

Empirical Study on the Behaviours of different types of Hong Kong Small investors' in their Investment

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Abstract

Lam, et al. (2010, 2012) and Guo, et al. (2015) have developed a new Bayesian approach to explain some market anomalies. In this paper we conduct a survey to examine whether the theory developed in Lam, et al. (2010, 2012) and Guo, et al. (2015) holds in the empirically by studying the behavior of different types of Hong Kong small investors' in their investment, especially during financial crisis.

Keywords: investment decision, representative and conservative heuristics; excess volatility; underreaction; overreaction; magnitude effects; financial crisis.

JEL classification: G11, C13

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1. Introduction

The investment decision theory is founded on the valuation bases that come from capitalism and the idea of free market economy. However, many parts of our investment theory will be applicable to other types of economic organization, and we may wish to consider and reflect upon the implications of our theory for more psychological value bases.

It looks that everybody agrees that some determinants should play some role in the investment decision of the small investors. But how big or small this role should be? Empirical data have been collected from 1,098 respondents via a survey. The present study attempts to contribute to the study of behavioural finance in the setting of an Asian financial centre, namely Hong Kong. This paper is organized as follows. Section 2 reviews the related literature; Section 3 explains the methodology of the present study and the data; Section 4 reports the results; and section 5 provides the conclusion.

2. Literature Review

Cohen and Kudryavtsev (2012) found that with respect to decision about stocks, irrationality cannot be established. Investment in stocks was influenced by expectation, past experience in the capital market, and knowledge about the past performance of selected market indices. Understanding how people perceive the underlying risk of different financial instrument is the first step to understand how investment decisions are made, and to further help investors to avoid biases and make sensible decisions. Wang, et al. (2011) paper suggests that familiarity bias is common among private investors. Understanding investors' behavior will be useful in making decision about investments. Information on companies (Wong and Chan, 2004), the economic and financial environment (Fong, et al., 2005, 2008), and technical analysis (McAleer, et al., 2015) could be used to make better investment decisions. Women want the same attention, advice, terms, and deals that men get with advisors providing

clear objective recommendations based on their goals and risk portfolios (Malhotra and Crum, 2010).

Williams (2007) results show that investor characteristics as consumers and their general attitude toward the social aims of firms appear to influence their investment choices. Peterson (2002) draws on the psychology literature to show that anticipation of reward (price appreciation) generates a positive affect (emotion, mood, or attitude) that drives increased risk-taking behavior and buy trading. Then, following the anticipated event or news, there is a reduction in positive affect that produces more risk-averse behavior and drives sell trading. Lewellen et al. (1977) cover (1) basic portfolio objectives, (2) information collection and decision mechanics, (3) instrument selection and portfolio composition, (4) return perception and market attitudes. They regard these not only as the key behavioral dimensions but, in the hierarchy indicated, as a logical directional model of investment process. The earliest paper addressing conservatism is Edwards (1968), who reveals that when investors are overconfident about their analysis based on past performance of stocks and underreact to recent information, thus updating their beliefs too slowly in the face of new evidence, they exhibit conservative heuristics.

Representative refers to our tendency to evaluate how likely something is with reference to how closely it resembles something rather than using probabilities. Tversky and Kahneman (1971) suggest that local representativeness is a belief in the “law of small numbers,” meaning the “the law of large numbers applies to small number as well.” Lam, et al. (2010, 2012) proposed an alternative approach by assuming that representative investor is aware of the correct underlying model but fails to adopt a correct approach in updating process. Under their model, incorporates investors’ biases not as the result of a mis-specification of the model but as a result of an incorrect updating method. The subjective expectation reflects investors’ conservative and representative heuristics. Recently, Guo, et al. (2015) extend their theory by developing some properties on the expected earnings shock and its volatility and establish some properties of investors’ behavior on the stock price and its volatility during a financial crisis and subsequent recovery. They also develop properties to explain excess volatility, short-term underreaction, long-term

overreaction, and their magnitude effects during a normal financial situation as well as during a financial crisis and subsequent recovery.

3. Methods and Data

Our questionnaire was designed to elicit information about demographics and factors affecting investment decision-making of the respondents. This questionnaire consists of 24 questions (items): 7 questions for risk tolerance, 10 questions for investment sentiment, 2 questions for time horizon and 5 questions for demographic characteristics.

The first part of questionnaire focused on risk tolerance, which is a function of both risk capacity and risk attitude. To clarify the difference, risk capacity refers to the amount of risk that is appropriate for an average individual with the same age, retirement plans, income, liquidity needs, and so on, as the respondent (i.e. item 2, item 3, item 4, item 6, and item 7). Risk attitude, on the other hand, is best viewed as an adjustment factor, reflecting to what extent the specific individual wishes to deviate from capacity because of personal preference and psychological factor (i.e. item 1, item 5).

The second part is designed to ascertain a small investor's sentiments. Edward (1968) observes that investors with conservative behavior might pay little attention or even ignore the full information from an earnings announcement. When investors are overconfident about their analysis based on the past performance of stocks and underreact to recent information, thus updating their beliefs too slowly in the face of new evidence, they exhibit conservative heuristics. (Edwards, 1968; Grether, 1980). Overreaction refers to predictability of good (bad) future returns from bad (good) past performance, while under reaction refers to the predictability of good (bad) future returns from good (bad) past performance (DeBondt and Thaler, 1985; Lakonishok et al., 1994).

On the representative heuristic, many experiments show that individuals expect key population parameters to be “represented” in any recent sequence of generated data (see Tversky and Kahneman, 1971, 1974 for detailed discussion). When small investors are overconfident about recent information on stocks and pay less attention to the past information on stocks or extrapolate too readily from samples, thus leading to belief revisions that are too dramatic, they demonstrate representative heuristic. The conservative heuristic contributes to the momentum profit, while the representative heuristic contributes to the contrarian trading profit.

Small investors based on poor long past performance of stocks in item 8, if small investors think that the chance the stock price will go down in the future, this reveals conservative heuristic. The predictability of bad future returns from bad past performance, this is under reaction (DeBondt and Thaler, 1985; Lakonishok et al., 1994); small investors will sell the stock in item 9, then they hope to get expected profit of a momentum trading strategy (dictates selling when there is string of bad news).

Small investors based on poor performance of stocks recently in item 10, if small investors think that the chance the stock price will go up in the future, this reveals representative heuristics. They are overconfident about recent information on stocks and pay less attention to the past information on stocks. Small investors will buy the stock in item 11, and then they hope to get expected profits of a contrarian trading strategy (dictates buying when there is string of bad news).

Small investors based on good long past performance of stocks in item 12, if small investors think the chance the stock price will go up in the future, this also reveals conservative heuristic. The predictability of good future returns from good past performance, this is also under reaction; small investors will buy the stock in item 13, then they hope to get expected profit of a momentum trading strategy (dictates buying when there is string of good news).

Small investors based on good performance recently of stocks in item 14, if small investors think that the chance the stock price will go down in the future, this reveals representative heuristics. Small investors will sell the stock in item 15, and then they

hope get expected profits of a contrarian trading strategy (dictates selling when there is string of good news).

Lam et al. (2010) mentioned a pseudo-Bayesian model of investment sentiment; weights induced by investors' conservative and representative heuristics are assigned to observation of the earning shocks of stock prices. Such weight assignments enable them to provide a quantitative link between some market anomalies and investors' behavioral biases. They concluded that excess market volatility will result from investors' biased heuristics. The representative heuristics, rather than the conservative heuristic, contributes to excess volatility in the market. Small investors based on poor performance in the past (conservative heuristics) and poor performance recently (representative heuristics) in item 16, if small investors think that the chance the stock price will go up in the future (the representative heuristics, rather than the conservative heuristic, contributes to excess volatility in the market), small investors will buy the stock in item 17, and then they hope to get expected profits of contrarian trading strategy (dictates buying when there is string of bad news).

Before we begin using the survey dataset for factor analysis, we need to ensure the survey results are reliable enough. According to Carmines & Zeller (1979, pp.11-13), reliability focuses on the extent to which the empirical indicator provides consistent results across repeated measurements. In testing the applicability of survey results, we first used the Cronbach alpha (Cronbach, 1947; Cronbach & Shavelson, 2004; Giliem & Gilem, 2003) to test the reliability of the 2 questions time horizon section, a highly reliable coefficient of 0.8123 was found for items 18 portfolio duration and item 19 time horizon. Since the Cronbach alpha measures how well a set of variable to represent a latest aspect of a group of variables, it is not applicable to our study and then we use the coefficient of variation for comparing the reliability and precision of the results of our survey (Bruton, 2000; C&S, 2014, pp.114-115) which are subject to sample error and non-sampling error. It should be noted that the measure used to assess the statistical significance of the item was the coefficient of variation (CV), which expresses the ratio of the standard error to the arithmetic mean $CV = \frac{S_x}{\bar{X}}$. The

CVs for each of questionnaire items have been shown in the Appendix. Taking a look at these CVs, we can find the maximum and minimum value is 12.7% and 0.89%

respectively with mean 2.88%. Accordingly, it was considered the consensus had been achieved when the level of item was on the statistically significant (that is $CV \leq 20\%$).

Cluster Analysis

The item provides us with analytical tool through which we can determine not only the order of determinants of the Hong Kong small investors' investment decision but also their degree of difference. It is desirable to partition the 19 items into subgroups so that those in each particular group are more similar to each other before carrying on further investigation. We use the cluster method (Everitt & Dunn, 1991 and Friedman, 2004) to complete the task.

The process of clustering begins finding the closest pair of items according to a particular distance measure of attributes and combine those items with the nearest distance to form a cluster. The procedure continues on step at a time, linking pairs of items, pairs of clusters, or a item with a cluster, by a linkage method until all the clusters are merged into a single cluster. This algorithm is known as the hierarchical clustering method. The results can be presented in dendrograms, which are known as hierarchical tree diagrams. The results of the hierarchical clustering are presented in the form of dendrograms.

Factor analysis

The purpose of factor analysis is to summarize pattern of interrelationship among variables (items) and establish levels of variance in decision variable as they influence a given phenomenon. To examine possible differences in the perceived importance of the key factors, our analyses indicate that all of four criteria (i.e., rotated principal component loadings, scree test, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity, reliability test) would be examined. Bartlett's test of sphericity and Kaiser-Meyer-Olkin are to test the appropriateness of the sample from the population and the suitability of factor analysis. If Bartlett's test of sphericity is large and significant, and the Kaiser-Meyer-Olkin measure is greater than 0.6, then factorability is assumed. If the sums of squares of the loadings on the extracted factors are no longer dropping but are remaining at a low and rather uniform level, factor extraction may be reasonably terminated. Cattell's (1966) Scree test is based on this principle.

SPSS use a default option of extracting all principal factors with eigenvalues of 1.0 or more (i.e., the Kaiser-Guttman rule). The main thing to consider in deciding when to stop factoring is that it is better to err on the side of extracting too many factors rather than too few. One of the most commonly used is Cronbach's coefficient α , which is based on the average correlation of items within a reliability test if the items are standardised. Cronbach's coefficient α can be interpreted as a correlation coefficient; it ranges in value from 0 to 1. For the purposes of this study, the cut-off value adopted was 0.5 (Nunnally, 1978) and the acceptable benchmark level of corrected item-total correlation was set above 0.3.

The data for the present study were collected from small investors in Hong Kong via questionnaire survey. Its main purpose is to analyse the behaviour of Hong Kong small investors and to provide some evidence of the small investors' on risk tolerance, investment sentiment, time horizon when facing uncertainty in their investment's performance. We also study demographics information. The survey was conducted during 23 September 2013 to 31 October 2013. Since the majority of Hong Kong's population is Chinese, the questionnaire was written in Chinese. After a pilot test on nineteen 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 (snowball method). A group of undergraduate students helped to distribute the questionnaires to the respondents. The target population is the small investors in Hong Kong financial markets. Finally, we distributed 1,100 questionnaires to our students. There were 1,098 selected respondents who completed and returned the questionnaires and this represents a response rate of 99.8 per cent. Since some respondents did not reply to all the questions in the questionnaire, we only used the number of replies (i.e., the questions that respondents did not answer were excluded) to calculate the total number of and the percentage of the total for the individual entries.

4. Empirical Findings

The profile of the respondents is reported in Table 1. Among the respondents, 56.3% were male and 43.7% were female. The majority of the respondents (88.9%) are in the

age group of 18-55. Regarding the level of education level, majority of them have tertiary education (56.6%), while 43.4% graduated from secondary schools or below. Regarding their employment status, 62.8% of the respondents were employed, 13.8% were self-employed, 7.7% of were retired, and 15.7% were classified as “others” which included housewives and students. Finally, the respondents’ median monthly income was \$14,410. In view of the above demographic profile of respondents, we believe that the respondents are representative of small investors in Hong Kong financial markets.

[Table 1 here]

The dendrogram that appear in Figure 1 is tree diagram, which give a visualization of hierarchical structure of the 19 items in questionnaire. Taking the complete linkage dendrogram, before joining the items together, each item is considered to be a single group at the first stage; at each of the second to the twelfth stage in the agglomerative procedure, the number of items is reduced. When the final (thirteenth) stage is reached, there is single group containing all 19 items.

At the twelfth stage, the items are classified into two groups. One group contains two items and the other contains 17 items. It is obvious that two items (Time, Duration) in the 2-item group are factor of time horizon).

At the eleventh stage, the 19 items are classified into the following three groups:

Group 1: Time, Duration

Group 2: Philosophy, Cash, Portfolio, Mind, MPF, Goal, Risk

Group 3: The other 10 items.

Time and duration form group 1. It confirm that two items (Time, Duration) in the 2-item group are factor of time horizon). Philosophy, Cash, Portfolio, Mind, MPF, Goal and Risk form group 2. It is obvious that seven items in the 7-item group are factor of risk tolerance. The other 10 items (Expectation 1, Heuristic 1, Expectation 2, Heuristic 2, Expectation 3, Heuristic 3, Expectation 4, Heuristic 4, Expectation 5, Heuristic 5) form group 3. It is also obvious that ten items in the 10-item group are factor of sentiment.

[Figure 1 here]

To identify the underlying dimensions of the items, which are perceived to be important by the respondents, the 19 items were then used for the factor analyse. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy gives a value of 0.788. The KMO is close to 1 which represents a perfectly adequate sample and the Barlett's test of Sphericity show a chi-square of 7,141.211 with the 1% a significance level. The five factors, collectively, accounted for a satisfactory 60.079% of the variance. Communality values in between 1.0 and 0 indicate partial overlapping between the items and the factors in what they measure. Furthermore, the communality column, provides further evidence of the overall significance, albeit, moderate, of the solution (see table 2).

[Table 2 here]

The underlying rationale for the Scree test is based on the fact that within a set of items, a limited number of factors are measured more precisely than the others. By graphing the eigenvalues, we found that the smaller factors form a straight line sloping downward. The dominant factors will fall above the line. Figure 2 shows that a five-factor solution is obtained.

[Figure 2 here]

In order to achieve meaningful factor loadings, the principal component matrix is rotated by orthogonal transformation by varimax with Kaiser normalization. After the rotation, there are no negative loadings on any consequence on factor A, factor B, factor C, factor D or factor E. We found five factors affecting the determinants of the Hong Kong small investors' investment decision follows: factor A might be interpreted as risk tolerance which include the respondent's best friend describe their attitude toward risk (risk), portfolio with which they are most comfortable (portfolio), respondent's investment goal (goal), respondent's investment philosophy (philosophy), the word "risk" comes to their mind first (mind), analysts predict the prices of gold/shares up that the reaction of respondent hold some cash (cash), and the

reaction of Mandatory Provident Fund makes a loss in past three years (MPF). The factor loadings are shown in Table 3.

[Table 3 here]

Factor B as sentiment of selling momentum and buying contrarian includes: if the stock has poor long past performance, small investors think the chance the stock price will go down in the future (item 8) and they will sell the stock in their conservative heuristics (item 9); then they hope to get expected profit of a momentum trading strategy. If the stock has poor performance recently, small investors think the chance the stock price will go up in the future (item 10) and they will buy the stock in their representative heuristic (item 11); then they hope to get expected profits of a contrarian trading strategy.

Factor C as sentiment of buying momentum and selling contrarian which include if the stock has good long past performance, small investors think that the chance the stock price will go up in the future (item 12) and they will buy the stock in their conservative heuristic (item 13), they hope to get expected profit of a momentum trading strategy. If the stock has good performance recently, small investors think the chance the stock price will go down in the future (item 14) and they will sell the stock in their representative heuristic (item 15), they hope get expected profits of a contrarian trading strategy. Factor D as sentiment of buying contrarian which include if the stock has poor performance in the past (conservative heuristic) and poor performance recently (representative heuristics), the representative heuristics, rather than the conservative heuristic, contributes to excess volatility in the market, small investors think the chance the stock price will go up in the future (item 16) and they will buy the stock in their representative heuristic (item 17), they hope to get expected profits of contrarian trading strategy. Factor E as time horizon includes the duration of portfolio for respondent before he/she sell it (item 18) and time horizon for respondent's investment (item 19).

[Table 4 here]

The reliability test is reported in Table 4. At this point only initial of internal reliability of the expected factors was performed in the form of Cronbach's coefficient α . Following the decision relating to the internal reliability, the factors were re-specified. This was undertaken to further reduce the number of factors. The internal reliability was tested and the decision results provide evidence as five factors exceeded the adopted criteria (Cronbach's coefficient α cut-off value adopted was 0.5; corrected item-total correlation was set above 0.3).

[Table 5 here]

It is found that factor A contains 7 items and relates to "risk tolerance"; factor B is made up of 4 items and refers to "sentiment of selling momentum and buying contrarian"; factor C comprises 4 items and deal with "sentiment of buying momentum and selling contrarian"; factor D contains 2 items and relates to "sentiment of buying contrarian"; and factor E is made up of 2 items and refers to "time horizon" (see table 5). We can derive the following ascending order of importance:

1. Factor E (time horizon)
2. Factor D (sentiment of buying contrarian)
3. Factor C (sentiment of buying momentum and selling contrarian)
4. Factor B (sentiment of selling momentum and buying contrarian)
5. Factor A (risk tolerance)

Based on these results, time horizon is the least important factor and risk tolerance is the most important factor.

Conclusion

Using cluster analysis, the 19 items are classified into three groups. They are time horizon, risk tolerance and sentiment. Using factor analysis, we identify five factors that capture the determinants of the Hong Kong small investors' investment decision. The factors are risk tolerance (factor A), sentiment of selling momentum and buying contrarian (factor B), sentiment of buying momentum and selling contrarian (factor C),

sentiment of buying contrarian (factor D) and time horizon (factor E). The factor of risk tolerance (factor A) includes risk, portfolio, goal, philosophy, mind, cash, MPF; the sentiment of selling momentum and buying contrarian (factor B) includes subjective expectation 1 (the chance the stock price will go down in the future), conservative heuristics 1 (small investors will sell the stock and they hope to get expected profit of a momentum trading strategy), subjective expectation 2 (the chance the stock price will go up in the future), representative heuristics 2 (small investors will buy the stock and they hope to get expected profits of a contrarian trading strategy). The sentiment buying momentum and selling contrarian (factor C) includes subjective expectation 3 (the chance the stock will go up in the future), conservative heuristics 3 (small investors will buy the stock and they hope to get expected profit of a momentum trading strategy), subjective expectation 4 (the chance the stock price will go down in the future), representative heuristics 4 (small investors will sell the stock and they hope get expected profits of a contrarian trading strategy). The sentiment of buying contrarian (factor D) includes subjective expectation 5 (the chance the stock price will go up in the future), representative heuristics 5 (they will buy the stock and hope to get expected profits of contrarian trading strategy); the time horizon (factor E) includes portfolio duration and time. In order to examine possible differences in the perceived importance of five factors, our analysis indicate that out of four criteria (including rotated minimum residual solution, scree test, KMO and Bartlett's test of Sphericity, and reliability test) examined, all five factors stand out to be significant. Accordingly, it can be concluded that the determinants of the Hong Kong small investors' investment decision have uniform views as to the ascending order of importance of time horizon (factor E), sentiment of buying contrarian (factor D), sentiment of buying momentum and selling contrarian (factor C), sentiment of selling momentum and buying contrarian (factor B), risk tolerance (factor A). Time horizon (factor E) is the least important factor and risk tolerance (factor A) is the most important factor. Based on these findings, more research should be conducted in the future to examine the determinants of the Hong Kong small investors' investment decision.

Last, in this paper we treat investors with conservative or representative heuristics as different types of investors. We note that there are many other types of investors, for

example, risk averters (Markowitz, 1952), risk seekers (Wong and Li, 1999; Wong, 2007), and investors with S-shaped and reversed S-shaped utility function, (Levy and Levy, 2002, 2004; Wong and Chan, 2008). Extension could include the study of investors different from those with conservative or representative heuristics.

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Appendix

Results on Determinants of the Hong Kong small investors' investment decision
in Hong Kong Survey

Survey period: 23 September 2013 – 31 October 2013

Section 1: Risk Tolerance				
Item				
1.	In general, how would your best friend describe you for your attitude toward risk? (CV = 9.6%)			
	a	Take high risk		7.9%
	b	Take medium risk		36.6%
	c	Take low risk		42.3%
	d	Don't take risk at all		13.2%
	Total			100%
2.	Portfolio with the higher average returns tends to have a higher chance of short-term losses. The table below provides the average dollar return of five hypothetical investment of \$100,000 and the possibility of your end value less than your initial investment over a one-year holding period. Please select the portfolio with which you are most comfortable. (CV = 12.7%)			
	a	Portfolio A: Possible Average value at the end of One Year \$110,000; Probability of your end value less than your initial investment 2%		15.5%
	b	Portfolio B: Possible Average value at the end of One Year \$130,000; Probability of your end value less than your initial investment 5%		30.4%
	c	Portfolio C: Possible Average value at the end of One Year; \$150,000; Probability of your end value less than your initial investment 10%		33.2%
	d	Portfolio D: Possible Average value at the end of One Year; \$170,000 ; Probability of your end value less		13.6%

		than your initial investment 20%		
	e	Portfolio E: Possible Average value at the end of One Year \$190,000 ; Probability of your end value less than your initial investment 30%		7.4%
	Total			100%
3.	Which best describe your investment goal? (CV = 10.9%)			
	a	emphasis on capital preservation.		16.4%
	b	making a balance between capital preservation and growth.		45.9%
	c	emphasis on growth with only moderate concern about fluctuations in price.		30.1%
	d	emphasis on growth with little concern for fluctuations in price.		7.7%
	Total			100%

Item				
4.	Inflation, the rise in prices over time, can erode investment return. Long-term investors should be aware that if portfolio returns are less than the inflation rate, the ability to purchase goods and services in the future decline. In order to maintain buying power, investment returns must keep pace with inflation. However, in general higher returns can only be achieved with greater volatility. Which of the following portfolios is most consistent with your investment philosophy? (CV = 0.89%)			
	a	Portfolio 1 is very likely to outperform long-term inflation by a significant margin and has a very high degree of volatility.		4.0%
	b	Portfolio 2 is very likely to outperform long-term inflation by a moderate margin and has a moderate to high degree of volatility.		19.2%
	c	Portfolio 3 is very likely to outperform long-term inflation by a small margin and has a moderate degree of volatility.		42.2%
	d	Portfolio 4 is very likely to match with inflation and has low degree of risk volatility.		26.6%
	e	Portfolio 5 is very likely to have return lower than inflation rate but has very low degree of risk volatility.		7.3%
	Total			100%
5.	When you think the word “risk”, which of the following words comes to your mind first?(CV = 1.2%)			
	a	Loss		29.4%
	b	Uncertainty		39.8%
	c	Opportunity		27.3%
	d	Thrill		3.6%
	Total			100%

6.	If some well-known fund managers/analysts predict the prices of some assets such as gold and shares will go up and you hold some cash now, what would you do? (CV = 1.4%)			
	a	do nothing		21.6%
	b	keep main portion of cash and invest only a small portion of your money on the products being recommended.		40.1%
	c	keep small portion of cash and invest big portion of your money on the products being recommended.		25.7%
	d	invest all your cash and but do not borrow money to invest		8.5%
	e	invest all your cash and borrow some small money to invest		3.4%
	f	invest all your cash and borrow as much as you can borrow to invest		0.7%
	Total			100%

Item				
7.	What will you do if your Mandatory Provident Fund (MPF) makes a loss in the past three year period? (CV = 1%)			
	a	transfer all your MPF investments to a more conservative portfolio .		11.1%
	b	transfer some your MPF investments to a more conservative portfolio .		32.1%
	c	do nothing and keep all your present MPF investment unchanged.		42.8%
	d	transfer your MPF fund to more aggressive MPF funds and aim to recover your loss (but there is a chance that you may end up lose more).		14.0%
	Total			100%

Section 2: Investor Sentiment

8.	If the stock has poor long past performance (this means the stock price is in general going down for a long time in the past), do you think the chance the stock price will (CV = 1.3%)			
	a	go up in the future		18.5%
	b	go down in the future		45.7%
	c	no change		12.2%
	d	don't know		23.6%
	Total			100%
9.	will you (CV = 1.2%)			
	a	buy the stock		18.1%
	b	sell the stock		35.7%
	c	do nothing (don't buy and don't sell)		30.1%
	d	don't know		16.1%
	Total			100%

10.	If the stock has poor performance recently (this means the stock price is in general going down recently), do you think the chance the stock price will (CV = 1.3%)		
	a	go up in the future	13.9%
	b	go down in the future	54.3%
	c	no change	9.5%
	d	don't know	22.3%
	Total		100%

Item			
11.	will you (CV = 1.1%)		
	a	buy the stock	13.1%
	b	sell the stock	39.7%
	c	do nothing (don't buy and don't sell)	33.1%
	d	don't know	14.0%
	Total		100%
12.	If the stock has good long past performance (this means the stock price is in general going up for a long time in the past), do you think the chance the stock price will (CV = 1.7%)		
	a	go up in the future	46.0%
	b	go down in the future	21.9%
	c	no change	10.3%
	d	don't know	21.8%
	Total		100%
13.	will you (CV = 1.5%)		
	a	buy the stock	35.4%
	b	sell the stock	22.1%
	c	do nothing (don't buy and don't sell)	28.1%
	d	don't know	14.4%
	Total		100%
14.	If the stock has good performance recently (this means the stock price is in general going up recently), do you think the chance the stock price will (CV = 1.9%)		
	a	go up in the future	54.2%
	b	go down in the future	13.5%
	c	no change	8.1%
	d	don't know	24.2%

	Total		100%
15.	will you (CV = 1.5%)		
	a	buy the stock	39.6%
	b	sell the stock	15.5%
	c	do nothing (don't buy and don't sell)	29.0%
	d	don't know	15.9%
	Total		100%
16.	If the stock has poor performance in the past and poor performance recently, do you think the chance the stock price will (CV = 1.1%)		
	a	go up in the future	9.7%
	b	go down in the future	57.7%
	c	no change	13.2%
	d	don't know	19.4%
	Total		100%

Item			
17.	will you (CV = 1.1%)		
	a	buy the stock	11.2%
	b	sell the stock	45.7%
	c	do nothing (don't buy and don't sell)	30.1%
	d	don't know	12.9%
	Total		100%
Section 3: Time Horizon			
18.	How long do you usually keep your portfolio before you sell it? (CV = 1.8%)		
	a	less than 1 year	37.9%
	b	1 to 2 years	29.1%
	c	3 to 4 years	16.9%
	d	5 to 8 years	9.8%
	e	9 to 10 years	2.5%
	f	11 years or more	3.7%
	Total		100%
19.	What is the time horizon for your investment? (CV = 1.6%)		
	a	less than 1 year	30.5%
	b	1-3 years	30.6%
	c	3-5 years	17.7%
	d	5-10 years	11.6%
	e	Over 10 years	9.7%
	Total		100%

Table 1: Demographic characteristics of the respondents

Items and responses	No.	% of total
Gender:		
Female	480	43.7
Male	618	56.3
age group:		
18 - 25 years old	322	29.3
26 – 35 years old	261	23.8
36 – 45 years old	199	18.1
46 – 55 years old	194	17.7
56 – 65 years old	96	8.7
over 65 years old	26	2.4
Education level:		
No school	6	0.5
Primary school	93	8.5
Secondary school	378	34.4
Tertiary education	621	56.6
Employment status:		
Employee	689	62.8
Self-employed	151	13.8
Retired	85	7.7
Others	172	15.7
Average monthly income		
Below HK\$5,000	169	15.6
HK\$5,000 - HK\$9,999	144	13.1
HK\$10,000 - HK\$14,999	259	23.9
HK\$15,000 - HK\$19,999	210	19.4
HK\$20,000 - HK\$24,999	151	14.0
HK\$25,000 - HK\$29,999	64	5.9
HK\$30,000 - HK\$49,999	50	4.6
HK\$50,000 or above	35	3.2

Table 2: Principal component analysis

Item	Item name	Communa lity	Factor (Component)	Eigenvalue	Per cent of variance	Cumulative per cent
1	Risk	0.622	1	4.778	25.149	25.149
2	Portfolio	0.553	2	2.801	14.742	39.891
3	Goal	0.513	3	1.695	8.922	48.813
4	Philosophy	0.474	4	1.126	5.924	54.737
5	Mind	0.418	5	1.015	5.342	60.079
6	Cash	0.361				
7	MPF	0.273				
8	Subjective expectation 1	0.697				
9	Conservative heuristics 1	0.687				
10	Subjective expectation 2	0.584				
11	Representative heuristics 2	0.617				
12	Subjective expectation 3	0.684				
13	Conservative heuristic 3	0.684				
14	Subjective expectation 4	0.579				
15	Representative heuristic 4	0.561				
16	Subjective expectation 5	0.709				
17	Representative heuristic 5	0.721				
18	Portfolio duration	0.843				
19	Time	0.837				

Extraction method: principle component analysis, Rotation method: Varimax with Karise Normalization, Kaiser-Meyer-Olkin (KMO) index: 0.788, Bartlett's test of Sphericity: approx. Chi-Square= 7141.211; $\rho < 0.000$.

Table 3: Varimax-rotated principal component loadings

Item	Factor					Item Name	Factor
	A	B	C	D	E		
1	0.783					Risk	A
2	0.734					Portfolio	A
3	0.707					Goal	A
4	0.675					Philosophy	A
5	0.624					Mind	A
6	0.524					Cash	A
7	0.515					MPF	A
8		0.776				Subjective expectation 1	B
9		0.786				Conservative heuristics 1	B
10		0.665				Subjective expectation 2	B
11		0.638				Representative heuristics 2	B
12			0.792			Subjective expectation 3	C
13			0.788			Conservative heuristic 3	C
14			0.604			Subjective expectation 4	C
15			0.552			Representative heuristic 4	C
16				0.793		Subjective expectation 5	D
17				0.815		Representative heuristic 5	D
18					0.915	Portfolio duration	E
19					0.913	Time	E

Notes: Factor names are factor A: risk tolerance; factor B: sentiment of selling momentum and buying contrarian; factor C: sentiment of buying momentum and selling contrarian; factor D: sentiment of buying contrarian; factor E: time horizon.

Table 4: Internal consistency and related decisions

Factors and items	Corrected item-total correlation	α value	Decision
Factor A (Risk Tolerance)			
Risk	0.6477	0.7769	Retained
Portfolio	0.5862		
Goal	0.5597		
Philosophy	0.5196		
Mind	0.4473		
Cash	0.4047		
MPF	0.3525		
Factor B (Sentiment of selling momentum and buying contrarian)			
Subjective expectation 1	0.5835	0.7898	Retained
Conservative heuristics 1	0.6303		
Subjective expectation 2	0.5997		
Representative heuristics 2	0.5849		
Factor C (Sentiment of buying momentum and selling contrarian)			
Subjective expectation 3	0.5587	0.7787	Retained
Conservative heuristic 3	0.5969		
Subjective expectation 4	0.5998		
Representative heuristic 4	0.5828		
Factor D (Sentiment of buying contrarian)			
Subjective expectation 5	0.6378	0.7779	Retained
Representative heuristic 5	0.6378		
Factor E (Time Horizon)			
Portfolio duration	0.6840	0.8123	Retained
Time	0.6840		

Table 5: Internal consistency of final revised structure

Items	Number of item	Corrected item-total correlation	α value
Factor A (Risk Tolerance)			
Risk	7	0.6477	0.7769
Portfolio		0.5862	
Goal		0.5597	
Philosophy		0.5196	
Mind		0.4473	
Cash		0.4047	
MPF		0.3525	
Factor B (Sentiment of selling momentum and buying contrarian)			
Subjective expectation 1	4	0.5835	0.7898
Conservative heuristics 1		0.6303	
Subjective expectation 2		0.5997	
Representative heuristics 2		0.5849	
Factor C (Sentiment of buying momentum and selling contrarian)			
Subjective expectation 3	4	0.5587	0.7787
Conservative heuristic 3		0.5969	
Subjective expectation 4		0.5998	
Representative heuristic 4		0.5828	
Factor D (Sentiment of buying contrarian)			
Subjective expectation 5	2	0.6378	0.8123
Representative heuristic 5		0.6378	
Factor E (Time Horizon)			
Portfolio duration	2	0.6840	0.8123
Time		0.6840	

Figure 1: Complete linkage dendrogram for data matrix

Dendrogram

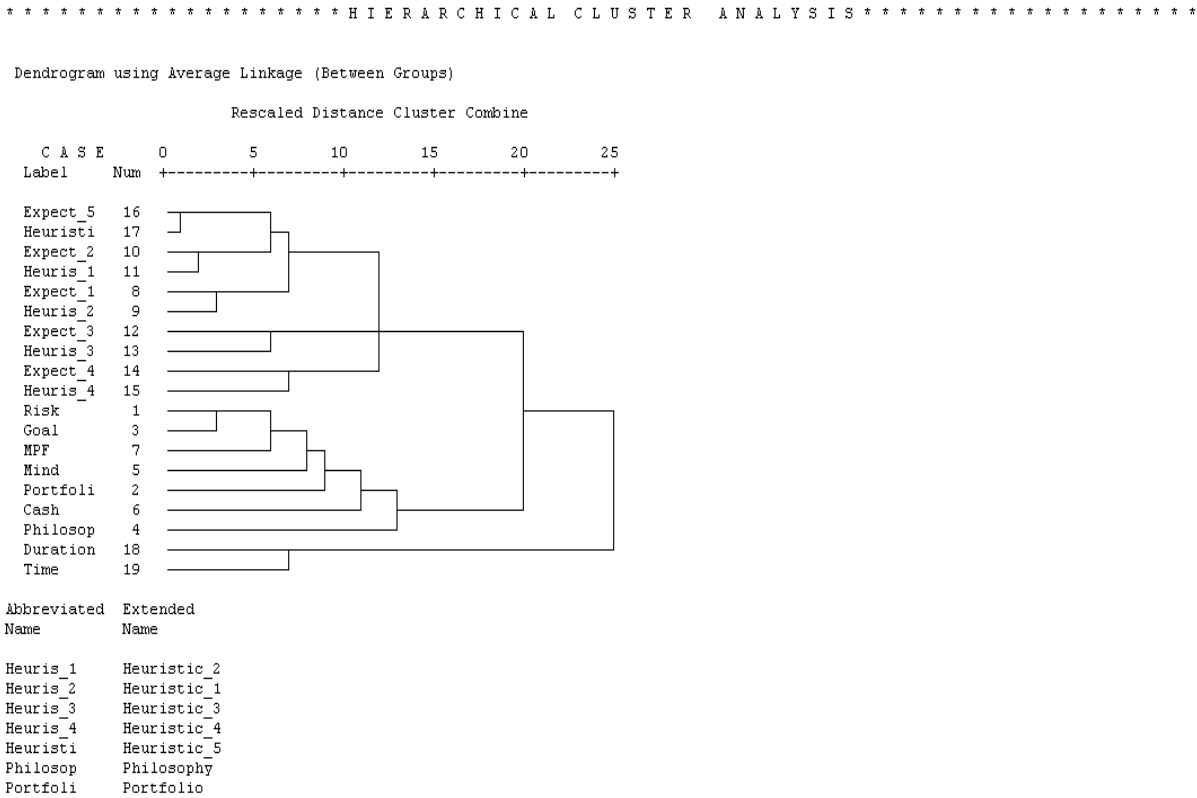


Figure 2: A scree plot

