

Investment risk tolerance, before and after recent financial tsunami: A survey in Hong Kong

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This paper investigates some of the determinants of investment risk tolerance. It compares the results of two surveys conducted during the first two weeks of March 2007 and November 2009 and aims at revealing the changes in investment behavior after the financial tsunami of 2008. Data was collected by means of a survey conducted by "Shue Yan Economic and Well-being Project" during November 2009. A total of 3,095 randomly selected respondents participated in interviews. The results of the survey show that: 1) There is not much difference between the self-reported investment risk tolerance before and after the recent financial tsunami. 2) Respondents tend to not trust financial consultants or brokers after the recent financial tsunami. 3) Respondents take into account the risk tolerance factor more seriously after the financial tsunami. 4) Respondents often link the relationship between high risk and high return by themselves. 5) Respondents do not prefer the greater highest loss choice. 5) These empirical findings provide important information for financial planners as well as individuals in preparing investment profiles.

**Field of research: Personal Finance, Risk Assessment, Risk Tolerance, Behavior
Finance**

1. Introduction

Since the financial crisis of 2008, the Hong Kong Hang Seng index has fluctuated and the local property market has become volatile. Against the backdrop of China's economy heating up and a strong stock, these scenarios suggest a positive future investment environment. Nevertheless, the question of an eventual adjustment is not 'if' but 'when?'. Undoubtedly, this becomes a question in which the majority of investors are interested. Other considerations would be the scale of the adjustment, whether it is a suitable timing for

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investment and whether investment activities should be prolonged. The answers to all of these questions are related to risk.

2. Literature Review

The risk of an adjustment increases with increasing asset prices. Once the risk becomes larger than investors can tolerate, investors tend to adjust their investment portfolio accordingly for risk reduction. What determines risk tolerance? This literature review briefly examines existing literature that addresses this question. Previous studies of risk tolerance suggest that demographic factors such as age, gender, education level, marital status, number of dependents, wealth and income are very important determinants.

Age is an essential variable in classifying the level of risk tolerance. Older investors do not have sufficient time to recover losses when an investment suffers a loss. Often in retirement, older investors only want to have a stable income to pay their living expenses. Many studies have also found that risk tolerance is inversely related to age (McInish, 1982; Morin & Suarez, 1983; Riley and Chow, 1992; Palsson, 1996; Sung and Hanna, 1996). Other studies, however, indicate that age is not the sole determining factor. Other factors must be added to assist in evaluating individual risk tolerance (Grable, 2000; Hariharan, Chapman, & Domain, 2000; Gollier & Zeckhauser, 2002). Gender is another determining demographic factor used in the analysis of individual risk tolerance. Research shows that women are more risk averse than men (Hallahan, Faff and McKenzie, 2004; Roszkowski and Grable, 2005; Watson and Mcnaughton 2007). Marital status and the number of dependents are also used for assessing an individual's level of risk tolerance. Hallahan, Faff and McKenzie (2004), agree that marital status is a significant determinant in risk taking. Generally, it does seem plausible that married couples have greater responsibilities than single individuals. Since they are also likely to have dependents, they would consider more stable income sources and so are generally considered a risk averse group and are less likely to invest in riskier assets. Furthermore, education levels also influence investor risk tolerance (Hallahan, Faff and McKenzie, 2004). It can be argued, however, that individual financial knowledge is actually more important than general education in influencing a risk-taking attitude.

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Income and wealth are also key indicators of risk tolerance (Relley & Chow, 1992; Schooley & Worden, 1996). Wealthy investors may be able afford losses if they have sufficient income or assets to recover the loss. It should be noted, however, that wealth and income levels are often correlated with the other factors such as the age of an individual. One reason for this is wealth and income gradually increases with a person's age. This means that age is still a major factor for classifying the risk tolerance of individuals. Indeed, it is essential that financial planners evaluate their clients through these demographic factors. Demographic variables, however, tend to be inadequate in explaining risk tolerance. Hence, recent studies suggest that sociological and psychological factors should be taken into consideration when assessing an individual's risk tolerance. This has led to the study of "behavioral finance", theories with terms such as representative bias, prospect theory and mental shortcuts comprising this area of research.

Representative bias theory proposes that those things people know will reflect onto the features of something they do not know. For example, if investors are uncertain about the risk of an investment product, they will consider the risk of that product as similar to some other investment product with which they are familiar. In Hong Kong, before the financial crisis, a financial derivative called a Lehman mini-bond was mistaken by many investors as a traditional bond. Of course, later it was revealed that these mini-bonds constituted high-risk derivatives and were entirely different from traditional low risk bonds. Prospect theory argues that individual investment decisions are affected by past experience. Before the financial crisis, investors considered mortgage security to be a low risk investment based on traditional knowledge that mortgages on property represent low risk. Of course, after the financial crisis, investors learned of something called sub-prime mortgages and that some of mortgage securities actually contained these high-risk sub-prime mortgages. Mental shortcuts show that when investors are given only the highest possible loss of an investment, they will have the perception that they do not need to bear extra risks. Investment grade rating services provided by credit-rating organizations tend to provide a mental shortcut to investors about the highest possible risk they need to face. Of course, after the financial crisis, investors learned that there is always a default amount of risk and that a credit rating cannot tell the whole story.

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On the whole, behavioral finance proposes a promising direction for academics and businesses who seek ways to explain the determinants of risk tolerance. Our paper contributes to this study by adding empirical evidence to the existing literature. The authors compare the results of two surveys conducted during the first two weeks of March 2007 and November 2009 and hope to reveal the changes in investment behavior after the financial tsunami of 2008. Additionally, a study based on an Asian sample has long been needed to confirm whether previous results are applicable across different cultures.

3. Survey

Data for this study was collected by means of a survey conducted by the “Shue Yan Economic and Well-being Project” during the first two weeks of March 2007 and 2009. A total of 3,095 randomly selected respondents participated in interviews. Among them, 2,038 had participated in some type of investment in the previous two years while 1,057 respondents had not participated in any investment activity in the previous two years. The questionnaire consisted of three main sections and all answers were ranked on an ordinal scale. Section 1 collected personal information such as gender, marital status, education level, age, and household income. The second part of the addressed questions related to risk tolerance. The last part of the questionnaire collected information relating to investment attitudes and choices regarding various investment opportunities

3.1 Statistical Summary

Table 1: Self-reported investment risk tolerance

In general, how would you describe your own investment risk tolerance?					
Year	Very low risk tolerance	Low risk tolerance	Moderate risk tolerance	High risk tolerance	Very high risk tolerance
2009	12.36% (0.60)%	30.34% (1.10)%	38.06% (1.25)%	16.69% (0.79)%	2.55%(0.16)%
2007	10.99% (1.44)%	30.24% (0.96)%	40.19% (0.88)%	15.70% (0.64)%	2.87% (0.18)%
Mann-Whitney U			-.904	Asymp. Sig.	.366

() standard error were generated from simulation of 250 bootstrap samples
2009 and 2007 data comes from the same sample

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Table 1 shows little difference between self-reported investment risk tolerance before and after the financial tsunami of 2008. Statistically, the Mann-Whitney U test shows no difference between the data samples for 2009 and 2007. The distribution of the percentages tends to skew to low risk tolerance. More than 40% of the respondents claimed that they have low or very low risk tolerance while only about 20% of the respondents claimed that they have high or very high risk tolerance. It seems that the respondents, in general, can be described as risk averse.

The following table 2 shows which types of information sources most affected the respondents' decisions in making investments. Table 2 shows that a large portion of respondents (25%) that participated in investment activities over the previous year tended to rely on information provided by the mass media, family members or friends to make their investment decisions. This proportion did not change significantly after the financial tsunami. The main difference regarding the information considered after the financial crisis points to levels of trust for investment consultants or brokers. In 2007, 16.67% of the respondents relied on investment consultants and brokers as their major source of information for making investment decisions. In 2009, however, only 9.54% of the respondents answered similarly. Thus, overall trust in financial consultants or brokers declined after the recent financial tsunami. Indeed, a large increase in 'other' sources of information was observed with the percentage increasing from 5.08%, in 2007 to 12.89% in 2009. A large portion of the 'other' information can be classified as stemming from the respondents' instincts. This would suggest that Hong Kong investors shifted to a position of greater self-reliance. The Mann-Whitney U test shows no difference between the data sample for 2009 and 2007. It is hard to say whether Hong Kong investors have learned anything from the recent financial tsunami and become more rational than before.

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Table 2: Main information to make decisions on investments

What type of information source provided most affects your decision to make investments?							
Year	Never consider any information	Mass media	Family members or friends	Internet	Investment consultants or brokers	Company prospectus	Other sources of information
2009	13.61% (0.86)%	25.77% (1.12)%	23.35% (0.99)%	6.39% (0.40)%	9.54% (1.54)%	8.45% (1.02)%	12.89% (0.68)%
2007	11.53% (0.57)%	23.32% (1.47)%	27.83% (1.27)%	9.29% (1.53)%	16.67% (0.76)%	6.28% (0.58)%	5.08% (1.19)%
Mann-Whitney U			-.578	Asymp. Sig.		.563	

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2009 and 2007 data comes from the same sample

Table 3: The term "Risk"

How would you associate the word "risk" with the following words					
Year	Loss	Unreliable	Chance	Rich	
2009	30.51% (1.39)%	28.82% (3.30)%	36.44% (1.76)%	4.24% (0.27)%	
2007	20.27% (1.06)%	33.23% (1.07)%	43.45% (1.19)%	3.04% (0.19)%	
Mann-Whitney U		-6.675*	Asymp. Sig.		.000

() standard error were generated from simulation of 250 bootstrap samples
*2009 and 2007 data sets are significantly different from each other at 5% significance level

Although, table 1 indicates that self-reported investment risk tolerance did not change significantly after the recent financial crisis, the attitude of the respondents towards the word "risk" seems to have changed. In 2007, 43.45% of the respondents associated the word "risk" with "chance" but in 2009, this association dropped to 36.44%. In 2009, around 30.51% of the respondents associated the word "risk" with "loss" while in 2007; the percentage of respondents making the same association was only around 20.27%. Additionally, the Mann-Whitney U test shows that 2009 and 2007 data are significantly different from each other. It seems that negative sentiment for the word "risk" increased among respondents and they became more cautious about risk after the financial tsunami.

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Table 4: Family and friends points of view on your investment and risk attitude

In general, how would you family and friend describe your investment and risk attitude?

Year	A real risk avoider	Cautious about risk	Take action after completing adequate research	Speculator
2009	11.59% (0.55)%	25.37% (1.28)%	49.72% (0.90)%	13.32% (0.84)%
2007	10.92% (0.59)%	26.85% (0.89)%	57.88% (1.03)%	4.34% (0.66)%
Mann-Whitney U		-4.449*	Asymp. Sig.	.000

() standard error were generated from simulation of 250 bootstrap samples

*2009 and 2007 data are significantly different from each other at 5% significance level

After the financial tsunami, the attitudes of the respondents' community towards risk and investment underwent changes. In 2007, respondents said only 4.34% of their family and friends would describe them as a speculator. In 2009, however, the percentage increased dramatically to 13.32%. Percentages for the description "take action after completing adequate research" dropped from 57.88% in 2007 to 40.72% in 2009. There was a slight drop, 26.85% to 25.37%, in the percentage perceiving respondents as being "cautious about risk" whereas a slight rise was observed in the percentage of family and friends describing respondents as "a real risk avoider": 10.92% to 11.59%. The Mann-Whitney U test shows that 2009 and 2007 data are significantly different from each other. Attitudes toward investment after the financial tsunami changed to have more speculative and investors do not conduct enough research before investment decision.

Table 5: Risk tolerance and investment decisions

Will your risk tolerance affect your investment decisions?

Year	Certainly will not	May not	neutral	May	Certainly will
2009	1.19% (0.07)%	4.27% (0.27)%	14.77% (0.93)%	47.83% (0.98)%	31.93% (1.96)%
2007	3.51% (0.22)%	7.35% (1.65)%	20.37% (1.51)%	43.49% (2.16)%	25.28% (0.83)%
Mann-Whitney U		-9.569*	Asymp. Sig.	.000	

() standard error were generated from simulation of 250 bootstrap samples

*2009 and 2007 data are significantly different from each other at 5% significance level

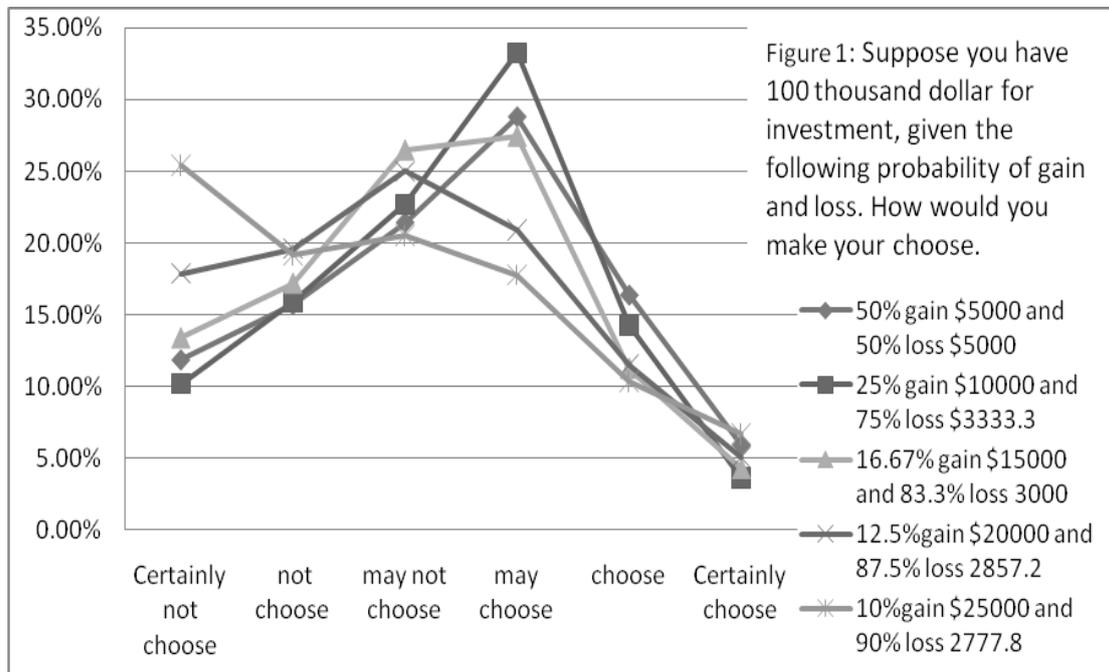
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Table 5 shows that risk tolerance affects the investment decisions of those interviewed. From 2007 to 2009, most respondents changed their views on toward risk tolerance and investment decisions. 25.28% of investors claimed that their tolerance of risk would certainly affect their investment decisions in 2007, whereas 31.93% of them claimed that it would affect their investment decisions in 2009. Those feeling that their risk tolerance “Certainly will not” affect their investment decisions fell from 3.51% to 1.19% from 2007 at 2009. Another noticeable decrease was observed for those who opted for a “neutral” stance on this question: 20.37% falling to 14.77% after the financial tsunami. These findings confirm that risk tolerance affects investment decisions. The Mann-Whitney U test shows that 2009 and 2007 data are significantly different from each other. It seems that respondents took the factor of risk tolerance into account more seriously after the financial tsunami

3.2 Investment choice toward various investment returns

In this section, respondents were presented with various investment returns and asked to make their decisions. For example, in the Figure 1, the expected returns for all cases are zero.

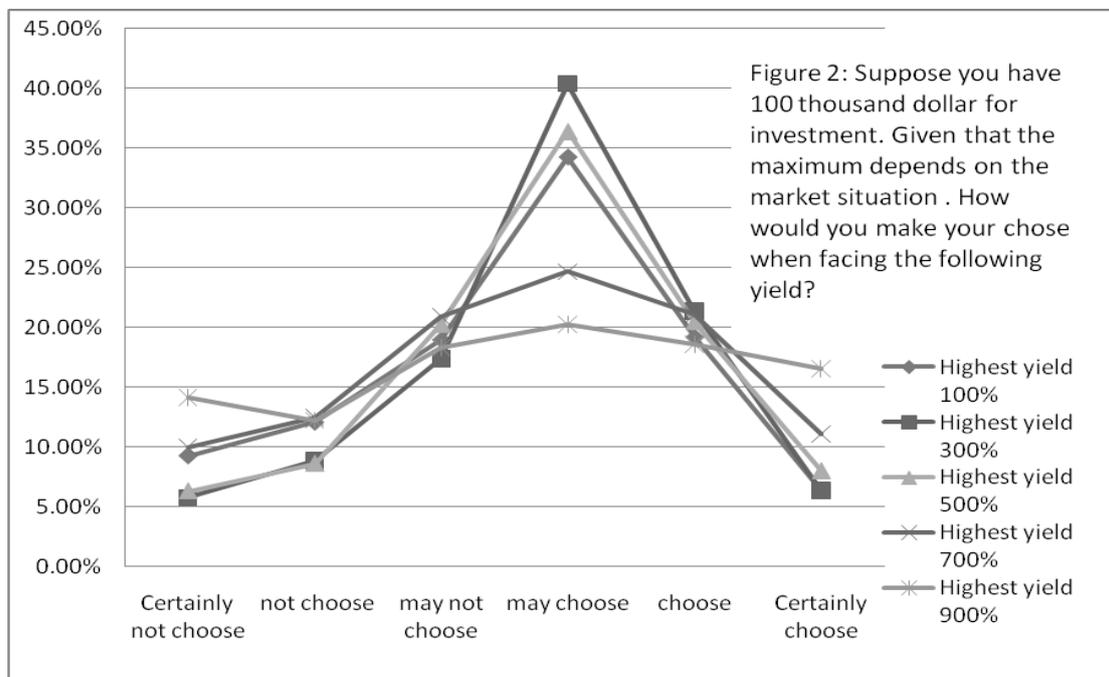
Figure 1 Scenarios that expected returns are the same in all choices.



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Figure 1 shows choices of respondents under the scenarios that expected returns are the same in all choices. What stands out is that the deviation of the percentage between “Certainly not choose” and “Certainly choose” increases when the possibility of gain decreases while the possibility of loss increases. Most investors chose “Certainly not choose” for an investment opportunity described as presenting 10% chance of gaining \$25000 and a 90% chance of losing \$2777.8. This result can be explained by prospect theory. Investors will not choose the one with the highest risk of loss, as they are risk adverse. Also, someone may want to take the risk for the gain of \$25000 even there is only a 10% chance of succeeding. This phenomenon is explained by prospect theory.

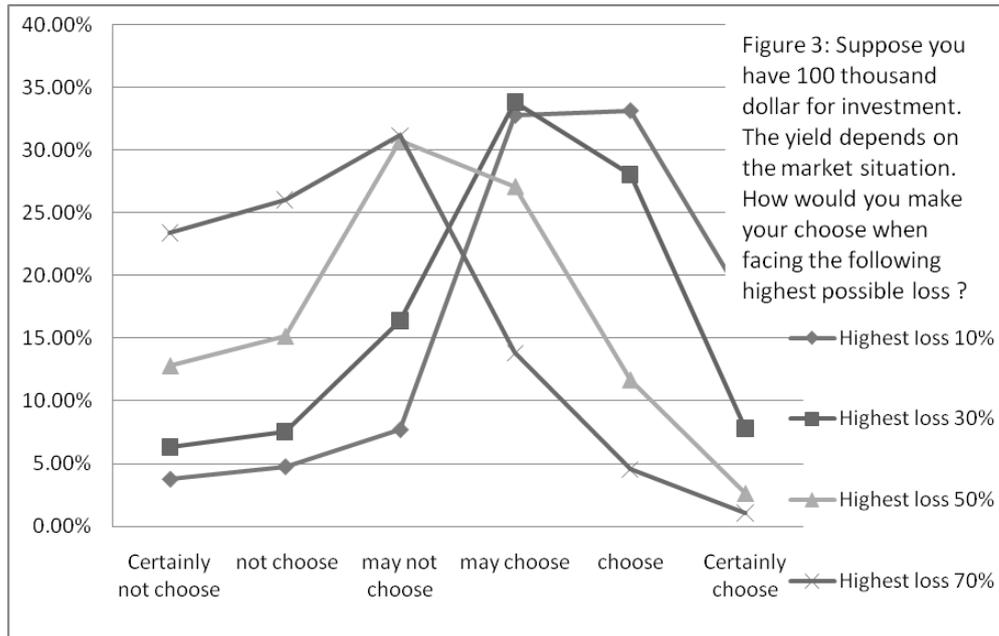
Figure 2 Certain about the highest possible gains but the highest possible loss remained unknown.



In figure 2, respondents were asked to choose among certain highest possible gains while the highest possible loss was unmentioned or remained unknown. Figure 2 shows that the higher the return, the flatter the yield curves. This phenomenon can be explained by representative bias which states that characteristics of something an investor knows are reflected onto the feature of something the investor does not know. In this question, the maximum loss is unknown. Respondents related high return to high risk, thus they are unwilling to choose the high return investment.

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Figure 3 Certain about the highest possible loss (between 10% to 70%) but the highest possible gain depends on the market.



In figure 3, respondents were asked to choose among certain highest possible loss while the highest possible gain depends on the market. There is an interesting fact. When the highest loss gradually increases from 10% to 70%, the shape of the result for each choice shifts from a “right-tail hill” to a “left-tail hill”. This means that there are more investors selecting “may choose / choose” the investment than the previous options. This situation can be explained by prospect theory. Prospect theory, which means that investors feel bad when they realize an investment loss, but twice as large a loss does not make the typical investor feel twice as bad. When investors face higher a possibility of loss, their utility loss from the investment loss will tend to decrease.

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Figure 4 Certain about the highest possible loss (between 90% to 600%) but the highest possible gain depends on the market.

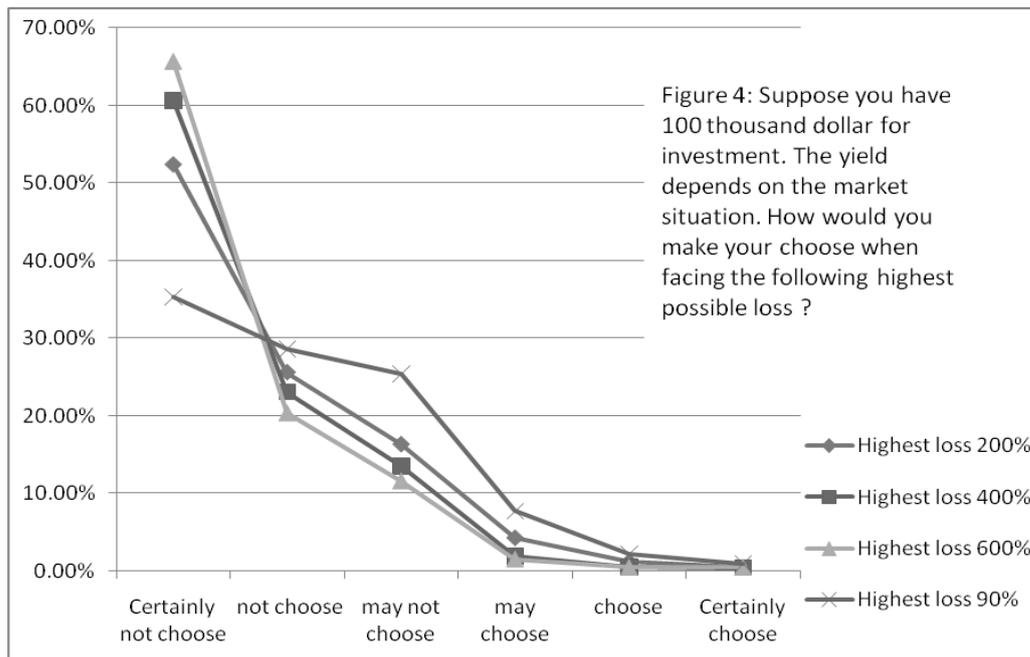


Figure 4 shows investor's choice towards the highest possible loss choices with the highest possible gain as being uncertain. The main difference between the data in Figure 3 and 4 is the highest possible loss is in the latter. When the highest loss increases to 600%, more investors tend to give up the investment choice, whereas when the highest loss is rated at 90%, only about 35% of the investors will give up the investment option. This can be explained by mental shortcuts. When investors are given only the highest possible loss of the investment, they will have the perception that they do not want to bear extra risks or even lose six times their original investment amount. Thus, they do not want to choose to invest for an option with the greater chance for loss.

4. Conclusions

This study gathered and compared quantitative data from about 3000 respondents in 2007 and in 2009 to better understand the changes in investment behavior after the financial tsunami of 2008. The results of the survey show little if any difference between self-reported investment risk tolerance before and after the recent financial tsunami. Respondents, however, tended to not trust financial consultants or brokers after the financial tsunami. In addition, they tended to risk tolerance factors more seriously after the financial crisis. Additionally, respondents often linked the relationship between high risk

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and high return by themselves and tended to avoid the high loss choice. These empirical findings provide important information for financial planners as well as individuals in preparing investment profiles. Moreover, the trust between financial planners and their clients may be broken due to misunderstanding or incorrect assessment of a client's risk tolerance. It is critical to correctly assess individual investment risk tolerance when making investment decisions as can avoid political, social and legal consequences.

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