

“Risk-as-Feelings” and the Pricing of Stocks

A strand of recent research in behavioural finance has investigated whether there is a relationship between stock returns and variables based on factors such as the weather (e.g. Hirshleifer and Shumway, 2001), biorhythms (e.g. Kamstra, Kramer and Levi, 2001) and societal happiness (e.g. Boyle and Walter, 2001).

These diverse investigations are motivated by emerging theories in psychological economics on visceral factors and the “risk-as-feelings” perspective. Visceral factors are the wide range of emotions, moods and drive states that people experience at the time of making a decision (Loewenstein, 1996). The “risk-as-feelings” perspective of Loewenstein, Weber, Hsee and Welch (2001) argues that these visceral factors can affect, and even override, rational cogitations on decisions involving risk and uncertainty. Variables such as the weather, biorhythms, and societal happiness are argued to be widespread visceral variables, and thus they are hypothesised to influence the investment decisions of most investors and be priced in equilibrium.

A brief review of the recent research and the supporting psychological arguments follows:

- *Relationship between weather and stock returns:* Saunders (1993) and Hirshleifer and Shumway (2001) find a relationship between cloud cover (a proxy for the level of sunshine) and stock returns. Their research is based on the “weather-effect” which is summarised by Howarth and Hoffman (1984) as; “weather variables affect an individual’s emotional state or mood, which creates a predisposition to engage in particular behaviours” (p. 15).
- *Relationship between biorhythms and stock returns:* Kamstra, Kramer and Levi (2001) find that returns decrease as the winter solstice approaches and the hours of sunlight in the day shorten. Returns start to increase after the winter solstice has passed and days start to lengthen. This research is based on the finding in psychology research that people have mood variations based on the seasonal variation in the hours of sunlight in the day; the so-called Seasonal Affective Disorder (SAD) (Rosenthal, 1991).
- *Relationship between societal happiness and stock returns:* Boyle and Walter (2001) hypothesise, but do not find, a relationship between the performance of the New Zealand national rugby team (the “All Blacks”) and stock returns on the New Zealand stock exchange. Their hypothesis is based on the finding that the performance of a sports team has an important impact on the mood of its fans (Sloan, 1979; Hirt, Zillman, Erikson and Kennedy, 1992).

The review illustrates the common theme running through this research; certain widespread visceral factors are hypothesised to affect the mood or emotions of investors at the time they are making an investment decision, and thus to influence the decision the investor eventually makes. This creates predictable patterns in stock returns because people in good moods tend to be more optimistic in their estimates and judgements than people in bad moods (Wright and Bower, 1992). In relation to stock pricing, the optimistic or pessimistic judgement might be about the future prospects for the business underlying the stock. If visceral factors affecting mood in a particular direction are widespread, stock prices should be predictably higher at times when most investors are in good moods than times they are in neutral or bad moods.

This hypothesised relationship is fundamentally different to the decision-making process assumed by theories of the Efficient Market Paradigm (EMP), and it is also fundamentally different to the decision-making process assumed by many theories in behavioural finance. Theories of the EMP assume that decisions are made by weighting the probabilities attached to the various available choices, with the

eventual choice being the one that offers the best risk-return trade-off (e.g. Sharpe, 1964). But, in addition, many theories in behavioural finance just involve basic adjustments to the traditional view of the decision-making process. For example, the availability bias, narrow framing bias and representativeness bias (reviewed in Hirshleifer, 2001), which dominate behavioural finance are all based on the traditional view of investor decision-making, but with adjustments for biases in either the selection of investment choices or the weightings attached to the various choices. Even the behavioural finance work of Benartzi and Thaler (1995), which argues that the fear of losing money causes the equity risk premium, still assumes a variation of the traditional view of investor decision-making. In Benartzi and Thaler, investors are implicitly assumed to calculate the return they require in return for the fear they have of losing money.

By allowing the emotions experienced by an investor at the time of making a decision to influence the eventual decision, the risk-as-feelings perspective is fundamentally different to the EMP perspective on investor decision-making and to the perspective in mainstream behavioural finance. The reason why such a perspective has not been previously considered in any great depth by behavioural finance researchers, might be simply because of the recency of the emergence of behavioural finance as a mainstream area of finance, or it may be, as Elster (1998) argues, that cognitive psychologists (e.g. Amos Tversky and Daniel Kahneman) have addressed themselves very effectively to translating the field of cognitive psychology into a form suitable for psychological economists, whereas emotions psychologists have not addressed themselves as effectively in translating their research into a form suitable for psychological economists.

Given the recentness of both the theoretical and empirical work in this area, the authors believe that an analytical review of the applicability of the area to investment research would be beneficial. Of particular benefit would be a comparison of the different perspectives of how investors make decisions. The authors believe that the risk-as-feelings perspective is part of the fundamental shift from behavioural finance as an anomalies literature, with psychological phenomena being adapted to explain known anomalies, to behavioural finance being an area of research capable of developing its own hypotheses and conducting research in directions independent of mainstream research. In addition, it is argued that the risk-as-feelings perspective addresses a criticism of behavioural finance made in Frankfurter and McGoun (2000); that behavioural finance still appears to accept that risk is a fundamental and not a psychological construct.

The paper will include findings from a robust investigation of the relationship between weather, biorhythms, and societal happiness variables and Irish stock returns. Improvements to the previous research in these areas have been identified, these are primarily econometric improvements, but also include refinements to the hypotheses tested in the previous research in the area.

Finally, possible areas for future research will be proposed and assessed. A possible area of future research is the psychometric testing of investors. This would enable the development of more refined hypotheses of how moods or emotions affect investor decision-making. For example, Biais, Hilton, Mazurier and Pouget (2000), and (to a lesser extent) Coval and Shumway (2001) have tested whether psychological traits affect investor decision-making. A second area for future research could involve testing whether media coverage can act as a visceral influence on investor decision-making. Recent work by Shiller (2000) has argued that media coverage creates emotional images of stocks, and MacGregor, Slovic, Dreman and Berry (2000) find that subjects assess whether they would invest in a stock based on the image the stock projects.

Bibliography

- Benartzi, S. and R. Thaler (1995). "Myopic Loss Aversion and the Equity Premium Puzzle." Quarterly Journal of Economics **110**(1): 73-92.
- Biais, B., D. Hilton, K. Mazurier and S. Pouget (2000). "Psychological Traits and Trading Strategies." Working Paper.
- Boyle, G. and B. Walter (2001). "Reflected Glory and Failure: International Sporting Success and the Stock Market." Working Paper: 24.
- Coval, J. D. and T. Shumway (2001). "Do Behavioral Biases Affect Prices?" Working Paper of University of Michigan Business School.
- Elster, J. (1998). "Emotions and Economic Theory." Journal of Economic Literature **36**(1): 47-74.
- Frankfurter, G. M. and E. G. McGoun (2000). Resistance is Futile: The Assimilation of Behavioral Finance. The Fifth Biennial Conference: Alternative Perspectives on Finance, Dundee, Scotland.
- Hirshleifer, D. (2001). "Investor Psychology and Asset Pricing." Journal of Finance **56**(4): 1533-1597.
- Hirshleifer, D. and T. Shumway (2001). "Good Day Sunshine: Stock Returns and the Weather." Working Paper.
- Hirt, E. R., D. Zillman, G. A. Erikson and C. Kennedy (1992). "Costs and Benefits of Allegiance: Changes in Fan's Self-Ascribed Competencies After Team Victory versus Defeat." Journal of Personality and Social Psychology **63**(5): 724-738.
- Howarth, E. and M. S. Hoffman (1984). "A Multidimensional Approach to the Relationship Between Mood and Weather." British Journal of Psychology **75**(February): 15-23.
- Kamstra, M. J., L. A. Kramer and M. D. Levi (2001). "Winter Blues: Seasonal Affective Disorder (SAD) and Stock Market Returns." Working Paper: 34.
- Loewenstein, G. (1996). "Out of Control: Visceral Influences on Behavior." Organizational Behavior and Human Decision Processes **65**: 272-292.
- Loewenstein, G., E. U. Weber, C. K. Hsee and N. Welch (2001). "Risk as Feelings." Psychological Bulletin.
- MacGregor, D. G., P. Slovic, D. Dreman and M. Berry (2000). "Imagery, Affect, and Financial Judgment." Journal of Psychology and Financial Markets **1**(2): 104-110.
- Rosenthal (1991). Winter blues Seasonal Affective Disorder what it is and how to conquer it, Fontana.
- Saunders, E. M. (1993). "Stock Prices and Wall Street Weather." American Economic Review **83**(5, December): 1337-1345.
- Sharpe, W. F. (1964). "Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk." Journal of Finance **19**(3): 425-442.
- Shiller, R. J. (2000). Irrational Exuberance. Princeton, Princeton University Press.
- Sloan, L. R. (1979). The Function and Impact of Sports for Fans: A Review of Theory and Contemporary Research. Sports, Games and Play. Goldstein, J. H. Hillsdale, New Jersey, Erlbaum.
- Wright, W. F. and G. H. Bower (1992). "Mood Effects on Subjective Probability Assessment." Organizational Behavior and Human Decision Processes **52**: 276-291.