



Asian Profile

Vol. 40, No. 3
June, 2012

The Behaviour of Small Investors in the Hong Kong Stock Market

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Introduction

In the new millennium, the financial markets have become increasingly volatile. Even in some advanced economies such as Hong Kong, the stock market has experienced wild fluctuations over the past decade. For example, beginning in January 2006, the stock prices of companies traded on the Stock Exchange of Hong Kong surged, followed by an abrupt downturn starting in October 2007. The Hang Seng Index rose by 111.7% between January 2006 and October 2007. However, by October 2008, the index had lost more than one-third of its market value as compared to its peak in the previous year.

There are different types of investors who put their money in the stock market. One important type is the large group of small investors. Their investment behaviour is different from other groups such as fund managers and institutional investors. For these small investors, when the stock prices dropped, the cost of entering the stock market decreased, and they tended to increase their investment in stocks. Yet we know little about their investment strategies and how well they are handling their investment in the stock market. The primary objective of this study is to examine the factors, investing characteristics, and decision-making processes that affect local small investors. Informed by behavioural finance, which is a new approach to the study of financial markets, we develop several hypotheses regarding the changes in the opinions and investment behaviour of small investors during and immediately after the buoyant stock market. These hypotheses are then tested with the data collected from 1,199 respondents via a survey questionnaire. The present study attempts to contribute to the study of behavioural finance in the setting of an Asian financial centre (Hong Kong).

This paper is organized as follows: Section 2 provides the background of the study; Section 3 reviews the related literature; Section 4 states the research questions and hypotheses; Section 5 explains the methodology of the present study; Section 6 reports the research findings; and Section 7 provides the conclusion.

Study Background

Given the growing connection between the economies of China and Hong Kong, the economic policies of the Chinese government have significant impacts on the Hong Kong economy. This in turn affects local stock prices. On 13 April 2006, the Chinese government announced the Qualified Domestic Institutional Investor (QDII) scheme, which allowed Chinese institutions and residents to invest in financial products overseas through Chinese commercial banks. Market investors were very excited about the scheme. Small investors in mainland China were particularly interested in investing in the Hong Kong stock market. Because of the expectation that more money would flow into the stock market, there was a drastic increase in the Hang Seng index following the announcement by the Chinese government. In effect, the scheme only allowed individual investors in China to invest indirectly in overseas stocks, mainly through listed financial institutions in Hong Kong. These financial institutions set up the QDII funds, and invited the Chinese investors to subscribe to these funds. However, all QDII funds launched to date are reporting losses, and the scheme appears to have lost its attraction for investors. Originally, the Chinese government also explored the possibility of the so-called "through train" program, which allows individual mainland Chinese residents to trade directly in Hong Kong stocks. However, on 3 November 2007, Premier Wen Jiabao stated the need to carefully assess the possible adverse effects of the "through train" program on the stability of Hong Kong's financial system. In addition, the sluggish overseas markets may be another possible reason for Beijing shelving the program indefinitely at that time. Because of this policy change, small investors lost confidence in the "through train" program and sold their stocks in the Hong Kong market, resulting in a significant decrease in the Hang Seng index.

The sub-prime mortgage crisis (2007-2010) was another event that caused a loss of confidence among small investors in the Hong Kong stock market. Once the crisis occurred in the United States in 2007, local investors began to lose confidence in the collateralized securities, and they attempted to leave the stock market as influenced by the liquidity issue. Although many central banks had injected large amounts of money into the financial market, they were unable to stop the spread of the financial crisis throughout the world. In September 2008, the global financial market began to get out of control. Many famous firms, such as investment banks (*e.g.*, Lehman Brothers) and insurance companies (*e.g.*, American International Group), went bankrupt or were taken over by the U.S. government. In Hong Kong, many small investors lost money through their investment in Lehman "mini bonds", which is a type of derivative called credit default swap. Under such conditions, local investors worried a great deal about the global financial crisis and its economic consequences. To avoid the financial risk, many investors sold their stocks in the Stock Exchange of Hong Kong. As a result, the stock prices dropped sharply after the outbreak of the crisis.

Against this backdrop, one may ask the following questions: Did small investors change their opinions and investment behaviour during and immediately after the buoyant stock market of January 2006 to October 2007 in Hong Kong? If so, how did their opinions and investment behaviour change? Is the new behavioural finance approach useful in explaining the change? We conducted the present study to address these questions.

Literature Review

According to Sewell (2010), behavioural finance is the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets. This emerging area is of interest because it helps explain why and how markets might be inefficient. Models of an individual's investment behaviour are developed that integrate insights from psychology with economics. These models also seek to understand and predict systematic financial market implications of the psychological decision-making processes, particularly in times of uncertainty. Below we outline some key concepts in this new area of research that are relevant to this study.

In their pioneering work, Kahneman and Tversky (1979) used cognitive psychology to explain various divergences of economic decision-making based on neo-classical economic theory. They laid out the original version of prospect theory, which can be viewed as an alternative to the theory of expected utility maximisation. Based on Prospect theory, people give less credence to outcomes that are probable versus outcomes that are certain. This tendency, called the "certainty effect", contributes to risk aversion when making choices involving sure gains and to risk seeking when making choices involving sure losses.

Framing, an important concept in behavioural finance, refers to the way a problem is posed for the decision-maker. In many contexts the decision-maker has flexibility in how to think about the problem. According to Shefrin (2003), individuals usually understand and respond to events (*e.g.*, make an investment choice) by relying on the collection of anecdotes and stereotypes that make up their mental and emotional filters. One important feature of mental accounting is narrow framing, which is the tendency to treat individual gambles separately from other portions of wealth. In other words, when offered a gamble, people often evaluate it as if it is the only gamble they face in the world, rather than merging it with pre-existing bets to see if the new bet is a worthwhile addition (Barberis and Thaler, 2003).

Cognitive dissonance, another key concept borrowed from psychology, is the mental conflict that people experience when they are presented with evidence that their beliefs or assumptions are wrong. Thus, cognitive dissonance might be classified as a sort of pain of regret, or regret over mistaken beliefs (Shiller, 2001). It will affect an individual's subsequent decision-making.

Overconfidence implies over-optimism about the individual's ability to succeed in his or her endeavours. Benos (1998) studied an extreme form of posterior overconfidence, where some risk-neutral investors over-estimated the accuracy of their private information. The participation of overconfident traders in the market often led to higher transaction volumes and more volatility. As shown in the study by Barber and Odean (2000), overconfidence can explain high trading levels and the resulting poor performance of individual investors.

Anchoring refers to the decision-making process in which quantitative assessments are required and where these assessments may be influenced by suggestions. People have in their minds some reference points – known as anchors – such as previous stock prices. When they receive new information, they may adjust their reference points inadequately (*i.e.*, under-react to the newly acquired information). Anchoring describes how individuals tend to focus on recent behaviour and give less weight to longer time trends (Tversky and Kahneman, 1974).

Herd behaviour means that small investors follow what the majority do in the market. Herding is closely linked to impact expectations, fickle changes without new information, bubbles, fads, or frenzies. However, herding requires a coordination mechanism. This mechanism could be a widespread rule to coordinate based on some signals in the market (*e.g.*, price movement), or on an individual's ability to observe other decision-makers and the market trends (Salmon, 2001).

Research Questions and Hypotheses

The theories and concepts written on behavioural finance are relatively new. Whether or not they can be applied to a real-world setting is still an area of controversy. More theoretical development and empirical studies are needed. To explain the change in the behaviour of small investors during and immediately after the buoyant stock market in Hong Kong, we attempt to set several research questions based on prospect theory and the concepts discussed in the previous section.

The following five questions are to be addressed in the present study. After discussing these questions with some theoretical explanations, we propose the corresponding hypotheses to be tested with empirical data.

1. *Is there a relationship between the belief of small investors in their ability to predict the market trend and their opinion of whether the market was overvalued during the buoyant stock market?*

If small investors think that they can predict the market trend, they tend to be overconfident, which in turn affects their judgment about the market price. The first question can be turned into the following hypothesis:

H1: A significant relationship exists between the belief of small investors in their ability to predict the future market development and their belief about whether the market was overvalued during the buoyant stock market.

2. *Is there a relationship between the reasons given by small investors for making changes in their security holdings and the reason they believed was most important for the sharp correction in the market that began at the end of October 2007?*

When small investors have herd behaviour, they are likely to sell their stocks as a result of the sharp correction in the market. Herding affects the reason given by an investor to justify their decision to sell their stocks. Hence, we put forward the following hypothesis:

H2: A significant relationship exists between the reasons given by small investors for making changes in their security holdings today and the reason they believed was most important for the sharp correction in the market.

3. *Is there a relationship between the most important factor small investors gave for making changes in their security holdings during the buoyant stock market and the most important factor they gave for the overvaluation of the market during the buoyant stock market?*

Small investors may have mental accounting during the buoyant stock market. They often believe that the probabilities of recent price increases in connection with the buoyant stock market are given too much weight. In addition, they think in terms of having a "safe" part of their portfolio that is protected from downside risk, and a "risky" part that is designed to increase their wealth. Based on the above reasoning, we propose the following hypothesis:

H3: A significant relationship exists between the most important factor small investors gave for making changes in their security holdings and the most important factor they gave for the overvaluation of the market during the buoyant stock market.

4. *Is there a relationship between the opinion of small investors on whether the market will recover if there is a similar economic downturn to the one that occurred after October 2007 and their opinion on the market value today?*

Small investors often have some reference points or anchors. A small investor who considers the market to be undervalued today may think that it will recover in the next few years to levels that prevailed during the buoyant stock market. In other words, they are confident and optimistic about the future. We thus propose the following hypothesis:

H4: A significant relationship exists between the opinion of small investors on whether the market will recover if there is a similar economic downturn to the one that occurred after October 2007 and their opinion on the market value today.

5. Is there a relationship between how small investors value the information given in a situation when a decision has to be made and their belief in the probability that stock prices will continue to rise after three days of continuous increase?

According to prospect theory, small investors will hold on to losing positions in the hope that prices will eventually recover. The theory also predicts they will be risk-averse in gains. In other words, when small investors believe that the Hang Seng Index will increase in value the next day, they will sell their stocks in the buoyant stock market. Therefore, we develop the following hypothesis:

H5: A significant relationship exists between how small investors value the information given in a situation when a decision has to be made and their belief in the probability that the Hang Seng Index will continue to rise after three days of continuous increase.

Data and Method

The data for the present study were collected from small investors in Hong Kong through a survey questionnaire. The main purpose of the survey is to collect their opinions, investment behaviour, and financial decision-making behaviour in the speculative stock market. The survey was conducted between October and November 2008. Since the majority of Hong Kong's population is Chinese, the questionnaire was written in Chinese. After a pilot test on ten respondents, some amendments (such as rewording of some questions to eliminate ambiguities) were made before we finalized the questionnaire.

We selected the respondents using non-probability sampling. A group of undergraduate students helped to distribute the questionnaires to the respondents. In the end, there were 1,199 selected respondents who completed and returned the survey.

The questionnaire was designed to elicit information about demographics, investment experience and behaviour, and factors affecting the financial decision-making of the respondents. We took an existing questionnaire developed by Johnsson, Lindblom and Platan (2002) in Lund University, Sweden, and modified it for this study. The first part of the questionnaire focused on the respondents' investment experience and perceptions about the investment conditions, and the factors that affect their financial decision-making. The second part collected respondents' personal information, including gender, age, employment status, and average monthly income.

The profile of the respondents is reported in Table 1. Just under half (44.5%) of respondents were female and 55.4% were male. The majority of respondents were under the age of 50 (85.6%), and only 14.4% were aged 51 or above. Regarding their employment status, 64.9% of respondents were employees, 10.3% were self-employed, 6.7% were retired, and 18.2% were classified as "other", which includes housewives and students. Finally, the respondents' mean income was \$14,564, while the median income was \$12,034. In view of the above demographic profile of the respondents, we believe that they are representative of small investors in Hong Kong.

Table 1
Demographic Characteristics of the Respondents

Personal characteristics	No.	% of Total
<i>Gender:</i>		
Female	534	44.5
Male	664	55.4
<i>Age group:</i>		
under 25 years old	397	33.1
26-35 years old	297	24.8
36-50 years old	332	27.7
51-65 years old	148	12.3
over 65 years old	25	2.1
<i>Employment status:</i>		
Employee	778	64.9
Self-employed	123	10.3
Retired	80	6.7
Other	218	18.2
<i>Average monthly income:</i>		
Below HK\$5,000	265	22.1
HK\$5,000 -HK\$9,999	226	18.8
HK\$10,000 - HK\$14,999	268	22.4
HK\$15,000 - HK\$19,999	193	16.1
HK\$20,000 - HK\$24,999	117	9.8
HK\$25,000 - HK\$29,999	46	3.8
HK\$30,000 - HK\$49,999	52	4.3
HK\$50,000 or above	32	2.7

To test hypotheses 1-5, we compare an individual's responses to different items in the questionnaire. The relationship of these responses is indicated by Cramer's V and Chi-square (χ^2) test.

Results

Table 2 shows the distribution of respondents' answers to various question items in the questionnaire. The items were designed to reflect some important concepts in behavioural finance. The response to one item is intended to be related to the response to another item, as stated in the hypotheses.

To test Hypothesis 1, we compare the responses to items 1 and 2, which indicate the relationship between overconfidence and cognitive dissonance. We expect a significant relationship between the belief of smaller investors in their ability to predict the market (*i.e.*, overconfidence), and their

Table 2
Response to Various Items

Items and responses	No.	% of total
1. During the increases in stock prices from January 2006 up to the end of October 2007, did you at any point in time think that you could forecast the future market development?		
Yes	336	28.0
No	490	40.9
Cannot say	369	30.8
2. In your opinion, was the stock market overvalued at any point of time during the period from January 2006 to the end of October 2007?		
Yes	678	56.5
No	181	15.1
Cannot say	337	28.1
3. When making investment decisions today, which of the following factors do you consider most important? (Choose one alternative)		
Information from the company as a basis for a fundamental analysis	303	25.3
Recommendations, advice, and forecasts from professional investors	221	18.4
The overall past performance of the market seen from a historical perspective	301	25.1
Information from newspapers/TV	113	9.4
Information from the Internet	47	3.9
Discussion with personal friends	85	7.1
Information from colleagues at work	30	2.5
Own intuition of future performance	99	8.3
4. What do you think was the most important contributing factor to the decline in the market from the end of October 2007 until today? (Choose one alternative)		
The news stories in the media	120	10.0
The forecasts of analysts	95	7.9
Loss of confidence among investors in the stock market	391	32.6
Earnings and profitability of the listed companies	214	17.8
Herd behaviour (<i>i.e.</i> , small investors following the majority)	294	24.5

.....cont'd

Table 2
Response to Various Items
(cont'd)

Items and responses	No.	% of total
5. When you made investment decisions during the period from January 2006 to the end of October 2007, which of the following factors did you consider most important? (Choose one alternative)		
Information from the company as a basis for a fundamental analysis	242	20.2
Recommendations, advice, and forecasts from professional investors	265	22.1
The overall past performance of the market seen from a historical perspective	287	23.9
Information from newspapers/TV	125	10.4
Information from the Internet	58	4.8
Discussion with personal friends	89	7.4
Information from colleagues at work	38	3.2
Own intuition of future performance	95	7.9
6. What do you think was the most important contributing factor to the overvaluation of the market during the period from January 2006 to the end of October 2007? (Choose one alternative)		
The news stories in the media	55	4.6
The forecasts of analysis	66	5.5
Overconfidence among investors in the stock market	168	14.0
Earnings and profitability of the listed companies	45	3.8
Herd behaviour (i.e., small investors following the majority)	343	28.6
7. If there was a similar significant downturn in the market today as there was at the end of October 2007, do you agree that the market will surely return to its former level in a couple of years or so?		
Strongly agree	82	6.8
Somewhat agree	258	21.5
Neutral	462	38.5
Somewhat disagree	294	24.5
Strongly disagree	103	8.6

.....cont'd

Table 2
Response to Various Items
(cont'd)

Items and responses	No.	% of total
8. If you look at the stock market today, in your opinion, is it: (choose one alternative)		
Overvalued by _____ %	146	12.2
Undervalued by _____ %	187	15.6
Valued at a fundamentally correct level	420	35.0
Cannot say	434	36.2
9. Assume the following situation: during the last two years, the stock price of a certain company has risen 70% and the future for the stock look bright. How do you value this piece of information? (Choose one alternative)		
The stock is worth buying	217	18.1
The information is not sufficient for buying the stock	800	66.7
The stock is not worth buying	181	15.1
10. If the Hang Seng Index has <i>increased</i> consecutively over the past three days, what is probability that it will <i>increase</i> in value tomorrow?		
Less than 10%	52	4.4
10% to under 20%	69	5.7
20% to under 30%	118	9.9
30% to under 40%	144	12.0
40% to under 50%	132	11.0
50% to under 60%	448	37.4
60% to under 70%	96	8.0
70% to under 80%	83	6.9
80% to under 90%	32	2.7
90% to under 100%	11	0.9
100%	8	0.7

opinion of whether the market was overvalued between January 2006 and the end of October 2007 (*i.e.*, cognitive dissonance). As shown in Table 3, the Cramer's V value is 0.139, and the relationship is significant at the 0.01 level. Given this finding, Hypothesis 1 is supported.

Hypothesis 2 is tested by comparing the responses to items 3 and 4. It is a more wide-ranging query concerning the composition and characteristics of investments and is based on a theory of herd behaviour as a cause of both overvaluation and the decline of the market. A significant relationship is expected to exist between the reason given by small investors for making changes to

Table 3
Statistical Results

Hypotheses	Cramer's V Value	Approx. Significance
Hypothesis 1 (relationship of responses to items 1 and 2)	0.139	0.000
Hypothesis 2 (relationship of responses to items 3 and 4)	0.099	0.030
Hypothesis 3 (relationship of responses to items 5 and 6)	0.088	0.828
Hypothesis 4 (relationship of responses to items 7 and 8)	0.102	0.000
Hypothesis 5 (relationship of responses to items 9 and 10)	0.214	0.000

their security holdings and the reason they believed was most important for the sharp correction in the market that began in October 2007. For example, if a small investor believed that the forecasts by analysts were important to the downturn, that investor would plausibly focus on analysts' forecasts today in order to be well-informed about important news stories that may affect his or her security holdings. The Cramer's V value for the two is 0.099, which is significant at the 0.05 level. Thus, Hypothesis 2 is also supported.

Hypothesis 3 is tested by comparing respondents' answers to items 5 and 6. Item 5 pertains to the most important factor small investors gave for making changes to their security holdings during the buoyant stock market. Mental accounting theory is the concept behind this item. The comparison between the two items is an exploration of the linkage between the concepts of mental accounting and cognitive dissonance. Small investors tend to focus on recent behaviour and give less weight to longer time trends. The probabilities of recent price increases in connection with a buoyant stock market may be given too much weight, which can reinforce herd behaviour. We thus expect a significant relationship between the sources of information people actually used and the sources they believed to be the most important in the buoyant stock market. For example, the Internet was widely available and popular, and there were a number of Internet brokers and numerous websites providing financial information on companies. In addition, newspapers gave "hot stock tips" on a daily basis. Therefore, we predict that some of this widely available information would have affected people and their perceived reasons for the buoyant stock market. The Cramer's V value is 0.088, and the relationship is not significant at the 0.05 level. In contrast to the hypothesis, no relationship is found between responses to items 5 and 6. Thus, Hypothesis 3 is not supported.

Hypothesis 4 is tested by comparing the responses to items 7 and 8. The comparison was used to determine whether there was a relationship between confidence and optimism on one hand, and anchoring on the other hand. A small investor who considers the market to be undervalued today is likely to believe that the market will recover in a few years to levels that prevailed during the buoyant stock market. This belief is expected to be related to his or her opinion regarding the market value today. The Cramer's V value for the two is 0.102, which is significant at the 0.01 level. Thus, Hypothesis 4 is supported.

Hypothesis 5 is tested by comparing the responses to items 9 and 10. It specifies the relationship between how much small investors value the information they have in a situation when a decision has to be made and their belief that the stock price index will continue to rise after three days of continuous increases. The existence of such a relationship implies that Kahneman and Tversky's classic value function (*i.e.*, prospect theory) is correct. The result reveals that the Cramer's V value is 0.214, and the relationship is significant at the 0.01 level. Given this finding, Hypothesis 5 is

supported. It is worthy to note that no matter how many days the stock market has increased in value, the probability that it will go up or down in the next day is 50-50. For small investors, some patterns of stock prices are thought to exist even for data that are random in nature. Yet continuous price increases are almost impossible. This is consistent with the overconfidence hypothesis. Conservation can also help to explain why small investors give too much weight to the previous probabilities of events in a given situation, as they are reluctant to change their opinions.

Conclusion

The primary objective of this study was to identify some factors and decision-making processes that affect the investment behaviour of small investors in Hong Kong. Obviously, there was a change in their opinion and behaviour during and immediately after the buoyant stock market of January 2006 to October 2007. During the buoyant market, small investors were overconfident and bought more stocks. They also exhibited herd behaviour. However, once the sharp correction to the market occurred after October 2007, most of the small investors sold their stocks. According to the new approach of behavioural finance, small investors always have some reference points (or anchors) in mind, such as the stock purchase price. If a stock appreciates (*e.g.*, during the buoyant stock market) and the small investors continue to use purchase price as a reference point, the stock price will be in the concave, risk-averse part of an investor's value function. The stock's expected return will then be used by small investors to justify its risk. However, if the small investors lower their expectation of the stock's return, they are likely to sell the stock. On the other hand, if the stock price falls (*e.g.*, immediately after the buoyant stock market), it will be in the convex, risk-seeking part of an investor's value function. In such a situation, the small investors will continue to hold the stock, even if its expected return falls below the level that would have been necessary to justify its original purchase.

Based on prospect theory and some key concepts in behavioural finance, we developed five hypotheses and tested with a data set collected from 1,199 small investors in Hong Kong. The study produced several findings that are largely consistent with the predictions of behavioural finance. First, there is a significant relationship between the number of small investors who thought they could predict the market during the buoyant stock market period and whether the market was overvalued during that period. This finding implies that small investors tended to be overconfident and often bought the stock during the buoyant stock market.

Second, a significant relationship is found between the reason given by small investors for changing their current security holdings and the reason given for the sharp correction in the market. This finding suggests that herd behaviour occurred frequently among the small investors, and they tended to sell their stock during the sharp correction period.

Third, no significant relationship is found between the factor that small investors considered to be the most important in making changes to their security holdings during the buoyant stock market and the factor they felt was most important in causing the overvaluation of the market during that same time period. In other words, small investors had no mental accounting during the buoyant stock market. They often thought in terms of having a "safe" part of their portfolio that was protected from downside risk, and a "risky" part of their portfolio that was designed to increase wealth.

Fourth, we find a significant relationship between the opinion of small investors on whether the market would recover in the event of an economic downturn similar to the one that occurred after October 2007 and their opinion of the market value today. This finding suggests that small investors have some reference points (*i.e.*, anchors) in mind when they make their investments in the stock market. For example, a small investor who believes the market is undervalued today may plausibly think that the market will recover in a few years to levels that prevailed during the buoyant stock market.

Finally, there is also a significant relationship between how small investors value information in a situation when they have to make a decision and their belief in the probability that the stock price index would continue to rise after three days of continuous increase. This finding provides empirical support for Kahneman and Tversky's classic value function (*i.e.*, prospect theory). Small investors tend to hold on to a position of loss in the hope that the stock prices will eventually recover. Prospect theory also predicts that small investors will be risk-averse to gains, which means that they believe the stock price index will continue to increase in value, and hence they will sell their stock in a buoyant stock market.

Although the present study is exploratory in nature, some new results are obtained that are in line with the predictions of behavioural finance. The present study thus enhances our understanding of the investment behaviour of smaller investors in Hong Kong. Nevertheless, this study also has several limitations, particularly in its research design. First, we used a questionnaire survey to collect the data rather than using experimental design, which can better test a causal relationship. Second, the survey data were collected via non-random sampling rather than random sampling. Third, we focused on the relationships between responses to different question items, and provided a simple test of these relationships. It would be better to develop a sophisticated model and test the relationships in the model with advanced statistics. In conclusion, more empirical research is needed on the investment behaviour of small investors. As well, more studies should be conducted in other Asian countries in the future.

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