

The Impact Of Stock Price On Investment Decision: Theory & Evidence

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Abstract

Purpose – The purpose of this paper is to present a behavioral explanation of excess stock price volatility relative to present value theory.

Design/methodology/approach – The conceptual basis is the impact of affect on investor decisions. The empirical tests involve survey data collected from a sample of semi-professional investors and investment advisors.

Findings – It is suggested that affect causes investors to perceive an inverse ex ante relationship between risk perceptions and expected returns. Thus, new good or bad information has an amplified effect on stock valuations. In addition, investors tend to extrapolate recent short-term market movements into the future.

Practical implications – The primary implications are that ex ante perceptions of risk and return vary inversely and that affect has a strong influence on valuation. This means that simple statistical measures of risk are unlikely to fully capture risk perceptions and that market volatility can be expected to be greater than a simple present value model would imply.

Originality/value – This paper is unique as to the conclusion that risk and return perceptions vary inversely ex ante and that affect can amplify stock price volatility.

Keywords- Stock prices, Stock returns, Net present value, financial management, Affect, Volatility, Risk.

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I. Introduction

Positive (negative) Affect is associated with a global “feeling” of things perceived as good (bad). Researchers have postulated that Affect serves as a decision focused orienting mechanism (Damasio, 1994; Zajonc, 1980). Most relevant to this paper, recent research indicates that, ex ante, decision makers may perceive risk and return to vary inversely because of Affect (Alhakami and Slovic, 1994; Finucane and Slovic, 2000; Ganzach, 2001; Peters et al., 2006; Siegrist and Cvetkovich, 2000; Slovic, 2004; Wilson and Arvai, 2006). Therefore, stock price changes may be amplified by past events because of the event’s affective influence on the level of expected stock return and supporting changes in the perceived level of uncertainty (discount rate). Therefore, Affect may offer a new amplification based explanation for evidence of excess stock price volatility (Shiller, 1992).

Because it is well known that investors seek consistency in information and belief to reduce cognitive dissonance, the finding of an inverse relationship between risk and expected return may not seem too surprising. What is intriguing however is that this empirical study finds, ex post, a very large positive elasticity between recent past stock returns (an affect altering event) and changes in Affect (as measured by sentiment about future stock prices). Thus, Affect may be serving as a mechanism to amplify future stock price volatility by influencing both the expected level and uncertainty about future returns. This can be represented in following sequence:-

1. Recent Stock Return-
2. Affect (measured by market sentiment)
3. Expected Stock Price Before looking at the data it is important to understand how Affect is introduced into the decision process.

II. The Dual Decision Process

Affect is defined as “goodness” or “badness” experienced as a feeling state associated with a particular stimulus. Affect can be conscious or non-conscious. Affect exerts its greatest influence when decision makers rely upon what is called the “experiential” or “associative” decision making process. This paper is focused on “integral affect” wherein positive or negative feelings are based on prior experiences and thoughts instead of transitory “mood states”.

The experiential decision-making process is used extensively where the following Conditions exist

1. The decision situation is complex. That is, there may be competing goals or objectives and there does not appear to be a common denominator to sort among them.
2. The information appears to be ambiguous, incomplete, contradictory, or not well suited to symbolic categorization and manipulation.
3. Decisions must be made in a short period of time
4. There is a compelling personal/social need to “feel” that a good choice has been made.

The experiential decision process is reproductive as opposed to productive in the sense that it uses cues mentally retrieved from memories of similar past events in processing information. It also encodes information in the form of concrete exemplars, images and narratives. It appears to be relatively non-symbolic and non-linguistic. It is also holistic and very context sensitive. Most importantly, the experiential decision making process is more emotionally driven and motivated by positive anticipated affect or “feelings”. In this decision mode decision makers stress a stronger need to feel that they have made a choice that feels right as opposed to one that just looks right, based upon formal calculation.

The second decision making process is often called “rational” or “rule based”. A defining feature of this system is that it uses symbolically represented knowledge processing. Processing rules are culturally based and socially learned. Information is evaluated and integrated using formal logic as opposed to informal associations. The rational process requires greater mental effort and is more time consuming and tends to yield superior results where the decision situation is relatively simple. More specifically, complex “appearing” situations must be reducible to a set of separable independent attributes. That is, dynamical complexity cannot exist.

There is an extensive dual decision process literature postulating a number of alternative dual interaction systems (Hammond, 1996; Chaiken and Trope, 1999; Forgas, 2000; Over, 2003). However, no theorist claims that decision makers switch back and forth between pure forms of the two processes depending upon the particular situation.

The reality is that both systems appear to be simultaneously in operation with the relative weights of the two systems continuously varying. There is also neuroscience evidence that the two systems make use of somewhat different brain structures and that the experiential system is older from an evolutionary perspective (Geary, 2005). It appears designed to generate acceptable but not necessarily optimal solutions to problems related to adaptation.

Risk perceptions are often characterized as arising most commonly from Affect since it is related to the experiential decision process, the process most capable of integrating non-compensatory, formally complex, and time sensitive information. In effect Affect serves as a common currency for risk perception. In this regard it has been suggested that the Affective perception of risk may serve as an anchor point even where more calculative measures of risk may be taken into account (Peters et al., 2006).

Risk as qualia

Qualia are qualitative feelings such as the “redness” of a rose or the “pain” of regret. Qualia can be associated with experiential or rule based decision process but appear to be unrelated to formal thought (Chalmers, 1996). However, they are most common when the experiential decision making process is in use. They appear to originate in a more primal brain structure that informs the decision maker about the quality of his/her decision. Decision makers usually report these “feelings” as thoughts but they appear to be involuntary and are often associated with “feelings of knowing” and perceptions of familiarity and risk (Burton, 2008; Gardner, 2008; Loewenstein and Weber, 2001).

III. Evidence Of Affective Influence On Investment Behavior:

A brief review the nature of the investment management makes it vulnerable to an experiential and affectively influenced decision process (Olsen, 2002). As mentioned, experiential processes tend to be utilized where the decision environment is complex, data is incomplete, ambiguous and possibly contradictory, and time is of the essence. This situation appears to fit the world of investing “to a tee”. First, investing is all about correctly predicting a future that is influenced by a myriad of worldwide economic, social, and political events. Second there is a plethora of methods advocated for valuing individual assets and collecting them into portfolios. Moreover, there is little convincing evidence that any one method or investment advisor can produce consistently superior results. Third financial data is usually incomplete and difficult to interpret because of different accounting conventions, forms of presentation and competitive secrecy. Fourth, financial markets are volatile and investors generally believe that immediate action needs to be taken before an investment opportunity is lost. Thus, it would be surprising to find that investment decisions were not subject to the experiential process and the influence of affect.

There is already a body of evidence linking affect to investment behavior (Yates, 1992; Olsen, 2009). Risk is seen as a multi attribute perception consisting of more than estimates of statistical distributions of possible returns. Perceived risk is also a function of fear of loss, lack of personal control, familiarity, degree of trust, and fairness. Traces of affect are also apparent in a multitude of studies of investor “herding”, “momentum trading”, the “disposition effect”, “home bias” and “IPO premiums” (Thaler, 1993, 2006; Shefrin, 2000; Belsky and Gilovich, 2000; Warneryd, 2001). However, these studies do not focus on the possibility of an inverse relation between investment return and risk.

In summary there is scant reason to believe that affect does the not influence investment decisions. The primary question involves the degree of influence. In this regard while there is substantial evidence of affect in novices’ investment decisions, there is also evidence that professional investors are not immune to affective influence (Breton and Taffler, 2001; Sias, 2004; Hong and Kubik, 2005).

IV. Evidence Of Affective Influence On Risk And Return:

New survey evidence Neoclassical financial theory argues that investors should perceive expected return and perceived risk to vary directly. High risk is the price to be paid for the chance of high return. Alternatively, the Affect heuristic suggests that it is likely that some investors might believe expected return and perceived risk to vary inversely. Good (bad) Affect may emotionally “color” expected returns to look high (low) and risk to look low (high). The following survey results are unique in that they highlight the possibility of an inverse relation between expected return and perceived risk. Complete Affect focused surveys were received from of 622 American Association of Individual Investors (AAII) investors and 157 Certified Financial Planners (cfps). Call back checks did not find these respondents significantly different from non-reporting aaii, cfps. Both groups represent skilled and highly educated investors who oversee portfolios of significant value (median AAII.\$750K, 86 percent college degree). 75 percent of the cfps had more than 11 years’ experience and about 130 clients each. Thus, the respondents’ beliefs and advice might be expected to have market significance.

Consistent with the experiential decision process discussed previously, question one Below shows that AAII and cfps perceive investment risk as having a strong “feeling” or emotional content. Question two is also consistent with the experiential process in that investors risk related feelings are based on past similar experiences. Question three suggests that both AAII and cfps generally see positive affect as being associated with lower levels of risk. Question four indicates that both AAII and cfps tend to associate higher return investments with lower levels of perceived risk. Question five suggests that AAII investors tend to associate positive affect with lower levels of risk. Question six reveals that cfps believe that their clients generally associate good return with lower risk.

In summary these new findings are consistent with Affect as a factor influencing return and risk perceptions. In particular, a large proportion of educated investors appear to see return and risk as being inversely related instead of directly related as assumed by current financial theory. These inverse benefit/risk results are consistent with those found in studies of other risky environments, such as atomic power, medicine, etc.

Survey questions and responses

The questions asked and percentage of responses received were as follows:

- (1) Investment risk has an emotional “feel” as well as statistical unpredictability (Table 1)

(Table I).

	Strongly agree (%)	Moderately Agree (%)	Moderately Disagree (%)	Strongly Agree (%)
AAII	27	61	9	3
CFP	71	21	7	1

Note:- Agree percentage larger than disagree percentage at 1 % significant level.

- (2) Risk related feelings are most meaningful when based on similar experiences (Table II).
- (3) How risky is a firm that you admire because of non-economic features such as employee relations, environmental activities, etc. (Table III).
- (4) Think of an investment that you feel “Generally Positive” about. How would you characterize its expected return/ risk ratio? (Table IV).
- (5) How often have your feelings of good potential return been associated with less concern about large financial loss? (Table V).
- (6) Clients tend to see high returns as being associated with lower risk (Table VI).

5. Affect and stock prices

The influence of changes in effect on stock prices can be demonstrated using the Constant growth valuation equation:

Table -2

	Strongly agree (%)	Moderately Agree (%)	Moderately Disagree (%)	Strongly Agree (%)
AAII	32	51	11	6
CFP	25	51	21	3

Notes: AAII agree percentages larger than disagree percentages at 1 percent significance level; CFP moderate agree percentages are larger than disagree at the 1 percent significance level

Table-3

	Very Risky (%)	Moderately Risky (%)	Slightly Risky (%)
AAII	3	49	48
CFP	5	35	60

Note: Moderate and slightly risky percentages are greater than the very risky percentage at the 1 percent significance level

Table-4

	High return/Low risk (%)	High return/Moderate risk (%)	High return/high risk (%)
AAII	41	45	14
CFP	14	56	30

Notes: AAII low and moderate risk percentages are greater than “high risk” at 1 percent significance level; CFP moderate risk exceeds other categories at the 1 percent significance level; CFP low and high risk not significantly differently at 5 percent level.

Table-5

	Very often (%)	Moderately often (%)	Slightly often (%)
AAII	22	45	33
CFP	18	57	2

Note: Percentages differ at the 5 percent significance level

Table -6

	Agree (%)	Disagree (%)
AAII	29	71
CFP	24	76

Note: Agree percentage larger than disagree at the 1 percent significance level

Changes in affect would influence both the expected rate of dividend growth (g) and the discount rate (k). Positive (negative) affective changes would be associated not only an increase in g (more growth is good) but also a decrease (increase) in k (less risk is good). Thus, positive (negative) affective changes would be associated with larger changes in P (price) than traditional models would predict. In traditional models expected growth and risk are usually hypothesized to be independent, if not positively rather than inversely correlated.

It is also likely that the influence of affective changes on price (P) will be asymmetric because of wishful thinking bias. In particular, downward adjustments in P due to potential unfavorable events are likely to be proportionately less than upward adjustments because investors have been shown to overweight the probability of favorable events and underestimate unfavorable events. This situation is likely to be most visible in declining markets wherein investors are more likely to over anticipate positive market reversals. In summary.

1. Expectations of future price changes should be more volatile than fundamental economic change would suggest because expected benefit and perceived risk vary inversely and support one another from a present value perspective.

2. Expectations of future price changes may exhibit asymmetry wherein positive Events are associated with greater price change than comparable negative events Due to wishful thinking bias. Wishful thinking bias refers to investors Underweighting potential negative outcomes.

Market sentiment and affect: data

This study uses weekly stock market sentiment survey data gathered by the AAII and weekly returns data for the S&P 500 Stock Index. Both cover the period July 1987 to July 2008. The AAII polls a random sample of its members each week and asks them to indicate whether they are bullish, bearish or neutral regarding changes in stock market over the following few weeks. The average number of weekly responses was about 150. In an average week 39 percent of the respondents were bullish, 29 percent were bearish and 32 percent were neutral. The AAII interprets these percentages as indicators of market sentiment. In general “sentiments” such as these are interpreted as being relative to some norm (historical average). Thus, a bullish investor is assumed to be one who expects the market to perform better than the norm over the next six months whereas a bearish investor is one

who expects the market to perform worse than the norm. A neutral investor expects about average market returns. Because Affect is comprised of Positive or negative feelings, market sentiment should be a good proxy for felt Affect. Bullish sentiment should indicate positive Affect while bearish sentiment should indicate negative Affect.

Other researchers have carefully analyzed the AAI data and have arrived at the following conclusions (Fisher and Statman, 1999, 2003; Indro, 2004; Brown and Cliff, 2004, 2005):

1. Previous market returns are a significant predictor of the level of AAI sentiment. Current sentiment and last week's returns are positively correlated (1 percent significance level). High past returns lead to higher levels of positive sentiment.

2. AAI Sentiment influences investor's expectations, as measured by changes in portfolio compositions. Increases in positive sentiment are associated with the movement of funds from cash to stocks while decreases in sentiment are associated with the reverse. Bond investments are not appreciably influenced by changes in market sentiment suggesting that bonds serve other than a "speculative purpose" in investors' portfolios. Thus, sentiment should have some stock market price influence.

In summary, recent returns are a significant determinant of immediate future returns And portfolio rebalancing.

Wishful thinking. For the 1987-2008 period AAI respondents had net bullish sentiment (percent bullish minus percent bearish .0) in 71 percent of the weeks and net bearish sentiments in 29 percent of the weeks. In contrast, the market rose in 59 percent of the weeks and declined in 41 percent of the weeks. Nonparametric tests find the AAI mean percentages different from the market percentages at the 1 percent significance level. These results are consistent with much previous research indicating that investors have a propensity to weight more highly the probability of good outcomes as opposed to bad outcomes and to believe that market reversals are more likely following down markets (Hogarth, 1998; Poses and Anthony, 1991; Olsen, 1997).

Market returns and market sentiment: Results

The previous sections hypothesized that previous market performance might have exaggerated effects on sentiment due to Affect. Past market increases were hypothesized to be associated with exaggerated increases in positive sentiment (bullishness) since the positive affect of the past good news would not only lead to expectations of higher returns (i.e. greater g) but also less perceived uncertainty about the realization of those returns (i.e. lower k). Alternatively, market declines were hypothesized to be associated with less exaggerated declines in market sentiment because wishful thinking bias might moderate the influence of the negative affect associated with the previous market decline.

Estimates of arc elasticity for sentiment are presented below. In all cases the measures of elasticity show the percentage change in sentiment levels divided by the

Percentage change in the stock market for the preceding week

1. Elasticity for full period: 4.3.
2. Elasticity for market increases: 5.8.
3. Elasticity for market decreases: 2.1

As can be seen, for the period as a whole, on the average, a one percent increase in stock price is followed by a much greater 3.6 percent increase in market sentiment in the following week. Similarly, when looking at the effect of stock price increases only a one percent increase in market prices is associated with a larger 4.8 percent increase in sentiment. Conversely, when looking at the effect of prior stock price decreases, a one percent decrease in the market is associated with a much lower 1.1 percent decrease in sentiment. The relative magnitude of these elasticity coefficients is consistent with the proposed hypothesis. As previously suggested the most likely cause of the lower declining market elasticity is that investors tend to expect more market reversals in declining markets because of wishful thinking.

Consistent with the results of others who have used the AAI data, positive sentiment was found to be strongly correlated with market returns in the previous week. Linear regression of sentiment changes on market returns in the previous week yielded regression coefficients that were significant at the 1 percent level with R^2 around 46 percent. Regressions with multiple week return lags did not significantly improve the fit of the relationship. Thus, it appears that sentiment change is most influenced by rather recent market events. Previous researchers have also noted this result using AAI data.

V. Summary And Implications

This exploratory paper has hypothesized that excessive stock price volatility might be partially caused by investor Affect. Specifically this paper has suggested that many investment decision makers associate positive affect with enhanced expectations but lower perceived risk. Thus, future stock prices may respond more strongly to changes in Affect laden company related information because of reinforcing changes in both expected benefits

and risk. A limited examination of this hypothesis with AAI sentiment data provided results consistent with this hypothesis. Investor Affect as measured by AAI market sentiment exhibited disproportionate volatility relative to changes in recent market performance (the independent economic event). In addition, positive sentiment exhibited greater volatility than negative sentiment, tending to confirm previous studies indicating investor “desirability” bias.

While some investors may subscribe to the conventional hypothesis of a direct relation between return and risk, the evidence of a countervailing influence implies that it may be fruitful to investigate the conditions under which each directional effect is dominant. Because Affect is stronger, due to the Experiential decision process, when decisions are more complex, more ambiguous and time sensitive, the inverse return/risk effect may be stronger in the cases of less well known small firms, new startups, foreign stocks and where market trading volume is lighter. More interesting, the heretofore economically unexplainable higher stock market returns during Democrat Presidential administrations may also reflect an Affective influence. Even though Ex post Republican and Democrat economic policies are often little different, there tends to be a different social “flavor” to political discussion during the different party tenures. More positive Democratic Affect may encourage stock investment and boost prices.

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