

# Chinese Casino Gambling Behaviors: Risk Taking in Casinos vs. Investments

*Bernadete Ozorio  
Davis Ka-Chio Fong*

## Abstract

Capitalizing on the recent developments in casino gambling in Macao and the dominance of Chinese gambling at Macao casinos, the purpose of this research was to study how Chinese behaved in gambling and how these behaviors related to another risk taking activity, investment, which has been documented to be in a different risk taking domain from gambling. A survey was carried out in Macao with casino gamblers as the target respondents. In addition to socio-economic data, each respondent was asked about the extent of his gambling involvement and his responses to some standardized investment decision making situations. Bet-to-income ratio was used to assess a respondent's risk taking behavior in casino gambling. The questionnaire developed by MacCrimmon and Wehrung (1988) was used to assess risk taking propensities in the area of investment. Results showed that gamblers appeared to be taking high risk while gambling. In addition, the degrees of risk taking in the two domains were significantly and positively correlated. The quest for instant rewards either for quick profits or for satisfying strong immediate sensations and excitement might possibly explain the correlation.

Key words: gambling, investment, risk taking, content specificity, China.

## Introduction

Except lotteries, "gambling in China is effectively a national pastime" (Access Asia Limited, 2002, p. 1). Macao, a small city located at the southwestern coast of China, is the only place in China where legalized gambling can be found. After being a Portuguese colony for over 440 years, its sovereignty was returned to China on 20<sup>th</sup> December, 1999. Upon return, it was granted the status of a special administrative region (SAR) of the People's Republic of China. With this status, Macao is allowed a high degree of autonomy which means that it can maintain its social and economic characteristics. Gambling, which has been legalized since 1847 (Chan & Chan, 2001) and has all the years been serving as the main contributor to Macao's economy<sup>1</sup>, is allowed to continue in the territory. Different forms of gambling which include casino gambling, soccer matches betting, horse racing, greyhound racing, and keno can all be kept operating.

In principle, gambling is not only allowed after the handover, its importance is even promoted further. The new administration decided to open up the casino sector in order to attract foreign investment to develop tourism and its related industries. Casinos were

<sup>1</sup> For instance, in the year 2002, gambling tax amounted to USD 0.950 billion and this amount already accounted for more than 60% of the public revenue of Macao (Monetary Authority of Macao, 2002).

Bernadete Ozorio  
University of Macau  
Faculty of Business  
Administration  
Av. Padre Tom-s Pereira,  
S.J.  
Taipa, Macao  
China  
Tel: + 853 3974 757  
Fax: +853 838 320  
E-mail: bozorio@umac.mo

Davis Ka-Chio Fong  
University of Macau  
Faculty of Business  
Administration  
Av. Padre Tom-s Pereira,  
S.J.  
Taipa, Macao  
China  
Tel: + 853 3974 720  
Fax: +853 838 320  
E-mail: daviskcf@umac.mo

chosen because they are by far the largest business among all forms of gaming. As shown in Table 1, the gross revenue of casinos in 2003 was 27.8 times that of horse racing, 56.1 times that of soccer matches and 376.5 times that of greyhound racing.

**Table 1**  
**Gross Revenue from Different Gaming Activities in 2003**

Form of Gaming	Gross Revenue (in Million USD*)
Casino	3,482.34
Horse Racing	125.42
Soccer Matches Betting	62.02
Greyhound Racing	9.25

Source: Direcção de Inspeção e Coordenação de Jogos (Gaming Inspection and Coordination Bureau of Macau SAR) (2004)

Each year large number of tourists visits Macao. In 2003, the number of tourists approached 12 million (11,887,900). The majority were from Mainland China (48.3%) and Hong Kong (38.9%) (Statistics and Census Service of Macau, 2004). In 2002, although only 5% of the visitors declared that the major purpose for visiting Macao was for gambling (Statistics and Census Service of Macau, 2004), it is believed that visiting casinos and gambling there were actually prominent activities for most tourists.

Capitalizing on the recent developments in casino gambling in Macao and the dominance of Chinese gambling at Macao casinos, the purpose of this paper was to understand the casino gambling behaviors of Chinese which in effect included residents from Mainland China, Hong Kong SAR and Macao SAR. The paper attempted to examine casino behaviors from a risk taking perspective and discussed how the behaviors related to the behaviors in another risk taking activity, investment which has been documented to be in a different risk taking domain from gambling.

## Literature Review

As early as the 1960s, the issue of domain-specific risk taking has been raised. Slovic (1962), in an effort to measure the convergent validity of a number of risk taking measures, found that taking risks might not be a general trait but rather varied from situation to situation within the same individual. MacCrimmon and Wehrung (1988, 1990) studied risk taking behaviors of American and Canadian executives using different measures. Since the results revealed that almost all of the measures were not significantly correlated, MacCrimmon and Wehrung concluded that risk taking was likely to be situation-specific and the situations with which respondents had demonstrated different degrees of risk taking included games of chance/gambling, financial investing, business decisions, and personal decisions. Lovvoll (1999) conducted research comparing three different measures of risk taking for the purpose of examining the support for a unitary trait of risk taking. He concluded that broad generalizations about risk takers should be avoided and that risk taking behavior should be specified to individual activities. Weber, Blais and Betz (2002) provided empirical support that individuals' risk taking behavior was highly domain-specific.

As concluded from the above researches that risk taking is domain-specific, the authors would like to narrow the focus of this research from different risk taking domains which may include finance, health/safety, recreational, ethical, and social to only two domains, namely gambling and investment.

\* With reference to the exchange rate quoted by the Statistics and Census Service of Macau (2004), the exchange rate between USD and MOP in December 2003 was USD 1 = MOP 7.9972.

**Once again, factor analysis confirmed that gambling and financial investing were different risk taking domains.**

Weber, et al. (2002) discovered that gambling and investment were two different risk taking domains. In their process of developing a psychometric scale which was supposed to be used in assessing risk taking behavior in five content domains, they found that one of the domains, the financial decision, was split into two domains (financial gambling and investment) in the factor analysis. In other words, instead of a five-factor model, the results turned out to be a six-factor model. In order to strengthen the reliability and validity of this new scale, the authors repeated the six-factor model in a follow-up study. Before repeating, a few new items related to either financial investing and other financial decisions versus gambling were added to the financial subscale for the purpose of investigating further the multidimensional nature of this subscale. Once again, factor analysis confirmed that gambling and financial investing were different risk taking domains.

The reason for the splitting between gambling and financial investment into two domains may be explained by Zaleskiewicz's (2001) stimulating-instrumental risk taking behavior. Zaleskiewicz hypothesized that gambling and investment domains were related to two distinct forms of risk preferences he discovered in his experiment. In this experiment, Zaleskiewicz (1999) found that both individual and situational variables posed influences on risk taking behavior. People perceived and reacted differently to various risky financial situations characterized by either excitatory or instrumental utility. In stimulating situations of high excitatory value like gambling, individuals were found to exhibit what he labeled stimulating risk taking (SRT) behavior while in instrumental economic situations like investing in the stock market or in one's own education; individuals were found to behave in what was labeled as instrumental risk taking (IRT) way. On the basis of the results of this experiment, Zaleskiewicz (2001) hypothesized the two distinct forms of risk preference in the following ways. A stimulating risk taker was a person motivated by his needs for sensation seeking and because of this, his risk taking behavior was more rapid, effortless and even automatic. As expected, calculations of consequences were not associated with this risk taking behavior. In addition, a stimulating risk taker unconsciously experienced the physiological arousal as pleasant and was driven to further this state. On the other hand, an instrumental risk taker was motivated by the sense of achievement rather than by the need for stimulation and hence his behavior was more rational, like relying more on cognitive cues, analyzing possible outcomes and controlling the environment. Moreover the experience of arousal associated with risky behavior was not considered important and might even be avoided rather than being intensified.

In order to validate SRT and IRT, correlations and linear regressions were carried out to determine the relationships between the two forms of risk and four personality scales which included the Paratelic Dominance Scale (PDS; Gotts, Kerr & Wangeman, 2000), the Dickman Impulsivity Inventory (DII; Dickman, 1990), the Rational-Experiential Inventory (REI; Epstein, Pacini, Denes-Raj & Heier, 1996), and the Sensation Seeking Scale (SSS V; Zuckerman, 1994a). Although results generally supported the hypothetical characteristics of SRT and IRT with SRT significantly related to arousal seeking and thrill and adventure seeking while IRT significantly related to future orientation and rational mode of information processing, unexpected results were also found. Both forms were associated with impulsivity and disinhibition which were assumed to explain mainly SRT behavior.

Furthermore, when the two forms of risk preference were regressed to the Risk-Behavior Scale developed by Weber, et al. (1999), SRT was found related in a significant and positive manner to general financial risk taking and gambling while at the same time related in a negative way to the investment domain. As for IRT, instead of only correlating with investment domain, it was found contributing significantly and positively to gambling domain as well. Investment risk taking was the only domain that

distinguished strongly between SRT and IRT as those who scored high on stimulating risk taking tended not to engage in investment risk taking while those who scored high on instrumental risk taking were interested in investment risk taking. Although the results generally help to explain why investment and gambling appear as two different domains, the fact that gambling was found in both domains and impulsivity and disinhibition were related to both SRT and IRT suggest that it is hard to draw a definite line between gambling and investment domains.

Different decision theoretic models have long been established to illustrate the principles of optimal choice (e.g., Bernoulli, 1738; Von Neuman & Morgenstern, 1944). While well recognized for their applications in the domain of investment, they fail to explain gambling behavior. Von Neumann and Morgenstern admitted that the set of rationality axioms “eliminates the specific utility or disutility of gambling” (1953, p. 28, 629, 632). Other economists argue that a specific utility or disutility for gambling has to be excluded from expected utility because such a theory has an outcome-oriented attitudes restriction while a utility for gambling appears as a process utility, not a consequential utility (Harsanyi, 1993; Le Menestrel, 2001). Although representing different disciplines, the economic view is found parallel to that of Zaleskiewicz who suggested that investment was more related to the achievement of goals (consequential utility) while gambling was more related to immediate sensations and excitement, in other words, process utility.

Another economist, Handa (1971) showed the distinction in optimal portfolio composition between a risk-preferrer gambler and a business investor. He claimed that in general, lotteries, which were used to denote assets with high risk and low expected return, were required to exist in a portfolio as lotteries offered much higher risks than other assets with higher expected return. Because of this, “gambling, then, tends to stand out as an activity distinct from business investments in the degree of risk undertaken” (Handa, 1971, p. 357). Hence, the argument that investments and gambling should be treated as two different risk taking domains is once again supported in economic literature.

While acknowledging that gambling and investment belong to two different risk taking domains, one of the aims of this study is to ascertain whether Chinese casino gamblers exhibited different gambling and investment risk taking behaviors.

## Research Methodology

It is strongly believed that students cannot represent gamblers in terms of risk taking, especially in the area of gambling and investment. So rather than to invite students as subjects, the target respondents of this survey were casino gamblers who had ever placed their bets in casino gambling activities in Macao within the past three years. In addition, the respondents were limited to people from Mainland China, Hong Kong SAR and Macao SAR for the purpose of understanding the gambling and investment behavior in China.

An intercept survey was chosen rather than to invite gamblers to a casino lab because the absence of the possibility of a true loss in laboratory gambling does not allow the provision of the same kind of motivation and excitement found in a real casino. In a number of studies, gamblers are found risk-neutral when tested with laboratory-type lotteries (Goodman, Saltzman, Edwards, & Krantz, 1979). The influence of explicit goals, such as chasing after losses, on gambling behavior cannot be identified in laboratory gambling (Anderson & Brown, 1984). Finally, in laboratory gambling, it is difficult to

**An intercept survey was chosen rather than to invite gamblers to a casino lab because the absence of the possibility of a true loss in laboratory gambling does not allow the provision of the same kind of motivation and excitement found in a real casino.**

observe behaviors such as “gambler’s fallacy” which is used to describe a gambler who believes that the more frequently and heavily he has just lost, the more likely he would win on the next bet (Lovvoll, 1999).

The questionnaire was divided into two major parts. The first part contained questions about respondents’ involvement in gambling. Questions such as the number of times of gambling at Macao casinos in the past three years, the average amount bet per casino visit, and the average number of hours spent per casino visit were asked. Included in the first part were also some socio-economic data such as age, monthly personal income, occupation, etc. With the data collected in this part, a respondent’s risk taking behavior in the domain of gambling was assessed by his bet-to-income ratio which is believed to provide a more accurate picture of the risk taking behavior than just the average amount bet per trip.

The second part of the questionnaire was about risk taking in the domain of investment. Since it is a complicated task to determine the degree of risk taken by respondents from the respondents’ actual personal investment behaviors, their risk taking propensities were measured instead. This part of the questionnaire focused on collecting information on respondents’ risk taking propensity by asking how they responded to some standardized investment decision making situations. The questionnaire developed by MacCrimmon and Wehrung (1988) to measure one’s own willingness to take risks was adopted in this study. In the original questionnaire, three questions were asked: debt ratio, personal investment gamble and risk-return rankings. Debt ratio served as the first indicator of respondents’ willingness to take personal investment risks. It should be noticed that the debts had to come from personal investment rather than from gambling. As shown in Table 2, respondents with 50% of total assets held as debt were treated as risk neutral investors. Any value above 50% and below 50% would be considered as risk taking and risk averse behaviors, respectively. However, given the consideration that the availabilities of credit products in Mainland China, Hong Kong and Macao were all different, the results obtained from this question were likely to reflect the pace of development of loan facilities rather than the risk taking behaviors of respondents. Because of this, the debt ratio was not included in this study. As for the personal investment gamble, it asked respondents to determine how large the possible gain<sup>2</sup> from an investment had to be for them to risk one-half their current wealth in a new venture having a 50-50 chance of succeeding. If respondents indicated 1.5 times net wealth<sup>3</sup>, they were considered as risk neutral investors. Above and below this benchmark were regarded as risk averse and risk taking, respectively. Risk-return rankings required respondents to rank nine alternative ventures for investing 10% of their personal net wealth. Each alternative, different in terms of expected rate of return and rate of variation in returns, was carefully designed to indicate how respondents perceived risks and how he traded between expected return and variation. Compared with risk taking respondents, risk averse respondents were expected to require a higher return to compensate for a given level of risk. In the order of the most preferred (Rank 1) to the least preferred alternative (Rank 9), a preference rank of 3.5<sup>4</sup> for the alternative with the highest variation in returns indicated risk neutral propensity. Responses indicating a position lower than 3.5 (Rank 5–9) denoted risk averse preference while a position above 3.5 (Rank 1–2) denoted risk taking preference.

2. Measured in terms of times of net wealth.

3. When a respondent indicated 1.5 times net wealth as the possible gain for him to risk one-half his current wealth in a venture having a 50-50 chance of succeeding, the expected value of the gamble is the same as his original net wealth [i.e.  $0.5$  (half of net wealth) +  $0.5$  (one and one-half times net wealth)]. Hence 1.5 times net wealth was regarded as an indication of risk neutral behavior.

4. Since a risk-neutral person would choose investments on the basis of expected return, among all the nine ventures, the venture with a higher expected return would be ranked more favorably than a venture with a lower expected return. In this order of preference, the venture with the highest variation in returns was ranked either the 3<sup>rd</sup> or the 4<sup>th</sup> position (two ventures had the same rate of return but different variations in returns) and 3.5 thus became the standard level of risk taking for a risk neutral investor. Any positions above 3.5 (Rank 1-2) and any positions below 3.5 (Rank 5-9) would be regarded as risk taking and risk averse behaviors respectively.

**Table 2**  
**Risk Taking Propensities Classification System in the Domain of Investment**

(MacCrimmon & Wehrung, 1988)

	<b>Debt Ratio</b>	<b>Personal Investment Gamble</b>	<b>Risk-return Rankings</b>
Measurement	% of total assets held as debts	Times of net wealth	Position of the venture with the highest variation in returns
Risk Neutral	50%	1.5	3.5
Risk Taking	> 50%	< 1.5	Higher than 3.5 (Rank 1-2)
Risk Averse	< 50%	> 1.5	Lower than 3.5 (Rank 5-9)

An examination of the data set found that there were only a few respondents who met the criteria of risk neutral propensity described above. Because of this, further adjustments were made to the original measurement. Respondents who indicated 1.5 times return in their personal investment gamble were treated as if they required less than 1.5 times return. In a similar way, respondents who ranked the alternative with the highest variation in returns as 3.5 were treated as if they ranked it as less than 3.5. In this way the final classification system was developed for this study. As shown in Table 3, depending on the answers given to the above two questions, respondents were classified as risk averters, risk neutrals or risk takers. Respondents who were risk averse in both dimensions (> 1.5 times net wealth in Personal Investment Gamble and positions below 3.5 in Risk-return Rankings) were categorized as risk averters. On the other hand, respondents who were risk taking in both dimensions ( $\leq$  1.5 times net wealth in Personal Investment Gamble and positions above or equal to 3.5 in Risk-return Rankings) were regarded as risk takers. Those who were risk taking in one dimension and risk averse in another dimension were treated as risk neutral investors. For instance, respondents who were found taking risks in Personal Investment Gamble while avoiding risks in Risk-return Rankings were classified as risk neutral investors. However it has to be reminded that since gambling and investing are de facto risk taking behaviors, the terms risk averse, risk neutral and risk taking were only labels representing three classes of risk taking groups in this study. Risk averters were in effect used to refer to those who took relatively lower risk than the other risk taking groups.

**Table 3**  
**Modified Risk Taking Propensities Classification System in the Domain of Investment**

	<b>Risk-return Rankings</b>	
<b>Personal Investment Gamble</b>	<b>Position Below 3.5</b> (Risk Averse)	<b>Position Above or Equal to 3.5</b> (Risk Taking)
> 1.5 times (Risk Averse)	(Risk Averse)	Risk Neutral
$\leq$ 1.5 times Risk Taking	Risk Neutral	Risk Taking

This part of the questionnaire was translated into Chinese. Back translation into English was also performed to ensure semantic integrity. A pilot test of the instrument took place in mid November 2003. Since the test revealed no major misunderstandings of the questions, the actual survey was carried out between November and December 2003. A group of 40 trained interviewers were sent to casino and tourism areas to look for eligible respondents.

## Results

### Sample Profile

A total of 302 questionnaires were completed. The majority of respondents came from Mainland China (46%) and Macao (39.1%). Hong Kong respondents accounted for only 14.9% of the sample. Although Macao was over-represented while Hong Kong was under-represented in this sample, both independent t-tests and chi-square tests revealed that Macao and Hong Kong respondents were in fact similar in terms of gambling involvement and risk taking propensity in the domain of investment. For variables like “bet-to-income ratio”, “number of hours spent gambling”, and “times of net wealth required as the possible gain”, significant differences between Macao and Hong Kong were not found. As for variables like “whether respondents plan of how much to spend on gambling”, “whether respondents gamble close to budget”, and “the ranking of the venture with the highest variation in returns”, no significant associations were found between each of them and “the place of residence (Macao and Hong Kong)”. Hence, it is believed that this flaw did not cause any serious problem of sample bias. As expected, males made up the largest portion of the sample (67.25). Age ranged between 18 and 64 with the majority of the sample aged between 18 and 34 (62.1%). About equal percentages of respondents reported working as service workers (17.9%) and managers / administrators (17.5%). Equal percentages were also found in professionals (14.9%) and clerks (14.6%). There were 1.3% of respondents who claimed gambling as their occupation. When it comes to the monthly personal income, 46.4% earned less than MOP 4,999, 24.5% of the sample earned between MOP 5,000 – 9,999, 11.9% earned between MOP 10,000 – 14,999 and the rest 17.2% earned more than MOP 15,000.

### Risk Taking Propensities in the Investment Domain

After recoding the responses in each of the two dimensions (personal investment gamble and risk-return rankings) into either risk averse or risk taking investor, a cross tabulation was carried out to check the association in risk taking propensities between these two ordinal dimensions. Results showed a gamma statistic of 0.46 which signified a moderate positive relationship between personal investment gamble and risk-return rankings ( $p < .05$ ).

Using both dimensions together and in accordance with the risk taking classification system developed for this study, respondents were categorized into risk averters, risk neutrals or risk takers. As shown in Table 4, a majority of the respondents were classified as risk averters (64.1%) while only 4% were classified as risk takers. Risk neutral group accounted for around 32% of the sample.

**Table 4**  
**Frequency and Gambling Involvement of the Three Investment Risk Groups**

Investment Risk Group	Frequency	Percentage	Average Bet-to-income Ratio	Average No. of Visit Per Person Per Year	Average No. of Hours
Risk Averse	191	64.10	0.50	10.07	2.63
Risk Neutral	95	31.88	1.07	17.25	2.91
Risk Taking	12	4.02	1.48	44.42	2.63

### **Risk Taking Behavior in the Gambling Domain**

An overwhelming majority (87.7%) indicated that they did not have any plan of how much to spend on gambling per casino visit. As for those who had budgeted their spending, most of them (71%) spent close to their budgets.

The mean amount bet per casino visit was USD 1,011.32 while the median amount bet per casino visit was USD 125.04. As discussed above, bet-to-income ratio was used to assess risk taking behavior in the domain of gambling. Statistical analysis showed that the average bet-to-income ratio for the whole sample was 0.72 meaning that on average a respondent did spend as high as 72% of his income on betting per casino trip. As indicated in Table 4, when the average bet-to-income ratio was calculated for each of the investment risk groups, it was found that the results were in line with the risk taking propensities of the three investment groups. A Kruskal-Wallis Test was carried out and found that the differences in average bet-to-income ratio among the three investment risk groups were significant at .05 alpha level. On average, risk averters spent the least of their income betting at casinos (0.50). It should be noticed that although they spent the least among all three groups, they did spend half of their monthly income on gambling. Risk takers spent the most as can be seen that they spent even more than his monthly personal income on casino gambling (1.48). Risk neutral investors spent about one whole monthly income on gambling (1.07).

In terms of the average number of visit per person per year, once again the findings matched with the risk taking propensities of the three investment groups. Risk takers had the highest frequency of casino visit per year. They gambled at Macao casinos about 44 times a year. The risk neutral group gambled at Macao casinos about 17 times per year. Risk averters visited the least, they only gambled at Macao casinos about 10 times per year. When the frequency of visits per person per year was studied together with the bet-to-income ratios of the three groups, it seems that the degree of risk taken by the gamblers was generally high. In view of more than twelve times of visit per year and the spending of one or more than one month of income on gambling per visit, for sure both risk taking and risk neutral groups were involving themselves in very high risk. As for the risk averters, although the degree of risk involved was not as high as the other two groups, their risk level was not too low as well as they were also spending five months of income on gambling per year.

When it comes to the average numbers of hour played at casinos per visit, the findings were comparable among the three groups. Except the risk neutral group which spent an average of about 3 hours per visit gambling, risk takers and risk averters spent an average of 2.6 hours on casino gambling.

### **Relationship between Risk Taking in Gambling and Risk Taking in Investment**

A correlation analysis was carried out between the natural log of the product of personal investment gamble and risk-return rankings and the natural log of bet-to-income ratio. The product of personal investment gamble and risk-return rankings was used in the analysis as the product could better reflect the degree of risk taking propensities of respondents. Results indicated a significant relationship ( $r = -.22$ ,  $p < .001$ ) meaning that there was a tendency for those who required a higher return to risk one-half their current net wealth in a new venture and a high ranking for the alternative with the highest variation in returns, i.e. risk averse behavior, to spend a smaller percentage of their monthly personal income to bet at casinos. To conclude, a positive relationship was found between the risk taking behavior in casino gambling and the risk taking propensity in investment.

## Discussion

Although it is not possible to conclude whether gambling and investment in China belongs to two different risk taking domains in this study, Pearson correlation test confirms that risk taking behavior in gambling and risk taking propensities in investment are significantly related in a positive fashion in China.

An examination at the gambling and investment behaviors in China finds that gamblers and investors are basically consistent in their risk taking propensities. Chen, Li and Du (2002) studied individual investors in China stock markets and found that although the annual incomes of investors were commonly not high (with 55.63% of investors earning an annual income of less than RMB 20,000<sup>5</sup>), the proportions of their annual incomes spent on stock markets were relatively high. The lever index (the average amount invested / the average annual income) reached as high as 23.46. In addition, the amount invested in stocks accounted for an average of 50% of the total assets of the household. Hence, up to now, it should be clear why risk taking in gambling and risk taking in investment are found related. Interesting is that given the high investment to income and assets ratios, about 45.9% of the respondents believed that their abilities to bear risk was very weak and another 42.9% of the respondents believed that their risk bearing ability was only moderate. With these findings, no wonder many analysts in China regard the general public's investment in the stock market as a legalized form of gambling (Access Asia Limited, 2002).

Instant rewards or quick rewards may help explain why Chinese engage in risky activities (gambling and investment) even though they believe that their abilities to bear these risks are not high. In casino gambling, a player is rewarded instantly provided that he wins in the game. In terms of lottery, among all the different forms available in China, the one that allows buyers to know results instantly experiences the fastest growth in China (Access Asia Limited, 2002). On the investment side, 78.6% of respondents indicated that they were eager to make short term profits by buying and selling shares, and the frequency of their trading was high. Besides, 61.4% of the sample had ever purchased ST<sup>6</sup> or PT<sup>7</sup> shares because these shares provide chances for speculation (Chen, Li, & Du, 2002). In fact, given the high frequency of trading and the speculative moves of the risk takers, it seems more appropriate to label them as speculators rather than as investors. Nevertheless, all the above demonstrate that instant rewards or quick rewards are important to those who participate in gambling and speculation in China. In other words, instant or quick rewards provide a reason for the Chinese to take risks in gambling and investment.

When trying to understand why Chinese are prone to involve themselves in risky activities that provide instant or quick rewards, one may find an answer by applying Zaleskiewicz's instrumental risk taking to the situation. People participate in gambling and speculation because they believe that these are instrumental to the realization of some profits to improve their living in the shortest possible time. While this element of IRT is found applicable to explain the risky behaviors, other features of IRT seem not applying to the Chinese gamblers and speculators. According to IRT, risk takers analyze the magnitude of possible outcomes to make rational decisions and they avoid engaging in activities that depend mainly on chance. However, none of these characteristics are found among the Chinese gamblers and speculators. But instead of

5. About USD 2,400 to 2,500.

6. According to China Securities Regulatory Commission, Special Treatment ("ST") share is used to indicate that the share issuer (company) has been undergoing loss for two consecutive years, or the asset value per share is less than its face value.

7. According to China Securities Regulatory Commission, Particular Transfer ("PT") share is used to indicate that the share issuer (company) has been undergoing loss for three consecutive years, and may be removed from listing on the respective Stock Exchange.

**Gamblers and investors are basically consistent in their risk taking propensities.**

saying that the casino gamblers and speculators never care analyzing outcomes and making rational decisions, it would be better to say that they overestimate their chance of success. While many of them do not understand that casinos enjoy certain house advantages and that the expected value of gambling is usually negative on the part of players, many believe that they are able to win some money from gambling activities. One should notice that this misunderstanding is not unique among Chinese gamblers. Regular gamblers in other countries are commonly found to misinterpret the odds of gambling activities, to believe that skill is important in purely chance-determined activities, and to overestimate their subjective chances of success (Delfabbro, 2004). Illusions of control (Ladouceur, et al., 1988; Langer, 1975; Langer & Roth, 1975), availability heuristic (Tversky & Kahneman, 1973), gambler's fallacy and biased attribution (Gilovich, 1983) have all been found to contribute to over-estimations and over-confidence in gambling decisions. Imagine, gamblers in countries where gambling has been allowed for years are found to have such misconceptions, there should be no surprise to find that gamblers in Mainland China where gambling has been banned for years hold misconceptions about casino gambling.

The cognition problem also happened in the stock market fourteen years ago when many people crowded outside Shenzhen Stock Exchange on its very first day of operation. These investors drew together funds from different sources hoping to get a chance to buy some shares as they believed that they would be able to get rich once they were able to participate in the stock market. Even after many years, Chen, et al. found that when making investment decisions, investors still seldom cared about the news of listed companies. Rather they believed that by relying on informal means like newspapers, friends and relatives, they would have adequate investment knowledge. But the fact is that when these investors were asked about the knowledge of new financial products, the majority of them appeared to have little knowledge only. When examining how the behaviors changed over the entire history of the Shenzhen and Shanghai Stock Exchanges, Li (2003) concluded that by the late 1990s, the Shenzhen Stock Exchange had only marginally reached the condition for weak-form efficiency. However, the same did not apply to Shanghai Stock Exchange.

On the other side of the coin, one may also use Zaleskiewicz's stimulating risk taking to explain the quest for instant rewards. First of all, the instant nature of the rewards provided by gambling and investment helps to satisfy the strong need for immediate sensations and excitement. Second, while putting high proportions of their incomes onto gambling and investment, it seems that risk and probability of success are not taken into serious consideration by gamblers and speculators. In other words, the calculation of the magnitude of consequences is not found associating with gamblers and speculators. Lastly, their rather rapid and effortless behaviors match those described as a stimulating risk taker by Zaleskiewicz.

While this research confirms the positive relationship between the risk taking behavior in gambling and the risk taking propensities in investment, it requires further investigations as to whether people in China participate in the two for achieving some instrumental reasons or for satisfying some stimulating motives.

## **Limitations**

In order to appear socially desirable in front of interviewers, it is possible that respondents deliberately reported a higher or a lower extent of gambling involvement and a higher or lower level of income. Although observation could be a way to reduce bias on gambling involvement, feasibility and efficiency would mean that self-report was the best possible way in this research. Lastly, since this research involved tourists as the respondents, the length of the questionnaire had to be cut short in order not to disturb their tight schedules in Macao. Otherwise, more questions especially those related to risk taking propensities in investment would have been asked.

## References

- Access Asia Limited. (2002). *Lotteries and gambling in China: A market analysis*. Shanghai, China: China Contact.
- Anderson, G., & Brown, R. I. (1984). Real and laboratory gambling, sensation seeking and arousal. *British Journal of Psychology*, 75, 401-410.
- Bernoulli, D. (1738). Specimen theoriae novae de mensura sortis. *Commentarii Academiae Scientiarum Imperialis Petropolitanae*, 5, 175-192. Translated in 1967 as: *Exposition of a new theory on the measurement of risk*. Farnborough Hants, England: Gregg Press.
- Chan, P. K., & Chan, P.C. (2001). *Gaming industry and its opportunities for development*. Macao: Keng Vai.
- Chen, B., Li, S. M., & Du, Y. C. (2002). Individual investors in China's stock markets. (Abstract). Report prepared for Shenzhen Stock Exchange Composite Research Center. Retrieved March 24, 2004, from <http://economy.big5.enorth.com.cn/system/2002/04/15/000312367.shtml>.
- Delfabbro, P. (2004). The stubborn logic of regular gamblers: Obstacles and dilemmas in cognitive gambling research. *Journal of Gambling Studies*, 20(1), 1-21.
- Dickerman, S. J. (1990). Functional and dysfunctional impulsivity: Personality and cognitive correlates. *Journal of Personality and Social Psychology*, 58, 95-102.
- Direcção de Inspeção e Coordenação de Jogos (Gaming Inspection and Coordination Bureau of Macau SAR) (2004). Gross revenue from different gaming activities in 1994-2003. Retrieved July 16, 2004, from <http://www.dicj.gov.mo/EN/Jogos/stat.htm>
- Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual differences in intuitive-experiential and analytical-rational thinking styles. *Journal of Personality and Social Psychology*, 71, 390-505.
- Gilovich, T. (1983). Biased evaluation and persistence in gambling. *Journal of Personality and Social Psychology*, 44, 1110-1126.
- Goodman, B., Saltzman, M., Edwards, W., & Krantz, D. H. (1979). Prediction of bids for two-outcome gambles in a casino setting. *Organizational Behavior and Human Performance*, 24, 382-299.
- Gotts, G. H., Kerr, J. H., & Wangeman, J. F. (2000). Towards an international scale of telic-paratelic dominance. *Personality and Individual Differences*, 28, 217-227.
- Handa, J. C. (1971). A theory of risk preference in gambling. *The Journal of Political Economy*, 79(5), 1073-1083.
- Harsanyi, J. C. (1993). Normative validity and meaning of von Neumann-Morgenstern Utilities. In K. Binmore, A. Kirman, & P. Tani (Eds.). *Frontiers of game theory* (pp. 307-320). Cambridge & London: MIT Press.
- Ladouceur, R., Gaboury, A., Dumont, D., & Rochette, P. (1988). Gambling relationship between the frequency of wins and irrational thinking. *Journal of Psychology*, 122, 409-414.
- Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32, 311-328.
- Langer, E. J., & Roth, J. (1975). Heads you win, tails it's chance: The illusion of control as a function of the sequence of outcomes in a purely chance task. *Journal of Personality and Social Psychology*, 32, 951-955.
- Le Menestrel, M. (2001). A process approach to the utility for gambling. *Theory and Decision*, 50, 249-262.
- Li, X. M. (2003). China: Further evidence on the evolution of stock markets in transition economies. *Scottish Journal of Political Economy*, 50(3), 341-358.
- Lovvoll, D. R. (1999). *The risk taking personality: Comparing three measures used to evaluate different types of risk takers*. Doctoral dissertation, Rice University, Houston, Texas. University Microfilms International (UMI No. 9928556).

- MacCrimmon, K. R., & Wehrung, D. A. (1988). *Taking risks: The management of uncertainty*. New York: The Free Press.
- MacCrimmon, K. R., & Wehrung, D. A. (1990). Characteristics of risk taking executives. *Management Science*, 36, 422-435.
- Statistics and Census Service of Macau. (2002). Tourism Statistics 2002. Retrieved March 25, 2004, from [http://www.dsec.gov.mo/index.asp?src=/english/indicator/e\\_tur\\_indicator.html](http://www.dsec.gov.mo/index.asp?src=/english/indicator/e_tur_indicator.html).
- Statistics and Census Service of Macau. (2004). Monthly Bulletin of Statistics (February). Retrieved March 20, 2004, from [http://www.dsec.gov.mo/index.asp?src=/english/pub/e\\_bme\\_pub.html](http://www.dsec.gov.mo/index.asp?src=/english/pub/e_bme_pub.html)
- Statistics and Census Service of Macau. (2004). Economic Indicators. Retrieved March 25, 2004, from [http://www.dsec.gov.mo/index.asp?src=/english/indicator/e\\_tur\\_indicator.html](http://www.dsec.gov.mo/index.asp?src=/english/indicator/e_tur_indicator.html)
- Slovic, P. (1962). Convergent validation of risk taking measures. *Journal of Abnormal and Social Psychology*, 65(1), 68-71.
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, 5, 207-233.
- Von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behavior*. Princeton, NJ: Princeton University Press.
- Von Neumann, J., & Morgenstern, O. (1953). *Theory of games and economic behavior* (3<sup>rd</sup> ed.). Princeton, NJ: Princeton University Press.
- Weber, E. U., Blais, A., & Betz, N. (1999). *A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors*. Working paper.
- Weber, E. U., Blais, A. R., & Betz, N. E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making*, 15, 263-290.
- Zaleskiewicz, T. (1999). Between excitement and investment: Individual differences in financial risk taking. *Polish Psychological Bulletin*, 30, 153-165.
- Zaleskiewicz, T. (2001). Beyond risk seeking and risk aversion: Personality and the dual nature of economic risk taking. *European Journal of Personality*, 15, S105-S122.
- Zuckerman, M. (1994a). *Behavioral Expressions and Biosocial Bases of Sensation Seeking*. New York: Cambridge University Press.

**Article submitted:** 4/2/04

**Sent to peer review:** 4/2/04

**Reviewer comments sent to author:** 6/9/04

**Author's revised version received:** 7/12/04; 7/19/04

**Article accepted for publication:** 7/12/04