ESCIRRU
Economic and Social Consequences of Industrial Restructuring in Russia and Ukraine

DIW BERLIN

ESCIRRU Working Paper No. 22

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Berlin, February 2010

ESCIRRU • A European Research Project Funded by the 6th Framework Programme and Managed by DIW Berlin

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This version: February 2010

[#] The authors are grateful to Alpaslan Akay, Andrea Ichino, David Jaeger and participants of an IZA-World Bank conference in Bonn, the IZA topic week on "The Political Economy of Labor Market Reform in Transition and Emerging Economies", the CIER-IZA First Conference in Beijing, the ESCIRRU conference in Moscow and the ASSA/ACES meetings in 2010 as well as to seminar audiences at IZA, the University of Bologna, Cornell University and the College of William and Mary for valuable comments and insights. The usual disclaimer applies. Lehmann is grateful to the European Commission for financial support within the project "Economic and Social Consequences of Industrial Restructuring in Russia and Ukraine (ESCIRRU).
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Abstract

In our research we relate demographic characteristics to risk attitudes that in turn are linked to the incidence of informal or formal employment. Using the 2007 wave of the Ukrainian longitudinal monitoring survey (ULMS) to study the Ukrainian labor market, we first show that the determination of our measures of risk attitudes by carefully chosen predetermined demographic variables in Germany in 2004 can be replicated with the ULMS data. The measures employed thus seem to catch persistent patterns of risk attitudes across time and space. The ULMS allows the distinction between voluntary and involuntary informal employment. Our preliminary findings show that those workers who are willing to take more risks engage in voluntary informal employment relationships or are in formal or informal self-employment, both of which states we consider voluntary. These results provide additional evidence to support the hypothesis that the labor market in Ukraine is segmented in three ways: a formal sector co-exists with an informal sector which in turn has a voluntary "upper tier", where a minority of informally employed workers is located, and an involuntary "lower tier", where the majority of informally employed workers finds itself.

I. Introduction

There exists a large literature on the informal economy and labor market segmentation along the formal-informal divide in developing countries. However, no studies exist that investigate the link between risk attitudes of economic agents and the incidence of informality. This paper is a first attempt to establish such a link employing a unique panel data set of the Ukrainian labor market, the Ukrainian Longitudinal Monitoring Survey (ULMS). In this paper we use the three available waves of the ULMS, collected in the years 2003, 2004 and 2007. The 2007 wave has a special module on risk attitudes, which is used for the analysis. Our study, by looking at the link between risk attitudes and informality, contributes to the small but growing literature on informal employment in transition countries in a novel fashion.

To better understand the contribution of our study it is important to briefly look at the competing paradigms in the literature on labor market segmentation and informality. The existence of the informal segment of the labor market alongside the formal sector and the reasons posited for its existence have given rise to several paradigms in the literature. One key question in the labor market literature for developing countries is whether informal employment or self-employment reflects voluntary choice or is involuntary due to segmentation in the labor market (Guasch 1999).

The traditional dualistic view, going back to Harris and Todaro (1970), sees the informal segment as the inferior sector, the option of last resort. Due to barriers to entry, minimum wages, unions or other sources of segmentation, formal jobs are rationed. Workers in the informal sector are crowded out from the formal sector involuntarily, their wage being less than that in the formal sector.[1] For example, an

[1] In this school of thought, formal sector jobs not only command higher wages but also

increase in the statutory wage in the formal sector will reduce formal employment but lead to a lower informal wage and higher informal employment. During a recession informal employment and output expands because formal employment is reduced, while the informal labor market clears. In this view labor market segmentation between formality and informality is the defining feature of the labor market.

In contrast, in a competitive labor market one would expect workers to be able to move freely between occupations, and for wages (broadly interpreted) to equalize accordingly. In this view the informal and informal labor markets are not segmented, but integrated. Voluntary choice regarding jobs and particular attributes of these jobs, such as flexible hours, working as a self-employed and being one's own boss as a micro-entrepreneur, and not valuing social security benefits, can be the reasons for remaining in or moving to the informal sector (Maloney 1999, 2004; Cunningham and Maloney 2001). Here, contrary to the segmentation case, formal and informal employment are not necessarily negatively correlated over the business cycle.

Segmentation and integration of the formal and informal labor markets are two very polar views regarding the interaction of formality and informality. However, as mooted by Fields (1990), it is possible, given the heterogeneity of the informal labor market that these features co-exist in the same labor market. Fields subdivides the informal sector of the labor market into two categories: an 'easy-entry' informal sector, which constitutes the involuntary segment, and an 'upper-tier' informal sector, where barriers of entry persist and in which participation is voluntary. Hence, the labor market is divided into the formal sector, a 'disadvantaged' subsistence-level informal sector and the 'small firm' and micro-entrepreneur informal sector.

Empirical evidence on informality in transition economies is currently sparse.

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provide fringe benefits that are absent with informal sector jobs.

In a study comparing Latin American countries and transition economies a wage gap for formal versus informal salaried jobs is found in the Latin American context but not for the transition economies (Pages and Stampini 2007).[2] High mobility from informal to formal jobs is found in all countries, which suggests a preference and choice for formal work. For the case of self-employment and formal salaried work they find no clear pattern in the wage gap in terms of significance or sign and very low mobility between the two labor market sectors. Assessing labor mobility during economic transition, a study on Georgia finds support for labor market segmentation for both formal and informal wage employees and some self-employed. Formal employment is preferred over informal work, which also serves as buffer in recessions (Bernabe and Stampini 2008). A high degree of mobility between sectors alongside a significant formal-informal wage gap highlights a potential case of labor market segmentation in Bosnia and Herzegovina (Krstic and Sanfey 2007). In the study by Lehmann and Pignatti (2007) the role of the informal sector in labor market adjustment in Ukraine is assessed, using the 2003 and 2004 waves of the ULMS. Their evidence supports the notion of labor market segmentation for wage employees, and the informal sector is found to be split into two tiers, with an upper-tier voluntary in the sector and the majority in the involuntary lower-tier.[3]

When assessing the issue of whether workers select themselves into informal employment relationships, their risk attitudes might be important determinants of this selection. A priori one might expect that workers who are more prone to risk taking have a higher incidence of voluntary informal employment relationships. We also can moot that persons more prone to risk taking have a higher propensity to take up self-

[2] Latin America: Argentina, Mexico, Venzuela; Transition Economies: Albania, Georgia, Ukraine.

[3] Another study of the informal economy in Ukraine finds a formal-informal wage gap (Commander, Isachenkova and Rodionova 2008).

employment, whether formal or informal. If risk attitude is an important predictor of selection into some labor market states but not in others, then this might provide direct evidence whether labor markets are segmented or not.

We also need to keep in mind, though, that the work force in transition countries might be a lot more risk averse than the work force in a "regular" developing country where uncertainty has been a way of life for generations for all but the most privileged strata. In contrast, most of the older workers in transition countries are used to total security provided by the state and might, for example, be very reluctant to engage in unsure self-employment in the informal sector. This reluctance to engage in risky enterprise might be heightened by the turmoil that workers experience in particular in the first years of transition. The preliminary evidence provided by Lehmann and Pignatti (2007) seems to point to strong risk aversion in particular on the part of older workers in Ukraine.

Given the large macro shocks that occurred in the first decade of transition and the relatively muted response of the labor market in CIS countries (Boeri and Terrell 2002) and given the fact that risk attitudes show a great degree of long-term persistence (Dohmen et al. 2005), we can make the case that the observed risk attitudes are exogeneous factors which impact on workers' choice regarding the formal-informal divide. So, we are convinced that in CIS labor markets it is not the experience of working in the informal sector that determines risk attitudes (as might be the case in a "regular" developing country) but risk attitudes that determine whether a worker decides to work as a salaried employee, informally or formally, or as an informal or formal self-employed.[4]

The next section focuses on the question which predictions regarding the

[4] Since we have information on risk attitudes only in the 2007 wave of the ULMS, it is

impact of risk attitudes on informality are consistent with the various paradigms that we have sketched above. Section III discusses the ULMS data set, definitional issues related to informality, and the module on risk attitudes. This is followed by the presentation of our results: the unconditional and conditional correlations of our risk measures with demographic characteristics and with types of employment, as well as the determinants of the incidence of informal employment in probit and multinomial logit regressions that include covariates modeling risk attitudes. A final section offers some conclusions.

II. Competing paradigms on informality and risk attitudes

In the traditional paradigm there is little room for risk attitudes as a determinant of the incidence of informal employment. Because of imperfections in the labor market brought on by, e.g., trade unions or minimum wage laws some workers are prevented from entering the formal sector. Entry into the formal labor market segment does not depend in any way on the volition of workers but is determined by the equilibrium condition which says that the expected wage in the formal sector is equal to wage in the informal sector. So, we would not expect that informally employed persons exhibit different risk attitudes compared with those who work formally.

Risk attitudes should play a role in the paradigm that sees the informal sector split into an easy entry part where the majority of the informally employed find themselves involuntarily and a voluntary upper tier with barriers to entry. We would moot that workers with a greater propensity to expose themselves to risk might prefer voluntary informal to formal employment, while we would expect that risk attitudes do not predict a differential incidence in formal and involuntary informal

difficult to directly test whether causality runs from risk attitudes to labor market state.

employment. However, it is a priori not clear how important risk attitudes are relative to demographic and labor market status factors (e.g., age, educational attainment and previous non-employment spell). Our empirical analysis will answer this latter question and will give us some insights in how risk attitudes relate to the informality paradigms.

III. Data, Definitions and Measurement Issues

Our principal source of information is the ULMS, a nationally representative survey of the Ukrainian work force, undertaken for the first time in the spring of 2003, when it was comprised of around 4,000 households and approximately 8,500 individuals. The second wave was administered between May and July of 2004, when sample sizes fell to 3,397 and 7,200 respectively. Data of the third wave were collected in 2007 with 3101 questionnaires of households and 6774 individual questionnaires filled out. In the first part of our study we concentrate on the 2007 data but will extend our work by using the panel element of the data for the years 2003, 2004 and 2007.

The household questionnaire contains items on the demographic structure of the household, its income and expenditure patterns together with living conditions. The core of the survey is the individual questionnaire, which elicits detailed information concerning the labor market experience of Ukrainian workers. In the 2003 questionnaire, besides the reference week sections, there is an extensive retrospective part, which ascertains each individual's labor market circumstances beginning at specific points in time, namely December 1986, December 1991 and December 1997. The first two points are chosen to minimize recall bias, since the first date is close to the Chernobyl incident and the second date marks the end of the Soviet Union. The respective module is then structured in such a way that the data

record the month and year of every labor market transition or change in circumstance between December 1997 and the date of interview. The surveys for 2004 and 2007 have a similar retrospective part covering the intervals 2003 to 2004 and 2004 to 2007.

The definition of informality is a very complex issue as nicely exposited, for example, in chapter 1 of World Bank (2007) and in Kanbur (2009). We concentrate in this study on the "social protection/legalistic" definition since we find that using the "productivity-based" concept that defines informal or formal sectors would in transition countries be rather misleading. For example, to take all self-employed or workers in micro firms as belonging to the informal sector might be appropriate in a developing country but will introduce large measurement error in transition countries (see Lehmann and Pignatti, 2007, for discussion of Ukraine on this issue). As pointed out by Kanbur (2009), it is vital to be clear what is meant by informality and stick to the criterion one has chosen. We, therefore, use the information we have for the reference weeks and define an employment relationship as formal if employees answer the following question by choosing option 1, informal if they choose option 2:

Tell me, please, are you officially registered at this job, that is on a work Roster, work agreement or contract?

1. Registered 2. Not Registered.

For the self-employed we use a similar question:

Is your activity registered?
1. Yes 2. No

We consider all self-employed giving option 1 as formal, while those answering No are considered informal. The self-employed decide for themselves whether to register

their activity or not. We, therefore, think of all informal self-employed as voluntary informal self-employed. For employees we elicit the additional information about the (in-) voluntary nature of their informal job by asking the following question:

Why are you not officially registered at this job?
1. Employer does not want to register.
2. I do not want to register.
3. Both.

Answer 1 classifies a person as involuntary informal employed, answers 2 and/or 3 as voluntary informal employed.

With registration, salaried workers acquire several fringe benefits, pension rights as well as substantial job security, the latter at least on paper. We should note that workers might be employed in the formal sector, i.e. in a registered firm, but that their job might not be registered. In other words, we identify an informal employment relationship and not necessarily employment in the informal sector. As far as self-employment is concerned, there exist countervailing reasons for registration or non-registration of activities by the self-employed in Ukraine. On the one hand, registering one's activity as self-employed one has to pay only a monthly flat tax, which amounts to approximately the equivalent of 60 US dollars; so on purely economic grounds registration is clearly not expensive and is beneficial. On the other hand, many might shy away from registration in order to avoid becoming the victim of corruption by state officials or worse.

On our measure we calculate an incidence of informality of roughly 15% that includes informal employees and informal self-employed. However, we need to stress that our definition of informality does not capture all activities in the shadow economy, but only informal employment relationships in the primary job. In addition, in Ukraine, like in many successor states of the Soviet Union, the assessment of

informality is complicated by the fact that many firms pay a large part of workers' salaries as undeclared "envelope payments" even if their workers have a formal job. How to treat workers in registered jobs who receive a substantial fraction of their salaries off the books is a contentious issue. Empirically, we can only solicit information on total wages, but cannot distinguish between the "official" and "unofficial" parts of wage payments. Workers in formal employment relationships are, therefore, treated as formally employed salaried workers, even if they might receive part of their wages in an informal fashion. Lehmann and Pignatti (2007) provide a more detailed discussion of the ambiguous nature of informality in a CIS labor market. We attempt to overcome this ambiguity here by exclusively relying on the definition of a registered job as a formal employment relationship, and of a registered activity of a self-employed person as formal self-employment.

We use two "subjective" risk measures, a general risk measure and a measure related to career choices. Information on the first measure is collected by posing the following question:

> *How do you see yourself? Are you generally a person who is fully willing to take risks or do you try to avoid taking risks? Please give a number from 0 to 10, where the value 0 means: "Completely unwilling to take risks" and the value 10 means "Completely willing to take risks". You can take the values in between to make your estimate.*

Dohmen et al. (2005) have provided evidence on the experimental validity of this question. The validity of the risk questions have also been shown with the 2004 wave of the German Socioeconomic Panel (GSOEP) (Bonin et al. 2007; Caliendo et al. 2008). The career related risk measure was calculated using the answers to the following question:

> *People can behave differently in different situations. How would you rate your willingness to take risks in career matters? (0 to 10 as before).*

The usefulness of these risk measures is further shown by the regressions in tables A1

and A2. Following Dohmen et al. (2005) we regress the general risk measure and risk measures in different domains of life on determinants that are truly exogeneous, namely, gender, age, height, father's and mother's education, as well as on income or some proxy of it. The results in table A1 are very similar to those gotten with the GSOEP data in Dohmen et al. (2005), as are the results in table A2. So, whether we regress the general risk measure or life domain specific risk measures on primary determinants, we seem to achieve a stable relationship between risk attitudes and demographic characteristics in two very different economic environments (Ukraine and Germany). In both environments, females and older people are more risk averse, taller persons and people whose parents have better education have a propensity to take more risk (see also figures A1 to A4 in the annex). This stability across economic environments can be taken as a very encouraging sign regarding the validity of our risk measures in any economic context.

However, the "subjective" risk measures that we use have been criticized on the ground that they mix risk attitudes and risk perceptions. In other words, since individuals have heterogeneous perceptions of risk in general and in specific domains of life, the risk attitude component in the "subjective" risk measures cannot be isolated from the perception component. We, therefore, also use a lottery and hypothetical investment question and then see how the derived predicted investment amounts relate to our general risk measure. The lottery and hypothetical investment question is as follows:

Imagine you were given 100.000 Hryvnias and received the following offer: You could either keep all the money or keep part of it and allocate the remaining amount to a lottery in which there is the 50% chance to double the amount of money that you allocate to the lottery. It is equally possible that you lose half of the amount that you put into the lottery. You have the opportunity to put the full amount into the lottery, part of the amount or nothing. How much money would you be willing to put into the lottery?

1 *The entire amount, 100.000 Hryvnias*
2 *80.000 Hryvnias*
3 *60.000 Hryvnias*
4 *40.000 Hryvnias*
5 *20.000 Hryvnias*
6 *Nothing, I would decline the offer*

What is at stake is held constant across individuals; since risk perceptions do not confound risk attitudes, we can speak of an objective measure here. Table A3 in the annex shows average monthly wages by labor market and education status. The monthly figures clearly imply that the sums offered in the hypothetical investment question are so substantial that they would affect life time utility of Ukrainian workers in a significant way.

IV. Results

IV.1 Risk measures, employment categories and demographic characteristics – A descriptive analysis

Most members of the Ukrainian workforce are very reluctant to take risks in general as Figure 1 demonstrates. The modal for all respondents is at the value 0, with 20% of all respondents not willing to take any risk, while the second highest frequency is found at value 5. If we take values above 5 as an indication of the propensity to take risks in general, then we find roughly 20% of Ukrainian workers to have this disposition. In comparison, Dohmen et al. (2005) find the German workforce somewhat more prone to take risks in general since they locate about 30% of German workers as willing to take on risks in general. What is particularly striking in this comparison is the fact that the modal in the German case is at the value 5 (with roughly 22% of the respondents) and that those German workers not willing to take any risks amounts only to about 8%, i.e. the Ukrainian distribution is much more

skewed towards non-risk takers than is the German distribution. The Ukrainian sample exhibits typical behavior for a transition economy that has faced several major upheavals over the last fifteen years.

The distribution of the general risk measure when calculated only for the employed is, however, different as figure 2 shows. Having derived the measure for three employment categories, we see that for the informal and formal employees as well as for the self-employed the modal value is 5. We can also clearly infer from the figure that formal employees are more risk averse than the other two categories and that the self-employed are most willing to engage in risky activities. When we splice the data along the formal-informal divide, we see more mass at higher values of the general risk measure for informal than for formal workers (figure 3). A similar relationship holds when we split informal employees into their voluntary and involuntary segments (figure 4).

Table 1 gives averages of the general risk measure for informal employees, formal employees and the self-employed by demographic characteristics and region. Inspection of these averages drives the point home that formal employees are associated with lower risk taking when compared with the other two employment categories no matter what correlate we look at. Looking inside the sets of demographic characteristics we see that men are more willing to take risks as are younger workers and workers with university education. The higher propensity to take risks for these groups holds independently of the employment category. On the other hand, among the informal employees those who are married and have children have a far lower willingness to take general risks. It is also striking that informal employees residing in Kiev have a substantially higher propensity to take risks. For the other employment categories region is not associated with differing risk attitudes. Finally

those who are voluntarily informal employees making up about one third of all informal employees profess a larger tendency to take risks than the involuntarily informal employees, i.e. those among the informal employees whose jobs are not registered even though they would prefer registration. It is also striking that the self-employed who register their activity have a slightly higher propensity to take risks than the non-registered (informal) self-employed.

Thus far we have only looked at a general risk measure, but in our context it might be also fruitful to see the willingness of workers to take risks in career matters. A comparison of figures 5 and 1 makes clear that the Ukrainian workforce is particularly risk averse when it comes to career choices. The modal at value 0, reaching about 27%, is nearly twice as large as the next largest frequency that occurs at value 5. The rest of the distribution is very similar to the distribution of the general risk measure. Consequently, the more conservative stance in career matters comes about because some respondents seem to shift their answers from a professed average risk attitude to a response that implies an absolute unwillingness to take risks.

In contrast to the general risk measure where the modal was at value 5 when looking at the three employment categories, for the formal employees and the self-employed the modal of the career risk measure is at value 0; only with the informal employees do we see the highest frequency at value 5 (figure 6). As is the case with the willingness to take risks in general, formal employees are associated with lower risk taking than their counterparts among informal employees and among the self-employed. When combining all formal and informal workers into two subsets, we get the same result that we had with the general risk measure: formal workers are far more risk averse than informal workers (figure 7).

The overall averages of the career risk measures shown for three employment

categories in table 2 are about half a point smaller than the averages of the general risk measures in table 1. Otherwise, for the various demographic characteristics and regions we see the same relative risk patterns as in table 1. The larger propensity to take risks of voluntary informal employees and of formal self-employed is also confirmed when risk taking is about career choices.

Turning now to our "objective" risk measure, we see in Figure 8 that roughly two thirds of respondents are not willing to invest any amount, while about 10 percent would invest 20 000 hryvnias or the whole amount of 100 000. This hypothetical investment pattern is actually very similar to the one found in Germany by Dohmen et al. (2005). We can also see a relatively good correspondence of the predicted invested amount in the hypothetical asset and the responses to the general risk question, since from value 4 of the general risk measure onward this amount is nearly monotonically increasing in the values of the risk measure (Figure 9). In Figure 10, where we slice the sample along the formal-informal divide, no clear pattern emerges however.

IV.2 Regression results

We begin with simple probit regressions estimating the probability to be in an informal job. All salaried employees whose job is not registered and all self-employed whose activity is not registered are considered informal and assigned the value 1. We use four variables for risk attitudes; the general risk measure that can take values between 0 and 10 and the general risk indicator that is assigned 0 for values of the general risk measure between 0 and 5, and 1 for values between 6 and 10. The career risk indicator is constructed in a similar way from the career risk measure that also can take values between 0 and 10. We thus employ 4 specifications that add to each risk variable an identical set of covariates.

Virtually in all cases, the regressions in table 3 show very stable marginal effects on the covariates employed across the 4 specifications. A person who is ten years older than his colleague has a probability to be informal that is 1 percentage point lower, while a female worker's likelihood of being informal is by roughly 2 percentage points lower than her male counterpart's likelihood. The latter result is in contrast to what is observed in many developing countries where the incidence of informality is usually much larger among females, but in line with the findings of Lehmann and Pignatti (2007) about the Ukrainian labor market in the years 2003 and 2004. Being married and having completed university also lowers the probability of being informal in a substantial way as does higher household income. The most striking effect works through the labor market since workers with a non-employment spell between 2004 and 2007 have a far higher likelihood to find themselves in an informal job or activity.

The coefficients on all risk variables are significant at conventional levels and have a positive sign. The coefficients on the risk indicators, which are particularly easy to interpret, imply that a person professing to take risky actions in general and in career matters has a probability to be informal that is about 2 percentage points higher than a person stating to be relatively risk averse.

How important are risk attitudes in the determination of informality relative to other factors? One way to highlight the relative importance of the explanatory variables is to perform beta regressions. We, therefore, estimate a linear probability model. We present its coefficients and also coefficients on standardized coefficients (i.e. beta coefficients). The beta regressions show by how many fractions the standard deviation of the dependent variable is changed if the independent variable increases by one standard deviation. This normalization allows us to compare the relative

importance of each determinant of informality. In table 4 the coefficients of the linear probability model and in brackets the coefficients of the standardized explanatory variables, the beta coefficients, are reported. These coefficients show that risk plays a role as important as age, having completed university and household income, while being female and married plays a slightly bigger role. The most important factor determining informality is clearly a previous non-employment spell, being about two and a half times more important than risk attitudes. Whatever the relative importance of risk attitudes may be, and we have shown that they are as important as some central demographic characteristics, risk attitudes remain an important predictor of informality even when we control for many variables.

Since we have detailed information on the type of employment we can divide the set of the employed in 5 mutually exclusive groups: (1) formal employees, (2) involuntary informal employees, (3) voluntary informal employees, (4) formal self-employed and (5) informal self-employed. Using the same set of covariates and risk variables as in tables 3 and 4, we can thus estimate the probability of a person to be in one of the states using multinomial logit models. For each risk variable we present separate results in tables 5 – 8, where the shown coefficients are relative odds ratios with respect to the probability of being a formal employee.

Table 5 which has the general risk measure as our risk variable provides interesting evidence regarding the other covariates in the model. Being Ukrainian or female or married lowers the likelihood of being informally self-employed in a substantial fashion. Being married also lowers the likelihood of being an involuntary informal employee as does the completion of university education. Previous non-employment spells dramatically raise the odds ratios for all the employment states but formal self-employment: a non-employment spell in the period 2004 to 2007 more

than triples the likelihood to be an involuntary informal employed and more than doubles the likelihood of being a voluntary informal dependent employee or an informal self-employed. Finally, household income nearly doubles the relative odds to be in formal self-employment and lowers the probability to be an involuntary informal employee. Table 6 where we use the general risk indicator as our risk variable shows very similar results with respect to the mentioned covariates.

The general risk measure raises the relative probabilities to be formally or informally self-employed or to be a voluntary informal employee, with formal self-employment showing the strongest effect. General risk attitudes do not affect the relative probability of being an involuntary informal employee, a result that confirms our priors. In other words, since involuntary informal employees have non-registered jobs against their will their general risk attitudes should not heighten the likelihood of being in an informal job relative to the likelihood of being in a formal job. When we use the general risk indicator (table 6) risk strongly affects formal and informal self-employment. Turning to the career risk measures (tables 7 and 8), we get very similar effects of the other covariates on the relative odds to be in a particular state. The career risk measure produces positive and significant relative effects only for formal self-employment and voluntary informal employees, where this effect is slightly higher for the latter category. The career risk indicator in turn produces a significant effect only for formal self-employment.

Our “objective” measure of risk attitudes has very little predictive power as far as informality is concerned. In Table 9 the relative odds ratios between various employment statuses and formal employees are all insignificantly different from one when we use the predicted invested amounts in the hypothetical asset. When employing the hypothetical investment indicator in table 10 (the indicator takes the

value of one when any non-zero level of hypothetical investment is predicted) the relative odds ratio is significantly larger than one for the formal self-employed only. We, therefore, perform probit regressions showing a small positive impact of our two "objective" risk measures on formal self-employment. This result is very much in line with those of Dohmen et al. (2005) who show convincingly that the "objective" measure linked to hypothetical investment performs poorly in those areas that are far from the specific domain of life for which the risk measure is suitable. In our case, it might well be that the formal self-employed have experience with investment decisions. Thus it is not that surprising that the hypothetical investment measure only works for the formal self-employed. Dohmen et al. (2005) also find that the general risk measure is a significant predictor across all domains of life mentioned in Table A2, a result confirmed in our analysis.

Conclusions

Using data from the three waves of the ULMS (2003, 2004 and 2007), we analyze the question whether risk attitudes are in any way linked to the incidence of various states of formal and informal employment. Our data allow us to distinguish between five states: formal and informal self-employment, formal salaried employment, voluntary informal salaried employment and involuntary informal salaried employment.

Before we analyze the links between risk attitudes and employment status we perform some groundwork regarding the predetermined nature of risk attitudes and the appropriateness of the risk measures that we employ. We are able to show that Ukrainian individuals have similar exogeneous determinants of risk attitudes as individuals in Germany, capturing the risk attitudes in Ukraine by the same general risk measure and career specific risk measure that have been used in Dohmen et al.

(2005) for Germany. These results have at least three implications. First, the risk measures employed work well across very different economic settings. Second, this preliminary work regarding risk measures also suggests that risk attitudes are not subject to dramatic change in the short-run but evolve over longer periods and are well anchored in people's behavior patterns. This observation holds for the general risk measure as well as for the career specific measure of risk taking. For our empirical analysis this is important insofar as we can think of our risk measures as predetermined, i.e. it is unlikely that short-run changes in employment status affect risk attitudes in any major way. In other words, causality flows from risk attitudes to employment status and not vice versa.

We also use a more "objective" measure of risk taking where respondents are asked how much of a hypothetical lottery win they would be willing to invest, demonstrating that there is a close correspondence between the general risk measure and the "objective" measure.

Whichever measure of risk attitudes we use Ukrainian workers are on average more risk averse than their German counterparts. This result might be expected as many of the Ukrainians in the survey came from a system that guaranteed "cradle to grave" security, but were confronted with a decade of great turmoil and impoverishment after the start of transition.

Our results also show that measures of general and career risk attitudes are good predictors of the overall incidence of informal employment. Beta regressions point to the importance of risk attitudes relative to the main demographic controls. The only factor that is substantially more relevant in the determination of the likelihood to be informally employed is a previous non-employment spell. Relative to formal employment, both general and career risk taking positively impact on the

likelihood to be self-employed (formal or informal) and to be a voluntary dependent informal employee, while these risk attitudes have no such effect on involuntary informal dependent employment. We take this as evidence that the characterization of informal employment by Fields as segmented into an upper and lower tier is especially relevant for Ukraine. Our “objective” measure that investigates risk taking in the form of a hypothetical investment question affects positively only formal self-employment. This result might be intuitive since it is above all the formal self-employed in Ukraine who might be able to perform the economic calculus required for a rational answer to the hypothetical investment question.

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FIGURES

Figure 1

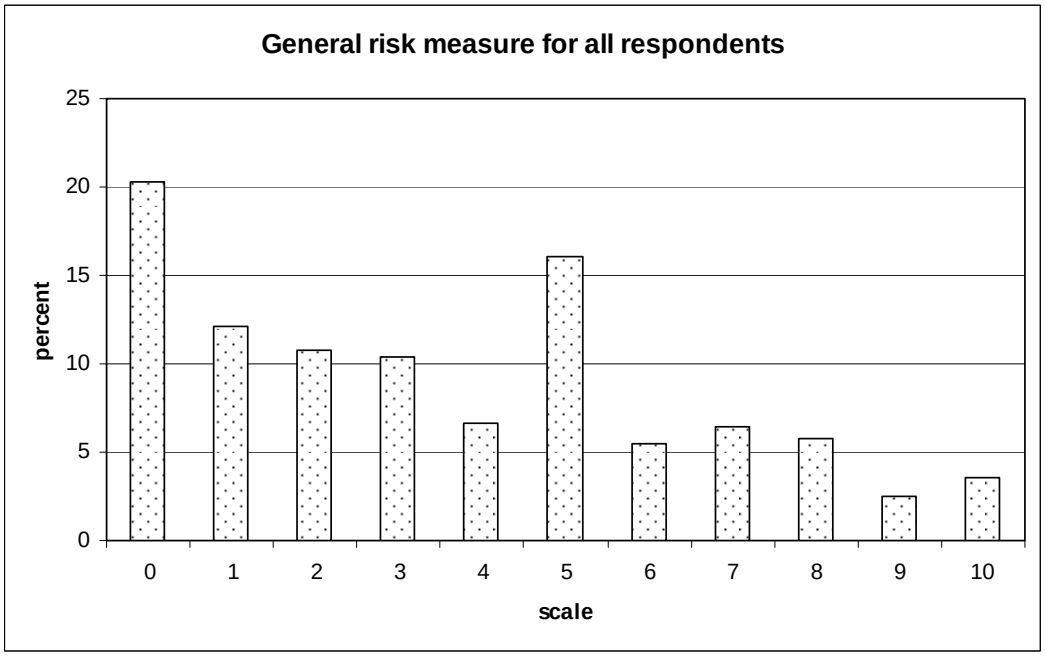


Figure 2

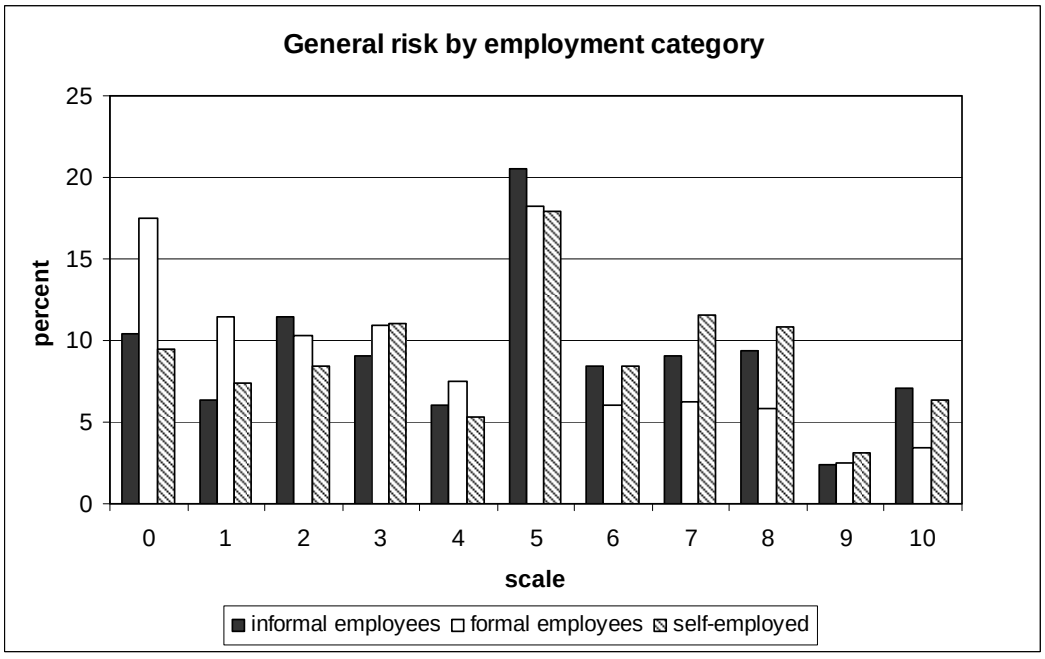


Figure 3

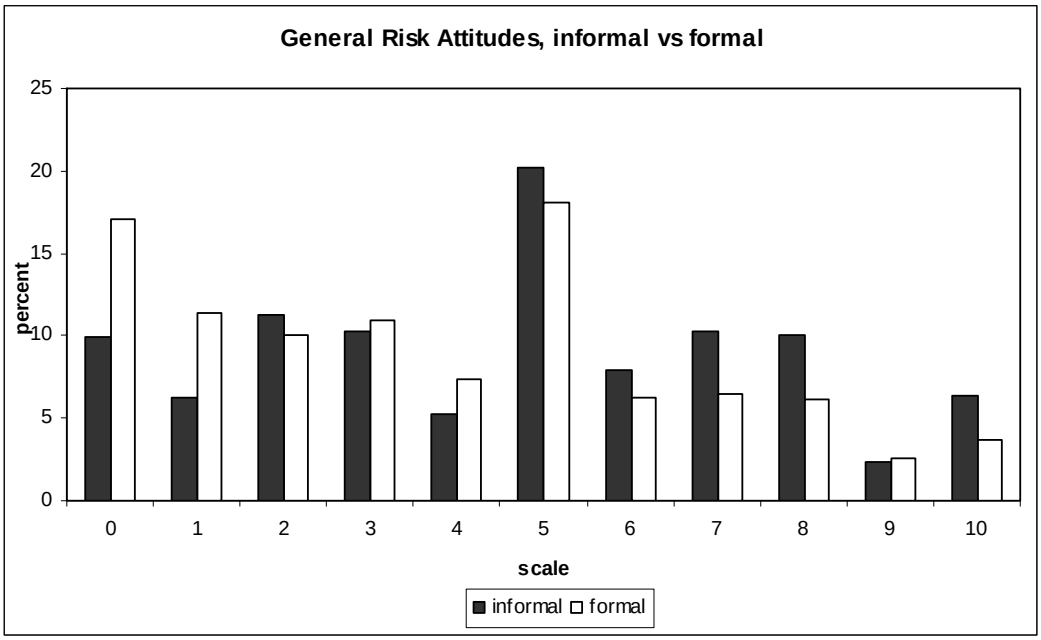


Figure 4

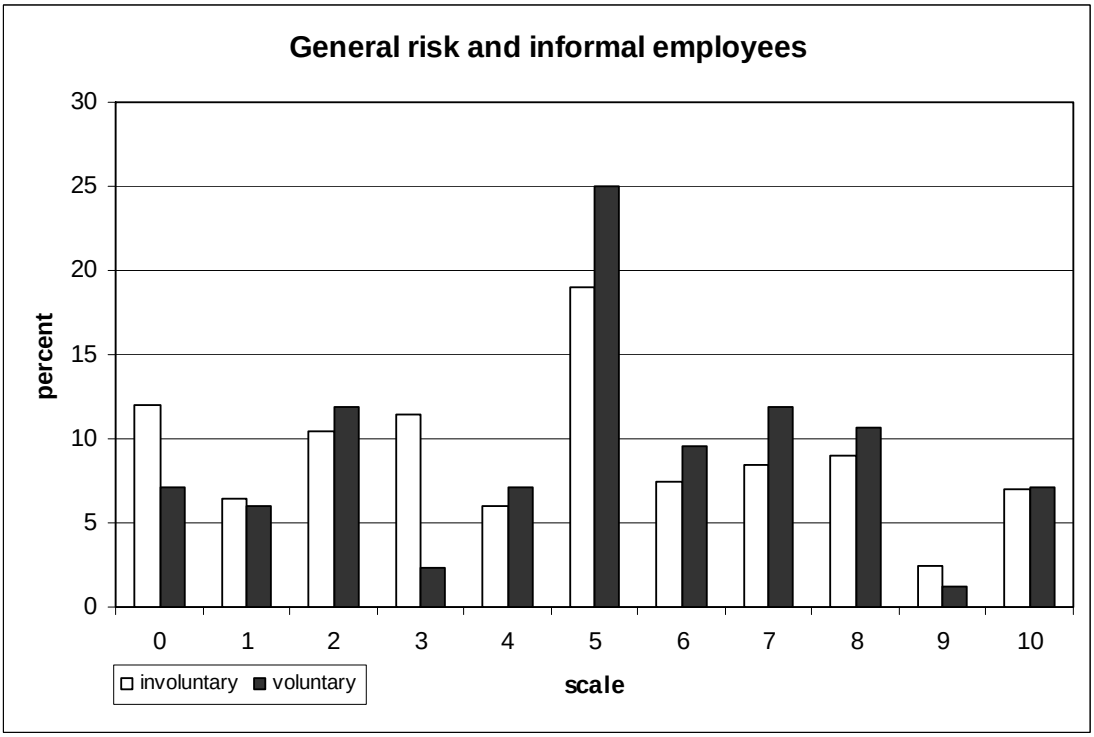


Figure 5

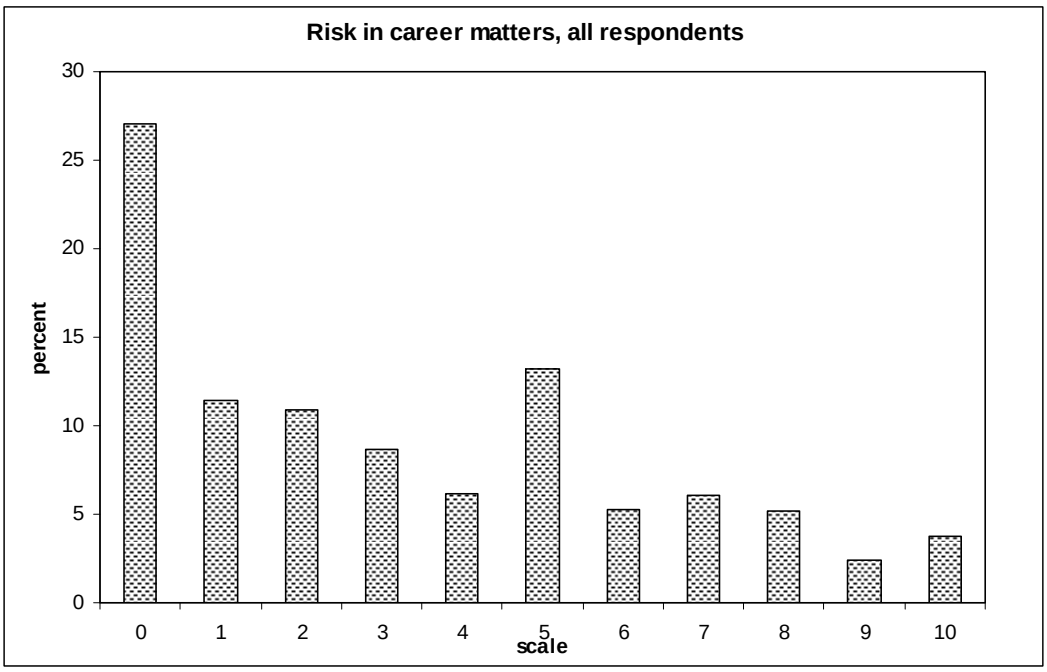


Figure 6

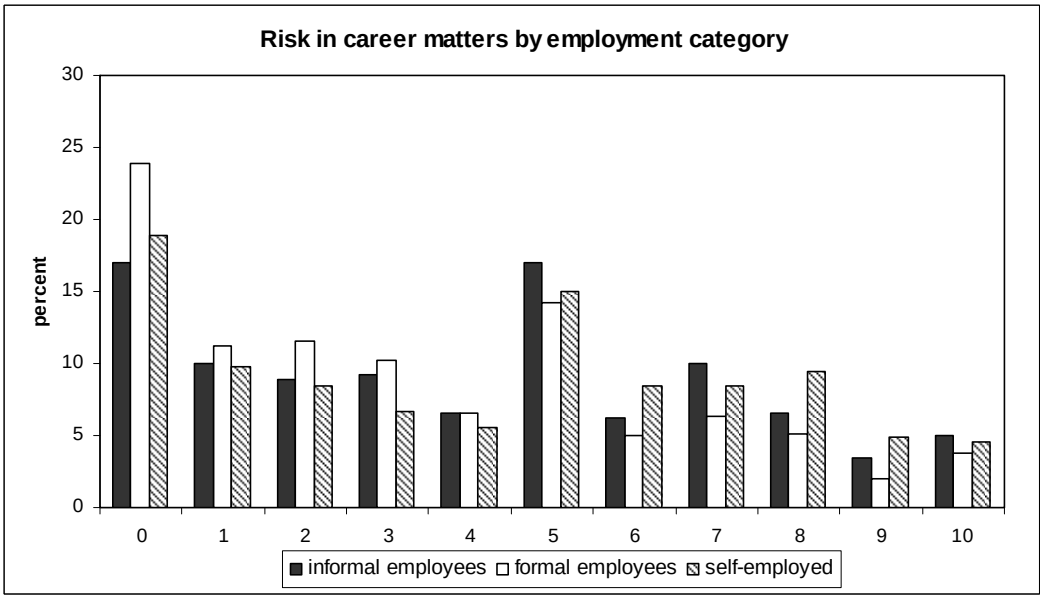


Figure 7

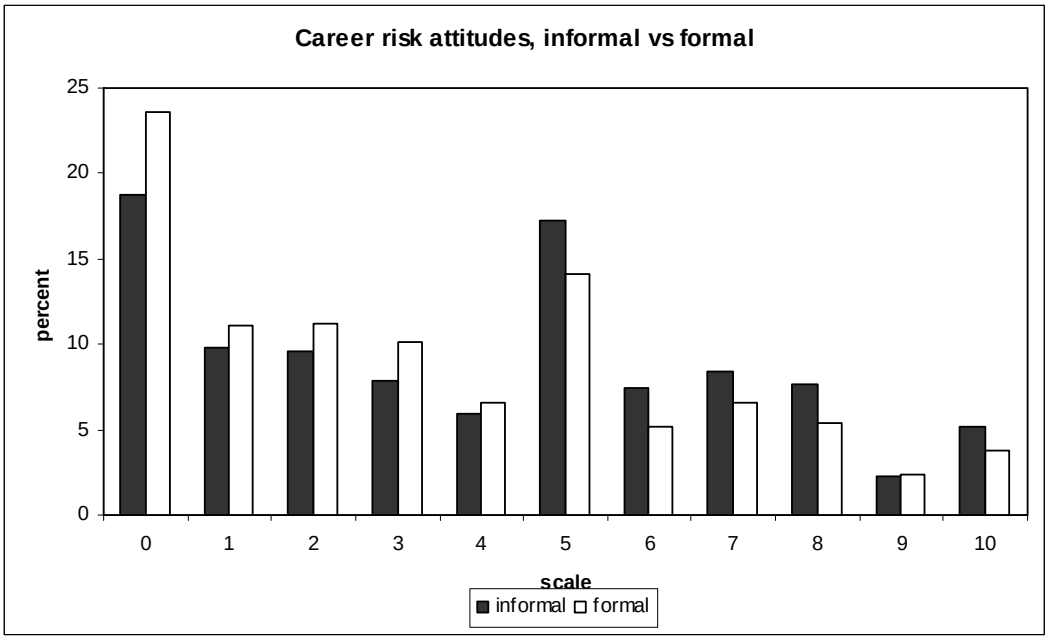


Figure 8

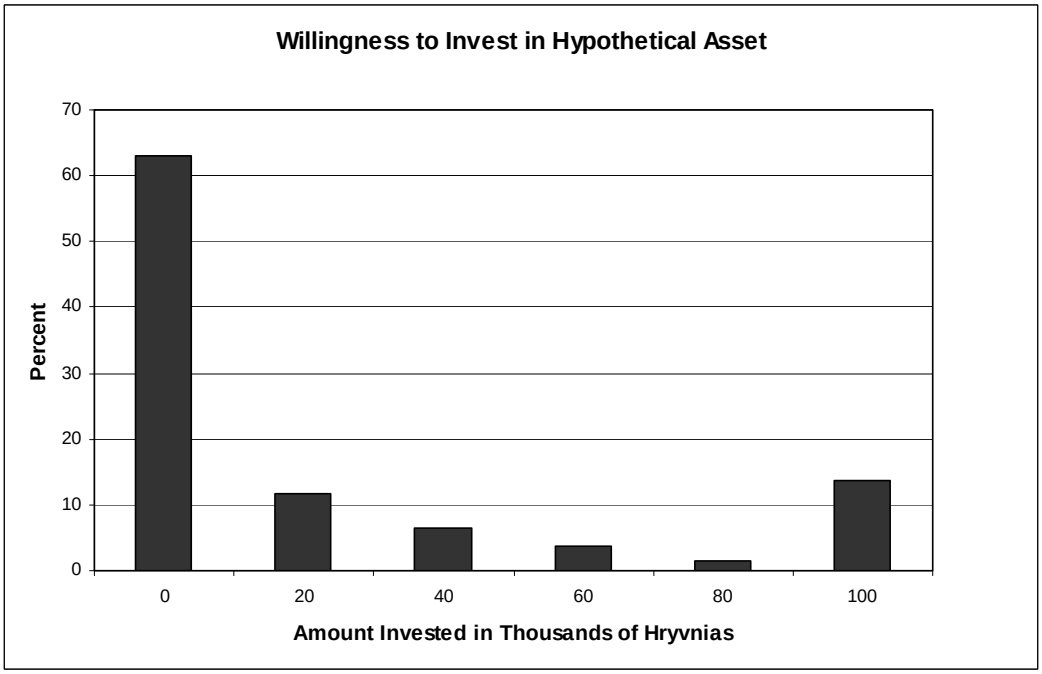


Figure 9

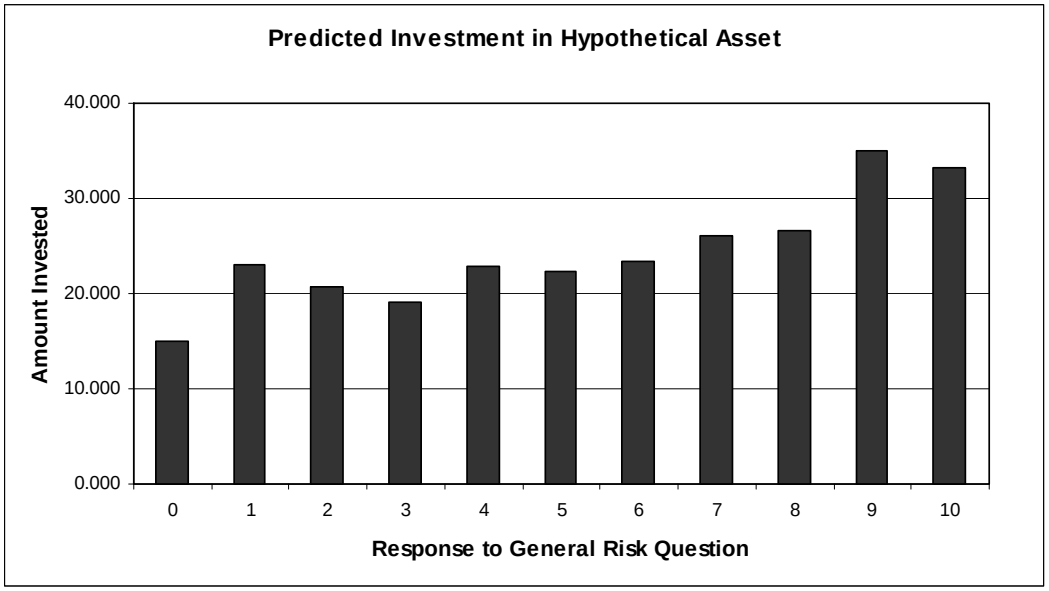
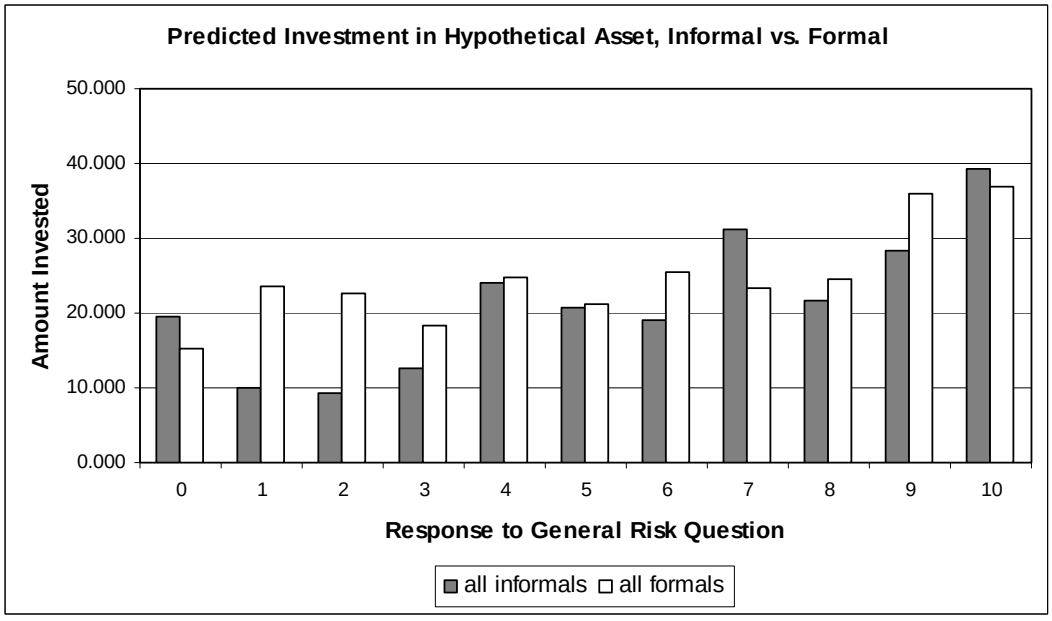


Figure 10



TABLES

Table 1

Average measures of risk attitudes for informal, formal and self-employed work						
	Informal employees		Formal employees		Self-employed 1/	
	Average of Risk Index	N	Average of Risk Index	N	Average of Risk Index	N
All	4.634	298	3.692	2725	4.786	379
Gender						
Men	5.325	166	4.334	1332	5.192	214
Women	3.765	132	3.078	1393	4.261	165
Age Group						
15-25	5.302	96	4.575	388	5.237	38
26-35	5.256	78	4.139	583	5.250	76
36-45	3.887	62	3.557	687	4.817	120
46-55	3.467	45	3.097	725	4.330	106
56-65	3.692	13	3.544	283	4.935	31
65+	4.250	4	3.068	59	3.250	8
Education 3/						
High School	4.159	69	3.710	455	4.613	75
University	5.125	24	3.995	646	5.600	65
Married						
Yes	3.741	135	3.537	1811	4.792	255
No	5.374	163	4.002	921	4.774	124
Kids 4/						
Yes	4.237	97	3.586	1064	4.576	139
No	5.364	33	3.468	408	4.551	78
Region						
Kiev	7.000	10	3.409	154	5.214	14
Center	4.015	65	3.699	667	4.688	96
West	4.745	47	3.911	471	5.684	76
East	4.795	78	3.590	748	4.771	83
South	4.622	98	3.711	685	4.209	110
Registration details 5/						
Registered Self-employed	…	…	…	…	4.926	162
Not registered Self-employed	…	…	…	…	4.702	218
Involuntary informal	4.500	200	…	…	…	…
Voluntary informal	4.988	84	…	…	…	…
Source: Authors' calculations based on Ukrainian Longitudinal Monitoring Survey (ULMS) 2007.						
Notes:						
1/ Self-employed: this category includes self-employed and entrepreneurs/employers from the ULMS.						
2/ N: number of observations.						
3/ Completed level.						
4/ Kids: kids in household						
5/ Involuntary informal: employer does not want to register. Voluntary informal: employee or both do not want to register.						

Table 2

Average measures of career risk attitudes for informal, formal and self-employed work						
	Informal employees		Formal employees		Self-employed 1/	
	Average of Risk Index	N	Average of Risk Index	N	Average of Risk Index	N
All	4.081	259	3.334	2482	4.182	286
Gender						
Men	4.454	141	3.740	1214	4.294	177
Women	3.636	118	2.946	1268	4.000	109
Age Group						
15-25	4.786	84	4.349	361	4.258	31
26-35	4.375	64	3.963	536	4.617	60
36-45	3.456	57	3.105	636	4.515	97
46-55	3.512	41	2.708	644	3.863	73
56-65	2.300	10	2.870	254	2.810	21
65+	3.667	3	2.627	51	2.000	4
Education 3/						
High School	4.082	61	3.303	396	3.842	57
University	4.682	22	3.910	625	5.618	55
Married						
Yes	3.387	124	3.149	1649	4.052	191
No	4.719	135	3.702	831	4.442	95
Kids 4/						
Yes	3.778	90	3.252	957	4.182	110
No	5.172	29	2.997	376	3.920	50
Region						
Kiev	5.556	9	3.782	147	4.571	14
Center	3.365	63	3.016	618	3.316	76
West	4.158	38	3.400	420	4.627	59
East	4.493	67	3.438	657	4.964	55
South	4.098	82	3.389	640	4.073	82
Registration details 5/						
Registered Self-employed	…	…	…	…	4.587	138
Not registered Self-employed	…	…	…	…	3.810	147
Involuntary informal	3.892	176	…	…	…	…
Voluntary informal	4.411	73	…	…	…	…
Source: Authors' calculations based on Ukrainian Longitudinal Monitoring Survey (ULMS) 2007.						
Notes:						
1/ Self-employed: this category includes self-employed and entrepreneurs/employers from the ULMS.						
2/ N: number of observations.						
3/ Completed level.						
4/ Kids: kids in household						
5/ Involuntary informal: employer does not want to register. Voluntary informal: employee or both do not want to register.						

Table 3

Risk Measures and Informal Labour Market: Probit Regressions				
	(1)	(2)	(3)	(4)
risk	0.004***	…	…	…
	[0.002]	…	…	…
risk indicator	…	0.018*	…	…
	…	[0.011]	…	…
career risk	…	…	0.003**	…
	…	…	[0.001]	…
career risk indicator	…	…	…	0.022*
	…	…	…	[0.012]
age	-0.001***	-0.001***	-0.001**	-0.001**
	[0.000]	[0.000]	[0.000]	[0.000]
ukraine	-0.014	-0.014	-0.01	-0.009
	[0.012]	[0.012]	[0.011]	[0.011]
female	-0.021**	-0.025**	-0.024**	-0.025**
	[0.010]	[0.010]	[0.010]	[0.010]
married	-0.051***	-0.053***	-0.036***	-0.036***
	[0.014]	[0.014]	[0.013]	[0.013]
kids in household	0.008	0.007	0.002	0.002
	[0.005]	[0.005]	[0.005]	[0.005]
completed secondary	0.008	0.008	0.009	0.009
	[0.011]	[0.011]	[0.011]	[0.011]
university completed	-0.029***	-0.029***	-0.029***	-0.029***
	[0.010]	[0.010]	[0.009]	[0.009]
non-employment (2004-2007)	0.089***	0.088***	0.086***	0.085***
	[0.019]	[0.019]	[0.020]	[0.020]
ln household income	-0.014**	-0.014*	-0.012*	-0.012*
	[0.007]	[0.007]	[0.007]	[0.007]
Other controls				
Sectors	YES	YES	YES	YES
Regions	YES	YES	YES	YES
Observations	2429	2429	2183	2183
Source: Authors' calculations based on the ULMS 2007.				
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				
Dependent variable: all informals (waged employees and self-employed) 1				
and rest of employed (formals) 0.				
Risk/Career Risk: Risk measure 0-10.				
Risk Indicator/Career Risk Indicator: 0-5 is 0 and 6-10 is 1.				

Table 4

General Risk and Informal Labour Market: Beta Regressions				
	(1)	(2)	(3)	(4)
risk	0.006***	…	…	…
	[0.053]	…	…	…
risk indicator	…	0.032**	…	…
	…	*[0.049]*	…	…
career risk	…	…	0.005**	…
	…	…	*[0.047]*	…
career risk indicator	…	…	…	0.045***
	…	…	…	*[0.072]*
age	-0.001**	-0.002***	-0.001*	-0.001**
	[-0.045]	*[-0.071]*	*[-0.041]*	*[-0.049]*
ukraine	-0.021	-0.026	-0.014	-0.024
	[-0.028]	*[-0.035]*	*[-0.018]*	*[-0.033]*
female	-0.036***	-0.037***	-0.041***	-0.039***
	[-0.058]	*[-0.062]*	*[-0.070]*	*[-0.064]*
married	-0.068***	-0.081***	-0.049***	-0.071***
	[-0.094]	*[-0.115]*	*[-0.069]*	*[-0.099]*
kids in household	0.01	0.004	0.003	0.007
	[0.026]	*[0.012]*	*[0.008]*	*[0.020]*
completed secondary	0.009	0.011	0.011	0.005
	[0.012]	*[0.014]*	*[0.014]*	*[0.006]*
university completed	-0.031**	-0.033**	-0.031**	-0.023
	[-0.042]	*[-0.047]*	*[-0.044]*	*[-0.032]*
non-employment (2004-2007)	0.121***	0.112***	0.122***	0.121***
	[0.138]	*[0.133]*	*[0.143]*	*[0.142]*
ln household income	-0.019*	-0.017	-0.020*	-0.021*
	[-0.037]	*[-0.035]*	*[-0.039]*	*[-0.042]*
Other controls				
Sectors	YES	YES	YES	YES
Regions	YES	YES	YES	YES
Observations	2429	2003	2183	2148
Source: Authors' calculations based on the ULMS 2007.				
Normalized beta coefficients in brackets and italics				
* significant at 10%; ** significant at 5%; *** significant at 1%				

Table 5

Multinomial Logit Regression: Informality and Risk Attitudes				
	formal	informal involuntary	informal voluntary	informal
	self-employed	employees	employees	self-employed
risk attitudes	1.142***	1.069	1.133*	1.123**
	[0.041]	[0.042]	[0.059]	[0.049]
age	0.998	0.983	0.976	0.983
	[0.01]	[0.01]	[0.014]	[0.012]
ukrainian	0.94	1.119	0.725	0.535*
	[0.241]	[0.31]	[0.255]	[0.151]
female	0.727	0.622	0.96	0.402**
	[0.161]	[0.157]	[0.327]	[0.121]
married	0.95	0.493**	0.6	0.395***
	[0.248]	[0.12]	[0.204]	[0.111]
kids in household	1.06	1.136	1.07	1.214
	[0.139]	[0.16]	[0.204]	[0.171]
completed secondary	0.91	1.314	1.14	0.973
	[0.269]	[0.339]	[0.417]	[0.3]
university completed	0.963	0.304**	0.707	0.585
	[0.251]	[0.136]	[0.313]	[0.216]
non-employment (2004-2007)	0.728	3.459***	2.761**	2.339**
	[0.239]	[0.832]	[0.903]	[0.659]
ln household income	1.968***	0.599**	0.972	1.046
	[0.366]	[0.111]	[0.251]	[0.228]
Other controls				
Sectors	YES			
Regions	YES			
Observations	2408			
Source: Authors' calculations based on the ULMS 2007.				
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				
Relative Odds Ratios				
Base Category: formal employees				
Risk Attitudes: Risk measure 0-10.				

Table 6

Multinomial Logit Regression: Informality and Risk Attitudes Indicator				
	formal	informal involuntary	informal voluntary	informal
	self-employed	employees	employees	self-employed
risk attitudes indicator	2.382***	1.5	1.151	1.772*
	[0.517]	[0.366]	[0.383]	[0.458]
age	0.997	0.982	0.973	0.982
	[0.01]	[0.01]	[0.014]	[0.012]
ukrainian	0.959	1.128	0.704	0.537*
	[0.247]	[0.313]	[0.247]	[0.151]
female	0.707	0.605*	0.811	0.370***
	[0.156]	[0.151]	[0.271]	[0.11]
married	0.963	0.494**	0.552	0.385***
	[0.252]	[0.12]	[0.187]	[0.108]
kids in household	1.039	1.136	1.057	1.215
	[0.136]	[0.16]	[0.201]	[0.17]
completed secondary	0.904	1.302	1.165	0.956
	[0.267]	[0.336]	[0.425]	[0.296]
university completed	0.899	0.298**	0.761	0.577
	[0.237]	[0.134]	[0.336]	[0.214]
non-employment (2004-2007)	0.679	3.382***	2.754**	2.261**
	[0.224]	[0.816]	[0.904]	[0.638]
ln household income	1.969***	0.601**	0.985	1.052
	[0.365]	[0.111]	[0.254]	[0.228]
Other controls				
Sectors	YES			
Regions	YES			
Observations	2408			
Source: Authors' calculations based on the ULMS 2007.				
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				
Relative Odds Ratios				
Base Category: formal employees				
Risk Attitudes Indicator: 0-5 is 0 and 6-10 is 1.				

Table 7

Multinomial Logit Regression: Informality and Career Risk Attitudes				
	formal	informal involuntary	informal voluntary	informal
	self-employed	employees	employees	self-employed
career risk attitudes	1.123**	1.049	1.134*	1.085
	[0.041]	[0.042]	[0.06]	[0.052]
age	1.001	0.983	0.98	0.983
	[0.011]	[0.011]	[0.015]	[0.013]
ukrainian	0.917	0.918	0.797	0.73
	[0.253]	[0.26]	[0.307]	[0.246]
female	0.63	0.582*	0.912	0.289***
	[0.149]	[0.152]	[0.325]	[0.104]
married	0.866	0.591*	0.739	0.377**
	[0.241]	[0.153]	[0.277]	[0.122]
kids in household	1.03	0.991	0.888	1.273
	[0.151]	[0.156]	[0.196]	[0.198]
completed secondary	0.957	1.447	1.211	0.907
	[0.304]	[0.385]	[0.468]	[0.313]
university completed	0.958	0.345*	0.582	0.555
	[0.265]	[0.155]	[0.279]	[0.237]
non-employment (2004-2007)	0.722	3.530***	2.861**	2.355**
	[0.257]	[0.884]	[1.003]	[0.755]
ln household income	2.103***	0.565**	1.279	1.036
	[0.424]	[0.11]	[0.356]	[0.254]
Other controls				
Sectors	YES			
Regions	YES			
Observations	2165			
Source: Authors' calculations based on the ULMS 2007.				
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				
Relative Odds Ratios				
Base Category: formal employees				
Career Risk Attitudes: Risk measure 0-10.				

Table 8

Multinomial Logit Regression: Informality and Career Risk Attitudes Indicator				
	formal	informal involuntary	informal voluntary	informal
	self-employed	employees	employees	self-employed
career risk attitudes indicator	2.429***	1.27	1.913	1.794
	[0.573]	[0.345]	[0.661]	[0.554]
age	1	0.982	0.978	0.982
	[0.011]	[0.011]	[0.015]	[0.013]
ukrainian	0.924	0.927	0.814	0.735
	[0.255]	[0.262]	[0.313]	[0.248]
female	0.635	0.573*	0.874	0.291***
	[0.15]	[0.15]	[0.31]	[0.104]
married	0.854	0.586*	0.723	0.377**
	[0.238]	[0.152]	[0.271]	[0.122]
kids in household	1.026	0.985	0.879	1.268
	[0.15]	[0.155]	[0.193]	[0.197]
completed secondary	0.963	1.445	1.215	0.913
	[0.306]	[0.385]	[0.469]	[0.315]
university completed	0.928	0.348*	0.603	0.55
	[0.257]	[0.156]	[0.288]	[0.235]
non-employment (2004-2007)	0.707	3.511***	2.817**	2.298**
	[0.252]	[0.88]	[0.987]	[0.739]
ln household income	2.093***	0.567**	1.283	1.037
	[0.422]	[0.11]	[0.357]	[0.254]
Other controls				
Sectors	YES			
Regions	YES			
Observations	2165			
Source: Authors' calculations based on the ULMS 2007.				
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				
Relative Odds Ratios				
Base Category: formal employees				
Career Risk Attitudes Indicator: 0-5 is 0 and 6-10 is 1.				

Table 9

Multinomial Logit Regression: Informality and Hypothetical Investment Amount				
	formal	informal involuntary	informal voluntary	informal
	self-employed	employees	employees	self-employed
hypothetical investment amount	1.005	1.002	1	1.001
	[0.003]	[0.003]	[0.005]	[0.004]
age	0.993	0.984	0.982	0.98
	[0.011]	[0.011]	[0.015]	[0.012]
ukrainian	0.827	0.96	0.635	0.542*
	[0.221]	[0.266]	[0.237]	[0.158]
female	0.693	0.557*	0.756	0.371***
	[0.158]	[0.14]	[0.263]	[0.111]
married	0.948	0.439***	0.514	0.367***
	[0.257]	[0.108]	[0.183]	[0.105]
kids in household	1.054	1.143	1.154	1.239
	[0.143]	[0.161]	[0.217]	[0.177]
completed secondary	0.841	1.348	0.919	1.072
	[0.263]	[0.352]	[0.38]	[0.335]
university completed	1.181	0.275**	0.865	0.717
	[0.31]	[0.133]	[0.386]	[0.266]
non-employment (2004-2007)	0.651	3.251***	3.441***	2.559**
	[0.23]	[0.813]	[1.166]	[0.734]
ln household income	1.963***	0.585**	1.229	1.087
	[0.381]	[0.112]	[0.338]	[0.24]
Other controls				
Sectors	YES			
Regions	YES			
Observations	2209			
Source: Authors' calculations based on the ULMS 2007.				
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				
Relative Odds Ratios				
Base Category: formal employees				
Hypothetical Investment Amount: 6 categories from 0 to 100,000 Hryvnias.				

Table 10

Multinomial Logit Regression: Informality and Hypothetical Investment Indicator				
	formal	informal involuntary	informal voluntary	informal
	self-employed	employees	employees	self-employed
hypothetical investment indicator	1.644*	1.281	1.024	0.663
	[0.355]	[0.291]	[0.326]	[0.178]
age	0.993	0.985	0.983	0.978
	[0.011]	[0.011]	[0.015]	[0.012]
ukrainian	0.813	0.964	0.64	0.514*
	[0.217]	[0.267]	[0.239]	[0.15]
female	0.701	0.565*	0.758	0.355***
	[0.16]	[0.142]	[0.264]	[0.107]
married	0.957	0.444***	0.513	0.372***
	[0.26]	[0.109]	[0.183]	[0.106]
kids in household	1.064	1.144	1.158	1.222
	[0.144]	[0.161]	[0.218]	[0.175]
completed secondary	0.838	1.361	0.922	1.063
	[0.263]	[0.356]	[0.381]	[0.334]
university completed	1.188	0.274**	0.868	0.725
	[0.311]	[0.133]	[0.387]	[0.27]
non-employment (2004-2007)	0.634	3.227***	3.432***	2.620***
	[0.224]	[0.807]	[1.163]	[0.752]
ln household income	1.954***	0.577**	1.229	1.107
	[0.38]	[0.111]	[0.338]	[0.245]
Other controls				
Sectors	YES			
Regions	YES			
Observations	2209			
Source: Authors' calculations based on the ULMS 2007.				
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				
Relative Odds Ratios				
Base Category: formal employees				
Hypothetical Investment Indicator: 0 no investment, 1 more than 0 investment.				

Table 11

Hypothetical Investment and Formal Self-Employment				
	(1)	(2)	(3)	(4)
Hypothetical Investment Indicator	0.0130**	…	0.013**	…
	[0.0056]	…	[0.006]	…
Hypothetical Investment Amount	…	0.0001**	…	0.0001**
	…	[0.0001]	…	[0.000]
ukrainian	-0.0023	-0.0022	-0.003	-0.003
	[0.0056]	[0.0057]	[0.006]	[0.006]
female	-0.0044	-0.0049	-0.006	-0.006
	[0.0047]	[0.0048]	[0.005]	[0.005]
married	0.0044	0.0043	0.003	0.003
	[0.0048]	[0.0049]	[0.005]	[0.005]
kids in household	0.0008	0.0005	0.002	0.002
	[0.0027]	[0.0027]	[0.003]	[0.003]
completed secondary	-0.0049	-0.0048	-0.005	-0.004
	[0.0052]	[0.0053]	[0.005]	[0.006]
university completed	0.0065	0.0063	0.003	0.003
	[0.0064]	[0.0064]	[0.006]	[0.006]
non-employment (2004-2007)	-0.0116***	-0.0116***	-0.008*	-0.008
	[0.0043]	[0.0044]	[0.005]	[0.005]
ln household income	0.0138***	0.0144***	0.014***	0.015***
	[0.0046]	[0.0046]	[0.005]	[0.005]
Other controls				
Sectors	Yes	Yes	Yes	Yes
Regions	Yes	Yes	Yes	Yes
Observations	2219	2219	1976	1976
Source: Authors' calculations based on the ULMS 2007.				
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				
Dependent variable: For (1) & (2): 1 formal self-employed, 0 other employed, for (3) & (4)				
1 formal self-employed, 0 formal employed.				
Hypothetical Investment Amount: 6 categories from 0 to 100,000 Hryvnias.				
Hypothetical Investment Indicator: 0 no investment, 1 more than 0 investment.				
Marginal Effects of Probit Regression Reported.				

Annex

Table A.1

Primary determinants of General Risk Attitudes					
	(1)	(2)	(3)	(4)	(5)
Sex	-0.966***	-0.991***	-0.895***	-0.893***	-0.974***
	(0.0909)	(0.0928)	(0.101)	(0.101)	(0.0936)
Age	-0.0449***	-0.0424***	-0.0418***	-0.0408***	-0.0413***
	(0.00208)	(0.00218)	(0.00246)	(0.00250)	(0.00223)
Height	0.0158***	0.0134**	0.0143**	0.0134**	0.0116**
	(0.00523)	(0.00535)	(0.00581)	(0.00584)	(0.00540)
Father's education		0.229*	0.223	0.223	0.209
		(0.134)	(0.149)	(0.149)	(0.136)
Mother's education		0.515***	0.497***	0.479***	0.511***
		(0.136)	(0.155)	(0.156)	(0.139)
Log(personal income)			0.188***	0.146***	
			(0.0464)	(0.0480)	
Fin.state (self-reported)				0.183***	0.234***
				(0.0342)	(0.0310)
Constant	3.397***	3.637***	2.168**	2.058*	3.240***
	(0.938)	(0.959)	(1.070)	(1.078)	(0.970)
Observations	6343	6054	5215	5155	5942
R squared	0.118	0.122	0.117	0.123	0.130
*** p<0.01, ** p<0.05, * p<0.1					
Standard errors in parentheses.					
Self-reported financial state is a cat. variable 1-7 from "far below the average" to					
"far above the average".					
Log(personal income) is the log of the last 30 days income (per person, from any source).					

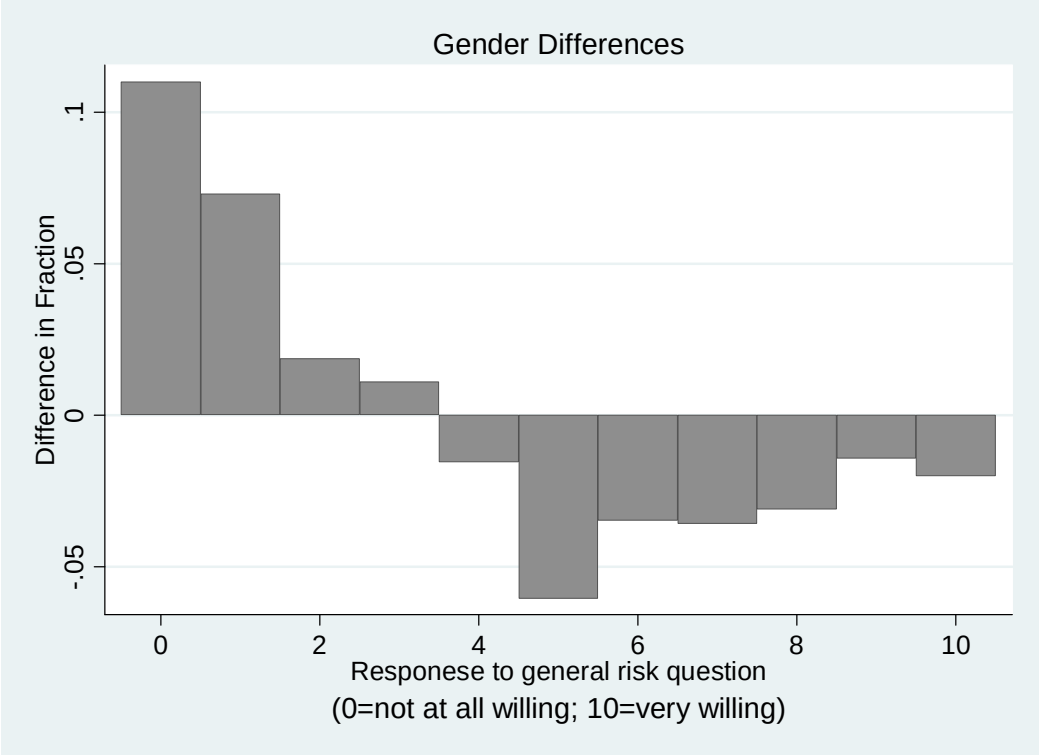
Table A.2

Primary determinants of Risk Attitudes in Different Domains of Life						
	(1)	(2)	(3)	(4)	(5)	(6)
	General	Car driving	Fin.matters	Sports/leisure	Career	Health
Sex	-0.991***	-1.537***	-0.597***	-1.072***	-0.561***	-0.652***
	(0.0928)	(0.122)	(0.0953)	(0.101)	(0.114)	(0.0906)
Age	-0.0424***	-0.0411***	-0.0394***	-0.0552***	-0.0506***	-0.0233***
	(0.00218)	(0.00296)	(0.00229)	(0.00241)	(0.00288)	(0.00214)
Height	0.0134**	-0.00203	0.0153***	0.0116**	0.0203***	0.00964*
	(0.00535)	(0.00706)	(0.00551)	(0.00582)	(0.00662)	(0.00523)
Father's education	0.229*	-0.0669	0.227*	0.210	0.360**	0.194
	(0.134)	(0.178)	(0.138)	(0.142)	(0.157)	(0.131)
Mother's education	0.515***	0.438**	0.426***	0.554***	0.517***	0.204
	(0.136)	(0.179)	(0.142)	(0.144)	(0.162)	(0.135)
Constant	3.637***	5.147***	2.438**	3.998***	2.121*	2.163**
	(0.959)	(1.267)	(0.990)	(1.041)	(1.189)	(0.937)
Observations	6054	3306	5588	4883	4410	5910
R-squared	0.122	0.137	0.091	0.168	0.108	0.049
*** p<0.01, ** p<0.05, * p<0.1						
Standard errors in parentheses.						

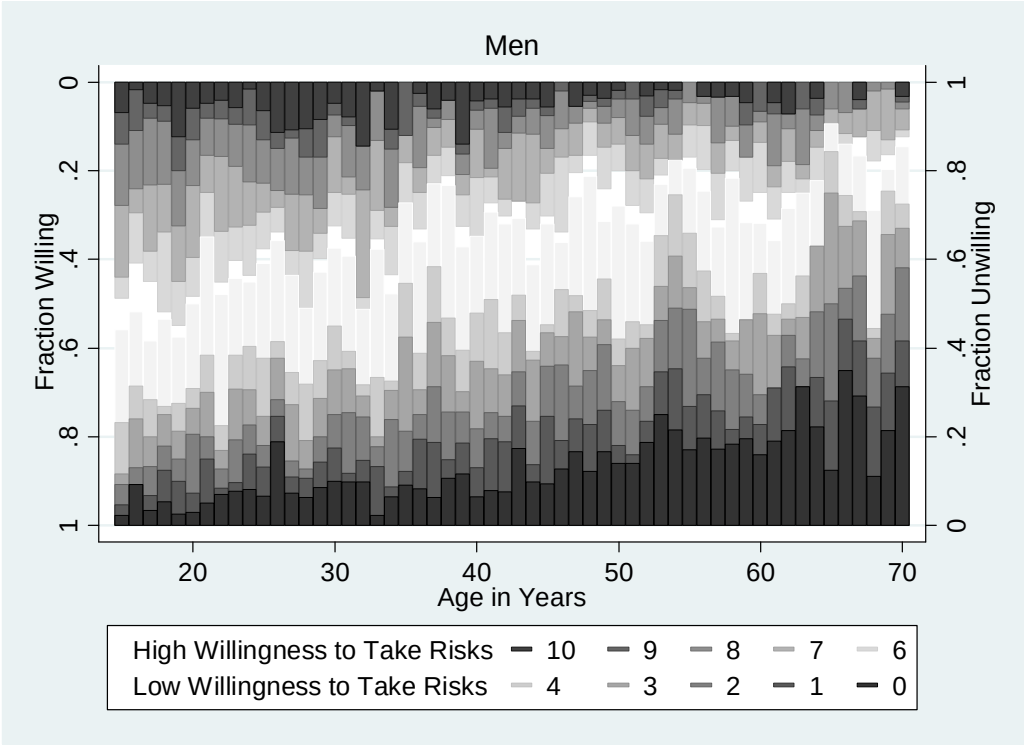
Table A.3

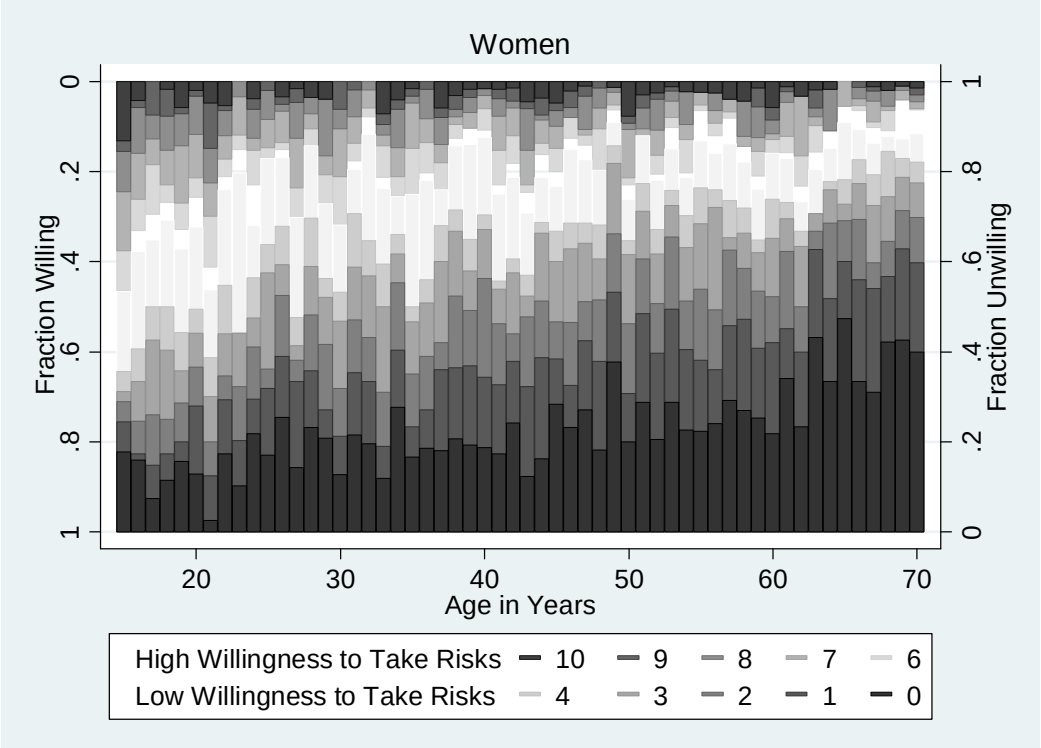
Monthly Earnings by Employment Status and Education				
	Monthly wage for waged workers	N	Monthly income for self-employed	N
All	896.19	2987	1236.73	272
	[589.45]		[1750.44]	
Status				
Formal	907.01	2680	1836.5	100
	[586.42]		[2464.69]	
Informal	807.69	296	888.02	172
	[605.37]		[1003.13]	
Informal voluntary	954.75	80	…	…
	[760.92]		…	…
Informal involuntary	756.43	200	…	…
	[539.42]		…	…
Education				
Diploma	899.72	2624	1240.685	219
	[594.65]		[1716.73]	
Completed Secondary	786.7686	523	1168.772	57
	[473.70]		[1231.15]	
University	1077.111	646	1839.167	36
	[660.00]		[1781.77]	
Source: Authors' calculations based on the ULMS 2007.				
Note: Zero wage and income were excluded. Actually received amounts, net of taxes and expenditures, are reported.				
In Ukrainian Hryvnias.				
Standard Deviation are reported in brackets.				

Figure A.1: Willingness to Take Risks in General (gender differences, women –male**)**



Figures A.2: Willingness to Take Risks in General, by Age and Gender





Figures A.3: Willingness to Take Risks in General, by Parental Education

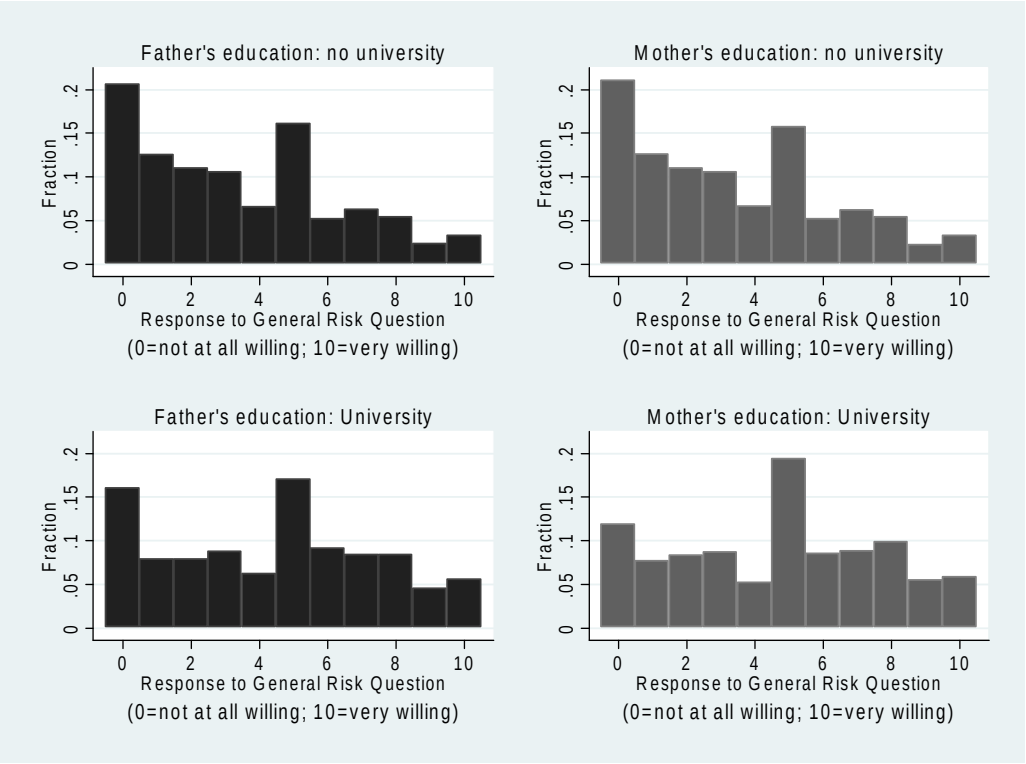


Figure A.4: Willingness to Take Risks in General, by Height and Gender