



The Effect of Uncertainty on Individuals' Risk Preferences: Experimental Approach

Menna Tarek

Economics Department, Faculty of Business
Administration, Economics and Political Science
The British University in Egypt
tarek.mennatallah@yahoo.com

Sarah Mansour

Economics Department
Faculty of Economics and Political Science
Cairo University
sarah.mansour@fepe.edu.eg

Mona Essam

Economics Department
Faculty of Economics and Political Science
Cairo University
monaesam@fepe.edu.eg

Mohamed Rashwan

Business Department, Faculty of Business
Administration, Economics and Political Science,
The British University in Egypt
mohamed.rashwan@bue.edu.eg

Abstract

Risk preference is considered a cornerstone for well-informed decision-making across various domains. It can shed light on decision-making processes, predicting behaviors related to not only patterns of risk preferences, but also behaviors related to consumption and investment decisions. Accordingly, this paper aims to examine the impact of uncertainty, presented by political instability, on individuals' risk preferences. The study employs the experimental methodology, specifically a lab experiment, to examine its hypotheses. The lab experiment was conducted on March 2022 using a sample of 178 students from The British University in Egypt (BUE) at the university's Experimental and Behavioral Economics Lab (EBEL). To mentally activate the concept of political instability before starting the game a prime video for Russian-Ukrainian war was randomly introduced for half of the participants. In contrast, the other group was exposed to a neutral picture that triggers nothing about instability. This allowed us to compare behaviors with and without political instability and to examine the influence of political instability on individuals' risk preferences. We also aimed to find out whether risk preferences affect individuals' financial decisions such as investment and portfolio allocation. Our results showed that risk preferences have a limited effect on individuals' financial decisions and that risk preferences are not always stable among individuals as assumed by the standard theories, rather they tend to change not only between individuals but also for everyone depending on the decisions' context.

Keywords: Risk References, Uncertainty, Investment Decisions.

Introduction

In real life the decision-making process is not always compatible with the assumption that risk is stable, and investors are risk averse. Rather, people are affected by different factors that should make them be treated as normal and not rational (Statman, 1995). This was explained in the theories of behavioral economics when Kahneman and Tversky introduced the prospect theory, the first theory in this regard, in late 1970s (Plante, Lassoued and Phillips, 2017).

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Kahneman and Tversky (1979) started by invalidating the expected utility theory. They argued that people's preferences violate the idea that utilities of certain outcomes are weighted by their probabilities, rather people are evaluating the outcomes of each choice in terms of gains and losses not in terms of the final level of wealth. These gains and losses of a certain choice are defined based on a specific reference point which depends on the current level of wealth. However, evaluating this reference point and considering the outcomes as gains or losses differ based on how the offered choices are formulated and the expectations of the decision maker (Kahneman and Tversky, 1979).

Thus, prospect theory, with its focus on reference points and emotional responses, succeeded in incorporating the concept of uncertainty and in explaining how this uncertainty affects people's risk preferences. It further clarified that in the existence of uncertainty individuals tend to avoid potential losses and to be more risk averse in their choices. However, it also clarified that such relationship between uncertainty and risk preferences is not definite, and it depends on other factors (Warneryd, 1996).

Since then, uncertainty has been considered one of the important pillars in interpreting people's behavior and in understanding core economic phenomena. This is because uncertainty is recognized as a source of economic disruptions and understanding its interplay with the other psychological factors creates a subtle decision-making model where risk preferences go beyond a simple categorisation of risk seeking or risk averse. Moreover, by understanding uncertainty economists can build more robust models that allows for better economic forecasts and the development of effective policies to minimise the negative impacts of uncertainty shocks and promote economic stability.

Objective: based on the above, the main objective of this paper is to examine the implications of one type of uncertainty, which is political instability, on individuals' risk preferences. The paper also aimed to examine how risk preferences affect individuals' different decisions, such as: their investment decisions.

Paper contribution: although there is an extensive literature that discusses the impact of political uncertainty on individuals' risk preferences, we contribute to the literature by utilise primary data source through conducting computerised lab experiment rather than depending on secondary data sources. Moreover, most of the literature in this area was about the Western, Educated, Industrialized, Rich and Democratic societies (WEIRD). Therefore, we contribute to the literature of the non-WEIRD societies by focusing on Egypt. This is also due to latest global instabilities, triggered by corona pandemic and Russia-Ukraine war, which have generated chronic implications on the Egyptian economy, such as: soaring price levels, tightening financial conditions, growing foreign debt burdens, and falling growth rates. These implications, along with the high population size that exceeds 100 million, impose huge pressure on the state's budget to provide goods and services that the market fails to supply. Additionally, they impeded Egypt's limitless efforts towards achieving the Sustainable Development Goals. Accordingly, enhancing economic climate by understanding individual decisions and their preferences towards risk is closely linked to the goal of understanding and predicting economic behaviour and giving appropriate policy advice for decision makers (Meranera, Mushshoff and Finger, 2018).

Structure of the study: the rest of the paper is organized as follows: section 2 focuses on understanding risk preferences, highlights the different risk elicitation methods, and reviews some of the empirical literature in this regard. Then, section 3 clarifies the methodology and explains the experimental design used. After that, section 4 represents the results. Finally, the paper concludes in section 5.

Literature Review

Risk preference is considered an important determinant in understanding individuals' financial and economic decisions. Economic agents are always subjected to decisions that are based on how much risk they are willing to take in their daily lives. Given that importance and relevance of risk in the decision-making process, economists have developed many experimental methods to elicit the risk parameter. These

methods can then be used to predict decisions in risky environments (Charness et al, 2023). The next section aimed to elaborate on some of the risk elicitation methods.

Experimental Risk Elicitation Methods

(Binswanger, 1980) was among the pioneers to use risk elicitation methods in measuring risk preferences. His main purpose was to introduce real payoffs in determining whether differences in behavior between farmers of different wealth levels are the consequences of different attitude towards risk or because of other constraints, such as: the limited access to credit. Therefore, a set of actual one-time gambles was introduced to observe how individuals are going to react to these gambles. Besides using the experimental approach with real payoffs in eliciting individuals' risk preferences, he also provided a comparative analysis between the paid experimental approach and the interview method in eliciting risk preferences. The study was conducted on a sample of 240 participants using payoffs that varied from low levels to levels that exceeded the monthly income of the unskilled rural labors. Results showed that individuals' risk preferences differ with the differences in payoffs. Results also showed that risk preferences are subjected to little variation according to personal characteristics. Furthermore, results clarified that risk preferences reported from the experimental approach were not aligned with those reported from the interview approach. This in turn indicates inconsistencies between the two risk elicitation methods.

Since then, and due to these inconsistencies, that were reported in individuals' risk preferences, other elicitation methods were developed in an attempt to reach a conclusive result in this regard. These methods were categorised based on their complexity into complex methods and simple methods. In contrast, complex methods depend on assigning particular functional form assumptions while estimating the risk preferences parameters. Moreover, these methods incorporate mathematical sophistication from the subject otherwise the results would become less meaningful. On the other hand, simple methods are much easier to be understood by the participants and are beneficial in capturing treatment effects and differences in individual risk preferences (Charness, Gneezy and Imas, 2013). However, different eliciting methods has its pros and cons as discuss below.

1- The Balloon Analogue Risk Task (BART)

BART is one of the simplest methods in measuring risk attitude that was developed by Lejuez in 2002 to overcome the limitations of the self-reported measures (Lejuez et al, 2002). Subjects in this task participate in a computer simulation task of pumping air into a series of balloons that are displayed to the subjects one at a time. The balloon grows each time the subjects pump air into the balloon and as the balloon grows the subject will earn money. The money is deposited into a temporary reserve and the total value of this reserve is not revealed for the subjects. As the balloon gets bigger, there is a probability that it would pop after another pump. At the first pump the probability is negligible; however, when the balloon reaches a particular size, the probability grows to certainty. If the balloon pops, then the subject will lose all the earnings and another balloon appears. At any given time, the subject is free to choose whether to pump the balloon once again or to stop and collect what was earned in the temporary reserve. If the subject chooses to collect the earnings, the money is transferred into a permanent account and a new balloon appears, then the same scenario will be repeated with another balloon (Charness, Gneezy and Imas, 2013).

The main advantage of this method is that it is useful in considering personal differences and hence provides an accurate measure for examining risk behavior. Moreover, this method is suitable for longitudinal and development research as it is simple to be applied and could be repeated several times with a small practice effort (Li et al, 2020).

2- The Bomb Risk Elicitation Task (BRET)

One of the simplest choice-based elicitation methods is the (BRET). In this task, participants are asked to collect 100 boxes that contain a time bomb, and they can choose which number, between 0 and 100,

to stop at. The more boxes the participants collect the more the earnings will be. However, if one of these boxes contains the bomb, participants lose all the earnings. There are two versions for the BRET: the static version that could be performed using paper and pencil through questionnaires and surveys. Furthermore, there is the dynamic version that is performed using electronic support and more transparent in illustrating risk attitudes (Crosetto and Filippin, 2013).

BRET also has several advantages. First, the game is characterised by not having a potential for loss but rather it is defined as a gain game. This is because participants are not allowed to assume any reference point through which some outcomes could be perceived as losses. Accordingly, the estimates of risk aversion attitude become unbiased by the existence of loss aversion. Second, this task allows for accurate estimations for the coefficients of risk attitudes, risk aversion and risk seeking (Crosetto and Filippin, 2013). Third, the task is characterised by its simplicity and by being less dependent on participants' mathematical and cognitive skills (Holzmeistera and Pfurtschelle, 2016).

Besides the above risk elicitation methods, there are also other methods that their design followed Binswanger (1980) in consisting of different gambles. These methods are called Multiple Price Lists (MPL).

3- Multiple Price Lists (MPL)

We apply the MPL in this paper as it is the most common used methods in eliciting risk preferences. It was established on the basis of Binswanger (1980). MPL standard format consists of a table that has multiple rows. In each row subjects are faced with paired lottery choices of certain parameters, and they have to make only one choice per row. As subjects move down the rows, choices on the right side become more attractive than those on the left side. Subjects' risk preferences are determined based on the row they choose to switch from the left option to the right option (Csermely and Rabas, 2016). Several risk elicitation tasks were designed following the MPL methods, such as: Eckel and Grossman (2002), Holt and Laury (2002) and Brick and Visser (2012). Each of these tasks differed as explained below.

A- Holt and Laury Method (HL)

In 2002, Holt and Laury suggested using lottery to estimate the degree of risk aversion. This method is considered the golden rule of measuring risk attitude (Holt and Laury, 2002). In this lottery participants are subjected to a menu of choices and are incentivised with different payoffs that start from several dollars to several hundreds of dollars. Moreover, it consists of two options of ten paired choices. Option A is the low payoff treatment representing the less risky option, while option B is the risky one and has a high payoff. Therefore, the payoffs of option A, \$2.00 or \$1.60, are less variable than the payoffs of option B, \$3.85 or \$0.10. The payoffs remain constant for each choice; however, the probability of each choice is not constant. In the first choice, the probability of the highest payoff is 1/10 for both A and B. Hence, the extreme risk seeker will choose option B given this probability. Moreover, as the probability of each choice increases, each participant should switch to option B. This switch point represents the risk attitude for the participants. For example, risk neutral subjects who consider only the expected return will switch from A to B starting from the fifth row. Risk averse tends to reduce risk by choosing option A while giving up potential payoffs. On the other hand, risk seekers will choose the riskier payoff with the higher potential payoff and will switch to option B before the fifth row.

Despite being the golden rule in eliciting risk preferences, HL was criticised due to its complexity that requires certain cognitive ability that helps in having careful consideration of probabilities and potential outcomes among the decision rows. Therefore, other simplified versions appeared, such as: Eckel and Grossman (2008) and Brick and Visser Lottery (2012).

B- Brick and Visser Lottery

The Brick and Visser lottery task were developed in 2012 as a simplified version from HL to examine risk preferences of a number of individuals from fishing communities. The low literacy rate among these

communities required using simple task of eliciting risk preferences. Hence, this method was developed as a simplified version of HL that required less cognitive ability. Under this task, participants were confronted with a set of binary choices that have constant probabilities and different payoffs. It consists of 8 choices that appeared sequentially one after another. For each decision row, participants were supposed to choose between lottery (A), the safe option that offers a 100% chance to win a sure payoff of \$3 and lottery (B), the risky option that offers a 50% chance to either win \$3 or to win nothing. The payoff of lottery (A) declines sequentially through the eight rows while the payoff for lottery (B) does not change. Participants' risk preferences are determined based on their switching point from lottery (A) to lottery (B), such that: risk averse chooses lottery (A) in the eight choices or switch after the fourth row, while risk seeker will switch to lottery (B) before the fourth row or will choose lottery (B) along all the decision rows. As for risk neutral, Participant will switch from lottery (A) to lottery (B) in the fourth row where the expected value of both options is approximately equal.

Empirical Evidence

Different empirical evidence has been conducted to elicit risk preferences using MPL format and to examine other factors that affect these preferences.

On an attempt to examine the degree of risk aversion over different levels of payoffs and by comparing between hypothetical and real incentives, Holt and Laury (2002) found that individuals' preferences towards the risk aversion attitudes increases as payments scaled up. Their results also showed that this preference towards risk aversion increases further under the real incentives as compared to the hypothetical incentives. Same results were reached by Anderson et al., (2006) who used HL to compare between different formats of MPL. His results revealed a general tendency towards risk averse attitude not only on the standard format of the MPL but also on the other extended formats, such as: switching MPL and iterative MPL. This was also confirmed by Bauermeister (2016) who found that HL tends to reveal more risk averse preference if compared to the Brick and Visser (2012) lottery task which was also proved to reveal risk averse preference specifically among females.

Empirical evidence was further extended to include comparing MPL with other risk elicitation methods. Alexy et al., (2016) wanted to examine the level of consistency of risk preferences, besides identifying whether gender and subjects' cognitive abilities play any role in it. By using three different elicitation method, which are: HL (2002), Crosetto and Flippin's BRET (2013) and the Sabater-Grande and Georgantzis (SGG) (2002) lottery-panel task, results showed that risk preferences differed between HL and BRET methods, yet they were the same between the HL and SGG methods. Results also showed that, by comparing male and female participants, there were no significant differences in their risk attitudes based on HL and BRET methods and partially also on SGG method. This was supported by Holzmeister and Stefan (2021) who also experienced substantial variation in revealed risk preferences across the four risk preferences elicitation methods of BRET, MPL, certainty equivalent and single choice list.

Based on the above discussion, it is worth noting that risk elicitation is challenging and there are unresolved methodological issues that led to what is called "risk-elicitation puzzle". This puzzle was developed from the numerous investigations of people's risk preferences that clarified significant inconsistencies in risk preferences when elicited using different or similar methods. In other words, results of the different studies conducted to elicit risk preferences raised concerns on the degree to which risk preferences are stable as argued by the standard theories. They further provided evidence that risk preferences are influenced by different factors and different environments, such as: personality traits, cognitive biases, social norms, uncertainty, and market volatility (Pedroni, 2017 and Charness et al, 2023).

As a result to the controversy in the empirical literature, we aim to contribute to the existing literature by conducting the experiment one of the Non- WIRED countries, mainly Egypt.

Research Methodology and Hypotheses

Research Methodology

The experimental methodology was used to examine the effect of uncertainty, represented by political instability, on individuals' risk preferences. Specifically, we followed Cohn et al (2015) and used lab experiments to assess investors' willingness to financial risks.

The lab experiment was computerised. It was conducted on March 2022 using a sample of 178 students and teaching assistants from the British University in Egypt (BUE). Participants were invited by sending an announcement through the university e-mail where interested participants could sign up. The experiment lasted from 40 to 60 minutes in the university's Economics Behavioural and Experimental Lab (EBEL). When entering the lab, participants were randomly assigned to the control versus the treatment groups. Instructions were then displayed on the screen.

To measure political instability, a prime video that included scenes of the current Russian-Ukrainian war was randomly introduced for half of the participants. In the literature, priming was first introduced in the psychological field, and it was then extended to the fields of finance and economics (Molden, 2014). It refers to the mental activation of certain concepts. Hence, it allows for evaluating the pure psychological effect of these concepts on behavior (Cohn and Maréchal, 2016). Accordingly, priming will help in evaluating the psychological impact of political instability on risk preferences holding constant the influence of any other factors, such as: background risk, wealth effects, changing habits, experiencing gains or losses, unknown returns, and volatility expectations. This is because these variables do not change with the changing conditions. Hence, any behavioral difference that will result in measuring risk preferences will refer to the psychological impact of political instability (Cohn et al., 2015).

Based on the above, a prime including a video of the current Russian-Ukrainian war was introduced for the participants who were randomly assigned to the treatment. This was done to mentally activate the concept of political instability before starting the game in the context of the most recent incident that did not only involve political instability, but also involved economic and social instability. This is due to the negative consequences of this war all over the world and specifically on Egypt for being the world's largest importer of wheat with a significant reliance on Russian and Ukrainian supplies. This in turn affected Egypt's food security and led to high inflation rates. Moreover, the war affected Egypt's revenues of foreign exchange through its negative impact on tourism and FDI. Hence, Russian-Ukrainian war was an important incident to trigger political instability for the treatment group. In contrast, the other group was exposed to a neutral picture that triggers nothing about instability (Cohn and Maréchal, 2016).

After watching the video, participants were directed to the MPL task. Our study used the Brick and Visser lottery task (2012) to examine how political instability affects individuals' risk preferences. This is due to its simplicity to be understood and it was proved to give better results than HL (Bauermeister, 2016). Under this task, participants were confronted with a set of binary choices that have constant probabilities and different payoffs⁽¹⁾. It consists of 8 choices that appeared sequentially one after another. For each decision row, they were asked to choose between two options: Option (A), the safe option that offers a 100% chance to win a sure payoff and option (B), the risky option that offers a 50% chance to either win a certain payoff or to win nothing. The payoff associated with option (A) declines systematically through the eight tasks from L.E. 1000 to L.E. 100, while the payoff for option (B) remains unchanged at L.E. 1000 and L.E. 0⁽²⁾.

Then, to consider the impact of individuals' risk preferences on their investment decisions, we employed the investment task à la Gneezy and Potters (1997) to directly assess investors' willingness to take financial risk in a time of political instability. This investment game was designed in light of the Russian-Ukrainian war. Subjects were given a sum of money (L.E. 40) as an initial endowment then, they were asked

(1) For simplicity, there was visual representation for the game using images of bags and colored balls to represent the probabilities and the different payoffs.

(2) These were hypothetical payoffs. As for the real payoffs, there depended on the number of points collected, such that: each 20 points were exchanged to L.E. 1.

to decide on whether to make no investment and to keep the endowment as it or to invest in a pasta factory that yields positive expected return. Subjects also had the choice to allocate the endowment between both options as a proxy for portfolio allocation decision. The return of investing in the pasta factory was based about the Russian- Ukrainian war and whether it will be stopped or not. There was 50% probability that the war will be stopped, and, in this case, subject receive double the invested amount. Nevertheless, there was another 50% that the war will be continued and accordingly subject lose the invested amount. Regarding the remaining amount, it was directly converted to a risk-free account with zero interest rate. As for the payoff for each subject from the investment game, it was determined as follows: if the good state prevailed, subjects received a payoff that consists of the initial endowment plus the return resulted from investing in a risky asset. On contrast, if the bad state prevailed, subjects lost the amount invested in the risky asset and received only the remaining amount from the initial endowment as a payoff.

At the end of the experiment, and before being paid the payoffs they earned during the experiment, participants were automatically directed to fill in a questionnaire about their demographic characteristics such as: economic status, age, gender, education, and religion. These variables were used later as controls in the regression analysis. In addition, as a robustness check for risk preferences' results in the lottery task, there were self-reported questions on risk preferences that were collected from the Socio-Economic Panel (SOEP) survey. In the first question participants were asked to choose any value between 1 and 10 to the following question "are you generally a person who is willing to take risks or do you try to avoid taking risk", where: 1 means "not at all willing to take risks" and 10 means "very willing to take risks". In the second questions, participants were also asked to choose between 0, indicating risk averse, and 10, indicating risk taker, in rating their risk preferences in certain situations, such as: career, leisure and sports, driving, health and financial investment (Dohmen et al., 2011).

Hypotheses

Standard theories assumed that economic agents are stable in their risk preferences. This is because they have perfect information and complete knowledge while taking their decisions. Following this assumption, the first hypothesis is as follows:

H1: it is expected that individuals' preferences are stable among all the gamble's decision rows in treatment and control groups.

On the other hand, prospects theories argued that uncertainty affects people's risk preferences. Accordingly, it was important to examine, assuming that preferences are not stable, whether in the absence of uncertainty, preferences would have changed less but more changes could be examined in uncertain times. Hence, the second hypothesis is as follows:

H2: it is expected that there will be less changes in the selected decision rows in the control group and more changes in the treatment group.

Besides the above two hypotheses, a third hypothesis is developed to observe whether the selected rows reveal a specific pattern for individuals' risk preferences. This is based on the contradiction between the standard theories, which argue that individuals end to be risk averse, and the behavioral theories, which argue that individuals tend to avoid potential losses and to be more risk averse in their choices in the existence of uncertainties only.

H3: it is expected that there will be more conservative choices in treatment group than in the control group.

After analysing risk preferences' patterns among individuals, it was important to examine the impact of these patterns on one of the individuals' decision-making processes, which is their investment decisions. Hence, the fourth hypothesis was developed to fulfill this aim.

H4: it is expected that individuals who reveal risk averse preference tends to be more conservative in their investment decisions, unlike risk seekers who tends to prefer risky portfolio allocation decisions.

Results and Discussion

Summary Statistics:

Of all participants, there were 89 Participants for the control and 89 Participants for the political instability treatment. There was high representation for the male participants recording 63% of the sample as compared to only 37% of the females. As for the age, participants aged between 18 and 46 with an average age of 23 years old. However, 71% of the sample was between 20 to 25 years old with different educational background. Faculties of engineering, Pharmacy and Business Administration, Economics and Political Science (BAEPS) contributed largely to the sample recording 42.37%, 25.28%, and 21.37% of the sample size, respectively. Consequently, around 74% of the participants have never completed a financial course in the university. This in turn reflects a lack of financial background.

Regarding the level of income, family income was used as an indicator for the income level as most of the participants were students and do not have an independent source of income. The largest proportion of the participants reported a family income that ranges between EGP 10,000- EGP 20,000 and EGP 20,000- EGP 30,000 constituting around 35% and 27% of the sample size, respectively.

Experimental Manipulation Check

After being exposed to the prime, Participants were asked to report their feelings after watching the video. Choices diverged between including negative feelings, such as: feeling worried, feeling uncertain, feeling pessimistic and feeling instable that should be captured by those exposed to the political instability video. On the other hand, positive feelings, such as: feeling happy and feeling optimistic were added to be captured by Participants in the control group. This is to ensure that there were differences in the feelings captured from the treatment Participants as compared to the control.

A Chi-Square test was conducted for the reported feelings between the treatment and the control groups. Results showed that there is a statistically significant difference ($P < 0.05$) between both groups in each of the reported feelings, except for feeling uncertain that revealed a statistical insignificant difference. This in turns asserts that the political instability video helped in inducing negative feelings for the treatment group.

Experiment Results

1- Results: Brick and Visser Lottery Task

In analysing the results of the Brick and Visser lottery, results clarified that of all participants only 13 revealed stable risk preferences among all the decision rows. As shown in figure (1), out of this 13, 7 participants chose option A, which is the safe option, while 6 chose the other risky option. By categorising among treatment and control groups, results showed that in the control group the number of participants is who chose option A, the safe option, is slightly higher than that the number of participants who chose the risky option. While for the treatment group, there is an equal number of participants between both option A and option B.

The above results did not support the first hypothesis which followed the standard theories in assuming that individuals' risk preferences are stable. This is because only few participants are stable in their risk preferences, while the largest proportion of participants tended to change their preferences among the gamble's decision rows. These results are more aligned with the behavioral

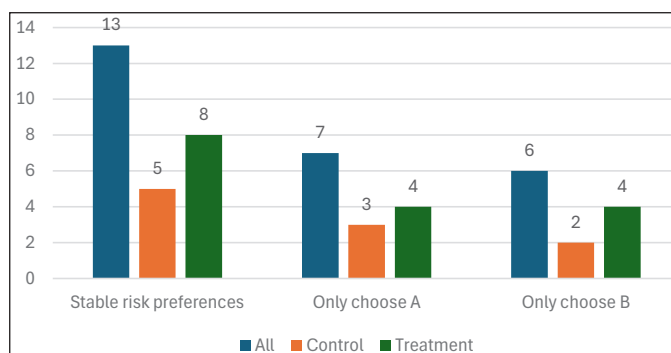


Figure 1: Stability of Risk Preferences among Treatment and Control

theories' which argued that risk preferences are not stable among individuals, and they are affected by different factors, such as: uncertainty.

Therefore, it is important to examine these changing preferences and whether they differ in the presence of uncertainty or not as assumed by the second hypothesis. This is analysed by looking at how many time participants tend to switch between the decision rows in both treatment and control groups. Of all the sample, as shown in figure (2), results revealed that 112 participants switched only once, while 53 participants switched more than one time and tended to switch back and forth between the two options as they move down the decision rows. By taking a closer look, results proved that there is no significant difference between the number of participants who switched more than one time in the presence of uncertainty as compared to that in the absence of uncertainty. This in turn indicates that despite the existence of unstable risk preferences, uncertainty is not a necessary condition for individuals to alter their risk preferences.

Regarding the third hypothesis, which tended to examine the pattern of risk preferences among individuals and whether participants will be more conservative in their choices in the treatment than in the control, it is analysed by focusing only on those participants who revealed consistent risk preferences, that is participants whose choices

did not change among the decision rows or those participants who change only once. Accordingly, the analysis is conducted on 124 participants out of 178. As mentioned before, in the Brick and Visser lottery task, participants' risk preferences are determined based on their switching point from option (A) to option (B), such that: risk averse chooses option (A) in the eight choices or switch after the fourth row, while risk seeker will switch to option (B) before the fourth row or will choose B along all the decision rows. As for risk neutral, Participant will switch from option (A) to option (B) in the fourth row where the expected value of both options is approximately equal. By categorising data based on this criterion, results, as shown in figure (3), showed that participants revealed more risk averse behavior in the treatment than in the control group. Similarly, they revealed more risk seeking behavior in the control than in the treatment group. This in turn is consistent with the behavioral theories' argument that individuals tend to avoid potential losses and to be more risk averse in their choices in the existence of uncertainties. However, as shown in the below figure, differences are not severe in each risk category between treatment and control. This in turn indicates that there is a general tendency for the risk averse preference among the participants and uncertainty, as proved in the second hypothesis, is not the main determinant for participants to prefer the risk averse attitude.

2- Results: Investment Task

Under this task, individuals' portfolio allocation decisions is determined based on whether participants choose to keep or to invest the endowment. Keeping all the endowment indicates the safe investment decision, investing all the endowment indicates the risky investment decision, while allocating the endowment between safe and risky choices is categorised based on the share of the invested amount on the risky asset, such

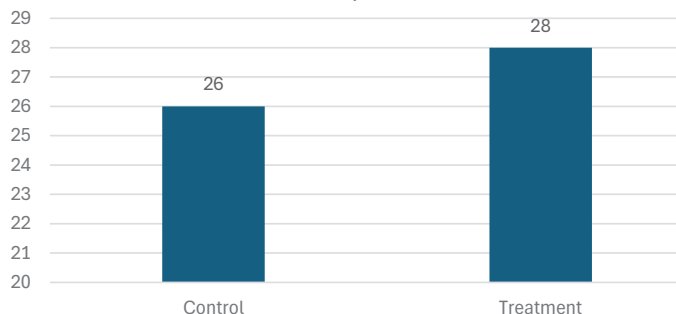


Figure 2: Number of Switches between the Decision Rows

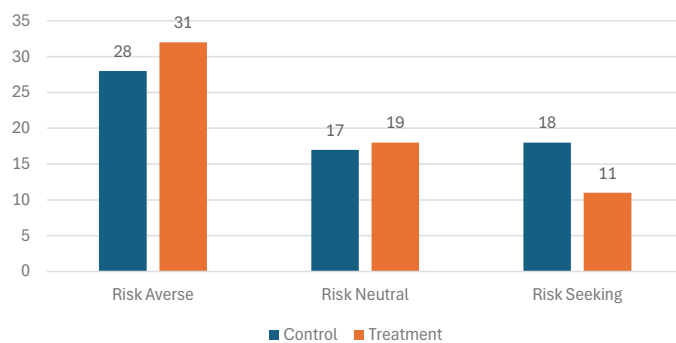


Figure 3: Risk Preferences Patterns among Treatment and Control

that those who invested less than 50% of their endowment are categorised under the safe investment and those who invested more than 50% of their endowment are categorised as risky investment.

Based on the above and given individuals' risk preferences, participants who revealed risk averse preference should be more conservative in their investment decisions and should choose the safe investment option and vice versa for the risky option, as argued by the fourth hypothesis. However, our results did not support this hypothesis. As shown in figure 4, out of the 124 participants who were consistent in their risk preferences, only 27 participants choose to allocate less than 50% of their endowment on the risky option compared to 32 participants who were reported as risk averse, yet they chose to allocate more than 50% of their endowment in the risky option. Similarly, for the risk seeking preference there were 11 participant who chose to invest less than 50% of their endowment in the risky option despite reporting a risk seeking preference. This in turns clarifies that participants' risk preferences do not necessarily affect their decisions as these preferences might differ based on the context of the decision. This is further clarified in the next part.

3- Results: SOEP Questionnaire

Regarding the first question that involved a general assessment for the willingness to take risks, graph (4) displays the fraction of participants choosing a certain number from 1 to 10. As shown, there is a huge variation in the risk preferences among individuals over the scale with a high peak at the value of 8 reflecting the existence of a high degree of risk seeking preference. In contrast, a very small fraction of participants chose 1, indicating that they are not at all willing to take risks, and 10, indicating that they are very willing to take risks. This contradicts with the results of the lottery task which showed that individuals in general tended to have higher risk averse behavior in both groups as compared to the risk seeking behavior. However, this is aligned with Binswanger (1980) whose results also revealed inconsistent risk preference among individuals across different risk elicitation method.

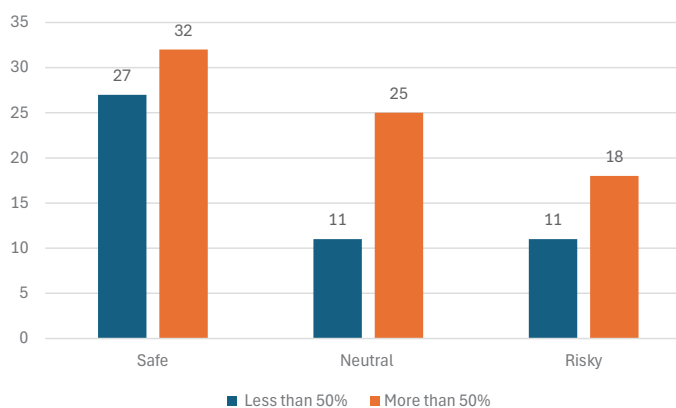


Figure 4: Participants' Portfolio Allocation Decisions by Their Risk Preferences

On the other hand, the other question that involved rating risk preferences in certain context and by taking the average value of each participant's rating in the different context, results revealed that individuals' risk preferences differ in different context. As shown from panel (A) to panel (E) in figure (5), participants tend to have more risk averse preference in driving and health as compared to leisure and sport where participants showed larger risk seeking preference. While in the financial investments' context, participants showed a high peak at the value of 5 indicating moderate risk preference followed by a greater tendency for risk seeking preference, unlike the careers context where participants also have a high peak at 5 but followed by greater preference for risk aversion.

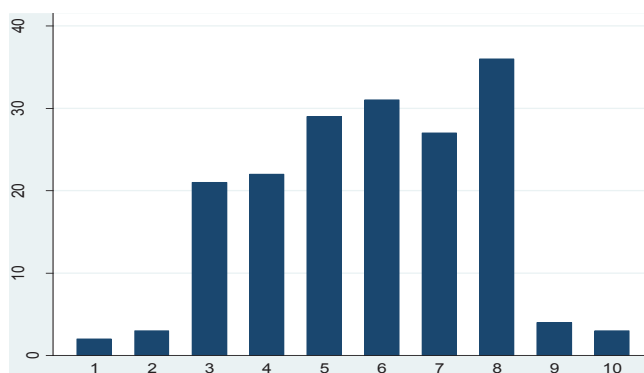


Figure 5: Willingness to Take Risks, Responses Measured on 10 Point Scale (1= Not at All Willing; 10 Very Willing)

These results provided clear evidence that individuals decision is not necessarily affected by their risk preferences. This is because individuals might reveal different risk preferences

across different decisions context. This in turn provided explanation on why some individuals in the investment task, although showing risk averse behavior, chose to invest more than 50% of their income in the risk option, while other risk seeking participants chose to invest less than 50% of their income in the safe option.

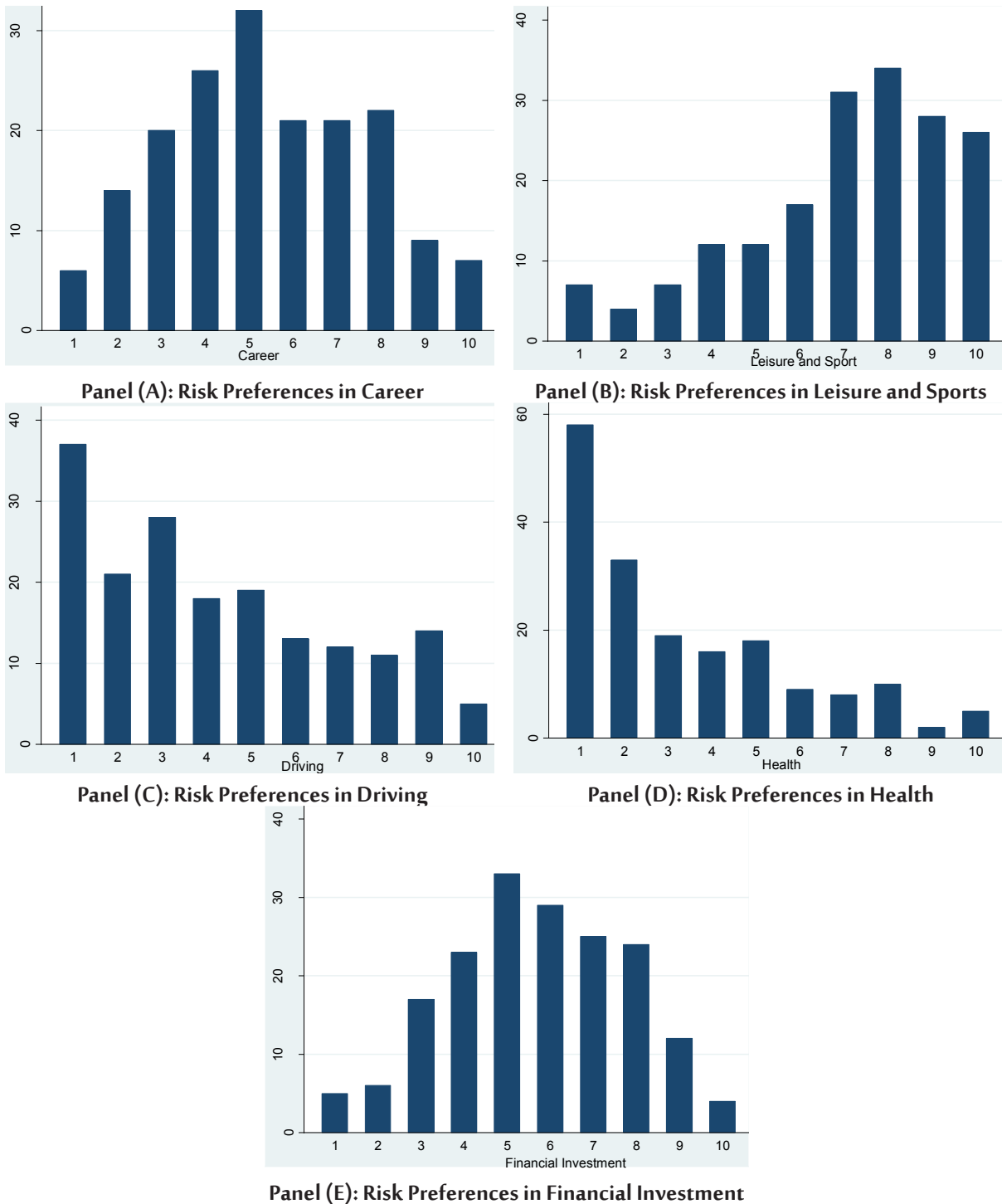


Figure 6: Risk Preference in the Different Contexts by Number of Participants

4- Limitation and Future Research

The above results have provided some insights regarding individuals' risk preferences in one of the non-WEIRD societies, which is: Egypt. Nevertheless, the study has some limitations that can be presented as follows:

- First, it is worth noting that on studying behavioral interventions, decisions vary not only across individuals of different age, gender, religion, income level and educational background, but also vary across countries and cultures. Accordingly, our results could have been changed if the same experiment was conducted on participants from different countries or different cultures. Yet, our study was restricted only to Egypt and more specifically to students from BUE.
- Second, previous literature has proved that risk preferences might vary with different levels payoffs. Yet, the fund limitations hindered the possibility to compare between decisions at different payment levels.
- Third, different experimental designs have been used to elicit individuals' risk preferences. Each task has its merits and limitations, hence applying different experiment designs in the same setting could provide more insights on individuals' risk preferences.
- Fourth, experimental methodologies have been criticised for being unable to provide reliable implications that can be generalised to the real world. This is because experiment designs are abstracted from reality and is considerably simpler than risky situations that would occur in an actual setting. Therefore, Participants may act differently in the experimental situation than they do in a similar situation in the real world. This lack of external validity is considered to be the major weakness of laboratory experiments. Nevertheless, we believe that a careful experimental design and implementation is essential for a valid measure of individuals' risk preferences (Ihli et al., 2016).
- Finally, despite that the sample size is relatively large for lab experiments (N=178), having a larger sample size would have contributed to increase the study's external validity and generalisability.

Accordingly, some extensions of the present study might be considered, as follows:

- First, it would be interesting that the same experimental setting be conducted on other samples from different countries and cultures, such as: WEIRD countries. This would not only help to provide more general results regarding individuals' risk preferences, but also would allow to compare risk preferences between WEIRD and non-WEIRD societies.
- Second, another interesting path to be considered is to examine the impact of different payoff levels and to find out how individuals' preferences towards risk could be altered at high payoff levels.
- Third, different experiment tasks involving different degrees of difficulty could be considered in order to more carefully address the limitation of how a participant's behavior is changing with differences in numbers and probabilities involved in each task. Also, this would allow to compare between the results generated from the different tasks. Besides considering different experimental tasks, it is also important to consider different political instability primes that is more related to Egypt.

Conclusion

Understanding individual risk preferences has become of considerable importance in recent years. It acts as a cornerstone for well-informed decision-making across various domains. In other words, risk preferences can shed light on decision-making processes, predicting behaviors related to not only patterns of risk preferences, but also behaviors related to consumption and investment decisions. By incorporating risk preference analysis, researchers and policy makers can design interventions and recommendations to

better suit individual needs and empowers the creation of personalised strategies that harmonise with an investor's risk tolerance and financial goals.

Accordingly, the main objective of this paper was to examine the impact of uncertainty, presented by political instability, on individuals' risk preferences. An experimental approach was used to gather data individuals' risk preferences through Brick and Visser lottery task. Moreover, to mentally activate the concept of political instability before starting the game a prime video for Russian-Ukrainian war was randomly introduced for half of the participants. In contrast, the other group was exposed to a neutral picture that triggers nothing about instability. This allowed us to compare behaviors with and without political instability and to find out whether political instability had an influence on investors' risk preferences or not.

Our results showed that risk preferences are not always stable among individuals as assumed by the standard theories, rather they tend to change not only between individuals but also for each individual depending on the context of the decision. Results also showed that uncertainty, specifically the one caused by political instability, is not an important determination for risk preferences in the non-WEIRD societies. This is because our results clarified that the difference between participants who switched more than one time in the existence of uncertainty compared to those who switched in the absence of uncertainty was insignificant. Also, our results highlighted that participants are more risk averse in the treatment group and more risk seeking in the control group, which is consistent with the behavioral theories' argument that individuals tend to avoid potential losses and to be more risk averse in their choices in the existence of uncertainties.

However, it is worth noting that differences were not severe in each risk category between treatment and control. This in turn confirms the above-mentioned result that uncertainty is not an important determination for individuals risk preferences in the non-WEIRD societies. One reason behind this is the choice of the Russian Ukrainian war as a source of the political instability prime and the timing of the experiment which was conducted after the eruption of this war by month. Hence, the effect of the was as being source of political instability in Egypt was not yet captured by the participants. Also, the eruption of the Russian-Ukrainian war occurred after a small period of recovery from the instability caused by COVID-19 pandemic. Accordingly, people were originally still suffering from the effect of instability and the Russian-Ukrainian war did not have a great influence in altering participants' risk preferences. Another reason is that participants while reporting their interest in politics risk preferences in the questionnaire, their responses revealed a small interest in politics which in turn clarify why the stability and patterns of their preferences were not severe between the control and the treatment groups.

Our results also clarified that individuals' risk preferences differ across different context, such that they might be more risk seeking with aspects related to their health, while be more risk averse in financial decisions. This was confirmed through the investment task, which revealed that individuals' risk preferences are not consistent with their portfolio allocation decisions. Moreover, it was further confirmed with the results of the SOEP questionnaire which asked participants to report their risk preferences in different contexts.

Although there is an extensive literature that discusses the effect of political instability on risk preferences, we contributed to the literature by examining one of the non-WEIRD societies, which is Egypt. Nevertheless, it is worth noting that findings of this study are not generalised to other societies. It is just a step towards bridging the gap in the literature about understanding the behavior of these societies. The same experiment must be repeated in several settings and on different countries for its results to be generalised. This will improve the findings' external validity and create a new area for future research.

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