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DO SELF-THEORIES EXPLAIN OVERCONFIDENCE AND FINANCIAL RISK TAKING?

A Field Experiment

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ABSTRACT

How people develop beliefs about themselves (self-theories) plays an important role on motivation and achievement as shown by Carol Dweck's life-long research. In this paper, we conduct a field experiment to investigate whether self-theories impact overconfidence and risk taking. Self-theories deal with how an individual perceives some of her attributes such as intelligence, personality or moral character. In this paper, we are interested by how people perceive their mindset (fixed or growth). All decisions taken by young Vietnamese executives were incentivized to identify their degree of overconfidence and risk taking. As in previous studies, we find that subjects exhibit significant overconfidence. We also find that fixed mindset subjects are less over-confident than growth mindset persons, the latter earning the highest incomes in our experiment. Finally, we find correlation between risk taking and overconfidence. However, contrary to the existing results in the literature on behavioral finance, in our experiment, the higher the degree of overconfidence, the lower the investment in risky lotteries. Gender does not seem to have any impact on neither overconfidence nor risk-taking behavior.

Keywords: overconfidence; experiment; self-theories; mindset; risk-taking.
JEL classification: C93, D81

I. INTRODUCTION

People's emotion, way of life, or personal experience affect their decisions. Traditional theoretical decision models in economics and finance have been revisited in order to take into account the individuals' psychological characteristics in their evaluation and decision process. Behavioral economics and behavioral finance borrow some concepts and methodologies from psychology when trying to explain the people's deviations from standard economic or finance models (expected utility, CAPM for instance). In particular, in financial decisions the principal reasons for deviation quoted in the literature are relative to mental accounting, heuristic simplification, peer effects, dispositional effects, self-deception, and over-confidence. About this last point, Nofsinger (2011) writes: "Overconfident investors trade too much, take too much risk, and earn lower returns". In this paper, we investigate whether overconfidence is impacted by the way people consider their mind, and whether the type of mindset can explain risk taking. About this second point, many papers deal with

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the link between overconfidence and risk taking in behavioral economics & finance (see for instance Odean 1999, Kent and al. 2001, Barber and Odean 2001, Statman and al. 2006, Glaser and Weber 2007). Several economic experiments were conducted in order not only to identify this bias but also to test whether it is more or less pronounced with regard to gender, experience or the professional variables. To our knowledge, no experiment in finance and economics has tested the potential link between over-confidence, risk-taking and people's mindset. In the meantime, psychological studies have shown that the way individuals perceive their mindset has a significant effect on their behavior.

Our study is based on Carol Dweck's lifelong research on self-theories on intelligence (for an overview see Bandura and Dweck, 1981; Dweck and Legett, 1988; or Dweck and Molden, 2005). Self-theories deal with how people think about themselves and how these self-theories create their psychological worlds, shaping thoughts, feelings and behaviors. Self-theories can be measured on a wide range of attributes such as intelligence, personality or moral character. Measures can also be "domain-general" when it refers to the person as a whole. In our research, we will focus on one attribute which is intelligence. We investigate whether what people think about their own intelligence explains their level of overconfidence. We have conducted a field experiment in Vietnam with 81 young Asian executives.

Self-theories explain how people perceive competence. The question is not about the innate/cultural share of intelligence, but how people perceive their intelligence (Dweck, 2000):
1. Do people believe that their intelligence is a fixed trait? If so, people have developed a "fixed mindset" which reflects an "entity" theory.
2. Do people think that intelligence is a malleable quality that they can cultivate? If so, people have acquired a "growth mindset" and believe in an "incremental" theory.

Many papers have shown that self-theories on intelligence are at the root of many other factors including our motivation for learning, strategies that we implement after setbacks, effort perception and effects on attribution (for some early references see Legett and Dweck, 1986; Mueller and Dweck, 1997; Rhodewalt, 1994; Zhao, Dweck and Mueller, 1998). "Growth mindset" people are learning oriented rather than performance oriented, implement efficient strategies to overcome setbacks, attribute failure to lack of effort or inappropriate strategies and evaluate more precisely their strengths and weaknesses. In contrast, "fixed mindset" people try to validate their intelligence through their performance and are more easily diverted from learning, consider effort as negative, see setbacks as a sign of deficient ability (Dweck and Molden, 2007).

In this paper, we test the links between self-theories, overconfidence and risk taking thanks to experiments and questionnaires. We investigate whether psychological biases observed in behavioral finance can be explained by the type of mindset of the individual investor. It is well known that overconfident investors trade more, although their portfolio does not perform better than others. Barber and Odean (2000) check this issue by classifying portfolio performance of individual investors (households) according to portfolio turnover over a six-year period. Active portfolio management should be based on superior information gathering and interpretation to be successful. However, gross return is roughly the same whatever the portfolio turnover. When taking into account transactions fees to compute the net return, the more passive the portfolio the better the return. Buy and hold strategies clearly outperform all active strategies. By referring to theoretical models that take into account overconfidence (as for instance Odean, 1999), Barber and Odean argue that

excessive trade (or turnover) can be explained by this psychological bias. Nevertheless, the link between turnover and overconfidence is not tested in their study. Glaser and Weber (2007) have confirmed that active portfolio management is linked to overconfidence: an online questionnaire on investors' level of confidence showed that more confident investors traded more without performing better.

In our study, we also propose some specific questionnaire allowing us to elicit individuals' degree of overconfidence. We aim at linking it to their perception of their type of mindset and to their risk-taking decisions.

Many studies have been conducted in order to isolate the effect of overconfidence in risk taking. Some of them also try to identify the source of overconfidence. Results are contrasted. For instance, Locke and Mann (2001) and Christoffersen et al. (2002) show that more experienced investors are less confident and invest less in risky assets. On the contrary, psychological studies conducted by Heath and Tversky (1991) and by Frascara (1999) show that experts are more overconfident than young and inexperienced investors. This is confirmed thanks to experiments conducted in the lab by Kirchler and Maciejovsky (2002). Gender and marital status were also tested as potential significant determinants. Single men trade the most and married women the least (Barber and Odean, 2001). More recently, Ifcher and Zarghamee (2011, 2014) have conducted different laboratory experiments to test the influence of positive and negative affect on overconfidence. They obtain that *mild positive affect* (good mood) increases overconfidence.

Because this study is at the crossroads of two research areas, the general methodology can be broken down in two main steps. First, we measure respondents' mindsets by implementing a questionnaire on their implicit theories. Then we carry out experiments to test for overconfidence. This combination will enable to discriminate overconfidence according to respondents' mindset, i.e. we seek to test whether differences in implicit theories could explain differences in overconfidence levels.

We find that linearity in mindset and income is statistically rejected against a quadratic specification. We show that self-theories alone cannot explain the bulk of the level of overconfidence. Income has also a strong explanatory power and a quite high level of significance.
Our main conclusions show that a positive correlation does exist between the type of mindset and the level of absolute overconfidence, but only for subjects endorsing strongly the fixed mindset. In other words, as the individuals perception move toward growth mindset, this correlation becomes less and less significant. For individuals who strongly endorse the growth mindset, there is no significant correlation with their level of overconfidence. At the exception of revenue, we find no impact of the demographic variables (especially gender) on our results. Our findings also show that once we control for mindset, overconfidence is no longer significant for explaining risk taking. However, mindset matters for risk taking: both fixed and growth mindsets are likely to take more risks than average mindset individuals. Lastly, gender has no impact, neither on overconfidence nor on risk-taking, contrary to what is found in some existing experiences. Cultural differences may matter. We discuss and interpret all the results.

The paper is organized as follows. Section 2 describes the experimental design. Section 3 provides descriptive statistics on the sample, on measures of mindsets and on levels of overconfidence. In

section 4, we test and discuss the main hypotheses regarding the relationships between self-theories, overconfidence and risk taking. Section 5 concludes.

II. EXPERIMENTAL DESIGN

The experiment took place in Vietnam, respectively in Ho Chi Minh City and in Hanoï in January 2014. All subjects have a full-time career.[4] The experimental procedure was as follows. First, the experimenter handed out the instructions manual (enclosed in Appendix A). Subjects read them. The experimenter read them aloud as well and told subjects to ask any question helpful to clarify the experiment procedure. Second, subjects read and signed the letter of consent. Third, sections 1 to 3 of the questionnaire/experiment were distributed. The first two sections measure subjects' implicit theories and their risk taking attitudes. Section 3 is a general knowledge trivia quiz with 20 questions. These 3 sections were collected by the experimenter after completion. Fourth, sections 4 and 5 of the questionnaire were handed over. Section 4 is a performance self-evaluation based on the quiz of section 3. This section provides overconfidence measures. Section 5 collects demographic data. Fifth, lotteries were drawn to compute rewards from section 2 in front of all subjects. Sixth, subjects were paid according to their answers to sections 2, 3 and 4 of the questionnaire/experiment and they signed the certificates of payment.

Subjects
The experiment was conducted in Vietnam at the Centre Franco-Vietnamien de formation à la Gestion (CFVG) in Hanoi on January 11, 2014 and in Ho Chi Minh City on January 18, 2014. CFVG is a nonprofit business school operating in Vietnam since 1992. It was created by the Vietnamese government and the French Ministry of Foreign Affairs and is operated by the Paris Chamber of Commerce and Industry (CCIP). It trains yearly about 600 students. They study on evenings and weekends and nearly all of them have a full-time job.

All participants to our questionnaire/experiment attended the "financial markets" course in the second year of the MBA program. Prospective subjects were told that participation would yield an average profit of 250,000 VND (roughly 11.85 US$), which is equivalent to 23.35 US $ using the purchasing power parity exchange rate. 81 Asian students from the MBA program participated voluntarily to the experiment (80 were Vietnamese and one Indian). They are all part-time students and have a full-time career. The average years of professional experience is close to 6 years.

Measure of implicit theories
Social psychologists have implemented many different questionnaires to scale implicit theories. Two main distinctions have been established: Self-theories vs. Other Theories, and Domain-specific vs. Domain-general Implicit Theories (Dweck, 2000). The "self" form is used to predict what respondents think about their own intelligence or personality. The "other" form asks them about people in general. As our goal is to link these theories to individual portfolio management behavior, the "self" form is appropriate.

Implicit theories measures can be domain-general (the "kind of person" theories) or can be applied to specific attributes like intelligence, personality or morality. Domain-general questionnaires are most appropriate when judgment or behavior are based on several attributes as for instance when studying stereotypes and their origins. Our purpose is to study overconfidence behaviors.

[4] More details are given in the next section.

Overconfidence comes from the illusion of knowledge and the illusion of control (Statman, Thorley and Vorkink, 2006; Nofsinger, 2011). Among other factors, investors' confidence increases with the amount of information they receive. Since intelligence can be defined as the ability to adapt to the environment and to process information adequately, we chose to measure implicit theories on intelligence.

Questionnaires can include "entity" theory items as defined in the introduction (endorsed by fixed mindset people), "incremental" theory items (endorsed by growth mindset people) or a mixture of both. Although, previous research has shown that disagreement with entity theory is strongly correlated with agreement with incremental theory, including only incremental theory items can introduce some social desirability bias (Hong, Chiu, Dweck, Sacks, 1997); i.e, respondents who endorse entity theory are inclined to agree with incremental theory items. Thus, incremental theory items must be carefully formulated and the questionnaire should include at least some entity theory items. We have chosen a mixed form with 3 incremental theory items and 3 fixed theory items gathered in section 1 of the questionnaire (cf. the instructions in the Appendix).

Subjects indicated the extent to which they agreed or disagreed with statements regarding self-theories on a rating scale including six ordered responses.

Measure of risk taking
In a second step of the experiment (section 2 of the instructions), we tested risk attitudes of the subjects (not ambiguity). Similar to Lauriola and Levin (2001), subjects had to choose sequentially between one sure lottery and a risky, binary, lottery with the same mean. All options were presented in pairs, which were ordered from the pair containing the most risky lottery to the one containing the least risky lottery. Lotteries being binary, the risk contained in them was measured by the variance. They were numbered from 1 (the most risky pair) to 5.

Through this section, subjects were financially incentivized. The high stakes of some of the lotteries allowed us to reward only 10 subjects who were randomly chosen. More precisely, once all participants had completed the experiment, 5 participants were chosen randomly on the two sites of the experiment (Hanoi and Ho Chi Minh City). Then we chose randomly one of the five lotteries in front of all participants. Finally, the monetary gains displayed by a computer screen were handed over to them for the selected lottery according to the participants' choice of option A or option B.

To examine whether risk taking is influenced by overconfidence and self-theories, we constructed a risk taking index (RTI) from answers to section 2 of the questionnaire. We chose to weight riskier contracts more heavily. For each risky contract B, we attributed a coefficient reflecting the level of risk: if contract B of question 7, the riskiest contract, was chosen, we applied a coefficient 5. We applied a coefficient 4 for contract B of question 8 and so forth. A coefficient 0 was applied to choices of the riskless contract A. Hence, the risk taking indicator is defined as follows:

$$RTI = \sum_{i=7}^{11}(12 - i) * I_B(i) \qquad (1)$$

Where $I_B(i)$ denotes the indicator function. It is equal to 1 if the subject chose contract B of question *i* and 0 otherwise. Hence the index of risk taking (RTI) can take any value from 0 to 15.

Measures of overconfidence
Overconfidence is measured through a two-step procedure.

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First, subjects took part in a trivia quiz comprising 20 questions (section 3 of the instructions). All participants were paid for each answer that was exactly correct (no partial credit was given). Once this stage was completed, the experimenter collected responses from all first three sections.

Subjects' overconfidence is measured thanks to two indices: the absolute overconfidence index (AOC) and the relative overconfidence index (ROC) as defined by Ifcher and Zarghamee (2014). The AOC index measures how the individual perceives her own performance without any comparison with others, while the ROC index measures how the individual evaluates her performance relative to the whole sample performance. Thus it may be that the individual be overconfident from the AOC index but not overconfident from the ROC index, in particular if she overestimates the whole sample performance.

In our study, subject's absolute overconfidence is measured through a set of four questions gathered in section 4 of the instructions. They were asked how well they think that they performed at the trivia quiz of section 3 and how many questions they think that they answered correctly. The difference between estimated correct answers and actual correct answers provides the measure of the AOC index.

Two questions contributed to elicit their relative level of overconfidence (ROC) as subjects were asked how well they performed compared to other participants both qualitatively and quantitatively. Relative overconfidence (ROC) is measured by question 3 of section 4 in which subjects were asked: "Compared to the typical participant in this session, how many more or fewer questions do you think you answered correctly?" This estimation minus the actual difference between the subject's actual number of correct answers and the average of correct answers by the whole sample provides a proxy for relative overconfidence. For instance, if a subject estimates that she answered 5 more "questions correctly than did the typical participant in this session" (see question 3 of section 4), and he actually answered correctly 12 questions compared to an average of 10 correct answers for the whole sample, his relative overconfidence (ROC) is 3.

The accuracy of the responses to the quantitative questions was financially rewarded for all subjects (see Appendix A for details).

Demographic characteristics

Section 5 of the questionnaire ends the experiment by collecting data on demographic and corporate characteristics: gender, marital status, age, home city, university studies degree, level of income, executive title, professional experience and business sector.

III. DESCRIPTIVE STATISTICS

Subjects' characteristics

Subjects' age ranges from 24 to 36 years with an average age of 29. Nearly half of subjects are female (48%). 31 subjects are married (38%).

Before joining CFVG, they graduated from universities with a bachelor degree which is a minimum requirement to enter the CFVG MBA program. Their college major ranges from medicine to HRM. However, most of them (65%) have completed either economics or management studies: economics

(26%), finance (18%), general management (11%), marketing (6%) and HRM (4%). Engineer students represent the other important major (20%). Scientific students account for 11%.

As for their position in their company, 10% are senior or top managers, 45% are middle managers, 40% are juniors and the 5% remaining are assistants. The high propensity of middle and top management positions considering the subjects' age can be explained by the recent history of Vietnam. The Đổi Mới policy, initiated in 1986, fosters economic reforms to support private enterprises. Combined with the lack of trained executives and a fast growing economy in the two last decades, the Vietnamese job market has offered many opportunities for fast career advancement.

The average monthly income is nearly 20,000,000 VND which converts into roughly 950 US $ and represents sixfold the GDP per capita of Vietnam in 2013. The dispersion of income is very high reflecting differences of seniority and positions.

As the experience was conducted in two different places, we tested also for demographic and professional differences between both cities. We do not find any statistically significant differences for most characteristics including sex, age, years of experience. The two sub-samples exhibit only a mild difference in terms of income. The average income is slightly higher in Ho Chi Minh City (p-value=0.09).

Mindsets statistics

We first checked the internal consistency of subjects' answers to the implicit theories items of section 1 of the questionnaire. If a subject strongly agreed with an incremental theory item (items 1, 3 and 5), he should also strongly disagree with an entity theory item (items 2, 4 and 6) and conversely. For the 6 items and the sample of 81 subjects, the estimate alpha of Cronbach is 0.81, indicating that subjects exhibit a high degree of internal consistency: high adherence to incremental theory (growth mindset) goes generally with a high rejection level of entity theory (fixed mindset) and conversely.

We use these answers to build an index M of mindsets for each subject. The index is the average of the 6 items ranging from 1 to 6 with M=6 corresponding to subjects endorsing very strongly the incremental theory (growth mindset) as opposed to index value M=1 for subjects endorsing strongly the fixed mindset. The index mean is 4.28 and its standard deviation 0.90. This translates into an average high endorsement of incremental theories (those related to growth mindset). The first column of Table 1 displays the distribution of subjects with respect to their mindset index M. The result at stake may find its roots in the composition of the sample. Subjects are all young professionals, holding a master degree, and going back to university to study part-time to get an MBA. The program lasts two years and sets a challenging time schedule for all participants. They have to reconcile their professional, student and family commitments. Most of them self-finance their studies. All in all, students joining the program are usually highly motivated and believe in the benefits of training. Strong adherence to incremental theory might also be linked to cultural factors as the mandarin culture has deeply permeated the Vietnamese society.

Table 1: Descriptive statistics

	M	AOC	ROC	RTI	Income
Mean	4.28	1.38	0.28	8.32	4.25
Lower quartile	4.00	0.00	-1.44	5.00	3.00
Median	4.33	1.00	0.56	9.00	4.00
Upper quartile	5.00	3.00	2.56	12.00	6.00

Note: Income is a recoded interval variable. Intervals 3, 4 and 6 correspond respectively to a monthly income comprised between 10 and 15 million VND, 15 and 20 million VND, and 25 and 30 million VND. See Appendix C for a description of the 9 intervals.

Trivia quiz answers and overconfidence measures

The trivia quiz is inspired by Moore and Small's quiz (2007) (see Appendix B). We adapted it to Asian culture by including a few questions related to Asian geopolitics. Our purpose was to build-up a mildly difficult quiz in order to reach the highest variance of correct answers. Indeed, the mean of correct answers was 9.6 out of 20 with a standard deviation of 3.2.

Recall that a first measure of overconfidence is provided by question 1 of section 4 (quiz check): "How many of the 20 questions in Section 3 do you think you answered correctly?" The difference between this estimation and the actual number of correct answers provides a measure of absolute overconfidence (AOC).

On average, subjects overestimated their actual performance by 1.38 answers (see Table 1) which is highly significant (with a p-value of 10^{-6}). 64% predicted a higher score than the real one, 15% predicted it correctly and 21% underestimated their score. This result is in line with previous research (see for instance Ifcher and Zarghamee, 2014 ; Statman, Thorley and Vorkink, 2006). We investigated also the level of AOC with respect to demographic variables. Although men tend to overestimate more than women (1.55 vs 1.18), the difference is not statistically significant. Neither marital status nor professional position does exhibit any significant difference. However, the absolute overconfidence is strongly and positively correlated with income (p-value=0,035).

Relative overconfidence (ROC) was defined as the difference between the subject's estimation of his performance relative to the others and his effective performance relative to the others.

We found an average positive relative overconfidence (ROC) of 0.28 (see Table 1) which is not statistically significant (p-value=0.34). Despite this insignificance on average, it is worthwhile to study the impact of both AOC and ROC index on risk taking: Table 1 confirms that ROC is very dispersed over individuals.

Table 2: Correlation coefficients between variables

	M	AOC	ROC	RTI
AOC	0.04			
ROC	-0.08	0.50		
RTI	0.01	-0.24	-0.13	
Income	0.03	0.23	0.12	-0.04

Table 2 shows that ROC and AOC are highly correlated with a correlation coefficient of 0.5 (and an associated p-value of 10^{-6}). Subjects who overestimate their own performance do also overestimate

their relative performance. On average AOC is significantly positive, but not ROC. This is due to the fact that the ROC index is a difference of differences and, thus, exhibits more randomness. This can also be interpreted as subjects overestimating the whole sample performance and who believe that others did better than they actually did. Similar results were found by Ifcher and Zarghamee (2014).

Table 2 shows that most other variables are not highly correlated with each other, which helps to avoid the burden of multicolinearity in the regression analysis below. Furthermore we split ROC into two components: the subject's estimated relative performance and his effective relative performance (not reported in Table 2). As the correlation between these two components is 0.64, we conclude that the insignificance of ROC on average is explained by compensation between both components. This strong correlation also confirms the reliability of individuals answers.

Among all professional and demographic variables, income is the only one which has a significant correlation with overconfidence measures (p-value=0.035).

Risk Taking Index (RTI)

The RTI index is a normative measure ranging from 0 to 15 (see Equation (1)). Two agents may have a same RTI index, while having chosen different lotteries. What is important is the ranking of the RTI measures. The higher the RTI index of an individual, the higher her level of risk-taking in our experiment. Riskier lotteries (i.e. with higher variances) have higher weights in the RTI function. This definition of the risk-taking measure allows us to consider even individuals that alternate between risky and sure lotteries in their sequential choices. The average value of RTI was 8.3 with a high standard deviation of 4.53, showing that individuals are heterogeneous in terms of risk taking.

IV. MINDSETS, OVERCONFIDENCE AND RISK TAKING

Our aim is to study three explained variables y_j, where the subscript j = AOC, ROC, RTI, denotes the three explained variables: the Absolute Overconfidence index, the Relative Overconfidence index and the Risk Taking index. The choice of an adequate specification for each of these three variables is a delicate task involving the explanatory variables relevant for overconfidence and risk taking. It also requires specifying an adequate functional form, able to capture nonlinear interactions between explained and explanatory variables and at the same time ensuring a relative parsimony of parameters. These issues are widely discussed in the statistical literature; see Harrell (2001) for instance.

In order to avoid imposing too many *a priori* restrictions on our model, we consider a locally flexible specification corresponding to a second order Taylor-approximation of an unknown function of K explanatory variables. The specification is given by

$$y_{jn} = a_j + b_j'x_n + x_n'C_jx_n + u_{jn}, \qquad j=\text{AOC, ROC, RTI}, \quad n=1,\dots,N. \quad (2)$$

The (Kx1) vector x_n comprises the explanatory variables. The parameters are given by a_j, the (Kx1) vector b_j and the (KxK) matrix C_j (which is symmetric and includes K(K+1)/2 free parameters). The random term u_{jn} satisfies $E[u_{jn}|x_n]=0$ and $V[u_{jn}|x_n] = \sigma_j^2$. A quadratic specification has the advantage of allowing the impact of income (for instance) to vary over the sample, and to be different for poorer and richer subjects.

In order to avoid overparameterization, we impose that the ratio of the number of observations to parameters, N/K, be higher than 10. Fortunately we can exclude some demographic variables: experience and the marital status can be dropped because they are strongly correlated with age in our sample. We exclude the sector of activity and the professional position for a similar reason: when

we appropriately encode these categorical variables (for example, with a low code for a junior position and a high code for a senior one), they exhibit a strong correlation with income. It follows that only gender, age, income and mindset belong to the list of explanatory variables for our two overconfidence measures. As gender is a dichotomous variable (and so $x_g = x_g^2$), we can without loss of generality exclude it from the quadratic term $x_n'C_jx_n$ and include it only in the bilinear part $b_j'x_n$. The range of the age variable is also quite limited and it is unlikely that nonlinear effects occur (or can be identified) with less than 12 years difference in age[5], so we only include it in the linear term. This leaves us with a total of 1+4+3=8 parameters for overconfidence. For comparison, we also report the estimation results corresponding to the linear specification (obtained by imposing $C_j = 0$ in (2)). The estimation results are reported in Table 3.

Table 3: OLS parameter estimates

	AOC	AOC	ROC	ROC
Gender	0.33	0.65	-0.40	-0.62
	(0.560)	(0.821)	(0.549)	(0.33)
Age	-0.02	0.05	-0.07	-0.09
	(0.861)	(-0.926)	(0.531)	(0.47)
M	4.98	0.10	3.51	-0.17
	(0.011)	(0.731)	(0.123)	(0.61)
Income	1.79	0.29	1.58	0.27
	(0.048)	(0.068)	(0.138)	(0.13)
M^2	-0.49	--	-0.34	--
	(0.037)		(0.202)	
$Income^2$	-0.02	--	-0.02	--
	(0.682)		(0.770)	
M x Income	-0.29	--	-0.25	--
	(0.051)		(0.146)	
H_0: income is irrelevant	2.58 (0.060)		1.54 (0.212)	
H_0: M is irrelevant	2.58 (0.060)		1.21 (0.311)	
H_0: linearity in (M, Income)	2.64 (0.056)		1.20 (0.317)	
SSR	371.6	411.9	516.9	542.3
Adjusted R^2	0.068	0.008	-0.001	-0.009

Notes: all regressions include an intercept (not reported). The p-value for the null hypothesis that the corresponding coefficient is equal to zero is indicated in parentheses.

Mindsets and overconfidence

We first consider the regressions involving our two measures of overconfidence. Regarding AOC, the results of Table 3 (column 2) indicate that several coefficients are significant at the 5% threshold. The estimates of b_j of Equation (2) are either non-significant or positive, the second order terms are either non-significant or negative. In particular, the estimated coefficients related to the Mindset index and to Income are significantly different from zero. We interpret them below.

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[5] Recall that the participants' age ranges from 24 to 36 years.

Demographic variables (gender and age) are non-significant. Indeed, our results indicate no gender difference in overconfidence level. This contrasts with Niederle and Vesterlund (2007)'s study on competitiveness. In their sample, men are substantially more overconfident than women which in turn explains partly their higher propensity to engage in tournaments. These conflicting results might be explained by cultural differences. In the cross-cultural study conducted by Gneezy, Leonard and List (2009), the authors showed that culture might play an important role. Men of the patriarchal Masai society enter much more in competition than women. In contrast, in the matrilineal Khasi society, more women than men choose to compete albeit not in a significant way. However, as the Vietnamese society is patriarchal (Nguyễn Thế Anh (1996)), the explanation for the absence of gender difference in overconfidence levels lies rather on the political organization. Indeed, Zhang (2013) found the same results as ours for China. Among others, China and Vietnam share similar political organizations which promote high employment of women and gender equality.

It is worthwhile to note that AOC is not so easy to predict: the adjusted R^2 is equal to 0.068 (a level which is quite common in studies on individuals' cross section data). In the alternative specification which is linear in the mindset index and income (column 3), only income is found to be significant at a reasonable threshold. In this specification $C_{AOC}=0$ in (2), which means there are no quadratic terms, and the impacts of M and Income are restricted to be identical for all individuals. It turns out that mindset and all demographic variables are non-significant. This may be due to the imposition of the overly restrictive constraint of linearity of AOC in M for all individuals, irrespectively of their levels of mindset and income. Linearity in mindset and income is statistically rejected against the more general formulation (column 2) at the 6% threshold. We note that the adjusted R^2 is lower in the linear specification than in the quadratic one. This shows not only that the linear model is not adequate, but also that the relative low R^2 obtained in the quadratic specification is not due to multicolinearity.

We test for the statistical validity of two other submodels (see the lower panel of Table 3). Omitting income as a regressor yields a model which is statistically rejected at the 6% threshold. Conversely, the omission of the mindset index from the regression is also rejected. In summary, we conclude on the basis of this empirical evidence that self-theories alone cannot explain the bulk of the level of overconfidence. Income has also a strong explanatory power and a quite high level of significance.

We go back to our preferred specification which is the quadratic specification for AOC (see column 2 of table 3). With a quadratic specification of the conditional mean in x_n, the vector of explanatory variables, the estimated parameters do not individually reflect the whole impact of the explanatory variables on AOC. However, from the results in Table 2, we can deduce that the impact of the M index on AOC is positive for small values of M, but declines as M increases. Similarly, AOC is found to be increasing in income for low values of incomes. We evaluate the partial derivatives of AOC with respect to M and Income and construct the confidence intervals via the delta method in order to assess their sign and significance (see for instance Davidson and MacKinnon, 2004, for details on the delta method). The partial derivative with respect to M is given by $b_M+2C_{MM}M_i+C_{MI}Income_i$, which is evaluated at the value of the estimated parameters and represented by the bold straight line on Figure 1 (evaluated at the median income level of 4). When this value is positive, the relationship between AOC and M is increasing (and decreasing otherwise). We also represent the 95% confidence interval for the hypothesis that the partial derivative is equal to zero by two dotted curves. It shows that the relation between overconfidence and the mindset index is significantly increasing (positive

value of the slope) for low levels of M (and incomes). This impact, however, decreases with M (and with income) and becomes insignificant or even negative when mindset increases.
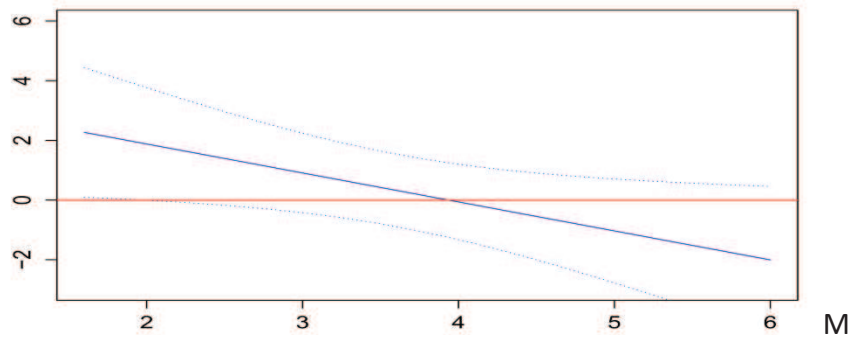

Figure 1: The marginal effect of M on AOC, for Income = 4

When evaluating the influence over all 81 individuals of our sample we found that it was significantly positive at the 10% threshold for only 10 persons and negative for 24 individuals. For each of these three groups of individuals, we report in Table 4 the sample average of AOC, M-index and income. It turns out that the two groups with a significant impact of M on AOC were quite heterogeneous. On one side, the group with a positive relationship between M and AOC comprises individuals with a low level of overconfidence, with an average mindset and a lower than average income. On the other side, the 24 individuals with a negative derivative of AOC with respect to M are characterized by rather high levels of AOC and income, and a very high M index. These empirical means are consistent with the regression results: increasing M and income globally contributes to increase overconfidence. Beyond some value of M and income, however, AOC begins to decline with the M-index and income.

Table 4: Average values of AOC, M, and income over the three subsamples

	Positive slope	Insignificant slope	Negative slope
Nb of observations	10	47	24
AOC	-0.20	1.57	1.67
M	3.20	3.28	6.58
Income	2.60	4.38	4.78

All in all, self-theories have a contrasted effect on the absolute level of overconfidence. When controlling the level of income, the level of overconfidence is sensitive to mindset for fixed-mindset participants (low index) and for highly growth mindset persons (high mindset index). Fixed-mindset people tend to believe that intelligence is a fixed entity. In their view, some people are smarter than others and this cannot be changed through effort. We find that fixed mindset persons evaluate quite correctly their own performance. In contrast, growth mindset persons are overconfident. To our knowledge, there has not been any study aiming at linking self-theories to confidence levels. The only strand of literature remotely related to our research is devoted to motivational response to factors influencing intrinsic motivation. Dweck and Legett (1988) show that goal orientations are better predictors of motivational response to challenge than levels of confidence. Performance goal are privileged by fixed mindset students (the goal is to prove performance) whereas growth mindset students exhibit a learning goal (the goal is to learn skills). However, in this latter study, confidence is an explanatory variable to motivation whereas we try to explain confidence levels. Finally, as these

studies from the social psychology literature apply to students' motivation, income cannot be taken into account. Indeed, it is worth noticing that in our subsample (the third one in Table 4), the growth mindset people are also those with the highest incomes, whereas fixed mindset persons are much less wealthy. A suggested explanation could be that wealthy persons tend to be more overconfident. This does not explain why in our subsample the richest persons are more likely growth mindset.

Zhao, Dweck, Mueller (1998) have shown that emotions may interfere when fixed-mindset people face challenges. After failure, they are much more vulnerable which might also affect their objectivity. Note that our study tests overconfidence at one point of time. It would be interesting to test how overconfidence evolves in time for both fixed-mindset and growth mindset participants when participants receive feedback about their performance. Presumably, fixed mindset people assessment of their own performance would be much more volatile and farthest from the true performance than for growth mindset people. A related strand of literature has dealt with predictors of students' success. Henderson and Dweck (1990), Hong, Chiu, Dweck and Lin (1998), among others, have shown that self-theories do better explain academic success than prior confidence. This is particularly true when students are facing difficult tasks: fixed-mindset students' performance drops sharply even for the most confident ones. However, our study aims to check the direct link between self-theories and overconfidence and provides evidence of significant causality for fixed-mindset participants.

Regarding *relative* overconfidence ROC (columns 4 and 5 of Table 3) it is noteworthy that estimated coefficients are statistically close to those obtained for AOC: yet none of the estimated coefficients for ROC is found to be individually significant at the 10% threshold, neither in the quadratic specification, nor in the linear one. This may be related to the fact that ROC is defined as a difference between two variables (see Section II above) and exhibits by construction more randomness than each separate random variable. For ROC, we cannot reject the validity of the linear regression against the more general quadratic regression (see the test results in the lower panel of Table 3). Even more striking, the linear model is found to be uninformative: its coefficients are jointly insignificant at the 10% threshold. This means that there is much randomness in the ROC data. As stated above, the fact that ROC estimates are less significant might also be linked to participants' assessments of the whole sample performance: ROC is lower than AOC because each participant also individually overestimates the number of correct answers of other participants.

Risk taking

We now turn to investigate the determinants of risk taking. We consider the same specification (2) as before to which we add overconfidence in the list of explanatory variables entering the specification linearly. This increases the number of parameters to be estimated to 9. The RTI index is in turn regressed against AOC and mindset index by controlling for demographic and professional variables. Table 5 reports that income and the demographic variables have no (significant) explanatory power for risk taking: the specification test in the lower panel of Table 5 cannot reject this hypothesis.

Table 5: RTI parameter estimates

	RTI	RTI
Gender	-0.47	-0.04
	(0.667)	(0.972)
Age	-0.13	-0.08
	(0.530)	(0.688)
M	-10.65	0.10
	(0.008)	(0.856)
Income	-0.93	0.10
	(0.604)	(0.752)
AOC	-0.30	-0.47
	(0.198)	(0.039)
M^2	1.27	--
	(0.007)	
$Income^2$	-0.02	--
	(0.875)	
M x Income	0.28	--
	(0.341)	
H0: income is irrelevant	0.33	
	(0.802)	
H0: M is irrelevant	2.67	
	(0.054)	
H0: linearity in (M, Income)	2.66	
	(0.054)	
SSR	1392.5	1547.0
Adjusted R^2	0.059	-0.004

Notes: all regressions include an intercept (not reported). The p-value for the null hypothesis that the corresponding coefficient is equal to zero is indicated in parentheses.

In the quadratic specification AOC has an insignificant negative impact on RTI. The only significant explanatory variable is people mindset. The relationship, however, is nonmonotonic and U-shaped and means that the relationship is heterogeneous over the sample. For low and high levels of M, individuals are more likely to choose more risky lotteries. For average levels of mindset, the relationship between both variables is insignificant. This can be seen, in particular, for the class 4 of Income. It is depicted on Figure 2 representing the partial derivative of (1) with respect to M, together with the 5% confidence interval (the doted blue curves). Zero is included in the confidence interval for M between 3.2 and 4.2, and represents the range of mindset for which the relationship between RTI and mindset is insignificant. In our data, 35 persons were located in the decreasing part of the U-shape curve and 7 persons in the increasing part. For the remaining 39 persons, mindset has no significant impact on risk taking.
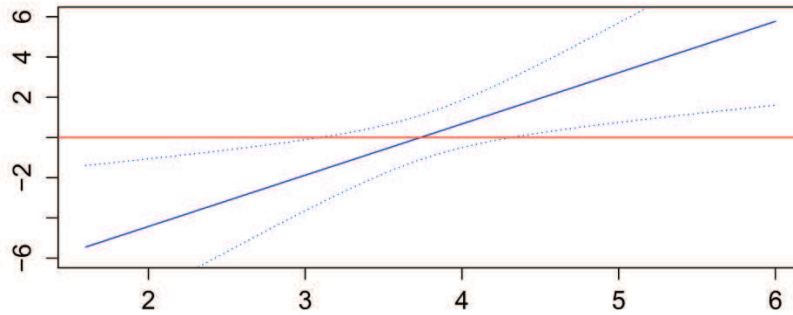
Figure 2: The marginal effect of M on RTI, for Income =4

In the restricted linear specification, AOC is significantly negatively related to risk taking. The more overconfident individuals are the less risky lotteries they choose. This result stands in contradiction with decision theory under risk. As the linear model in x_n is statistically rejected against the quadratic specification (at the 6% threshold), our interpretation is that the significant negative coefficient of AOC is due to a specification bias occurring in the linear model.

In the quadratic specification only our mindset index has a significant impact on the risk taking index. But this result needs to be qualified. First, it does not permit to conclude on a homogeneous relation between mindsets and risk taking since participants who either heavily endorse the entity theory or the incremental theory are inclined to take more risk. For mildly fixed mindset participants, the relationship is not significant. Second, the result in itself is difficult to interpret and needs further investigation either by enlarging the sample and/or by using also alternative measures of individual risk taking like multi-item questionnaires. Indeed, Lonnqvist, Verkasalo, Walkowitz and Wichardt (2014) have suggested that the questionnaire by Dohmen, Falk, Huffmann, Schlupp and Wagner (2011) provides more adequate and stable measures than lottery-choice task.[6]

Finally, in our sample, there is no difference in risk taking between men and women. If taking more risk reflects some lower risk aversion, then our result contrasts with Eckel and Grossman (2002)'s finding. Their evidence show that female students of two American universities tend to be consistently more risk averse than male students. As for overconfidence, cultural differences seem to matter.

V. CONCLUSION

We have conducted a field experiment to analyze how the way individuals perceive their mind impacts their (over)confidence and their risk taking. Following Dweck (2000), two self-theories are at stake: People have developed a "fixed mindset" which reflects an "entity" theory when they believe that their intelligence is a fixed trait. In contrast, people who believe that intelligence is a malleable quality which can be improved have acquired a "growth mindset" which corresponds to the "incremental" theory.

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[6] It is worth noting that these authors are interested in risk attitude measures, while we focus on risk taking measures.

Our 81 subjects were Vietnamese studying finance at the CFVG (Centre Franco-Vietnamien de formation à la Gestion) in Ho Chi Minh City and in Hanoï (January 2014), all of them having a full time job.

As in previous studies, we found that subjects exhibit significant overconfidence. We showed that self-theories alone cannot explain the bulk of the level of overconfidence. Income has also a strong explanatory power and a quite high level of significance. Precisely we found that fixed mindset subjects are less over-confident than growth mindset persons. Absolute overconfidence was found to be increasing in income. By dividing the sample into three subgroups in the econometric analysis we obtained that an increase in the mindset index (which reflects a move from fixed to growth mindset) and an increase in income globally contributes to increase overconfidence. Beyond some value of the mindset index (M-index), however, absolute overconfidence begins to decline with the M-index and income.

Besides, when controlling the level of income, the level of overconfidence is sensitive to mindset for fixed-mindset participants (low index) and for highly growth mindset persons (high mindset index).
As regard of risk taking, the impact of self-theories is significant but not homogenous: our risk taking index is higher for low and high levels of mindset and lower for average levels of mindset.
We also find correlation between risk taking and overconfidence. However, contrary to the existing results in the literature on behavioral finance, in our experiment, the higher the degree of overconfidence, the lower the investment in risky lotteries.
Moreover the impact of self-theories is significant in our sample but ambiguous. This may be explained by the insensivity of risk attitudes regarding self-theories or methodological limitations.

At last, gender does not seem to have any impact on neither overconfidence nor risk-taking behavior, contrary to what is usually obtained in the literature. Our result may be explained by cultural differences.

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APPENDIX A: INSTRUCTION MANUAL

> **Instructions for the financial experiment conducted in Hanoi on January 11, 2014 (and Ho Chi Minh City on January 18, 2014) at CFVG premises**

You have accepted to participate to a scientific experiment which objective is to determine psychological factors explaining risk behaviour.

You will receive a participation fee of 30,000 VND and supplementary rewards depending on the accuracy of your answers.

The experiment consists in responding to a questionnaire with 5 sections. In order to validate scientifically your participation, **you need to answer all questions** (except for the trivia quiz if you do not know the answer). Furthermore, you cannot carry any electronic devices (computer, phone,...) during the experiment. **You only need a pen** to write down your answers. Any communication with other participants is forbidden. If you have any question, please refer to the experimenter.

Hereafter, we describe the different steps of the experiment design:

Step 1: reading of the instructions. The experimenter will read aloud and explain the instructions

Step 2: you read and sign the informed consent form

Step 3: you answer the questions of the 5 sections of the questionnaire.

Step 4: Lotteries will be drawn in front of all participants to determine how much you won

Step 5: you will receive your payment. You will be paid in VND. For procedures reasons, the certificates of payment are in French and the amounts are expressed in Euros. The exchange rate used for the certificate is 1 € = 28,841 VND, CFVG official rate in January 2014.

The experiment lasts approximately 45 minutes.

Note: **Answers to the questionnaire will remain confidential**. However, we need to identify you (name and surname) to proceed with payment.

Section 1 of the questionnaire:

The questionnaire in this section has been designed to investigate ideas about intelligence (What you think intelligence is about). There are no right or wrong answers. We are interested in your ideas.

Using the scale provided, you will indicate the extent to which you agree or disagree with each of the statements by putting a cross in the space next to each statement that corresponds to your opinion.

Section 2 of the questionnaire:

Everyday decisions involve some element of uncertainty. In this section, we ask you to make such decisions under hypothetical conditions. In particular, you will be asked to make a series of choices between alternative options. Only one option can be chosen. The options will be presented in pairs as in the following example:

Option A	Option B
☐	☐
	25 chances out of 100 to gain 400,000 VND
100 chances out of 100	
	75 chances out of 100 to gain nothing
TO GAIN 100,000 VND	
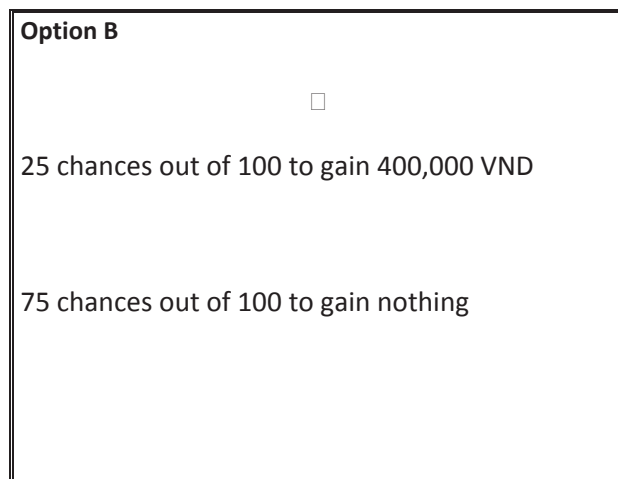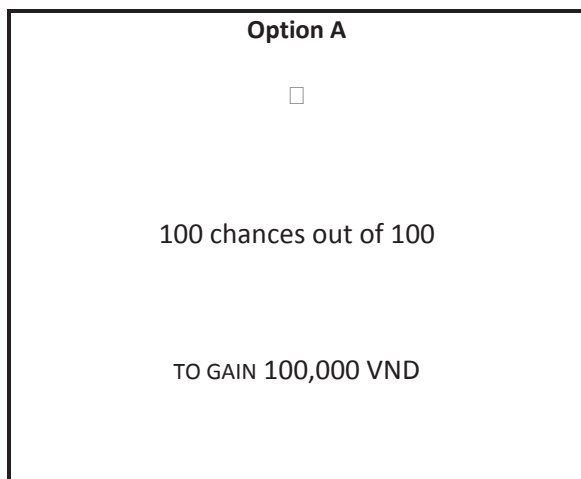
One of the options (**Option A** in the example), if chosen, allows you to gain (or lose) a given amount of money for sure (e.g., 100,000 VND), since it provides 100 chances out of 100 for that monetary outcome. The alternative option (**Option B** in the example), if chosen, allows you to gain (or lose) an uncertain amount of money proportional to the risk it involves (e.g., 25 chances out of 100 to gain 400,000 VND and 75 chances out of 100 to gain nothing).

IMPORTANT

Note that the economic analysis of the alternatives above reveals that the two options (e.g. **A** and **B**) have the same worth. This is because the *potential* consequences of **Option B** (e.g., **25**% of 400,000 VND + **75**% of **nothing** = 100,000 VND) are worth as much as the *certain* consequences of **Option A** (e.g., **100**% of 100,000 VND = 100,000 VND).

As a result, neither decision can be made on the basis of arithmetic calculations, nor can right or wrong answers be made from an economic point of view.

You are asked to answer in a subjective way according to your personal preferences or attitudes. Since no objective decision can be made, some people prefer the certain alternative (**Option A** in the example), while other people prefer the uncertain option (**Option B** in the example).

Once all participants have completed their questionnaire, 5 participants will be chosen randomly. The monetary gains displayed will be handed over to you for the selected lottery.

Section 3 of the questionnaire:

You will have to answer **20 trivia questions** about geography, history and general knowledge. You will be paid 10,000 VND for each answer that was exactly correct (no partial credit is given).

Section 4 of the questionnaire:

You are evaluated on your performance on the trivia quiz (Section 3). For instance, if you say that you answered 12 questions correctly in section 3 and, after we checked your answers, 12 responses are indeed correct, your evaluation of your own performance is perfect, and you will be paid 100,000 VND. If the margin error is one or two you will be paid 60,000 VND.

In this section, you will also be asked on your performance compared to other participants.

Section 5 of the questionnaire:

This section deals with demographic questions. For the purpose of our study, we need to know whether you are a male or a woman, the sector you are working for, your level of experience and so on

APPENDIX B: FIRST PART OF THE QUESTIONNAIRE (SECTIONS 1 TO 3)

This Appendix reproduces section 1 of the questionnaire. This is a measure of our implicit theories.

SECTION 1

The questionnaire in this section has been designed to investigate ideas about intelligence. There are no right or wrong answers. We are interested in your ideas.

Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements by putting a cross in the space next to each statement that corresponds to your opinion.

1. You have a certain amount of intelligence, and you cannot really do much to change it.

Strongly agree	Agree	Mostly agree	Mostly disagree	Disagree	Strongly disagree

2. No matter who you are, you can significantly change your level of intelligence.

Strongly agree	Agree	Mostly agree	Mostly disagree	Disagree	Strongly disagree

3. To be honest, you can't really change how intelligent you are.

Strongly agree	Agree	Mostly agree	Mostly disagree	Disagree	Strongly disagree

4. You can always substantially change how intelligent you are

Strongly agree	Agree	Mostly agree	Mostly disagree	Disagree	Strongly disagree

5. You can learn new things, but you can't really change your basic intelligence.

Strongly agree	Agree	Mostly agree	Mostly disagree	Disagree	Strongly disagree

6. You can change even your basic intelligence level considerably.

Strongly agree	Agree	Mostly agree	Mostly disagree	Disagree	Strongly disagree

Section 2 of the questionnaire is adapted from Lauriola, Levin (2001) to measure subjects' attitude toward risk.

SECTION 2

In this section, we assess how you make decisions in situation involving chance or risk. Each problem is separate from all others. The monetary gains displayed will be handed over to you for the selected lottery if you are among the 5 randomly chosen students of your intake.

7. Which contract would you choose?

□	□
CONTRACT A 100 chances out of 100 to Gain 100,000 VND	**CONTRACT B** 5 chances out of 100 to gain 2,000,000 VND 95 chances out of 100 to gain nothing

8. Which contract would you choose?

□	□
CONTRACT A 100 chances out of 100 to gain 100,000 VND	**CONTRACT B** 25 chances out of 100 to gain 400,000 VND 75 chances out of 100 to gain nothing

9. Which contract would you choose?

□	□
CONTRACT A 100 chances out of 100 to gain 100,000 VND	**CONTRACT B** 50 chances out of 100 to gain 200,000 VND 50 chances out of 100 to gain nothing

10. Which contract would you choose?

□	□
CONTRACT A 100 chances out of 100 to gain 100,000 VND	**CONTRACT B** 75 chances out of 100 to gain 133,000 VND 25 chances out of 100 to gain nothing

11. Which contract would you choose?

□	□
CONTRACT A 100 chances out of 100 to gain 100,000 VND	**CONTRACT B** 95 chances out of 100 to gain 105,300 VND 5 chances out of 100 to gain nothing

Section 3 reproduces the set of trivia questions. Each correct answer was rewarded 20,000 VND (except for the tiebreaker question).

SECTION 3: TRIVIA QUIZ

Answer the following questions. You will be paid 10,000 VND for each answer that was exactly correct (no partial credit is given)

1. Berlin is the capital of what country? _____
2. What is the capital of Azerbaijan? _____
3. How many weeks are there in one year? _____
4. How many nanoseconds are there in a second? _____
5. What is the name of the largest country in the world? _____
6. What is the name of the largest country in South America? _____
7. How many meters are there in a kilometer? _____
8. How many kilometers are there in a marathon? _____
9. What is the name of the prophet of the Islamic faith, born in the city of Mecca in the year 571? _____
10. Who is the current president of the People's Republic of China?
    _____
11. Who is the German Chancellor of Germany? _____
12. Which British band sang "Hey Jude"? _____
13. The Coliseum is located in which city? _____
14. Who wrote "Hamlet"? _____
15. In what European country is Dutch spoken? _____
16. How many countries were members of the Asean (Association of Southeast Asian Nations as of January 2014)? _____
17. The Roman god of war gives his name to the "Red Planet," the fourth planet from the Sun in our solar system. What is his name? _____
18. When did Christopher Columbus discover America? _____
19. Baghdad is the capital of what country? _____
20. Who ruled France before François Hollande? _____

Tiebreaker: Which grade do you expect to earn in the "financial markets course" (from 0 to 20)? _____

APPENDIX C: SECOND PART OF THE QUESTIONNAIRE (SECTIONS 4 AND 5)

This Appendix reproduces sections 4 and 5 of the questionnaire. This part of the questionnaire is handed over to participants after the experimenter has collected answers to sections 1 to 3.

SECTION 4: QUIZZ CHECK

You are evaluated on your performance on the trivia quiz (Section 3) by answering four questions.
- If your answer to question 1 is correct, you will receive 100,000 VND, and 60,000 VND (20,000VND) if your answer is within 2 (4) of the correct answer. For instance, if you think that you answered 12 questions correctly out of 20 for question 1, but in reality (after we checked answers) you answered 10 questions correctly, the difference is 2 and you earn 60,000 VND.
- If your answer to question 3 is correct, you will receive 100,000 VND, and 60,000 VND (20,000VND) if your answer is within 1 (2) of the correct answer.

1. How many of the 20 questions in Section 3 do you think you answered correctly?

2. How well do you think you did in Section 3? Possible responses range from 1, "Very poor," to 7, "Very well"

Very Poor	Poor	Quite poor	Average	Quite well	Well	Very well

3. Section 3 had 20 questions. Compared to the typical participant in this session, how many more or fewer questions do you think you answered correctly? (In other words, compare how many of the 20 questions in Section 3 you think the typical participant answered correctly to your answer to question #1 above).
   "I think that I answered _____ more / fewer (circle one) questions correctly than did the typical participant in this session."

4. In terms of correct answers in Section 3, how do you think you performed relative to all the other participants in this session? Possible responses range from 1,"Well below average," to 7, "Well above average"

Well below average	Below average	A bit below average	Average	A bit above average	Above average	Well above average

SECTION 5:

Finally, we would be grateful for some informations about yourself:

1.   Are you a male or a female?
□ Male   □ Female

2.   Are you married or single?
□ Married   □ Single

3.   What is your age?
[   ] Years

4.   Are you a full time student or have a professional activity?
□ Full time student   □ professional activity

5.   Are you an exchange student
□ Yes   □ No

6.   What is your major before joining CFVG (undergraduate degree)?
☐   Finance
☐   Marketing
☐   Economics
☐   General Management
☐   Engineer
☐   Mathematics
☐   Sciences
☐   Other : please specify : [   ] -

7.   For how many years have you been working?
[   ] years

8.   What is your current position?
☐   Senior/top manager
☐   Middle manager
☐   Junior
☐   Other: [   ] -

9.   In which field are you working?
☐   Finance/banking/insurance
☐   Marketing/sales
☐   Industry
☐   Teaching
☐   Government
☐   Others : specify : [   ] -

10.   What is your monthly level of income?
☐   No professionnal activity outside CFVG (no income)
☐   Less than 10,000,000 VND
☐   From 10,000,000 VND to 15,000,000 VND
☐   From 15,000,000 VND to 20,000,000 VND
☐   From 20,000,000 VND to 25,000,000 VND
☐   From 25,000,000 VND to 30,000,000 VND
☐   From 30,000,000 VND to 40,000,000 VND
☐   From 40,000,000 VND to 50,000,000 VND
☐   More than 50,000,000 VND