-767	1,524	2	147
2001-Q3	0.852	0.957	24,972	74	35,372	9,770	3,807	753	4	2	16	22	13	739	8	5	-764	1,517	2	324
2001-Q4	0.852	0.959	25,629	17	31,202	9,721	3,807	728	6	4	19	15	22	626	3	11	-772	1,500	22	137
2002-Q1	0.863	0.961	25,102	52	26,737	9,845	3,807	726	9	2	16	18	20	468	3	9	-778	1,504	2	136
2002-Q2	0.863	0.967	24,915	287	37,246	9,012	3,807	718	10	3	9	24	5	545	10	4	-772	1,490	2	353
2002-Q3	0.863	0.972	24,964	31	40,361	7,471	3,807	717	6	1	5	19	7	794	4	3	-771	1,488	16	113
2002-Q4	0.863	0.976	25,604	214	28,636	7,691	3,807	713	6	14	7	16	12	744	2	4	-773	1,486	38	303
2003-Q1	0.930	0.983	26,700	149	27,388	7,189	3,807	734	9	14	7	27	4	725	0	4	-777	1,511	281	394
2003-Q2	0.930	0.985	25,629	225	28,699	8,086	3,807	741	9	17	3	28	3	588	2	3	-778	1,519	66	779
2003-Q3	0.930	0.989	26,269	872	34,071	8,646	3,807	772	23	46	9	40	7	500	1	0	-777	1,549	213	338
2003-Q4	0.930	0.992	29,514	915	42,790	9,396	3,807	803	21	40	8	61	6	501	0	2	-779	1,582	379	1,036
2004-Q1	0.930	1.000	28,357	826	43,363	9,802	3,807	842	25	33	4	76	6	485	1	3	-781	1,623	139	832
2004-Q2	0.930	1.008	29,094	1,392		9,763	3,807	848	20	24	11	67	2		1	0	-780	1,628	158	1,136

Notes: Data sample consists top 3,807 CRSP firms (ranked by market capitalization) which are non financial, non utilities, and non foreign in their last quarter.

Col. (2) is the tax preference parameter from Poterba (2004). It is defined as the average of $(1-\text{tdiv})/(1-\text{tcg})$ where tdiv is marginal tax rate on dividend income and tcg is the marginal tax rate on capital gains.

Col. (3) is the Consumer Price Index (base 1 in 2004-Q1). All amounts are expressed in real 2004-Q1 dollars. Col. (4) is the total amount of regular dividends. Col. (5) is the total amount of special dividends.

Col. (6) is the total amount of share repurchases computed with data93 item in the COMPUSTAT quarterly data (purchases of common and preferred stock). Col. (7) is market capitalization (in \$bn).

Col. (8) is the number of firms, col. (9) is the number of regular dividend payers, col. (10) is the number of special dividend payers.

Col. (11) is the number of regular dividend initiations defined as starting to pay regular dividends after not having paid for 4 quarters (6 quarters if annual payer).

Col. (12) is the number of regular dividend terminations defined as stopping regular dividends payments (see text for details).

Col. (13) (resp. (14)) are the number of intensive reg. div. increases (resp. decreases) by at least 20% in real terms in quarter t (relative to quarters $t-1$ and $t-4$). Dividend initiations are not counted as intensive increases or decreases.

Col. (15) is the number of firms repurchasing at least 0.1% of their shares in the quarter.

Col. (16) is the number of firms which enter the core sample and are paying regular dividends. Col. (17) is the number of firms leaving the core sample and which were regular dividend payers.

Col. (18) is the cumulated difference between columns (16) and (17). Column (19) is col. (9) minus col. (18): it captures the number of payers controlling for entry and exit effects.

Col. (20) is the amounts of regular dividend initiations defined as starting to pay regular dividends after not having paid for 4 quarters (6 quarters if annual payer).

Col. (21) is the intensive change in regular dividend payments relative to previous payment (in \$Mn) for firms present in the data and paying dividends currently and in previous quarter (initiations and terminations excluded).

The solid line marks the time at which the tax reform was enacted (end of May 2003) and the dashed line the time at which the tax reform was retrospectively applied (January 1st, 2003)

Table A3

Heterogeneity Results: Annualized Initiation Rates Pre and Post Reform by Quintile

Variable	Period	Quintile					Diff-in-Diffs q5 vs. q1
		1	2	3	4	5	
Largest Fraction of Shares among Executives	Pre	0.20 (0.10)	0.29 (0.12)	0.62 (0.20)	0.58 (0.19)	1.91 (0.42)	
	Post	3.55 (0.93)	3.20 (0.82)	3.81 (0.95)	4.68 (1.09)	9.49 (1.89)	4.22 [0.0314]
Largest Option (Unexercisable) Holding among Executives	Pre	0.88 (0.25)	0.94 (0.25)	0.41 (0.15)	0.43 (0.16)	0.73 (0.23)	
	Post	8.43 (1.77)	5.91 (1.26)	4.41 (1.02)	2.87 (0.83)	3.96 (1.03)	-4.31 [0.0277]
Largest Option (Exercisable) Holding among Executives	Pre	1.13 (0.28)	0.66 (0.20)	0.73 (0.23)	0.54 (0.19)	0.31 (0.14)	
	Post	8.38 (1.68)	5.42 (1.14)	3.07 (0.82)	4.62 (1.18)	4.22 (1.08)	-3.34 [0.0813]
Percentage of Shares Held by Institutional Investors	Pre	0.76 (0.21)	0.76 (0.20)	0.56 (0.17)	0.85 (0.21)	0.65 (0.18)	
	Post	2.73 (0.68)	3.05 (0.71)	3.55 (0.77)	4.64 (0.89)	10.72 (1.35)	8.09 [0.0000]
Two-year Forecasted Earnings Growth	Pre	1.13 (0.57)	0.58 (0.41)	0.61 (0.43)	1.12 (0.56)	0.00	
	Post	10.64 (2.69)	13.54 (2.96)	6.66 (1.98)	5.06 (1.89)	1.53 (1.08)	-7.97 [0.0003]
Ratio of Profits to Assets	Pre	0.00 (0.24)	0.15 (0.09)	0.51 (0.16)	1.29 (0.26)	1.67 (0.29)	
	Post	0.33 (0.24)	1.47 (0.49)	3.90 (0.79)	7.29 (1.12)	13.14 (1.50)	11.14 [0.0000]
Ratio of Debt to Assets	Pre	0.84 (0.20)	0.60 (0.17)	0.65 (0.18)	0.85 (0.21)	0.71 (0.20)	
	Post	8.23 (1.19)	3.27 (0.75)	4.28 (0.85)	4.57 (0.87)	4.94 (0.89)	-3.16 [0.0345]
Ratio of Cash to Assets	Pre	1.06 (0.23)	0.80 (0.21)	0.80 (0.20)	0.65 (0.18)	0.35 (0.13)	
	Post	5.67 (0.96)	4.04 (0.81)	5.73 (0.99)	4.46 (0.87)	5.35 (0.96)	0.39 [0.7785]
Assets	Pre	0.60 (0.19)	0.75 (0.19)	0.70 (0.19)	0.70 (0.19)	0.90 (0.21)	
	Post	2.03 (0.58)	3.22 (0.74)	4.40 (0.86)	5.10 (0.92)	10.62 (1.33)	8.29 [0.0000]
Number of Large Holding Outside Shareholders	Pre	1.07 (0.22)	0.48 (0.16)	0.48 (0.34)	0.58 (0.15)	0.39 (0.24)	
	Post	4.87 (0.91)	4.63 (1.05)	1.52 (1.07)	4.75 (0.89)	6.40 (2.20)	2.21 [0.3419]
Number of Large Holding Independent Directors	Pre	0.62 (0.15)				1.13 (0.37)	
	Post	2.18 (0.50)				5.76 (1.63)	3.06 [0.0543]

NOTE-See Figures 14-16 and text for description of sample and quintile construction procedure. Pre-reform period is 2001-Q3 to 2002-Q4; post-reform is 2003-Q1 to 2004-Q2. Standard errors clustered by firm reported in parens. Diffs-in-diffs column reports pre-post change in initiation rate in q5 minus corresponding change in q1, with p-values for F-test in square brackets. For earnings growth, diffs-in-diffs column compares q5 and q2. For indep. directors, q1 contains all firms with no large-shareholding indep directors and q5 contains all other firms.

Table A4

Heterogeneity Results: Initiation Rates Pre and Post Reform by Quintile Conditional on Controls

Variable	Period	Quintile					Test: q5-q1
		1	2	3	4	5	
Largest Fraction of Shares among Executives	Pre	0.27 (0.27)	0.33 (0.33)	0.74 (0.74)	0.53 (0.53)	1.70 (1.70)	5.14 [0.0222]
	Post	3.79 (1.08)	3.20 (0.96)	4.44 (1.06)	5.19 (1.28)	10.37 (2.05)	
Largest Option (Unexercisable) Holding among Executives	Pre	0.64 (0.32)	1.02 (0.29)	0.47 (0.18)	0.52 (0.19)	0.90 (0.32)	-4.02 [0.071]
	Post	9.03 (1.91)	4.88 (1.42)	4.73 (1.22)	3.26 (0.99)	5.27 (1.29)	
Largest Option (Exercisable) Holding among Executives	Pre	0.88 (0.36)	0.76 (0.23)	1.03 (0.28)	0.44 (0.24)	0.44 (0.20)	0.16 [0.9424]
	Post	6.96 (1.90)	4.95 (1.15)	3.95 (1.04)	4.54 (1.39)	6.68 (1.32)	
Percentage of Shares Held by Institutional Investors	Pre	0.77 (0.35)	1.29 (0.39)	0.33 (0.18)	0.79 (0.25)	0.62 (0.22)	8.40 [0.0003]
	Post	2.73 (1.42)	5.99 (1.58)	2.63 (0.97)	4.59 (1.18)	10.99 (1.82)	
Two-year Forecasted Earnings Growth	Pre	0.95 (0.65)	0.24 (0.52)	0.24 (0.39)	0.52 (0.34)	0.08 (0.18)	-3.19 [0.1350]
	Post	4.76 (3.60)	6.36 (3.44)	1.26 (2.48)	0.31 (2.38)	0.70 (1.50)	
Ratio of Profits to Assets	Pre	0.15 (0.20)	0.10 (0.14)	0.42 (0.21)	1.42 (0.37)	1.39 (0.37)	6.94 [0.0019]
	Post	3.15 (1.00)	1.71 (0.76)	4.26 (1.18)	6.67 (1.73)	11.33 (2.11)	
Ratio of Debt to Assets	Pre	1.09 (0.30)	0.64 (0.23)	0.53 (0.23)	0.72 (0.33)	0.48 (0.31)	-2.72 [0.2486]
	Post	8.24 (1.80)	4.26 (1.07)	4.14 (1.25)	4.89 (1.61)	4.91 (1.44)	
Ratio of Cash to Assets	Pre	1.36 (0.38)	0.76 (0.33)	0.79 (0.27)	0.55 (0.22)	0.31 (0.22)	2.42 [0.3427]
	Post	6.13 (1.63)	2.71 (1.39)	6.56 (1.57)	3.99 (1.13)	7.50 (1.79)	
Assets	Pre	0.52 (0.43)	0.98 (0.34)	0.33 (0.20)	0.62 (0.25)	1.17 (0.31)	5.24 [0.0808]
	Post	4.96 (1.90)	6.10 (1.68)	2.62 (1.09)	3.13 (1.33)	10.84 (1.91)	
Number of Large Holding Outside Shareholders	Pre	0.92 (0.25)	0.51 (0.21)	0.67 (0.42)	0.71 (0.20)	0.80 (0.34)	1.81 [0.5595]
	Post	6.53 (1.30)	3.84 (1.32)	-0.76 (1.60)	5.46 (1.18)	8.23 (2.85)	
Number of Large Holding Directors	Pre	0.12 (0.39)				0.83 (0.41)	4.16 [0.0971]
	Post	1.73 (1.80)				6.59 (2.24)	

NOTE-Table reports annualized initiation rates by quintile pre- and post-reform conditional on observables, using regression specifications as in equation (3) in the text, with key variable of interest excluded from linear control set. Standard errors clustered by firm reported in parentheses. Diffs-in-diffs column reports pre-post change in initiation rate in q5 minus corresponding change in q1, with p-values for F-test in square brackets. For earnings growth, diffs-in-diffs column compares q5 and q2. See Table A3 for additional details.

MONEY ILLUSION IN THE STOCK MARKET: THE MODIGLIANI-COHN HYPOTHESIS*

RANDOLPH B. COHEN

CHRISTOPHER POLK

TUOMO VUOLTEENAHÖ

Modigliani and Cohn hypothesize that the stock market suffers from money illusion, discounting real cash flows at nominal discount rates. While previous research has focused on the pricing of the aggregate stock market relative to Treasury bills, the money-illusion hypothesis also has implications for the pricing of risky stocks relative to safe stocks. Simultaneously examining the pricing of Treasury bills, safe stocks, and risky stocks allows us to distinguish money illusion from any change in the attitudes of investors toward risk. Our empirical results support the hypothesis that the stock market suffers from money illusion.

I. INTRODUCTION

Do people suffer from money illusion, confusing nominal dollar values with real purchasing power? When the difference between real and nominal quantities is small and stakes are relatively low, equating the nominal dollar amounts with real values provides a convenient and effective rule of thumb. Therefore, it seems plausible that people often ignore the rate of inflation in processing information for relatively small decisions.¹

Modigliani and Cohn [1979] hypothesize that stock market investors may also suffer from a particular form of money illusion, incorrectly discounting real cash flows with nominal discount rates. An implication of such an error is that time variation in the level of inflation causes the market's subjective expectation of the future equity premium to deviate systematically from the

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1. The term "money illusion" was coined by John Maynard Keynes early in the twentieth century. In 1928 Irving Fisher gave the subject a thorough treatment in his book *The Money Illusion*. Since then, numerous papers have described implications of money illusion to test for its existence. The most widely discussed of these implications is stickiness in wages and prices (see Gordon [1983] for a review of the evidence on this topic). Although money illusion can exist even in the absence of inflation, inflation is central to most money illusion stories. Fisher and Modigliani [1978] catalog the ways in which inflation could affect the real economy, with money illusion as one important source of real effects. Shafir, Diamond, and Tversky [1997] examine in detail potential effects of money illusion and present evidence on these effects along with a theory of the psychological underpinnings of the illusion.

rational expectation. Thus, when inflation is high (low), the rational equity-premium expectation is higher (lower) than the market's subjective expectation, and the stock market is undervalued (overvalued). The claim that stock market investors suffer from money illusion is a particularly intriguing and controversial proposition, as the stakes in the stock market are obviously very high.

Nevertheless, recent time-series evidence suggests that the stock market does suffer from money illusion of Modigliani and Cohn's variety. Sharpe [2002] and Asness [2000] find that stock dividend and earnings yields are highly correlated with nominal bond yields. Since stocks are claims to cash flows from real capital and inflation is the main driver of nominal interest rates, this correlation makes little sense, a point made recently by Ritter and Warr [2002], Asness [2003], and Campbell and Vuolteenaho [2004]. These aggregate studies suffer from one serious weakness, however. Inflation may be correlated with investors' attitudes toward risk, which directly influence stock prices even if investors do not suffer from money illusion. To the extent that these aggregate studies fail to fully control for risk, the results may confound the impact of risk attitudes and money illusion.

Our novel tests explore the cross-sectional asset-pricing implications of the Modigliani-Cohn money-illusion hypothesis. Simultaneously examining the pricing of Treasury bills, safe stocks, and risky stocks allows us to distinguish money illusion from changing attitudes of investors toward risk. The key insight underlying our tests is that money illusion will have a symmetric effect on all stocks' yields, regardless of their exposure to systematic risk. In contrast, the impact of investor risk attitudes on a stock's yield will be proportional to the stock's risk, as risky stocks' yields will be affected much more than safe stocks' yields will be. This insight allows us to cleanly separate the two competing effects.

Specifically, we assume that investors use the logic of the Sharpe-Lintner capital asset pricing model (CAPM) [Sharpe 1964; Lintner 1965] to measure the riskiness of a stock and to determine its required risk premium. According to the CAPM, a stock's beta with the market is its sole relevant risk measure. In the absence of money illusion (and other investor irrationalities), the Sharpe-Lintner CAPM predicts that the risk compensation for one unit of beta among stocks, which is also called the slope of the security market line, is always equal to the rationally ex-

pected premium of the market portfolio of stocks over short-term bills. For example, if a risky stock has a beta of 1.5 and the rationally expected equity premium is 4 percent, then that stock should have a rationally expected return of the Treasury-bill yield plus 6 percent. Conversely, a safe stock with a beta of 0.5 should only earn a 2 percent premium over Treasury bills, and the risky stock will therefore return a premium of 4 percent over the safe stock.

The joint hypothesis of money illusion and the CAPM offers a sharp, quantitative prediction. We show that money illusion implies that, when inflation is low or negative, the compensation for one unit of beta among stocks is larger (and the security market line steeper) than the rationally expected equity premium. Conversely, when inflation is high, the compensation for one unit of beta among stocks is lower (and the security market line shallower) than what the overall pricing of stocks relative to bills would suggest. Suppose that, in our above example, high inflation leads money-illusioned investors, who still demand a 4 percent equity premium, to undervalue the stock market to the extent that the rational expectation of the equity premium becomes 7 percent. Then these investors will price the risky stock to yield only a 4 percent return premium over the safe stock. Consequently, when inflation is high, the average realized equity premium (7 percent) will be higher than the average return premium of the risky stock over the safe stock (4 percent).

Our empirical tests support this hypothesis. First, as an illustration, we sort the months in our 1927–2001 sample into quartiles based on lagged inflation and examine the pricing of beta-sorted portfolios in these quartiles. The slope of the solid line in Figure I denotes the price of risk implied by the pricing of the overall stock market relative to that of short-term bills, i.e., the equity premium that a rational investor should have expected. The dashed line is the security market line, the slope of which is the price of risk implied by the pricing of high-risk stocks relative to that of low-risk stocks. As predicted by the money-illusion hypothesis, the figure shows that during months that are preceded by inflation in the lowest quartile of our sample, the relation between average returns and CAPM betas is steeper than the slope predicted by the Sharpe-Lintner CAPM and no money illusion. Conversely, during months that are preceded by inflation in the highest quartile of our sample, the security market line

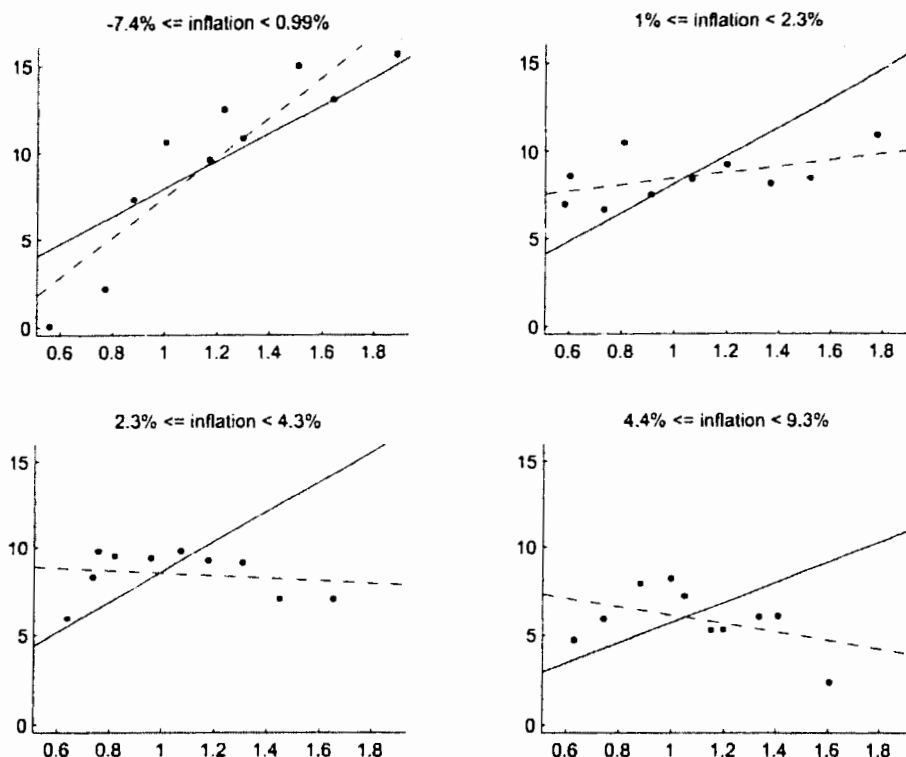


FIGURE I

Average Excess Returns and Beta in Different Inflation Environments

We first create ten portfolios by sorting stocks on their past estimated betas. We then record the excess returns on these portfolios. Next, we sort months in our 1927:06–2001:12 sample into four groups based on lagged inflation (defined as the smoothed change in the producer price index). For each group, we then estimate the postformation betas and average excess returns. The average annualized excess returns (y-axis) and betas (x-axis) of these portfolios form the graphs. The solid line (drawn from the [0,0] to [1, average market's excess return in this subsample]) is the relation predicted by the Sharpe-Lintner CAPM. The dashed line is the fitted line computed by regressing the average returns on betas in each subsample.

estimated from the cross section of beta-sorted portfolios is much shallower than the expected equity premium.

Second, we introduce a new method for estimating the excess slope and excess intercept of the security market line among stocks, relative to the predictions of the Sharpe-Lintner CAPM. Our statistical test combines Fama-MacBeth [1973] cross-sectional and Black-Jensen-Scholes [1972] time-series regressions to solve for the excess slope and excess intercept as a function of the betas and conditional alphas from the time-series regression's parameters. The idea behind this statistical test is exactly the

same as the one illustrated in Figure I, but allows for a convenient and powerful statistical hypothesis test. Our tests indicate that the excess intercept of the security market line comoves positively and the excess slope negatively with inflation, as predicted by the Modigliani-Cohn money-illusion hypothesis.

At first, it may seem incredible that stock market investors, with trillions of dollars at stake, make such a pedestrian mistake. Fortunately, or perhaps unfortunately, we need not look any further than to the leading practitioner model of equity valuation, the so-called "Fed model,"² to find corroborating evidence of stock market investors falling prey to money illusion. The Fed model relates the yield on stocks to the yield on nominal bonds. Practitioners argue that the bond yield plus a risk premium defines a "normal" yield on stocks, and that the actual stock yield tends to revert to this normal yield. Consistent with this practitioner argument, Sharpe [2002], Asness [2000], and Campbell and Vuolteenaho [2004] find that the Fed model is quite successful as an empirical description of aggregate stock prices—prices are set as if the market used the Fed model to price stocks. Logically, however, the Fed model is on weak grounds, as it is based on precisely the money-illusion error noted by Modigliani and Cohn.

Even if most stock-market investors confuse nominal and real quantities, could a small number of wealthy and rational arbitrageurs still eliminate any potential mispricing? We believe that rational arbitrageurs would be very conservative in accommodating supply and demand due to money illusion. The Sharpe ratio (the expected excess return divided by the standard deviation of excess return) of a bet against the money-illusion crowd is likely to be relatively low, because one can only make a single bet at a time and because the mispricing may be corrected very slowly. This potential slow correction of mispricing is a particularly important limiting factor of arbitrage, as any attempt to correct the inflation-related mispricing exposes the arbitrageur to the uncertain development of the stock market's fundamentals. Mispricing that corrects slowly necessarily requires long holding periods for arbitrage positions along with significant exposure to volatility, as the variance of fundamental risk grows linearly in time. In fact, if a rational arbitrageur had bet against money illusion by buying stocks on margin in the early 1970s, his profits

2. Despite this name, the model has absolutely no official or special status within the Federal Reserve system.

would have been negative for more than a decade. As Modigliani and Cohn noted in 1979: "On the other hand, those experts of rational valuation who could correctly assess the extent of the undervaluation of equities, had they acted on their assessment in the hope of acquiring riches, would have more than likely ended up with substantial losses." In summary, mispricing caused by money illusion has precisely those characteristics that Shleifer and Vishny [1997] suggest effectively prevent arbitrage activity.

II. MONEY ILLUSION AND ITS IMPLICATIONS

II.A. Modigliani and Cohn's Money-Illusion Hypothesis

The correct application of the present-value formula discounts nominal cash flows at nominal discount rates or real cash flows at real discount rates. Modigliani and Cohn [1979] propose that stock market investors, but not bond market investors, suffer from money illusion, effectively discounting real cash flows at nominal rates.

What mechanism could cause the bond market to correctly reflect inflation, while the stock market suffers from money illusion? According to the Modigliani-Cohn hypothesis, money illusion is due to the difficulty of estimating long-term future growth rates of cash flows. Consider an investor who thinks in nominal terms. Since nominal bonds have cash flows that are constant in those terms, estimating a growth rate for bonds is not difficult. In contrast, the task of estimating the long-term expected cash-flow growth for stocks is far from trivial.

For example, suppose that this investor erroneously assumes that long-term earnings and dividend growth are constant in nominal terms, and uses all past historical data to estimate a long-term growth rate for a stock. Of course, a more reasonable assumption would be that expected long-term growth is constant in real terms. If expected long-term growth is constant in real terms, yet the investor expects it to be constant in nominal terms, then in equilibrium stocks will be undervalued when inflation is high and overvalued when inflation is low.

The basic intuition of the Modigliani-Cohn hypothesis can easily be captured by examining a money-illusioned investor's approach to stock valuation. Consider the classic "Gordon growth model" [Williams 1938; Gordon 1962] that equates the dividend-

price ratio with the difference between the discount rate and expected growth:

$$(1) \quad D/P_{t-1} = R - G,$$

where R is the long-term discount rate and G is the long-term growth rate of dividends. R and G can be either both in nominal terms or both in real terms, but the Gordon growth model does not allow mixing and matching nominal and real variables. If the expected returns are constant, the discount rate is exactly equal to the expected return on the asset. If conditional expected returns vary over time, however, the discount rate is only approximately equal to the long-horizon expected holding period return on the asset.

The Gordon growth model can also be thought of in terms of the investor's first-order condition. If an investor is at the optimum portfolio allocation, then the discount rate or expected return R on stocks must equal the yield on bonds plus a premium due to the higher covariance of stock returns with the investor's consumption. If an otherwise optimizing investor suffers from money illusion of Modigliani and Cohn's variety, then he thinks of R in nominal terms and expects G to be constant in nominal terms. If the inflation is time varying, however, the assumption of constant nominal G does not make any sense, as it would imply a wildly variable real G . In real terms, there is no obvious reason why either R or G should change mechanically with expected inflation, if the consumer is rational.³

If stock market investors suffer from money illusion and expect constant long-term growth in nominal terms, what will happen when inflation rises? Higher nominal interest rates resulting from inflation are then used by stock market participants to discount unchanged expectations of future nominal dividends. The dividend-price ratio moves with the nominal bond yield because stock market investors irrationally fail to adjust the nominal growth rate G to match the nominal discount rate R . From the perspective of a rational investor, stocks are thus undervalued when inflation is high and overvalued when inflation is low. A single small rational investor, facing a market populated by money-illusioned investors, would then tilt his portfolio toward

3. Some business-cycle dynamic (such as Fama's [1981] proxy hypothesis) might create a correlation between inflation and either near-term discount rates or near-term growth rates. However, such movements are a priori unlikely to move long-term discount rates or growth rates much.

stocks when inflation is high and away from stocks when inflation is low, so that the equilibrium risk premium of stocks would be justified by stock returns' covariance with his consumption.

To adapt the notation to conform with our subsequent empirical tests, first subtract the riskless interest rate from both the discount rate and the growth rate of dividends. We define the excess discount rate as $R^e \equiv R - R_f$ and the excess dividend growth rate as $G^e \equiv G - R_f$, where all quantities should again be either nominal or real. As we are considering the possibility that some investors are irrational, we follow Campbell and Vuolteenaho [2004] and distinguish between the subjective expectations of irrational investors (superscript *SUBJ*) and the objective expectations of rational investors (superscript *OBJ*).

As long as irrational investors simply use the present value formula with an erroneous expected growth rate or discount rate, both sets of expectations must obey the Gordon growth model:

$$(2) \quad \begin{aligned} D/P &= R^{e,OBJ} - G^{e,OBJ} - R^{e,SUBJ} - G^{e,SUBJ} \\ &= -G^{e,OBJ} + R^{e,SUBJ} + (G^{e,OBJ} - G^{e,SUBJ}). \end{aligned}$$

In words, the dividend yield has three components: (1) the negative of objectively expected excess dividend growth, (2) the subjective risk premium expected by irrational investors, and (3) a mispricing term due to a divergence between the objective (i.e., rational) and subjective (i.e., irrational) growth forecast, $\varepsilon \equiv G^{e,OBJ} - G^{e,SUBJ}$. Notice that mispricing ε is specified in terms of excess yield, with $\varepsilon < 0$ indicating overpricing and $\varepsilon > 0$ underpricing. Notice also that the Gordon growth model requires that the expectational error in long-term growth rates, $G^{e,OBJ} - G^{e,SUBJ}$, be equal to the expectational error in long-term expected returns, $R^{e,OBJ} - R^{e,SUBJ}$.

Campbell and Vuolteenaho [2004] formalize the Modigliani-Cohn money-illusion story by specifying that mispricing or expectational error is a linear function of past smoothed inflation:

$$(3) \quad \varepsilon \equiv G^{e,OBJ} - G^{e,SUBJ} = R^{e,OBJ} - R^{e,SUBJ} = \gamma_0 + \gamma_1 \pi,$$

where π is the expected inflation and $\gamma_1 > 0$. If one takes the Modigliani-Cohn hypothesis literally, one could argue that $\gamma_1 = 1$, i.e., inflation is (irrationally) fully priced into stock yields. The case in which $\gamma_1 = 1$ is consistent with the simple form of money illusion in which investors assume that future expected cash-flow growth is constant in nominal terms.

II.B. Cross-Sectional Implications of Money Illusion

While previous research has tested the aggregate time-series predictions of the Modigliani-Cohn money-illusion hypothesis, the cross-sectional implications of this hypothesis have been largely unexplored in either the literature on behavioral finance theory or the empirical literature in general. (The main exception is Ritter and Warr's [2002] study, which examines the differential impact of inflation on a firm's stock price as a function of its financial leverage.) We fill this gap in the literature by developing and testing cross-sectional predictions resulting from the original Modigliani-Cohn hypothesis.

We base our cross-sectional predictions on three substantive assumptions. First, we assume that the market suffers from money illusion of the type described by equation (3). Second, we assume that the market makes no other type of systematic mistake in valuing stocks. Together, these two assumptions imply that equation (3) holds not only for the market but also for each individual stock:

$$(4) \quad \varepsilon_i \equiv G_i^{e,OBJ} - G_i^{e,SUBJ} = R_i^{e,OBJ} - R_i^{e,SUBJ} = \gamma_0 + \gamma_1 \pi.$$

An important result of these assumptions is that money illusion's influence on mispricing is equal across stocks, i.e., $\varepsilon_i \equiv \varepsilon_M = \gamma_0 + \gamma_1 \pi$.

Our final assumption is that investors behave according to modern portfolio theory in evaluating risks; that is, they use the Sharpe-Lintner CAPM to set required risk premiums. This implies that the slope of the relation between the subjective return expectation on an asset and that asset's CAPM beta is equal to the subjective market premium:

$$(5) \quad R_i^{e,SUBJ} = \beta_i R_M^{e,SUBJ}.$$

This is in contrast with the usual, rational-expectations specification of the CAPM: $R_i^{e,OBJ} = \beta_i R_M^{e,OBJ}$. Note that we implicitly assume that betas are known constants so that subjective and objective expectations of betas are thus equal.

These assumptions allow us to derive the cross-sectional implication of the Modigliani-Cohn [1979] money-illusion hypothesis. Substituting the subjective Sharpe-Lintner CAPM into (4) yields

$$(6) \quad \varepsilon_i = R_i^{e,OBJ} - \beta_i R_M^{e,SUBJ}.$$

Recognizing that market mispricing ε_M equals the wedge between objective and subjective market premiums results in

$$(7) \quad \varepsilon_i = R_i^{e,OBJ} - \beta_i[R_M^{e,OBJ} - \varepsilon_M]$$

$$\Leftrightarrow \alpha_i^{OBJ} \equiv R_i^{e,OBJ} - \beta_i R_M^{e,OBJ} = \varepsilon_i - \beta_i \varepsilon_M.$$

Above, α_i^{OBJ} is an objective measure of relative mispricing, called Jensen's [1968] alpha in the finance literature. Since mispricing for both the market and stock i is equal to the same linear function of expected inflation, $\gamma_0 + \gamma_1\pi$, we can write

$$(8) \quad \alpha_i^{OBJ} = \gamma_0 + \gamma_1\pi - \beta_i(\gamma_0 + \gamma_1\pi).$$

Equation (8) predicts that the (conditional) Jensen's alpha of a stock is a linear function of inflation, the stock's beta, and the interaction between inflation and the stock's beta. If the market suffers from money illusion, then when inflation is high a rational investor would perceive a positive alpha for low-beta stocks and a negative alpha for high-beta stocks. Conversely, when inflation is low (or negative), a rational expectation of a stock's alpha is negative for low-beta stocks and positive for high-beta stocks.

Recall that the security market line is the linear relation between a stock's average return and its beta. Equivalently, equation (8) states that both the intercept and the slope of the observed security market line deviate systematically from the rational-expectation Sharpe-Lintner CAPM's prediction. Moreover, this deviation is a function of inflation. Define the excess slope of the security market line as the cross-sectional slope of (objective) alpha on beta. Define the excess intercept of the security market line as the (objective) alpha of a unit-investment stock portfolio that has a zero beta. Equation (8) predicts that the excess intercept of the security market line equals $\gamma_0 + \gamma_1\pi$ and the excess slope equals $-(\gamma_0 + \gamma_1\pi)$ under the joint hypothesis of money illusion and the Sharpe-Lintner CAPM.

The above reasoning assumes that prices are exclusively set by investors who suffer from money illusion. What happens if some investors suffer from money illusion while other investors do not, and the two groups interact in the market? In the Appendix we describe a very stylized equilibrium model, in which a fraction of the risk-bearing capacity in the market suffers from money illusion. This stylized model gives an intuitive prediction: the excess slope of the security market line is determined by the

product of inflation and the fraction of the market's risk-bearing capacity controlled by money-illusioned investors.

The above hypotheses tie in closely with recent research on equity-premium predictability and inflation. A paper by Polk, Thompson, and Vuolteenaho [forthcoming] assumes that the CAPM holds in terms of investors' subjective expectations, and uses the relative prices of high and low beta stocks to derive an estimate of the subjective equity premium. Polk, Thompson, and Vuolteenaho find that this estimate correlates well with proxies for the objective equity premium such as the dividend yield, and also has predictive power for the future equity premium. The major exception to their finding occurs in the early 1980s, when their subjective equity premium measure is low but the dividend yield, as well as the subsequent aggregate stock market return, is high. It is noteworthy that this period was also the peak of U. S. inflation.

Campbell and Vuolteenaho [2004] assume the validity of Polk, Thompson, and Vuolteenaho's [2004] measure of the subjective equity premium. Campbell and Vuolteenaho combine this measure with the Gordon growth model for the aggregate market to estimate the subjectively expected growth rate of aggregate cash flows. It appears that inflation drives a wedge between the subjective and objective estimates of aggregate growth, just as predicted by the Modigliani-Cohn hypothesis.

In contrast, we essentially circle back to ask how money illusion affects the objective validity of the CAPM. Even if investors subjectively use the CAPM, does the CAPM describe the pattern of objective returns in the cross section? The answer is that there should be an objective security market line, but it can be steeper or flatter than the prediction of the Sharpe-Lintner CAPM, i.e., the rational expectation of the equity premium.

III. EMPIRICAL METHODOLOGY AND RESULTS

Our main tests examine time variation in the excess intercept and slope of the security market line, and the relation of this time variation to inflation. Our estimation strategy is the following. First, we construct dynamic stock portfolios that are likely to show a large and consistent cross-sectional spread in their CAPM betas. The natural way to construct such portfolios is to sort stocks into portfolios each month on their past estimated stock-

level betas. We record the returns on these value-weight portfolios, which become our basis assets.

Specifically, we generate our basis asset returns from the Center for Research in Securities Prices (CRSP) monthly stock file, which provides monthly prices; shares outstanding; dividends; and returns for available NYSE, AMEX, and NASDAQ stocks. We measure betas, $\hat{\beta}_{i,t}$, for individual stocks using at least one and up to three years of monthly returns in a market-model OLS regression on a constant and the contemporaneous return on the value-weight NYSE-AMEX-NASDAQ portfolio.⁴ As we sometimes estimate beta using only twelve returns, we censor each firm's individual monthly return to the range (-50 percent, 100 percent) in order to limit the influence of extreme firm-specific outliers. We use these stock-level estimates to form beta-sorted portfolios. The portfolios are value-weight and re-formed each month using the most recent available betas. We consider sorts into 10, 20, and 40 portfolios. The results are not sensitive to the number of portfolios, and we thus concentrate on the twenty-portfolio data set for most tests. These portfolio-return series span the 895-month period, 1927:06–2001:12.

Second, we estimate rolling betas on these 20 beta-sorted portfolios using a trailing window of 36 months. (We have replicated our results using 24- and 48-month beta-estimation windows, and the results are robust to variation in window length.) We denote the time series of these rolling betas as the "postformation betas" of the basis assets. These postformation beta series span the 860-month period, 1930:05–2001:12.

At this stage of the analysis, it is important to verify that our stock-level beta estimates are actually useful and result in cross-sectional spread in the average postformation betas. We find that they are, as the average postformation beta of the lowest beta portfolio is 0.63 while the postformation beta of the highest beta portfolio is 1.77. However, the estimated postformation betas for a particular portfolio are not constant through time. For the lowest beta portfolio, the postformation beta varies from -0.35 to 1.92, while the highest beta portfolio's postformation beta varies from 0.59 to 3.63. Of course, most of this time-series variation in the postformation betas is simply due to sampling variation.

Third, we form two portfolios from these 20 basis assets using

4. We skip those months in which a firm is missing returns. However, we require all observations to occur within a four-year window.

Fama and Macbeth's [1973] cross-sectional regression technique. The purpose of this step is to directly control for the time variation in postformation betas documented above. Specifically, for each cross section, we regress the future excess return on the 20 basis assets on a constant and the portfolios' trailing-window postformation beta. As shown by Fama and Macbeth, the time series of these cross-sectional regression coefficients are excess returns on portfolios as well:

$$(9) \quad \begin{bmatrix} r_{\text{intercept},t}^e \\ r_{\text{slope},t}^e \end{bmatrix} \equiv ([\mathbf{1} \quad \hat{\beta}_{t-1}]' [\mathbf{1} \quad \hat{\beta}_{t-1}])^{-1} [\mathbf{1} \quad \hat{\beta}_{t-1}]' \underline{r}_t^e.$$

Above, $\mathbf{1}$ is a vector of constants and $\hat{\beta}_{t-1}$ a vector of postformation betas of beta-sorted portfolios estimated using a trailing window that ends at $t - 1$. $\underline{r}_t^e$ is the vector of excess returns on the beta-sorted portfolios.

We present the regression coefficients in matrix notation in equation (9) to highlight the fact that the cross-sectional regression coefficients are portfolios. As long as the trailing postformation betas are accurate forecasts of future postformation betas, the intercept portfolio return will be the excess return on a unit-investment zero-beta stock portfolio and the slope portfolio return will be the excess return on a unit-beta zero-investment portfolio. Furthermore, these portfolio strategies are implementable as long as the explanatory variables (i.e., the betas) are known in advance of the dependent variables (i.e., the basis-asset excess returns). The intercept and slope portfolio have average returns of 44 and 19 basis points per month respectively, though only the intercept portfolio's mean return is statistically significantly different from zero. These two excess-return series span the 859-month period, 1930:06–2001:12.

Though the steps taken so far are complicated, these complications are justified as they will produce two portfolio return series with relatively constant, precisely measured betas of zero and one for the intercept and slope portfolios, respectively. This is desirable, as the time-series regressions in the next stage critically require that the portfolios we use have constant betas.

Fourth, we regress the intercept and slope portfolio's excess returns on a constant, the contemporaneous market excess return, and lagged inflation. As above, we use the value-weight NYSE-AMEX-NASDAQ portfolio as our proxy of the market portfolio. The excess return is computed by subtracting the three-

month Treasury-bill rate from CRSP. Our measure of inflation is the series used by Campbell and Vuolteenaho [2004] in their study investigating aggregate market valuations and inflation. We first compute log growth rates on the producer price index. As these growth rates are very noisy especially in the first part of our sample, we smooth these log growth rates by taking an exponentially weighted moving average with a half-life of 36 months (i.e., monthly decay to the power of 0.9806). Note that the exponentially weighted moving averages use trailing inflation data, so there is no look-ahead bias in our smoothing. We also demean this inflation series using its full sample mean in order that the subsequent regression parameters are easier for the reader to interpret.

The two time-series regressions (10) are analogous to Black, Jensen, and Scholes [1972] and Gibbons, Ross, and Shanken [1989] time-series regressions with time-varying Jensen's [1968] alphas:

$$(10) \quad \begin{aligned} r_{\text{intercept},t}^e &= a_1 + b_1 r_{M,t}^e + c_1 \pi_{t-1} + u_{1,t} \\ r_{\text{slope},t}^e &= a_2 + b_2 r_{M,t}^e + c_2 \pi_{t-1} + u_{2,t}. \end{aligned}$$

The empirical estimates of the two regression equations in (10) show that both portfolios have very precisely measured betas. Table I shows that for our preferred specification (20 beta-sorted portfolios where postformation betas are estimated using a 36-month trailing window), the intercept portfolio has a beta of 0.0041 with a t -statistic of 0.14, while the slope portfolio has a beta of 1.0205 with a t -statistic of 34.38. We also find that the conditional alpha of the intercept portfolio varies positively with lagged inflation as the estimate of c_1 is 1.50 with a t -statistic of 2.41. Our estimate of c_2 is reliably negative (value of -1.48 , t -statistic of -2.35) indicating that inflation tracks the conditional alpha of the slope portfolio in an opposite fashion.

Because of our novel methodology, we now have identified two portfolios with relatively stable betas. If we could be confident that the trailing-window postformation beta estimates are perfect forecasts of the future basis-asset betas, the excess intercept and excess slope of the security market line would be given by $a_1 + c_1 \pi_{t-1}$ and $a_2 + c_2 \pi_{t-1}$. In that hypothetical case, the time-series regression coefficients b_1 and b_2 would be exactly equal to zero and one. Despite the usefulness of our new approach, realistically speaking, the trailing-window betas we use as inputs of

TABLE I
TIME-SERIES REGRESSIONS OF INTERCEPT AND SLOPE PORTFOLIOS

<i>K</i>	<i>N</i>	<i>a</i> ₁	<i>a</i> ₂	<i>b</i> ₁	<i>b</i> ₂	<i>c</i> ₁	<i>c</i> ₂	<i>R</i> ² _{intercept}	<i>R</i> ² _{slope}
36	20	0.0008 (0.36)	-0.0009 (-0.40)	0.0041 (0.14)	1.0205 (34.38)	1.5048 (2.41)	-1.4784 (-2.35)	0.44%	58.03%
36	10	0.0008 (0.33)	-0.0009 (-0.40)	-0.0344 (-1.12)	1.0558 (34.15)	1.4588 (2.23)	-1.4151 (-2.16)	0.49%	57.69%
36	40	0.0007 (0.33)	-0.0004 (-0.21)	0.0575 (2.07)	0.9732 (34.75)	1.5099 (2.57)	-1.5722 (-2.65)	1.02%	58.58%
24	20	-0.0001 (-0.06)	-0.0001 (-0.03)	0.0589 (2.10)	0.9641 (34.02)	1.6340 (2.73)	-1.5561 (-2.57)	1.12%	57.19%
48	20	0.0016 (0.70)	-0.0017 (-0.72)	-0.0163 (-0.53)	1.0394 (33.55)	1.2269 (1.86)	-1.2224 (-1.85)	0.22%	57.23%

The table shows OLS regressions of the intercept portfolio's ($r_{intercept,t}^e$) and the slope portfolio's ($r_{slope,t}^e$) excess return on a constant, contemporaneous excess market return ($r_{M,t}^e$), and demeaned lagged inflation (π_{t-1}):

$$\begin{aligned} r_{intercept,t}^e &= a_1 + b_1 r_{M,t}^e + c_1 \pi_{t-1} + u_{1,t} \\ r_{slope,t}^e &= a_2 + b_2 r_{M,t}^e + c_2 \pi_{t-1} + u_{2,t} \end{aligned}$$

The intercept and slope portfolios are constructed using Fama-MacBeth [1973] regressions of excess returns on *N* beta sorted portfolios on a constant and the portfolios' lagged *K*-month postformation betas. *t*-statistics are in parentheses. *R*² is adjusted for degrees of freedom. The regressions are estimated from the sample period 1930:06–2001:12, 859 monthly observations.

the Fama-MacBeth stage will never be perfect forecasts of future betas; there is no guarantee that $b_1 = 0$ and $b_2 = 1$ exactly. Since the point estimates are always close for the basis assets we consider, our method is informative enough to allow us to simply modify the formulas for the conditional excess intercept and excess slope of the security market line to take these small deviations into account.

As we can confidently reject the hypotheses that $b_2 = 0$ and $b_2 = b_1$ for all sets of basis assets, straightforward algebra provides the alphas of a zero-beta and a unit-beta stock portfolio implied by the estimates of equation (10). The functions that map estimates of the parameters in regression (10) into the parameters of equation (8) are as follows. The excess slope of the security market line is

$$\begin{aligned} (11) \quad g_0 + g_1 \pi_{t-1} \\ g_0 &\equiv a_2/b_2 \\ g_1 &\equiv c_2/b_2. \end{aligned}$$

The excess intercept of the security market line is given by the function,

$$\begin{aligned}
 & h_0 + h_1 \pi_{t-1} \\
 (12) \quad & h_0 \equiv a_1 - a_2 b_1 / b_2 \\
 & h_1 \equiv c_1 - c_2 b_1 / b_2.
 \end{aligned}$$

To summarize, these two formulas are the result of solving for the conditional alpha of a zero-beta and a unit-beta portfolio implied by estimates of system (10).

It is important to note that equations (11) and (12) also provide a correction for any potential measurement error problem caused by the use of estimated betas at the Fama-Macbeth stage. Even if betas are estimated with error in earlier stages, our final estimates of the excess slope and the excess intercept of the security market line are consistent.

Table II reports the point estimates of the excess slope of the security market line. We focus on the specification using 20 portfolios and a 36-month beta-estimation window in the Fama-MacBeth stage, but as the table shows, the results are robust to small

TABLE II
EXCESS INTERCEPT AND SLOPE OF THE SECURITY MARKET LINE

<i>K</i>	<i>N</i>	<i>g</i> ₀	<i>g</i> ₁	<i>h</i> ₀	<i>h</i> ₁	$ g_1, h_1 ' = 0$	$g_1 + h_1 = 0$
36	20	-0.0009 (-0.40)	-1.4487 (-2.35)	0.0008 (0.36)	1.5108 (2.40)	5.82 [0.05]	0.00 [0.96]
36	10	-0.0009 (-0.40)	-1.3403 (-2.16)	0.0007 (0.33)	1.4126 (2.23)	5.20 [0.07]	0.00 [0.95]
36	40	-0.0004 (-0.21)	-1.6155 (-2.64)	0.0007 (0.32)	1.6029 (2.57)	7.12 [0.03]	0.00 [0.99]
24	20	-0.0001 (-0.06)	-1.6140 (-2.56)	-0.0001 (-0.05)	1.7290 (2.71)	8.37 [0.02]	0.01 [0.93]
48	20	-0.0016 (-0.72)	-1.1761 (-1.85)	0.0016 (0.71)	1.2077 (1.86)	3.46 [0.18]	0.00 [0.98]

The table shows the estimated function that maps inflation into the excess slope and intercept of the security market line. First, we regress the intercept portfolio's ($r_{intercept,t}^e$) and the slope portfolio's ($r_{slope,t}^e$) excess return on a constant, contemporaneous excess market return ($r_{M,t}^e$), and lagged inflation (π_{t-1}):

$$\begin{aligned}
 r_{intercept,t}^e &= a_1 + b_1 r_{M,t}^e + c_1 \pi_{t-1} + u_{1,t} \\
 r_{slope,t}^e &= a_2 + b_2 r_{M,t}^e + c_2 \pi_{t-1} + u_{2,t}
 \end{aligned}$$

The intercept and slope portfolios are constructed using Fama-MacBeth [1973] regressions of excess returns on *N* beta sorted portfolios on a constant and the portfolios' lagged *K*-month postformation betas. Second, we compute the functions that map the regression parameters to the excess slope and intercept of the security market line. The excess slope is defined as $g_0 + g_1 \pi_{t-1}$, where $g_0 = a_2/b_2$ and $g_1 = c_2/b_2$. The excess intercept is computed as $h_0 + h_1 \pi_{t-1}$, where $h_0 = a_1 - a_2 b_1/b_2$ and $h_1 = c_1 - c_2 b_1/b_2$. *t*-statistics computed using the delta method are in parentheses. We also report the test statistic and the two-sided *p*-values [in brackets] for the hypotheses that $|g_1, h_1|' = |0, 0|'$ and $g_1 + h_1 = 0$. The regressions are estimated from the sample period 1930:06–2001:12, 858 monthly observations.

variations in these choices. Increasing the number of basis-asset portfolios in the tests typically strengthens our results.

We estimate g_0 as -0.0009 with a t -statistic of -0.40 and h_0 as 0.0008 with a t -statistic of 0.36 . The interpretation of these near-zero intercept estimates is that when inflation is at its mean, the empirical beta slope and the zero-beta rate among stocks are consistent with the prediction of the Sharpe-Lintner CAPM. In other words, when inflation is at its time-series average, the Sharpe-Lintner CAPM "works." This is consistent with a form of money illusion in which people use historical average nominal growth rates to value the stock market, ignoring the current level of inflation which may be very different from inflation's historical average.

Our estimate for g_1 is -1.4487 with a t -statistic of -2.35 . As predicted by the Modigliani-Cohn hypothesis, the excess slope of the security market line comoves negatively with inflation. Our point estimates for the excess-intercept function are also consistent with the predictions of the theory: the estimate of h_1 is 1.5108 with a t -statistic of 2.40 , which is statistically significantly different from zero but not from one. In words, we can reject the hypothesis that the market does not suffer from money illusion, but we cannot reject the hypothesis that inflation is (irrationally) fully priced into real stock yields. Furthermore, g_1 is economically and statistically very close to $-h_1$, as predicted. Finally, we can reject the joint hypothesis that both $g_1 = 0$ and $h_1 = 0$ against the two-sided alternative at the 5 percent level of significance.

III.A. Additional Robustness Checks

Our results are not sensitive to small variations in the inflation measure. For example, all of our conclusions remain valid if we use as our measure of inflation the fitted value from a regression of monthly (unsmoothed) inflation on its lagged value, the three-month Treasury-bill yield, and the ten-year Treasury-bond yield.

We have also replicated our results with expanded sets of basis assets, presented in Table III. The first panel uses 20 beta-sorted and 10 size-sorted portfolios as basis assets. The second panel uses 20 beta-sorted and 10 book-to-market-sorted portfolios as basis assets. The third and final panel uses 20 beta-sorted, 10 size-sorted, and 10 book-to-market-sorted portfolios as basis assets. The size-sorted and book-to-market-sorted portfolios are provided by Kenneth French on his Web site. Add-

TABLE III
RESULTS FROM EXPANDED ASSET SETS

20 beta-sorted and 10 ME-sorted portfolios						
K	g_0	g_1	h_0	h_1	$[g_1, h_1]' = 0$	$g_1 + h_1 = 0$
36	0.0005 (0.22)	-1.6660 (-2.55)	0.0002 (0.07)	1.5911 (2.41)	6.94 [0.03]	0.00 [0.95]
20 beta-sorted and 10 BE/ME-sorted portfolios						
K	g_0	g_1	h_0	h_1	$[g_1, h_1]' = 0$	$g_1 + h_1 = 0$
36	0.0001 (0.03)	-1.9251 (-3.12)	-0.0000 (-0.02)	2.0335 (3.23)	10.90 [0.00]	0.01 [0.93]
20 beta-sorted, 10 ME-sorted, and 10 BE/ME-sorted portfolios						
K	g_0	g_1	h_0	h_1	$[g_1, h_1]' = 0$	$g_1 + h_1 = 0$
36	0.0012 (0.52)	-2.0503 (-3.13)	-0.0007 (-0.30)	2.0644 (3.13)	9.86 [0.01]	0.00 [0.99]

The table shows the estimated function that maps inflation into the excess slope and intercept of the security market line, estimated from expanded asset sets. First, we regress the intercept portfolio's ($r_{intercept,t}^e$) and the slope portfolio's ($r_{slope,t}^e$) excess return on a constant, contemporaneous excess market return ($r_{M,t}^e$), and lagged inflation (π_{t-1}):

$$\begin{aligned} r_{intercept,t}^e &= a_1 + b_1 r_{M,t}^e + c_1 \pi_{t-1} + u_{1,t} \\ r_{slope,t}^e &= a_2 + b_2 r_{M,t}^e + c_2 \pi_{t-1} + u_{2,t} \end{aligned}$$

The intercept and slope portfolios are constructed using Fama-Macbeth [1973] regressions of excess returns on basis-asset portfolios on a constant and the portfolios' lagged K -month postformation betas. Second, we compute the functions that map the regression parameters to the excess slope and intercept of the security market line. The excess slope is defined as $g_0 + g_1 \pi_{t-1}$, where $g_0 \equiv a_2/b_2$ and $g_1 \equiv c_2/b_2$. The excess intercept is computed as $h_0 + h_1 \pi_{t-1}$, where $h_0 \equiv a_1 - a_2 b_1/b_2$ and $h_1 \equiv c_1 - c_2 b_1/b_2$. t -statistics computed using the delta method are in parentheses. We also report the test statistic and the two-sided p -values [in brackets] for the hypotheses that $[g_1, h_1]' = [0, 0]'$ and $g_1 + h_1 = 0$. The regressions are estimated from the sample period 1930:06–2001:12, 859 monthly observations.

ing these characteristics-sorted portfolios to the set of basis assets does not alter our basic conclusions, as the point estimates remain close to those obtained in the earlier tests. Thus, we argue that our main conclusions are not sensitive to small changes in the set of basis assets.

In unreported tests, we also examine the Modigliani-Cohn hypothesis using long-horizon returns. We use the same portfolios as in our previous tests, except we hold the stocks for horizons ranging from 3 to 60 months. Our market return is also compounded in the same way, and then the compounded three-month Treasury-bill interest rate is subtracted. Smoothed inflation is scaled to the same time units as the returns. Other than the change in the holding period, the test procedure is exactly the same as in the previous tests. We find point estimates consistent

with the joint hypothesis of money illusion and the CAPM at the quarterly horizons and at horizons of three years and five years. However, for intermediate horizons (12–24 months), any effect is small, with point estimates occasionally having the wrong sign. Though unfortunate, the low power and large standard errors of these long-horizon tests are at least partially to blame, as the Modigliani-Cohn hypothesis is never rejected statistically.

As part of our long-horizon tests, we also check to see whether our point estimates of the cross-sectional effect of money illusion are consistent with the aggregate mispricing of stocks versus bonds by Campbell and Vuolteenaho [2004]. In particular, we estimate a regression forecasting the excess market return with smoothed inflation, while controlling for the subjective risk-premium measure λ^{SRC} of Polk, Thompson, and Vuolteenaho [2004]. As predicted by the Modigliani-Cohn hypothesis, the partial regression coefficient on inflation is positive, significant, and similar to our short-horizon cross-sectional estimate at all horizons.

Though we find evidence of Modigliani and Cohn's money illusion, our tests so far have only considered the Sharpe-Lintner version of the CAPM. However, it is theoretically possible that our results are simply due to an incorrect restriction on the intercept of the security market line implicit in that version of the CAPM.

Black [1972] considers the possibility that investors cannot borrow at the Treasury-bill rate. If so, the likely effect of such inability to borrow is that the zero-beta rate among stocks deviates from the Treasury-bill rate. In other words, the Black CAPM allows the excess intercept and slope of the security market line to be nonzero. Therefore, an alternative explanation for our findings is that the spread between the true borrowing rate facing investors and the Treasury-bill rate comoves with inflation.

Fortunately for our conclusions, data on actual borrowing rates indicate that the spread does not comove positively with inflation. Our three empirical proxies for the true borrowing rate are car-loan rates from commercial banks, personal-loan rates from commercial banks, and credit-card interest rates. We obtain these quarterly data from the Federal Reserve's Web site. The data from commercial banks begin 1972:02, while the credit-card rate data begin 1994:11. We first compute the yield spread between these loans and maturity-matched Treasury yields. We

then regress these spreads on smoothed inflation (in the same annualized units).

The regression results in Table IV show that the yield spread between individuals' borrowing rates and Treasury rates comoves negatively, not positively, with lagged inflation. This result is not surprising, as Ausubel [1991] finds that credit-card interest rates appear "sticky" in responding to changes in market interest rates. Thus, we reject the Black CAPM as an alternative explanation for the observed time-variation in the excess slope of the security market line.

We also consider subjective risk premiums determined in a world where multiple risk factors determine the cross section of subjective expected returns. That is, we assume a world in which investors mistakenly misestimate real cash-flow growth of (and thus expected returns on) all stocks due to money illusion, but otherwise price stocks correctly in accordance with a multifactor model. Furthermore, we assume that measured betas are not materially affected by this mispricing.

TABLE IV
INFLATION AND THE SPREAD BETWEEN BORROWING AND TREASURY RATES

48-month car loans from commercial banks, spread over the 48-month T-note yield					
constant	(<i>t</i> -statistic)	slope on π	(<i>t</i> -statistic)	Adj. R^2	<i>N</i>
3.4327	(13.9)	-0.0489	(-0.9)	0.01	124
24-month personal loans from commercial banks spread over the 24-month T-note yield					
constant	(<i>t</i> -statistic)	slope on π	(<i>t</i> -statistic)	Adj. R^2	<i>N</i>
9.2135	(29.4)	-0.5596	(-7.9)	0.58	124
Credit card accounts (interest rates), spread over the 90-day T-bill yield					
constant	(<i>t</i> -statistic)	slope on π	(<i>t</i> -statistic)	Adj. R^2	<i>N</i>
11.4532	(22.8)	-0.4270	(-2.0)	0.15	33
Credit card accounts (assessed interest), spread over the 90-day T-bill yield					
constant	(<i>t</i> -statistic)	slope on π	(<i>t</i> -statistic)	Adj. R^2	<i>N</i>
11.1719	(21.1)	-0.4547	(-2.0)	0.12	33

The table regresses proxies for the spread between borrowing rates that individuals face and Treasury rates on lagged inflation. The inflation series (π) is the smoothed inflation used in earlier tests, annualized by multiplying the series by twelve. The *t*-statistics are based on Newey-West standard errors computed using four lags and leads. The heading of each panel specifies the spread measure being used as the dependent variable. Data are quarterly.

In our robustness checks below, we employ the well-known three-factor model of Fama and French [1993], but the steps below will easily generalize to any multifactor model for which the additional factors are expressed as long-short stock portfolios. The equations given above for the Sharpe-Lintner CAPM case, and therefore the regressions we will run to test the model and the Modigliani-Cohn hypothesis, easily generalize to this case. We begin by replacing equation (5) with the multifactor beta representation of assets' subjective risk premiums:

$$(13) \quad R_i^{e,SUBJ} = \beta_i R_M^{e,SUBJ} + \delta_i' f.$$

f is a column vector of factor realizations for the given period and δ_i is a column vector of asset i 's multiple-regression loadings on those factors. Here we assume that the factor-mimicking portfolios are long and short stocks in equal dollar amounts. Under these conditions there is no need for *SUBJ* superscripts, as the inflation-related mispricing affects the yields of all stocks identically so that the expected return of any long-short stock portfolio is unaffected. Thus,

$$(14) \quad \varepsilon_i = R_i^{e,OBJ} - \beta_i R_M^{e,SUBJ} - \delta_i' f,$$

and therefore,

$$(15) \quad \begin{aligned} \varepsilon_i &= R_i^{e,OBJ} - \beta_i [R_M^{e,OBJ} - \delta_i' f - \varepsilon_M] \\ \Leftrightarrow \alpha_i^{OBJ} &\equiv R_i^{e,OBJ} - \beta_i R_M^{e,OBJ} - \delta_i' f = \varepsilon_i - \beta_i \varepsilon_M. \end{aligned}$$

α_i^{OBJ} denotes the Jensen's alpha relative to the multifactor model, and is almost identical to the expression derived in the CAPM case, except that β is a multifactor sensitivity on the market return:

$$(16) \quad \alpha_i^{OBJ} = \gamma_0 + \gamma_1 \pi - \beta_i (\gamma_0 + \gamma_1 \pi).$$

In the Fama-MacBeth regressions we now include as explanatory variables the estimated loadings on all three factors, including multifactor market betas. Let the additional nonmarket factor loadings be denoted by $\hat{\underline{\delta}}_{t-1}$ where $\hat{\underline{\delta}}_{t-1}$ has one row for each asset and one column for each nonmarket factor. The returns on the intercept and (all) slope portfolios are then given by

$$(17) \begin{bmatrix} r_{intercept,t}^e \\ r_{allslopes,t}^e \end{bmatrix} \equiv ([1 \quad \hat{\beta}_{t-1} \quad \hat{\delta}_{t-1}]' [1 \quad \hat{\beta}_{t-1} \quad \hat{\delta}_{t-1}])^{-1} [1 \quad \hat{\beta}_{t-1} \quad \hat{\delta}_{t-1}]' r_t^e.$$

$r_{intercept,t}^e$ represents the return (in excess of the riskless rate) on a portfolio anticipated to have zero loadings on all factors (including the market) and a unit net investment in stocks. $r_{slope,t}^e$, which is defined as the first element of $r_{allslopes,t}^e$, is the return on a portfolio anticipated to have a unit market loading and a zero loading on the other factors. The remaining elements of $r_{allslopes,t}^e$ are returns on portfolios with unit loadings on the other factors; they are not used in our subsequent analysis.

The actual factor loadings of the $r_{intercept,t}^e$ and $r_{slope,t}^e$ portfolios are again reasonably close to their hypothetical values. We observe this by regressing the time series of returns on the factors, as well as on π , our inflation variable:

$$(18) \quad \begin{aligned} r_{intercept,t}^e &= a_1 + b_1 r_{M,t}^e + B_1' f_t + c_1 \pi_{t-1} + u_{1,t} \\ r_{slope,t}^e &= a_2 + b_2 r_{M,t}^e + B_2' f_t + c_2 \pi_{t-1} + u_{2,t}. \end{aligned}$$

f_t is a vector of factor realizations at time t . B_1 and B_2 are regression coefficients on the nonmarket factors. As above, in order to estimate the slope of the security market line, we need to adjust the intercept and slope portfolios slightly to get portfolios that (in sample) actually have the necessary loadings. Again, the process of cleaning out any extraneous loadings on other factors conveniently leaves us with security market line equations that are virtually identical to those in the CAPM case (except that the b_1 and b_2 now come from the regression that includes the other factors (i.e., they are multifactor betas). The excess slope and excess intercept of the security market line are again given by equations (11) and (12).

Table V contains our estimates for the Fama and French [1993] multifactor model, which contains two factors in addition to the market factor. The factor series are provided by Kenneth French on his Web site. The first is *SMB*, the difference between the return on small and big market-capitalization stocks. The second is *HML*, the difference between the return on high and low book-to-market ratio stocks. In Table V we find that the estimated g_1 is close to 1, the estimated h_1 is close to -1 , and the two are close to equal in absolute value but opposite in sign, just

TABLE V
RESULTS FOR THE FAMA-FRENCH THREE-FACTOR MODEL

20 beta-sorted portfolios						
K	g_0	g_1	h_0	h_1	$[g_1, h_1]' = 0$	$g_1 + h_1 = 0$
36	0.0003 (0.11)	-1.2788 (-1.75)	-0.0003 (-0.13)	1.2787 (1.71)	3.13 [0.21]	0.00 [1.00]
20 beta-sorted and 10 ME-sorted portfolios						
K	g_0	g_1	h_0	h_1	$[g_1, h_1]' = 0$	$g_1 + h_1 = 0$
36	-0.0018 (-0.76)	-0.9980 (-1.51)	0.0018 (0.75)	1.0099 (1.52)	2.30 [0.32]	0.00 [0.99]
20 beta-sorted and 10 BE/ME-sorted portfolios						
K	g_0	g_1	h_0	h_1	$[g_1, h_1]' = 0$	$g_1 + h_1 = 0$
36	-0.0014 (-0.40)	-0.9099 (-3.12)	0.0009 (0.35)	0.9615 (1.36)	2.28 [0.32]	0.00 [0.99]
20 beta-sorted, 10 ME-sorted, and 10 BE/ME-sorted portfolios						
K	g_0	g_1	h_0	h_1	$[g_1, h_1]' = 0$	$g_1 + h_1 = 0$
36	-0.0014 (-0.62)	-1.1630 (-1.80)	0.0012 (0.60)	1.1950 (1.84)	3.54 [0.17]	0.00 [0.98]

The table repeats the tests of Table II using the Fama-French [1993] three-factor model. First, we regress the excess returns on the basis-asset portfolios on a constant and the portfolios' lagged K -month postformation factor loadings. The intercept portfolio's ($r_{intercept,t}^e$) and the slope portfolio's ($r_{slope,t}^e$) excess returns are the coefficient time series corresponding to the intercept and the three-factor model's market loading, respectively. Second, we regress these returns on a constant, contemporaneous factor returns, and lagged inflation (π_{t-1}):

$$\begin{aligned} r_{intercept,t}^e &= a_1 + b_{1,1}r_{M,t}^e + b_{1,2}r_{SMB,t}^e + b_{1,3}r_{HML,t}^e + c_1\pi_{t-1} + u_{1,t} \\ r_{slope,t}^e &= a_2 + b_{2,1}r_{M,t}^e + b_{2,2}r_{SMB,t}^e + b_{2,3}r_{HML,t}^e + c_2\pi_{t-1} + u_{2,t} \end{aligned}$$

The excess slope is defined as $g_0 + g_1\pi_{t-1}$, where $g_0 \equiv a_2/b_{2,1}$ and $g_1 \equiv c_2/b_{2,1}$. The excess intercept is defined as $h_0 + h_1\pi_{t-1}$, where $h_0 \equiv a_1 - a_2b_{1,1}/b_{2,1}$ and $h_1 \equiv c_1 - c_2b_{1,1}/b_{2,1}$. t -statistics computed using the delta method are in parentheses. We also report the test statistic and the two-sided p -values [in brackets] for the hypotheses that $[g_1, h_1]' = [0, 0]'$ and $g_1 + h_1 = 0$. The regressions are estimated from the sample period 1930:06–2001:12, 859 monthly observations.

as predicted by the Modigliani and Cohn hypothesis (and just as we found using the CAPM as the risk model). For our preferred specification (36 months in postformation loading regressions, 20 test asset portfolios) we obtain point estimates of -1.28 for g_1 (t -statistic of -1.75) and 1.28 for h_1 (t -statistic of 1.71). The tests using the multifactor model have less power, but we can still reject at the 10 percent level the hypothesis that inflation plays no role in the determination of the cross-sectional beta premium. The results for other specifications are qualitatively similar, as can be seen in Table V.

IV. CONCLUSIONS

Do people suffer from money illusion? While we may disagree on the answer to this question, its importance is indisputable. Many important decisions, such as choosing between buying and renting a home or allocating one's portfolio between stocks and nominal bonds, depend critically on the decision-maker's ability to distinguish between nominal and real quantities.

Modigliani and Cohn [1979] suggest that stock market investors suffer from money illusion. Consistent with this hypothesis, previous time-series studies have found that high inflation coincides with low prices for stocks relative to bonds. This observed relation may be caused by money illusion; however, as noted by Campbell and Vuolteenaho [2004] and others, it may also be caused by the real discount rates used by investors being positively correlated with inflation.

We present novel cross-sectional evidence supporting Modigliani and Cohn's hypothesis. Simultaneously examining the future returns of Treasury bills, safe stocks, and risky stocks allows us to distinguish money illusion from any change in the attitudes of investors toward risk. The key insight underlying our tests is that money illusion will have a constant additive effect on all stocks' future returns, regardless of their exposure to systematic risk. This constant effect is in contrast to the impact of investor risk attitudes on future stock returns, which is proportional to the stock's risk, as risky stocks' future returns will be affected much more than safe stocks' future returns. Our empirical tests indicate that when inflation is high (low), stock returns are higher (lower) than justified by an amount that is constant across stocks, irrespective of the riskiness of the particular stock.

A critical assumption in our tests is that investors use the Sharpe-Lintner capital asset pricing model (CAPM) to evaluate the risk of a stock. Our cross-sectional tests leverage this Sharpe-Lintner CAPM assumption by noting that any effect of risk attitudes on a stock's price would have to result in an expected-return effect that is proportional to the stock's CAPM beta. Consequently, one may never completely rule out the possibility of our results being due to a misspecified model of risk.

In addition to suggesting that stock market investors suffer from money illusion, our results offer a partial explanation for the Sharpe-Lintner CAPM's poor empirical performance in recent

samples. In an influential paper Fama and French [1992] fail to find support for "the central prediction of [the CAPM], that average returns are positively related to market [betas]." Curiously, this negative result is primarily driven by their 1951–1960 and 1981–1990 subsamples, both of which were preceded by high inflation. The cross-sectional implication of the Modigliani-Cohn hypothesis is that the slope of average returns on beta should be much lower than the equity premium in precisely those subsamples. In a sense, money illusion may have killed the Sharpe-Lintner CAPM. (4)

Although we do not explicitly consider money illusion's effect on investor welfare, we believe that our results may nevertheless have some policy implications, however speculative. First, if investors suffer from money illusion, stable and low inflation is likely to result in a less mispriced stock market than volatile and high inflation. To the extent that real investment decisions are influenced by stock market (mis)valuations, one would expect low and stable inflation to be beneficial to society.⁵ Second, if government borrowing shifts from nominal bonds to inflation-indexed or real bonds, it is possible that the stock market will value stocks relative to real (instead of nominal) bonds, eliminating the effect of money illusion on stock prices. Third, and most importantly, to the extent that investors perceive a benefit from valuing stocks using nominal quantities, they should pay more attention to expected inflation when forecasting future nominal cash flows.

APPENDIX

In this Appendix we present a stylized model of market equilibrium, where some investors suffer from money illusion and others do not. The model gives a simple prediction: the difference between the equity premium and the cross-sectional beta premium (i.e., the slope of the security market line) is equal to $c\pi/(1 + \pi)$, where π is the rate of inflation and c is a measure of the risk-bearing capacity of money-illusioned investors relative to

5. Dow and Gorton [1997] model the connection between stock market efficiency and economic efficiency. Stein [1996] focuses on the link between market inefficiency and firms' real investment policies, modeling how an inefficient capital market can result in managers catering to market mispricing. Polk and Sapienza [2004] document catering effects in firms' capital expenditures related to mispricing.

that of rational investors. On the one hand, as expected, if money-illusioned investors have all of the risk-bearing capacity in the economy, inflation translates almost one-for-one into the excess slope of the security market line. On the other hand, also as expected, if rational investors have all of the risk-bearing capacity, then the Sharpe-Lintner CAPM holds. For intermediate cases, the excess slope of the security market line depends linearly on the share of risk-bearing capacity of the two investor groups.

The model has two periods, denoted by 0 and 1. At time 0, the investors trade but do not consume. At time 1, investors consume the payoffs from their portfolios, and there is no trading.

There are three traded assets, one nominal bond (asset indexed 1) in zero net supply and two stocks (assets indexed 2 and 3) both with one share outstanding. The prices of these assets at time 0 are p_1 , p_2 , and p_3 . Because we have no consumption at time 0, asset prices have meaning only in relative terms. We set $p_1 = 1$ as an arbitrary normalization, interpreting all relative to the nominal bond's price.

The asset payoffs are as follows. The nominal debt has no default risk. The rate of inflation, π , is known, and the nominal debt is thus risk-free in real terms as well. The real payoff to the debt is $X_1 = F/(1 + \pi)$, where F is the nominal face value of the bond. Set $F = 1$ without any loss of generality, and thus the real debt payoff is $X_1 = 1/(1 + \pi)$.

The second asset is the stock of a relatively safe company, and the third asset is a relatively risky company's stock. The real payoffs to the second asset and the third asset are $\tilde{X}_2$ and $\tilde{X}_3$. For simplicity, we make the expected payoffs for both assets equal; that is, $E(\tilde{X}_2) = E(\tilde{X}_3) = \bar{X}$. The uncertain future values of real assets are independent random variables with known variances $\text{var}(\tilde{X}_2) = \sigma^2$ and $\text{var}(\tilde{X}_3) = k\sigma^2$, $k > 1$. In particular, these real payoffs do not depend on the rate of inflation π . The real payoff to the market portfolio of all assets is thus $\tilde{X}_2 + \tilde{X}_3$, and the real return on the market portfolio is $(\tilde{X}_2 + \tilde{X}_3)/(p_2 + p_3)$. The nominal return on the market portfolio is $(1 + \pi)(\tilde{X}_2 + \tilde{X}_3)/(p_2 + p_3)$.

Suppose that two investors (or groups of investors), denoted by A and B, have mean-variance preferences over time 1

consumption and behave competitively as price takers. Initially, the assets are endowed evenly between the two groups of investors. Both investors maximize a mean-variance objective function, but in addition investor B suffers from money illusion.

Investor A has an absolute risk-bearing capacity of $(1 - c)$, $0 \leq c \leq 1$. Investor A does not suffer from money illusion, perceives the above real payoffs correctly, and maximizes the mean-variance preference of time 1 consumption:

$$(19) \quad w_1 X_1 + w_2 E(\tilde{X}_2) + w_3 E(\tilde{X}_3) - \frac{1}{2(1-c)} w_2^2 \text{var}(\tilde{X}_2) \\ - \frac{1}{2(1-c)} w_3^2 \text{var}(\tilde{X}_3) = \frac{1}{(1+\pi)} w_1 + (w_2 + w_3) \bar{X} \\ - \frac{1}{2(1-c)} w_2^2 \sigma^2 - \frac{1}{2(1-c)} w_3^2 k \sigma^2,$$

subject to the budget constraint $.5(p_2 + p_3) = w_1 + p_2 w_2 + p_3 w_3$ by choosing his portfolio allocations w . The first-order conditions yield demand curves for risky assets:

$$(20) \quad w_2 = \frac{(1-c)\bar{X}}{\sigma^2} - \frac{(1-c)}{(1+\pi)} \frac{p_2}{\sigma^2} \\ w_3 = \frac{(1-c)\bar{X}}{k\sigma^2} - \frac{(1-c)}{(1+\pi)} \frac{p_3}{k\sigma^2}.$$

The idea that investor B suffers from money illusion manifests itself in two ways. First, investor B maximizes mean-variance preferences over nominal wealth. Second, investor B believes that the nominal growth in the value of corporate assets is a random variable with a distribution that does not depend on the rate of inflation. In other words, investor B perceives nominal payoffs, $X_{B1} = F = 1$, $\tilde{X}_{B2} = \tilde{X}_2$ and $\tilde{X}_{B3} = \tilde{X}_3$, irrespective of the inflation environment. We set the risk-bearing capacity of investor class B to c , which has the advantage of keeping the risk-bearing capacity of the economy as a whole constant as c changes. Thus, investor B maximizes

$$(21) \quad w_{B1} X_{B1} + w_{B2} E(\tilde{X}_{B2}) + w_{B3} E(\tilde{X}_{B3}) - \frac{1}{2c} w_{B2}^2 \text{var}(\tilde{X}_{B2}) \\ - \frac{1}{2c} w_{B3}^2 \text{var}(\tilde{X}_{B3}) = w_{B1} + (w_{B2} + w_{B3}) \bar{X} - \frac{1}{2c} w_{B2}^2 \sigma^2 - \frac{1}{2c} w_{B3}^2 k \sigma^2,$$

subject to the budget constraint $.5(p_2 + p_3) = w_{A1} + p_2 w_{A2} + p_3 w_{A3}$ by choosing his portfolio allocations. The first-order conditions yield demand curves for risky assets:

$$(22) \quad \begin{aligned} w_{B2} &= c\bar{X}/\sigma^2 - cp_2/\sigma^2 \\ w_{B3} &= c\bar{X}/\sigma^2 - cp_3/\sigma^2. \end{aligned}$$

In the equilibrium the asset market clears, and one share of both assets must be held by both investors:

$$(23) \quad \begin{aligned} 1 &= w_2 + w_{B2} = \frac{\bar{X}}{\sigma^2} - \frac{(1 + c\pi)p_2}{(1 + \pi)\sigma^2} \\ 1 &= w_3 + w_{B3} = \frac{\bar{X}}{k\sigma^2} - \frac{(1 + c\pi)p_3}{(1 + \pi)k\sigma^2}. \end{aligned}$$

Solving for prices yields

$$(24) \quad \begin{aligned} p_2 &= \left[\frac{1 + \pi}{1 + c\pi} \right] [\bar{X} - \sigma^2] \\ p_3 &= \left[\frac{1 + \pi}{1 + c\pi} \right] [\bar{X} - k\sigma^2]. \end{aligned}$$

These prices makes sense: if money-illusioned investors dominate the market (i.e., $c = 1$), then the price of a real asset in relation to the price of a nominal asset does not change with the rate of inflation.

The expected return premium of asset 3 over that of asset 2 is

$$(25) \quad \frac{E(\tilde{X}_3)}{p_3} - \frac{E(\tilde{X}_2)}{p_2} = \left[\frac{1 + c\pi}{1 + \pi} \right] \left[\frac{\bar{X}}{\bar{X} - k\sigma^2} - \frac{\bar{X}}{\bar{X} - \sigma^2} \right].$$

The return on the market portfolio is $(\tilde{X}_2 + \tilde{X}_3/p_2 + p_3)$, and the CAPM betas of the two stocks are

$$(26) \quad \begin{aligned} \beta_2 &= \frac{(2/(1 + k))\bar{X} - \sigma^2}{\bar{X} - \sigma^2} \\ \beta_3 &= \frac{(2k/(1 + k))\bar{X} - k\sigma^2}{\bar{X} - k\sigma^2}. \end{aligned}$$

The difference between the betas of the two assets is

$$(27) \quad \beta_{3-2}$$

$$= \frac{[(2k/(1+k))\bar{X} - k\sigma^2][\bar{X} - \sigma^2] - [\bar{X} - k\sigma^2][(2/(1+k))\bar{X} - \sigma^2]}{[\bar{X} - k\sigma^2][\bar{X} - \sigma^2]}.$$

The expected equity premium, or the expected return on the market portfolio less that on a risk-free asset, is

$$(28)$$

$$\theta = \frac{E(\tilde{X}_2) + E(\tilde{X}_3)}{p_2 + p_3} = \left[\frac{1 + c\pi}{1 + \pi} \right] \frac{2\bar{X}}{[\bar{X} - \sigma^2] + [\bar{X} - k\sigma^2]} - \frac{1}{1 + \pi}.$$

Finally, the slope of the security market line (the premium for one unit of beta exposure among stocks) is

$$(29) \quad \lambda = \left[\frac{1 + c\pi}{1 + \pi} \right] \times \frac{[\bar{X} - \sigma^2]\bar{X} - [\bar{X} - k\sigma^2]\bar{X}}{[(2k/(1+k))\bar{X} - k\sigma^2][\bar{X} - \sigma^2] - [\bar{X} - k\sigma^2][(2/(1+k))\bar{X} - \sigma^2]}.$$

The difference between the beta premium and the equity premium simplifies to

$$(30) \quad \left[\frac{1 + c\pi}{1 + \pi} \right] \left[\frac{\lambda}{\beta_{3-2}} - \theta \right] - \frac{1}{1 + \pi} = \frac{-c\pi}{1 + \pi}.$$

In words, the excess slope of the security market line ($-c\pi/(1 + \pi)$) is determined by the product of inflation and the fraction of the market's risk-bearing capacity controlled by money-illusioned investors.

HARVARD BUSINESS SCHOOL

KELLOGG SCHOOL OF MANAGEMENT, NORTHWESTERN UNIVERSITY

HARVARD UNIVERSITY AND NATIONAL BUREAU OF ECONOMIC RESEARCH

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Building the Future From the Past*



WENDY FARROW

BY ROGER G. IBBOTSON

Professor in the
Practice of Finance,
Yale School of
Management

UNTIL THE LAST TWO YEARS, INVESTORS had not seen consecutive negative annual stock market returns since the 1970s. In contrast, during the 1980s and 1990s the market produced its best 20-year performance ever. But neither the last two years nor the last two decades are good predictors of the long run.

A forecast usually begins by comparing the expected return on stocks with that of a low-risk asset, such as U.S. government bonds. This differ-

volatile. The only way to get a good representation is to look back over a long period of time, so that the ups and downs of the market tend to cancel out and we get a reasonable average.

The compound average annual nominal rate of return (including inflation) for common stocks was 10.7 percent over the period 1926–2001. This return exceeded long-term U.S. Treasury yields by over 5 percent per year. That difference was the historical equity risk premium—the amount of extra return investors got over the last three-quarters of a century for invest-

about 14 over the whole 76 years.

This growth in the P/E ratio is not expected to repeat in the future. Thus, to a certain extent, the stock market has outrun the underlying real earnings power of corporations.

A long-term forecast should not extrapolate the separation of the P/E ratio indefinitely. But today's high P/E ratios are not necessarily going to soon revert to historical levels, because the prices reflect the future outlook of investors—all those people and institutions that hold, buy, or sell stocks. In fact, if today's P/E ratio is higher than in the past, it has to mean one of three things: The price is now unrealistically high, people are willing to accept a much lower expected return for the

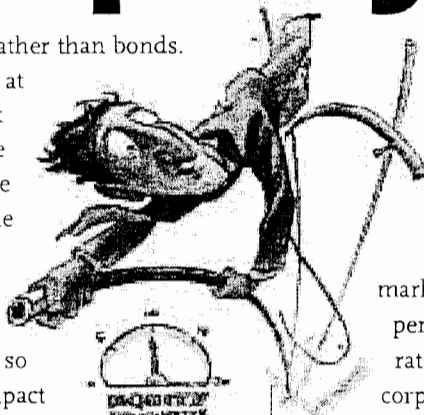
Measuring Equity Risk

ence is called the equity (stock) risk premium, because it is likely to be positive and represents the extra payoff that an investor demands (but does not always get) for investing in something risky (stocks) compared with something nearly risk-free (government bonds). Thus, the bond yield is our starting point, and adding the equity risk premium gives us the expected return on stocks.

Generally, the best way to get a sense of what the future may bring is to look at the past. After all, the past is our primary source of data. But, as you already know from recent market results, the stock market is quite

ing in stocks rather than bonds.

But looking at historical stock returns relative to bond income is not the whole picture. The bull market of the 1980s and 1990s had so much of an impact on stock prices that the price of stocks in the S&P 500® Index is almost 30 times the earnings of the same companies. This contrasts with a price/earnings (P/E) ratio closer to 10 back in the 1970s—and only



risk of stocks, or the market is optimistic that the earnings per share growth of corporations will be higher than it was in the past.

In fact, I believe in the market's optimism. Earnings per share will grow at faster rates for two reasons. First, corporations are paying out lower dividends and retaining more earnings. These extra retained earnings are reinvested back into firms. If the money is used productively, extra growth can be achieved.

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Stock Returns for a New Century*

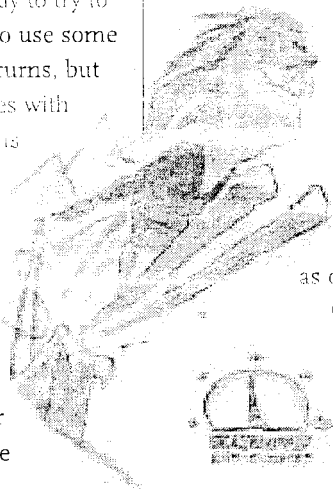
BY JOHN Y. CAMPBELL



Professor of Applied
Economics,
Harvard University

WHAT RETURNS SHOULD INVESTORS expect the U.S. stock market to deliver on average during this century? Does the experience of the last century provide a reliable guide to the future?

Perhaps the simplest way to try to forecast future returns is to use some average of past realized returns, but there are serious difficulties with this approach. Stock returns are so variable that even an average measured over a century is an unreliable guide to the true long-term average. Also, if the expected future stock return is not constant, but changes over time, it can have a perverse



have happened during the long bull market of the 1980s and 1990s.

An alternative approach is to forecast future returns using valuation ratios — ratios of stock prices to accounting measures of value, such as dividends or earnings. One variant of this approach, known as the Gordon growth model, breaks returns into income

consistent with average realized returns. For instance, from 1871–2001, the average dividend/price ratio was just under 5 percent, while the average real growth rate was just over 2 percent, adding to about 7 percent, which is the long-term compound average realized stock return in real terms, that is, correcting for inflation. The average earnings/price ratio was also close to 7 percent.

But current valuation ratios are wildly different from historical averages, reflecting the unprecedented 20-year bull market that ended about two years ago. The dividend/price ratio, for example, has fallen dramatically to about 1.5 percent. In part, this may be due to a shift in corporate financial policy away from paying dividends and toward repurchasing shares. One way to correct for this is to add repurchases to conventional dividends, but this still implies a dividend/price ratio of only about 2.5 percent. The earnings/price ratio has also declined. In the short term, this ratio may be affected by temporary cyclical fluctuations in earnings. But even correcting for this, the earnings/price ratio is about half its long-term historical average.

The implications of current valuations for future returns depend on

k Premium

effect on the average realized return: Consider what happens if the expected future stock return declines — perhaps because investors have become more comfortable with equity (stock) market risk and require a smaller compensation for bearing it. Investors' willingness to reduce their equity risk premium itself tends to drive up the price of stocks, causing an increase in realized returns. Thus, at precisely the wrong time, when the expected future stock return is declining, the average of past stock returns will actually increase. This may well

(the dividend/price ratio) and capital gains (the long-term average growth rate of dividends). Return is estimated by the dividend/price ratio plus the dividend growth rate. Another variant argues that stock returns come from corporate earnings: Earnings that are paid out generate income, while earnings that are reinvested generate growth. In the long run, both components of earnings are equally valuable and thus return should equal the earnings/price ratio.

Over long periods of time, these formulas have given results that are

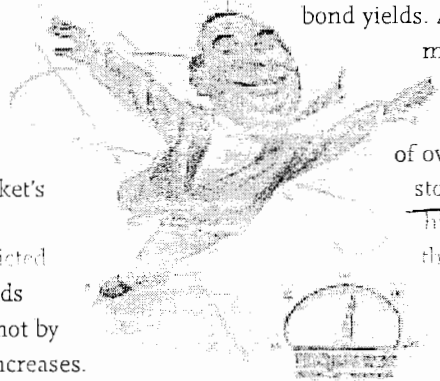
*Ibbotson's and Campbell's columns refer to returns on the S&P 500® Index, in nominal terms and real (inflation-adjusted) terms respectively.

continued on page 12

Building the Future From the Past continued from page 10

Second, investors are rationally willing to pay high prices for current earnings when they think future earnings will grow. The evidence demonstrates that over time investors who buy when the market's P/E ratios are high do just about as well as those who buy when the market's P/E ratios are low.

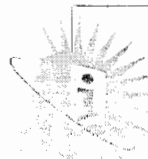
Stocks are predicted to outperform bonds in the future, but not by further P/E ratio increases.



Instead, stocks will tend to participate with the overall U.S. economy and earnings per share growth. My forecast for stocks is somewhat less than 4 percent in excess of long-term bond yields.

Applying this premium to recent bond yields gives a long-term forecast of over 9 percent for the stock market. It is high, but lower than the historical stock market return. But, of course, there is no free lunch. The

reason stocks are expected to outperform bonds is that they are riskier than bonds. Although stocks belong in most people's portfolios, the smart investor will still want to diversify across different types of stocks, as well as across bonds and other asset classes. ■



To learn more about Ibbotson's research, go to <http://mba.yale.edu/faculty/professors/ibbotson.htm>.

Stock Returns for a New Century continued from page 11

whether the market has reached a new steady state, in which current valuations will persist, or whether these valuations are the result of some transitory phenomenon.

If current valuations represent a new steady state, they imply a substantial decline in the equity returns that can be expected in the future. The future expected stock return might be 3.5 percent to 4.5 percent, rather than the historical average of 7 percent. This would allow for only a very modest equity premium relative to Treasury bills or inflation-indexed Treasury bonds, which currently offer a safe 3.5 percent real yield.

If current valuations are transitory, it matters critically what happens to restore traditional valuation ratios. Rapid earnings and dividend growth could restore traditional valuations without any decline in stock prices. While this is always a possibility, it would be historically unprecedented. The U.S. stock market has an extremely poor record of predicting

long-term earnings and dividend growth. Historically, stock prices have increased relative to earnings during decades of rapid earnings growth, such as the 1920s, 1960s, and 1990s, as if the stock market anticipates that rapid earnings growth will continue in the next decade. But there is no systematic tendency for a profitable decade to be followed by a second profitable decade. The 1920s, for example, were followed by the 1930s, and the 1960s by the 1970s. Thus, stock market optimism often fails to be justified by subsequent earnings growth.

A second possibility is that stock prices will decline or stagnate until traditional valuations are restored. This has occurred at various times in the past after periods of unusually high stock prices, notably in the 1900s, 1910s, 1930s, and 1970s. This would imply extremely low and perhaps even negative returns during the adjustment period and then higher returns afterward.

It is too soon to tell which of these

views is correct, and I believe it is sensible to put some weight on each. That is, I expect valuation ratios to return part way but not fully to traditional levels, with the adjustment coming primarily from stock prices rather than earnings growth. A rough guess for the long-term stock return, after the adjustment process is complete, might be a compound average real equity return of 5.0 percent to 5.5 percent, corresponding to an equity premium of 1.5 percent to 2.0 percent. ■



To learn more about Campbell's research, go to <http://post.economics.harvard.edu/faculty/campbell/campbell.html>.

"Idea Exchange" is a forum for presenting alternative views on topics of interest to readers of *Investment Forum*. The ideas expressed in these columns are those of the authors, who are experts in their field, and unaffiliated with TIAA-CREF. Their opinions are based on their research and do not necessarily represent the position of TIAA-CREF. The research relies in part upon past performance, which we can't guarantee will be replicated. Forecasts cannot accurately predict future results.

American Water Works: A History Of Operating At Low Equity Ratios

Docket 06_00290____
Exhibit CAPD-SB____
Direct Testimony____
Schedule 1_____
Page 1 of 2_____

Consolidated Capitalization Ratios

(At December 31)	Common Equity	Preferred Stock	Debt
2001	36%	1%	63%
2000	37%	1%	62%
1999	37%	2%	61%
1998	37%	2%	61%
1997	36%	3%	61%

**American Water Works
Capital Structure Components
At End of FY 2001**

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Exhibit CAPD-SB____
Direct Testimony____
Schedule 1_____
Page 2 of 2_____

Capital Structure: Dollars (1000)

W/O Short-term Debt

With Short-term Debt

With Short-term Debt And Current LTD

Common Equity	DebtAtParent	DebtAtSubs	Preferred At Parent And Subs	Capital Lease	Short-term Debt	Current portion of long-term debt	Grand Total	Total Debt In Grand Total
1,758,018	297,000	2,250,490	49,415	2,529			4,357,452	2,547,490
1,758,018	297,000	2,250,490	49,415	2,529	414,083		4,771,535	2,961,573
1,758,018	297,000	2,250,490	49,415	2,529	414,083	166,087	4,937,622	3,127,660

Capital Structure: Percentages(Ratios)

W/O Short-term Debt

With Short-term Debt

With Short-term Debt And Current LTD

Common Equity	DebtAtParent	DebtAtSubs	Preferred At Parent And Subs	Capital Lease	Short-term Debt	Current portion of long-term debt	Grand Total	Total Debt In Grand Total
40.3%	6.8%	51.6%	1.1%	0.1%			100.0%	58.5%
36.8%	6.2%	47.2%	1.0%	0.1%	8.7%		100.0%	62.1%
35.6%	6.0%	45.6%	1.0%	0.1%	8.4%	3.4%	100.0%	63.3%

Common Equity		Preferred At Parent And Subs			Total Debt In Grand Total
36%		1%			63%

**Capital Structure Percentages Reported In AWW 10K
For Fiscal Year Ending Dec 31, 2001**

**American Water Works
Capital Structure Drops
To 30% In March 2002**

Docket 06_00290____
Exhibit CAPD-SB____
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(From AWK's 10K Exhibit 13 March 2002.) "Upon giving effect to the above financings through January 14, 2002, and the call of American Water Works' preferred stocks effective March 1, 2002, the Company's total debt represents 70% of total capitalization. The Company's bank credit facility that expires on June 25, 2002 includes a limitation on total debt not to exceed 72.5% of total capitalization. Upon renewal of the credit facility, the Company will seek to increase the debt limitation given the pending upgrades from the rating agencies in connection with the RWE merger. However, if the Company were not successful in increasing the debt limitation, the Company may need to issue additional equity in order to continue its acquisition strategy. In addition if the RWE merger did not close, the Company would need to issue equity in order to maintain its credit ratings. "

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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Direct Testimony____
Schedule 3____
Page 1 of 8____

American States Water: Consolidated Capitalization

(In Thousands of \$)

Capital Structure Components As Of:	2005: Dec 31	2004: Dec 31	2003: Dec 31	2002: Dec 31	2001: Dec 31
Short-Term Debt: Notes Due	\$27,000	\$45,000	\$56,000	\$35,000	\$20,000
Short-Term Debt: Current Portion of Long-Term Debt	\$635	\$880	\$820	\$13,305	\$800
Long-Term Debt	\$268,405	\$228,902	\$229,799	\$231,089	\$245,692
Trust Preferred Securities	\$0	\$0	\$0	\$0	\$280
Common Equity	\$264,094	\$251,465	\$212,487	\$213,279	\$204,654
Total	\$560,134	\$526,247	\$499,106	\$492,673	\$471,426

RATIOS:

Short-Term Debt: Notes Due	5.4%	9.0%	11.2%	7.1%	4.2%
Short-Term Debt: Current Portion of Long-Term Debt	0.1%	0.2%	0.2%	2.7%	0.2%
Long-Term Debt	53.8%	45.9%	46.0%	46.9%	52.1%
Trust Preferred Securities	0.0%	0.0%	0.0%	0.0%	0.1%
Common Equity	52.9%	50.4%	42.6%	43.3%	43.4%
Total	112.2%	105.4%	100.0%	100.0%	100.0%

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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California Water Svc Group: Consolidated Capitalization

(In Thousands of \$)

Capital Structure Components As Of:	2005: Dec 31	2004: Dec 31	2003: Dec 31	2002: Dec 31	2001: Dec 31
Short-Term Debt: Notes Due	\$0	\$0	\$6,454	\$36,379	\$22,000
Short-Term Debt: Current Portion of Long-Term Debt	\$1,133	\$1,100	\$904	\$1,000	\$5,381
Long-Term Debt	\$274,142	\$274,821	\$272,226	\$250,365	\$202,600
Common Equity	\$293,941	\$287,605	\$244,524	\$199,217	\$196,619
Preferred	\$3,475	\$3,475	\$3,475	\$3,475	\$3,475
Total	\$572,691	\$567,001	\$527,583	\$490,436	\$430,075

RATIOS:

Short-Term Debt: Notes Due	0.0%	0.0%	1.2%	7.4%	5.1%
Short-Term Debt: Current Portion of Long-Term Debt	0.2%	0.2%	0.2%	0.2%	1.3%
Long-Term Debt	47.9%	48.5%	51.6%	51.0%	47.1%

Common Equity	51.3%	50.7%	46.3%	40.6%	45.7%

Preferred	0.6%	0.6%	0.7%	0.7%	0.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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Connecticut Water Service: Consolidated Capitalization

(In Millions of \$)

Capital Structure Components As Of:	2005: Dec 30	2004: Dec 30	2003: Dec 30	2002: Dec 30	2001: Dec 30
Short-Term Debt: Notes Due	\$4,750	\$5,650	\$9,700	\$6,950	\$1,825
Short-Term Debt: Current Portion of Long-Term Debt	\$2,331	\$326	\$254	\$242	\$2,205
Long-Term Debt	\$77,404	\$66,399	\$64,754	\$64,734	\$63,953
Common Equity	\$94,076	\$87,865	\$83,315	\$79,975	\$70,783
Preferred	\$847	\$847	\$847	\$847	\$847
Total	\$179,408	\$161,087	\$158,870	\$152,748	\$139,613

RATIOS:

Short-Term Debt: Notes Due	2.6%	3.5%	6.1%	4.5%	1.3%
Short-Term Debt: Current Portion of Long-Term Debt	1.3%	0.2%	0.2%	0.2%	1.6%
Long-Term Debt	43.1%	41.2%	40.8%	42.4%	45.8%

Common Equity	52.4%	54.5%	52.4%	52.4%	50.7%

Preferred	0.5%	0.5%	0.5%	0.6%	0.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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Exhibit CAPD-SB____
Direct Testimony____
Schedule 3____
Page 4 of 8____

Middlesex Water Company: Consolidated Capitalization

(In \$)

<i>Capital Structure Components As Of:</i>	<i>2005: DEC 30</i>	<i>2004: DEC 30</i>	<i>2003: DEC 30</i>	<i>2002: DEC 30</i>	<i>2001: Sep 30</i>
<i>Short-Term Debt: Notes Due</i>	<i>\$4,000,000</i>	<i>\$11,000,000</i>	<i>\$12,500,000</i>	<i>\$17,650,000</i>	<i>\$13,225,000</i>
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	<i>\$1,930,617</i>	<i>\$1,091,351</i>	<i>\$1,067,258</i>	<i>\$639,427</i>	<i>\$358,836</i>
<i>Long-Term Debt</i>	<i>\$128,174,944</i>	<i>\$115,280,649</i>	<i>\$97,376,847</i>	<i>\$87,483,382</i>	<i>\$88,140,459</i>
<i>Common Equity</i>	<i>\$99,592,325</i>	<i>\$95,128,651</i>	<i>\$79,643,184</i>	<i>\$76,501,245</i>	<i>\$72,290,312</i>
<i>Preferred</i>	<i>\$3,958,062</i>	<i>\$4,063,062</i>	<i>\$4,063,062</i>	<i>\$4,063,062</i>	<i>\$4,063,062</i>
<i>Total</i>	<i>\$237,655,948</i>	<i>\$226,563,713</i>	<i>\$194,650,351</i>	<i>\$186,337,116</i>	<i>\$178,077,669</i>

RATIOS:

<i>Short-Term Debt: Notes Due</i>	<i>1.7%</i>	<i>4.9%</i>	<i>6.4%</i>	<i>9.5%</i>	<i>7.4%</i>
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	<i>0.8%</i>	<i>0.5%</i>	<i>0.5%</i>	<i>0.3%</i>	<i>0.2%</i>
<i>Long-Term Debt</i>	<i>53.9%</i>	<i>50.9%</i>	<i>50.0%</i>	<i>46.9%</i>	<i>49.5%</i>
<i>Common Equity</i>	<i>41.9%</i>	<i>42.0%</i>	<i>40.9%</i>	<i>41.1%</i>	<i>40.6%</i>
<i>Preferred</i>	<i>1.7%</i>	<i>1.8%</i>	<i>2.1%</i>	<i>2.2%</i>	<i>2.3%</i>
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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Aqua America: Consolidated Capitalization					
<i>(In Thousands of \$)</i>					
Capital Structure Components As Of:	2005: Dec 30	2004: Dec 30	2003: Dec 30	2002: Dec 30	2001: Dec 30
Short-Term Debt: Notes Due	\$138,505	\$74,810	\$96,459	\$115,113	\$109,668
Short-Term Debt: Current Portion of Long-Term Debt	\$24,645	\$50,195	\$39,386	\$34,265	\$14,935
Long-Term Debt	\$878,438	\$784,461	\$696,666	\$582,910	\$516,520
Common Equity	\$811,923	\$747,231	\$659,030	\$493,097	\$472,717
Preferred	\$1,551	\$1,237	\$0	\$172	\$1,116
Total	\$1,855,062	\$1,657,934	\$1,491,541	\$1,225,557	\$1,114,956
RATIOS:					
Short-Term Debt: Notes Due	7.5%	4.5%	6.5%	9.4%	9.8%
Short-Term Debt: Current Portion of Long-Term Debt	1.3%	3.0%	2.6%	2.8%	1.3%
Long-Term Debt	47.4%	47.3%	46.7%	47.6%	46.3%
Common Equity	43.8%	45.1%	44.2%	40.2%	42.4%
Preferred	0.1%	0.1%	0.0%	0.0%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

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S J W: Consolidated Capitalization

(In Thousands of \$)

<i>Capital Structure Components As Of:</i>	<i>2005: Dec 30</i>	<i>2004: Dec 30</i>	<i>2003: Dec 30</i>	<i>2002: Dec 30</i>	<i>2001: Dec 30</i>
<i>Short-Term Debt: Notes Due</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$11,450</i>	<i>\$11,500</i>
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	<i>\$332</i>	<i>\$275</i>	<i>\$252</i>	<i>\$0</i>	<i>\$0</i>
<i>Long-Term Debt</i>	<i>\$145,281</i>	<i>\$143,604</i>	<i>\$143,879</i>	<i>\$110,000</i>	<i>\$110,000</i>
<i>Common Equity</i>	<i>\$195,908</i>	<i>\$184,691</i>	<i>\$166,368</i>	<i>\$153,499</i>	<i>\$149,354</i>
<i>Preferred</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>
<i>Total</i>	<i>\$341,521</i>	<i>\$328,570</i>	<i>\$310,499</i>	<i>\$274,949</i>	<i>\$270,854</i>

RATIOS:

<i>Short-Term Debt: Notes Due</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>4.2%</i>	<i>4.2%</i>
<i>Short-Term Debt: Current Portion of Long-Term Debt</i>	<i>0.1%</i>	<i>0.1%</i>	<i>0.1%</i>	<i>0.0%</i>	<i>0.0%</i>
<i>Long-Term Debt</i>	<i>42.5%</i>	<i>43.7%</i>	<i>46.3%</i>	<i>40.0%</i>	<i>40.6%</i>
<i>Common Equity</i>	<i>57.4%</i>	<i>56.2%</i>	<i>53.6%</i>	<i>55.8%</i>	<i>55.1%</i>
<i>Preferred</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>

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Southwest Water Company: Consolidated Capitalization

(In Thousands of \$)

Capital Structure Components As Of:	2005: Dec 31	2004: Dec 31	2003: Dec 31	2002: Dec 31	2001: Dec 31
Short-Term Debt: Notes Due	\$30,000	\$23,035	\$16,609	\$20,158	\$13,863
Short-Term Debt: Current Portion of Long-Term Debt	\$9,492	\$2,733	\$2,697	\$1,969	\$3,344
Long-Term Debt	\$117,603	\$115,827	\$56,493	\$60,827	\$50,967
Common Equity	\$144,792	\$125,737	\$79,160	\$61,324	\$55,205
Preferred	\$461	\$461	\$507	\$513	\$513
Total	\$302,348	\$267,793	\$155,466	\$144,791	\$123,892

RATIOS:

Short-Term Debt: Notes Due	9.9%	8.6%	10.7%	13.9%	11.2%
Short-Term Debt: Current Portion of Long-Term Debt	3.1%	1.0%	1.7%	1.4%	2.7%
Long-Term Debt	38.9%	43.3%	36.3%	42.0%	41.1%
Common Equity	47.9%	47.0%	50.9%	42.4%	44.6%
Preferred	0.2%	0.2%	0.3%	0.4%	0.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Comparable Companies' Capital Structure: As Stated In Audited SEC 10-K Reports

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York Water Company: Consolidated Capitalization

(In Thousands of \$)

Capital Structure Components As Of:	2005: Dec 31	2004: Dec 31	2003: Dec 31	2002: Dec 31	2001: Dec 31
Short-Term Debt: Notes Due	\$7,292	\$0	\$7,153	\$2,738	\$2,000
Short-Term Debt: Current Portion of Long-Term Debt	\$12,039	\$16,339	\$2,739	\$38	\$38
Long-Term Debt	\$39,385	\$35,574	\$29,913	\$32,652	\$32,690
Common Equity	\$50,415	\$48,037	\$39,057	\$37,217	\$35,891
Preferred	\$0	\$0	\$0	\$0	\$0
Total	\$109,131	\$99,950	\$78,862	\$72,645	\$70,620

RATIOS:

Short-Term Debt: Notes Due	6.7%	0.0%	9.1%	3.8%	2.8%
Short-Term Debt: Current Portion of Long-Term Debt	11.0%	16.3%	3.5%	0.1%	0.1%
Long-Term Debt	36.1%	35.6%	37.9%	44.9%	46.3%
Common Equity	46.2%	48.1%	49.5%	51.2%	50.8%
Preferred	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

**AWW May Have To
'Retract' Capital From TAWC To Pay
For Preferred Stock**

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OCA Statement 1

COMMONWEALTH OF PENNSYLVANIA
BEFORE THE PUBLIC UTILITY COMMISSION

Application of Pennsylvania-American	:	
Water Company for Approval of a Change in	:	
Control to be Effected Through a Public	:	Docket No. A-212285F0136
Offering of the Common Stock of American	:	
Water Works Company, Inc.	:	

**Direct Testimony of
Scott J. Rubin**

on behalf of

Office of Consumer Advocate

*** Non-Proprietary Version ***

September 29, 2006

AWW May Have To 'Retract' Capital From TAWC To Pay For Preferred Stock

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Direct Testimony of Scott J. Rubin, PA PUC Docket No. A-212285F0136

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1 In short, PAWC and its customers will not receive any benefits from the IPO.

2 Indeed, as is the case with AWW, PAWC and its customers are likely to be made worse
3 off by the IPO, through higher capital costs, reduced access to capital, management
4 distraction, and increased costs associated with supporting a publicly traded company.

5 **Q. What do you conclude about the effects of the proposed IPO on PAWC and its**
6 **customers?**

7 A. I conclude that the proposed IPO would be detrimental to PAWC and its customers.

8 **8. Financial Fall-out of IPO: Preferred Stock**

9 **Q. Does the proposed IPO have any other financial consequences for AWW?**

10 A. Yes, it does. If RWE is permitted to sell its common stock in AWW, that results in the
11 automatic call of approximately \$1.75 billion in AWW preferred stock that is owned by
12 another RWE company, Thames Water International Luxemburg (TWIL). This is part of
13 a more complex financial arrangement, involving other RWE subsidiaries, designed to
14 shield RWE from tax liability. Simply, one immediate consequence of the IPO is that
15 AWW will have to come up with \$1.75 billion in cash to redeem the AWW preferred
16 stock held by another RWE company.

Calculation Of Parent's Debt Cost

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Thames Water and Subsidiary debt maturities of long-term debt

<u>Interest rate</u>	<u>2005/12/31</u>	<u>2004/12/31</u>	<u>Weighted Cost</u>	
0%-1.99%	269,547	183,432	1.0%	2,695
2%-2.99%	4,833	4,609	2.5%	121
3%-3.99%	239,461	239,566	3.5%	8,381
4%-4.99%	1,928,210	1,529,360	4.5%	86,769
5%-5.99%	860,515	860,888	5.5%	47,328
6%-6.99%	532,477	553,181	6.5%	34,611
7%-7.99%	503,986	522,863	7.5%	37,799
8%-8.99%	142,789	149,660	8.5%	12,137
9%-9.99%	145,755	170,870	9.5%	13,847
10%-10.99%	25,415	25,802	10.5%	2,669
Capital leases	2,494	1,710	5.0%	125
	<u>4,655,482</u>	<u>4,241,941</u>	5.29%	<u>246,482</u>

Source: TAWC Response to CAPD Discovery, Part III, No. 5(f), Attachment , page 24

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Water Company	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	2000	2001	2002	2003	2004	2005	2006	2007	2000-2003	2003-2007	2000-2007	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Amer St Water (NYSE:AWR)	18.91	19.12	20.01	20.58	22.81	24.47	31.01	38.57	8.8	87.4	104.0	1.1	4.7	2.8	10.8	7.3	26.7	24.4
Connecticut Water Service, Inc. (NASDAQ:CTWS)	16.44	16.37	25.20	22.21	24.99	24.70	23.68	23.11	35.1	4.1	40.6	-0.4	53.9	-11.9	12.5	-1.2	-4.1	-2.4
California Water Svc (NYSE:CWT)	21.29	20.57	20.84	20.91	25.11	34.59	37.40	39.63	-1.8	89.5	86.1	-3.4	1.3	0.3	20.1	37.8	8.1	6.0
Middlesex Water Company (NASDAQ:MSEX)	12.17	12.91	14.39	13.99	18.46	17.49	16.96	18.75	15.0	34.0	54.1	6.1	11.5	-2.8	32.0	-5.3	-3.0	10.6
S J W Cp (AMEX:SJW)	16.22	14.35	12.77	11.67	13.70	16.77	22.20	39.88	-28.1	241.7	145.9	-11.5	-11.0	-8.6	17.4	22.4	32.4	79.6
Southwest Water Company (NASDAQ:SWWC)	6.70	6.78	8.52	8.64	10.34	12.46	14.27	13.31	29.0	54.1	98.7	1.2	25.7	1.4	19.7	20.5	14.5	-6.7
Aqua America(NYSE:WTR)	6.46	9.59	12.21	11.39	15.62	17.48	27.05	22.51	76.3	97.6	248.5	48.5	27.3	-6.7	37.1	11.9	54.7	-16.8
York Water Company (NASDAQ:YORW)	4.62	5.17	8.97	8.73	11.04	12.64	16.49	17.88	89.0	104.8	287.0	11.9	73.5	-2.7	26.5	14.5	30.5	8.4
Average Annual Increase→												6.7	23.4	-3.5	22.0	13.5	20.0	12.9

**Value Line's
'Lopsided Distribution
Of Betas**

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The Lopsided Distribution Of Value Line's Betas August 4, 2006 - 1568 Companies With
Betas: 60% Of The Companies Are As Risky Or More Risky Than The Market And The
Weighted Average Beta Is 1.103

Beta Value	# Of Companies With The Beta Value To The Left	Cumulative Total	% Of Companies At Or Above The Beta Value	% Of Companies Below The Beta Value	# Of Companies As % Of Total Comps.	Weighte d Av. Of Betas
2.85	1	1	0.1%	99.9%	0.1%	0.002
2.80	1	2	0.1%	99.9%	0.1%	0.002
2.60	3	5	0.3%	99.7%	0.2%	0.005
2.40	1	6	0.4%	99.6%	0.1%	0.002
2.30	2	8	0.5%	99.5%	0.1%	0.003
2.25	3	11	0.7%	99.3%	0.2%	0.004
2.20	1	12	0.8%	99.2%	0.1%	0.001
2.15	4	16	1.0%	99.0%	0.3%	0.005
2.10	3	19	1.2%	98.8%	0.2%	0.004
2.05	5	24	1.5%	98.5%	0.3%	0.007
2.00	2	26	1.7%	98.3%	0.1%	0.003
1.95	8	34	2.2%	97.8%	0.5%	0.010
1.90	6	40	2.6%	97.4%	0.4%	0.007
1.85	11	51	3.3%	96.7%	0.7%	0.013
1.80	16	67	4.3%	95.7%	1.0%	0.018
1.75	12	79	5.0%	95.0%	0.8%	0.013
1.70	21	100	6.4%	93.6%	1.3%	0.023
1.65	14	114	7.3%	92.7%	0.9%	0.015
1.60	28	142	9.1%	90.9%	1.8%	0.029
1.55	25	167	10.7%	89.3%	1.6%	0.025
1.50	23	190	12.1%	87.9%	1.5%	0.022
1.45	30	220	14.0%	86.0%	1.9%	0.028
1.40	49	269	17.2%	82.8%	3.1%	0.044
1.35	61	330	21.0%	79.0%	3.9%	0.053
1.30	48	378	24.1%	75.9%	3.1%	0.040
1.25	64	442	28.2%	71.8%	4.1%	0.051
1.20	72	514	32.8%	67.2%	4.6%	0.055
1.15	81	595	37.9%	62.1%	5.2%	0.059
1.10	115	710	45.3%	54.7%	7.3%	0.081
1.05	117	827	52.7%	47.3%	7.5%	0.078
1.00	120	947	60.4%	39.6%	7.7%	0.077
0.95	130	1077	68.7%	31.3%	8.3%	0.079
0.90	125	1202	76.7%	23.3%	8.0%	0.072
0.85	95	1297	82.7%	17.3%	6.1%	0.051
0.80	86	1383	88.2%	11.8%	5.5%	0.044
0.75	69	1452	92.6%	7.4%	4.4%	0.033
0.70	45	1497	95.5%	4.5%	2.9%	0.020
0.65	35	1532	97.7%	2.3%	2.2%	0.015
0.60	18	1550	98.9%	1.1%	1.1%	0.007
0.55	12	1562	99.6%	0.4%	0.8%	0.004
0.50	3	1565	99.8%	0.2%	0.2%	0.001
0.40	1	1566	99.9%	0.1%	0.1%	0.000
0.35	2	1568	100.0%	0.0%	0.1%	0.000
					100.0%	1.103

Double Leverage Calculations

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	Source:TAWC Witness Sheila Miller - Exhibit 3	Ratios:	Cost Of Outside Financing	Weighted Cost Of Outside Debt
	(1)	(2)	(3)	(4)
TAWC's Total Capital (\$)	105,827,056	100.0%		
Outside Financing:				
9.25% Series	2,500,000	2.4%	9.3%	1.5%
7.84% Series	5,700,000	5.4%	7.8%	3.4%
6.50% series	6,500,000	6.1%	6.5%	3.9%
9.489% Capital Lease	902,161	0.9%	9.8%	0.5%
Total Outside Financing	15,602,161	14.7%		9.3%
Financing From Parent:	90,224,895	85.3%		
	(1)	(2)	(3)	(4)
				Weighted Cost Of Internal Financing
Parent:		Ratios:	Cost Of Internal Financing	
Debt:		70.0%	5.3%	3.7%
Equity		30.0%	7.5%	2.3%
Total				6.0%
	(1)	(2)	(3)	(4)
				Weighted Cost: All Financing
Total Weighted Cost By Source:		Ratios		
Outside Financing:		14.7%	9.3%	1.4%
Internal Financing:		85.3%	6.0%	5.1%
Total Weighted Cost				6.4%

Banc of America Investment Advisors

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INVESTMENT STRATEGIES GROUP

Week of October 2, 2006

CAPITAL MARKET OUTLOOK

Lynn Reaser, Ph.D., Managing Director & Chief Economist
Harvey B. Hirschhorn, CFA, Managing Director & Chief Portfolio Strategist
Joseph P. Quinlan, Managing Director & Chief Market Strategist

Highlights

- Undeterred by mixed economic reports, stocks touched record highs last week.
- In the long term, slower stock appreciation may drive higher demand for dividends.
- Japanese and European stocks may be more exposed to the U.S. economy than investors think.

Economic outlook

— Lynn Reaser, Ph.D.

Current market focus

Stock investors pushed prices into record territory last week, ignoring some of the economy's recent fluctuations. Sales of existing homes eased just 0.5% in August, while new-home sales jumped 4%. It is important to note that these numbers can be quite volatile and that total home sales are still 14% below their June 2005 peak. Nevertheless, the housing correction does not appear to be intensifying.

Numbers on industrial activity were slightly unpredictable this week. Durable goods orders fell another 0.5% in August, adding to July's 2.7% drop. Although a falloff in the volatile commercial aircraft category accounted for a significant amount of the decline, new orders for nondefense capital goods excluding aircraft also dipped 0.3%. Strong data for the prior three months still suggests that business investment is in a solid upward trend. Meanwhile, the Chicago Purchasing Managers' Index made a strong jump to 62 in September from 57 in the prior month.

Consumers slowed down in August, as auto sales pulled back after July's increase. Spending inched up just 0.1%, trailing the 0.3% rise in personal income, but following the 0.8% surge offered in July. Looking forward, both the Conference Board and University of Michigan reported strong advances in September consumer confidence, boding well for spending in coming months.

Finally, inflation shows signs of greater calm. Excluding food and energy, the Personal Consumption Expenditures Price Index rose a modest 0.2% in August. However, relative to a year ago, prices increased 2.5%, the fastest rise since April 1995.

The week ahead

This week's release of some of September's first key indicators will help gauge the economy's health. Key numbers to monitor will include the Institute for Supply Management (ISM) indices, auto sales and employment.

Do not be surprised to see weaker ISM numbers on both manufacturing and non-manufacturing businesses, as economic growth has clearly moderated. Readings comfortably above 50.0 should still suggest expansion.

Anticipate some improvement in auto sales, as manufacturers and dealers work to clear inventories of 2006 models. Households may still avoid large SUV and light truck purchases despite the recent drop in gasoline prices.

Expect lackluster job growth in September, with nonfarm payrolls up about 100,000 or 110,000. As a result, the jobless rate may move back to 4.8% from 4.7%, although this will still be relatively close to full employment. Workers appear to be displaying some increase in bargaining power. We look for a monthly rise of 0.3%, which would put the gain from a year ago at 4.0% — the largest increase in more than five years.

This week's economic numbers may determine the stock market's next movement. Data showing that economic expansion remains intact, while inflation remains under wraps, could be the boost needed to drive the Dow Jones Industrial Average to that elusive all-time high.

Finally, the latest reading on core inflation should not go unnoticed. The year-over-year rise of 2.5% remains at the top of the Federal Reserve's forecast target of 2.25% to 2.50%, suggesting that monetary policymakers must remain on inflation watch.

Investment strategy

— Harvey B. Hirschhorn, CFA

U.S. equities

After more than six-and-a-half years, the Dow skirted its all-time high last week. However, the S&P 500 remains more than 13% below its prior historical peak, and Nasdaq is still almost 60% below its 2000 pinnacle. Stock prices continued to press higher because of reduced concerns over Federal Reserve policy and dampened inflation fears. In coming weeks, the market will shift its focus to third-quarter corporate earnings and guidance reports. For last week, the Dow increased 1.5%, the S&P 500 rose 1.6%, and Nasdaq gained 1.8%.

Our longer-term forecasts for equities

To develop our forecasts for stock returns over the next 15–20 years, we built upon our long-term expectations for inflation and interest rates that were highlighted in the last two editions of our weekly *Capital Market Outlook*. To recap, we anticipate the following:

- Inflationary pressures to remain moderate, with inflation around 2.5%
- Shorter-term 90-day Treasury bill rates to reflect lower inflation risk, but higher real returns, and deliver a 3.25% yield
- Intermediate-term bonds to produce a compound annual return of around 4.75%
- The Lehman Brothers U.S. Aggregate Bond Index, which represents fixed-income securities with maturities longer than one year, and long-term government bonds to return 5.00% per annum

For large-cap stocks, we use three different methodologies to estimate possible return trends over the next 15–20 years. First, extending our building block approach, in which relationships among various asset classes are built on one another, stocks historically have returned about 500 basis points more than long-term government bonds. However, perhaps 100 basis points of this premium return was due to the expansion of the price-to-earnings (P/E) multiple over the past 80 years. We do not expect P/E multiples to continue to trend higher in the long term. Also, we anticipate a continuation of low volatility in the economy, which is likely to diminish risk premiums to somewhat lower than historical norms. In this environment, a 350 basis-point premium for large-cap stocks over government bonds, or a projected return of 8.5% per annum, appears reasonable.

Our second methodology is based on long-term economic trends. We anticipate inflation of 2.5% per annum. If the economy grows at its long-term trend rate of 3.25%, then nominal gross domestic product (GDP) would average about 5.75% per annum. This growth rate would also be a good estimate for corporate profit growth. Assuming P/E multiples fluctuate around the current level, which is consistent with historical averages, stock appreciation would be 5.75% per year, on average. To get a total return for stocks, we add our estimate for dividend yields, as total return includes both capital gains in the form of stock price appreciation and income from dividends.

Although the current dividend yield on the S&P 500 is below 2%, we anticipate dividend yields will rise to around 2.8%. In an investment environment where lower levels of appreciation are anticipated, investors will continue to demand more of their return in current income or dividends. We believe the continued, favorable tax treatment for dividends makes this prospect more likely. Combined with corporate payout ratios that are well below historical norms and beginning to rise, we anticipate higher yields. Thus, adding a price appreciation of 5.75% to a 2.8% dividend yield produces an average annual return forecast of 8.55%.

A third set of our methodologies incorporates valuation and quantitative models. With one of our modeling processes, we assess multiple longer-term economic scenarios and use valuation techniques that Bank of America's predecessor firms have employed for more than 25 years. Projected large-cap stock returns are a weighted average of these different scenarios. This process suggests returns may be moderately below the 8.5% rate. A second modeling approach within this method takes into account economic and fundamental data. This approach confirms our forecast of 8.5% for large caps.

Through assessing the projected results from all of these alternative methodologies, we conclude that our best guess is for large-cap stocks to have an average return of 8.5% over the next 15–20 years.

Bond market

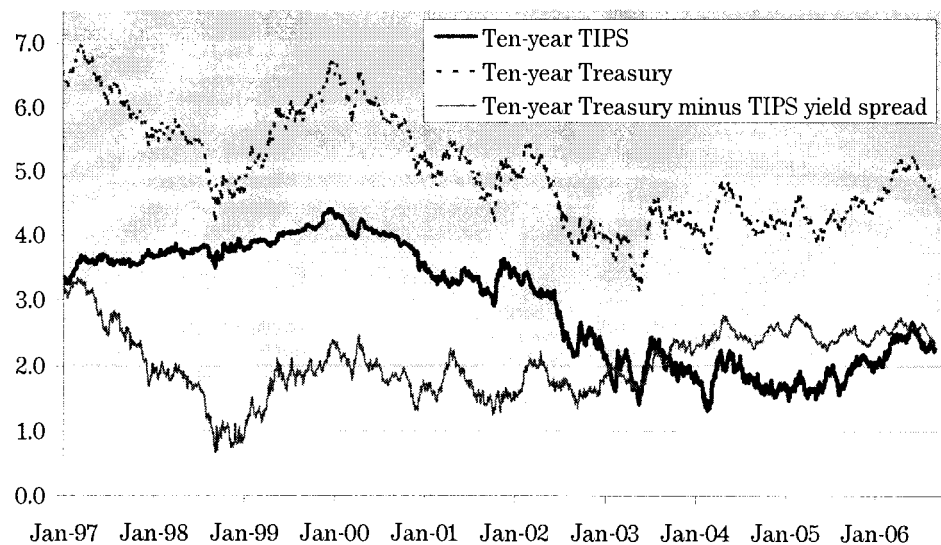
The bond market meandered last week, as economic news was mixed. Although new home sales and consumer confidence reports were firmer, revised second-quarter real GDP and August durable goods orders reports were softer. For the week, the yield on the ten-year Treasury note¹ inched higher, to 4.64% from 4.60%.

¹ The ten-year Treasury note is used solely as a benchmark for long-term interest rates.

What's the bond market thinking?

Bond yields have fallen sharply since the last Fed tightening move in late June. The ten-year Treasury note's yield has dropped from 5.25% to 4.64%. As we have explained in prior editions of the *Capital Market Outlook*, we can disaggregate the Treasury yield into two components: a real return and an inflation expectation. The real return corresponds to the yield on the Treasury Inflation-Protected Securities (TIPS), while the inflation expectation is imputed by subtracting the TIPS yield from the Treasury note yield. Exhibit 1 details the three rates over the past ten years.

Exhibit 1 — Implied inflation expectation
(Ten-year TIPS vs. ten-year Treasury notes¹, yield, daily, percent)



Source: Bloomberg

Data through September 29, 2006

¹The ten-year Treasury note is used solely as a benchmark for long-term interest rates.

Refer to index definitions at the end of this presentation.

Past performance is no guarantee of future results.

As the Exhibit shows, Treasury note yields have fallen by 50 basis points since June 2006. In the same time frame, the TIPS yield has fallen 26 bps, to 2.27%, while the inflation expectation has receded by 24 bps, to 2.37%. Thus, the bond market has become more constructive on the prospects for continued moderate inflation and has scaled down somewhat its outlook for real growth and productivity.

Market commentary

— Joseph P. Quinlan

The foreign markets most exposed to a U.S. economic slowdown

Seeking shelter from the impending economic slowdown in the United States, many U.S. investors are headed overseas, increasingly preferring European and Japanese equities to U.S. stocks. Fueling this trend is the consensus view that both Japan and Europe are poised to grow faster than the United States over the near term. Another

supporting factor is the notion that Europe and Japan are relatively immune to a U.S. economic downturn and are therefore hedges against any negative news emanating from the United States.

We disagree. Large-cap stocks in Europe and Japan are more exposed to an economic slide in the United States than many investors realize.

Global linkages — trade vs. foreign affiliate sales

Based strictly on trade, it's true that Japan and many European nations are not overly exposed to a U.S. economic slowdown. For instance, Japan's exports to the United States accounted for just 3% of its GDP last year. Europe's exposure was even less, with exports from the European Union to the United States accounting for 2.3% of GDP in 2005. French exports to the United States as a percentage of GDP were just 1.6% last year. The percentages for Germany, Italy and Switzerland were 3.0%, 1.7% and 3.9%, respectively. For the United Kingdom, the figure was 2.5% last year.

Notwithstanding all of the above, however, Europe and Japan's immunity to a U.S. downturn all but evaporates once foreign direct investment and affiliate sales are plugged into the equation. European multinationals presently account for roughly 40% of the nearly 10,000 foreign-owned affiliates operating in the United States. Europe's investment base in the United States is massive. European foreign direct investment in the United States (based on an historical cost basis) rose from \$332 billion in 1995 to \$887 billion in 2000, and then to \$1.2 trillion in 2005. In the past decade, Europe's investment stake in the United States has nearly quadrupled.

Between 2000 and 2005, Germany's foreign direct investment position in America soared by more than 50%, from \$122.4 billion to \$184.2 billion. France's investment stake in the United States expanded by 14.1% over the same time frame, the Netherlands' position rose 23%, and Switzerland's soared by nearly 90%. With one of the largest foreign investment positions in the United States, Japan's investment base rose from \$160 billion in 2000 to \$190.3 billion last year, a 19.2% increase.

Not surprisingly, as Japanese and European multinationals have expanded their investment base in the United States over the past decade, the sales of U.S.-based European and Japanese foreign affiliates have also expanded. Presently, U.S.-based foreign affiliate sales are so large that they render traditional trade figures obsolete and misleading.

For example, French foreign-owned affiliate sales in the United States — totaling \$172 billion in 2004, the latest available data — were nearly six times larger than France's exports to the United States in the same year (\$30.3 billion). French exports to the United States are not all that large, falsely signaling only nominal French exposure to a U.S. slowdown, but foreign affiliate sales are massive, suggesting that corporate France, contrary to the consensus, has a great deal riding on the U.S. economy.

That's also true for a host of other nations commonly assumed to be immune to an economic slowdown in the United States. Sales by German foreign-owned affiliates in the United States were nearly four times larger than German exports to the United States in 2004. Japanese foreign affiliate sales were 3.5 times larger than total Japanese exports to the United States. The foreign affiliate sales/export ratio was even higher for the United Kingdom (7.1), and practically off the charts for Switzerland (10.4) and the Netherlands (14.8). The higher the ratio, the more exposed the country is to an

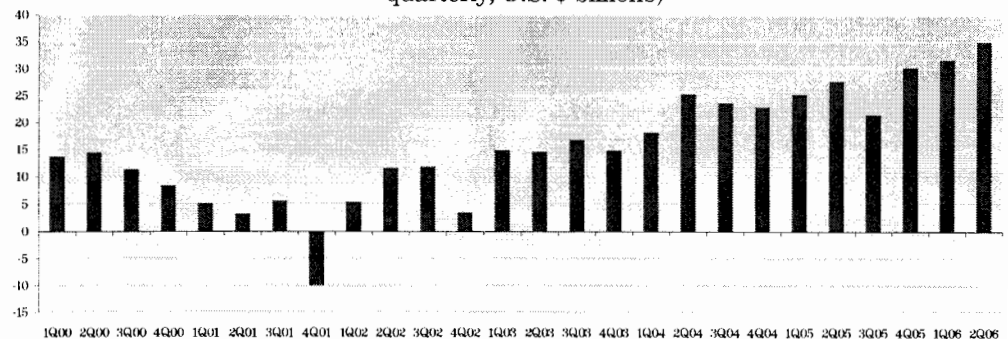
economic slowdown in the United States. That said, British, Dutch, French and Swiss multinationals, as well as German and Japanese multinationals, are clearly in the crosshairs of a U.S. economic downturn.

The earnings of U.S.-based foreign affiliates have never been stronger

The U.S. market has been nothing short of a cash cow over the past few years for many of the largest firms in Europe and Japan. Robust U.S. demand has lifted many boats — not just the earnings of American firms, but European, Canadian, Japanese and Australian companies as well.

Indeed, U.S.-based affiliate earnings have soared since hitting a bottom in late 2001 — the last time the U.S. economy headed south and slipped into recession (see Exhibit 2). In the second quarter of this year, the earnings of foreign affiliates operating in the United States soared to a record \$35.1 billion, a near 27% rise from the same period a year ago. The earnings of European affiliates increased to a record \$24.8 billion in the second quarter of 2006 — a jump of 31.2% from a year ago. Meanwhile, Japanese affiliates — think soaring automobile sales in the United States — earned a record \$4 billion during that same time period, a 25% year-over-year increase.

Exhibit 2 — Profits for foreign affiliates on U.S. soil reach a new peak
(Income of foreign-owned affiliates operating in the United States, quarterly, U.S. \$ billions)



Sources: Bureau of Economic Analysis; Investment Strategies Group
Data through second quarter 2006

Against this backdrop, the equity rallies in Europe and Japan over the past few years have had a “Made in America” element to them. Since 2002, soaring profits from U.S. affiliates have boosted the bottom lines of many European and Japanese firms, helping to drive the earnings and equity prices of many foreign multinationals to new highs.

Now, however, the tide could be set to turn. A slowing U.S. economy could emerge as a drag on the earnings of many large-cap stocks in Europe and Japan over the near term, just as many U.S. investors are seeking shelter from problems at home.

One offset to this scenario is stronger growth in both Europe and Japan. That said, given how important U.S. earnings have become to many European and Japanese multinationals over the past few years, if the U.S. economy flirts with recession in the months ahead, the pain will no doubt be felt across the Atlantic and the Pacific.

Index definitions

The Dow Jones Industrial Average Index is a price-weighted average of 30 actively traded blue-chip stocks as selected by the editors of *The Wall Street Journal*.

The Standard & Poor's (S&P) 500 Index tracks the performance of 500 widely held, large-capitalization U.S. stocks.

The NASDAQ Composite Index is a market capitalization price-only index that tracks the performance of domestic common stocks traded on the regular NASDAQ market as well as National Market System-traded foreign common stocks and American Depository Receipts.

Bloomberg's real yield benchmark for Treasury Inflation-Protected Securities (TIPS) is an unmanaged index calculated from the yield of the current on-the-run TIPS bond of a selected, stated maturity.

The Lehman Brothers U.S. Aggregate Bond Index is an unmanaged, market value-weighted index which covers the U.S. investment-grade fixed-rate bond market. The index is composed of the U.S. Government/Credit Index, the Mortgage-backed Securities Index, the Asset-backed Securities Index, and the Commercial Mortgage-backed Index. It includes U.S. Treasury issues, U.S. agency issues, credit securities, agency mortgage-backed passthrough securities, asset-backed securities and commercial mortgage-based issues with a minimum \$150 million par amount outstanding and a maturity greater than one year. The index includes reinvestment of income and is unavailable for investment.

Indices are unmanaged, and an investor cannot invest directly in an index.

Economic forecasts								
	2005Q3a	2005Q4a	2006Q1a	2006Q2a	2006Q3f	2006Q4f	2005a	2006f
Real GDP (Annual rate, percent change)	4.2	1.8	5.6	2.6	2.0	2.7	3.2	3.3
CPI (Annual rate, percent change)	5.5	3.2	2.2	5.0	3.8	2.3	3.4	3.6
Personal Consumption Expenditures Price Index less food & energy (Annual rate, percent change)	1.6	2.5	2.1	2.7	2.3	2.5	2.1	2.3
S&P 500 operating earnings (Dollars per share)	18.78	20.10	20.86	22.37	21.35	21.75	75.93	86.33
Federal funds rate (End of period, percent)	3.75	4.25	4.75	5.25	5.25	5.25	4.25	5.25
Ten-year Treasury note yield ¹ (End of period, percent)	4.34	4.39	4.86	5.15	4.65	5.05	4.39	5.05
Euro (End of period, dollars per euro)	1.20	1.18	1.21	1.28	1.27	1.28	1.18	1.28
Yen (End of period, yen per dollar)	114	118	118	114	118	116	118	116

a = actual; e = estimate; f = forecast

Tactical asset allocation (Weightings relative to strategic allocation targets)								
	Underweight	Neutral	Overweight		Underweight	Neutral	Overweight	
Equities			✓	Fixed income	✓			
Growth			✓	Investment grade	✓			
Value		✓		Non-investment grade	✓			
Large cap			✓	Cash				✓
Mid cap		✓						
Small cap	✓							
Developed international			✓					

All asset classes are not suitable for all investors. Each investor should select asset classes for investment based on his or her own goals, time horizon and risk tolerance.

U.S. equity indices (Price return, percent change)				
	Close 09/29/06	Last week	Year- to-date	Last 12 Months
Dow Jones Indstl Avg.	11,679.07	1.49	8.97	10.67
S&P 500	1,335.85	1.60	7.01	8.81
S&P 400 MidCap	754.25	1.56	2.19	6.02
S&P 600 SmallCap	371.78	0.73	6.02	6.45
Nasdaq Composite	2,258.43	1.78	2.41	5.47
Russell 1000 Growth	524.28	1.66	2.06	5.30
Russell 1000 Value	762.18	1.40	11.11	11.66
Russell Midcap Growth	384.35	1.46	2.80	6.92
Russell Midcap Value	1,042.15	1.15	9.07	10.41
Russell 2000 Growth	364.13	1.32	3.83	5.88
Russell 2000 Value	1,103.38	0.64	11.78	12.33

International markets (Percent change)				
Equity indices (Price return)	Close 09/29/06	Last week	Year-to- date	Last 12 Months
MSCI EAFE	1,885.26	1.07	12.21	16.67
MSCI Europe	1,720.64	0.84	17.20	19.97
MSCI Pacific	2,392.64	1.57	2.53	10.06
S&P/IFCI Emerging	529.91	1.66	12.25	20.97
Currency				
Yen per dollar	118.18	1.39	0.37	4.57
Dollars per euro	1.2674	-0.86	6.96	5.34

Sources: Bloomberg; Investment Strategies Group

¹ The ten-year Treasury note is used solely as a benchmark for long-term interest rates.

Indices are unmanaged, and an investor cannot invest directly in an index.

U.S. equity sectors

(Price return, percent change)

Ten economic sectors of S&P 500 Index	Index weight	Last week	Year-to-date	Last 12 months
Energy	9.40	4.34	10.37	0.21
Industrials	10.93	2.86	5.40	10.52
Information technology	15.26	2.10	1.65	3.13
Consumer discretionary	10.11	1.76	6.75	8.27
Materials	2.87	1.65	4.51	16.32
S&P 500	100.00	1.60	7.01	8.81
Utilities	3.42	1.25	7.94	0.95
Financials	22.25	1.23	9.25	17.13
Health care	12.68	0.79	4.74	5.91
Consumer staples	9.58	-0.46	8.57	9.27
Telecommunications	3.50	-0.58	22.54	22.06

Bond indices

(Merrill Lynch, total return, percent change)

	Yield to maturity 09/29/06	Last week	Year-to-date	Last 12 months
Corporate & government	5.16	-0.06	2.76	3.15
Broad corporate	5.68	-0.08	2.96	3.23
Non-investment grade	8.31	0.41	7.25	7.91
Treasury bills	4.76	0.10	3.53	4.47
Treasury notes & bonds	4.78	-0.07	2.40	2.92
Agencies	5.07	-0.01	3.25	3.57
Mortgages	5.69	-0.15	3.66	4.07
Municipals	4.34	-0.05	3.77	4.50
Global gov't, ex-U.S.	2.95	-1.32	5.05	2.58

U.S. equity industries

(Price return, percent change)

Ten best and worst performing groups of S&P 500 Index (of 123)	Last week	Year-to-date	Last 12 months
Road and rail	6.07	7.93	23.49
Energy equipment and services	5.97	6.30	9.66
Electrical equipment	4.66	9.08	13.73
Automobiles	4.28	29.40	5.17
Auto components	4.27	-10.59	-7.96
Internet and catalog retail	4.15	-29.33	-25.70
Machinery	4.04	12.38	15.90
Oil and gas	3.98	11.32	-1.56
Semiconductors and equipment	3.70	-7.29	-6.53
Construction materials	3.49	15.50	5.91
S&P 500	1.60	7.01	8.81
Household products	0.35	8.14	8.15
Specialty retail	0.23	-0.91	3.58
Health care providers and services	0.11	-4.25	1.89
Communications equipment	0.07	11.39	9.27
Health care equipment and supplies	-0.14	-6.13	-4.45
Food and staples retailing	-0.18	6.60	9.40
Wireless telecom services	-0.57	-12.01	-13.36
Diversified telecom services	-0.58	33.96	34.04
Trading companies and distributors	-1.90	-5.74	7.07
Tobacco	-6.27	5.00	6.99

U.S. government bonds

(Generic, percent change)

	Yield 09/29/06	Week ago	Year-end 2005	Year ago
90-day T-bill	4.89	-0.04	0.81	1.35
Two-year Treasury	4.71	0.04	0.30	0.58
Five-year Treasury	4.59	0.04	0.24	0.45
Ten-year Treasury	4.64	0.04	0.25	0.35
Ten-year TIPS (real)	2.27	0.00	0.22	0.53

Source: Bloomberg

Indices are unmanaged, and an investor cannot invest directly in an index.

What's Ahead for Stocks and Bonds—And How to Earn Your Fair Share

Keynote Speech by John C. Bogle
Founder and Former Chairman, The Vanguard Group
"The Money Show"
Las Vegas, NV
May 15, 2006

It's a treat to be invited to keynote The Money Show again, and a special delight this year. Why? Because we are also here to hold the fifth annual get-together of "the Bogleheads" of the Internet. I understand that the *Vanguard Diehards* site, originally established in 1998 and readily accessible on the Morningstar website, now attracts an average of 25,000 "unique visitors" (in the contemporary vernacular) each day. So this is also "Diehards V" (using the Roman numerals popularized by the NFL Superbowl), and I begin by offering a special Bogle salute to the 75 Bogleheads who are here in the audience with us today.

I must tell you that three of the leading Diehards—Taylor Larimore, Mel Lindauer, and Michael LeBoeuf—have recently written a wonderful book—*The Bogleheads' Guide to Investing*. It is filled with wit and wisdom, and has won almost unanimous acclaim (18 5-Star reviews on Amazon.com). *The Guide* is a heart-warming affirmation of the common sense approach to investing that has been my career-long trademark, and which, I warn you, will continue to be in evidence in my remarks this evening.

My assignment was to talk about what's ahead for stocks and bonds, and I'll do exactly that. But I sense among investors (and advisers) considerable overconfidence about their ability to earn outsize rewards, as well as a certain unreality about their ability to capture whatever returns our financial markets may be generous enough to deliver, so I'll also try to bridge that gap and discuss the only way that I know to assure that you'll earn your fair share of those returns.

I'm going to use a lot of numbers—fairly simple ones, I think—in my talk today. But please don't be intimidated. For that matter, don't even bother to take notes, for the speech is already posted on my brand-new personal website, "The Bogle Blog" (note the near anagram!)—just launched this very day—at www.JohnCBogle.com.

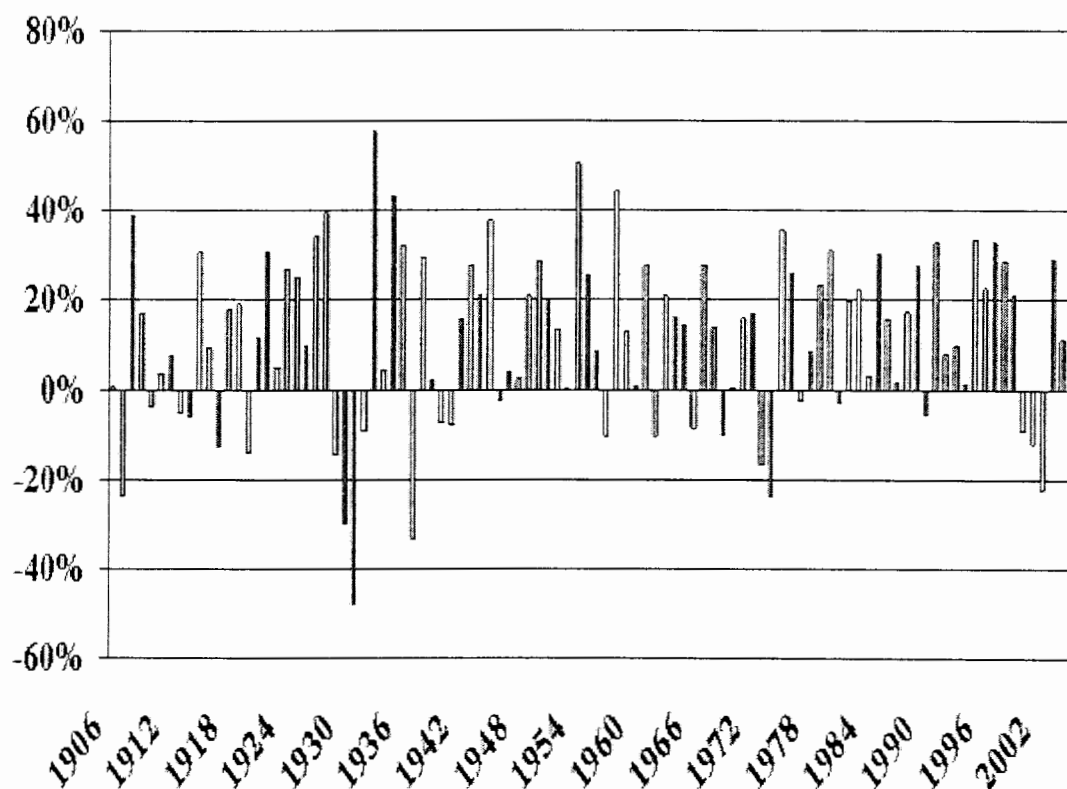
My numbers, however, will *not* include a forecast of what stocks and bonds will do during the remainder of this year, nor even for the next two or three years. I have no ability to do so with any accuracy, and even if I could it would be useful only to short-term speculators. In fact, I'm constantly amazed by how many

pundits, gurus, and Wall Street strategists regularly predict what the stock market will do during the following year, and how badly they do at it. Those who present their predictions to *Barron's* each year, for example, are almost invariably optimistic, usually forecasting a stock return that is (of course!) a few percentage points higher than the long-term average of 9 ½ percent.

Look at the start of 2002, for example, when they were projecting stock returns clustered around 13 percent. But when the year was over, stock prices had tumbled by 20 percent. The fact is that stock returns are rarely "average." Over the past 100 years, the S&P 500 Index has generated returns in the 9.5 percent range—say 9 percent to 11 percent—in only three(!) years.

Chart 1:

Annual Returns of the S&P 500, 1906 - 2005



There were 26 years of negative returns and 28 years with returns of more than 25 percent. Yes, the route to long-term investment success is a bumpy one, filled with dangerous turns and giant potholes.

When the annual returns on stocks depart materially from the long-term norm, it is rarely because of the *economics* of investing—the earnings growth and dividend yields of America's corporations. The fact is that the annual dividend

yield is *always* a plus, and that corporate earnings growth has been positive in every moving decade since 1937—almost 70 years! Rather, the reason that annual stock returns are so volatile is largely because of the *emotions* of investing, simply represented by the number of dollars investors are willing to pay for each dollar of earnings—the price/earnings ratio—reflecting to a greater or lesser extent swings in emotion from greed (very high P/Es), to hope (moderate P/Es), to fear (very low P/Es), and back and forth, over and over again.

So to state the obvious, these market strategists are making their predictions—or is it just guessing?—largely upon whether the mood of investors will be more or less optimistic (or more or less pessimistic) at the end of the year than it was at the beginning. As a result, forecasting short-term returns is a fool's errand, seemingly made rational by the fact that the stock market return has an upward slope, due solely to those economics. Thus, a guess that the market will rise during the year, based on past history, has about three chances out of four of being correct.

After almost 55 years in this business, however, I have *absolutely no idea* how to forecast short term swings in investor *emotions*. But, largely because the arithmetic of investing is so simple, I believe that I can forecast the long-term *economics* of investing with remarkably high odds of success. So this evening I'll focus on decade-long periods, just as I have been doing (with accuracy that is easy to measure) for the past few decades.

My first message to you is this: it's essential to recognize that in the long run, it is *investment* returns—the earnings and dividends generated by American business—that are almost entirely responsible for the returns delivered in our stock market. Yes, the legendary investor and author of *The Intelligent Investor* Benjamin Graham was right on the money when he pointed out, "in the short run the stock market is a *voting* machine . . . (but) in the long run it is a *weighing* machine."

What the wise Mr. Graham was saying, of course, is that while *illusion*—the momentary prices we pay for stocks—often loses touch with *reality*—intrinsic corporate values—in the long run it is reality that rules. So please place no credence in the idea that the past is prologue to the future. To understand why the past cannot foretell the future, we need only heed the wise words of the great British economist John Maynard Keynes, written 70 years ago: "It is dangerous . . . to apply to the future inductive arguments based on past experience, unless one can distinguish the broad reasons why past experience was what it was."

Only if we can distinguish the *reasons* why the past was what it was, then, can we establish reasonable expectations about the future. Keynes helped us make this distinction by pointing out that the state of long-term expectation for stocks is a combination of *enterprise* ("forecasting the prospective yield of assets over their whole life") and *speculation* ("forecasting the psychology of the market")¹. I'm well familiar with those words, for 52 years ago I incorporated them in my senior thesis at Princeton, written, providentially for my lifetime career that followed, on "The Economic Role of the Investment Company," the title I chose for the thesis.

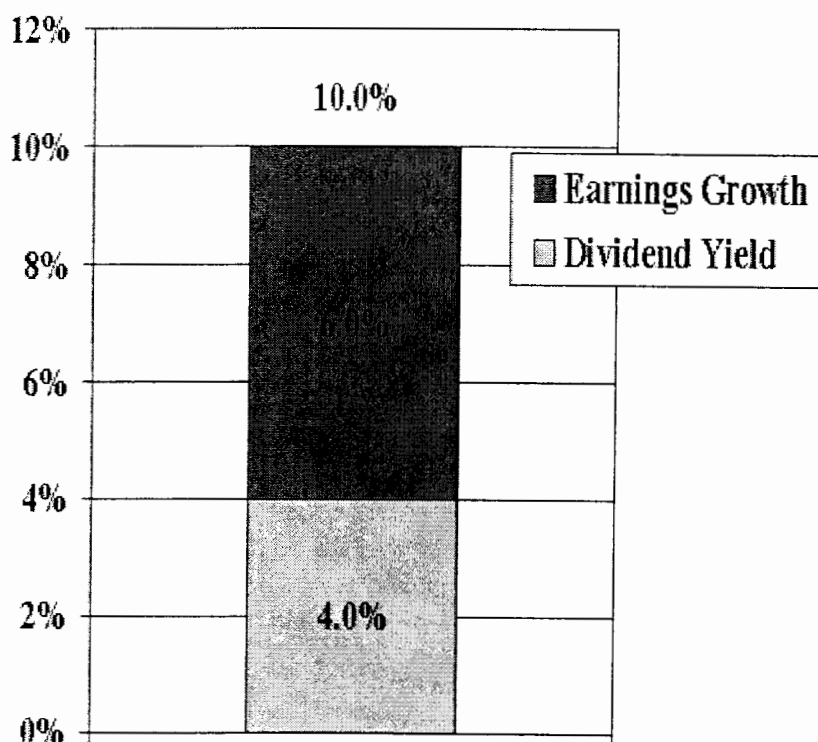
Investment Return and Speculative Returns

This dual nature of returns is clearly reflected in stock market history. Using Keynes' idea, I divide stock market returns into: 1) *Investment Return* (enterprise), consisting of the initial dividend yield on stocks plus their subsequent annual earnings growth, together constituting what we call "intrinsic value"; and 2) *Speculative Return*, reflecting the impact of changing price/earnings multiples on stock prices. Simply adding the two together gives us the 3) *Total Return* on stocks.

For example a 4 percent initial yield plus future earnings growth of 6 percent would equal a 10 percent investment return.

Chart 2:

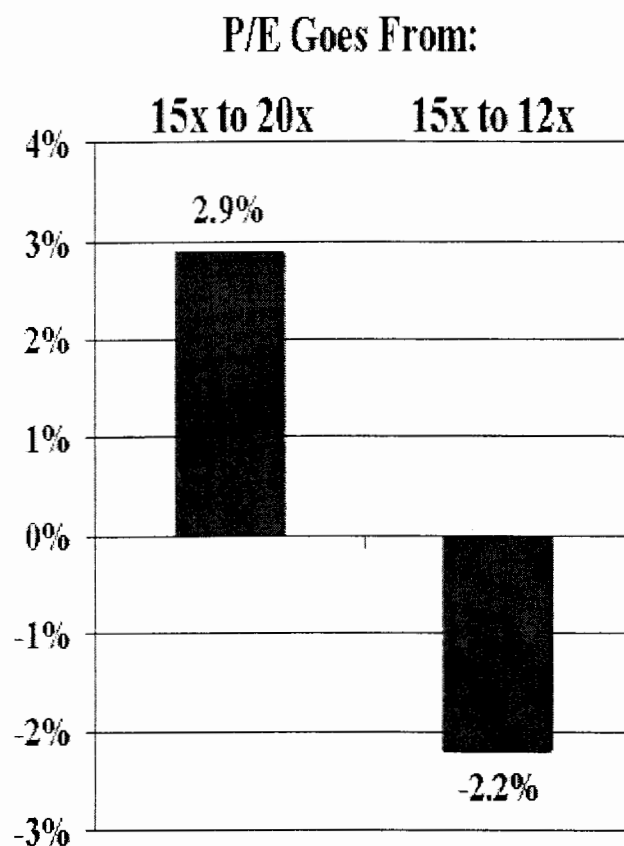
Investment Return: Earnings Growth and Dividend Yield



If the P/E were unchanged over the decade, the total return would be 10 percent. If the P/E rose, say, from 15 to 20, that 33 percent gain, spread over a decade, it would add almost 3 percent per year to the return, increasing it to 13 percent. If it were to decline to 12, it would reduce the returns by more than 2 percent. Yes, it *is* that simple.

Chart 2a:

Speculative Return: The Impact of Changes in the P/E Ratio

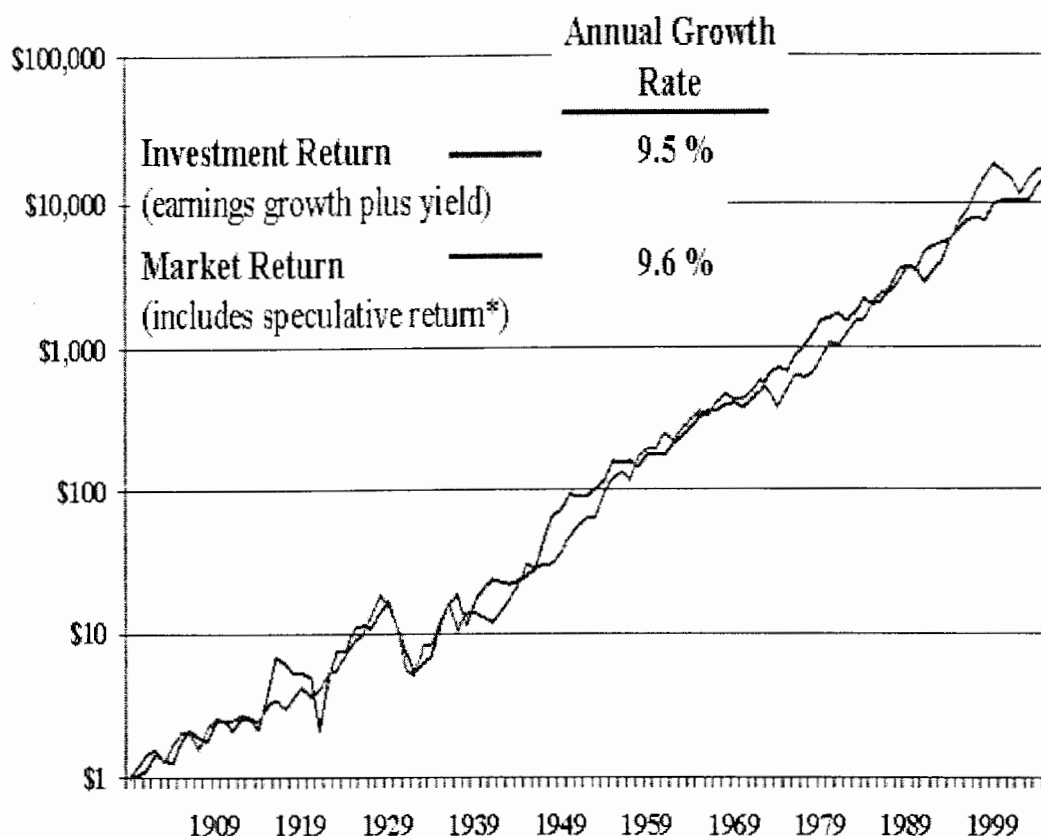


Need proof? Just look at the past 100 years. The average annual total return on stocks of 9.6 percent was virtually identical to the investment return of 9.5 percent—4.5 percent from dividend yield and 5 percent from earnings growth. Speculative return added a mere 0.1 percent per year.

Chart 3:

Investment Return Versus Market Return

Growth of \$1: 1900 - 2005



*Impact of change in price-earnings ratio

If speculative return contributed nothing on balance, however, it created many short-term variations, carrying the market's *total* long-term returns far *above* the investment return in the late 1990s, for example, and far *below* in the mid 1970s. I underscore the message: in the long run, stock returns depend almost entirely on the *reality* of the investment returns earned by business. Momentary investor *perception*, reflected in speculative return, proves to be an *illusion* that counts for little. Put another way, it is *economics* that controls long-term equity returns; *emotions*, so dominant in the short-term, dissolve. Investing in equities, truth told, is simply betting on American business.

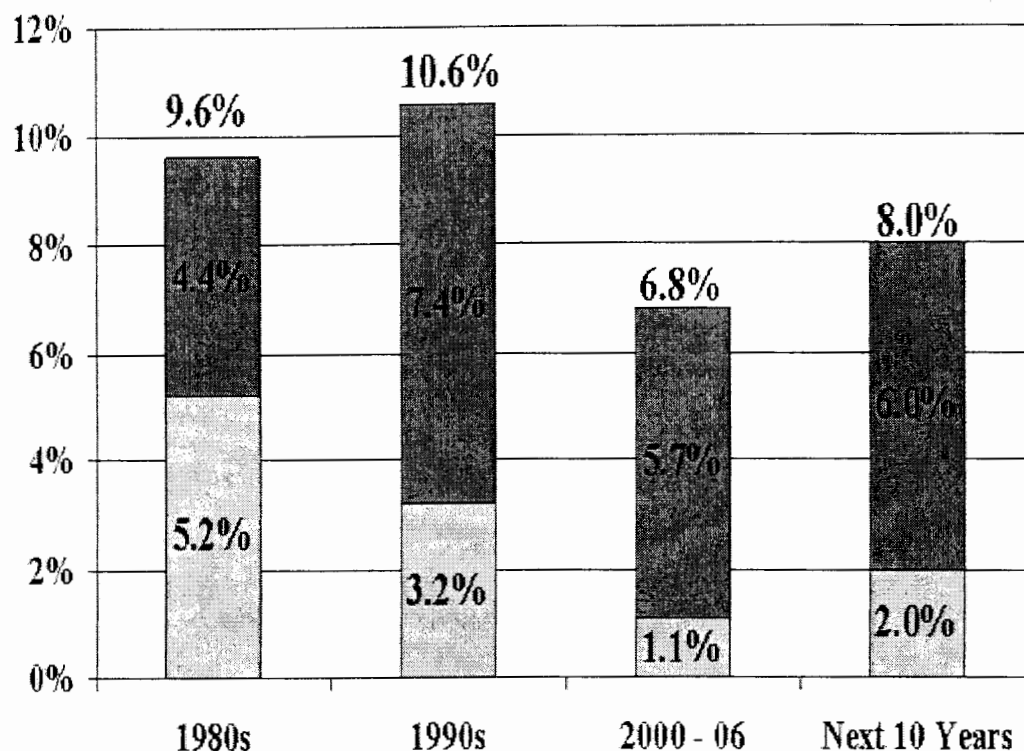
Returns in Retrospect, and in Prospect

Now let's put this vital information about the sources of stock returns into use, and contrast stock market returns in the 1980s, the 1990s, the first decade (so far) of the new century, and the decade that lies ahead. Let's begin with the Investment Return.

Chart 4:

Investment Returns on Stocks, Past and Future

Dividends and Earnings Growth, annualized



Nominal corporate earnings growth averaged about 6 percent during the '80s and '90s, and it is running at 5.7 percent so far in this new decade (1999-2005). Since earnings growth tends to parallel the nominal growth rate of our economy, I see no reason growth shouldn't continue at about 6 percent, more or less, in the next ten years.

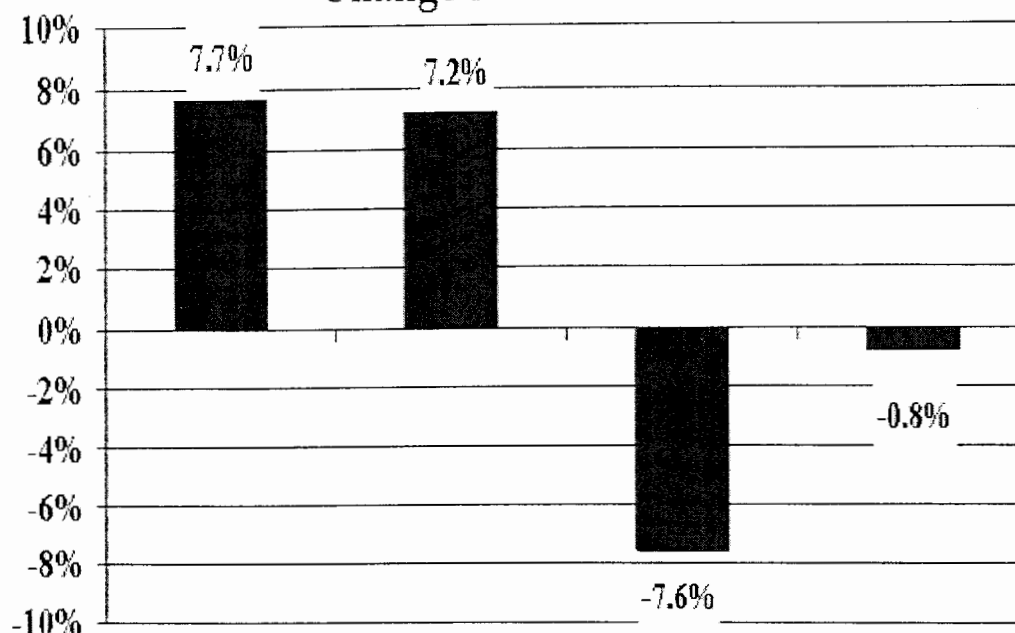
Dividend yield is quite another matter. The 5.2 percent yield as the 1980s began contributed more than half of the subsequent 9.6 percent investment return, and even the diminished 3.2 percent yield at the start of the 1990s contributed one-third of the 10.6 percent investment return. By the start of 2000, however, the yield had shriveled to just 1.1 percent, resulting in a 65 percent reduction in its contribution to investment return so far during the decade. With the subsequent drop in stock prices and rising dividend payments, the yield is now up to 2 percent, almost double. Nonetheless, dividends will make a contribution of only about 25 percent of the expected total investment return over the next ten years.

When we turn to speculative return, the plot thickens.

Chart 5:

Speculative Returns on Stocks, Past and Future

Change in P/E Ratio



	1980s	1990s	2000 - 06	Next 10 Years
Cumulative	110%	100%	-38%	-7.4%
Start P/E	7.3x	15.2x	30.4x	18.9x
End P/E	15.2x	30.4x	18.9x	17.5x

The soaring P/Es of the 1980s and 1990s—from a depressed level (call it fear) of 7.3 to an exuberant level (call it greed) of 30.4, a rise of more than 300 percent—swelled speculative returns by 7.5 percent per year over two decades, far, far beyond any historical experience. Such an increase couldn't *possibly* recur. (In two more decades it would have taken the P/E to the lunatic level of 131.2.) So it was easy to predict a sharp reversion toward the long-term ratio of 15.2. And that's not too far from what we have seen so far in this decade—a 38 percent drop in P/E ratio to 18.9, slashing a pretty decent investment return of 6.8 percent by 7.6 percentage points.

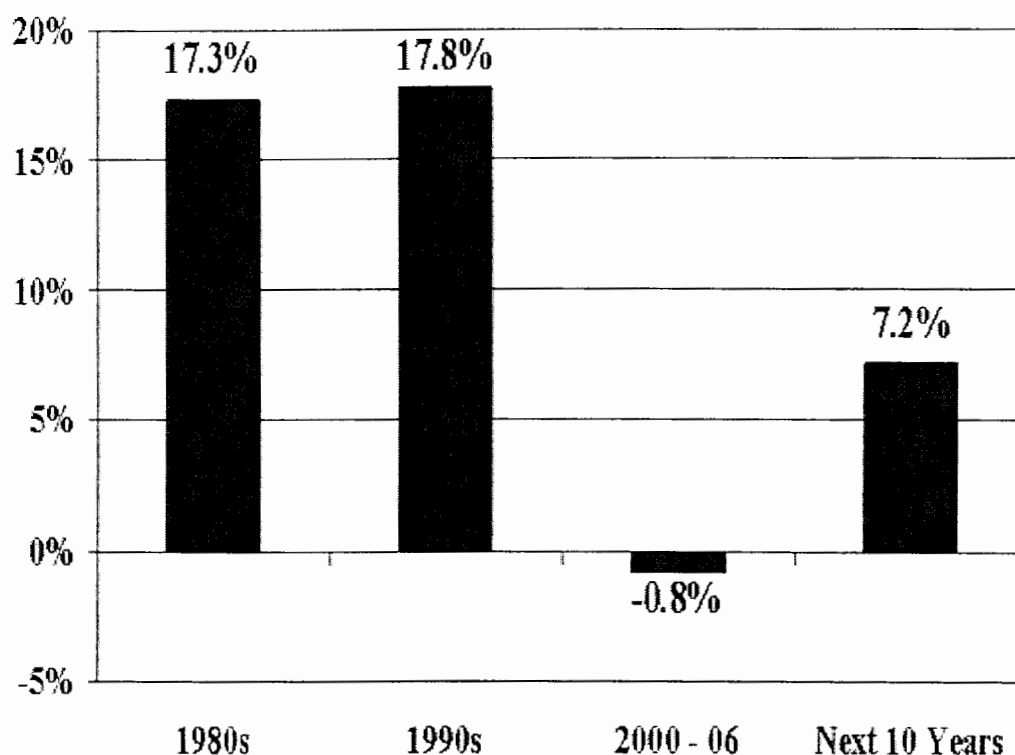
Looking ahead from here—and this is the most uncertain part of my long-term forecast—I think it is more likely that the P/E will ease downward rather than surge upward. So I'm tentatively assuming a 17.5 P/E ten years hence. Result: a small 0.8 percent deduction from the projected 8 percent investment return. (The great thing about this analysis is that you don't need to agree with me. Use your own projections. If you believe that the P/E will fall to its long-term norm, speculative return would reduce the annual investment return by 2.3 percentage points. If you think it would rise to, say, 25 times, feel free to add 2.8 percentage points to the investment return.)

The *Total Return* on stocks is simply the combination of the returns from our two sources—investment return and speculative return.

Chart 6:

Total Returns on Stocks, Past and Future

Investment Return plus Speculative Return



I don't think it takes a giant brain to reach the clear conclusion that the remarkable stock returns we witnessed—and if we were lucky (I was!), *enjoyed*—during the '80s and '90s will not soon return. No, a return of 17 ½ percent per year is not in the cards for as long ahead as I can see, and almost certainly not in the coming decade. A return in the range of, say, 6 percent to 8 percent seems a reasonable expectation, largely based on the simple arithmetic of equity market returns.

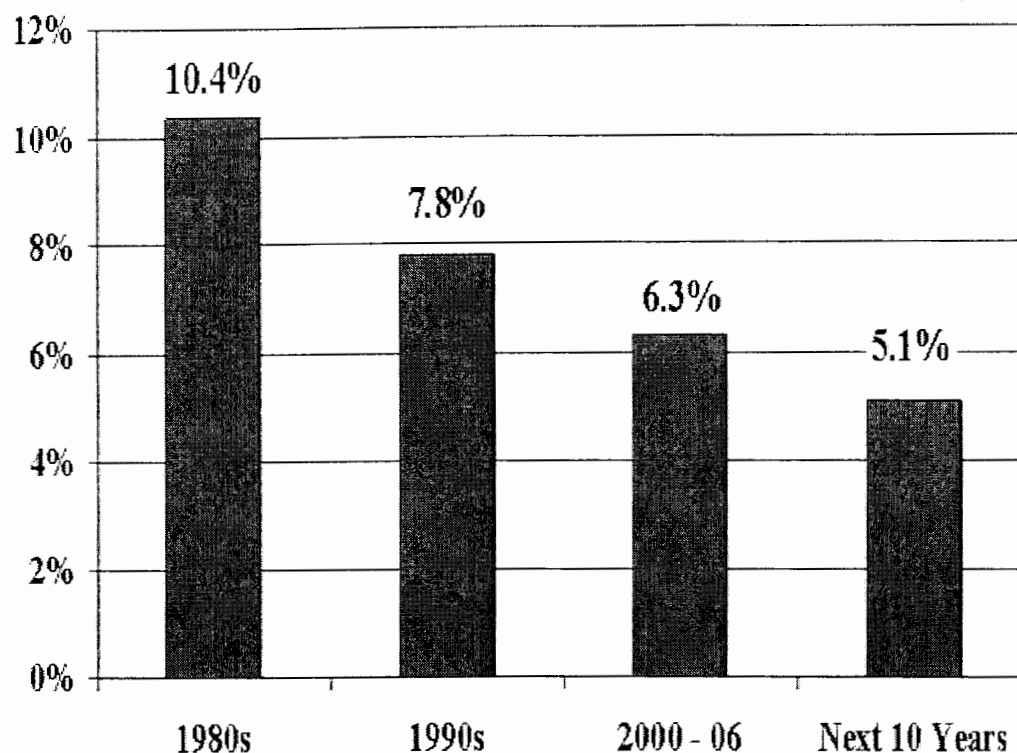
Bond Returns

The mathematics of bond returns are actually even simpler. Investment return is established by the initial yield of the bond market, measured by the U.S. Treasury Intermediate-term (10-year) note.

Chart 7:

Investment Returns on Bonds, Past and Future

Yield at Start of Each Period

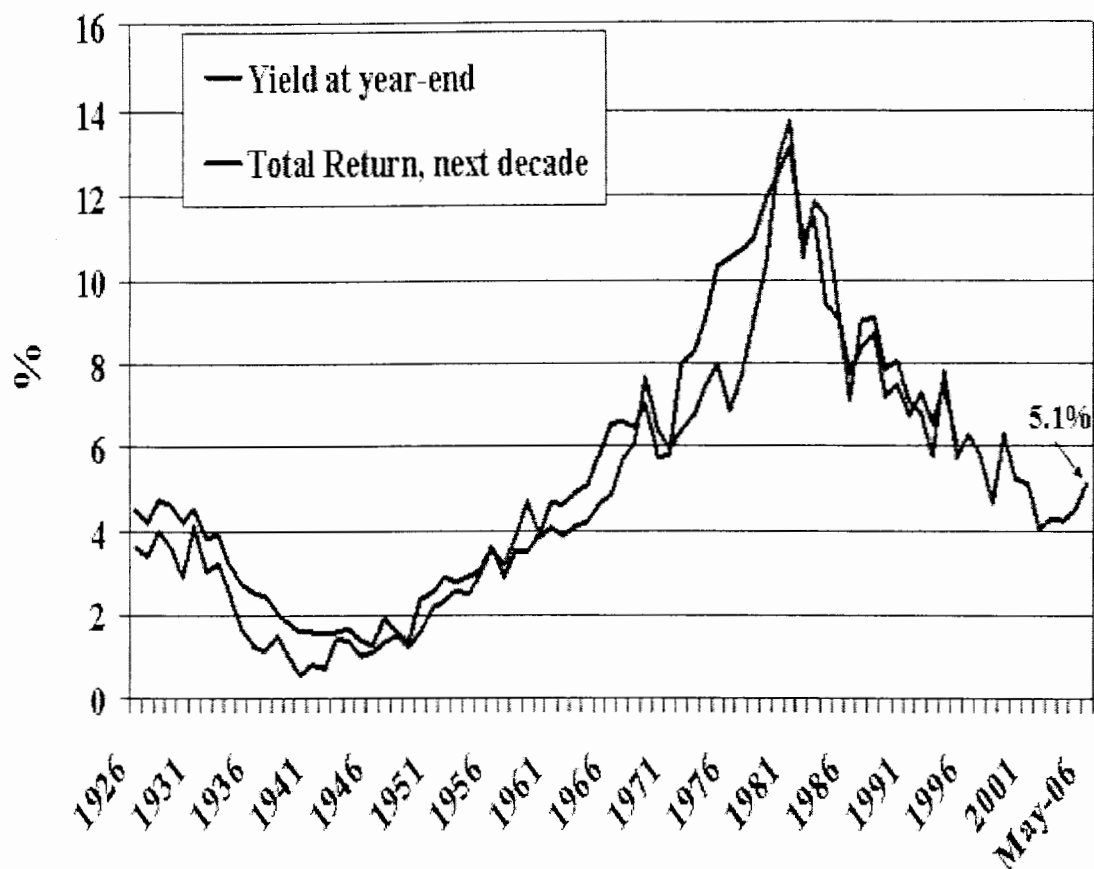


Its yield now is at the lowest level of any of the four decades that we are examining: starting yields in the '80s, 10.4 percent; the '90s, 7.8 percent; 2000, 6.3 percent, and today, 5.1 percent. So we can be highly confident of lower returns in the years ahead. Of course, speculative return, driven by whether interest rates rise or fall, has a major impact on the total return on bonds over the short-term. Spread over a decade however, such fluctuations have surprisingly little force in either direction. In fact, the correlation of the current interest rate on the 10-year Treasury and its total return over the subsequent decade is a truly astonishing 0.91. (1.00 is *perfect* correlation).

Chart 8:

Bonds: Current Yields and Future Returns

Yield and Total Return of IT Gov't Bonds

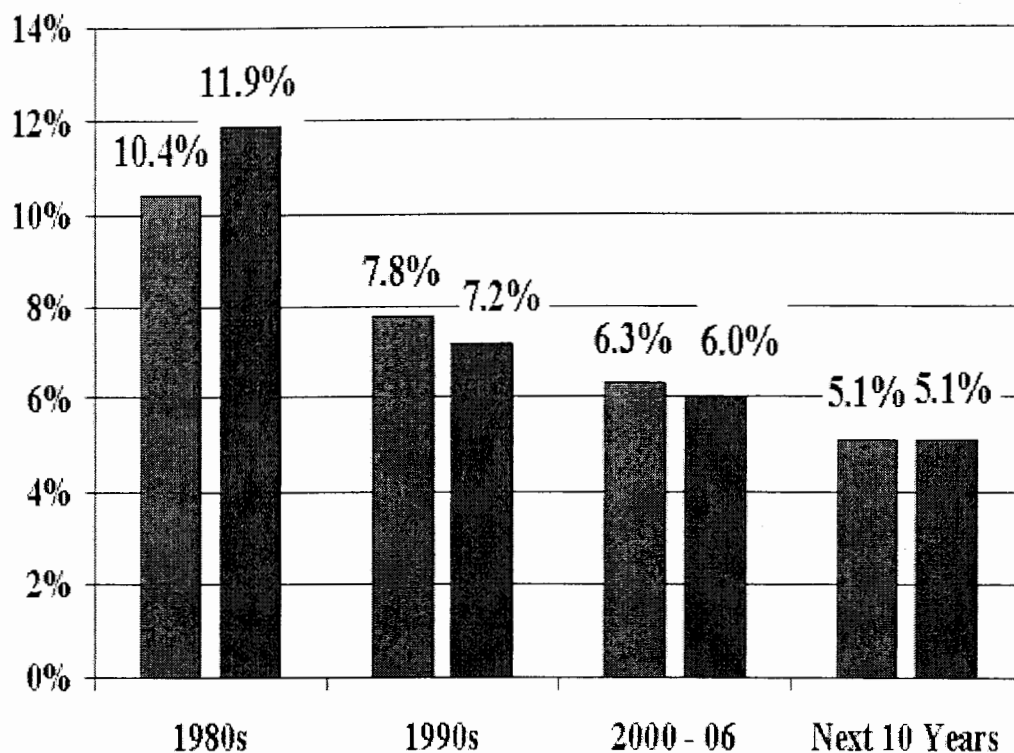


So compared to the 1980s and 1990s, when bond returns averaged almost 10 percent annually, we're on the path to lower returns—about 6 percent—during the 1999-2009 decade, and still lower bond returns during the coming ten years.

Chart 9:

Total Returns on Bonds, Past and Future

Beginning Yield, and Return for Following Period



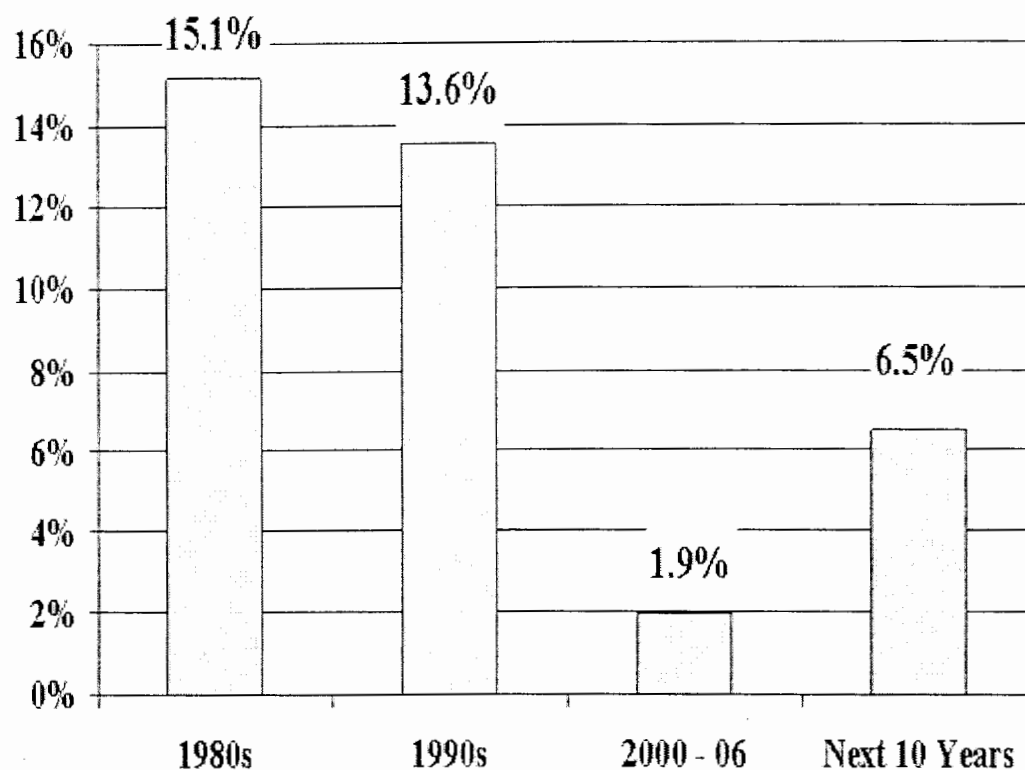
With that 5.1 percent yield on the 10-year Treasury, reasonable expectations give us a solid basis for expecting a similar return in the years ahead, say 5 $\frac{3}{4}$ percent for a mixed portfolio of U.S. Treasury and investment-grade corporate bonds.

A Balanced Portfolio

Let's assume, then, that returns in the stock market are likely to center around 7 $\frac{1}{2}$ percent during the coming decade, and that returns in the bond market are likely to center around 5 $\frac{3}{4}$ percent. The bad news, then, is that simple arithmetic suggests that the future return of 6.5 percent on a typical balanced portfolio (60 percent stocks, 40 percent bonds) will be far *below* those wonderful returns of the 1980s and 1990s.

Chart 10:

Return on a Balanced Portfolio, Past and Future



60% stocks, 40% bonds

The good news is that the return should be far *above* the 1.9 percent return of the past six years.

A word about risk. If annual stock returns prove to be about 7.5 percent and the yield of the 10-year Treasury is 5.1 percent, the equity premium would be a skinny 2.4 percent, an extremely low level compared to the historical norm of 4.6 percent. So consider Federal Reserve chairman Alan Greenspan's warning late last year: "history has not dealt kindly with the aftermath of protracted periods of low risk premiums." To which I would add, "especially during times when risks themselves are high." To each his own in analyzing the extent of such risks, but with problems looming in our federal deficits, mortgage financing, global instability, the war in the Middle East, and terrorism (and perhaps even avian flu), a little extra risk aversion seems little more than common sense.

Conclusion: with (A) subdued returns in prospect; (B) low equity risk premiums; at (C) a time of substantial risk; with (D) bond *income* dwarfing stock *income* (5 $\frac{3}{4}$ percent vs. 2 percent); and (E) the pleasant sensation of more safety when, and if, stocks take a tumble, carefully consider whether your own portfolio balance provides, not only adequate *opportunity*, but adequate *protection*.

Illusion vs. Reality

And now let me turn to the most important message I have for you today. The numbers that I have just presented to you—with all of the logic, validity, and objectivity I can command—are not *reality*. They are an *illusion*. For us investors, the gross returns that our financial markets generate are not delivered on a pristine platter. They are delivered only after the costs of obtaining them—the cost of our financial system (intermediation costs, or agency costs); and the cost of income taxes paid to federal, state, and local governments (except for tax-deferred retirement accounts). What is more, the cost of living also takes its toll, for our dollars will be worth far less a decade hence than they are today.

Two conclusions: 1) *Beating the market before costs is a zero-sum game*; 2) *Beating the market after costs is a loser's game*. The returns earned by investors in the aggregate inevitably fall well short of the returns that are realized in our financial markets. How much do those costs come to? In equity mutual funds, the "expense ratio"—management fees and operating expenses—averages about 1.5 percent per year of fund assets. Add another 1 percent in portfolio turnover costs, and, say, another 0.5 percent in sales charges, marketing expenses, and other small add-ons. Result: the total cost of equity fund ownership can easily double, to as much as 3 percent per year. So yes, *costs matter*. The great irony of investing, then, is not only that you don't get what you pay for. The reality is quite the opposite: You get precisely what you *don't* pay for. *So if you pay for nothing, you get everything.*

Let me illustrate this simple lesson with a wonderful quotation from *Other People's Money*, by Louis D. Brandeis, first published in 1914. Brandeis, later to become one of the most influential jurists in the history of the U.S. Supreme Court, railed against the oligarchs who a century ago controlled investment America and corporate America as well. (Shades of today!) He described their self-serving financial management and interlocking interests as, "trampling with impunity on laws human and divine, obsessed with the delusion that two plus two makes five." He predicted (accurately, as it turned out) that the widespread speculation of that era would collapse, "*a victim of the relentless rules of humble arithmetic.*"

Most investors seem to have difficulty recognizing these relentless rules, even though they lie in plain sight, right before their eyes, or, perhaps even more pervasively, refuse to recognize them because they fly in the face of their deep-seated beliefs, their biases, and their own self-interest. Paraphrasing Upton Sinclair: "it's amazing how difficult it is for a man to understand something if he's paid a small fortune *not* to understand it." But only by facing the obvious realities of humble arithmetic can the intelligent investor find long-term success.

How Much Do Costs Matter?

How much do costs matter? A ton! Indeed, fund costs have played the determinative role in explaining why, for example, during the quarter-century from 1980–2005, when the return on the stock market itself averaged 12.5 percent per year, the pre-tax return on the average mutual fund averaged just 10.0 percent. That 2.5 percent differential is about what one might have expected, given our 3% rough estimate of fund costs. (Never forget: Market

return, minus cost, equals investor return.) Simply put, fund managers have arrogated to themselves an excessive share of the financial markets' returns, and have left fund investors with too small a share.

On first impression, that annual gap may not look large, but when compounded over 25 years it reaches really staggering proportions. In fact, \$1000 invested in a simple S&P 500 Index Fund (of course it was Vanguard's, the only index fund then in operation!) returned 12.3 percent per year during that period (the market return of 12.5 percent less costs of just 0.2 percent), growing by \$17,080. By way of contrast, the average equity mutual fund's return of 10.0 percent grew that original \$1000 by just \$9,820, or little more than half as much (57 percent) of the index fund.

Chart 11:

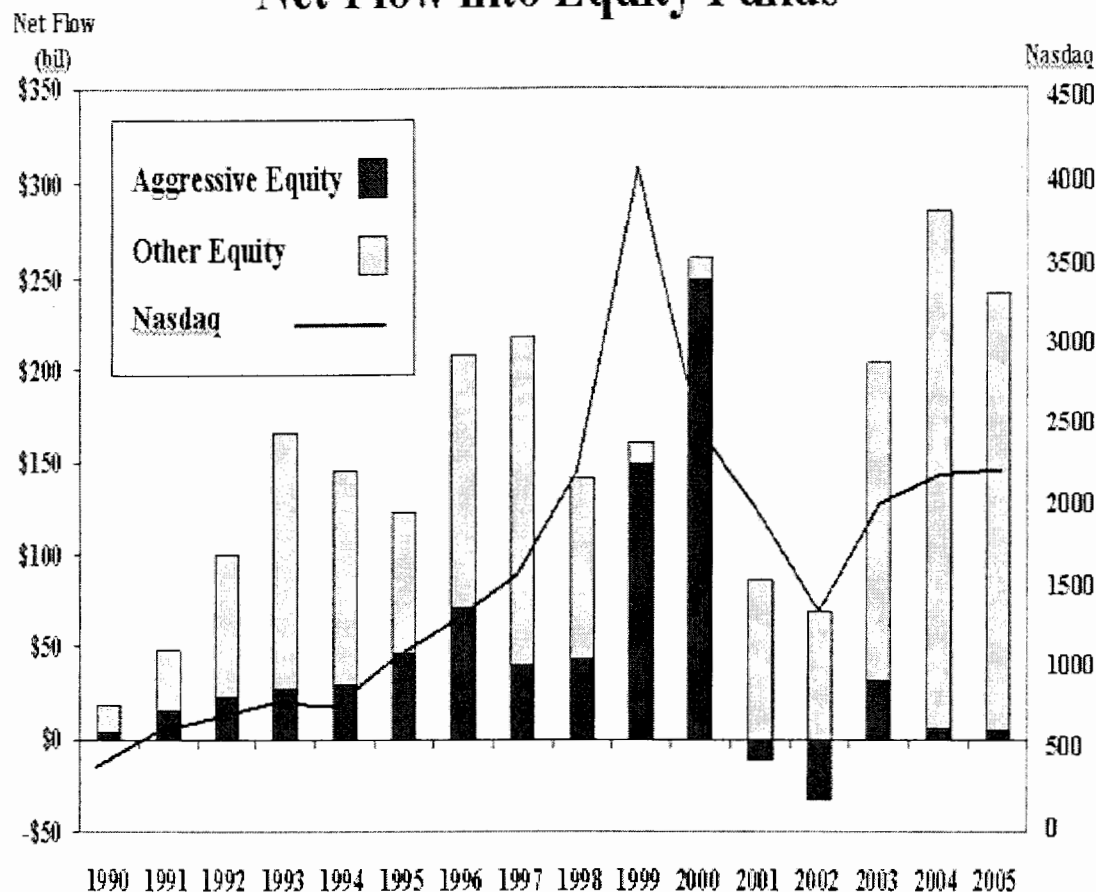
Average Fund versus 500 Index Fund, 1980 - 2005

	500 Index Fund		Avg. Fund		Fund % of Index Profit
	Rate	Profit on \$1,000	Rate	Profit on \$1,000	
Gross Return	12.5%	\$17,920	12.5%	\$17,920	100%
Fund Lag	-0.2		-2.5		
Pre-tax Return	12.3%	\$17,080	10.0%*	\$9,820	57%

But it gets worse. For fund investors pay a second, additional cost that is even *larger*. During those 25 years, and especially during the new economy mania of the late 1990s, the fund industry organized more and more funds, usually funds that carried considerably higher risk than the stock market itself, and then magnified the problem by heavily advertising the returns earned by its "hottest" funds with eye-catching past returns. As the market soared, investors not only poured ever larger sums of money into equity funds, they chose overwhelmingly the highest-risk growth funds, to the virtual exclusion of more conservative value funds. After the fall, when it was too late, their purchases dried up, and they turned to value funds and pulled money out of growth funds.

Chart 12:

The Timing and Selection Penalties: Net Flow into Equity Funds



Source: Strategic Insight

Fund investors, then, paid a huge penalty both in the *timing* of their fund purchases and in the *selection* of funds they purchased. Result: mutual fund owners have fared far worse than have the *funds* themselves. We can't be sure by exactly how much the average fund *investor* lagged the average fund, but we can estimate it by comparing the *dollar-weighted* returns actually earned by a fund's shareholders with the *time-weighted* returns of the fund itself (the conventional per-share calculation). During the past 25 years, we estimate that the *dollar-weighted* returns of funds—the returns actually enjoyed by their shareholders—lagged the *time-weighted* returns by fully 2.7 percentage points per year.

Chart 13:

Average Fund versus 500 Index Fund, 1980 - 2005

	500 Index Fund		Avg. Fund		Fund % of Index Profit
	Rate	Profit on \$1,000	Rate	Profit on \$1,000	
Gross Return	12.5%	\$17,920	12.5%	\$17,920	100%
Fund Lag	-0.2		-2.5		
Pre-tax Return	12.3%	\$17,080	10.0%*	\$9,820	57%
Time/Sel. Penalties			-2.7		
Investor Return	12.3%	\$17,080	7.3%	\$4,820	28%

When we add those selection and timing penalties to the 2.3 point shortfall of the average *fund* to the index fund, the gap grows to 5 full percentage points. The average fund investor earned just 7.3 percent per year during that period, a pale shadow of the net 12.3 percent return of the index fund. And the result? Each \$1,000 invested grew by \$4,800, a mere 28% of the index fund's \$17,000 growth.

And now a cold shower of financial reality. So far, we've done all our measurements in *nominal* dollars, ignoring the fact that it is only *real* dollars—dollars that are adjusted to take inflation into account—that are available for us to spend. During the past 25 years, inflation averaged 3.3 percent, reducing the real return of the index fund to 9.0 percent, and the average fund investor to but 4.0 percent.

Chart 14:

Average Fund versus 500 Index Fund, 1980 - 2005

	500 Index Fund		Avg. Fund		Fund % of Index Profit
	Rate	Profit on \$1,000	Rate	Profit on \$1,000	
Gross Return	12.5%	\$17,920	12.5%	\$17,920	100%
Fund Lag	-0.2		-2.5		
Pre-tax Return	12.3%	\$17,080	10.0%*	\$9,820	57%
Time/Sel. Penalties			-2.7		
Investor Return	12.3%	\$17,080	7.3%	\$4,820	28%
Inflation	-3.3		-3.3		
Real Return	9.0%	\$7,620	4.0%	\$1,670	22%

*Lipper reported return reduced by 0.6% for estimated survivor bias and 0.3% for sales charges.

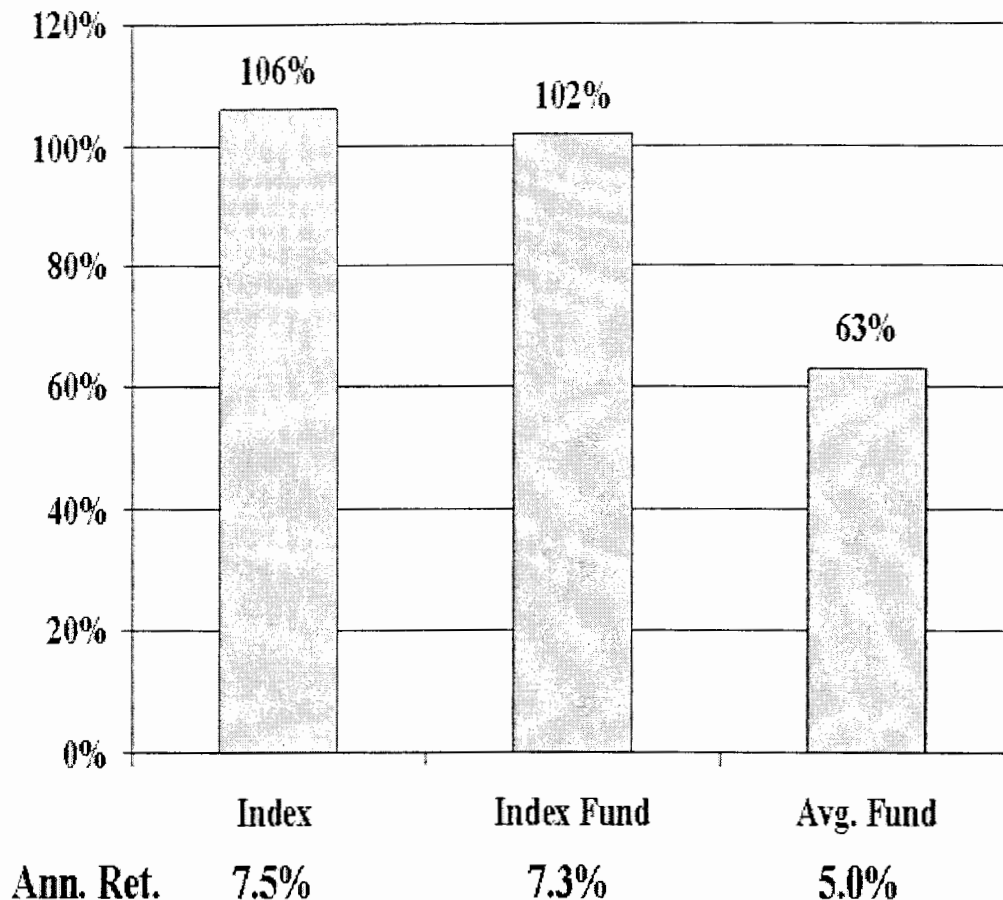
Cumulative *real* profit after compounding on the original \$1,000 investment: just \$1,670 for the average actively-managed equity fund investor; \$7,620 for the passively-managed index fund. The average fund investor earned only about one-fifth of the profit earned by the market itself through the simple index fund, which was there for the taking. Dare I remind you yet again, *fund costs matter!* Indeed, they make the difference between investment success and investment failure. (Note: the icing on the cake is that the index fund was highly tax-efficient, the typical managed fund was grotesquely tax-inefficient. So these results *understate* the true gap.)

In short, the humble arithmetic of investing—the logical, inevitable, and unyielding penalty assessed by investment expenses, the fact that emotions lead investors to make bad fund choices at bad times, and the toll taken by rising living costs—devastates the returns that investors in mutual funds earn over time. Using Justice Brandeis's formulation, the mutual fund industry is obsessed with the delusion—and is foisting that delusion on fund investors—that the *nominalgross* returns in the stock market can easily be translated into the *realnet* returns that equity fund investors receive. *Well, to state the obvious, they cannot!* And unless the fund industry changes, it will falter and finally fail, a victim, yes, of the relentless rules of humble arithmetic.

But if the illusion of real-world mutual fund returns is but a pale shadow of the reality of pre-cost, pre-tax, pre-inflation stock market returns in a 12 ½ percent market, just imagine the difference when—if you accept my projections for the coming decade—the illusory return is just 7 ½ percent. In terms of nominal returns, a 102% gain for an index fund versus just 63 percent for a managed fund.

Chart 15:

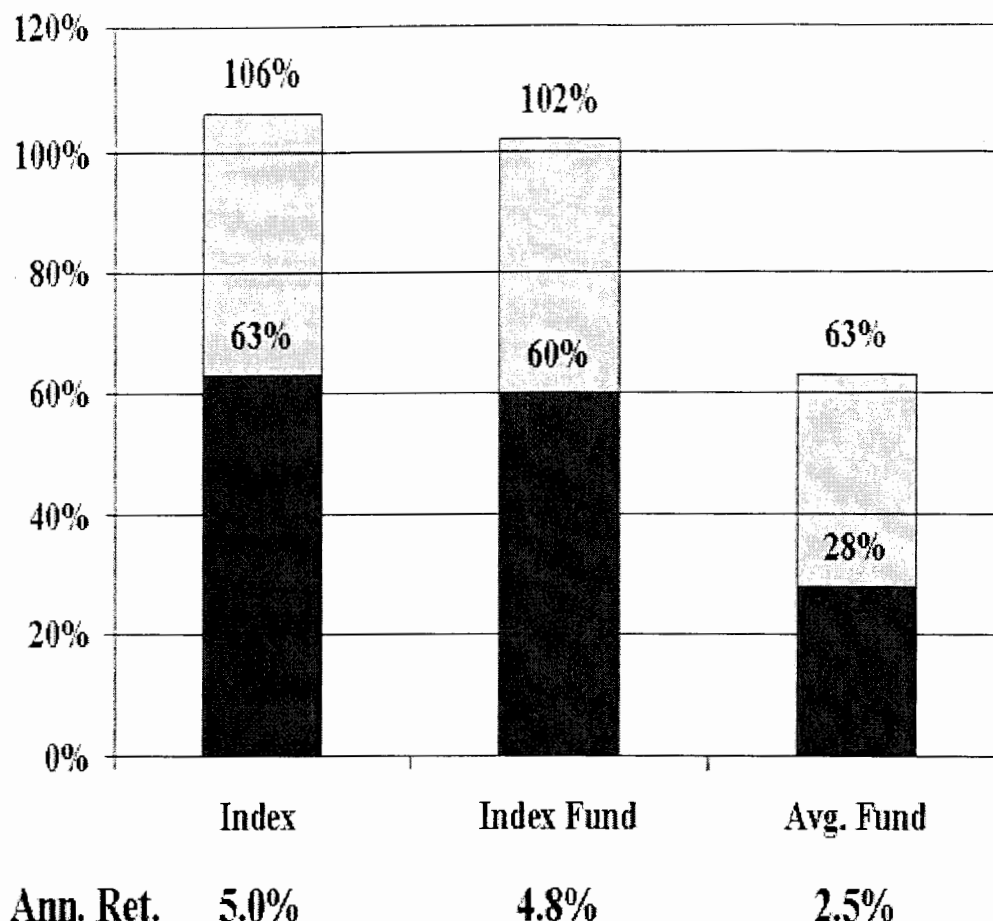
Growth Over Ten Years, Nominal Returns



If we're lucky enough to contain inflation at the present level of 2.5 percent, that will leave a net *real* return of 4.8 percent in the index fund, but only 2.5 percent in the average fund—a return I imagine most of you here today would consider unacceptable—and a real gain for the decade of 60 percent for the index fund, more than double the 28 percent gain for the managed fund.

Chart 16:

Growth Over Ten Years, Real Returns



(It's too frightening to consider the further deductions that would result from taxes and the penalties of counterproductive market timing and poor fund selection. After these additional bites, the typical equity fund investor would likely be left with a *negative return*.)

So what can equity fund investors do to avoid being trapped by these relentless rules of humble arithmetic? Clearly the expected return of the average equity fund is unacceptable. So there are at least these four options to improve on it: 1) Select the funds with the best recent short-term records. 2) Select the funds with the best long-term records. 3) Select the funds with the lowest costs and lowest portfolio turnover. 4) Select an index fund that simply holds the stock market portfolio. In the time remaining this evening, let's examine each of these four options.

Selecting Short-Term Winners

As the record I showed you earlier indicates, fund investors have a strong proclivity to select the funds that have recently turned in the best returns. How has that strategy worked? Consider this example of the top ten performers among the 851 equity funds in operation during the great "new economy"

market bubble of 1997-1999.

Chart 17:

Picking the Short-Term Winners

Annual Returns

1996 - 1999

Rank	Time-wtd.
1.	65.8%
2.	62.5
3.	59.5
4.	58.5
5.	54.8
6.	53.3
7.	51.5
8.	51.5
9.	50.0
10.	49.7
Avg.	55%

Based on 851 funds with more than \$100 million of assets.

A wondrous group they were! Focused on internet, telecom, and technology stocks, these funds generated an average return of 55 percent *per year* during the upswing—a cumulative return of 272 percent for the full three years. Remarkable!

Well, you know what came next. The bubble burst, and, one by one, just as the Good Book warned, "the first shall be last." Really!

Chart 18:

Picking the Short-Term Winners

Annual Returns			
1996 - 1999		1999 - 2002	
Rank	Time-wtd.	Rank	Time-wtd.
1.	65.8%	841.	-37.1%
2.	62.5	832.	-31.2
3.	59.5	845.	-40.7
4.	58.5	791.	-27.4
5.	54.8	801.	-28.6
6.	53.3	798.	-28.2
7.	51.5	790.	-27.2
8.	51.5	843.	-39.1
9.	50.0	851.	-51.7
10.	49.7	793.	-27.9
Avg. 55%		-34%	

Based on 851 funds with more than \$100 million of assets.

Over the next three years (2000-2002 inclusive), Fund #9 on the upside actually was last—#851 on the downside. Fund #1 dropped in rank “only” to #841. And not a single fund in the original top ten ranked higher than #790. Essentially, all ten *top* funds found themselves in the *bottom* 5 percent!

Yet with average annual gains of 55 percent on the upside and annual losses averaging 34 percent on the downside, these aggressive new-economy funds still ended up with a *cumulative* positive return averaging 7 percent for the full six-year period, albeit a far cry from the S&P 500's cumulative gain of 30 percent. Not bad for the funds in terms of traditional *time-weighted* returns, but hardly a disaster.

Chart 19:

Picking the Short-Term Winners

Annual Returns				Cum. Returns
1996 - 1999		1999 - 2002		96 - 02
Rank	Time-wtd.	Rank	Time-wtd.	Time-wtd.
1.	65.8%	841.	-37.1%	13%
2.	62.5	832.	-31.2	39
3.	59.5	845.	-40.7	-16
4.	58.5	791.	-27.4	52
5.	54.8	801.	-28.6	35
6.	53.3	798.	-28.2	33
7.	51.5	790.	-27.2	34
8.	51.5	843.	-39.1	-21
9.	50.0	851.	-51.7	-62
10.	49.7	793.	-27.9	26
Avg. 55%		-34%		7%

Based on 851 funds with more than \$100 million of assets.

But for the *shareholders* of the funds, it was a disaster. By investing *after* seeing those mouth-watering returns achieved in the soaring bull market, fund buyers missed the upside, and then caught the full force of the downside, their investments tumbling by an average of 34 percent per year over three years.

Chart 20:

Picking the Short-Term Winners

Annual Returns				Cumulative Returns	
1996 - 1999		1999 - 2002		96 - 02	96 - 02
Rank	Time-wtd.	Rank	Time-wtd.	Time-wtd.	Dollar-wtd.
1.	65.8%	841.	-37.1%	13%	-62%
2.	62.5	832.	-31.2	39	-80
3.	59.5	845.	-40.7	-16	-85
4.	58.5	791.	-27.4	52	-57
5.	54.8	801.	-28.6	35	-18
6.	53.3	798.	-28.2	33	-60
7.	51.5	790.	-27.2	34	-56
8.	51.5	843.	-39.1	-21	-87
9.	50.0	851.	-51.7	-62	-66
10.	49.7	793.	-27.9	26	-3
Avg.	55%		-34%	7%	-57%

Based on 851 funds with more than \$100 million of assets.

Result: Not a *gain* of 7 percent, but a *loss* of 57 percent for investors—more than *half* of the capital they had invested. The message is clear: *avoid performance-chasing based on short-term returns.*

Selecting Long-Term Winners

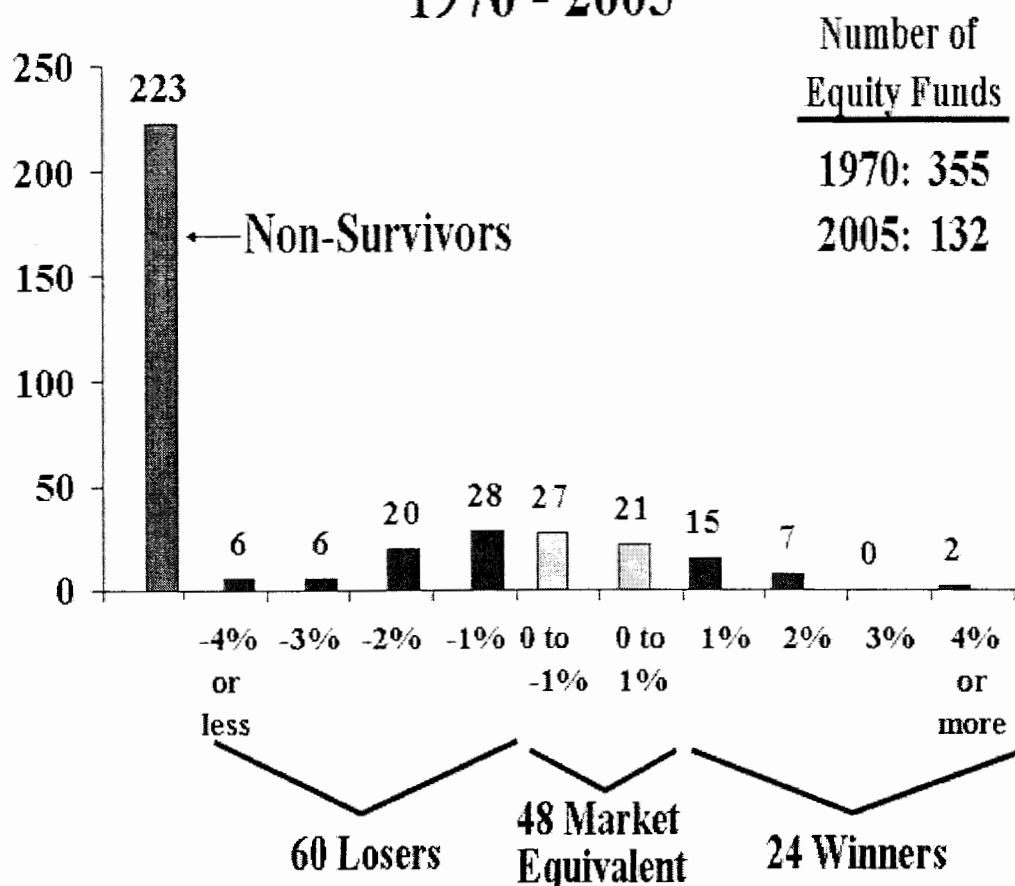
How about investing in funds that have won over the long-term? At first glance, that seems like a good idea, so let's see how it has worked in practice. Let's go back to 1970, and examine the 35-year records of the 355 equity funds that existed all those years ago.

Chart 21:

Winners, Losers, and Failures

Long-Term Returns of Mutual Funds

1970 - 2005



The first and most obvious surprise awaits you: fully 223 of those funds—almost two-thirds—have gone out of business! We can assume that it was not the best performers that have gone to their well-earned demise. Almost certainly, it was the losers that disappeared; funds whose managers moved on (the average portfolio manager, in fact, lasts just five years!); funds whose management companies were acquired by giant financial conglomerates (firms, truth told, in business primarily to earn a return on *their* capital and not a return on *your*—the fund investor's—capital); funds whose lagging performance caused investors to flee; and even funds with solid long-term records whose new management companies concluded they had simply outlived their usefulness. (Sadly, one of the victims was the second oldest fund in the industry—State Street Investment Trust, born 1925-died 2005.)

So 223 funds are gone. Another 60 remained, yet underperformed by more than 1 percent per year—almost 80 percent of the total that, one way or another, lagged the returns of the S&P 500. Another 48 funds provided returns within one percentage point, plus or minus, of the return of the S&P 500. (Let's call them "market-equivalent.") That leaves just 24 winners that beat the market by more than one percent per year, only one fund of every 14. Those odds aren't great, especially since the margins of superiority of 15 of those 24 funds was less than

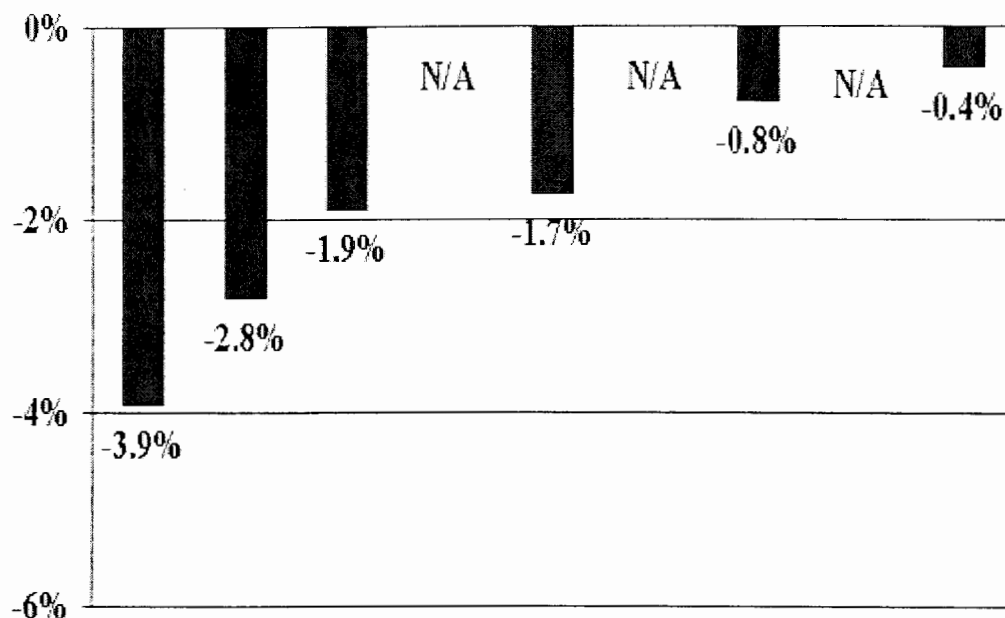
2 percent per year.

But that still leaves us with nine good-sized winners. And, believe me, it is a *tremendous* achievement to out-pace the market by more than 2 percentage points over 35 years. Make no mistake about that. Here, a curious—perhaps almost obvious—fact emerges.

Chart 22:

Now, About Those Nine Winners

Annual Performance vs. S&P 500 Since Fund's Peak



	Fund	Fund	Fund	Fund	Fund	Fund	Fund	Fund	Fund
Year of	One	Two	Three	Four	Five	Six	Seven	Eight	Nine
Peak	1991	1983	1993	2005	1993	2005	1983	2005	1982

Six of those nine winners achieved their superiority much earlier, after which their modern records turned lackluster. One, in fact reached its peak way back in 1982, 24 long years ago. Two others in 1983. And the remaining three peaked no more recently than 1993, more than a decade earlier. That leaves just three funds—only 1 out of every 120 that started the race—that have mounted a record of sustained excellence. I salute them, by name: Davis New York Venture, Fidelity Contrafund, and Franklin Mutual Shares. Hail to the victors! But before you rush out to invest in them, think about the odds that they will continue to outperform for the *next* 35 years, let alone the odds that they will even exist 35 years hence. I wish them all well.

Selecting Investments that Operate at Low Cost

If neither selecting funds based on past short-term performance nor selecting funds based on long-term performance is the answer, it is because of something that, deep down, we intuitively know. *Performance comes and goes*. So perhaps we can be more successful by focusing, not on the inevitable evanescence of past performance, but by focusing on something that seems to go on *forever*, or more fairly, a factor that usually persists over sustained periods of time. That factor is the *cost* of owning mutual funds. *Costs go on forever*.

By costs, I mean not only the fund's expense ratio, but also its estimated portfolio turnover costs. Transactions cost money, and I estimate that turnover costs are roughly $\frac{1}{2}$ percent on each purchase and sale, meaning that 100 percent turnover would cost about 1 percent every year. 50 percent turnover would cost about 0.50 percent; and 10 percent turnover would cost about 0.10 percent, and so on. Rule of thumb: *turnover costs equal 1 percent of turnover rate*.

So now let's add that turnover cost to the fund's expense ratio, and get a total annual operating cost. (The record is clear, by the way, that funds with low costs tend to remain low cost, and that funds with low expense ratios also tend to remain low.) Then we'll divide equity funds by quartile, and compare the returns of the lowest-cost group with those of the highest-cost group.

Chart 23:

Equity Mutual Funds: Returns vs. Costs

(10 Years Ended February 2005)

Cost Quartile	Gross Return	Costs	Net Return	Risk	Risk-adj Return	Cum. Gain
One (lowest)	12.6%	0.9%	11.7%	16.0%	11.9%	207%
Two	12.5	1.5	11.0	17.0	10.9	181
Three	12.8	2.0	10.8	18.5	10.1	163
Four (highest)	12.0	3.0	9.0	21.4	8.1	118
Low Cost Enhancement	+5%	-70%	+30%	-34%	+47%	+75%

Gross return was calculated by adding costs back into each group's net return.

The all-in costs range from 0.9 percent in the lowest cost quartile to 3.0 percent in the highest cost quartile. And *costs matter*! That 2.1 percentage point difference constitutes a huge portion of the 2.7 difference between the returns of the two groups over the past ten years: net annual return of low-cost funds, 11.7 percent; net annual returns of high-cost funds, just 9.0 percent.

But the difference is really larger, for those low-expense, low-turnover funds also assumed 34 percent *less* risk. If we adjust for that difference, the annual improvement in *risk-adjusted* return grows to 3.8 percentage points, a remarkable advantage that approaches 50 percent in return *per* year. And, when we compound those returns over time, the difference reaches staggering proportions. The value of the low-cost funds tripled over the decade, while the value of the high-cost funds did a bit better than double. Total gain for the period: 207 percent for the low-cost funds, 118 percent for the high-cost funds, an enhancement arising almost entirely from the differential. Surely "fishing in the low-cost pond" should enhance your returns, and by a wide margin at that. Yes, *costs matter*!

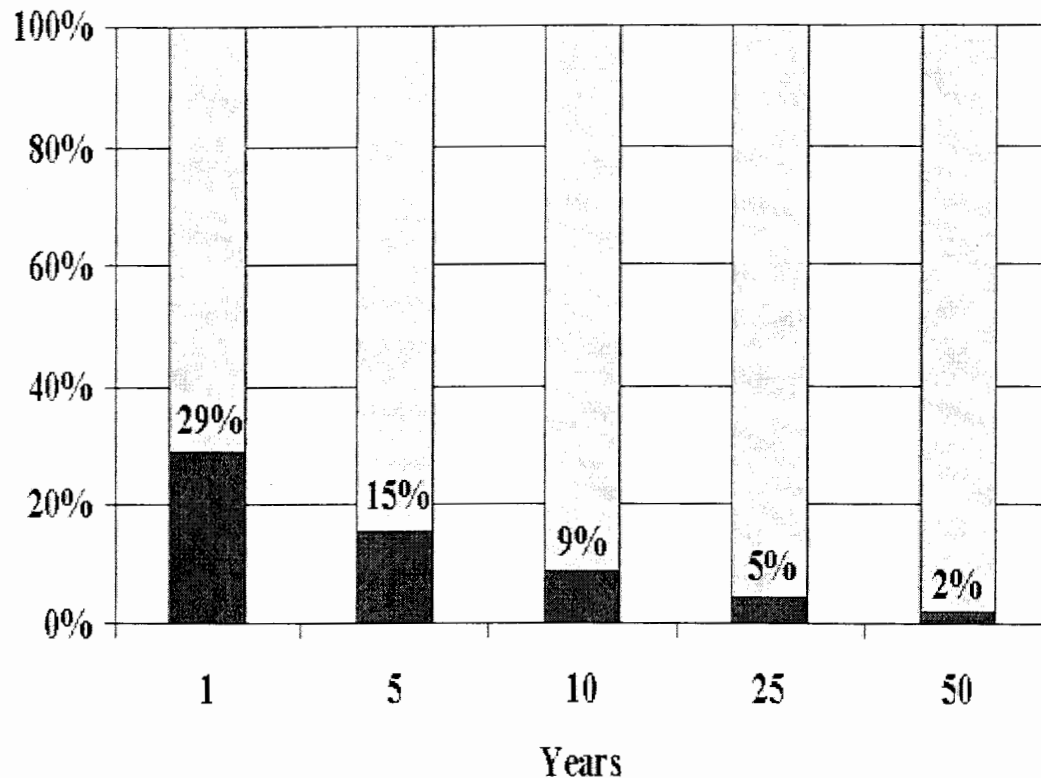
Selecting Index Funds that Own the Entire Stock Market

But if low costs are good—and I don't think a single analyst, academic, or industry expert would disagree that low costs *are* good—why wouldn't it be logical to focus on the lowest-cost funds of all, index funds that own the entire stock market? Such funds often have expense ratios of as low as 0.10 percent or even less, and incur turnover costs that turn out to be zero; all-in costs of just 10 basis points per year, 80 percent lower even than the 90 basis points for the low-cost quartile. And of course it works. Witness the real-life example of the S&P 500 Index fund vs. the average equity fund over the past 25 years that I've already given you, a compelling case for indexing in the past. Now let me conclude my evening stroll through the relentless rules of humble arithmetic with a final statistical example that suggests what the future may hold.

With a complex exercise called "Monte Carlo Simulation," we can in fact project the odds that a passively-managed index fund will outpace an actively-managed equity fund over various time periods. A few simple assumptions about volatility and the range of equity fund returns around the stock market returns are all that is required, as well as an assumption that the all-in costs of indexing will run to about 0.25 percent per year and the costs of active management will run to about 2 percent per year. (Note that this spread is much *smaller* than the historical spread we've experienced, giving a fund management the benefit of the very large doubt.)

Chart 24:

Odds of Actively Managed Fund Portfolio Outperforming Index Fund



Result: Over one year, about 29 percent active managers on average, would be expected to outpace the index; over five years about 15 percent would be expected to win; over 10 years, 9 percent; over 25 years, 5 percent, and over 50 years just 2 percent of active managers would be expected to win.

How will the future actually play out? Of course we can't be sure. But we know what the past 25 years look like, and we know that over the past 35 years only 7 percent of funds outperformed by more than a minuscule margin of 1 percent or more per year, so it looks like we're in the right ballpark. So I suggest to you that stock index funds—and bond index funds, too—deserve an important place in your portfolio, even as they constitute the overriding portion of my own.

Whatever the case, in an era of subdued returns, costs became more important than ever, especially when we move from the *illusion* of financial market returns to the illusion of our own returns, after all of those pesky costs—fund expense ratios, sales charges, and turnover costs; tax costs, and the most subtle cost of all, the cost of living, inflation that substantially erodes the spending power of our investments over time.

My conclusions about the market returns we can expect in the years ahead, as well as my conclusions about the share of those returns that we investors will

actually enjoy, have one thing in common—reliance not on opinion but largely on mathematical facts—those relentless rules of humble arithmetic, the very same rules that make selecting winning funds rather like looking for a needle in a haystack, rules you ignore at your peril.

If, as I said at the outset, the road to investment success is hazardous, filled with dangerous turns and giant potholes, never forget that simple arithmetic can enable you to moderate those turns and avoid those potholes. So do your best to minimize your investment expenses and your own emotions, rely on your own common sense, be very careful, and then stay the course.

¹ Chapter 12 of *The General Theory of Employment, Interest, and Money*, John Maynard Keynes, 1936.

Note: The opinions expressed in this speech do not necessarily represent the views of Vanguard's present management.

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