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A photograph of a brick building with a clock tower, likely a part of Waseda University, positioned in the background behind the text.

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*Cognitive Biases of Japanese Institutional Investors:
Consistency with Behavioral Finance*

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Cognitive Biases of Japanese Institutional Investors: Consistency with Behavioral Finance ⁺

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Abstract:

This paper investigates the cognitive biases to which Japanese institutional investors are subject. Investors showed optimism in forecasting market returns, and this tendency was much more significant for domestic markets and for longer forecasting time-horizons. This optimism is consistent with the existence of availability heuristics. Herding behavior was also detected. In addition, Japanese institutional investors showed loss aversion, as suggested by Tversky and Kahneman [1979]. The median of the relative weight for loss versus gain was two or three, depending on the amount of possible loss, and this number is consistent with a coefficient of 2.25 for the value function estimated in Tversky and Kahneman [1992]. We conclude that the concepts of behavioral finance have universality in the sense that they are pertinent among institutional investors as well as students, and that they are found in an Asian country as well as the U.S.

Keywords:

behavioral finance, optimism, cognitive bias, availability heuristics, herding, prospect theory, loss aversion

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We would like to thank Chuo University for its financial support for our questionnaire survey on professional asset management. I am also grateful to the Daiwa Securities Research Institute for its valuable assistance in sending our questionnaire to Japanese institutional investors. Thanks to their support, we were able to survey a large proportion of Japanese institutional investors.

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1. Introduction

Many anomalies have been observed in securities markets all around the world. The size effect and the value effect in stock markets are among the most common. Researchers who have been trying to reveal factors underlying these anomalies can be divided into at least two schools:

One school consists of proponents of traditional finance theory. As shown in Fama and French [1993], they try to reconcile seemingly anomalous phenomena by generalizing equilibrium models. The most important feature of this school is their insistence that all of the players in the market are rational. Here, rationality means that they conform to the assumptions of expected utility theory (von Neumann and Morgenstern [1947]), and that they can reflect all of the information available in the market in pricing securities prices.

The other school consists of researchers opposed to the idea of fully rational market players. They insist that the level of investors' rationality is seriously limited. Simon [1955, 1956] called it bounded rationality, and was sceptical regarding the assumption made by expected utility theory (von Neumann and Morgenstern [1947]) that decision makers are fully rational. Simon proposed instead the construction of decision-making models that do not assume perfect rationality on the part of decision-makers.

Building on Simon's work, Tversky and Kahneman [1974] introduced the idea of heuristics. This idea means that people tend to use rules of thumb when making a decision due to their lack of ability to process information fully rationally and/or to time pressures, i.e. they have to make a lot of decisions in a limited time. A few years after they presented the idea of heuristics, Kahneman and Tversky [1979] proposed prospect theory, an alternative decision-making model to expected utility theory.

Figure 1 represents its value function, where the horizontal axis represents profits/losses and the vertical axis represents the value assigned to each profit/loss by a decision-maker, typically an investor. This figure shows loss aversion, which means that a loss of 1 dollar causes more pain in terms of absolute value than a gain of the same amount provides joy.

Later, Tversky and Kahneman [1992] carried out an experiment and specified a function form as follows:

$$v(x) = \begin{cases} x^{0.88} & (x \geq 0) \\ -2.25(-x)^{0.88} & (x < 0) \end{cases}, \quad (1)$$

where x is the profit/loss and $v(x)$ is the value assigned to each profit/loss. This function shows that a loss of 1 dollar equals, on average, a gain of 2.25 dollars.

---Figure 1---

This idea of loss aversion was later utilized by some researchers (Barberis, Huang, and Santos [2001]) when they tried to specify factors underlying such anomalies as the equity premium puzzle (Mehra and Prescott [1985]).

The implication of bounded rationality is appealing, and the research on finance based on this idea is collectively called behavioral finance. One potential criticism of this school is that most of the experiments to verify the effectiveness of behavioral models have been performed on university campuses, usually with student participants. For example, the equation (1) was derived from experiments using twenty-five graduate students of Stanford University and the University of California at Berkeley. Opponents of behavioral finance could argue that “naïve” student subjects might display some cognitive biases that would not be found in professional investors. It is therefore important to check if such biases are also prevalent among “real-world” investors who are pricing securities in the markets.

The major purpose of this paper is to try to establish whether the concepts of behavioral finance are universal. In order to do that, we analyze the results of a questionnaire survey of Japanese institutional investors conducted by ourselves in October and November 2003. If we can detect any cognitive biases in this survey data, we may be able to establish the validity of behavioral finance theory in the sense that its concepts are internationally applicable and pertinent even among institutional or professional investors.

This paper consists of seven sections, including this one. Section 2 classifies sources of bias on the part of decision makers, as well as behavioral models. Section 3 shows hypotheses we would like to verify in this paper. Section 4 explains the data we used in later sections. Sections 5 and 6 show the results of our analyses: Section 5 describes the results regarding the optimism of forecasts by institutional investors, while Section 6 deals with the results related to loss aversion. Section 7 concludes the paper.

2. Sources of Bias and Behavioral Models

Figure 2 represents the structure of behavioral finance (Toshino [2003, 2004]). This school considers that there are several sources of bias underlying market anomalies. Some researchers have presented behavioral models, which can be more directly connected to anomalies.

---Figure 2---

(1) Sources of Bias

First, as already described, the concept of bounded rationality was first proposed by Simon [1955]. This concept implies that human behavior is not always conducted rationally, as assumed by expected utility theory, which is the basis for traditional finance theory such as the Sharpe-Lintner-Black model (Sharpe [1964], Lintner [1965], and Black [1972]). Human judgment, such as selection among several alternatives, is generally made based on past memory and newly collected information (Figure 3). Simon [1955, 1956] suggested that human behavior could be subject to biases at any of three stages in the decision-making process; recalling memories, selecting information, and making judgments.

---Figure 3---

The second source of bias is time constraints. Human beings are very busy and have to continuously make many kinds of decisions. As a result, they cannot afford to take a lot of time and try to make an optimal decision for every judgment.

Thirdly, emotional factors can be a source of bias in human judgment. In particular, overconfidence and regret aversion are included in biases, which could lead to market anomalies.

Fourth and finally come social factors (see the sources of bias shown in Figure 2.) Human beings tend to create a variety of societies, and to act as members of each society. Meanwhile, they are subject to some kinds of social bias such as exposure to market sentiment, herding, and avoidance of cognitive dissonance. Market sentiment means the general atmosphere of bullishness or bearishness in the market. For example, when market sentiment is very bullish, investors would like to purchase securities even though they are mostly overvalued. On the other hand, herding is the human tendency to act similarly, following other people's behavior. To act differently when other people are acting uniformly is mentally very difficult. Lastly, the avoidance of cognitive dissonance refers to the human tendency to try to be consistent in one's behavior. Having once expressed a positive or negative opinion on something, people find it difficult to change their position even though they have discovered reasons for doing so. For example, if an analyst has written a report with a buy recommendation for a certain stock, he or she may feel some mental pressure not to express a negative

view about the stock even when its issuing firm has announced some detrimental news.

(2) Behavioral Models

Reflecting the sources of bias described so far, some researchers have presented behavioral models which could be more directly connected to market anomalies.

Heuristics is one of the earliest behavioral models presented in Tversky and Kahneman [1974], which is considered the seminal work in the field of behavioral finance. Heuristics refers to the human tendency to try to intuitively solve problems with limited information by using rules of thumb, even when people could derive better answers with more time and information. Although this kind of decision-making rule is generally regarded as an effective way to deal with daily incumbencies, it can lead to systematically biased decisions. Tversky and Kahneman [1974] presented three types of heuristics: representativeness, availability, and anchoring.

Representativeness heuristics is the human tendency to judge A as belonging to a group X ($A \in X$) if A has any representative feature of that group. Availability heuristics is the human tendency to consider that more familiar things happen more often. Accidents and homicides are generally considered to happen quite often because they receive a lot of coverage in the mass media. People usually take care not to get involved in such affairs since they are a familiar risk. At the same time, people tend to disregard the risk of sicknesses such as diabetes because they are largely ignored by the news media. Anchoring refers to the tendency to consider an arbitrary available number as a starting point for estimating the true value of an unknown matter. The resulting estimate can be affected by the arbitrary number.

On the other hand, prospect theory was presented by Kahneman and Tversky [1979] and was intended to be an alternative model to expected utility theory (von Neumann and Morgenstern [1947]). This model was based on five experimentally established aspects of human nature: 1) People tend to evaluate alternatives not by their ultimate asset value but by how far the alternatives depart from a reference value. 2) People tend to be risk averse when making a profit, but reckless when suffering from a loss. 3) People tend to weigh a loss of a certain quantity more than the a gain of the same quantity. 4) People tend to value 100% certain things much higher than merely probable things. 5) People tend to overvalue the chances of a scenario succeeding when the probability is very small. Based on the above features, Kahneman and Tversky derived alternative value and weighting functions, as shown in Figure 1.

Finally, the idea of mental accounting was presented by Thaler [1985]. It is the human tendency to set up a local account and try to get an optimal value for each

account.

3. Hypotheses

In this paper, we try to check if Japanese institutional investors are subject to any cognitive biases, based on a questionnaire survey conducted in October and November 2003. Among many potential sources of bias, this paper focuses on optimism and loss aversion.

(1) Optimism

It is generally thought that institutional investors have a preference for strong market conditions. For example, if stock markets are strong and the clients of institutional investors are making profits, they may be in less danger of losing their jobs even though their performance lags behind market returns. If this is the case, institutional investors may become optimistic about future market conditions.

It is possible that this kind of optimism comes from the selection bias of information, one of the aspects of bounded rationality (Simon [1955]). Even in a situation where there are equal amounts of positive and negative information about future market conditions, institutional investors may pay more attention to positive information and thus take an optimistic view of the market. These days there is frequently so much available information relevant to any given decision-making problem that it is difficult to deal with all of the available information objectively and to derive an unbiased forecast. It is also said that securities analysts tend to issue buy recommendations more often than sell recommendations. This tendency may also reflect the selective nature of perception by analysts towards good news since their clients, or institutional and individual investors, would prefer to receive buy recommendations.

Optimism in forecasting may be stronger for domestic markets than for foreign markets. Optimism is related to the availability of information, one of the three heuristics suggested by Tversky and Kahneman [1974]. Institutional investors are more familiar with domestic markets. Armed with more information, they may underestimate the risks of domestic markets, leading to more optimistic forecasts than they would make for less familiar foreign markets.

In addition, we would like to investigate whether institutional investors tend to be either more optimistic or more pessimistic when the forecasting period is longer. As the forecasting period becomes longer, the level of uncertainty becomes larger. The relationship between uncertainty and optimism is uncertain but important.

Finally, all institutional investors make judgments based on similar information, including analyst and strategist reports as well as general economic and/or political news. It is therefore to be expected that they make similar decisions. So, if they tend to make optimistic forecasts, their optimism may be ubiquitous among various types of investor, e.g. gender, age, job experience, business position, academic background, etc. This tendency, if it exists, would be called “herding,” one of the social factors in Figure 2.

(2) Loss Aversion

In the latter half of our analysis, we would like to check if Japanese institutional investors show loss aversion, suggested by Kahneman and Tversky [1979] when they outlined prospect theory. We are going to check whether they actually dislike losses and, if they do, how strong their loss aversion is. We would also like to check if the level of loss aversion differs among investor segments.

4. Data

To examine the hypotheses, we use the latest data of a questionnaire survey conducted from October through November 2003.¹ This questionnaire survey focused on the behavior of fund managers of Japanese institutional investors in terms of incentives and information processing in portfolio management. Questions were grouped into four parts: the personal profile of the fund manager, performance incentives, opinions on the behavior of asset managers in general, and personal investment behavior and information processing.

The questionnaire was sent to 78 fund management companies. The return rate was 61.5% (48 companies), including 8 trust banks, 5 insurance companies, 29 investment advisory companies and 6 investment trust companies (Table 1). The total number of fund managers who returned the answers was 488 and the average number of respondents per company was 10.2. One hundred and sixteen respondents were from trust banks, 24 from life insurance companies, 299 from investment advisor companies, and 49 from investment trust companies. Among the 488 respondents, 96.7% were male, and all held bachelor (82.0%) or graduate degrees (18.0%). They listed their current positions as follows: fund manager (59.5%); senior fund manager (17.9%); chief fund manager (17.5%); CIO or CEO (5.2%). About eighty percent of them had been working in asset management for more than 7 years. Around two thirds (68.1%) were at the age of 31 through 40, while 7.2% were under 31 and 24.8% were over 40 years old.

¹ Major results of the questionnaire are summarized in Suto and Toshino [2004].

---Table 1---

5. Findings regarding Optimism

In order to establish the existence of optimism in the forecast among Japanese institutional investors, we asked for their one-month and one-year forecasts of the Nikkei Stock Average (NSA) and Dow Jones Industrial Average (DJIA). We specifically asked for the base indices at the time of their forecast, as well as their 90% confidential range. We then calculated their lower-bound returns, upper-bound returns, and the mid-returns by averaging them.

Table 2 represents the median, average, and standard deviation of their lower-bound returns and upper-bound returns, respectively, for each index and for each forecasting period.

The forecasts of Japanese institutional investors showed a clear positive bias. Although the lower-bound and upper-bound returns were similar in terms of absolute value for the one-month forecast of the DJIA, the average of the upper-bound returns for the one-month forecast of the NSA was larger by around 20% than that of its lower-bound returns in terms of absolute value. The discrepancy was much larger for one-year return forecasts. The difference was more than 50% for the one-year return of the DJIA, while it was more than double for that of the NSA.

The table 2 also includes the result of the t-test for the hypothesis that the average of the upper-bound returns was larger in absolute value than that of the lower-bound returns. Three of the four cases showed a statistical significance of 1% or below; only the case of the one-month forecast of the DJIA showed a statistically insignificant t-value.

These results were consistent with the hypothesis as follows:

First, Japanese institutional investors were generally optimistic in their market forecasts. This phenomenon is consistent with the hypothesis that they are more sensitive to positive market news, or subject to a bias in selecting information, which is one of the aspects of bounded rationality.

Second, the optimism was more significant for the domestic market than for the foreign market. This result is consistent with the hypothesis that investors tend to undervalue the risk of familiar investment products (availability heuristics).

Third, optimism was much greater when the forecasting period was longer and there was greater uncertainty. However, it must be stressed that we still lack a theoretical explanation for what appears to be a clear link between forecasting period

and the optimistic bias. Investors may perhaps request a higher premium for more risky investments with a longer holding period.

---Table 2---

On the other hand, Table 3 shows the averages of mid-point forecasts between the lower-bound and upper-bound returns for each index and for each forecasting period. These figures allow us to confirm most of the above observations for various types of investor: Japanese institutional investors were mostly optimistic in their market forecasts; the optimism was stronger for the domestic market and when the forecasting period was longer. This kind of uniformity may result from the fact that most institutional investors are doing business based on similar information, e.g. economic/political news as well as market reports from strategists and analysts. As a result, they may tend to make similar market forecasts. This result is consistent with the concept of herding.

---Table 3---

6. Results on Loss Aversion

In order to find out if Japanese institutional (professional) investors are also subject to loss aversion, we asked respondents the following questions:

“Please assume that you can make a bet with an even (50% and 50%) chance of making a profit or loss. If the loss is ten thousand Japanese yen, what would be the minimum profit you would require in order to make a bet?”

“What would be the minimum profit if the loss were one million Japanese yen in the above question?”

---Table 4---

Table 4 presents the answers to the above questions. Fewer than 20% of the respondents answered that they would make a bet even if it were a fair game, or the expected value for the bet were 0. The majority required a premium. The mode was 1-2 times; they required that the profit be more than the loss and less than twice the loss. There were even respondents who required a profit of more than 10 times the loss. Reflecting the existence of these investors with pronounced loss aversion, the means of

the answers were 246.7 thousand yen for a loss of ten thousand yen and 28.95 million yen for a loss of one million yen, more than twenty fold for both cases.

In order to avoid the influence of these outliers, we calculated medians, which turned out to be twenty thousand yen for a loss of ten thousand yen and three million yen for a loss of one million yen. These figures imply that even Japanese institutional investors are subject to loss aversion by requiring gains of several times the stake when faced with a 50-50 chance of a loss. The above results are approximately consistent with the result from the experiment in Tversky and Kahneman [1992], which reported that the extent of the loss aversion of U.S. graduate students was on average 2.25 times, as shown in the equation (1).

---Table 5---

We calculated medians for different categories of respondent. As shown in Table 5, we found the following characteristics regarding the loss aversion of investors.

First, loss aversion was stronger among females and respondents with spouses than among males and respondents without spouses, respectively.

Second, the older the respondent, the stronger his or her loss aversion.

Third, academic background and type of investment were not related to the extent of loss aversion.

Fourth and finally, loss aversion was stronger for senior fund managers than for junior ones, but weaker for CIOs and CEOs than for their subordinates.

7. Conclusions and Discussion

Behavioral finance is currently one of the hottest topics in finance research. It is of interest not only to academic researchers but also to practitioners such as institutional investors. There are even money managers who use the concepts of behavioral finance in building up their strategies. The prospects for practical applications of behavioral finance are good.

As suggested by Toshino [2003, 2004], one potential criticism of behavioral finance is the fact that most of the experiments to check on the validity of its concepts have been done on campuses with students as participants. Thus, any behavioral models derived from these experiments may be subject to the criticism that they wouldn't work in actual securities markets, where a lot of sophisticated players are continuously making investment decisions.

So, the major purpose of this paper was to examine the viability or universality

of the concepts of behavioral finance. Although our research was not comprehensive enough to cover all sources of bias and all behavioral models, we were able to detect a few clear biases even among institutional or professional investors in Japan.

To briefly summarize our findings, our results were confirmed the existence of:

- optimism in market forecasting by institutional investors;
- the use of availability heuristics to underestimate the risk of more familiar markets;
- herding behavior due to the uniformity of the information on which institutional investors base their forecasts, and
- a tendency to loss aversion where investors feel much more pain from losses than they feel joy from the same amount of gains.

We also found that optimism was stronger for a longer-forecasting period, but the underlying factors for this result were not so obvious.

However, our observations shown above may also be subject to bias. Our research is based on only one questionnaire, so our results may be influenced by the sentiments prevailing in Japanese securities markets in October and November of 2003. We might get quite different results if we were to repeat our survey today.

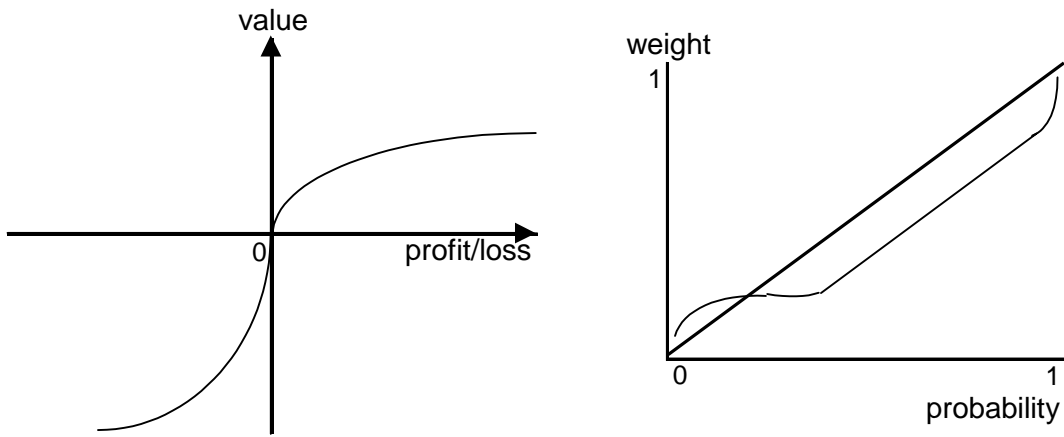
Regarding loss aversion, we basically checked on only the coefficient of the relative weight of loss versus gain on the equation (1). But prospect theory also implies that people start to take greater risks when suffering from a loss. Our research did not cover this aspect of the theory. In order to investigate further the risk attitudes of investors in the area of gains and losses, we may need to actually meet investors and do comprehensive experiments rather than carrying out simple questionnaires surveys of anonymous investors. These questions await our future research.

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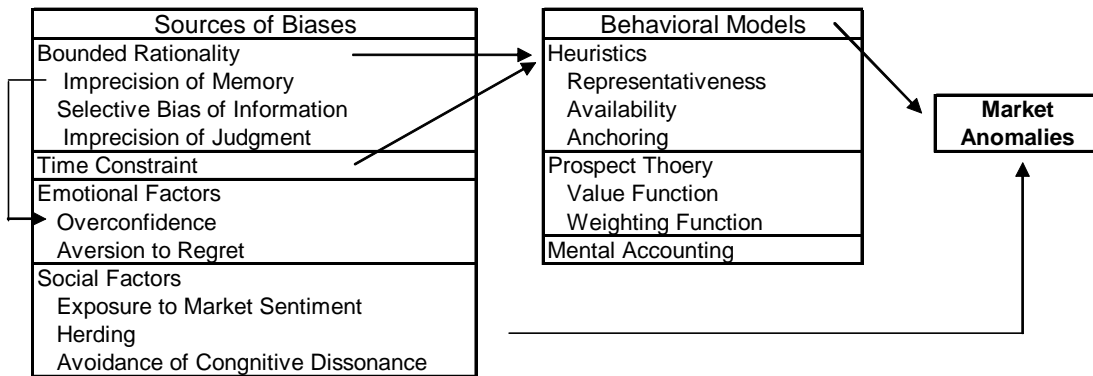
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Figure 1 Value and Weighting Functions of the Prospect Theory



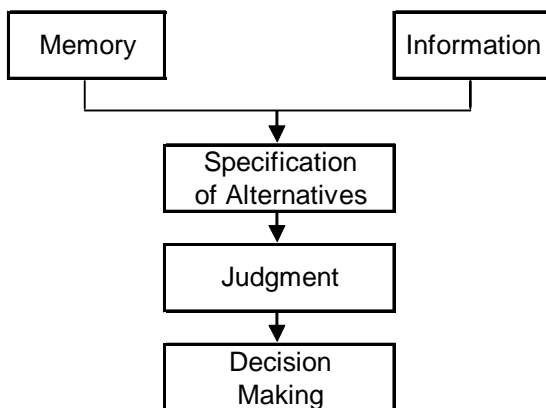
Source: Kahneman and Tversky [1979]

Figure 2 Structure of Behavioral Finance



Source: Toshino [2004] Figure 2-1

Figure 3 Process of Human Decision Making



Source: Toshino [2004] Figure 2-2

Table 1 Respondents for Questionnaire

Types of Institutions	Number of Institutions			Number of Respondents
	Sent	Responded	%	
Trust Banks	9	8	88.9	116
Life Insurance Co.	10	5	50.0	24
Investment Advisory Co.	46	29	63.0	299
Investment Trust Co.	13	6	46.2	49
Total	78	48	61.5	488

Source: Toshino and Suto [2004] Table 1

Table 2 Results on Optimism in Forecasting

Target of Forecast	Lower Bound				Upper Bound				t-value
	Median	Mean	Standard Deviation	Number of Sample	Median	Mean	Standard Deviation	Number of Sample	
Nikkei Stock Average									
One-month forecast	-7.41	-7.83	5.26	432	8.78	9.34	6.22	432	3.04 ***
One-year forecast	-13.88	-12.58	13.90	432	26.92	28.08	16.69	431	14.82 ***
Dow Jones Industrial Average									
One-month forecast	-6.07	-6.34	3.76	418	5.08	6.51	4.98	418	0.56
One-year forecast	-11.58	-12.20	9.93	418	17.73	18.55	12.08	417	8.30 ***

Source: Toshino and Suto [2004] Table 4

Note: level of significance ***1%

Table 3 Results on Optimism in Forecasting (By Attribution)

Attribution	Numer of Sample	Nikkei Stock Average				Dow Jones Industrial Average			
		One-month forecast		One-year forecast		One-month forecast		One-year forecast	
		Mid-point (%)	t-value	Mid-point (%)	t-value	Mid-point (%)	t-value	Mid-point (%)	t-value
Total	413	0.79	4.70 ***	7.73	13.71 ***	0.10	0.78	3.11	8.26 ***
Institutions									
Trust Banks	103	0.91	2.75 ***	7.84	7.46 ***	-0.06	-0.20	2.46	3.33 ***
Life Insurance Co.	22	-0.50	-0.61	4.30	1.64	-0.15	-0.33	1.23	0.87
Investment Advisory Co.	245	0.67	3.44 ***	7.23	9.99 ***	0.12	0.76	3.22	6.45 ***
Investment Trust Co.	43	1.87	2.49 **	12.08	6.19 ***	0.50	1.32	5.05	4.36 ***
Gender									
Male	401	0.74	4.36 ***	7.72	13.41 ***	0.07	0.52	3.00	7.88 ***
Female	12	2.42	2.43 **	8.20	2.94 **	1.14	1.65	6.75	2.78 **
Spouse									
Without	70	0.85	1.55	7.03	4.48 ***	0.90	0.34	3.28	3.19 ***
With	343	0.78	4.60 ***	7.88	13.13 ***	0.10	0.70	3.08	7.62 ***
Age									
-30	27	1.73	1.99 *	10.29	3.62 ***	0.09	0.23	3.71	1.88 *
31-35	96	0.24	0.61	5.39	4.64 ***	-0.32	-1.12	1.60	1.84 *
36-40	183	0.96	4.38 ***	8.18	9.94 ***	0.25	1.47	3.61	7.03 ***
41-45	79	1.05	2.72 ***	8.80	6.77 ***	0.13	0.52	4.03	4.88 ***
46-	28	-0.01	-0.02	7.36	4.17 ***	0.48	0.59	1.84	1.45
Business Years									
-6	81	1.04	2.75 ***	8.78	6.21 ***	0.03	0.09	3.70	3.68 ***
7-9	77	0.96	1.96 *	6.84	5.15 ***	0.29	1.16	2.63	2.69 ***
10-12	83	0.00	0.00	5.32	4.20 ***	-0.41	-1.88 *	2.14	2.43 **
13-15	102	0.97	2.86 ***	9.04	8.80 ***	0.43	1.51	3.22	5.13 ***
16-	69	1.12	2.87 ***	8.73	6.75 ***	0.08	0.25	4.01	5.43 ***
Weekly Working Hours									
-45	26	2.67	2.03 *	6.94	2.85 ***	0.84	1.47	3.36	2.52 **
46-50	91	0.44	1.21	7.87	6.02 ***	0.02	0.08	2.93	3.20 ***
51-55	127	0.54	2.13 **	8.56	8.86 ***	0.01	0.03	3.71	5.62 ***
56-60	87	1.12	4.04 ***	6.00	5.73 ***	0.06	0.20	2.05	2.98 ***
61-	67	0.62	1.53	9.35	6.03 ***	0.37	1.04	4.38	4.41 ***
Academic Background									
Bachelor	339	0.88	4.62 ***	7.90	12.60 ***	0.19	1.30	3.19	7.61 ***
Graduate	74	0.39	1.12	6.95	5.39 ***	-0.32	-1.54 *	2.76	3.16 ***
Business Position									
Fund Manager	244	0.58	2.65 ***	7.55	9.20 ***	-0.14	-0.96	2.28	4.42 ***
Senior Fund Manager	73	1.00	2.83 ***	8.16	6.89 ***	0.44	1.33	3.89	4.73 ***
Chief Fund Manager	70	0.87	1.90 *	7.48	7.32 ***	0.48	1.28	3.86	6.41 ***
CIO, CEO	8	1.29	1.35	8.06	3.50 **	0.24	0.53	4.33	2.05 *
Type of Fund									
Investment Trust	73	1.00	2.63 **	9.13	6.59 ***	0.35	1.51	4.72	5.14 ***
Pension Fund	208	0.59	2.76 ***	7.15	8.89 ***	-0.12	-0.66	2.60	4.76 ***
Asset									
Stock	236	0.90	3.96 ***	8.96	12.25 ***	-0.06	-0.32	3.44	6.84 ***
Bond	132	0.53	1.76 *	6.29	6.00 ***	0.38	1.83 *	2.85	3.99 ***

Source: Toshino and Suto [2004] Table 5

Note: level of significance ***1%, **5%, *10%

Table 4 Results on Loss Aversion

Required Gain	10 Thousand Yen		1 Million Yen	
		%		%
-1	5	1.1	8	1.8
1 time	82	18.1	60	13.5
1-2	180	39.8	119	26.9
2-5	93	20.6	106	23.9
5-10	64	14.2	82	18.5
10-	28	6.2	68	15.3
Total	452	100.0	443	100.0
Mean	246.7 Thousand Yen		28.95 Million Yen	
Median	20 Thousand Yen		3 Million Yen	

Source: Toshino and Suto [2004] Table 6

Table 5 Results on Loss Aversion (By Attribution)

Attribution	Number of Sample	10 Thousand Yen (Thousand Yen)	1 Million Yen (Million Yen)
Total	437	20	3.00
Gender			
Male	424	20	3.00
Female	13	30	5.00
Spouse			
Without	76	20	2.75
With	360	20	3.00
Age			
-30	33	20	2.00
31-35	101	20	2.50
36-40	194	20	5.00
41-45	79	20	3.00
46-	30	30	7.50
Academic Background			
Bachelor	361	20	3.00
Graduate	76	20	3.00
Business Position			
Fund Manager	257	20	3.00
Senior Fund Manager	75	20	5.00
Chief Fund Manager	77	20	5.00
CIO, CEO	9	11	2.00
Asset			
Stock	248	20	3.00
Bond	141	20	3.00

Source: Toshino and Suto [2004] Table 8