



THE ROLE OF SOCIO-ECONOMIC THEORY IN FINANCIAL MARKET: REVIEW OF INVESTORS BEHAVIOUR AND THEIR PSYCHOLOGICAL BIASES

DOI: 10.17261/Pressacademia.2016321987

Heitham Al-Hajieh

King Abdulaziz Univeristy. Aa4119@hotmail.co.uk

ABSTRACT

The efficient market hypothesis assumes that investors behave rationally, by using all relevant information, and analyse it in the most effective way to achieve the best possible outcome. However, many investors appear to behave in irrational ways. For example, irrelevant information, such as rumour, is used and the analysis may be subject to misinterpretation, emotion and other psychological bias. Investors may not base decisions on their own views about investments, but upon what they see as the majority view. The majority being followed are not necessarily well-informed rational investors. The investors that are followed may be uninformed and subject to psychological biases that render their behaviour irrational (from the perspective of economists). Rational investors may even focus on predicting the behaviour of irrational investors rather than trying to ascertain fundamental value. This may explain the popularity of technical analysis amongst market professionals. This paper compares and evaluates the existing literature of psychological bias, based on the critical analysis of uneconomic variables, such as weather and biorhythmic variables, on investors' mood that are found in the literature. This paper argues for the need to develop a new methodology to examine the efficient market hypothesis by reflecting psychological bias as a main driver of financial market assessment.

Keywords: Socio-economic theory, investors behaviour, psychological biases, financial market

JEL Classification: G02, G14, G15

1. INTRODUCTION

It can be argued that the *market efficiency* paradigm has only come to dominate Western academic thought relatively recently. After the inflation-related economic crises of the 1970s and the collapse of the Soviet Union and Warsaw-Pact-related socialism in the world, capitalism became the main economic paradigm in the world. The arguments of Friedman and his fellow monetarists succeeded in influencing politicians such as Reagan in the US and Thatcher in the UK. Simultaneously, models related to market efficiency, such as the rational expectations hypothesis (REH) and the efficient market hypothesis (EMH), began to develop a dominant role in academia.

One of the consequences has been that mathematical models have been used extensively to examine market efficiency. For example, we see the widespread use of tools such as runs tests, serial correlation, variance ratio and GARCH models to examine the level of market efficiency.

The implication of the EMH was that, because investors behave rationally and competitively, financial markets would constantly set prices reflecting *all available information* and so markets were efficient. Accordingly, the market price would constantly reflect more perfect information than was available to any one individual and, therefore, no one could expect to "*beat the market*". This included any regulators and provided extra academic support to monetarist thought, which was also accepted by many governments, particularly in the UK. Constant market price fluctuations were dismissed as meaningless random fluctuations, akin to a *random walk*. Even though EMH failed to explain five major crises in the financial markets; in stock markets in 1987, bank lending in emerging markets in 1994, currencies in 1998, the new economy dot-com bankruptcies of 2003-2007 and credit markets in 2008 (Petrochilos, 2010), it is still the most accepted theory in the field.

This paper compares and evaluates existing literature of psychological bias based on the critical analysis of uneconomic variables, such as weather and biorhythmic variables, on investors' mood. This paper argues for the need to develop a new methodology to examine the efficient market hypothesis by reflecting psychological bias as a main driver of financial market assessment.

The paper begins with a brief review of the market efficiency paradigm, in the second section socio-economic theory and investor behaviour are presented. This is followed by identifying the different forms of psychological bias in section three. In section four, critical analysis of previous research is presented before, finally, some brief conclusions are drawn.

2.SOCIO-ECONOMIC THEORY AND INVESTOR BEHAVIOUR

Prechter's socio-economic hypothesis (1999) suggested that human interaction spreads moods and emotions. It is argued that, when moods and emotions become widely shared, the resulting feelings of optimism or pessimism cause uniformity in financial decision-making. This amounts to herding and has impacts on financial markets at the aggregate level. Furthermore, Calvo and Mendoza (1997) examined the effect of herd behaviour on the volatility of the capital market at the beginning of the Mexican crisis; from 1991 to mid-1993 short-term public debt was smaller than gross reserves. A large debt-reserves imbalance developed in 1993–1994, and ended with the collapse of the currency; short-term public debt was nearly three times larger than reserves. Tesobonos alone, including commercial bank holdings, exceeded US\$22 billion in December 1994, compared with gross reserves of less than US\$13 billion at the beginning of the month. By the end of December 1994, reserves fell to nearly US\$6 billion, well below the critical US\$10 billion set by the Bank of Mexico. Calvo and Mendoza's (1997) focus was on the effects of the globalization of financial markets. According to that paper, as the number of markets grows and the share of the country's assets in the investors' portfolios declines, the payoff of gathering information on country-specific information becomes smaller and the incentives for herding behaviour grows stronger.

Kaminsky and Schmukler (1999) studied the origins of the Asian crisis and discuss the harmful effect of rumour, arguing that the existence of herd behaviour significantly deteriorates the economic conditions in periods of market stress. Lu and Zhu (2006) pointed out the destabilizing effect on the stock market of China caused by the herd behaviour of the fund investors. Patterson and Sharma (2007) assumed that, due to short-term pressure caused by investors, moves in market prices of assets from their fundamental values may provide opportunities for the formation of bubbles and crashes.

It has been argued that the stock market is a direct index to social mood; it reflects the combined level of optimism or pessimism in a society at any given time (Prechter, 1985, 1999; Green, 2004). Nofsinger (2005), for example, argues that social mood influences the judgments made by consumers, investors and corporate managers. He indicates that the level and nature of business activity will follow social mood rather than lead it.

3. PSYCHOLOGICAL BIASES

3.1. Influence of Emotion and Mood

Studies by psychologists have found that mood appears to affect predictions about the future. People in a good mood are more optimistic about the future than people in a bad mood (Wright and Bower, 1992). The impact of mood on financial decisions has been referred to as the "misattribution bias" (Nofsinger, 2005). If a person is in a good mood, they will have a tendency to be optimistic when evaluating an investment. Good moods may cause people to be more likely to take risky investments (for example choosing stocks rather than bonds). Nofsinger (2002) has suggested an optimism bias. Optimism reduces critical analysis during the investment process and causes investors to ignore negative information. Furthermore, mood affects investment behaviour (Baker and Nofsinger, 2002; Nofsinger, 2002). It has been suggested that good moods make people less critical. Good moods can lead to decisions that lack detailed analysis.

People transmit moods to one another when interacting socially. People not only receive information and opinions in the process of social interaction, they also receive moods and emotions. Moods and emotions interact with cognitive processes when people make decisions. There are times when such feelings can be particularly important, such as in periods of uncertainty and when the decision is very complex. Moods and emotions may be unrelated to a decision, but nonetheless affect the decision. Moods and motives produced by spiritual factors will affect individual decisions. The general level of optimism or pessimism in society will influence individuals and their decisions, including their financial decisions.

There is a distinction between emotions and moods. Emotions are often short term and tend to be related to a particular person, object or situation. Moods are free-floating and not attached to something specific. A mood is a general state of mind and can persist for long periods. Mood may have no particular causal stimulus and have no particular target.

A positive mood is accompanied by emotions such as optimism, happiness and hope. These feelings can become extreme and result in euphoria. A negative mood is associated with emotions such as fear, pessimism and antagonism. Nofsinger (2005) suggested that social mood is quickly reflected in the stock market, such that the stock market becomes an indicator of social mood. Prechter (1999), in proposing a socio-economic hypothesis, argued that moods cause financial market trends and contribute to a tendency for investors to act in a concerted manner and to exhibit herding behaviour.

Many psychologists would argue that actions are driven by what people think, which is heavily influenced by how they feel. How people feel is partly determined by their interactions with others. According to the socio-economic hypothesis (Prechter, 1999; Nofsinger, 2005), moods can be transmitted through social contact and a widely shared, or social, mood emerges. Contact between people conveys mood as well as information. Collectively, shared moods influence individual decisions, with the effect that trends emerge. At times, mood can dominate over reason in the decision-making process. It has been found that people in depressed moods are less willing to take risks (Yuen and Lee, 2003) and a negative mood is associated with a desire for asset preservation and safety (Kavanagh et al., 2005). A positive mood renders people more trusting (Dunn and Schweitzer, 2005) and, for many people, trust in the financial services industry is a big issue when considering investments. A positive social mood results in perceived trustworthiness, low risk and high returns whilst negative social mood is associated with low trust, high perceived risk and low anticipated returns (Olson, 2006).

Furthermore, social mood is a collectively shared state of mind (Prechter, 1999; Nofsinger, 2005; Olson, 2006). Investors with no knowledge of analysis are particularly likely to be influenced by social mood when making investment decisions. DeLong et al (1990) illustrated a class of investors whose expectations were not justified by the fundamentals and they referred to them as “noise traders”. Unjustified expectations are referred to as *investor sentiment*. When sentiment is shared amongst investors, stock prices can deviate from fundamental values for long periods.

People in a peer group tend to develop the same tastes, interests and opinions (Ellison and Fudenberg, 1993). Social norms emerge in relation to shared beliefs. These social norms include beliefs about investing. The social environment of investors influences investment decisions. This applies not only to individual investors but also to market professionals. Fund managers constitute a peer group; fundamental analysts are a peer group; technical analysts comprise a peer group. Indeed, market professionals in aggregate form a peer group. It is likely that there are times when these peer groups develop common beliefs about the direction of the stock market.

3.2. Herd Behaviour

Hirshleifer (2001) states that people have a tendency to conform to the judgements and behaviours of others. People may follow others without any apparent reason. Such behaviour results in a form of herding. If there is a uniformity of view concerning the direction of a market, the result is likely to be a movement of the market in that direction.

Herding is an irrational behaviour and low information cost strengthens herding. Banerjee (1992) defines herding as “everyone doing what everyone else is doing, even when their information suggests doing

something different.” Furthermore, Shiller (2000) ventured that the meaning of herd behaviour is that investors tend to do as other investors did. They imitate the behaviour of others and disregard their own information. Kultti and Miettinen (2006) proposed that, if the cost of information about predecessors’ actions is very expensive, then all the agents will act according to their own signals but, if observing is free, everyone acts in accordance with herding behaviour. Facing financial panic, investors may not have enough time to collect valuable information from many scattered sources. Investors may herd during financial panic. Prechter and Parker (2007) suggest that uncertainty about valuation may cause herding.

Walter and Weber (2006) distinguished between intentional and unintentional herding. Intentional herding is seen as arising from attempts to imitate others, whereas unintentional herding emerges as a result of investors analysing the same information in the same way. Intentional herding could develop as a consequence of poor availability of information. Investors might imitate the behaviour of others in the belief that others have traded on the basis of information. When imitating others in the belief that they are acting on information becomes widespread, there is an *informational cascade*.

Another possible cause of intentional herding arises as a consequence of career risk. If a fund manager loses money whilst others make money, that fund manager’s job may be at risk. If a fund manager loses money whilst others lose money, there is more job security. So it can be in the fund manager’s interest to do as others do (this is sometimes referred to as the ‘reputational reason’ for herding). Since fund managers are often evaluated in relation to benchmarks based on the average performance of fund managers, or based on stock indices, there could be an incentive to imitate others since that would prevent substantial underperformance relative to the benchmark.

Walter and Weber (2006) found that investors bought stocks following price rises and sold following falls. If such momentum trading is common, it could be a cause of unintentional herding. Investors do the same thing because they are following the same strategy. It can be difficult to know whether observed herding is intentional or unintentional.

Hwang and Salmon (2006) investigated herding in the sense that investors, following the performance of the market as a whole, buy or sell simultaneously. Their investigations into the US, UK and South Korea markets show that herding increases with market sentiment. They found that herding occurs to a greater extent when investors’ expectations are relatively identical. Herding is strongest when there is confidence about the direction in which the market is herding. Herding appeared to be persistent and slow moving. This is consistent with the observation that some bubbles have taken years to develop.

Deutsch and Gerard (1955) distinguish between ‘normative social influence’ and ‘informational social influence’. Normative social influence does not involve a change in perceptions or beliefs, merely conformity for the benefit of conformity. An example of normative social influence would be that of professional investment managers who copy each other on the grounds that being wrong when everyone else is wrong does not jeopardize one’s career, but being wrong when the majority get it right can result in job loss. This is a form of regret avoidance. If a bad decision were made, a result would be the pain of regret. By following the decisions of others, the risk of regret is reduced. There is safety in numbers. There is less fear of regret when others are making the same decisions.

Informational social influence is acceptance of a group’s beliefs as providing information. For example, a share purchase by others delivers information that they believe that prices will rise in future. This is accepted as useful information about the stock market and leads others to buy. This is an informational cascade. People see the actions of others as providing information and act on that information. Investors buy because they know that others are buying, and in buying they provide information to other investors, who in turn buy purchase more investments. Informational cascades can cause large, and economically unjustified, swings in stock market levels. Investors cease to make their own judgments based on factual information and use the apparent information conveyed by the actions of others instead. Investment decisions based on relevant information cease, and hence the process whereby stock prices come to reflect relevant information comes to an end. Share price movements come to be disconnected from relevant information.

Welch (2000) investigated herding among investment analysts. Herding was seen as occurring when analysts appeared to mimic the recommendations of other analysts. It was found that there was herding towards the prevailing consensus, and towards recent revisions of the forecasts of other analysts. A conclusion of the research was that in bull markets the rise in share prices would be reinforced by herding.

Furthermore, the media are an integral part of market events because they want to attract viewers and readers. Generally, significant market events occur only if there is similar thinking among large groups of people, and the news media are vehicles for the spreading of ideas. The news media are attracted to financial markets because there is a persistent flow of news in the form of daily price changes and company reports (Redhead, 2008).

The media seek interesting news and can be fundamental propagators of speculative price movements through their efforts to make news interesting (Shiller, 2000). They may try to enhance interest by attaching news stories to stock price movements, thereby focusing greater attention on stock price movements. The media are also prone to focussing attention on particular stories for long periods. Shiller refers to this as an 'attention cascade'. Attention cascades can contribute to stock market bubbles and crashes.

Davis (2006) confirmed the role of the media in the development of extreme market movements. The media were found to exaggerate market responses to news, and to magnify irrational market expectations. At times of market crisis, the media can push trading activity to extremes. The media can trigger and reinforce opinions.

Nevertheless, Brown (1999) examined the effect of noise traders (non-professionals with no special information) on the volatility of the prices of closed-end funds (investment trusts). A shift in sentiment meant these investors moved together and an increase in price volatility resulted. Walter and Weber (2006) also found herding to be present among managers of mutual funds.

3.3. Overconfidence

Psychological research has indicated that there is a self-attribution bias in decision-making. When an investment is successful, the investor believes that it is due to his or her skill. An unsuccessful investment is seen to fail as a result of bad luck or the actions of others. The self-attribution bias leads to overconfidence. Overconfidence is also reinforced by the hindsight bias, which a false belief is held by people who know the outcome of an event that they would have predicted the outcome. Overconfidence may be particularly characteristic of inexperienced investors who find that their initial investments are profitable. Their belief in their own skill leads them to invest more. Thus, a bull market can generate overconfidence, which causes more investing, thereby reinforcing the upward price movement. There are those who interpret their gains in a bull market as arising from their own skill. They see certainty where there is uncertainty. This can lead them to invest beyond a rational level, and painful losses result when the market falls.

Overconfidence can arise from excessive confidence in the quality of one's information and an exaggerated view of one's ability to interpret that information. This leads to an unwarranted degree of certainty about the accuracy of one's forecasts and a corresponding underestimation of risk (Barber and Odean, 1999). As a consequence, overconfident investors are prone to invest to a greater extent than would be the case if they properly understood the quality of their forecasts. Barber and Odean (1999) found that overconfident investors tend to take more risks than less confident investors do.

During the bull market, individual investors increased their levels of trading. Investors allocated higher proportions of their portfolios to shares, invested in riskier stocks (often technology companies), and many investors borrowed money in order to increase their shareholdings (Barber and Odean, 2001). It is likely that, during the bull market, individual investors attributed much of their success to their own expertise and became overconfident as a result.

3.4. Illusion of Control

A psychological bias that helps to produce overconfidence is the illusion of control. People often behave as if they have influence over uncontrollable events (Presson and Benassi, 1996). A number of attributes have been identified as fostering the illusion of control. One of these is the outcome sequence. Early positive outcomes

give a person more illusion of control than early negative outcomes. This is demonstrated by the tendency of people to become addicted to gambling if their first few bets are successful. In a rising stock market, people investing for the first time will experience gains. This is likely to engender the illusion of control, overconfidence, and the inclination to invest more. If significant numbers of people invest more, prices will continue to rise, thereby reinforcing these psychological biases.

The illusion of control and overconfidence may explain why a great number of investors choose actively managed funds when index funds outperform them and have lower charges. It might be that overconfidence in their own selection abilities and the illusion of control provided by the ability to choose between funds cause investors to pick actively managed funds even though index funds offer better potential value (Redhead, 2008).

Langer (1975) mentions that people usually find it hard to accept that outcomes may be random. He makes a distinction between chance events and skill events. Skill events involve a fundamental link between behaviour and the outcome. In the case of chance events, the outcome is supposed to be random. However, people often think of chance events as skill events. When faced with randomness, people normally behave as if the event were controllable or predictable. If people engage in skill behaviour, such as making selections, their belief in the controllability of a random event becomes stronger. Additionally, there is substantial evidence that investment managers are unable to outperform stock markets. Yet, since investment managers engage in skill behaviours of analysis and choice, they are likely to see portfolio performance as controllable. Retail investors and financial advisors also tend to think that the performance of their investment choices is controllable and that the act of selection between mutual funds enhances the illusion of control.

Another attribute that fosters the illusion of control is the acquisition of information. Increased information increases the illusion of control and the degree of overconfidence. This has been called the illusion of knowledge (Nofsinger, 2005; Peterson and Pitz, 1988). The information may or may not be relevant to the investments. Particularly, for investors with little knowledge of investment, information does not give them as much understanding as they think because they lack the expertise to interpret it. They may be unable to distinguish relevant and reliable information from irrelevant and unreliable information. However, to the extent that stock market gains lead investors to seek information, the information obtained is likely to increase the illusion of control and the extent of investing. The resulting investment will help to perpetuate the share price rises and thereby the psychological biases.

3.5. Narrow Framing

Narrow framing refers to the tendency of investors to focus too narrowly. One aspect is focussing on the constituents of a portfolio rather than the portfolio as a whole. Since individual investments tend to be more volatile than the investor's portfolio as a whole, such narrow framing causes investors to overestimate price volatility. This could cause people to invest too little (Redhead, 2008).

Another dimension of narrow framing is the focus on the short term even when the investment horizon is long term. It is not rational for an investor accumulating assets for retirement in twenty-five years' time to be concerned about the week-to-week performance of the portfolio. Yet long-term investors do focus on short-term volatility. Studies have shown that when, in experimental situations, people have been presented with monthly distributions of returns they are less likely to invest than when they are shown annual distributions (with the annualized volatility being the same in both cases). The implication is that focus on short-term volatility deters investment. It appears that people do not appreciate the effects of time diversification. Time diversification is the tendency for good periods to offset bad periods with the effect that the dispersion of investment returns does not increase proportionately with the period of the investment. Investors who focus increasingly on short-term fluctuations overestimate stock market risk and allocate too little of their money to stock market investment (Redhead, 2008).

Table 1: Summary of the Various Psychological Biases Found in the Literature

Psychological Biases	Explanation	Implementation
Influence of Emotion and Mood	Mood appears to affect predictions about the future.	Misattribution bias, optimism bias, social mood bias.
Herd Behaviour	Everyone doing what everyone else is doing, even when their information suggests doing something different.	Normative social influence bias, informational social influence bias. Intentional and unintentional herding bias.
Overconfidence	When an investment is successful, the investor believes that it is due to his or her skill. An unsuccessful investment is seen to fail as a result of bad luck or the actions of others.	Self-attribution bias
Illusion of Control	People often behave as if they have influence over uncontrollable events.	Illusion of knowledge bias
Narrow Framing	The tendency of investors to focus too narrowly.	Overestimate bias

4. Critical Analysis the Impact of Weather and Biorhythmic Variables on Investors' Mood

Weather and length of daylight are factors that can affect mood. The effects of such factors on investment decisions have been researched. Hirshleifer and Shumway (2003) investigated the effects of sunshine on stock market returns. When the sun is shining people feel good. This may increase optimism and affect investment decisions. It may be the case that investors are more likely to buy shares when the sun is shining. The purchases would cause stock prices to rise. Stock markets in twenty-six cities were examined by the authors. They found that stock market returns (price increases) were higher on sunny days. When comparing the sunniest days with the worst days, it was found that there was an annualized difference of 24.6% on average.

Kamstra et al. (2003) looked at the relationship between hours of daylight and stock market returns. They found that stock markets performed relatively poorly during the autumn as the hours of daylight fell. This was most marked for the more northerly stock markets. Consistent with this theory is the observation that the effect occurred over October to December in the northern hemisphere, and over April to June in the southern hemisphere. This study is consistent with the view that sunlight affects mood and mood affects investment decisions. Sunlight enhances optimism about the future and the prospective future returns from investments.

Empirical evidence from existing studies that have investigated the effects of weather and environmental conditions on volatility is mixed. Chang et al. (2008) show that New York City cloudiness increase intraday volatility in NYSE firms over the entire trading day. These authors used two volatility proxies, one based on the range of the intraday prices and the other on the basis of the standard deviation of the bid-ask mid-point returns. Both of these proxies are uncommon in the literature and their accuracy is unknown. Dowling and Lucey (2008) studied the empirical effect of seven mood proxies on both the returns and variances of thirty-seven national equity market indices and twenty-one small capitalization indices. They employed GARCH-type processes to approximate and model the variations in the conditional variance of returns. Their results show that wind, precipitation, geomagnetic storms, daylight saving time changes and seasonal affective disorder (SAD) are all positively related to conditional volatility for most of the indices considered.

Kaplanski and Levy (2009) considered the effect of SAD and temperature on the VIX options implied volatility index that is traded in the Chicago Board Options Exchange (CBOE). They used a measure of so-called 'actual' volatility based on the historical standard deviation of a monthly window of daily returns. The authors found that the number of daylight hours is negatively related only to the 'perceived' volatility proxy by the VIX and

not to the 'actual' historical volatility measure. Another study that indirectly shows a positive relationship between volatility and bad weather is that of Kliger and Levy (2003). These authors, based on their usage of S&P500 index options data, found that bad moods, as a proxy for total cloud cover and precipitation, makes investors place higher-than-usual probabilities on adverse events.

Mehra and Sah (2002) show that even small fluctuations in investors' attitudes towards risk, which could result from weather-related shifts in their moods, can have an impact on market volatility. Chang et al. (2008) suggested that the empirical implication for the relationship between weather and volatility is that social moods can be associated with more disagreement in valuation opinions among investors. Therefore bad weather can be expected to be inversely related to market volatility. On the other hand, studies such as those of Brown (1999), Gervais and Odean (2001) and Statman et al. (2006) suggest that when investors are in a good mood, which can be associated with fair weather, they tend to trade more, which in turn increases volatility. Moreover, another explanation has been given by Kaplanski and Levy (2009) that if SAD induces seasonality in returns and returns are negatively correlated with volatility, then SAD can indirectly create seasonality in volatility in the opposite direction.

5. CONCLUSION

The history of economic thought has shown a tendency for new and old theories to be synthesized. After Fama (1970) introduced the EMH, market anomalies appeared in the financial market and challenged the validity of the EMH, some of these market anomalies disappeared after they were documented in the literature. Even so, market efficiency theory is still the main theoretical framework of studying financial market, given its emphasis on statistical analysis. Socio-economic theory believes that examining the results from just an efficiency perspective is highly limiting as the observed behaviour of investors will be influenced by behavioural psychological forces. These are likely to be especially important during the time of uncertainty.

This study contributes significantly to the literature by comparing and evaluating the role of psychological bias in financial markets. Critical analysis in this paper of uneconomic variables provided evidence that investor decisions are influenced by their state of mind. Finally, the considerable variety of results found in the literature suggest that *the efficient market hypothesis* and *socio-economics theory* need to implement a new mathematical model that provides a better understanding of financial market mechanisms.

REFERENCES

- Baker, H. and J. Nofsinger (2002), 'Psychological Biases of Investors', *Financial Services Review*, 11(2): 97–116.
- Banerjee, A. V. (1992), 'A Simple Model of Herd Behavior', *Quarterly Journal of Economics*, 107(3): 797–817.
- Barber, B. and T. Odean (1999), 'The Courage of Misguided Convictions', *Financial Analysts Journal*, 55(6): 41–55.
- Barber, B. and T. Odean (2001), 'Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment', *Quarterly Journal of Economics*, 116(1): 261–292.
- Brown, G. (1999), 'Volatility, Sentiment, and Noise Traders', *Financial Analysts Journal*, 55(2): 82–90.
- Calvo, A. and E. Mendoza (1997), 'Rational Herd Behavior and the Globalization of Securities Markets,' working papers, Duke University.
- Chang, S., S. Chen, R. Chou and Y. Lin (2008), 'Weather and Intraday Patterns in Stock Returns and Trading Activity', *Journal of Banking and Finance*, 32(9): 1754–1766.
- Davis, A. (2006), 'The Role of the Mass Media in Investor Relations', *Journal of Communication Management*, 10(1): 7–17.
- DeLong, J., A. Shleifer, L. Summers and R. Waldmann (1990), 'Noise Trader Risk in Financial Markets', *Journal of Political Economy*, 98(4): 703–738.
- Deutsch, M. and H. Gerard (1955), 'A Study of Normative and Informational Influence upon Individual Judgment', *Journal of Abnormal and Social Psychology*, 51(3): 629–636.
- Dowling, M. and B. Lucey (2008), 'Robust Global Mood Influences in Equity Pricing', *Journal of Multinational Financial Management*, 18(2): 145–164.
- Dunn, J. and M. Schweitzer (2005), 'Feeling and Believing: The Influence of Emotions on Trust', *Journal of Personality and Social Psychology*, 88(5): 736–748.

- Ellison, G. and D. Fudenberg (1993), 'Rules of Thumb for Social Learning', *Journal of Political Economy*, 101(4): 612–643.
- Gervais, S. and T. Odean (2001), 'Learning to be overconfident', *Review of Financial Studies*, 14(1): 1–27.
- Green, S. (2004), 'The development of China's Stock Market, 1984–2002: Equity Politics and Market Institutions', Oxford and New York: Routledge.
- Hirshleifer, D. (2001), 'Investor Psychology and Asset Pricing', *Journal of Finance*, 56(4): 1533–1598.
- Hirshleifer, D. and T. Shumway (2003), 'Good day sunshine: Stock returns and the weather', *Journal of Finance*, 58(3): 1009–1032.
- Hwang, S. and M. Salmon (2006), *Sentiment and Beta Herding*, paper presented to the Behavioural Finance and Market Efficiency Workshop, University of Warwick, March.
- Kaminsky, G. and S. Schmukler (1999), 'What triggers market jitters? A chronicle of the Asian crisis', *Journal of International Money and Finance*, 18(4): 537–560.
- Kamstra, M., L. Kramer, and M. Levi (2003), 'Winter blues: A SAD stock market cycle', *American Economic Review*, 93(1): 324–343.
- Kaplanski, G. and H. Levy (2009), 'Seasonality in Perceived Risk: A Sentiment Effect,' working papers, Jerusalem School of Business Administration.
- Kavanagh, D., J. Andrade and J. May (2005), 'Imaginary Relish and Exquisite Torture: The Elaborated Intrusion Theory of Desire', *Psychological Review*, 112(2): 446–467.
- Kliger, D. and O. Levy (2003), 'Mood and Judgment of Subjective Probabilities: Evidence from the U.S. Index Option Market', *European Finance Review*, 7(2): 235–248.
- Kulatti, K. and P. Miettinen (2006), 'Herding With Costly Information', *International Game Theory Review*, 8(1): 21–31.
- Langer, E. J. (1975), 'The Illusion of Control', *Journal of Personality and Social Psychology*, 32(2): 311–328.
- Mehra, R. and R. Sah (2002), 'Mood fluctuations, projection bias, and volatility of equity prices', *Journal of Economic Dynamics and Control*, 26(5): 869–887.
- Nofsinger, J. (2002), 'Do Optimists Make the Best Investors?', *Corporate Finance Review*, 6(4): 11–17.
- Nofsinger, J. (2005), *The Psychology of Investing*, London: Prentice Hall.
- Olson, K. (2006), 'A Literature Review of Social Mood', *Journal of Behavioral Finance*, 7(4): 193–203.
- Patterson, D. and V. Sharma (2007), 'Did Herding Cause the Stock Market Bubble of 1998-2001?', working papers, Social Science Research Network.
- Peterson, D. and G. Pitz (1988), 'Confidence, Uncertainty, and the Use of Information', *Journal of Experimental Psychology*, 14(1): 85–92.
- Petrochilos, G. A. (2010), *Ethics, Responsibility, Regulation and Economics (or Saving Capitalism from Itself)*, Business & Economics Society International Conference, Athens, Greece.
- Prechter, R. (1985), *Popular Culture and the Stock Market*, US: New Classics Library.
- Prechter, R. (1999), *The Wave Principle of Human Social Behavior and the New Science of Socionomics*, US: New Classics Library.
- Prechter, R. and D. Parker (2007), 'The Financial/Economic Dichotomy in Social Behavioral Dynamics: The Socionomic Perspective', *Journal of Behavioral Finance*, 8(2): 84–108.
- Presson, P. and V. Benassi (1996), 'Illusion of Control: A Meta-Analytic Review', *Journal of Social Behavior and Personality*, 11(3): 493–510.
- Redhead, K. (2008), *Personal Finance and Investments: A Behavioural Finance Perspective*, Oxford and New York: Routledge.
- Shiller, R. (2000), *Irrational Exuberance*. US: Princeton University Press.
- Statman, M., S. Thorley and K. Vorkink (2006), 'Investor Overconfidence and Trading Volume', *Review of Financial Studies*, 19(4): 1531–1565.
- Walter, A. and F. Weber (2006), 'Herding in the German Mutual Fund Industry', *European Financial Management*, 12: 375–406.
- Welch, I. (2000). 'Herding among Security Analysts', *Journal of Financial Economics*, 58(3): 369–396.
- Wright, W. and G. Bower (1992), 'Mood Effects on Subjective Probability Assessment', *Organizational Behavior and Human Decision Processes*, 52(2): 276–291.
- Yuen, K. and T. Lee (2003), 'Could Mood State Affect Risk-Taking Decisions?', *Journal of Affective Disorders*, 75(1): 11–18.