Sentiment, Value, and Market-Timing

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The U.S. market may be in an incipient bubble, [but economists] have no theory of how long a bubble will last.
—Paul Samuelson in McGough [1999]

It is easy, in hindsight, to ignore Samuelson's words and conclude that anyone who cared to look in 1999 could have seen with perfect foresight that the stock market was in a bubble, and anyone who cared to look in early 2000 would have seen with equally clear foresight that the bubble was beginning to deflate. But foresight is not hindsight, and today's promises of sure market timing are as misleading as yesterday's.

We analyze the expectations of investors during 1999 and early 2000 following great stock market gains, and in 2002 following great stock market losses, as reflected on Yahoo message boards, in the Gallup/UBS surveys of individual investors, and in the *BusinessWeek* surveys of Wall Street strategists.

We know from Fisher and Statman [2000] that sentiment follows stock returns more than it leads them, so we are not surprised to find that a greater percentage of Yahoo posters were bullish at the peak of the market, in late 1999 and early 2000, following great gains, than in 2002, following great losses. Yet Yahoo postings also show that many investors were bearish in late 1999 and early 2000, as stock prices neared their peaks, concerned about lofty valuations and wary of manipulation, hype, and insider trading. Bullishness subsided by 2002, and the Yahoo postings of that time are tinged with hindsight and regret.

Gallup surveys show that the stock market return expectations of individual investors in the late 1990s were in line with historical stock market returns and modest relative to subsequent returns. Return expectations declined in the early 2000s, following stock market losses.

BusinessWeek surveys show that Wall Street strategists were less bullish than individual investors during the late 1990s, but while the deflation of stock prices in the early 2000s made individual investors less bullish, it made Wall Street strategists more bullish. By December 2002, individual investors expected a median stock market return of 5% in 2003, while Wall Street strategists expected more than 21%.

BUBBLES, VALUE, AND SENTIMENT

Stock prices reflect both (fundamental) value and sentiment. Stock markets are in a bubble when bullish sentiment pushes prices above value, and they are in a negative bubble when bearish sentiment reduces prices below value. Value and sentiment are the two drivers that steer prices in Shefrin and Statman's [1994] behavioral capital asset pricing theory. Prices equal value in efficient markets where only information traders trade and value is the only driver of prices. Noise traders join information traders in real-world markets, however, and their sentiment, bullish or bearish, is the second driver of prices, moving prices away from value.

Shefrin and Statman [1994] divides noise traders into two groups: momentum traders, who expect continuations in the past trends in prices, and contrarians, who expect reversals. A cognitive bias affects each group, and a tug-of-war between the two groups and the interaction between them and information traders can move prices away from value. Kumar and Dhar [2002] identified momentum traders and contrarian traders among U.S. investors, and Grinblatt and Keloharju [2000] identified momentum traders and contrarian ones among Finnish investors.

There is much evidence that value drives prices, but much evidence as well that value is not the sole driver. Roll [1988], for example, finds that value-related news about events in the economy, industry, and company explains only 35% of the variation in monthly stock returns, and Fair [2002] finds that many large changes in the price of S&P 500 index futures occurred with no value-related events. Sentiment, the second driver of prices, might explain changes in prices not explained by value-related events.

Fisher and Statman [2000] suggest that the sentiment of both individual and institutional investors predicts future stock returns. Wysocki [1999] finds that a high volume of postings on Internet message-boards predicts future returns, but Tumarkin and Whitelaw [2001] report that message-board sentiment does not predict stock returns, as do Das and Chen [2001] and Antweiler and Frank [2002].

YAHOO MESSAGE BOARDS

Yahoo's message boards have become, in the words of Wysocki,

> gathering places to share timely company information, engage in debate about company financials, provide predictions about future stock performance, stock the corporate rumor-mill, spread misinformation, or simply rant about nothing [1999, p. 5].

People must register with Yahoo operators before they are allowed to post messages, but they can choose to post their messages under aliases rather than true names. As Wysocki notes:

> The anonymous nature of these boards makes it difficult to tell who is posting messages, but it appears that small investors, analysts, public relations officers, interested bystanders, teenage computer hackers, and scam artists are among active participants [1999, p. 6].

We examined the Yahoo boards of six "old economy" and "new economy" stocks during the seven days ending with their highest prices in 1999 or 2000 and then during the week of July 8, 2002. The stocks include IBM, Lucent, GE, Home Depot, Amazon, and Yahoo. Lucent, for example, reached its peak price of $62.69 on Monday, December 20, 1999, so we examined its postings during the seven days beginning on Tuesday, December 14, 1999. Its stock price had sunk to $2.56 by the end of the week of July 8, 2002 (*see Exhibit 1*).

Our sample of companies is small, but its characteristics are similar to those of the overall Yahoo population. As Antweiler and Frank [2002, Figures 6 and 7] found in the Yahoo population, we also find that declines in stock prices are followed by declines in bullishness.

While there were a total of 792 messages on Lucent's board during the seven days beginning on December 14, 1999, these messages came from only 245 names—many posted multiple messages.* We read messages from each name until we encountered bullish or bearish sentiment, and then classified the posters accordingly. We classify posters as having "no sentiment" if we did not find bullish or bearish sentiment.

Bullish or bearish sentiments were often expressed in loud and clear voices. For example, Oceanwave_md expressed loud and clear bullish sentiment about GE on July 8, 2002, under the heading "Buy Now":

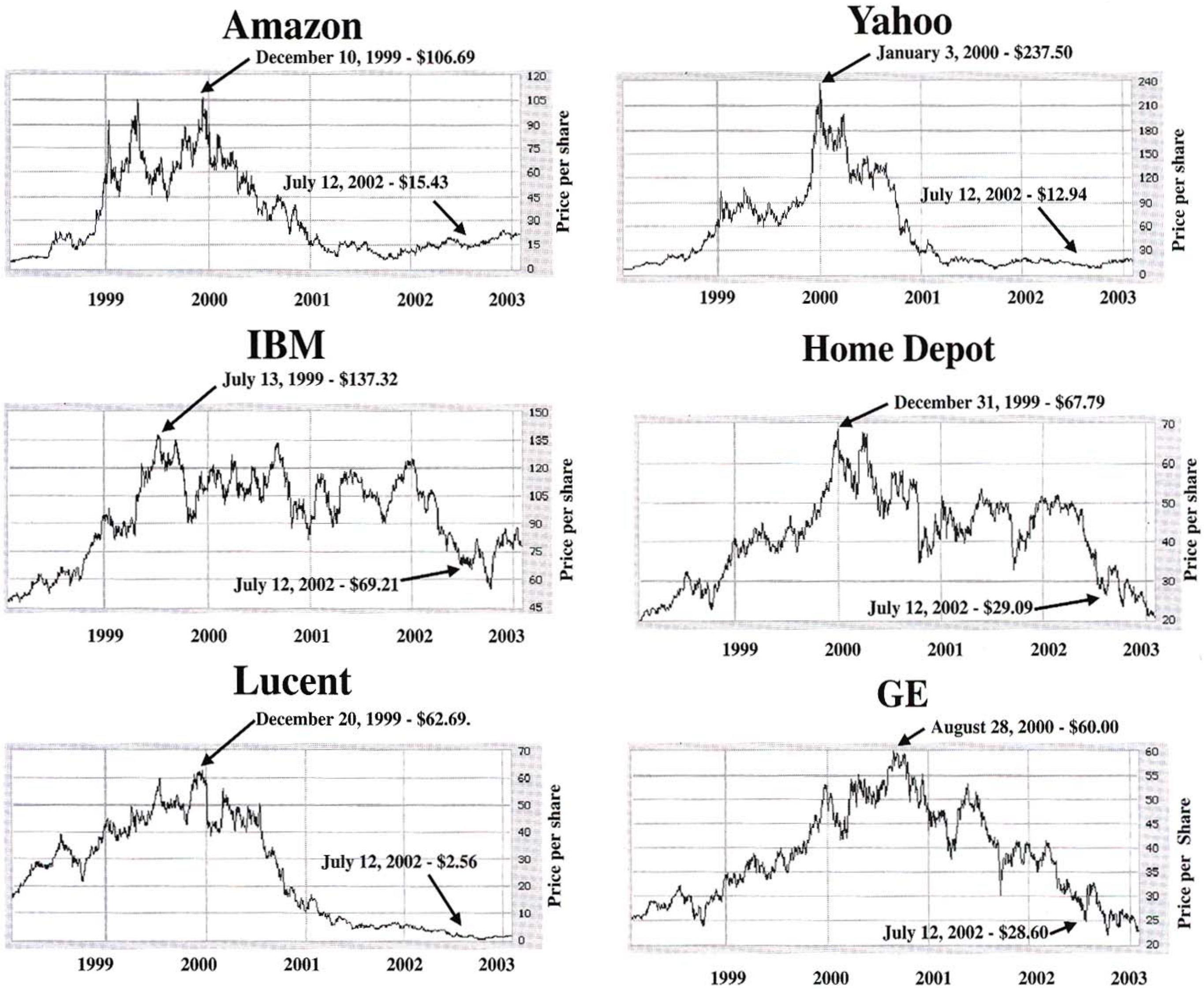
> GE has been beaten down more than you can believe. It will bounce back to about $35 before the week ends. The company seems clean and has withstood all types of insinuations. Buy now!

Blackcairo1 expressed even louder and clearer bearish sentiment on the same day, under the heading "General Electric is going to file for bankruptcy." The message said:

> BANKRUPTCY
> BANKRUPTCY
> BANKRUPTCY
> BANKRUPTCY
> BANKRUPTCY

EXHIBIT 1

Stock Prices at Their Peak and on July 12, 2002



BANKRUPTCY
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Sentiment was not quite as loud and clear at other times, but it could still be readily discerned. We classify those who posted good news without additional comments as bullish and those who posted bad news as bearish. We classify as bullish posters who stated that they owned the stock and those who responded negatively to bearish posts. Similarly, we classify as bearish posters who stated that they shorted the stock and those who responded negatively to bullish posts. We ignored sentiment labels that appear on some recent Yahoo postings recently (strong buy, buy, hold, sell, and strong sell) since they were not used in 1999 or 2000.

In Fisher and Statman [2000] we found that sentiment follows stock returns more than it leads it, and sentiment on Yahoo boards is no exception. Bullishness on the Yahoo boards was higher in late 1999 and early 2000, following stock market gains, than in 2002, following stock market losses. For example, while 71% of Amazon's posters who expressed sentiment were bullish during the seven days ending on December 10, 1999, when Amazon's stock reached its $106.69 peak, only 17% were bullish

EXHIBIT 2

Bullish and Bearish Posters on Yahoo Message Boards

Stock	Percentage of Bullish Posters Among Posters who Expressed Sentiment	Number of Bullish Posters	Number of Bearish Posters	Number of Posters who Expressed no Sentiment	Total Number of Posters	Total Number of Messages
Amazon						
Week of price peak	71%	251	102	249	602	2860
Week ending July 12, 2002	17%	23	113	83	219	2874
Yahoo						
Week of price peak	75%	250	84	383	717	1939
Week ending July 12, 2002	56%	322	250	180	752	2727
IBM						
Week of price peak	87%	39	6	79	124	429
Week ending July 12, 2002	36%	63	113	161	337	1478
HomeDepot						
Week of price peak	89%	88	11	88	187	539
Week ending July 12, 2002	66%	208	105	94	407	1565
Lucent						
Week of price peak	91%	117	10	118	245	792
Week ending July 12, 2002	73%	168	61	281	510	2931
GE						
Week of price peak	74%	53	19	133	205	1179
Week ending July 12, 2002	45%	161	199	376	736	3140

Amazon stock peaked at $106.69 on December 10, 1999, and fell to $15.43 by July 12, 2002.
Yahoo stock peaked at $237.50 on January 2, 2000, and fell to $12.94 by July 12, 2002.
IBM stock peaked at $137.32 on July 13, 1999, and fell to $69.21 by July 12, 2002.
Home Depot stock peaked at $67.79 on December 31, 1999, and fell to $29.09 by July 12, 2002.
Lucent stock peaked at $62.69 on December 20, 1999, and fell to $2.56 by July 12, 2002.
GE stock peaked at $60.00 on August 28, 2000, and fell to $28.60 by July 12, 2002.

during the week of July 8, 2002, which ended with Amazon's stock at $15.43.

The decline in bullish sentiment is evident with regard not only to Amazon and Yahoo, the new economy stocks, but also with regard to old economy stocks such as Home Depot. For example, the proportion of bullish posters on Home Depot's board declined from 89% during the time of the bubble to 66% more recently.

It is a common belief that investors were more bullish about new economy stocks than about old economy stocks in the late 1990s and early 2000, but the Yahoo data show otherwise. In fact, there was a higher proportion of bulls at the time of the bubble at old economy IBM and Home Depot than at new economy Amazon and Yahoo (*see Exhibit 2*).

Bullishness on the Yahoo boards declined as stock prices fell, but there were more posters and postings in 2002 than in late 1999 and early 2000. The number of posters increased on all but one of the six Yahoo boards, and the number of messages increased on all boards.

The increases were much more pronounced in old economy than in new economy stocks. For example, while the number of posters on the new economy Amazon fell from 602 at the time of the bubble to 219 in its aftermath, and the number of posters on the new economy Yahoo increased slightly from 717 to 752, the number of posters on the old economy Home Depot increased greatly, from 187 to 407.

POSTINGS AT THE HEIGHT OF THE MARKET

Most investors were indeed bullish in late 1999 and early 2000, following a period of high stock returns. For example, on Friday, December 31, 1999, when Yahoo's stock price was at $216.35, close to its $237.50 peak, A-Bird-on-the-Wire responded to the doubts of "nizzytom":

> nizzytom—you have no imagination.
>
> Do you really think Yahoo and [its] business model in 2015 will be anything like it is now? The whole idea of your comparison is based on the flawed assumption that Yahoo will be much like it is now. What people see is that Yahoo is becoming the Internet brand and whatever the Internet becomes, Yahoo will be at the center of it as long as they

take the right steps. Information/communication/media/entertainment will all flow through Yahoo if they play their cards right. The sky is the limit. (msg #180245, 12/31/1999).

Billydan was more succinct in his bullishness as he posted the following on August 24, 2000, when GE's stock was at $58.94, close to its $60.00 peak:

GE is a BEAST.

Put this stock in a drawer and wake up rich. God bless Jack Welch! (msg #40723, 08/24/2000).

But not all posters were bullish in late 1999 and early 2000, and outright bulls were countered by outright bears. INETMktg posted the following on December 9, 1999, as Amazon's stock was nearing its peak:

[Amazon] is like tulips in Holland. It will wilt, just like they did. People will get hurt, because there is too much margin buying going on here. This is 1929, times ten. . . . Watch out (msg # 191300, 12/09/1999).

Similarly, on December 26, 1999, as Home Depot was nearing its peak, rohith2 posted the following:

There is more to investing than buying, it is called selling.

Heard the saying, bulls make money, bears make money, pigs like [you] get slaughtered (msg #19554, 12/26/99).

A day earlier, Martian91301_99 supported his or her bearishness on Home Depot with facts gleaned from experience as a Home Depot department manager:

Something to Think About. As a [department] manager with Home Depot for two years I would like to express some thoughts about home depot stock price. Last year's sales 36 billion, 6% profit margin (rounded numbers) stock price values this RETAIL business at 171 million dollars per store or 150 billion dollars for all of them. Granted [Home Depot] will double stores in 3 or 4 years but will or should the market cap double from here (rationally speaking to 300 Billion?) or 600 [billion] next double, or are we entering a market bubble where a customer wants a 10% discount on a $5 tool but thinks nothing of paying $100 for a stock share that will net 5% (msg #19508, 12/25/99).

Many investors who were not outright bears in late 1999 and early 2000 were wary, anticipating the pop of a bubble but hoping to ride it a little longer. "A needed correction," was the title of Cooperstrom's December 8, 1999, post on Amazon's board:

A needed correction will occur after [Amazon] tests the 100/105 level. Still long... until signs of true financial collapse emerge (msg # 190850, 12/08/1999).

Other investors decided it was time to dismount what they perceived as a bubble. On December 4, 1999, Chesscard posted on the Amazon board:

First time I shorted a stock was yesterday. . . . I believe in the Internet sector and believe in their potential. . . . However I think that a big correction is coming (msg #189506, 12/04/1999).

Posters both loathed insiders and tried to follow them. Gabowitzz posted the following on Amazon's board:

"AMZN Insiders Bailing Out"

Last month, two AMZN directors (Patricia Stonesifer and Scott Cook) each sold about 120,000 shares of stock, worth about $10 million each, and accounting for approximately 75% of their holdings. When directors of the company dump so much of their stock at one time it suggests that they do not think the stock price can stay at these levels (msg #192244, 12/10/1999).

Other posters were wary of manipulation and suspicious of the media. On November 20, 1999, crash_of_1999_2000 posted:

"Engineered Scam"

This market is one massively engineered scam to steal most people's money. With the extraordinary gains in the market, most people aren't much better off. They usually buy high and sell low. Today, Yahoo was being tanked purposely to suck shorts into the stock as well as cause some longs to panic and jump out of the stock even though the big boys KNEW the stock would be added to the S&P 500.

THIS MARKET IS AN ENGINEERED SCAM! (msg#166969, 11/20/1999).

And on August 28, 2000, Theproper_pig posted on the GE board:

"CNBC Leading you to the Slaughter"

Parading out the bulls and sucking in the individual investor for what promises to be a slaughter by the end of the year... (msg #41290, 08/28/2000).

Last, some posters were baffled, looking for advice. On December 28, 1999, Eatredmeat posted on the Home Depot board:

I bought in at 71 and then again in the low 90s. Should I still be buying in or are we nearing the top? What is the long-term prospect? Any opinions would be appreciated (msg # 19734, 12/28/99).

POSTINGS AFTER THE FALL

The proportion of bulls was lower in 2002, following losses, than in the late 1999 and early 2000, following gains, but many posters remained bullish in 2002. Some bulls, such as Tradn_dude, berated short-selling bears. Tradn_dude posted on July 12, 2002, on GE's board under the heading "Short sellers destroying America":

Now that valuations are down to reasonable levels, shorts continue to pile on and drive down stock prices. They [don't] care if their attempts harm America, they are only after a buck.

Greedy bastards...

Phone your congressman – outlaw the short selling of stocks (msg #188790, 07/12/02).

Nostradomissays responded to attacks of short-sellers on July 10, 2002, with an "ode to shorts" on GE's board:

Shorts are the avatars of divine perfection. Gardens of flowers spring in their footsteps. The soft glow of their halos brings comfort in the darkest night. When they breathe, gentle perfumed zephyrs fill the air (msg #187329, 07/10/02).

The 2002 period is also marked by hope, hindsight, regret, and sober lessons for the future. Mobuto1 posted on GE's board on July 9, 2002:

Jeeze. My 1000 shares haven't done too damn well recently. My broker advised me to sell in 2000, and I resisted.

I'm an idiot.

But I'm going to buy more. Assuming their accounting holds up (msg #186651, 07/09/02).

And Oglaxa posted a day later on the same board:

"What Are We Going To Do Now?"

The world has changed and nobody believes those tired old broker/huckster mantras: "Real men only buy when there's blood in the streets," "the market always bounces back," and, my favorite, "don't worry, you're in it for the long term." Fact is, even if you do believe all of that, only a fool isn't taking at least some of his money off the table right now. My advice, take your rent money out of the game. Later, when things have settled down, you can play again. Don't try to beat the street: you don't know where the bottom is (msg #187151, 07/10/02).

SURVEYS

Gallup has been conducting the UBS Index of Investor Optimism surveys since June 1998. The December 2002 survey, conducted from December 1 through 15, includes 1,000 investors. There are a wide range of questions in the Gallup survey, from the outlook for unemployment to attitudes toward Social Security and to expectations about stock returns.

BusinessWeek has been conducting surveys of the expectations of Wall Street strategists in December of each year since 1995. The December 2002 list includes 66 strategists representing institutions such as Salomon Smith Barney, J.P. Morgan, and Banc of America Securities.

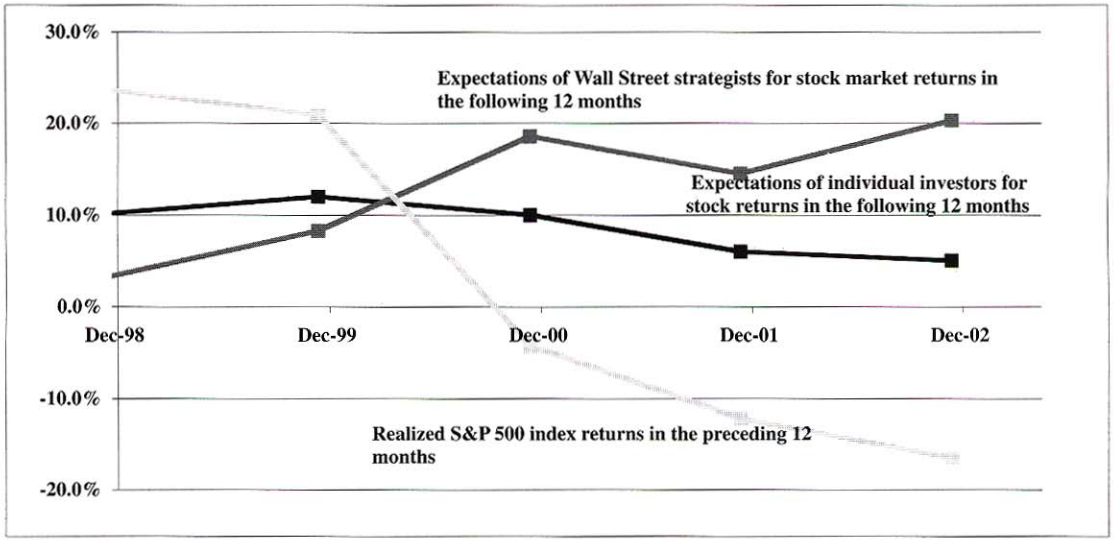
EXHIBIT 3
Median Stock Market Return Expectations

	Expected Stock Returns in the Following 12 months: Individual Investors	Finance Academics	Wall Street Strategists	Realized S&P 500 Return in Preceding 12 months (Oct-Nov)	Yield of T-Bills (3-month)	Realized Return in the Following 12 Months (Jan-Dec)
Dec-98	10.10%	10.50%	3.05%	23.67%	4.50%	21.03%
Dec-99	12.00%	11.36%	8.31%	20.88%	5.36%	-9.10%
Dec-00	10.00%	NA	18.59%	-4.21%	5.94%	-11.88%
Dec-01	6.00%	5.72%	14.64%	-12.22%	1.72%	-22.11%
Dec-02	5.00%	5.21%	21.32%	-16.51%	1.21%	28.69%

Data on individual investors are from Gallup.
Data on finance academics are from Welch [2000, 2001].
Data on Wall Street strategists are from *BusinessWeek*.

The expectations of Wall Street strategists are for the appreciation in the S&P 500 index. We add realized dividend yields to the expected appreication for estimates of expectations of returns.

EXHIBIT 4
Median Expectations of Returns for the Following 12 Months and Stock Returns in the Preceding 12 Months



Strategists are asked to forecast the levels of the DJIA, the S&P 500, and Nasdaq at the end of the next year. They are also asked to specify their preferred asset allocation, favorite stock sector, and favorite stock.

Welch [2000, 2001] conducted three surveys of finance academicians. One consisted of 114 respondents over October 1997 to February 1998, another of 112 respondents over January 1999 to May 1999, and a third of 510 respondents in August 2001. Respondents were asked for their estimate of equity premiums over horizons ranging from one to 30 years.

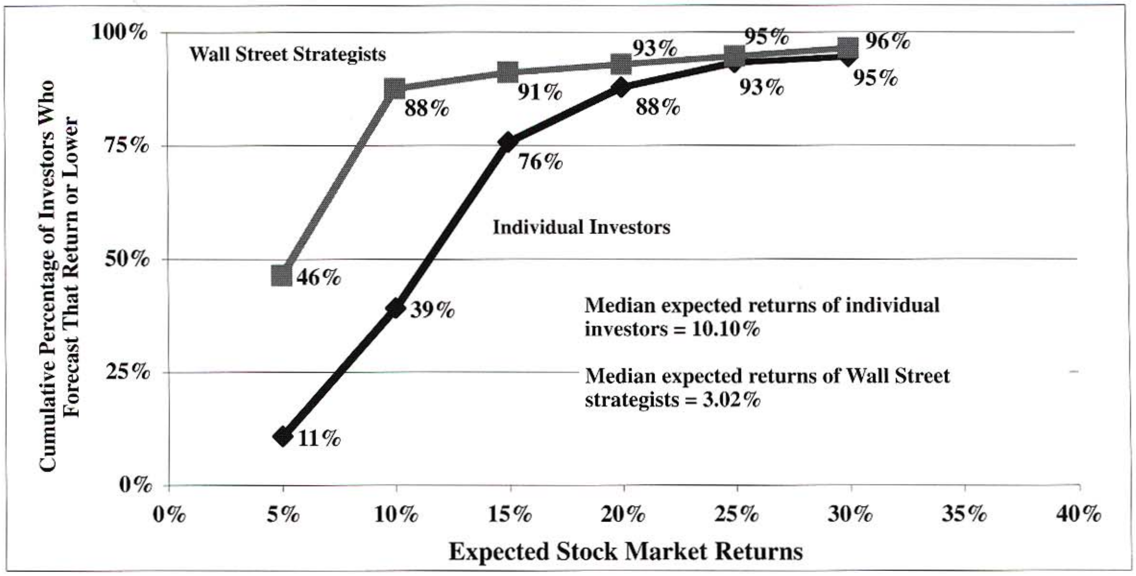
It is common belief now that investors, both individual and institutional, had exuberant expectations of stock market returns in the late 1990s. But the Gallup and *BusinessWeek* surveys show otherwise. Wall Street strategists were wrong in December 1998 when they forecasted stock returns for 1999, but not because they were bullish. Indeed, strategists were bearish in December 1998, expecting stock returns lower than Treasury bill yields and much lower than average historical stock returns. The median S&P 500 stock return forecasted in December 1998 for 1999 was 3.05%, lower than the 4.50%, the yield of Treasury bills at the time. Strategists turned out to be wrong; the realized S&P 500 return in 1999 was 21.03%, more than six times their median expectation (*see Exhibits 3 and 4*).

Individual investors were much more bullish than institutional investors in December 1998, but in hindsight they too turned out to be too bearish. The median stock return expected by individual investors in December 1998 for 1999 was 10.10%, in line with historical stock returns and less than half the return realized during the year.

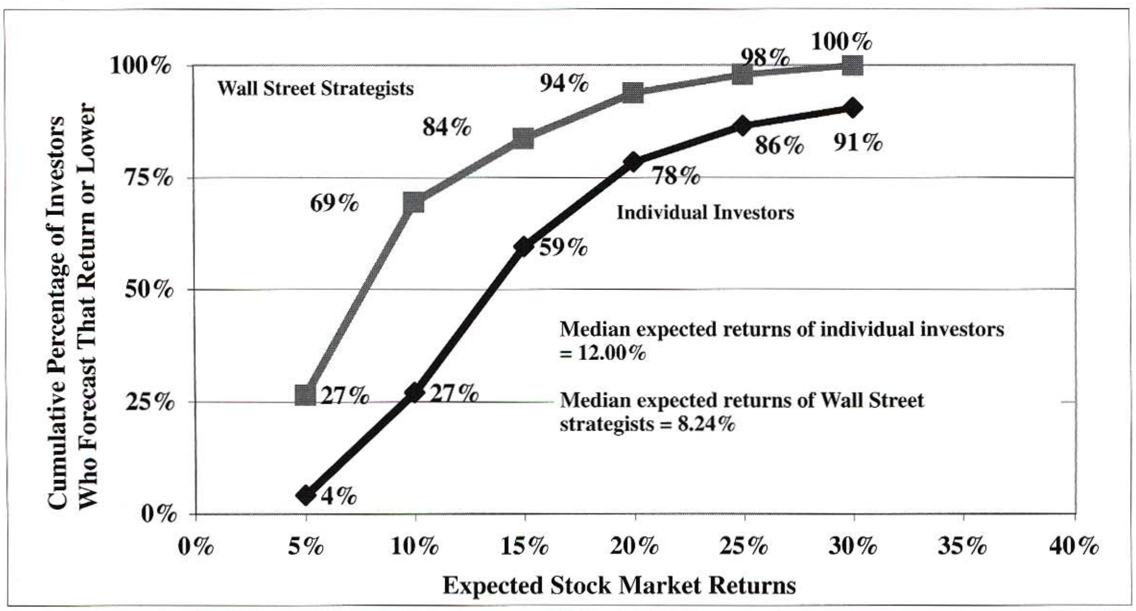
EXHIBIT 5

Expectations Year-End 1998-2002

A. Expectations in December 1998 for Stock Market Returns in 1999



B. Expectations in December 1999 for Stock Market Returns in 2000

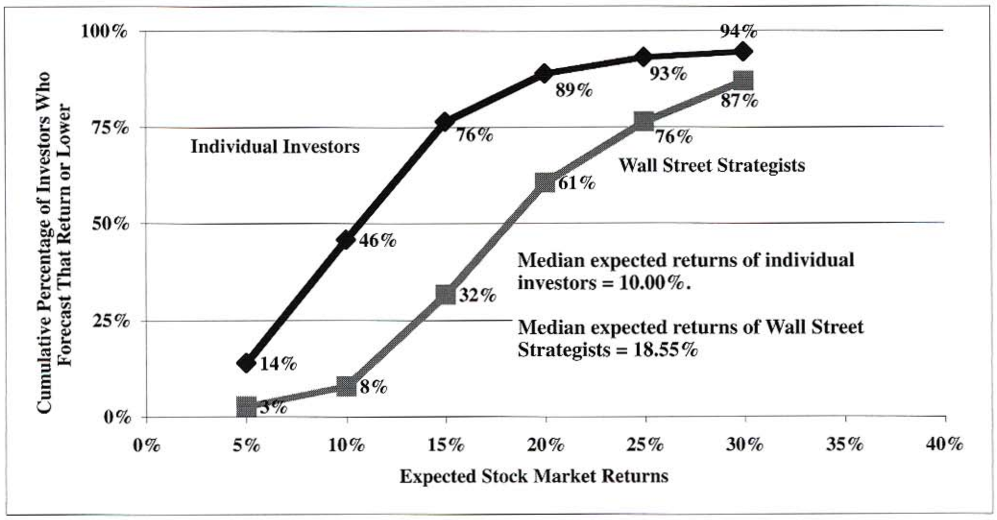


The expectations of finance academics were very similar to those of individual investors. The median expected one-year equity premium of finance academics was 6.0% in Welch's [2000] surveys of 1997-1998 and 1999. The stock return expected by finance academics in December 1998 for 1999 was 10.5%, assuming that the 6.0% expected equity premium applies to that date and adding to it the 4.5% Treasury bill yield. The 10.5% stock return expected by finance academics in December 1998 is close to the 10.1% stock return individual investors expected at that time.

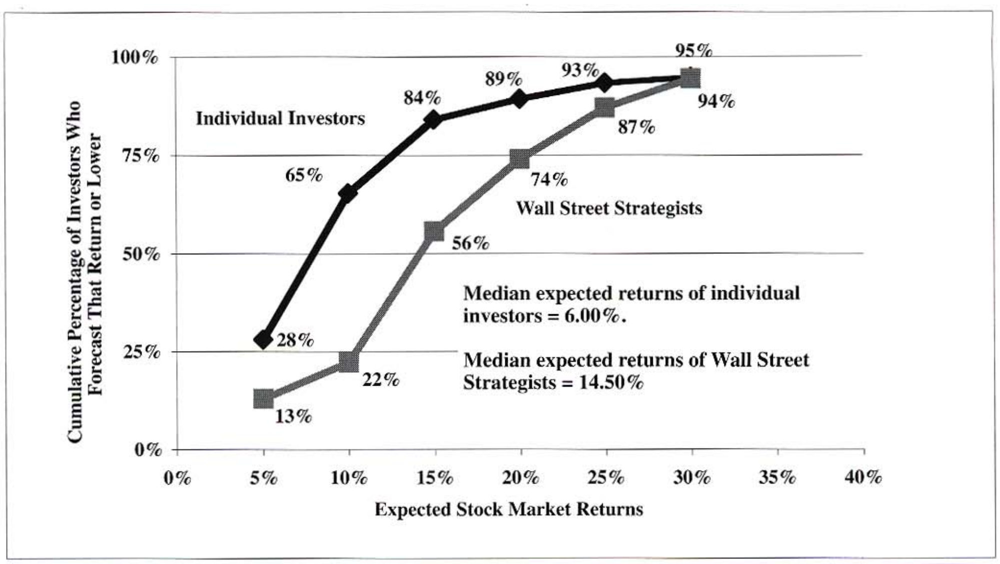
Individual investors and Wall Street strategists responded very differently to the declines in stock prices in 2000, 2001, and 2002. On average, individual investors formed their expectations as momentum investors, expecting continuations of recent returns, while strategists

EXHIBIT 5 (continued)
Expectations Year-End 1998-2002

C. Expectations in December 2000 for Stock Market Returns in 2001



D. Expectations in December 2001 for Stock Market Returns in 2002



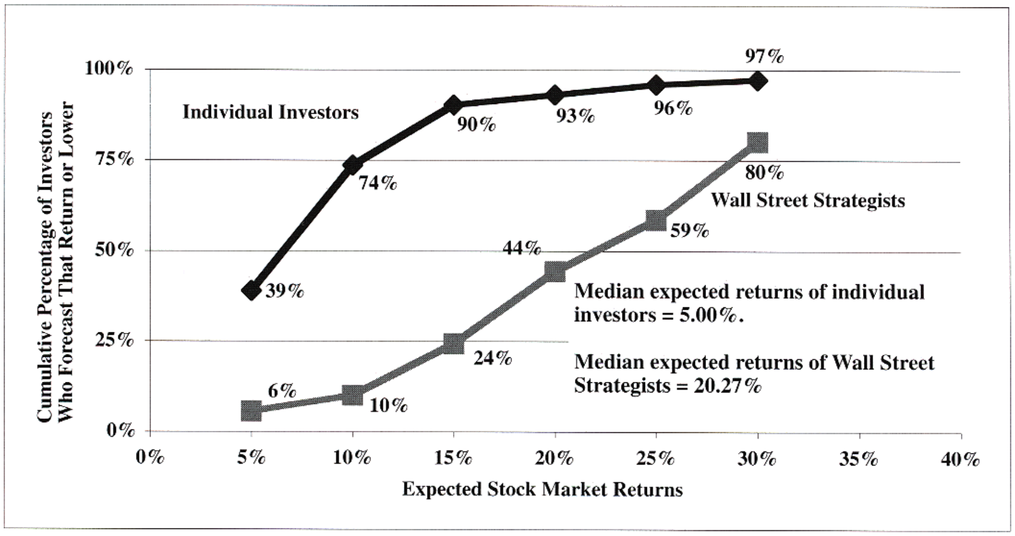
on average formed their expectations as contrarian investors, expecting reversals. So while individual investors turned less bullish, strategists turned more bullish. By December 2002, strategists expected a median S&P 500 return of 21.32% for 2003; individual investors expected only 5.00% (*see Exhibits 3 and 5*).

The change of expectations of finance academics resembles that of individual investors. The median expected one-year equity premium of finance academics in Welch's 2001 survey was 4.00%, implying that in December 2001 finance academics expected a 5.72% return in 2002 and that in December 2002 they expected a 5.21% return in 2003. These expected stock returns are close to the 6.00% and 5.00% returns that individual investors expected at the same time.

While individual investors were closer to the mark than Wall Street strategists in December 1998, Wall Street strategists were closer to the mark than individuals in December 2002. The S&P 500 index return in 2003 was 28.69%, way higher than the 5.00% expected return of individual investors and even higher than the 21.32% expected return of Wall Street strategists.

EXHIBIT 5 (continued)
Expectations Year-End 1998-2002

E. Expectations in December 2002 for Stock Market Returns in 2003



CONCLUSION

Value is one driver of stock prices, but sentiment is the other. Bullish sentiment can drive prices higher even as value goes down, while bearish sentiment can drive prices down even as value goes up. Investor sentiment and assessment of value drive prices in directions that are hard to see in foresight—even if they seem obvious in hindsight.

It seems obvious today that the stock market was in a bubble in the late 1990s because exuberant investors were driving prices up. But, as captured in the Gallup and *BusinessWeek* surveys, the median expectations of both individual investors and Wall Street strategists in the late 1990s were in line with average historical stock returns, and modest when compared with subsequent realized returns. Stock prices of the late 1990s were likely driven higher by the exuberance of investors about their favorite *individual* stocks, as captured on the Yahoo message boards, or by the combined drive of many investors, each with modest expectations. But market timing based on either value or sentiment remains treacherous.

Norris [2000] writes about Julian Roberts of the Tiger Hedge Fund and Stanley Druckenmiller of the Soros Hedge Fund. The Tiger Fund was dissolved in 1999 because its returns lagged the market when Julian Roberts shunned technology stocks as their prices were rising, while the Soros Fund was closed in 2000 when Stanley Druckenmiller failed to sell technology stocks quickly enough as their prices were falling.

Norris quotes a Wall Street analyst who has dealt with both hedge fund managers:

> Julian said, "This is irrational and I won't play," and they carried him out feet first. Druckenmiller said, "This is irrational and I will play," and they carried him out feet first.

We know more today about value, sentiment, and market timing than we have known in 1999, but Samuelson's 1999 statement remains true today: We still "have no theory of how long a bubble will last." Today's market timers, like yesterday's, should ask what they know about value and sentiment that is known by other investors and not reflected in the market, and they should remember that hindsight is not foresight.

ENDNOTES

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*Some posters might have used more than one name, but we have no way of accounting for that.

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