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# Investor Sentiment and Stock Returns

Kenneth L. Fisher and Meir Statman

*Investors are not all alike, and neither are their sentiments. We show that the sentiment of Wall Street strategists is unrelated to the sentiment of individual investors or that of newsletter writers, although the sentiment of the last two groups is closely related. Sentiment can be useful for tactical asset allocation. We found a negative relationship between the sentiment of each of these three groups and future stock returns, and the relationship is statistically significant for Wall Street strategists and individual investors.*

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Studies of the sentiment of investors are important for two reasons. First, they teach us about biases in the stock market forecasts of investors. Second, they teach us about opportunities to earn extra returns by exploiting those biases.

Alan Greenspan, chair of the U.S. Federal Reserve Board, warned against irrational exuberance in December 1996. In 1999, he warned against Internet mania. Greenspan told the Senate Budget Committee on January 28, 1999, that the impulse that drives Internet investors is the not-quite-rational impulse that drives lottery ticket buyers. One day earlier, Arthur Levitt, chair of the U.S. Securities and Exchange Commission, warned day traders that they should trade only "with funds they can afford to lose" (Wessel 1999).

Small investors are the main concern of Greenspan, Levitt, and a host of other commentators, but is the sentiment of "small" investors different from the sentiment of "large" investors or "medium-sized" investors? We set out to answer this question and several more: Does investor sentiment forecast stock returns? Do high returns turn investors into exuberant bulls? And finally, do individual investors follow their sentiment with investment actions?

## Measuring Investor Sentiment

We studied three groups of investors—large, medium, and small (in the sense of *large* Wall Street strategists, *medium* writers of investment newsletters, and *small* individual investors). Newsletter writers are often described as semiprofessionals,

midway between amateur individual investors and professional Wall Street strategists.

For the sentiment of the large investors, we used data from Merrill Lynch, which has compiled the sentiment of Wall Street sell-side strategists since September 1985. Our Merrill Lynch data extend through July 1998. Merrill Lynch defines the sentiment of Wall Street strategists as the mean allocation to stocks in their recommended portfolios. Merrill Lynch compiles the sentiment of strategists monthly, and responses are received close to the end of each month. The number of strategists in the Merrill Lynch survey has ranged over the years from 15 to 20.

Bernstein and Pradhuman (1994) found that the sentiment of Wall Street strategists is a useful contrary indicator. For example, they wrote in their December 20, 1994, *Quantitative Viewpoint* report that the stock allocations recommended by strategists in November were very low

and now clearly suggest that Wall Street is *too* bearish. Because the indicator is contrarian in nature, that extreme bearishness is a buy signal for the S&P 500. (p. 1)

Data on medium-sized investors came from Chartcraft, an investment services company that publishes *Investors Intelligence*, a survey of the sentiment of more than 130 investment newsletter writers. *Investors Intelligence* classifies newsletter writers into three categories—bullish, bearish, or waiting for a correction—and it promotes the sentiment data as a contrary indicator; investors are advised to sell when the proportion of bulls among newsletter writers is high. The headline of the January 22, 1999, issue of *Investors Intelligence* was "Too Many Bulls." The article goes on to say:

Situation continues to get more worrisome as our Sentiment Bulls are at the highest level since August 28, 1987, just less than two months before the crash. (p. 1)

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*Investors Intelligence* has compiled its sentiment data weekly since 1964. We used only data from September 1985 through July 1998, however, to facilitate comparisons with Wall Street strategists. We used the percentage of bullish newsletter writers in the last week of each month as the measure of the sentiment of newsletter writers that would correspond to the end-of-the-month compilation of the sentiment of Wall Street strategists.

Our data on the sentiment of small investors came from the American Association of Individual Investors (AAII), which has conducted a sentiment survey among its members since July 1987. The data we used extended through July 1998. The AAII asks respondents to classify themselves as bullish, bearish, or neutral. AAII's sentiment survey, like that of *Investors Intelligence*, is weekly. The AAII mails 100 survey questionnaires each weekday. On Thursday of each week, it tallies all the questionnaires that were received that week and were dated no earlier than the previous two weeks. A typical number of responses is the total number of questionnaires received during the last week of July 1998—217. We used the percentage of bullish investors in the last week of each month as a measure of the sentiment of individual investors that would correspond to the measure of sentiment of newsletter writers and Wall Street strategists.

In the following discussions, analyses that included AAII data span July 1987 through July 1998 whereas other analyses span September 1985 through July 1998.

## Does Sentiment Move in Lockstep?

The relationship between the sentiment of individual investors and the sentiment of newsletter writers is strong, whereas the relationship between the Wall Street strategists and the other two groups is not. Table 1 reports the correlations between changes in the sentiment of the three groups by month.

As can be seen, individual investors grow bullish when newsletter writers grow bullish, but not in lockstep. The correlation of 0.47 is highly statistically significant but hardly perfect.

**Table 1. Correlations between Changes in Sentiment**

	Individual Investors	Newsletter Writers	Wall Street Strategists
Individual investors	1.00		
Newsletter writers	0.47**	1.00	
Wall Street strategists	0.01	0.03	1.00

\*\*Significant at the 1 percent level.

On the other hand, the correlations in Table 1 indicate that changes in the sentiment of Wall Street strategists are virtually unrelated to changes in the sentiment of individual investors or newsletter writers.

## Does Sentiment Predict Stock Returns?

*Investors Intelligence* and Merrill Lynch use the level of sentiment to predict stock returns. So, we begin this section with an analysis of the relationship between the level of sentiment and future returns. We then turn to an analysis of the relationship between changes in sentiment and future stock returns.

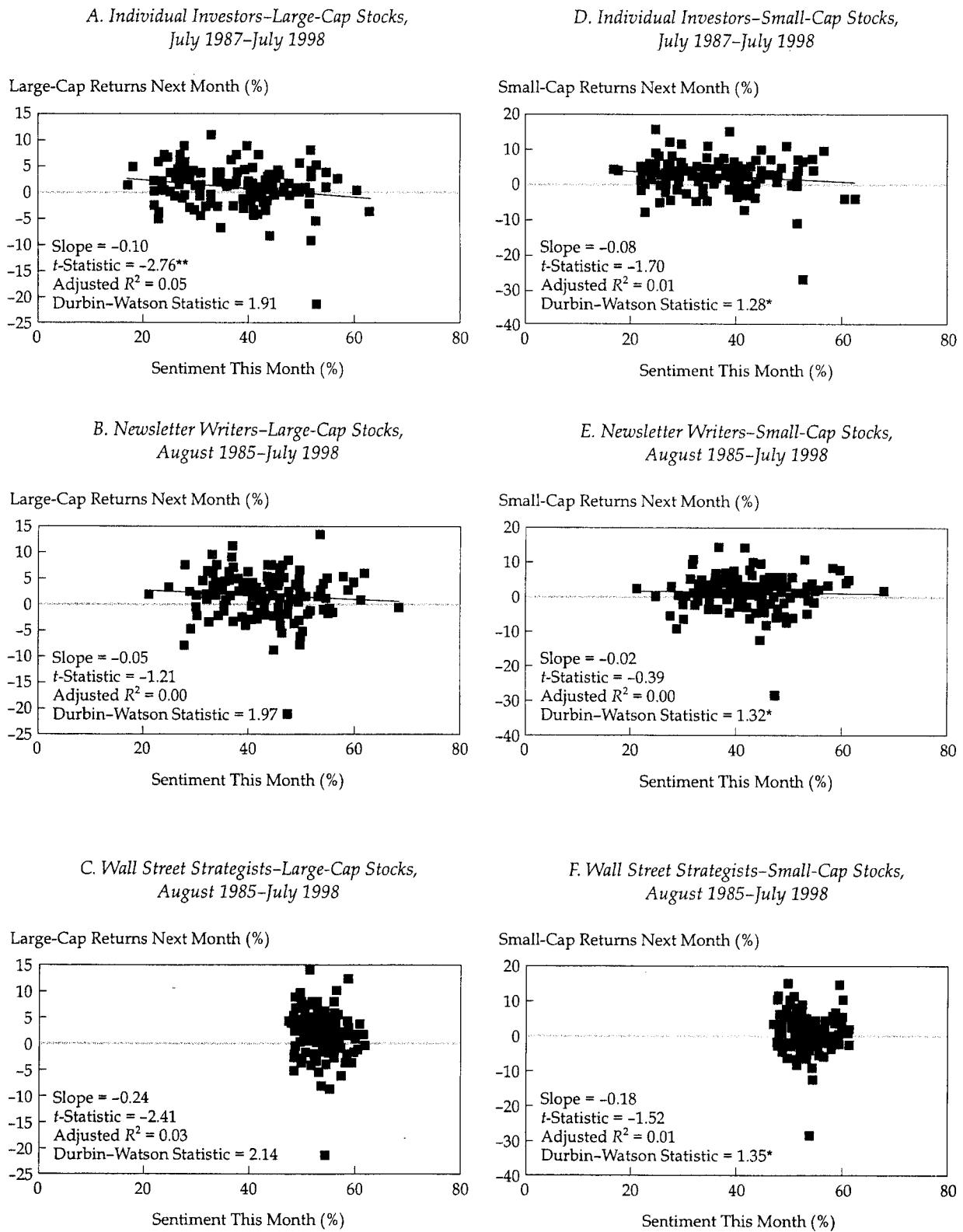
**Level of Sentiment.** Scatterplots for the relationships between the sentiments of the three groups and the returns of large-capitalization stocks (proxied by the S&P 500 Index) and the relationships between the sentiments of the three groups and the returns of small-capitalization stocks (proxied by the CRSP 9–10 Index<sup>1</sup>) are in Figure 1.

Panel A of Figure 1 shows that the level of sentiment of individual investors is a reliable contrary indicator of future S&P 500 returns. We found a negative and statistically significant relationship between the sentiment level of individual investors and S&P 500 returns in the following month. An increase of 1.0 percentage point in the sentiment level of individual investors is associated, on average, with a 0.1 pp decrease in S&P 500 returns in the following month.

Solt and Statman (1988) and Clarke and Statman (1998) analyzed weekly *Investors Intelligence* observations beginning in 1964 and found no statistically significant relationship between the level of sentiment of newsletter writers and DJIA or S&P 500 returns in the following 4 weeks, 26 weeks, or 52 weeks. We used monthly sentiment observations beginning in 1985, but we reached the same conclusion: The relationship between the level of sentiment of newsletter writers and S&P 500 returns in the following month is negative, but we found the relationship to be not statistically significant. The lack of relationship between large-cap stock returns and the level of sentiment of newsletter writers is clear in Panel B of Figure 1.

Panel C shows that the sentiment level of Wall Street strategists, like the sentiment level of individual investors and unlike that of newsletter writers, is a reliable contrary indicator for future S&P 500 returns. We found a negative and statistically significant relationship between the sentiment level of Wall Street strategists and S&P 500 returns

**Figure 1. Relationships between Bullish Sentiment and Future Equity Returns**



\*Significant at the 5 percent level.

\*\*Significant at the 1 percent level.

in the following month. An increase of 1.00 pp in the sentiment level of Wall Street strategists is associated, on average, with a 0.24 pp decrease in S&P 500 returns in the following month.<sup>2</sup>

Panels D, E, and F of Figure 1 provide the scatterplots for the relationship of the level of sentiment with small-cap returns. In all cases, the level of sentiment did not forecast the returns of small-cap stocks as well as it forecasted the returns of large-cap stocks. Although we found a negative relationship between the level of sentiment and future small-cap stock returns for all three sentiment groups, this relationship was not statistically significant. Moreover, the low level of statistical significance in the small-cap stock regressions was biased upward by serial correlation in the residuals, as indicated by the Durbin-Watson statistics.<sup>3</sup>

Combining the level of sentiment of the three groups provides a good tool for forecasting future S&P 500 returns. Table 2 shows that a multiple regression of S&P 500 returns in one month on the level of sentiment of the three investor groups in the preceding month yielded an  $R^2$  of 0.08, a number that was statistically significant at the 1 percent level. Although an  $R^2$  of 0.08 might seem low because it indicates that sentiment explains only 8 percent of S&P 500 returns, the 0.08 figure is properly interpreted as high. Clarke, Fitzgerald, Berent, and Statman (1989) showed that information reflected in such an  $R^2$  can add substantial value to a tactical asset allocation program.

**Change in Sentiment.** We found no signs of a meaningful relationship between *change* in sentiment in one month and stock returns in the following month. For large-cap stock returns, the relationship was negative for all sentiment groups but never statistically significant. The relationship between

change in sentiment during a month and the following month's stock returns was positive for the small-cap stocks of the CRSP 9-10, but that relationship also was never statistically significant.<sup>4</sup>

## What Makes Investors Bullish?

Stock returns are prominent among factors that affect sentiment. But do investors forecast continuations of past returns or do they forecast reversals? Common investment proverbs provide no good answers because they reflect diametrically opposed perceptions of the processes underlying stock returns. For every proverb that implies one should expect reversals (e.g., "trees don't grow to the sky"), there is a proverb implying that continuations are the rule (e.g., "don't fight the tape").

Scatterplots of the relationship between stock returns in one month and changes in sentiment in the month are shown in Figure 2. As Panel A shows, we found, consistent with De Bondt (1993), a positive and statistically significant relationship between S&P 500 returns and future changes in the sentiment of individual investors. A 1 pp increase in S&P 500 returns was associated with a 1 pp increase in the bullish sentiment of individual investors.

Clarke and Statman found that newsletter writers form their sentiments as if they expected continuations of short-term stock returns and reversals of long-term returns. High S&P 500 returns over four-week periods are associated with the migration of newsletter writers into the bullish camp. High S&P 500 returns over 26- and 52-week periods, however, are associated mostly with "nervous bullishness," a migration of newsletter writers into the correction camp. We confirmed the short-term effect: As Panel B of Figure 2 shows, we found a positive and statistically significant relationship

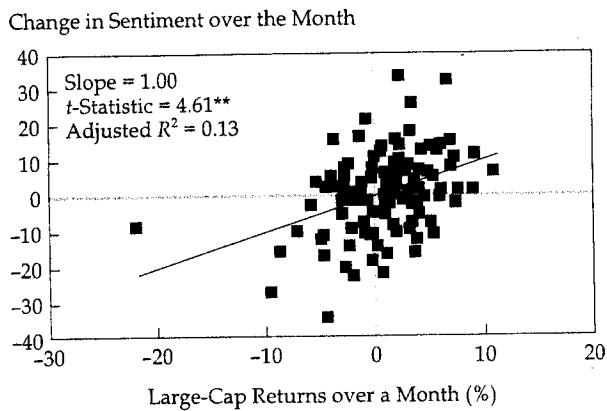
**Table 2. Multiple Regression of S&P 500 Returns on Level of Sentiment in Preceding Month**

Dependent Variable	Intercept	Independent Variable (July 1987-July 1998)		
		Individual Investors	Newsletter Writers	Wall Street Strategists
Stock Returns Next Month				
Large stocks (S&P 500)	17.48	-0.09	-0.01	-0.24
<i>t</i> -Statistic		(-2.37)*	(-0.16)	(-2.43)*
Adjusted $R^2$				0.08
Durbin-Watson statistic				1.98
Small stocks (CRSP 9-10)	12.40	-0.08	0.00	-0.16
<i>t</i> -Statistic		(-1.45)	(-0.06)	(-1.25)
Adjusted $R^2$				0.01
Durbin-Watson statistic				1.28*

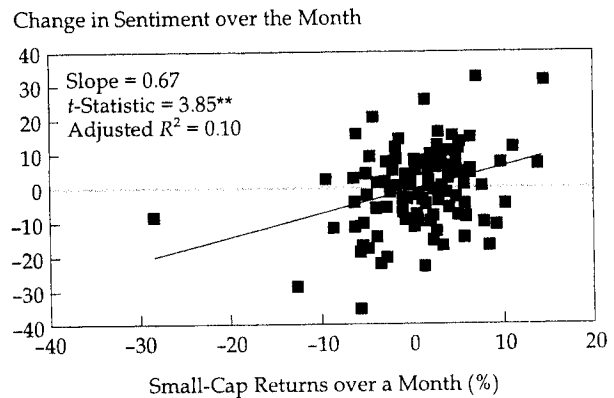
\*Significant at the 5 percent level.

**Figure 2. Relationships between Equity Returns and Changes in Bullish Sentiment**

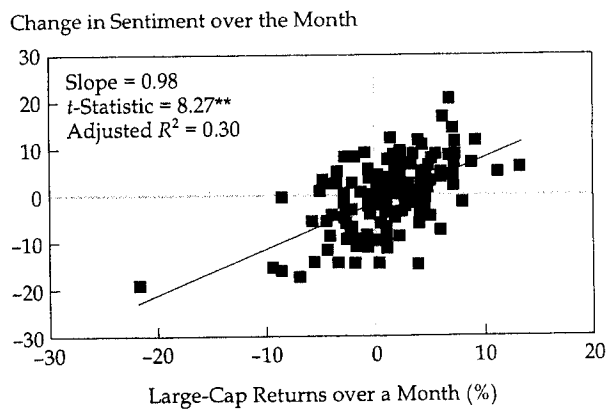
*A. Large-Cap Stocks–Individual Investors, July 1987–July 1998*



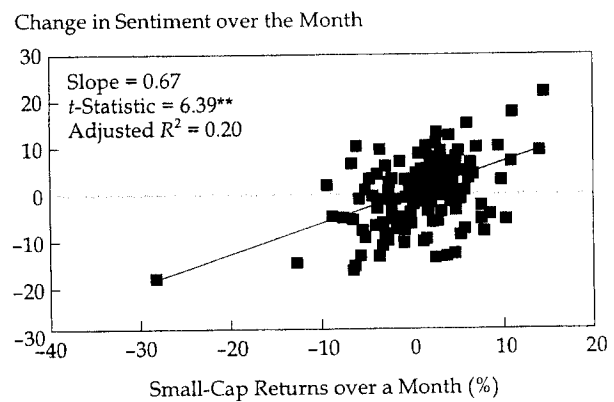
*D. Small-Cap Stocks–Individual Investors, July 1987–July 1998*



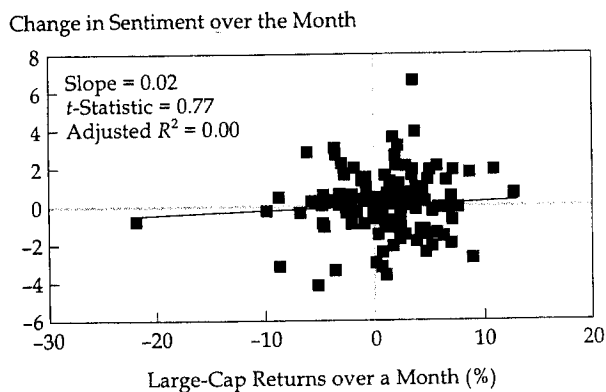
*B. Large-Cap Stocks–Newsletter Writers, August 1985–July 1998*



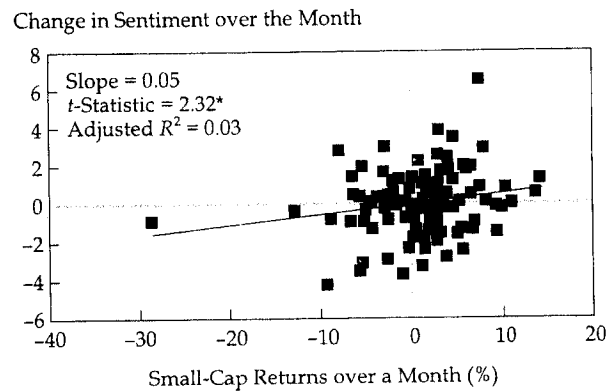
*E. Small-Cap Stocks–Newsletter Writers, August 1985–July 1998*



*C. Large-Cap Stocks–Wall Street Strategists, August 1985–July 1998*



*F. Small-Cap Stocks–Wall Street Strategists, August 1985–July 1998*



\*Significant at the 5 percent level.  
\*\*Significant at the 1 percent level.

between S&P 500 returns and changes in the sentiment of newsletter writers during the month. The effect was similar to the effect on the sentiment of individual investors. A 1.00 pp increase in S&P 500 returns was associated with a 0.98 pp increase in the bullish sentiment of newsletter writers.

Panel C of Figure 2 shows that stock returns had little effect on the sentiment of Wall Street strategists in our study. A 1.00 pp increase in the S&P 500 returns was associated with a 0.02 pp increase in the bullish sentiment of Wall Street strategists, but the relationship is not statistically significant.

Some researchers have suggested that the returns to small-cap stocks are related to the sentiment of small investors whereas the returns to large-cap stocks are related to the sentiment of large investors. For example, Lee, Shleifer, and Thaler (1991) concluded that small investors concentrate their holdings in small-cap stocks, thus creating such a link. Elton, Gruber, and Busse (1998) disputed these conclusions. When we analyzed the link between individual investor sentiment and small-cap versus large-cap returns, we found no support for the argument that the sentiment of small investors follows the performance of small-cap stocks more closely than the performance of large-cap stocks. A comparison of Panel D with Panel A of Figure 2 shows that, to the contrary, changes in the sentiment of individual investors are related more closely to S&P 500 returns than to CRSP 9–10 returns. Comparison of Panels C and F shows that the correlation between the returns of small-cap stocks and changes in the sentiment of Wall Street strategists was higher than the correla-

tion between the returns of large-cap stocks and changes in the sentiment of Wall Street strategists.

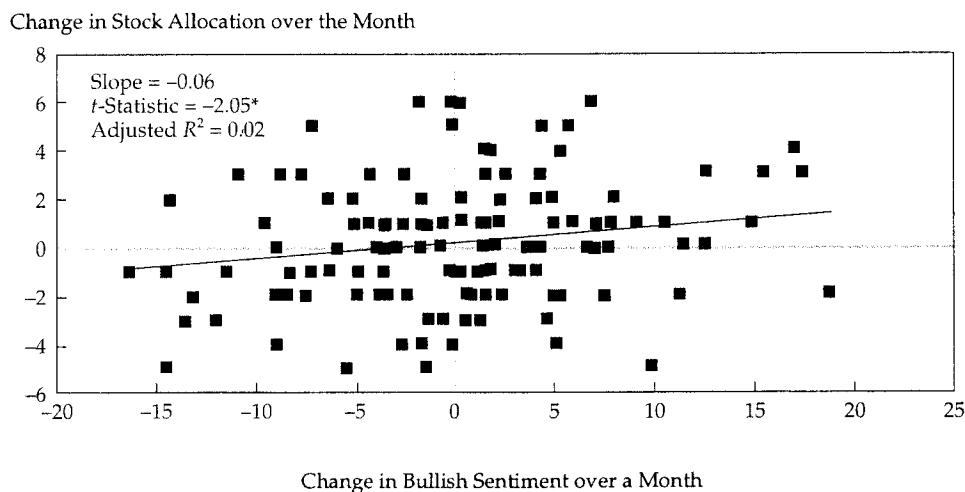
## Do Individual Investors Act on Their Sentiments?

No data are available that would reveal the relationship between the sentiments of Wall Street strategists or newsletter writers and investment actions. Therefore, this section analyzes only individual investors. In addition to the sentiment survey, the AAI conducts an asset allocation survey, in which individual investors are asked to specify their *actual* portfolio allocations to stocks, bonds, and cash. The asset allocation survey, unlike the sentiment survey, is monthly. The AAI mails 600 questionnaires at the beginning of each month and tallies the responses received during the month. As to typical responses, the July 1998 tally consisted of 144.

The AAI asset allocation survey responses are returned throughout the month, but the central point is roughly the middle of each month, so we used the mean of the weekly AAI sentiment figures during a month as the measure of sentiment corresponding to the measure of investment action.

Individual investors do follow their sentiment with investment action—but not forcefully. We found a positive and statistically significant relationship between the monthly change in the sentiment of individual investors and the monthly change in the stock allocation in their portfolios. As Figure 3 shows, however, the adjusted  $R^2$  of the regression of allocation changes on sentiment changes was only 0.02.

**Figure 3. Relationship between Change in Bullish Sentiment and Change in Stock Allocation: Individual Investors, November 1987–July 1998**



\*Significant at the 5 percent level.

It turns out that individual investors are wiser in their investment actions than in their sentiment. Figure 4 shows that, although we found a negative and statistically significant relationship between the sentiment of individual investors and future S&P 500 returns, we found a positive, although not statistically significant, relationship between actual stock allocations and future S&P 500 returns.

## Conclusions

We studied the sentiment of three groups of investors—small (individual) investors, medium investors (newsletter writers), and large investors (Wall Street strategists). We found that the sentiments of the three groups do not move in lockstep. The correlation between changes in the sentiment of individual investors and newsletter writers is high but hardly perfect, and virtually no correlation was found between changes in the sentiment of Wall Street strategists and changes in the sentiment of the other two groups.

The sentiments of both small and large investors are reliable contrary indicators for future S&P 500 returns. The relationship between the sentiment of individual investors and future S&P 500 returns was found to be negative and statistically significant, as was the relationship between the sentiment of Wall Street strategists and future S&P 500 returns. We found the relationship between the sentiment of newsletter writers and future S&P 500 returns to be also negative but not statistically significant. In addition, we found that a combination of the sentiment of the three groups provides forecasts of future S&P 500 returns that can be used in a tactical asset allocation program.

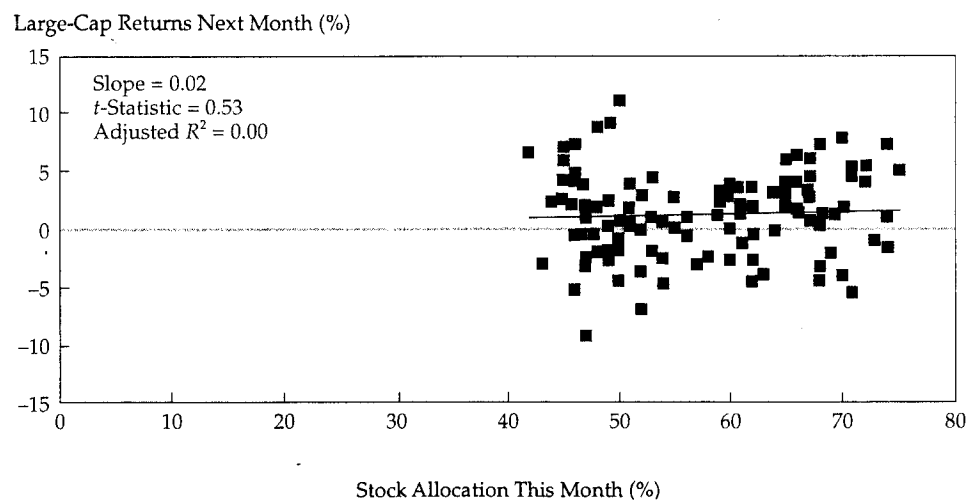
Individual investors and newsletter writers form their sentiments as if they expect continuations of short-term returns. High S&P 500 returns during a month make them bullish. The sentiment of Wall Street strategists is little affected by stock returns. We found no statistically significant relationship between S&P 500 returns and future changes in the sentiment of Wall Street strategists.

We also found no support for the claim that the sentiment of small investors is influenced primarily by the returns of small-cap stocks whereas the sentiment of large investors is influenced mostly by returns of large-cap stocks. Indeed, we found the correlation of changes in the sentiment of individual investors with the returns of large-cap stocks to be higher than the correlation with the returns of small-cap stocks. Similarly, we found the correlation of changes in the sentiment of Wall Street strategists with the returns of small-cap stocks to be higher than the correlation of changes in their sentiment with the returns of large-cap stocks.

Individual investors are wiser in their investment actions than in their sentiment. Although we found a negative and statistically significant relationship between the sentiment of individual investors and future S&P 500 returns, we found a positive, although not statistically significant, relationship between the actual stock allocations in the individual investors' portfolios and future S&P 500 returns.

Much work remains to be done in studying what affects investor sentiment and what effects sentiments have on the stock market. The three groups of investors we studied are only three of many. Research needs to be directed toward all kinds of investing groups, including groups in non-U.S. markets.

**Figure 4. Relationship between Individual Investors Stock Allocation and Large-Cap Stock Returns, November 1987–July 1998**



Moreover, we studied only *explicit* sentiment—that is, sentiment collected in investor surveys—but indicators of *implicit* sentiment also need to be studied. An example is the Market Volatility Index (Copeland and Copeland 1999). The relationship between explicit and implicit measures of sentiment, such as the relationship between the sentiment of individual investors and the discount on the closed-end funds (Brown 1999), also needs to be studied.

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## Notes

1. CRSP ranks all eligible NYSE stocks by company size (market value of outstanding equity) and then splits them into 10 equally populated groups, or deciles. The largest companies are in Decile 1, and the smallest are in Decile 10. The CRSP 9–10 Index is a combination of the two smallest deciles.
2. A couple of notes about the validity of the test findings shown in Panels A–C of Figure 1. First, the statistical significance of the relationship between the level of sentiment and future returns might be biased if serial correlation exists in the residuals of the regressions, but as noted in Figure 1, Durbin–Watson statistics indicate no serial correlation. (There was serial correlation in the level of sentiment but no serial correlation in S&P 500 returns.) Second, the period of our study contained October 1987, the month of the crash. But excluding October 1987 from our tests did not greatly affect the relationship between sentiment level and future S&P 500 returns. The relationship remained negative in all three regressions, and the *t*-statistics of two of the regressions increased when October 1987 was excluded. The *t*-statistic of the Wall Street strategists regression increased, in absolute

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value, from –2.41 to –2.68, and the *t*-statistic of the newsletter writers regression increased from –1.21 to –1.62. The *t*-statistic of the individual investors regression declined from –2.76 to –2.44.

3. Returns of small-cap stocks had positive serial correlation during the period. Excluding October 1987 had no noteworthy effect on the statistical significance of the coefficients.
4. Exclusion of the October 1987 returns had no effect on statistical significance.

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