SOCIAL TIES AND RISK TOLERANCE: EVIDENCE FROM TURKISH WOMEN

by

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Abstract

Are informal social institutions embedded in measured risk preferences? In this study, we analyze whether attitudinal differences in risk are attributable to the degree of support received from different social circles. We relate measures of perceived social support from 3 different backgrounds (family, friends and neighborhood) to experimental measures of risk preferences. We employ an incentivized choice task and a large-stakes hypothetical lottery question to elicit risk preferences. We find that individuals who report higher social support tend to make more risky choices in an incentivized risk task. This relationship is robust to the inclusion of a wide variety of controls, and region fixed effects. The link between social support and risk choices is partly moderated via access to funds from social networks. We control for the effects of various characteristics including psychological health, cognitive ability, religiosity, socio-economic status, neighborhood quality, and several household characteristics. Our results suggest that psychological health and religiosity have significant effects, while cognitive ability does not seem to influence incentivized risk choices.

Keywords: Field experiments, Risk preferences, Social support, Informal financial institutions, Access to Funds

Özet

Gayri resmi sosyal kurumlar, ölçülmüş risk tercihlerinin içinde gömülü müdür? Bu çalışmada, risk tutum farklılıklarının farklı sosyal çevrelerden alınan destek derecesine atfedilebilir olup olmadığı analiz edilmektedir. Üç farklı çevre (aile, arkadaş ve mahalle) için algılanan sosyal destek ölçekleri, deneysel risk tercihi ölçümleri ile ilişkilendirilmektedir. Risk tercihlerini ortaya çıkarmak için, teşvik edilmiş seçim görevi ve büyük bahisli varsayımsal piyango sorusu kullanılmaktadır. Yüksek sosyal destek aldığını bildiren bireylerin, teşvik edilmiş seçim görevinde daha riskli seçimler yapma eğiliminde oldukları görülmektedir. Bu ilişki, çok çeşitli kontroller ve bölge sabit etkileri dahil edildiğinde sağlamdır. Sosyal destek ve risk seçimleri arasındaki bağlantı kısmen sosyal ağlardan fonlara erişim ile denetlenmektedir. Ruh sağlığı, bilişsel yetenek, dindarlık, sosyo-ekonomik durum, mahalle kalitesi ve birkaç hane halkı özellikleri de dahil olmak üzere çeşitli özelliklerin etkileri kontrol edilmektedir. Bulgularımızda bilişsel yeteneğin teşvik edilmiş risk seçimlerini etkilemediği, psikolojik sağlık ve dindarlığın ise önemli etkileri olduğu ileri sürülmektedir.

Anahtar Sözcükler: Saha deneyleri, Risk tercihleri, Sosyal destek, Gayri resmi finans kurumları, Fonlara erişim

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To my loving family...

1 Introduction

Are informal social institutions embedded in measured risk preferences? Choices people make under uncertainty may reflect their environment, including formal and informal credit and insurance institutions. An important component of the latter is social connections. Informal institutions play a crucial part in risk management in a developing economy context: "Social capital may be particularly important in environments where government or private sector substitutes for risk-coping mechanisms are not available or not accessible" (p.2, Nielsen et al. [2013], Collier [2002]). This also applies to Turkey, a developing economy with transitioning financial markets. We investigate the determinants of risk choices, and particularly the role of support from social networks, in a representative sample of approximately 750 women from Turkey.

In Turkey, social networks (neighbors, acquaintances, relatives) are the predominant sources of informal credit. Compared to their male counterparts, Turkish women are less educated and participate less in the labor force (Ilkkaracan [2012], Dayioglu and Kirdar [2009]). The use of formal financial institutions is not very common, especially among non-employed women. Among the women in our sample, a significant majority prefer informal sources of financing (from social networks) over formal sources of credit such as banks. These characteristics render our subject pool attractive for our analyses of informal financial institutions.

While research on risk preferences is extensive, little is known about the relation between social ties and risk attitudes. To address this gap, we relate measures of social support to measures of risk preferences. On the impact of social support on risk preferences, there is only one other study that we are aware of, by Nielsen et al. [2013]. This is a very recent study which assesses the determinants of risk preferences of the farmers in rural Vietnam. The study

has two main objectives: to compare different risk elicitation techniques, and to analyze the effect of social capital on risk preferences. We extend their approach further using more comprehensive proxies of social capital. In particular, we distinguish among social support from different sources, including family, friends and neighborhood.

There are many studies aiming to uncover the socio-economic determinants of risk behavior. Our study contributes to this strand of literature, using a rich dataset. Our focus is particularly on the relationship between social ties and risk preferences. We propose that the quality of social support might capture some of the variation in risk choices. Moreover, we show that this link is partly driven by availability of funds from social networks. This study aims to provide insight on the role of informal financial institutions in a sample where the dominant source of funds are social networks rather than formal financial intermediaries.

The use of formal/informal finance is determined by access to formal financial institutions as well as access to credit from social networks. Availability of credit from social networks provides individuals with social insurance. If they can rely on their social networks for credit, they are more likely to use informal sources (social connections) to borrow, rather than formal institutions such as banks. Hence, access to funds from social networks is an important indicator of the use of informal financial institutions in a society.

Eswaran and Kotwal [1990] analyze how risk behavior is characterized by access to credit in less developed economies with imperfect capital markets. They formalize the idea that access to consumption credit enhances individuals' capacity to absorb risk and smooth out consumption over time. They conclude that even when the underlying risk preferences are identical, constraints on credit can lead to differential risk behavior, via providing ability to pool risks over time. Therefore, even though it is not directly linked to risk preferences,

access to credit plays an important role in how people cope with risks.

Economists have exploited social network measures to investigate the role of social networks on risk management, risk sharing and consumption-smoothing. These studies have typically been conducted in less developed economies. For example, Fafchamps [1999] document that informal credit is a critical mechanism in smoothing out consumption in rural communities in the third world. He asserts that these informal risk-sharing arrangements may fail to achieve Pareto-efficiency in risk sharing, compared to standard credit and insurance contracts. Thus, informal credit between friends and relatives is considered a form of 'quasi-credit'. Similarly, Platteau and Abraham [1987] study quasi-credit contracts in agrarian village societies. They analyze how these credit systems function as insurance against risk and uncertainty. Overall, these studies suggest that social linkages underlie strategies to cope with risk.

It is crucial to distinguish between social support and social networks (Gottlieb and Bergen [2010], Barrera Jr [1986]). Social network measures employed by economists rely on the theory of networks. They are structured according to the number of social linkages enveloping the central individual or 'ego', and the associated social proximity (Marsden [1990], Chandrasekhar et al. [2011]). Hence, these measures inform us on the number of social connections, rather than the characteristics of the individual's actual social environment. Nevertheless, a common finding is that individuals are more likely to share risk with friends and family (Fafchamps and Lund [2003], Angelucci et al. [2009]). Fafchamps and Lund [2003] study the role of social networks in risk-sharing in rural Philippines. This study concludes that households receive help primarily through networks of friends and relatives to manage risk against income and expenditure shocks. These findings highlight the importance of distinguishing among different social circles, and also the need to study social ties in further

detail.

We exploit a measure of social support that pertains to the quality of social ties. Social support instruments were developed by epidemiologists and health psychologists to measure social support with medical patients (Unden and Orth-Gomer [1989], Cohen and Hoberman [1983], Sarason et al. [1983], Cutrona and Russell [1987]). We use data from a perceived Social Support Questionnaire, which builds on several social support measures (see Sarason et al. [1983], Cohen and Hoberman [1983] for a detailed description of different social support instruments). Thereby, our instrument offers a multidimensional approach of perceived social support.

Using experimental methods to elicit risk preferences is a popular approach adopted by many economists. To elicit risk preferences, we use two different methods: a hypothetical lottery question, and an incentivized choice task. While incentivized tasks are favored by economists (Harrison et al. [2005]), they have been criticized for their limitation to small stakes. Complementing our incentivized choice task with a large-stakes hypothetical lottery question guards us against bias resulting from small-stakes. Thus, the large-stakes hypothetical lottery measure provides us with a robustness check.

The unusually rich nature of our dataset enables us to investigate the determinants of risk preferences from a broad set of characteristics including socio-economic level, several household characteristics, human capital, religiosity, cognitive ability, neighborhood ecologies, mental health, and past experience of financial loss[1]. In addition to the standard controls used in the risk literature, we also test whether cognitive ability scores, religiosity and mental health affect risk-taking behavior. Our main focus lies on the impact of the individual's social support network, controlling for additional characteristics.

Our analyses reveal that social support is an integral part of risk-taking

[1] We proxy for human capital by years of schooling and working status.

decisions. To argue that risk choices are shaped by the quality of social support, we establish a link between the two: a proxy for social insurance. We demonstrate that the effect of perceived social support on risk choices operates partially through access to funds from social networks. In addition to the quality of perceived social support, we find religiosity and mental health to be the most significant determinants of risk choices. In contrast to Dohmen et al. [2010], we do not detect a significant relationship between cognitive ability and risk choices.

The rest of the paper proceeds as follows: section 2 describes the nature of our data and experimental methods, section 3 explains the construction of our measures, section 4 presents our results and analyses, and section 5 concludes.

2 Data and Methodology

2.1 Data from ECDET Survey

Our subject pool consists of the participants in the "Study of Early Childhood Developmental Ecologies in Turkey" (ECDET). ECDET is a longitudinal study that aims to explore the social and environmental factors influencing cognitive and socio-emotional development of children from the age of 3 to 7[2] (Kuntay et al. [2010]). The ECDET study consists of five waves, beginning in 2008. The surveys have been conducted annually by visiting the subjects' homes. The study involves a nationally representative sample of approximately 1000 mother-child pairs from 19 different cities in Turkey[3]. In this study, we focus on the mothers. Our study exploits data obtained from the final wave of data collection of the ECDET study, to which we added a risk module. The approximate number of observations in our dataset is 745 and the women in our sample are between 22 and 84 years old, with an average age of 34.4[4]. 83% of the women in our sample reported that they are "not engaged in any activity that yields income" at the time of the survey. Out of the 83% non-working, 99% classified themselves as housewives. Educational attainment of the subjects vary greatly (from 0 to 15), with an average of approximately 6 years of education. More than 80% of the subjects have left school after completing elementary school (8th grade). We observe that subjects with higher levels of education are more likely to work. Notably, both the employment rate and education level are higher for their husbands. Almost all women are married (98%) and out of those who are married, 94% report that their husband has a job. The husbands

[2]ECDET has been developed by the Psychology department at Koç University in Istanbul, Turkey.

[3]There has been some attrition since the first wave of ECDET, which seems to have occurred with the wealthier portion of the sample.

[4]The study also includes several cases where the children have been adopted by their grandparents.

are on average more educated than the women, with an average of 7.4 years of education. Average size of the household (measured by the number of family members living in the same house) is around 5, with approximately 3 kids. In addition to general characteristics of the women (including age, education, employment status, physical and psychological health, religiosity and cognitive ability); we also have detailed information on socio-economic background of the family and the subjects' social environment. Thereby, this extraordinarily rich dataset enables us to analyze the relationship between social support and risk choices with respect to a large set of correlates.

Most importantly, majority of the subjects in our sample seem to prefer informal (social) sources of funding over formal financial institutions. The subjects are asked how would they finance an unexpected expense equal to their monthly spending. 43% of the subjects state that they would borrow from friends or relatives, while only 12% report that they would borrow from a bank or credit card. 38% state that they would use up from their savings, and the remaining 6% say that they would sell some things to cover an unexpected expense. Figure1 demonstrates the distributions of different means of financing. Note that, however, this instrument is not a pure indicator of preferred borrowing source. Due to the nature of the survey question, it combines data on borrowing preferences and access to funds. Yet it does not distinguish between the two reasons underlying the subjects' responses. Nevertheless, these statistics indicate the dominance of informal means of funding (friends/relatives) over the formal ones (bank/credit card).

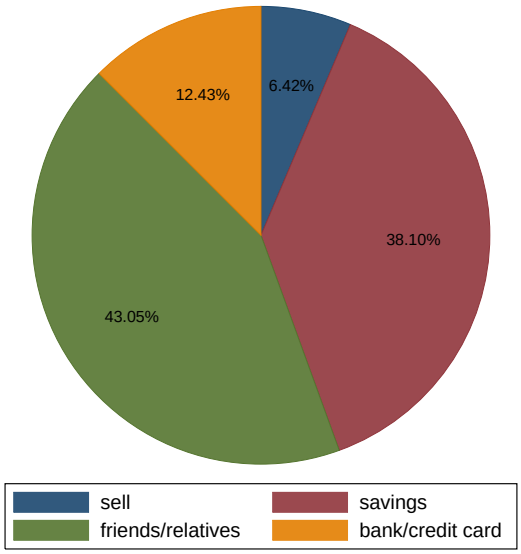

Figure 1: Means of Financing

2.2 Risk Elicitation Tasks

We employ two different methodologies to elicit risk preferences: an incentivized choice task with real payoffs (which involves low stakes), and a hypothetical financial lottery question (involving high stakes). First, we use a simple binary mechanism pioneered by Gneezy and Potters [1997]. Subjects receive a certain endowment of 10 tokens, which they are asked to divide between a risky and riskless option. The risky option has a 50% chance of generating the good outcome; in which case the amount invested in the risky option triples. The money invested in the risky option is lost if the bad outcome occurs. The outcome is determined by the color of a ball drawn from an opaque urn by the subject. The amount kept in the safe option remains unchanged independent

of the outcome[5]. Payoff of a subject is therefore determined by the following calculation:

$$E_i = 3 \times R_i \times 0.5 + (W_i - R_i)$$

where W_i represents subject i's endowment and R_i the amount invested in the risky option by subject i.

The amount invested in the risky option represents the subject's willingness to take risks, while the amount kept in the safe option determines the subject's degree of risk aversion. Charness et al. [2012] provide an overview of the use of incentivized choice task in different risk studies with different subpopulations. The distribution of the subjects' incentivized risk tolerance is clustered in the center. On average, subjects invest 45% of their endowment in the risky option. Extremely risk-averse (that invest 0) and risk-loving subjects (that invest all their endowment) lie on the two-tails, with 11% of the subjects on each tail. The Gneezy and Potters [1997] task has been conducted with different samples in various settings. Charness et al. [2012] assemble data from 15 different sets of experiments that use the same methodology and report average investment of females to be 40% of the initial endowment. In particular, average female investment ranges from 43% to 59% among student subjects, and from 4% to 50% among villagers in different rural regions. Ertac and Gurdal [2012] report 45-54% average investment with Turkish female undergraduates[6]. A comparison with other studies using the same methodology shows that the average risk

[5]The transparency of the experiment and the subjects' comprehension of the experimental procedure were ensured prior to the task. After explaining the rules, the interviewers performed a demonstration of the elicitation task with two hypothetical investment choices. Then the interviewers tested the participants' understanding of the task by asking them to make simple calculations of earnings for different hypothetical investment choices. The interviewers were instructed to only proceed with the task if the participants were able to answer these questions correctly.

[6]Although they follow the same methodology, treatments and procedures vary in some aspects.

behavior of the women in our sample is not biased in either direction.

We complement our incentivized risk task measure with a large stakes hypothetical investment question. Using two different methods provides a comparison of how determinants of risk tolerance vary between hypothetical and real (incentivized) tasks involving small and large stakes. Charness and Viceisza [2011] point out to comprehension issues with sophisticated risk elicitation tasks such as the Multiple Price List mechanism introduced by Holt and Laury [2002][7]. Following their approach, we incorporate a simple hypothetical lottery question. Specifically, subjects are asked what portion of the money they would invest in a risky business if they won 50,000 Turkish Liras in a lottery. The amount invested in the risky business doubles if the investment turns out to be profitable, with 0.5 probability. The amount is lost if the business goes bankrupt, with 0.5 probability. Levin et al. [1988], Schubert et al. [1999], Eckel and Grossman [2002] and Eckel and Grossman [2008] conduct similar abstract gamble experiments with large stakes. Responses to the large-stakes hypothetical lottery question indicates an average investment rate of 49%. In addition, mothers' responses to the hypothetical gamble predict their behavior in the small-stakes incentivized choice task. Spearman rank correlations yield a correlation of 0.23 that is significant at 1% level. Figure 2 displays the distributions of our two risk measures. To facilitate interpretation, we report risk tolerance in terms of proportion of the amount invested for both tasks.

[7] The risk elicitation mechanism proposed by Holt and Laury [2002] involves a series of choices between pairs of safe and risky lotteries, where the probability of getting the high payoff increases as subjects proceed with the choices. The 'switching-point', where the subject switches to the risky lottery, determines an interval identifying the subject's level of risk aversion.

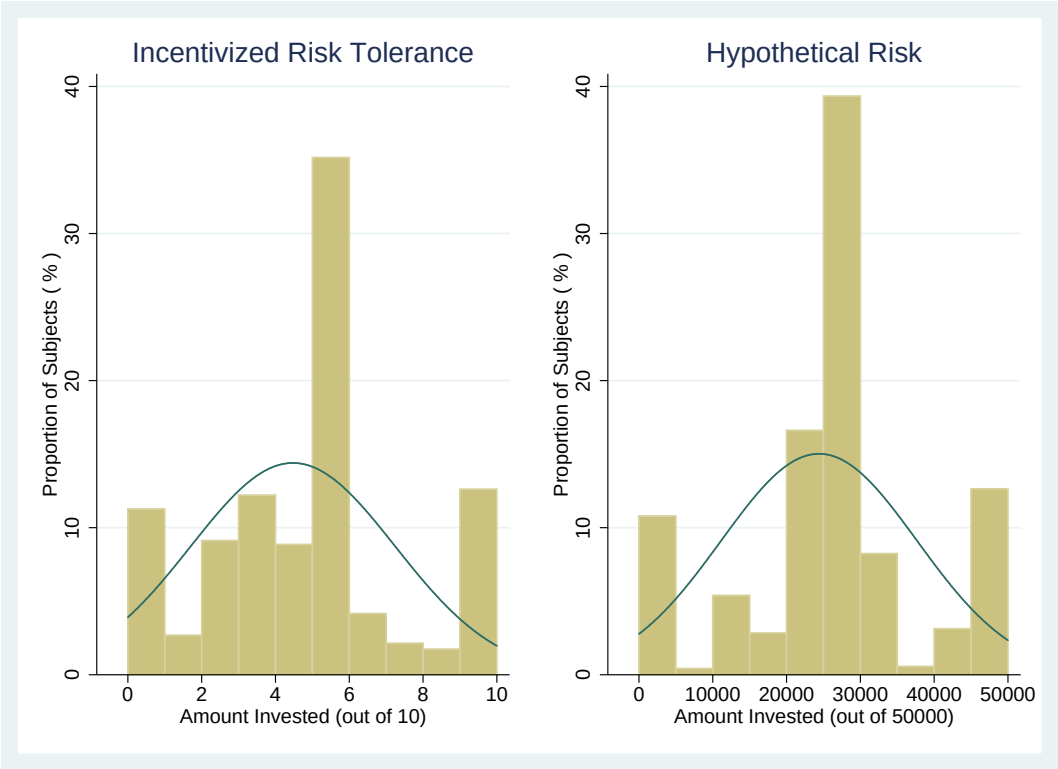

Figure 2: Risk Measures

3 Construction of Measures

3.1 Cognitive Ability

The ECDET study includes two separate instruments to assess cognitive ability: a verbal module (ACEP Vocabulary Test), and a non-verbal module (Working Memory Capacity Test). The Digit Span Task (Humstone [1919]) is a widely used measure of working memory capacity. It composes of two parts: a digit span task and a backward digit span task. The subjects are asked to repeat a sequence of numbers after the interviewer. In the backward digit span task, the subjects repeat the numbers in reverse order. We sum scores (number of correct items) from the two tasks. The reliability and validity of the Digit Span Task have been reported in Turner and Engle [1989], Kane et al. [2005] and Schroeder et al. [2012]. The ACEP Turkish Vocabulary Test, used to test subjects' knowledge of Turkish vocabulary, was developed by Gulgoz [2004] (see also Kagitcibasi et al. [2009] for the reliability of this measure). Although the original test contains 30 items, the present study includes a 24-item multiple-choice version adapted by Kagitcibasi et al. [2009]. This test assesses knowledge of words that are rarely used in daily language. Subjects are asked to identify the synonyms for each word from several options, and the number of correct answers correspond to the subject's score in the test. Both tests were conducted in the first wave of ECDET. We have cognitive ability scores for a total of 745 individuals.

In a study where they investigate the link between risk preferences and cognitive ability, Dohmen et al. [2010] employ similar tests of cognitive ability: a symbol-digit correspondence test and a word fluency test, which are submodules from the German version of the "Wechsler Adult Intelligence Scale (WAIS)", a widely used intelligence test. Their tests capture the subjects' speed of processing information as well as their knowledge. A standardized average IQ score

is constructed by averaging the standardized values of the two tests, and then standardizing the resulting average. Although this method of standardization is a common procedure, it is not feasible with our data. For both subsamples, we reject the hypothesis that the estimated distribution for test scores are normal, using a Skewness-Kurtosis All Normality Test (D'agostino et al. [1990]). Hence, we prefer to use the aggregate raw scores from our verbal and non-verbal tasks, without standardizing. Furthermore, we find that the two cognitive scores are significantly positively correlated with each other[8]. We generate a single combined measure of cognitive ability to reduce bias from measurement error and obtain a more reliable measure. Our aggregate measure of cognitive ability is the average of the sum of scores from both tasks. The average cognitive ability score is strongly positively correlated with education level[9]. Figure 3 shows how cognitive ability scores vary with education. The average test score also correlates strongly and significantly with the socio-economic status of the household[10].

[8] Spearman's ρ= 0.49, p-value = 0.0000

[9] Spearman rank correlations yield a correlation coefficient of 0.57, that is significant at 1 % level.

[10] Spearman's ρ= 0.49, p-value= 0.0000.

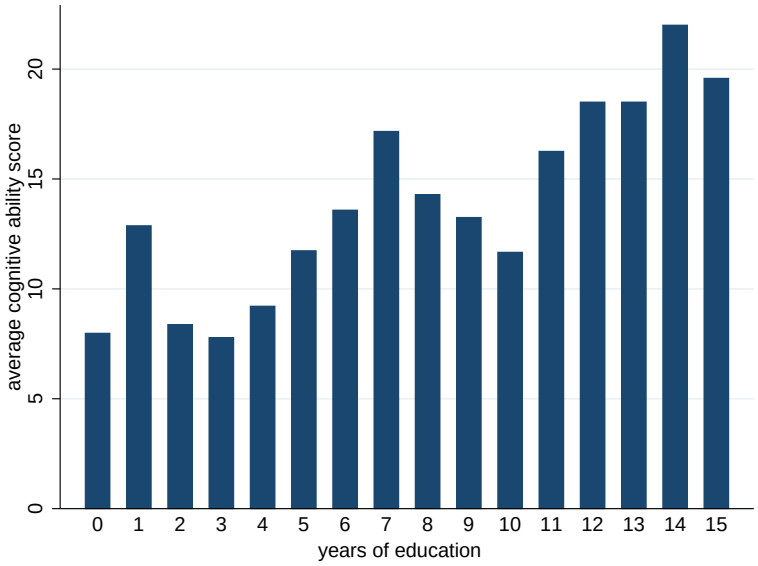

Figure 3: Cognitive Ability Scores by Education Level

3.2 Psychological Health

To assess the general psychological health of the mother, a Brief Symptom Inventory (BSI) was carried out. The BSI is a shorter version of the Symptom Checklist 90-R (see Derogatis [1975], Derogatis and Cleary [1977]). It is composed of 53 items covering nine symptom dimensions: Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism (see Derogatis and Spencer [1993] for a detailed construction of the BSI scales). The items in the BSI correspond to the intensity of the symptoms in the past week. Respondents rank each symptom (e.g. "Thoughts of ending your life") on a 5-point scale ranging from 1 ("Never") to 5 ("Too much"). Using these 9 primary dimensions, we construct a global index of distress, the Global Severity Index (GSI). The GSI is the sum over all items included in the BSI divided by the total number of items to which

the individual responded. This global index combines information about the number of symptoms and the intensity of distress (see Derogatis and Melisaratos [1983] and Conoley and Kramer [1989] on reliability and validity of the BSI). We use GSI measure to proxy for the mother's psychological health. 0 indicates no symptoms and a higher GSI score indicates higher number of psychological symptoms and/or high intensity of distress. 13.5% of the subjects appear to have no psychological symptoms. Figure 4 displays the variation in GSI scores. The distribution of the scale is highly skewed towards the lower tail, indicating that the majority of the subjects have reported a lower number of symptoms. The BSI measure is negatively and significantly correlated with our social support measures[11], suggesting that the women with higher BSI scores (indicating towards mental distress) tend to have weaker perceived social support.

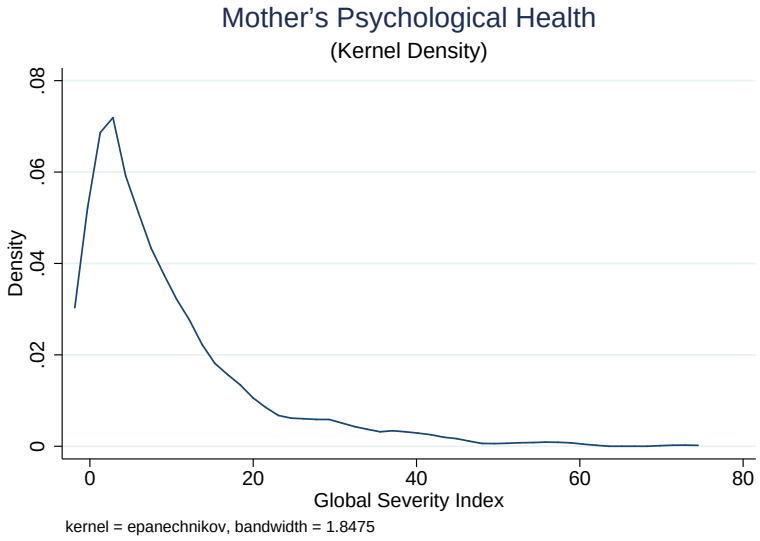

Figure 4: Mental Health

[11]Spearman rank correlations with each three social support indeces yield a negative correlation that is significant at 1 %.

3.3 Socio-economic Level

We also exploit several characteristics of the household, such as the Wealth Index. Note that the Wealth Index does not correspond to the formal definition of the term, i.e., assets net of liabilities. Various asset indeces have been developed to proxy for socio-economic status of households. Filmer and Scott [2008] provide a comparison of various asset indeces designed to rank socio-economic status of households. The data from ECDET survey allows us to combine two separate measures of economic status: the per capita household expenditure, and an asset index constructed from material wealth of the household. Per capita expenditure is the preferred proxy for income (Filmer and Scott [2008]). In the Household Income Expense Survey, the subjects are asked to state the total monthly expenditure of their household [12]. We then divide the reported amount by the number of people living in the household to calculate the total monthly expenditure per capita. To obtain a broader measure of socio-economic status, we combine the expenditure measure with an asset index approach. Our material wealth index is similar to the asset index developed by Filmer and Pritchett [1999] and Filmer and Pritchett [2001]. We ask the subjects whether the household owns various belongings (e.g. TV, dishwasher, summer house, daily newspaper, etc.) that are indicators of the material wealth of the household. Asset indeces are typically derived as a weighted sum of goods (which are effectively public in the household) and household quality indicators. Instead, we conduct principal component analysis with the individual items in the material wealth section. Finally, we construct a wealth index by extracting a common factor from the per capita total monthly spending and the factor predicting material wealth. The socio-economic status of the household appears

[12]"People in your house may have many expenses such as rent, electricity, transportation, education, and health care. Including such expenses, what is the total monthly expense of your household?"

to be uncorrelated with both of our risk measures. Socio-economic status is positively and significantly correlated with perceived support from family and friends, while it is significantly and negatively related to support from neighborhood.

3.4 Religiosity

Religious communities can provide a support network for individuals, which can indirectly influence risk attitudes. From this point of view, religiosity can also proxy social networks. Turkey is a predominantly Muslim country where religion plays an effective role in many aspects of life including health, insurance, and attitudes towards natural disasters. Moreover, religious beliefs and practices vary highly according to the region. Therefore, it is appealing to explore the relationship between religiosity and risk choices of Turkish women. The potential effects of religious attitudes on economic behavior has recently received considerable attention in economics literature (Benjamin et al. [2010], Kumar et al. [2011], Hilary and Hui [2009], Gheyssens and Gunther [2012], Halek and Eisenhauer [2001]). These studies have consistently demonstrated that risk preferences and religious attitudes are related. To account for religiosity, it is a common approach to exploit World Values Survey (WVS) data on indicators of religiousness (Miller [2000], Guiso et al. [2003] and Freese [2004]). The WVS religiosity indicators cover 4 dimensions: affiliation with a religion, comfort (finding comfort and strength in a religion), importance of religion, and attending religious services. A few number of studies on risk and religion, such as Miller [2000], include Turkey in their analyses. Note that both our methodology (risk elicitation methods and religiosity indicators) and analyses differ from Miller [2000]. Miller [2000] measures the respondents' general risk preferences on a 10-point self-reported scale. Moreover, their dependent variables are the

WVS indicators of religious attitudes, while we include religiosity as a control in our regressions of risk choices. The second wave of ECDET includes a religiosity scale which provides information about religious beliefs and practices. The dataset contains several items concerning the degree to which the respondent is involved in religious activities, affiliation with a religion and devotedness. From these items we conduct a principal component analysis to obtain a proxy for religiosity. On a scale of 0-100, the mean religiosity score of the subjects is 52.

3.5 Neighborhood Quality

In addition to the Social Support Questionnaire, we exploit another instrument reflecting the subjects' social environment. The Neighborhood Ecologies Survey in the ECDET study includes several subscales indicating the respondent's perception on their own neighborhood. This includes material and social resources available in the neighborhood, and social cohesion and social support. From the latter, we construct our index of social support from neighborhood. Remaining items provide information on the subject's perception of the quality of her neighborhood environment. To illustrate, the subjects report whether their neighborhood is clean, safe or whether they are pleased with the people living in their neighborhood. To construct an aggregate measure, we sum the individual items. The availability of social and material resources in the neighborhood appears to be positively associated to social support from neighborhood. Spearman rank correlations report a correlation coefficient of 0.53, with a p-value=0.0000. Thus, we control for the quality of the subjects' social environment while analyzing the effects of social support. Furthermore, to obtain a more credible measure of support from neighborhood and neighborhood ecologies, we also control for whether the respondents have moved to a different neighborhood in the past year. Only 9 % of the subjects state that they have

moved.

3.6 Social Support Instruments

The literature has established a link between social networks and risk behavior. With this study, our primary goal is to explore whether attitudinal differences in measured risk preferences are attributable to the quality of social support. There are different approaches to evaluate social support: received/perceived, observational/self-reported. Self-reported measures are preferred due to their convenience and brevity, and are typically obtained via surveys or interviews. We exploit data from a perceived Social Support Questionnaire, a self-reported survey-based measure which reports the adequacy of social support from the recipient's perspective.

One needs to bear in mind the distinction between the two concepts: social support and social networks (Barrera Jr [1986]). Social networks convey information on the number of social ties, their density, and the different roles of the 'ego' in social fabric. Network links provide information on the degree of social interconnectedness, while social support measures assess the quality of social interactions. For example, social networks reveal whether a family link exists, but social support measures also indicate whether there is someone in the family the individual can always trust. Hence, the existence of a social network does not necessarily translate into provision of social support. Social support indeces also measure reliance on social network members. Indeed, social support is about the availability of psychological and material resources from social networks. It is often grouped into three categories: instrumental, informational, and emotional. Instrumental social support involves the provision of financial assistance and help with daily tasks, informational social support is related to provision of information to help the individual with her problems (such as ad-

vice or guidance), and emotional social support refers to expression of emotions (e.g. empathy, caring, reassurance, and trust) (House et al. [1985]).

The Buffering Model, developed by Cohen and Wills [1985], proposes that social support protects, or 'buffers' individuals from negative impacts of adverse life events. The Buffering Hypothesis was the starting point for analyses of social support. With the buffering hypothesis, the development of a social support instrument for use in population surveys has been popularized (Unden and Orth-Gomer [1989]). Social support instruments have originally been developed to measure the level of social support of medical patients. Research has shown that correlation between stressful events and poor health is weaker for people with high social support (Cohen and Wills [1985]). Gottlieb and Bergen [2010] provide a comparison of the quality of three different measures of perceived social support (ISSB, SPS and ESSI), along with reporting their reliability and validity.

Some perceived Social support instruments that bear similarities with ours include the Interpersonal Support Evaluation List (ISEL), Social Support Questionnaire (SSQ), and the Social Provisions Scale (SPS). The ISEL (Interpersonal Support Evaluation List) asks the subjects about availability of a specific type of social support (see Cohen and Hoberman [1983] for a detailed information on the ISEL). The ISEL includes 40 items and 4 subscales: tangible support, belonging support, self-esteem support and appraisal support. The participants are presented with a list of statements, whereby they rate each statement on a 4-point scale, ranging from "Definitely True" to "Definitely False". A limitation of this approach is that it does not identify the source of social support. Hence, the subjects can obtain a high score if they receive strong support from a single source. Similarly, the SPS (Social Provisions Scale) by Cutrona and Russell [1987] does not provide information on the source of social support.

The SPS scale includes 24 items tapping 6 types (subscales) of provisions, including practical help, guidance, and attachment. SPS scores are calculated by summing over the individual items, after reverse-coding the negative ones. The SPS measure is reported to have an excellent internal consistency (reliability) with Cronbach's alpha = 0.92 [13]. The reliability and validity of SPS has been reported in Cutrona and Russell [1987] and Gottlieb and Bergen [2010] [14]. Therefore, the ISEL and SPS measures can be implemented when the source of social support is not crucial for the researcher. The SSQ (Social Support Questionnaire), developed by Sarason et al. [1983], is another popular instrument of social support. The original version of the SSQ is a 27-item questionnaire, where each item is composed of two parts. First, the respondents list sources that fit the description of the specific social support in the question. Then, the subjects are asked to indicate their level of satisfaction with social support from the reported sources. Thus, the SSQ conveys information on the source of social support. Yet it does not differentiate between different types of social support. Finally, Procidano and Heller [1983] devise an instrument focused on social support from two specific sources: friends and family.

In order to analyze different types of social networks separately, we have distinct modules assessing social support from different sources: support from family and friends. In addition to these two modules, we also exploit the Neighborhood Ecologies Survey, which includes items on social resources available in the neighborhood, from which we derive the social support from neighborhood measure. Following the approach with SPS, we form social support scores by summing up the individual items separately for each three dimensions. Our

[13] Cronbach's α is the coefficient of internal consistency. A measure is said to have an 'excellent' internal consistency if $\alpha \geq 0.9$.

[14] Reliability determines how consistent a measure is, i.e., whether it yields similar results under varying conditions. If a measure has high reliability, it yields consistent results. Validity refers to the degree to which an instrument measures what it is supposed to measure. Note that an instrument must be reliable in order to be valid.

instrument identifies the source of social support, as well as its quality. The ECDET Perceived Social Support Questionnaire has been conducted in all waves of ECDET. In our study, we only exploit data from the most recent wave. Our social support index comprises of three components: support from friends, family, and neighbors[15]. It indicates the perception of the respondents about the degree of various dimensions of social support they receive from different social circles. For each item, the subjects report their perception on a scale of 1-5, ranging from "Definitely False" to "Definitely True". Items include statements on whether the respondent can obtain help in times of need, whether there is someone in that social circle that she can trust, and whether she can obtain support in difficult times[16]. Most subjects indicate a high level of perceived social support in all dimensions. The resulting Kernel density estimates of our social support instruments are displayed in Figure 5. Our three social support measures are (strongly) positively and significantly correlated with each other[17].

[15] We also form a measure of support from the subjects' husbands, using specific items from the Marital Quality Scale in the ECDET study. However, we excluded husband support from our regressions, as it is available only for a few number of observations.

[16] For the complete list of items, please see Appendix 6.

[17] All Spearman rank correlations yield significance at 1% level.

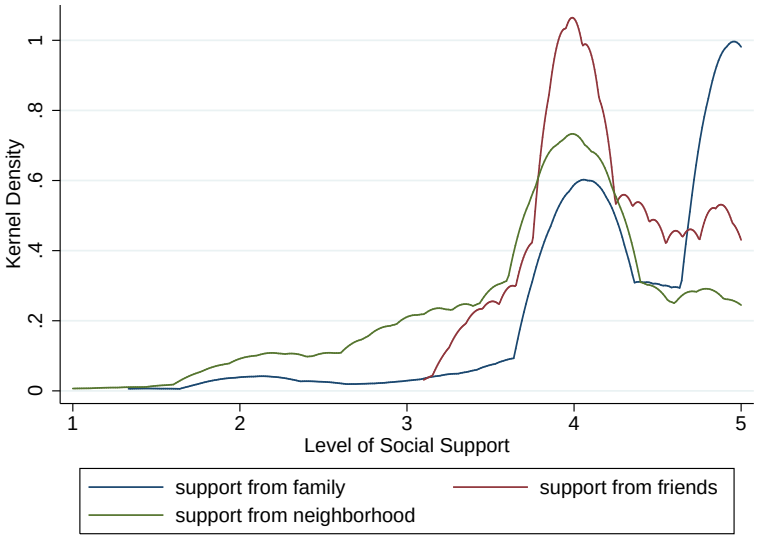

Figure 5: Dimensions of Social Support

3.7 Access to Funds

A widely accepted definition of social capital is by Putnam [1995]: "features of social organization such as networks, norms and social trust that facilitate co-operation for mutual benefit. (p.67)" Several proxies of social capital have been used to capture different aspects of social capital (see Grootaert and Van Bastelaer [2002] for definitions and measurement of social capital]. Some proxies of social capital include norms of helping others, norms of sharing gains, membership in organizations (civic engagement), and network-reliance. Nielsen et al. [2013] proxy for social capital using an instrument measuring social network-reliance. Their instrument consists of binary responses to the following survey question: "If you or another household member asked, would it be easy or not easy to borrow money for education (or for health expenses, a positive social event, a negative social event, or to borrow a water buffalo, or to ask for labor) from (see social networks below)?" (p.259, Nielsen et al. [2013]) The participants

report their network-reliance measure for first-degree relatives, friends, extended family, and village head. Nielsen et al. [2013] find that network-reliance from first-degree relatives is greater than friends, which is greater than reliance on extended family, which is greater than reliance on village head. This instrument conveys information on whether the individuals can rely on several social circles for financial support.

Similarly, we ask the subjects to rate the statement: "When I need money urgently, I can borrow it from someone who lives in our neighborhood." on a 1-5 scale, ranging from "Definitely False" to "Definitely True". We conceive of this question to be a proxy for access to funds from social networks, i.e., a form of (informal) social insurance. It shows the individual's ability to be financially insured by her social network. 16 % of the subjects rate this statement to be "False" or "Definitely False", while 69 % respond with "True" or "Definitely True". Figure 6 shows the resulting distributions of this item. Access to funds is positively and significantly[18] correlated with all three social support indeces, suggesting a positive relationship between perceived social support and access to funds from social networks. We will analyze this link further in the coming sections.

[18] All Spearman rank correlations are significant at 1%.

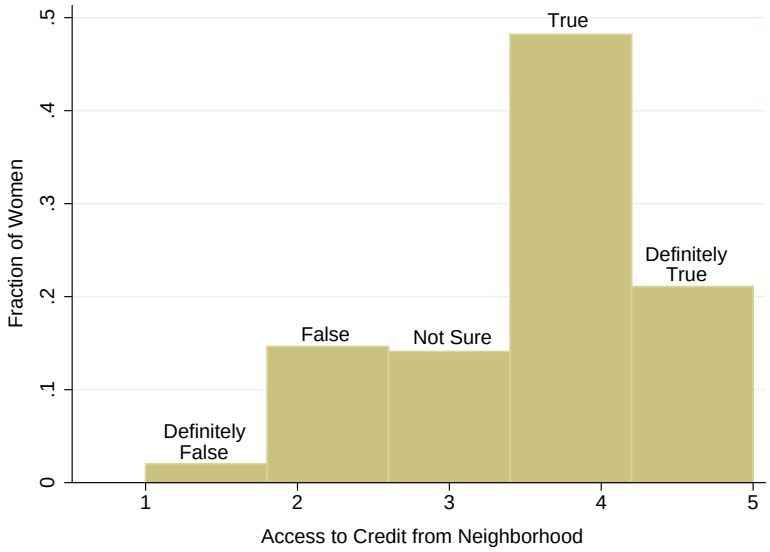

Figure 6: Access to Funds from Social Networks

4 Results and Discussion

We conduct our analyses in three steps. First, we perform a number of regression analyses to analyze the socio-economic determinants of elicited risk preferences, and detect a significant relationship between the quality of social support and risk tolerance. To further explore on the relationship between social support and risk choices, we use a proxy for social insurance: access to funds from social networks. We examine whether women with higher degree of social support tend to rely more on their social networks for financial resources, and find a positive association. Finally, we estimate the effect of social support on risk choices, controlling for access to funds. Even controlling for access to funds, we find that the quality of social support still has substantial predictive power on risk choices. Hence, our results reveal that our proxy for social insurance fails to wholly explain the nature of the link between social support and risk choices. Additionally, we implement Seemingly Unrelated Regression (SUR) model for a joint analysis of choices in the incentivized risk task and the hypothetical lottery question. Outcomes of the SUR estimations are presented in Appendix 6.

We estimate several alternative specifications to break down the relation between social ties and risk preferences. Estimation techniques and results are discussed below.

4.1 Social Support and Risk Tolerance

The starting point for our analyses is the link between quality of social support and experimentally elicited risk preferences. We find a significant positive correlation between all social support and risk measures[19]. Social support emerges

[19]Spearman rank correlations are significant at 5% except for the correlation of support from neighborhood with risk tolerance elicited by the hypothetical lottery question.

as a critical factor influencing risk choices. Our first set of regressions (Table 2 and Table 3) document this relationship. We estimate Ordinary Least Squares (OLS) regressions with risk tolerance as the dependent variable. First, we perform regressions of risk tolerance (both incentivized and hypothetical) on our social support measures from 3 different sources (see columns 1, 2, 3 and 4 of Table 2). Here, we show that the social support measures are jointly significant for both risk elicitation methods. An F-test of joint significance yields p-values of 0.002 and 0.016 for the incentivized and hypothetical risk measures respectively[20]. Another important point to note is that the social support measures alone explain 11% and 7% of the variation in incentivized and hypothetical risk choices respectively, when we control for region fixed effects. While none of the coefficients of social support indeces appear to be significant in specification (3) (with incentivized risk tolerance), support from friends has a significant (at 5 % significance level) positive effect on risk tolerance elicited by the hypothetical lottery.

We then extend our analyses to include various socio-economic characteristics. We analyze the role effects of social support on risk choices, controlling for a wide variety of characteristics. Inclusion of additional controls leads to a significant increase in R^2 for both risk elicitation methods. Controlling for socio-economic characteristics along with social support measures captures 15% of the variation in incentivized risk choices, and 10% of the variation in choices in the hypothetical lottery. Here, we observe that all social support measures have a positive effect on risk choices, i.e., people with higher perceived social support are inclined to make riskier choices in an incentivized risk task and a hypothetical lottery question. Significance levels differ.

Notably, including the controls magnifies the impact of social support on risk

[20]Note that these p-values correspond to regressions of risk tolerance on all of the three social support indeces, without controlling for region fixed effects. P-values for the regressions with region fixed effects are also reported.

choices on incentivized risk tolerance. Specifically, support from family becomes significant at 10% level, and support from neighborhood at 1%. The only type of support to significantly influence choices in the hypothetical lottery seems to be support from friends. While it remains significant at 5% level, we observe a negligible decline in the magnitude of its effect (from 0.065 to 0.059), when we control for additional characteristics. We observe that while support from family and neighborhood are significant predictors of incentivized risk choices, support from friends has a significant impact on choices in a hypothetical lottery with large-stakes.

Table 1 presents the descriptive statistics of our control variables. Specifications (5) and (6) in Table 2 offer a socio-economic analysis of risk choices. Socio-economic status of the household seems to be negatively associated with taking risks in the incentivized task, while this relationship is only significant (at 10% level) for the higher (3^{rd}) quartile. Our results display that the women from households with higher socio-economic status tend to behave more risk-averse in the incentivized risk task with small stakes. The socio-economic status of the household is not significant with choices in the hypothetical lottery. Other studies have also looked at how wealth effects risk attitudes. An experimental study reports that wealthier people take more risks with small stakes, and are more risk-averse with large-stakes (Bosch-Domenech and Silvestre [2006]). Dohmen et al. [2010] find that willingness to take risks in a hypothetical lottery increases with the logarithm of household income.

The fixed-effects model is used to account for region fixed effects. All our OLS regressions are adjusted for region fixed effects and standard errors are clustered at the city level. Note that regional fixed effects capture significant variation in the subjects' choices. We observe a significant increase in R^2 (from 0.07 to 0.15 for the incentivized risk choices, and from 0.05 to 0.10 for the

hypothetical lottery)[21]. In addition, we control for the effect of geographical location to provide a more detailed analysis of social support. The results are presented and discussed in Appendix 6.

Variable	**N**	**Mean**	**Min**	**Max**
Age	743	34.44	22	84
Education (in years)	745	5.86	0	15
Household Size	745	5.08	2	25
Socio-economic Level	745	-0.02	-1.55	5.48
Mental Health (0 No Symptoms)	739	9.40	0	72.64
Working (0,1)	745	0.17	0	1
Moved in the past year (0,1)	745	0.09	0	1
Job Loss in Close Circle (0,1)	745	0.11	0	1
Precautionary Savings (0,1)	745	0.42	0	1
Religiosity	745	51.93	0	100
Cognitive Ability	745	12.37	0	23.5
Number of Family Members living in the same Neighborhood	745	5.86	2	11
Social and Material Resources Available in the Neighborhood	745	38.74	17	50

Table 1: Additional Controls - Descriptive Statistics

[21]Specifications (1), (2), (3) and (4) in Table 2 provide comparison of analyses of social support with and without the inclusion of region fixed effects. Note that there is a significant increase in R^2 when we use the fixed-effects model.

Several personal characteristics of the subjects stand out as significant predictors of their risk choices. For instance, older women tend to make less risky choices, and this relationship is significant with choices in an incentivized risk task. Unlike previous studies, we observe that cognitive ability scores do not have an impact on risk choices. In addition, our proxies for human capital, level of education and working status, do not seem to influence risk choices in neither of the tasks.

Psychological health appears to be a critical factor determining incentivized risk tolerance. Research on mental health and economic decision-making is scarce. Bogan and Fertig [2013] analyze the role of mental health in household portfolio choice decisions and show that households with mental disorders invest less in risky instruments. We present contradictory evidence with Turkish women. Note that, however, our incentivized risk measure involves low stakes and is fundamentally different from portfolio choice. We find that mental health has a significant (at 1 % significance level) impact on incentivized risk choices and choices in the hypothetical lottery (significant at 10 %). In particular, the subjects are more likely to invest more in the risky option if they have reported more psychological symptoms.

There has been recent emphasis on the role of religion in economic decision-making. A standard conclusion of these studies is a strong interaction between risk choices and religious attitudes. Conducted with different societies with different religious norms, results from these studies vary greatly. Using data from the World Values Survey on religiosity indicators, Halek and Eisenhauer [2001] find some evidence for a higher degree of risk aversion for subjects who are more 'religious'. On the other hand, Gheyssens and Gunther [2012] note that religiosity increases risk-taking in the loss domain. Confirming the literature, we detect a significant negative relationship between willingness to take risks and

	(1) incentivized risk task (% invested)	(2) hypothetical lottery (% invested)	(3) incentivized risk task (% invested)	(4) hypothetical lottery (% invested)	(5) incentivized risk task (% invested)	(6) hypothetical lottery (% invested)
Support from Family	0.030*	0.017	0.021	0.014	0.033*	0.013
	(0.016)	(0.016)	(0.015)	(0.013)	(0.018)	(0.014)
Support from Friends	0.037	0.055**	0.034	0.065**	0.036	0.059**
	(0.024)	(0.024)	(0.034)	(0.028)	(0.037)	(0.027)
Support from Neighborhood	0.019	0.006	0.017	0.004	0.041***	0.021
	(0.013)	(0.014)	(0.015)	(0.010)	(0.014)	(0.013)
Age					-0.008*	-0.0003
					(0.004)	(0.008)
Age squared					0.000*	-0.000
					(0.000)	(0.000)
Education (years)					0.002	0.003
					(0.004)	(0.004)
Household size					0.008	0.001
					(0.005)	(0.005)
SEL 1^{st} quartile (low)					-0.033	0.009
					(0.038)	(0.052)
SEL 2^{nd} quartile					-0.024	-0.042
					(0.025)	(0.043)
SEL 3^{rd} quartile					-0.029*	-0.028
					(0.015)	(0.032)
Mother's Mental Health					0.004***	0.002*
					(0.001)	(0.001)
Works (0,1)					-0.010	0.021
					(0.029)	(0.036)
Moved in the past year (0,1)					-0.021	0.009
					(0.032)	(0.034)
Job Loss in Close Social Circle (0,1)					-0.023	0.026
					(0.031)	(0.035)
Precautionary Savings (0,1)					0.006	0.039*
					(0.026)	(0.022)
Religiosity (0-100)					-0.001*	-0.001
					(0.001)	(0.001)
Average Cognitive Ability					0.002	0.005
					(0.003)	(0.003)
Less than 5 family members					0.024	-0.005
					(0.024)	(0.024)
5-7 family members					-0.015	-0.024
					(0.023)	(0.029)
Neighborhood Resources					-0.004**	-0.004**
					(0.002)	(0.002)
N	739	699	739	699	733	693
R^2	0.019	0.015	0.110	0.069	0.152	0.104
Prob $> F$	0.002	0.016	0.124	0.061	.	.
Region FE	no	no	yes	yes	yes	yes

* $p < .1$, ** $p < .05$, *** $p < .01$
Standard errors in parentheses
All standard errors are clustered at the city level.
'SEL 4^{th} quartile' was dropped to avoid multicollinearity.

Table 2: Socio-economic Determinants of Risk Choices - OLS Regressions

religiosity[22]. Subjects who have a higher religiosity score tend to behave significantly more risk-averse in the incentivized choice task. This relationship is not significant for choices in the hypothetical lottery, while the negative relationship is preserved.

We control for the quality of the subject's environment, including the availability of social and material resources in the neighborhood. Neighborhood resources appear to have a significant influence on risk choices. Subjects who report more resources in the neighborhood tend to make less risky choices.This result holds for both risk measures, yet the coefficients are negligible in magnitude. Another indicator of the subject's environment is the number of family numbers residing in the same neighborhood. While neighborhood resources have an important effect, the number of family members living in the same neighborhood does not seem to influence risk choices. In addition, a proxy for financial loss does not seem to have a significant effect either. To proxy for past experience of financial loss, we asked the subjects whether someone in their family or close circle (including the subject herself) has lost their job. Only 11% of the subjects have reported a job loss in their family or close social circle in the past year. This variable doesn't seem to have a significant effect on risk choices.

When the subjects were asked how they would finance an unexpected expense, majority choose to borrow from friends and family (43 %) or use up their savings (38 %). Regarding these statistics, we also control for whether the subjects have precautionary savings. Our binary variable indicates whether the subjects have precautionary savings for emergency needs. 42 % of the subjects report to have precautionary savings. The precautionary savings dummy is significant (at 10 %) with choices in the hypothetical lottery, while it does not seem to have an effect on incentivized risk choices. We believe that this

[22]Spearman rank correlations between religiosity and incentivized risk tolerance yields a coefficient of (-0.1), which is significant at 1 %. Spearman rank correlations with the hypothetical risk measure yield a negative correlation coefficient that is not significant.

difference can partly be attributed to the distinct nature of our risk preference elicitation tasks. In particular, subjects might relate precautionary savings to choices involving large stakes. Having precautionary savings increases the risk taken in a hypothetical lottery.

Note that the social support measures obtained from 3 different sources are significantly related[23]. This might suggest that some social ties might overlap. Hence, to overcome a potential multicollinearity problem, we perform our regression analyses with individual social support indeces. The OLS regressions estimated in Table 3 correspond to the separate regressions of risk tolerance on individual social support measures (separate regressions for each social support dimension), including the exact same set of controls in specifications (3) and (4) of Table 2. The results from individually ran regressions of social support (Table 3) are highly similar to the results from the models including all social support measures (Table 2, columns 5 and 6). On average, separate regressions with individual social support indeces capture about 14% (compared to 15% in the previous model) of the variation in incentivized risk choices, and about 9% (compared to 10% in the previous model) of the variation in risk choices in a hypothetical lottery question. Hence, estimating the model with all three social support indeces or individual support instruments does not make a huge difference in terms of explaining the variation in risk choices.

We observe that social support variables have greater influence on risk choices when we perform individual regression analyses. Women with higher perceived social support from their families invest 5% more on average in the incentivized risk task, while those with higher perceived social support from their friends invest 7% more in a hypothetical lottery. Higher perceived social

[23] All three Spearman rank correlations yield positive coefficients, and significance at 1% level.

support from neighborhood increases investments in the incentivized task by 5%, and investments in the hypothetical lottery by 3%. Hence, we find that social support from friends has a greater influence on risk-taking when the decision involves high stakes. The degree of social support from family and neighborhood almost have the same impact on risk attitudes in an incentivized risk task involving small stakes.

Additional control variables have almost identical impacts as in the model presented in columns 5 and 6 of Table 2. Hence, we do not report them here.

4.2 Access to Funds from Social Networks

Although the quality of social support seems to influence risk choices from both tasks, the nature of this relationship remains unclear. For instance, someone who is more risk-averse might have weaker or stronger social ties. We propose that a link between social support and access to funds from social networks can explain how social support influences risk choices. In line with our hypothesis, we construct a proxy for social network reliance: reliance on informal credit from social circles. This instrument indicates access to funds from social networks, and precisely, access to credit from neighborhood. We hypothesize that access to funds from social networks can drive the link from social support to risk tolerance.

First, we observe that access to funds is positively and significantly correlated with all three dimensions of social support. Spearman rank correlations yield significant correlations at 1 % significance level, for all three social support indeces. To investigate this relationship further, we estimate ordered logistic regressions of access to funds on social support network measures, including additional controls[24].

[24]We use the identical set of controls from Table 2 (columns 5 and 6) and Table 3.

	(1) incentivized risk task (% invested)	(2) incentivized risk task (% invested)	(3) incentivized risk task (% invested)	(4) hypothetical lottery (% invested)	(5) hypothetical lottery (% invested)	(6) hypothetical lottery (% invested)
Support from Family	0.046**			0.026		
	(0.019)			(0.016)		
Support from Friends		0.058			0.070**	
		(0.040)			(0.027)	
Support from Neighborhood			0.048***			0.029**
			(0.016)			(0.014)
N	737	733	737	696	693	696
R^2	0.136	0.137	0.138	0.090	0.100	0.092
Region FE	yes	yes	yes	yes	yes	yes

* $p < .1$, ** $p < .05$, *** $p < .01$

Standard errors in parentheses

All standard errors are clustered at the city level.

All regressions include the controls in specifications (5) and (6) in Table 2. Full set of results are available on request.

Table 3: OLS Regressions of Risk Choices on Individual Social Support Indeces

It is typical to use ordered logit estimation to analyze outcomes of opinion surveys (Greene [2003], McKelvey and Zavoina [1975]). Our response variable, access to credit from neighborhood, has five categories. Given 5 possible answers, the subjects choose the one that most closely represents their own feelings on the item. Hence, the actual value of the dependent variable is not observed. We can only know to which category the actual value belongs. The answers to access to funding question (our response variable) have a natural ordering (ranging from 'Definitely False' to 'Definitely True'). Using the ordered logit model accounts for the ordinal nature of our response variable, which is essential for our analyses.

Table 4 exhibits ordered logistic regression results of access to funds on separate social support instruments and a set of controls. This model informs us on the relationship between the degree of reliance on social networks for credit and the quality of social support. Consistent with our hypothesis, the quality of social support appears to be a significant predictor of access to funds from social networks. The coefficients of all three social support indeces appear to be positive and significant (at 1% level). The positive association between the quality of social support and access to funds is consistent with our hypothesis: people with higher perceived social support are more likely to have access to funds from social networks. This relationship is robust to the inclusion of a wide variety of controls.

		(1) access to funds	(2) access to funds	(3) access to funds
Panel A	Support from Family	0.503***		
Social Support		(0.114)		
	Support from Friends		0.591***	
			(0.169)	
	Support from Neighborhood			2.892***
				(0.163)
Panel B	Age	0.0609	0.0520	0.0368
Additional Characteristics		(0.052)	(0.052)	(0.059)
	Age squared	-0.001	-0.001	-0.000
		(0.001)	(0.001)	(0.001)
	Education (years)	-0.046	-0.0404	-0.003
		(0.028)	(0.028)	(0.031)
	Household size	0.121***	0.107**	0.038
		(0.046)	(0.047)	(0.051)
	SEL 1^{st} quartile(low)	0.068	0.104	-0.030
		(0.252)	(0.253)	(0.274)
	SEL 2^{nd} quartile	-0.214	-0.215	-0.277
		(0.227)	(0.228)	(0.249)
	SEL 3^{rd} quartile	-0.309	-0.298	-0.275
		(0.211)	(0.212)	(0.231)
	Mother's Mental Health (0 No symptoms)	-0.011	-0.016**	0.001
		(0.007)	(0.007)	(0.008)
	Works (0,1)	-0.095	-0.104	-0.246
		(0.201)	(0.200)	(0.221)
	Moved in the past year (0,1)	-0.202	-0.290	0.375
		(0.244)	(0.246)	(0.259)
	Job Loss in Close Social Circle (0,1)	0.374	0.324	0.012
		(0.237)	(0.235)	(0.254)
	Precautionary Savings (0,1)	-0.135	-0.146	-0.281*
		(0.147)	(0.148)	(0.161)
	Religiosity (0-100)	0.001	0.001	-0.002
		(0.004)	(0.004)	(0.004)
	Average Cognitive Ability	-0.029	-0.032	-0.024
		(0.023)	(0.023)	(0.025)
	Less than 5 family members	-0.298	-0.400**	-0.113
		(0.194)	(0.193)	(0.213)
	5-7 family members	-0.246	-0.262	-0.179
		(0.185)	(0.185)	(0.204)
	Neighborhood Resources	0.122***	0.117***	0.013
		(0.012)	(0.013)	(0.014)
	N	737	733	737
	Pseudo R^2	0.104	0.100	0.321
	LR Chi-squared	202.47	191.83	625.07
	Degrees of Freedom	18	18	18

* $p < .1$, ** $p < .05$, *** $p < .01$
Standard errors in parentheses
Response variable is 'Access to Credit from Neighborhood', which is our proxy for 'Access to Funds'.

Table 4: Access to Funds and Social Support - Ordered Logit Regressions

4.3 Social Ties, Access to Funds and Risk

To test the validity of our hypothesis, we analyze whether access to funds from social networks has an impact on risk choices. Spearman rank correlations yield a significant positive correlation (at 10 % level) for the incentivized risk task. Access to funds from neighborhood is not significantly correlated with choices in the hypothetical lottery. Moreover, regressions of risk choices on access to funds indicate that access to funds from social networks does not have a significant impact on risk choices. These result suggest that our hypothesis fails in this context, using this particular proxy for social insurance and risk elicitation methods.

Finally, we investigate whether the quality of social support has an independent effect on risk choices when we also control for access to funds. Results from OLS estimations are presented in Table 5. To assess the influence of support from different social circles, we perform these regressions with individual social support indeces.

Our findings show that social support measures still appear to be significant, and the results are very similar to Table 3. Although almost all coefficients of social support indeces are still significant, the estimates are smaller in magnitude (except for the neighborhood support instrument). Note that the magnitude of the coefficient of support from neighborhood increases slightly for both risk measures (from 0.0464 to 0.0538 for the incentivized risk task, and from 0.0292 to 0.0304 for the hypothetical lottery question). This might occur because the access to funds variable is an indicator of access to credit from neighborhood. In fact, the two instruments (support from neighborhood and access to credit from neighborhood) are strongly and positively correlated. Spearman rank correlations yield a coefficient of 0.71, and a p-value of 0.0000.

Our findings do not fully comply with our initial hypothesis. Access to funds

does not seem to explain the whole story. It only partially captures the effect of social support on risk choices. In other words, the influence of social support on risk choices does not fully operate through access to funds. While the quality of social support seems to predict access to funds (Table 4), it also has an independent effect on risk choices. Thus, we conclude that further investigation is required to reveal the factors that explain the link between social support and measured risk tolerance.

This has two potential implications. First, a superior proxy of access to funds from social networks might yield different results that support our hypothesis. Since our instrument only captures access to funds from neighborhood, a more comprehensive measure of access to funds from different social circles might serve as a better proxy for social insurance.

Second, it is possible that other factors contribute to explaining the link between social ties and risk choices. Another mechanism of support, such as in-kind support, might play a role. In-kind support is another form of social insurance, i.e., individuals can make different choices under risk if they have in-kind support from their social networks. In addition, other forms of social capital, such as trust, reciprocity and social norms might also play a part in driving the link from social connections to risk behavior. Trust is a crucial component of social insurance as low levels of trust in social networks reduces reliance on social networks. Although our social support instrument includes several items that indicate trust from social circles, we do not have a measure that specifically reveals trust from social networks.

Another result worth noting from these regressions is the effect of cognitive ability. The cognitive ability score does not seem to have an impact on incentivized risk choices. However, women who score higher on cognitive ability tasks make significantly riskier choices in the hypothetical lottery question. This dis-

tinction might potentially arise due to the difference in stakes between the two elicitation methods. Choices in the hypothetical lottery confirm evidence from Frederick [2005] and Dohmen et al. [2010] on the effect of cognitive ability on willingness to take risks.

		(1) incentivized (% invested)	(2) incentivized (% invested)	(3) incentivized (% invested)	(4) hypothetical (% invested)	(5) hypothetical (% invested)	(6) hypothetical (% invested)
Panel A Social Support	Support from Family	0.043**			0.024		
		(0.019)			(0.016)		
	Support from Friends		0.054			0.067**	
			(0.040)			(0.027)	
	Support from Neighborhood			0.054**			0.029
				(0.021)			(0.029)
	Mother's Age(years)	-0.006	-0.008*	-0.007	0.001	-0.000	0.000
		(0.004)	(0.004)	(0.004)	(0.008)	(0.008)	(0.008)
	Age squared	0.000	0.000*	0.000	-0.000	-0.000	-0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	Mother's Education (years)	0.002	0.002	0.003	0.003	0.003	0.003
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
	Household size	0.009	0.008	0.007	0.002	0.001	0.000
		(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.004)
	SEL 1^{st} quartile(low)	-0.031	-0.035	-0.037	0.008	0.009	0.003
		(0.040)	(0.040)	(0.040)	(0.052)	(0.052)	(0.052)
	SEL 2^{nd} quartile	-0.029	-0.026	-0.024	-0.039	-0.041	-0.042
		(0.023)	(0.024)	(0.024)	(0.040)	(0.043)	(0.039)
	SEL 3^{rd} quartile	-0.028**	-0.029*	-0.030**	-0.032	-0.027	-0.034
		(0.013)	(0.017)	(0.014)	(0.031)	(0.032)	(0.030)
	Mother's Mental Health (0 No symptoms)	0.003***	0.003***	0.003***	0.001	0.001	0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
	Works (0,1)	-0.011	-0.006	-0.011	0.023	0.023	0.023
		(0.028)	(0.027)	(0.028)	(0.037)	(0.036)	(0.037)
	Moved in the past year (0,1)	-0.026	-0.031	-0.023	0.007	0.005	0.008
		(0.032)	(0.031)	(0.030)	(0.033)	(0.034)	(0.034)
	Job Loss in Close Social Circle (0,1)	-0.020	-0.024	-0.033	0.027	0.026	0.020
		(0.032)	(0.033)	(0.032)	(0.036)	(0.035)	(0.034)
	Precautionary Savings (0,1)	0.005	0.009	0.005	0.038*	0.040*	0.039*
		(0.026)	(0.024)	(0.026)	(0.021)	(0.022)	(0.022)
	Religiosity (1-5)	-0.001*	-0.001*	-0.001*	-0.001	-0.001	-0.000
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
	Average Cognitive Ability	0.002	0.002	0.003	0.005*	0.005	0.006*
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
	Less than 5 family members	0.020	0.019	0.015	-0.002	-0.006	-0.006
		(0.020)	(0.023)	(0.022)	(0.025)	(0.025)	(0.025)
	5-7 family members	-0.018	-0.015	-0.021	-0.023	-0.023	-0.025
		(0.021)	(0.023)	(0.022)	(0.030)	(0.030)	(0.030)
	Neighborhood Resources	-0.002	-0.002	-0.004**	-0.003*	-0.003**	-0.004**
		(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
	Access to Credit from Neighborhood	0.016	0.020	-0.006	0.012	0.013	0.000
		(0.014)	(0.012)	(0.018)	(0.013)	(0.012)	(0.023)
	N	737	733	737	696	693	696
	R^2	0.139	0.141	0.139	0.0920	0.102	0.0917
	Region FE	yes	yes	yes	yes	yes	yes

* $p < .1$, ** $p < .05$, *** $p < .01$
Standard errors in parentheses
Standard errors clustered at the city level.
We use 'Access to Credit from Neighborhood' to proxy for 'Access to Funds'.

Table 5: Social Ties, Access to Funds, and Risk Preferences

5 Conclusion

Most generally, this study investigates how measured risk preferences are shaped by socio-economic characteristics in a sample of about 750 Turkish women, using experimental measures. We develop our approach around the effect of the quality of social support on willingness to take risks. Social support is a novel instrument to be used in economic studies.

Social network literature has already demonstrated some stylized facts about the role of social connections in shaping risk behavior. First, we know that loans obtained from informal sources usually do not require collateral or interest payments. Thus, especially in economies with less developed financial markets, most credit transactions rely upon social collateral rather than physical collateral. Indeed, social networks serve as social collateral to secure informal borrowing (Karlan et al. [2009]). This suggests a role for support from one's social networks on the formation of informal financial institutions. We also know that individuals are more likely to share risk with friends and family than with other members of the society (Fafchamps and Lund [2003] and Angelucci et al. [2009]).

Motivated by these findings, we investigate the role of social relationships on risk choices from a different perspective. We exploit a measure of social support, which reflects provision of social and material resources from social networks. We detect a strong interaction between the quality of social support and risk choices. Yet, our instrument, access to funds from social networks, fails to fully reveal the relationship between social ties and risk choices. Moreover, our proxy for access to funds from social networks does not have a significant effect on risk choices. Hence, our hypothesis fails in this specific context. Nevertheless, our results suggest that social network measures can be complemented with social support instruments in analyzing risk behavior.

There are several limitations to our study. Above all, a more comprehensive measure of access to funds from social networks is required. This could also provide information on the specific source of funds. Moreover, information on the frequency of borrowing from both formal and informal financial intermediaries could be of use. Although we have information on the subjects' dominant source of funding (formal vs. informal), it does not specify whether subjects have access to formal financial institutions. Our results can be extended to distinguish between settings where formal credit is not accessible/available, and available, but not preferred.

Nonetheless, this study has implications on the penetration of formal financial sector among women in developing economies. Moreover, these results could be analyzed in the context of microcredit, where informal credit arrangements in social networks play a critical role. In a setting where social connections constitute the dominant sources of funding, we show that the quality of social support plays an important role in economic decision making. Including information on saving and borrowing patterns would enrich these conclusions.

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6 Appendix

A. Perceived Social Support Questionnaire

A.1 Support from Family

For each sentence, please select one of those choices below:

"5: Definitely True," "4: True," "3: Not Sure," "2: False," and "1: Definitely False"

1. Someone from family is there when I need help.
2. I can share my happiness and sorrow with someone from family.
3. Someone in the family really tries to help me.
4. I can get support someone from the family when I am upset/depressed.
5. Someone from the family comforts me when I have problems.
6. I can trust someone from the family when I am in trouble.
7. I can talk to someone from the family about my problems.
8. Someone in the family cares about my feelings.
9. Someone from the family helps me to make decisions.

A.2 Support from Friends

For each sentence, please select one of those choices below:

"5: Definitely True," "4: True," "3: Not Sure," "2: False," and "1: Definitely False"

1. My friends do not visit me as often as I wish.
2. My best friend does not show interest in my problems.
3. I have a friend that I can share the good news with.
4. I have a friend who cheers me up, no matter how upset I am.
5. I have no friends that I can trust enough to share my secrets.
6. I often need help from my friends, but I cannot get the help I need.
7. I have a friend that I can talk to, at least on the phone, when I am depressed.
8. I do not have any friends that I can rely on for support in difficult times.
9. I feel very lonely most of the time.
10. I do not have a very close friend.

A.3 Support from Neighborhood

For each sentence, please select one of those choices below:

"5: Definitely True," "4: True," "3: Not Sure," "2: False," and "1: Definitely False"

1. Neighborhood dwellers come together to solve problems in neighborhood.
2. When I have a problem, someone from the neighborhood helps me.
3. I can ask someone in our neighborhood to take care of my children when I need to go somewhere.

4. I can share it with someone in the neighborhood when my child has a problem.

5. Someone in the neighborhood would help me if I am sick.

6. Someone in the neighborhood can help me when I need to go to the bank, hospital, office, etc..

B. Regional Differences in Social Support

Turkey has a rich culture, and social norms vary greatly across regions. Social support is surely closely related to social norms. Hence, we elaborate on the quality of social support by comparing the effects of different levels of social support on risk choices with subjects from different regions in Turkey. These differences might be of importance since our dataset includes observations from 19 different cities in Turkey. Specifically, we categorize the cities with respect to their geographical location. We construct dummies for regions in the east/west and north/south, according to the latitude and longitude of the cities. We then interact regions with social support indeces to compare the influence of social support from different regions on risk choices.

Table 6 displays results from the OLS regressions of risk choices on three dimensions of social support and additional controls. Regression results reported here correspond to the estimation (5) and (6) in Table 2 [25].

First, we observe that whether the city of the respondent is in the north makes a difference in incentivized risk choices for the degree of family support. Women from the south invest about 7% more in the risky option if they receive more family support, while women from the north invest 1% more. Hence, the degree of perceived support from family has a greater influence on risk choices in southern regions. Geographical location does not seem to make a difference in incentivized risk choices with support from friends and neighborhood.

The effect of regional differences in social support is greater on choices in the hypothetical lottery. Subjects from western cities with greater perceived social support from their families tend to invest about 10 % more in the hypothetical lottery, while those from eastern cities invest only 2 % more. Furthermore, subjects from Northern cities invest 4 % more in the hypothetical

[25] Full set of results including the controls are available on request.

lottery, compared to 10 % in southern cities. Regional variation also matters for support from neighborhood. Subjects from western cities make significantly riskier choices (invest about 4 % more) with greater support from neighborhood. Thus, accounting for the effect of support from different regions has a significant effect for hypothetical lottery choices. These difference might be attributable to variation in social norms.

	(1) incentivized risk task (% invested)	(2) incentivized risk task (% invested)	(3) incentivized risk task (%invested)	(4) hypothetical lottery (% invested)	(5) hypothetical lottery (% invested)	(6) hypothetical lottery (% invested)
Support from Family	0.065***			0.098***		
	(0.021)			(0.020)		
Support from Family (East)	0.020			-0.083***		
	(0.030)			(0.021)		
Support from Family (North)	-0.053*			-0.060***		
	(0.029)			(0.021)		
Support from Friends		0.098			0.130*	
		(0.103)			(0.067)	
Support from Friends (East)		-0.006			-0.038	
		(0.088)			(0.062)	
Support from Friends (North)		-0.075			-0.078	
		(0.090)			(0.060)	
Support from Neighborhood			0.076**			0.056**
			(0.028)			(0.021)
Support from Neighborhood (East)			-0.019			-0.039*
			(0.032)			(0.021)
Support from Neighborhood (North)			-0.032			-0.015
			(0.031)			(0.020)
N	737	733	737	696	693	696
R^2	0.141	0.140	0.140	0.101	0.103	0.094
Region FE	yes	yes	yes	yes	yes	yes

* $p < .1$, ** $p < .05$, *** $p < .01$

Standard errors in parentheses

Standard errors clustered at the city level.

Table 6: Social Support from Different Regions - OLS Regressions

C. Seemingly Unrelated Regression Estimations

The Seemingly Unrelated Regressions (SUR) method, put forward by Zellner [1962], takes account of a potential correlation between the residuals from jointly estimated regressions[26]. Unlike the univariate multiple regression model (which explains the variation in a single dependent variable), the SUR model explains the variation of a set of dependent variables in terms of the variation in independent variables and individual-specific error terms. When the residuals from a set of regressions are correlated, the regressions are related. Ordinary Least Squares estimation overlooks the possibility of a correlation between regression residuals. Hence, estimating the two equations separately using Ordinary Least Squares produces a different disturbance covariance matrix, which leads to incorrect inference if the residuals from the two regressions are correlated.

We estimate Seemingly Unrelated Regression (SUR) equations for choices in the incentivized risk task and the hypothetical lottery question using the identical set of regressors from Table 2, specifications (5) and (6). We do not report the SUR estimation results here, as it yields identical results with the OLS regressions in Table 2, columns 5 and 6. Note here, that the set of independent variables are the same for estimated regressions. It follows from Kruskal's Theorem that OLS and SUR are equivalent when the set of regressors are exactly the same. Nevertheless, in Zellner [1962] it was shown that when the equations are related, joint estimation (rather than estimating the equations separately), leads to more precise estimates of the regression coefficients and improved hypothesis testing.

In our setting, SUR estimation results confirm that the residuals from the

[26] See Zellner [1962], Zellner and Huang [1962], Zellner [1963] for further details on this method and properties of the estimators. Allenby et al. [2005] provides an application.

two regressions are correlated (a correlation of 0.24). A Breusch-Pagan test of independence shows that our dependent variables are not independent ($p<.001$). With respect to these results, we test a cross-equation constraint of whether the quality of social support has the same effect on risk choices elicited via different methods (for all three dimensions of social support). We perform a Wald test to test for the equality of coefficients between equations. We fail to reject the null hypothesis that the influence of quality of social support is equal for incentivized risk choices and choices in the hypothetical lottery. This conclusion is valid for all three dimensions of social support. Our results suggest that the quality of social support has different effects on risk tolerance measured via different elicitation tasks. This might be explained by the difference between stakes (large vs. small) and in real vs. hypothetical choices.