
EDITORIAL COMMENTARY

The Influence of Affect on Investor Decision-Making

In the editorial in Volume 4, Number 4 (2003) issue of this Journal, the writer attempted to link some of the more recent affect research to specific investor decision-making that seemed pertinent to the disconnect between prices and values of high-tech and dot.com stock during the 1997–2000 bubble, and again in the current mini-bubble. These affect findings appeared to provide some good answers to consistent, but to date unexplained, investor behavioral patterns. The current piece will attempt to provide further insight into other characteristics of the affect heuristic which also appear to impact investor decision-making. The analysis will first examine a number of well documented investment anomalies, and then attempt to explain what part affect played in investor decision-making in each case.

Investor Behavior to Initial Public Offerings

The first case is a look at investor behavior to initial public offerings in four separate market periods since the late nineteen fifties. While the first three bubbles were not of the magnitude of the 1997–2000 Bubble, investor behavior seemed very similar, if not identical.

Conventional Financial Theory holds that IPO's should be offered at a small discount to their actual value, in order to ensure the successful salability to investors. Figure 1 demonstrates the significant overpricing of IPOs during the 1998–March 2000 Bubble. As Figure 1 indicates, the average IPO was priced at a premium of 10% or under the first day's closing price for the eight years from 1987 through 1994, in line with the small discount expected for IPOs. As Figure 1 indicates, during the years 1987–1994, the average IPO's offering price was 10% at most below the first trading day's close, in line with the small discount expected for IPO's. Over the next four years, premiums expanded significantly, averaging somewhat under 20%. This significant appreciation is by itself enough to steer many investors away from more conventional investment returns into the far more speculative arena of IPOs. Speculation dominated 1999 and the first three months of 2000 with the average IPO rising by a staggering 90% and 95% respectively at the close of the

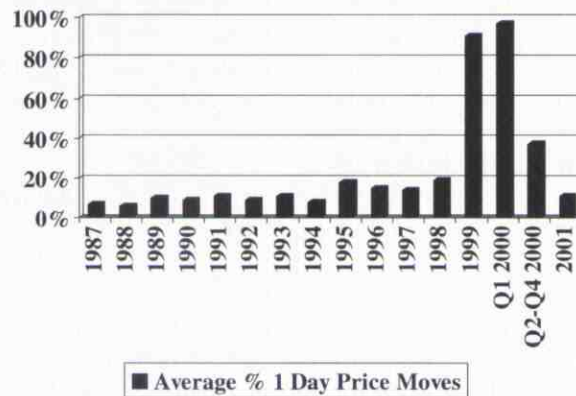
first day's trading. Moreover, for the first three months of 2000, the peak of the Bubble, the average closing price of IPOs of dot.com stocks (not shown in the figure) increased 135% from the original offering price, to the close of the first day's trading.

One of the most notable characteristics of a bubble is that the normal guidelines used to evaluate a company's value are bypassed or short-circuited by analysts, money managers and other professional investors. The premiums on IPOs in the late 1990s, as noted above increased to as much as ten to twelve times the average premiums over the longer term. The fundamentals of this group of IPOs were certainly no better, and judging by the high rates of failures, likely a good deal worse than IPOs of earlier time periods.

Since the late 1950's, no fewer than four major IPO bubbles have occurred, with the 1990's surpassing any in the past in terms of both its magnitude and its price appreciation. In all four bubbles, each new issue had some cutting edge product or service investors believed was absolutely guaranteed to make money. In the IPO market of the early eighties, one of the captivating images was that of new pharmaceuticals and other products that would come from genetic engineering, along with major breakthroughs in computer technology, including the introduction of the PC. In the 1966–69 IPO Bubble the image was of unlimited growth in the semi-conductors, computer peripherals, computer service companies and health-care issues. All in all, the concepts that captivated investors in the Bubble of the late sixties were not very different from the IPO Bubble that began in the mid-1990's. Back then as in the 1990s, technology ruled supreme. The U.S. was soon to put a man on the moon and the possibilities of various forms of technology growth seemed unlimited.

People do not appear to accurately gauge the risk of IPOs during periods of significant appreciation, or the enormous dilution of their capital when they purchase IPO's. Caginalp, Porter and Smith [2002] for example noted that the prospectuses of many high-tech IPO's stated that the initial shareholder equity would be diluted by a factor of 20 due to the ownership of 95% of the shares by the founders of the company. In other words, shareholders paying \$ 10 per share would see an immediate drop of the book value to 50 cents minus expenses!

FIGURE 1
Underpricing of IPOs Average 1 Day Price Moves



The risk of initial public offering was clearly brought out in a study by Value Line. In the Bubble of the early 1980s, for example, the *Value Line New Issue Survey* analyzed a group of proposed IPOs and found that many were start-ups, perhaps 95% dream and 5% product. The survey also found that quite a few had only one or two full-time employees (some had none). The majority attempted to go public with absolutely no earnings at 20 to 100 times their book value prior to the offering (Value Line Survey).

The most conclusive evidence of both overpricing IPO's and not appreciating the risk was provided in a study by Loughran and Ritter [1995]. The study of new issues was the most comprehensive to that time. The study computed the returns of 4,753 IPOs traded on the New York Stock Exchange, the AMEX, and NASDAQ between 1970 and 1990. The average return for IPOs was 3% annually compared to 11.3% for the S&P 500. Put another way, investing \$10,000 in the S&P 500 over these 20 years would have returned 751%, vs. 81% for the IPOs. The far safer stocks of the S&P did almost ten times as well.

But perhaps more telling was that the median return for these almost 5,000 initial public offerings was a drop of 39%, from the original offering price. Loughran and Ritter's results also found that most new issues go public near the top of an IPO market, when the demand is the greatest and the value of the merchandise is at its lowest.

In a December 1985 cover story, entitled "Why new issues are lousy investments," *Forbes* came out with similar results (Stern and Bornstein [1985]). The magazine traced the performance of 2800 new IPOs between January 1, 1975, and June 30, 1984. The IPOs raised \$27.5 billion, of which \$2 billion went to the investment bankers. The study found that only four of ten stocks went up at all in the 10 years measured. Among the new issues, 1 in 25 ended in bankruptcy, another 1 in 8 was down 95% or more, and almost 50% were down at least 50% versus the averages. According to the *Forbes* study, technology was, not surprisingly, one

of the hottest areas. It is striking that after the debacle in technology issues in the early eighties and similar collapses in both 1962, and 1969, the enormous technology Bubble in the second half of the 1990's could be launched at all.

The Role of Affect in the IPO Bubble

What were some of the causes of the enormous deviation in analyst's valuations during the bubble shown in the previous section? While a number of the errors can be attributed to cognitive biases such as representativeness, availability, framing and hindsight bias, a good number may also be attributed to affect. The following areas studied by researchers on affect seem to provide plausible explanations for some of the errant decision-making.

The Affect Heuristic in Judgments of Risk and Benefit

Researchers have found that the judgments of risk and benefit are negatively correlated. For many hazards the greater the perceived benefit the lower the perceived risk. A paper by Alhakami and Slovic [1994] indicates that the perceived risk and perceived benefit of an activity (e.g., using pesticides) was linked to the positive or negative affect linked to the activity. In the investment sector Ganzach [2001] found support for a model in which analysts base their judgments of risk and return upon widely held investment attitudes. If stocks were perceived to have good outlook, they were thought to promise high returns and low risk, whereas if their outlooks were perceived to be poor they were expected to provide lower returns and higher risk.

Also tying neatly to the influence of affect on risk judgments is a recent study by Finucane, Alhakami, Slovic, and Johnson [2000] which provided four different kinds of information designed to manipulate affect

by increasing or decreasing perceived risk and increasing or decreasing perceived benefit. In each case there was no apparent logical relation between the information provided (e.g., information about risks) and the non-manipulated variable (e.g., benefits). The predictions were confirmed. These data support the theory that risk and benefit judgments are constructed, at least in part, by reference to some overall affective evaluation. These findings certainly appear to help to explain the relatively low level of scrutiny of highly risky stocks in bubbles.

The Affect Heuristic and Risk Levels

Shortly after each bubble imploded, more normal risk evaluations began to be reestablished, resulting in the reversal, to a major extent, of the risk standards used during the Bubble. The affect heuristic may eventually turn inside out the traditional evaluation of which categories of stocks normally carry higher or lower levels of risk being turned inside out.

While the linking of strong positive affect with limited risk in investor minds, and vice versa, appears far clearer in a bubble environment, it also seems to be present in many other types of market circumstances, as well as in many non-equity investments. One notable example is the consistently superior performance of out-of-favor stocks using metrics such as low P/E, low price-to-book or low price-to-cash-flow, over favored stocks as measured by high P/E, high price-to-book, or high price-to-cash flow.

The Greater Reliance on Affect Under Conditions of Information Overload

Another important finding written about by Nobel Laureate Herbert Simon [1959] is information overload. More information according to Simon need not bring about better decisions. Instead it can also lead to poorer decision-making because of the inability of humans to process large amounts of information effectively. Simon goes on to state that even the processing of information is not a passive activity, which provides a pretty reasonable representation of the real world, "but an active process that involving attention to a very small part of the whole and the exclusion from the outset of all that is not within the scope of our attention."

In recent research on affect, Shiv and Fedorikhin [1999] demonstrated that by reducing the availability of processing resources, by increasing memory load, a greater reliance on affect was detected.

In the stock market both professionals and individual investors suffer from information overload. Large numbers of analysts' reports (sometime there are twenty or more analysts covering a company, all putt-

ing out numerous research updates), vast amounts of related company, industry, market and other important economic and financial information, all combine to further increase the degree of information overload. It is not surprising then that under these circumstances the affect considerations have a freer rein to operate.

Psychophysical Numbing

"Judgments and decisions can be faulty because they are subject to inherent biases of the experiential system. For example, the affective system seems designed to sensitize us to small changes in our environment at the cost of making us less sensitive to larger changes. For example, we are very sensitive to a single death, but are not proportionately sensitive to a much larger number of deaths. We might all empathize with the victims of a brutal murder or terrorist attack, but are less able to respond appropriately to much larger changes, such as major starvation or a large typhus outbreak in an third world country that caused many thousands or even a million or more deaths. Fetherstonhaugh, Slovic, Johnson, and Friedrich [1997] referred to this insensitivity as "psychophysical numbing."

Similar problems arise when the outcomes we must evaluate are visceral in nature. Visceral factors include hunger, thirst, sexual desires, emotions, pain and drug-craving. Although they produce strong feelings in the present moment, these feelings are impossible to recall accurately. According to Loewenstein [1999], "Unlike currently experienced visceral factors which have a disproportionate impact on behavior, delayed visceral factors tend to be underweighted in decision-making."

A large body of research indicates that it is difficult to process in a consistent manner the affect that is associated with outcomes that occur repeatedly but change slowly over time or are remote over time. This research is helpful in explaining IPO's, Contrarian Strategies, and major and consistent errors in analysts' forecasts.

The strongly positive affective response to favored stocks or new issues, accompanied by appreciation that extends for months to several years, leads to the belief that this is a "New Paradigm," where valuation metrics have changed permanently. These seem to be but two of many such examples of psychophysical numbing in the investment world.

Retrospective Evaluations of Affect

Kahneman [2000] finds that retrospective evaluations of affective episodes are strongly influenced by the affect experienced at singular moments, notably the moment when the affect was most extreme and the fi-

nal moment. Such evaluations show little or no sensitivity to the duration of the affect. Applying this concept to investment decisions we see that the addition of an extra period of diminishing discomfort to an unpleasant episode renders its memory less unpleasant (Kahneman, [1994], Schreiber and Kahneman [2000]).

This phenomenon appears to be particularly applicable to both the out-performance of contrarian stocks over time, as well as the high-flyers in the dot.com-tech bubble. In the case of contrarian stocks people often forget the positive outperformance, remembering instead the years of both mediocre outlooks and results. In the case of the bubble stocks the situation is reversed.

The Durability Bias

Durability Bias, the tendency to overestimate the length of time that a positive or negative affect will last after experiencing a pleasant or unpleasant event was noted briefly in the earlier editorial (2003, Vol 4).

An interesting effect on time horizon has been observed in studies asking investors to estimate the future performance of their stock portfolios, over varying time periods during the Bubble. In 1998 U.S. investors were extremely optimistic regarding the coming 12 month period, expecting an average return of about 12%. According to Dreman, Johnson, MacGregor and Slovic [2001] investors when asked to forecast their average return over the next 10 years, the results were even more optimistic, averaging 14%. Asking for inflation adjusted forecasts did not diminish this discrepancy. Numerous other studies conducted prior to the end of 2000 show the same anti-regressive tendency, for already extreme short-forecasts to become even more extreme for longer time periods.

In the recent bear market, investor long-term forecasts have come down dramatically. A recent Charles Schwab survey found that investors were looking for returns approximating 8% for the next few years.

Proportion Dominance

In situations that involve uncertainty about whether or not a critical event will occur or those that involve ambiguity about the value of security, there appears to be one information format that is highly evaluable, leading it to carry great weight in many judgment tasks. This is a representation characterizing an attribute as a proportion or percentage of something, or as a probability. Chris Hsee refers to the strong effects of this type of representation as "proportion dominance."

Proportion Dominance may have played a role both in the Bubble and in more normal markets in the following manner. In markets, available information is al-

most unlimited, confusing, often seemingly contradictory, and difficult to evaluate. Under these circumstances the analyst may rely on a small portion of the information available that appears clear-cut and can be evaluated easily. A strong statistical statement often laden with affective connotations can cut through a myriad of other diffuse facts, i.e. a statement that the market for dot.com advertising is growing at 200% a year, and the rate is likely to accelerate. Company "A" in this sector may have no profits and weak finances. Nevertheless, the powerful growth of Internet advertising may overwhelm other more important fundamental factors many, of which are difficult to put within an evaluable framework, allowing investors to justify paying extremely high prices for the stock.

In a like manner company "B" may have a satisfactory rate of growth in an industry that is growing far less rapidly, than Internet advertising, although its profits are much higher and it finances much stronger. Analysts in the dot.com bubble were likely to focus on the far faster growth perceived for dot.com advertising stocks giving them a much higher valuation, than on the slower relative growth of a company B, even though its profitability levels are significantly higher and are likely to be so for years to come.

The study of the affect heuristic is relatively new, but already has resulted in many dozens of papers demonstrating its influence on decision-making. In years to come it shows promise of becoming one of the important sources of new research in behavioral finance.

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