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Risk Aversion and Job Mobility

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Abstract

Job mobility is inherently risky as workers have limited ex ante information about the quality of outside jobs. Using a large longitudinal Dutch dataset, which includes data on risk preferences elicited through (incentivized) experiments, we examine the relation between risk aversion and job mobility. The results for men show that risk averse workers are less likely to move to other jobs. For women, the evidence that risk aversion affects job mobility is weak. Our empirical findings indicate that the negative relation between risk aversion and job mobility is driven by the job acceptance rather than the search effort decision.

Keywords: Job mobility, risk aversion, job search, risk preferences

JEL classification: C90, D03, D81, J62

1 Introduction

Although most decisions involve risk, this is particularly true in the labor market. This study focuses on a risky decision that is relevant to almost all workers and that may have major consequences for the individual's career path: the decision to quit and move to another job. According to canonical models on job mobility, uncertainty plays a crucial role in explaining mobility processes: there is uncertainty about whether the worker will be able to find a better job (Burdett, 1978; Mortensen, 1986) and about the quality of outside jobs (Jovanovic, 1979). Because workers have limited information about many aspects of the new job, they may realize that they ended up in a poor match after accepting an outside job offer. The premise that job mobility is risky is also consistent with the empirical literature, showing that job mobility can be an important source of wage growth (Topel and Ward, 1992; le Grand and Tåhlin, 2002; Schmelzer, 2012), but may also lead to wage losses or lower wage growth (Tjaden and Wellschmied, 2014; Light and McGarry, 1998; Borjas, 1981). Because job mobility is inherently risky, it can be expected that risk preferences affect the decision to move to another job.

This paper examines the relation between risk aversion and job mobility. Given that uncertainty plays a central role in canonical models for the analysis of turnover, it is surprising that the role of risk aversion in turnover decisions has been largely ignored in the labor economics literature. Existing theoretical models generally assume risk neutral individuals or homogeneous risk preferences. Allowing for heterogeneity in risk preferences, we demonstrate theoretically that risk aversion is negatively related to job mobility. There are two potential channels through which job mobility is affected by risk aversion: the job acceptance decision (i.e. risk averse workers are more critical about outside job offers) and the job search decision (i.e. risk averse workers are less likely to invest in search activities). We test the relation between risk aversion and job mobility using the LISS, a longitudinal panel from the Netherlands. In addition to information on labor market behavior and a wide range of background characteristics, the data contains measures of risk preferences that are elicited through an (incentivized) lab-in-the-field experiment.

Our results show that male workers who are more risk averse are less likely to be mobile on the labor market. This relation appears to be stronger in case job mobility involves more uncertainties. However, for women the findings do not consistently point out that risk aversion decreases job mobility. Interestingly, the evidence does not indicate that risk aversion decreases on-the-job search effort, which suggests that the negative relation between risk aversion and job mobility (among male workers) is driven by the job acceptance decision: risk averse workers are more likely to reject outside offers. Surprisingly,

some of the estimation results show that more risk averse women search more intensively on-the-job. An explanation for this finding is that on-the-job search is not only used to generate outside offers (as assumed in on-the-job search models), but also to obtain more information about potential job offers and the individual's labor market position: search may thereby decrease uncertainties involved in a job switch.

Our study contributes to a growing literature on how risk aversion determines labor market outcomes. Existing studies have examined how risk aversion is related to educational and occupational choice (Bonin et al., 2007; Fouarge et al., 2014), migration decisions (Jaeger et al., 2010; Heitmueller, 2005; Bauernschuster et al., 2014; Falco, 2014), reservation wages of unemployed job seekers (Feinberg, 1977; Pannenberg, 2010), wage growth (Shaw, 1996; Budria et al., 2013) and the decision to become (and remain) an entrepreneur (Skriabikova et al., 2014; Caliendo et al., 2010; Koudstaal et al., 2015).[1] Empirical evidence on the relation between risk aversion and job mobility is virtually non-existent. To our knowledge, Maier et al. (2016) is the only other study that tests the relation between risk attitudes and job mobility empirically.[2] Using the German Socio-Economic Panel Survey, Maier et al. (2016) find that more risk-tolerant individuals move more often from one job to another. However, they rely on a survey question on risk attitudes rather than experimental data to capture heterogeneity in risk aversion and do not test the relation between risk aversion and on-the-job search effort. In general, most studies on the relation between risk aversion and labor market behavior rely on survey-based questions on risk attitudes to capture variation in risk preferences (Koudstaal et al. (2015) is an exception). In addition to examining the predictive value of risk aversion in a new domain, one of the strengths of our approach is that we use an experimentally elicited measure of risk aversion for a large sample of field subjects.[3]

Furthermore, this study contributes to the literature on turnover and labor market dynamics by providing new insights in the determinants of turnover. Turnover is a relevant economic variable, as it affects wages and careers (Topel and Ward, 1992; Blau and DeVaro, 2007; Dustmann and Pereira, 2008): the results may therefore provide a new explanation for wage inequality. Given the evidence indicating a significant intergen-

[1] A related strand of literature examines how risk aversion affects technology adoption decisions (e.g. Liu, 2013).

[2] The idea that job mobility is a risky decision is mentioned casually in several economic studies but never examined explicitly. For instance, Tom et al. (2007) state: "Many decisions, such as ... to accept a new job, involve the possibility of gaining or losing relative to the status quo. When faced with such decisions, most people are markedly risk averse." Outside the field of economics, the study of Allen et al. (2007) discusses the role of risk attitudes and derives several propositions drawing (mainly) on the psychological literature. However, the study does not test these propositions empirically.

[3] As the LISS also includes survey-based questions on risk attitudes, we test the robustness of our results using these questions.

erational correlation of risk attitudes (Dohmen et al., 2012), the study sheds light on a new mechanism explaining (low levels of) intergenerational income mobility. In addition, turnover has an impact on firm productivity (Ilmakunnas et al., 2005; Siebert and Zubanov, 2009; Jackson, 2013) and is relevant for the (allocative) efficiency of the labor market (Mortensen, 2011). The paper demonstrates that heterogeneity in preferences are important, and that (policy) evaluations assuming risk neutrality or a single risk aversion parameter (representative agent models) may produce misleading results.

The paper is structured as follows. The next section discusses the theoretical mechanisms through which risk aversion affects job mobility. Next, the data is discussed and the empirical results are presented. The final section concludes.

2 Theory

2.1 Theoretical models on job mobility

The benchmark theoretical models of turnover in economics are based on imperfect information. Borjas and Goldberg (1978) already pointed out the relevance of uncertainty in the job mobility process: "it is likely that uncertainty both before and after search about firms and workers and the on-the-job learning process which reduces this uncertainty is an important characteristic of the labor market" (Borjas and Goldberg, 1978, p. 124). In the current theoretical literature, we can distinguish between two general models: on-the-job search models, where jobs are search goods (e.g. Burdett, 1978; Mortensen, 1986), and learning models, where jobs are experience goods (Jovanovic, 1979, 1984; Johnson, 1978). According to the first type of models, workers search for other jobs and when an offer is located they accept it if the value (wage) of the alternative job is higher than the value of the current job. On-the-job search models assume that workers have imperfect information before search takes place but perfect information about the job that has been located after the search process. Hence, there is no ex ante uncertainty about the value of an offered job. In contrast, learning models are based on the assumption that workers have no or limited ex ante information about the job. The worker learns about the value of his new job (quality of the job match) while on the job. As pointed out by Jovanovic (1979: p.973), the fundamental difference between these models is that in models where jobs are pure search goods job mobility is due to the arrival of new information about alternative job opportunities, whereas in models where jobs are pure experience goods turnover is the result of obtaining new (negative) information about the current job.

In existing theoretical models on job mobility heterogeneity in risk preferences plays no role since risk neutrality or a single risk aversion parameter (representative agent

models) is assumed. However, given the uncertainty involved in job mobility it is likely that heterogeneity in risk preferences explains turnover. Based on the two main theoretical models, we can distinguish between two channels through which risk aversion affects job mobility. First, in on-the-job search models search can be considered as an investment involving costs (mainly in terms of time and effort) and uncertain rewards (in terms of locating a good job offer). More risk averse workers are less willing to engage in investment activities such as on-the-job search and are therefore less likely to receive outside offers. Second, in learning models where jobs are considered as experience goods, the job acceptance rather than the job search decision is affected by the individual's degree of risk aversion. Because it is impossible to fully evaluate the value of the job before accepting the offer, the worker faces the risk of accepting a poor job match. The more certain option would be to stay and reject the uncertain job offer. Hence, risk averse workers are less likely to quit and move to another job as they invest less in job search activities and are more critical about alternative job offers. However, it is plausible that search costs are quantitatively small and that the potential losses associated with unsuccessful search are limited. In contrast, the potential losses of accepting a 'lemon' are substantial. Hence, we believe that job mobility is risky mainly because it is impossible to completely evaluate the value of the job before accepting an offer and that the role of risk aversion is more relevant in models where jobs are considered as experience goods. In the spirit of these models, we present below a model in a rather stylized form that shows how risk aversion affects job mobility. In section 2.3 we discuss the relation between risk aversion and on-the-job search more extensively.

2.2 Risk aversion and the job acceptance decision

The model follows the central premise of the model of Jovanovic (1979): the individual has more information about the current job than about outside job opportunities and new information arrives while on the job. To capture the idea of ex ante uncertainty about match quality, we assume that each period the worker receives an alternative offer y, which is the match-specific value of the job drawn from the cumulative distribution function $F(y)$, where y is normally distributed with mean μ and variance σ_y^2. Since many uncertainties about a job involve the non-pecuniary characteristics, the job has a particular value in terms of utility and is not simplified to the wage level (which is generally observed before accepting the offer). The value of the match contains all aspects of the job that generate (dis)utility for holding the job, such as income, working hours, work atmosphere and commuting time. The true value of the job offer is not observed when the worker receives an offer. Instead, workers receive a noisy signal $\hat{y} = y + \varepsilon$. The

noise term ε is normally distributed with mean zero and variance σ_ε^2. For simplicity, we assume a zero discount rate. Furthermore, we assume that the worker has perfect information about the current job match and that the value of the job is immediately revealed when the job is accepted.

Conditional on receiving an outside offer, a worker accepts the job only if the observed signal of the job $\hat{y}$ is higher than the reservation match quality $\hat{y}^*$. The worker is indifferent between rejecting and accepting the offer if:

$$V(y_0) = E\left[V(y)|\hat{y} = \hat{y}^*\right] \tag{1}$$

where $V(y_0)$ is the utility value of the current job match y_0 and $E\left[V(y)|\hat{y} = \hat{y}^*\right]$ represents the expected utility value of the reservation match quality $\hat{y}^*$. Risk averse workers are more critical about job offers than risk neutral workers as:

$$E\left[V(y)|\hat{y} = \hat{y}^*\right] = V\left[E(y|\hat{y} = \hat{y}^*) - \Pi\right] < V\left[E(y|\hat{y} = \hat{y}^*)\right] \tag{2}$$

where Π indicates the risk premium. To examine how the individual's degree of risk aversion is related to the reservation match quality we can use the following equations:

$$E\left[V(y)|\hat{y} = \hat{y}^*\right] = V\left[E(y|\hat{y} = \hat{y}^*) - \Pi\right] \cong V\left[E(y|\hat{y} = \hat{y}^*)\right] - \Pi V'(E(y|\hat{y} = \hat{y}^*)) \tag{3}$$

$$E\left[V(y)|\hat{y} = \hat{y}^*\right] \cong V\left[E(y|\hat{y} = \hat{y}^*)\right] + \frac{1}{2}E(\hat{\varepsilon}^2|\hat{y} = \hat{y}^*)V''(E(y|\hat{y} = \hat{y}^*)) = V\left[E(y|\hat{y} = \hat{y}^*)\right] + \frac{1}{2}\frac{\sigma_\varepsilon^2}{\sigma_{\hat{y}}^2 + \sigma_\varepsilon^2}V''(E(y|\hat{y} = \hat{y}^*)) \tag{4}$$

We can derive the function for the risk premium Π:

$$\Pi = \frac{1}{2}\frac{\sigma_\varepsilon^2}{\sigma_{\hat{y}}^2 + \sigma_\varepsilon^2}A_{\hat{y}^*} \tag{5}$$

The worker's Arrow-Pratt (Pratt, 1964) degree of risk aversion $A_{\hat{y}^*}$ is given by:

$$A_{\hat{y}^*} = \frac{-V''(E(y|\hat{y} = \hat{y}^*))}{V'(E(y|\hat{y} = \hat{y}^*))} \tag{6}$$

Note that equations (1) and (3) imply:

$$y_0 = E(y|\hat{y} = \hat{y}^*) - \Pi \tag{7}$$

Using (5) we can rewrite equation (7) to:

$$y_0 = E(y|\hat{y} = \hat{y}^*) - \frac{1}{2}\frac{\sigma_\varepsilon^2}{\sigma_y^2 + \sigma_\varepsilon^2} A_{\hat{y}^*} \tag{8}$$

Under normality of y and ε, it follows from equation (8) that the reservation match quality can be written as[4]:

$$\hat{y}^* = y_0 + \frac{\sigma_\varepsilon^2}{\sigma_y^2}\left[y_0 - \mu_y + \frac{1}{2}A_{\hat{y}^*}\right] \tag{9}$$

Equation (9) shows that the reservation match quality increases with the individual's degree of risk aversion: more risk averse workers are more selective about job offers. Because a worker will accept the outside offer if the observed signal of the offer is higher than the reservation value ($\hat{y} > \hat{y}^*$), risk aversion negatively affects job mobility. The relevance of risk aversion in the job acceptance decision depends on the noise of the signal σ_ε^2. The interaction between risk aversion and noise is intuitive: if the quality of the match can be perfectly observed (i.e. when jobs are pure search goods, $\sigma_\varepsilon^2 = 0$), job mobility involves no uncertainty and risk aversion should not affect the job acceptance decision.

Furthermore, it is clear from the model that the value of the current match y_0 is positively related to the reservation match quality: workers in better matches are less likely to move. An interesting implication is that uncertainty in the value of alternative matches (captured by σ_y^2) decreases the reservation match value if the current job match is low (when $y_0 - \mu_y$ is sufficiently negative), but increases the reservation value if the current job match is sufficiently high. Uncertainty may encourage workers in bad jobs to move, but may discourage workers in good jobs to leave their job.

2.3 Risk aversion and the job search decision

The model so far describes the worker's choice conditional on receiving an alternative offer. In the model the effect of risk aversion on job mobility operates through the job acceptance decision. The analysis implicitly assumes that the job offer arrival rate is exogenous. However, in on-the-job models the intensity of search effort plays an important

[4] $E(y|\hat{y} = \hat{y}^*) = \frac{\sigma_\varepsilon^2}{\sigma_y^2+\sigma_\varepsilon^2}\mu_y + \frac{\sigma_y^2}{\sigma_y^2+\sigma_\varepsilon^2}\hat{y}^*$

role as it determines the probability of receiving an offer. On-the-job search includes all kinds of activities that increase the chances of locating and receiving an offer: the worker has to search for available vacancies and prepare for and actively attend job interviews. These activities involve time and effort and are often experienced as stressful.

Theoretically, on-the-job search s involves costs $c(s)$, which is an increasing convex function of s, and determines the job arrival rate λs, where λ is a constant parameter ($\lambda > 0$) indicating the individual's efficiency of on-the-job search. The optimal level of on-the-job search effort is determined by setting the marginal costs of search ($c'(s)$) equal to the marginal benefits of search:

$$c'(s) = \lambda E \int_{\hat{y}^*}^{\bar{y}} [V(y) - V(y_0)]\, dF(y) = \lambda \left[1 - F(\hat{y}^*)\right] \left[E(V(y|\hat{y} > \hat{y}^*)) - V(y_0)\right] \quad (10)$$

First assume that risk aversion does not affect the reservation match quality $\hat{y}^*$. It is clear that risk averse workers search less intensively for other jobs than risk neutral workers because:

$$\left[1 - F(\hat{y}^*)\right] \left[E(V(y|\hat{y} > \hat{y}^*)) - V(y_0)\right] < \left[1 - F(\hat{y}^*)\right] \left[V(E(y|\hat{y} > \hat{y}^*)) - V(y_0)\right] \quad (11)$$

The intuition behind this prediction is that search is an investment activity with uncertain rewards: risk averse workers are more reluctant to make such investments. As we have established in section 2.2 that, conditional on receiving an offer, the reservation match quality increases with risk aversion, risk aversion also negatively affects the probability of succesful search and thereby the marginal gains of search (the right-hand-side of equation (10)). Consider an individual with a low degree of risk aversion ($A^L_{\hat{y}^*}$) and an individual with a high degree of risk aversion ($A^H_{\hat{y}^*}$). Equation (9) implies that, conditional on receiving a job offer, the more risk averse individual will be more critical about job offers ($\hat{y}^*_H > \hat{y}^*_L$) and is therefore more likely to reject a job offer. This implies a decrease in marginal gains from search:

$$\begin{aligned} \lambda E \int_{\hat{y}^*_L}^{\bar{y}} [V(y) - V(y_0)]\, dF(y) = \\ \lambda E \int_{\hat{y}^*_L}^{\hat{y}^*_H} [V(y) - V(y_0)]\, dF(y) + \lambda E \int_{\hat{y}^*_H}^{\bar{y}} [V(y) - V(y_0)]\, dF(y) > \\ \lambda E \int_{\hat{y}^*_H}^{\bar{y}} [V(y) - V(y_0)]\, dF(y) \end{aligned} \quad (12)$$

Hence, risk aversion affects on-the-job search through two channels: risk averse workers are less likely to invest in activities with uncertain rewards and have lower expected gains from search as they are more likely to reject potential offers.

2.4 Discussion

Several factors are not explicit in the basic theoretical model but may be relevant in actual job mobility processes. First, we have assumed that staying is less risky than moving. Although it is likely that the worker knows more about his current job than about others jobs, this assumption may not always hold in reality. In general, we may expect that the current match offers more employment protection than the alternative match as firing costs increase with tenure and workers may have obtained a permanent contract. Permanent workers may have to sacrifice their employment protection if they move to another job, so among these workers quitting is indeed likely to involve more risks than staying. In contrast, staying in a temporary job may involve more uncertainties than moving. In practice, the probability that workers on a temporary contract are retained by their employer is relatively small (compared to their permanent counterparts). Because it is not risky to leave a sinking ship, the relation between risk aversion and mobility is ambiguous for temporary workers. We examine empirically whether risk aversion matters more for workers on a permanent contract.

Second, the worker's opportunity to mitigate a potential loss if the new match turns out to be poor may be relevant. When the worker has accepted a 'lemon', he or she may of course search for and accept another job. The time it will take to find another offer, and therefore the size of the loss of job mobility, depends on the labor market conditions. In case of a tight labor market, alternative job offers are relatively easy to find: this implies that when a worker ends up in a bad job match, the worker can simply quit and move to another job. So, in a good economic climate, turnover is less risky because a potential negative outcome can be offset by accepting another job within a short period of time. Even risk averse individuals may not prefer one bird in the hand if there are plenty in the bush. For that reason we expect that in a tight labor market job mobility is less risky and the relation between risk aversion and mobility is weaker. We test this prediction in section 4.1.

Another issue concerns the function of on-the-job search. As in existing on-the-job search models, in the model discussed above search intensity affects the job arrival rate. A function of job search that is generally ignored in the literature is that search increases the information about potential job offers and thereby the precision of the noisy signal

$\hat{y}$.[5] Hence, σ_ε^2 may be reduced by searching more intensively. Equation (9) indicates that, by decreasing the noise of the signal, search decreases the reservation match quality (if $\left[y_0 - \mu_y + \frac{1}{2}A_{\hat{y}^*}\right] > 0$) and increases the probability that search will generate an acceptable job offer. Due to the interaction between risk aversion and the noise of the signal these additional marginal benefits of search are more relevant for more risk averse workers. The intuition is that the value of information about job offers and future labor market opportunities increases with risk aversion. This mechanism suggests a positive rather than a negative relation between risk aversion and on-the-job search. For that reason it is possible that risk averse workers search more intensively on-the-job but at the same time are more critical about job offers. To test this empirically, we estimate the relation between risk aversion and on-the-job search effort (section 4.3).

A final issue is related to human capital investments. As pointed out by Shaw (1996), risk aversion may affect human capital decisions (and thereby income growth). She argues that more risk averse workers invest less in (firm-specific) human capital, because the returns of such investments are uncertain. In case we allow for turnover in the human capital model, these decisions become interdependent as the worker sacrifices his firm-specific human capital when he separates. An important question is how this may affect the theoretical predictions on turnover. On the one hand, following Shaw's argument, risk averse workers invest less in firm-specific human capital and may therefore be more likely to leave their current job. This suggests that the relation between risk aversion and turnover is positive rather than negative. On the other hand, following search and learning models, risk averse workers are more likely to stay and therefore have stronger incentives to invest in firm-specific human capital: if they indeed do so, this mechanism reinforces the negative effect on job mobility as higher levels of firm-specific human capital increase incentives to stay. We therefore argue that it is not obvious how allowing for firm-specific human capital affects our main predictions on the relation between risk aversion and job mobility.

3 Data and methodology

To test the relation between risk aversion and job mobility empirically, we make use of the LISS (Longitudinal Internet Studies for the Social sciences) survey, a representative Dutch panel that includes around 5000 households. The seven waves between 2008 and 2014 are used in this study. Around 6000 individuals are interviewed in each wave and

[5] The theoretical model discussed by Dustmann et al. (2016) allows for this to some extent, as a referral increases the precision of the noisy signal.

the panel is unbalanced in the final sample. LISS contains several studies, including the 'Work and Schooling' core study that includes questions on labor market outcomes and behavior. The data is matched with information on background variables. Furthermore, because LISS participants receive reimbursement for completing the survey, the payment infrastructure can be used for conducting incentivized experiments (see below). The analysis includes male and female workers who hold a job comprising at least 16 hours and are between the ages 20 and 65 at the time of the interview.

We measure risk aversion using data from a lab-in-the-field data from the LISS study by Noussair et al. (2013). In 2009, 3457 LISS respondents (59.2 percent) participated in an experiment where they had to make 17 binary choices in lottery games (see Appendix A and Noussair et al. (2013) for more details about the experiment). We use the data from this lab-in-the-field experiment to capture heterogeneity in risk preferences. About 40 percent of the subjects (almost 1400) were incentivized through a lottery: one out of ten incentivized subjects was selected as a winner.[6] In case the subjects were incentivized, it was stressed in the instructions that the subjects could actually earn money. Next, one of the 17 choices was randomly selected and the outcome of the game was paid to the subject. The potential payoffs were between 10 and 150 euros. For the remaining 60 percent of the subjects, the games involved hypothetical payoffs: half of this group faced hypothetical payments that are identical to the incentivized condition, in the other half the hypothetical payments are increased by factor 150. Here we focus on the five games that aim to capture risk aversion (the others are on higher order risk aversion). These five games basically represent a multiple price list, which follows a similar procedure as previous studies measuring risk aversion (e.g. Holt and Laury, 2002; Dohmen et al., 2010) except that subjects are asked to indicate their preference in all games rather than their switching point. In these five games, the subjects had to choose between a certain and a risky option, where the risky option always implied a 50 percent chance of earning 5 and a 50 percent chance of earning 65 euro. The certain payoff varied from 20 to 40 euro, which was presented in a stepwise manner (with steps of €5) to the subjects on separate screens.[7]

Table 1 presents the decisions of the subjects. The table shows clear differences in choices between men and women: men opt more often for the risky payoff. The finding

[6]The strategy of randomly selecting winners is followed in several other large-scale (representative) experiments (Von Gaudecker et al., 2011; Harrison et al., 2007; Dohmen et al., 2011). Abdellaoui et al. (2011) show that random selection of winners generates stronger incentives than paying all subjects a small amount.

[7]The order of the games was counterbalanced: half of the subjects follow the sequence game 1 - game 5, while the order is reversed for the other half of the subjects. Also whether the option 'left' or 'right' was the certain or risky option was counterbalanced.

Table 1: Fraction choosing the certain payoff

	Certain	Incentivized		Non-incentivized	
	payoff	Men	Women	Men	Women
Game 1	20	30.38	46.76	46.03	62.82
Game 2	25	38.85	63.89	54.76	67.89
Game 3	30	56.54	71.30	66.14	77.18
Game 4	35	73.08	81.48	79.63	85.92
Game 5	40	79.23	87.50	86.51	87.89

Notes In all five games, when the risky option is chosen the subject receives either €5 or €65 (both outcomes occur with a 50 percent chance)

that men are more risk seeking than women is consistent with most (but not all) field and experimental studies (Croson and Gneezy, 2009). In addition, it appears that the experimental condition matters, as both genders appear to choose the risky payoff more often when the choices are incentivized. This effect appears to be driven by the non-incentivized condition with high (scaling x150) hypothetical payoffs.[8]

Theoretically, risk neutral agents opt for the certain payoff in Game 5, are indifferent between the certain and risky option in Game 4 (both have an expected value of €35) and prefer the risky payoff in Game 1-3. Risk averse individuals opt for the certain payoff in Game 4 and 5 and depending on their degree of risk aversion may prefer the certain payoff in Games 1-3 as well. A risk seeking individual prefers the risky payoff in Game 1-4. The table shows that most individuals prefer the safe option in Game 4 and 5. Moreover, for both genders and in both experimental conditions, the majority chooses the certain payoff in Game 3 where the expected value of certain payoff is lower than that of the risky payoff. The expected value of the risky option is equal to the certain payoff in Game 4: a large majority prefers the certain payoff. Hence, these results indicate that most individuals are risk averse.

Following the previous literature (Holt and Laury, 2002; Noussair et al., 2013, 2014), we capture heterogeneity in risk aversion by aggregating the number of safe choices.[9] Figure 1 shows the distribution of this aggregated measure by experimental condition. Risk averse agents would prefer the safe outcome at least two times (Game 4 and 5),

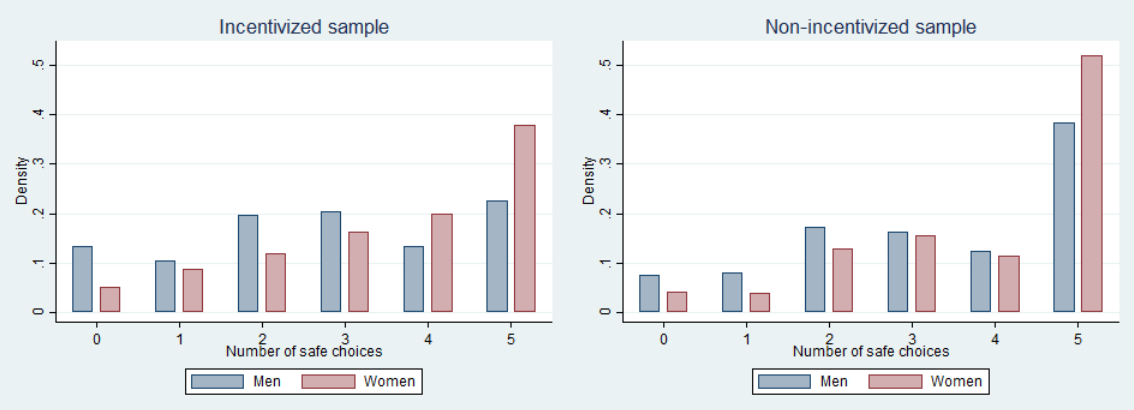
[8]Holt and Laury (2002) also provide evidence that scaling up the payment level increases the share of individuals choosing the safer option, though they mainly found this when choices are incentivized.

[9]Alternatively, we can construct the certainty equivalent of the decisions and use this as a measure for risk aversion. However, this measure can only be generated for individuals who made monotonic decisions. As about one out of three participants made inconsistent choices, this would imply a considerable decrease in the number of observations. Nevertheless, we test the robustness of our results using a certainty equivalent risk aversion measure (see section 4.2).

whereas risk seeking individuals prefer the risky payoff in at least four games (Game 1-4). Again, these figures indicate that most individuals are risk averse, that individuals are more likely to select the certain payoff in the non-incentivized condition (with high hypothetical payoffs) and that women are more risk averse than men. For the empirical analysis, we use the standardized value of the number of safe choices to capture heterogeneity in risk aversion. We assume that there is no within-individual variation in risk aversion over time and use the standardized risk aversion measure (measured in 2009) for all survey waves. This allows us to exploit the available data on job mobility from the other waves.

In addition to this measure of risk aversion elicited through the lottery experiments, the LISS contains (non-incentivized) items on attitudes towards risks. In the 2010 wave, respondents are asked about their willingness to take risks on an 11-point scale, where 0 means the respondent is highly risk averse and 10 indicates the respondent is fully prepared to take risks. These questions are asked concerning risk taking in general, and for three specific domains (financial, occupation and leisure). The correlation between the experimentally elicited risk aversion measure and these general risk attitude measures is significant but relatively weak (around 0.1-0.15). However, as studies testing the relation between risk aversion and field behavior generally exploit these questions (e.g. Dohmen et al., 2011; Fouarge et al., 2014; Skriabikova et al., 2014), we test the robustness of our results using this alternative measure of risk aversion. To make the results comparable, we recode this item so that a higher value indicates a higher degree of risk aversion and standardize this variable.

Figure 1: Distribution of choices



We measure job mobility using items on the year and month of hiring. Because the LISS does not contain information on the exact date of termination of the job, the du-

ration of completed spells cannot be measured accurately. We therefore use the panel structure of the data and the year and month of hiring information to infer whether the worker moved from one job to another between wave t and $t+1$. Around 6 percent of the workers is mobile between two consecutive waves. Women move somewhat more frequently between jobs than men, although this difference is not statistically significant. Furthermore, we have no information on the reason why the worker left the employer, so the variable captures both voluntary and involuntary job turnover.[10]

We test the relation between risk aversion and the probability to move from one employer to another with a (pooled) probit model (clustering the standard errors at the individual level). Since risk aversion may also affect the individual's occupational choice, one may consider job and firm characteristics as 'bad controls'. However, results controlling for these features provides insight in the relation between risk aversion and job mobility conditional on job and firm characteristics. We therefore estimate two different models: one with several basic individual controls (age, the respondent has a spouse, presence of children in the household, educational level and year dummies) and one where we, in addition to the basic controls, include controls for job and firm characteristics as well as controls for home ownership[11] and urbanization: see Appendix Table B1 for the descriptives of the main variables and controls.

4 Results

4.1 Main results

The main findings are presented in Table 2. Concerning the results for men (Panel A), the estimation results for the pooled sample (both the incentivized and hypothetical condition in the lottery experiment) show that there is a negative and significant relation between risk aversion and the probability to move to another job. A one standard deviation increase in risk aversion increases job mobility by around one percentage point. Given that around 6 percent of workers change jobs between two consecutive waves, the size of the estimated marginal effect is nontrivial. This relation is marginally affected by including job and firm characteristics, though the results become somewhat more precise. Moreover, the coefficients are more precisely estimated in the incentivized sample than in the (larger) non-incentivized sample, where the relation between risk aversion and job

[10] However, the data does contain information that we can use to test whether involuntary mobility drives the results, see section 4.2.

[11] Controlling for home ownership is important as home ownership is likely to affect the job mobility decision (by creating mobility costs) and, as buying a home may be considered as an investment, is likely to be correlated with the individual's degree of risk aversion.

mobility is insignificant. The finding that the relation between risk aversion and job mobility is driven by the incentivized sample suggests incentivizing decreases the noise of the risk aversion measure and therefore matters for empirical analysis.

For women (Table 2, Panel B), the degree of risk aversion does not seem to matter: the relation is insignificant in all six specifications and the direction of coefficients is inconsistent across specifications. A potential explanation for this finding could be that most Dutch women work part-time and are the second earner in the household. Moving to another job may in that case not involve substantial risks, as the worker can use the income of the spouse to partially insure against the risk of ending up in a bad match. A related explanation is that women may have lower work attachment and therefore do not consider job changes as a major risk. However, additional analyses do not provide support for this explanation. We tested, for instance, whether risk aversion is a relevant determinant of job mobility for women who provide at least half of the household income or work in larger jobs (at least 36 hours), but we found no evidence for this. Furthermore, our risk aversion indicator may be a better measure of the individual's true risk preference for men than for women. Below we present evidence based on alternative risk aversion measures that is in line with the latter explanation.

In addition to the main relation between risk aversion and job mobility, we may expect that the relation is stronger under certain circumstances. In section 2.4 we discussed two sources of effect heterogeneity: the effect of risk aversion on job mobility can be expected to be stronger a) among permanent workers than among temporary workers; and b) in weak labor markets. To test these predictions, we interact risk aversion with a dummy indicating whether the worker is on a temporary or permanent contract, and with an indicator of the tightness of the labor market. We capture the tightness of the labor market using industry-specific vacancy rates, obtained from CBS Statistics Netherlands.The vacancy rate indicates the number of vacancies per 1000 jobs in the industry. We use the vacancy rate measured in the second quarter of the year, which varies between 7 and 54 during the period relevant for our study. We match the CBS vacancy rate with the LISS data.[12] We define weak (low vacancy rate) and tight (high vacancy rate) labor markets using the median value of this indicator.

Table 3 presents the average marginal effects of risk aversion estimated for workers on different contracts (upper part) and in weak versus tight labor markets (lower

[12]The LISS data distinguishes between 15 different industries (including 'other'). We are able to perfectly match data for ten industries; for four industries we use the average vacancy rate of a larger industry category that includes the relevant industry but also one or several other related industries; for the industry category 'other' we use the national average vacancy rate.

Table 2: Risk aversion and mobility: main results

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Men						
Risk aversion	-0.00954*	-0.00965**	-0.0221**	-0.0163**	-0.00237	-0.00834
	(0.00512)	(0.00451)	(0.00918)	(0.00821)	(0.00585)	(0.00531)
Nr of individuals	781	678	319	273	462	405
Observations	3192	2729	1287	1084	1905	1645
Panel B: Women						
Risk aversion	0.00758	0.00314	0.00102	0.00100	0.00978	0.00495
	(0.00640)	(0.00612)	(0.00930)	(0.00885)	(0.00825)	(0.00748)
Nr of individuals	751	603	292	219	459	375
Observations	2893	2305	1153	824	1740	1418
Experimental cond.	Pooled	Pooled	Incentivized	Incentivized	Hypothetical	Hypothetical
Controls	Basic	Full	Basic	Full	Basic	Full

Notes Entries represent average marginal effects (clustered standard errors in parentheses). In the models presented in column (1), (3) and (5) only basic controls are included (age, spouse, child present, educational level, year dummies), whereas the models with full controls (column (2), (4) and (6)) include a more extensive list of controls: see Appendix Table C1 for the results of the complete model.
***p<0.01, **p<0.05, *p<0.1

part), allowing for the interaction between risk aversion and the contract dummy and risk aversion and the vacancy rate dummy respectively. The results from models using the full list of controls are shown (the estimates using the smaller set of basic controls are similar). Consistent with our theoretical predictions, the results for men indicate that risk aversion is a significant determinant of turnover among permanent but not among temporary workers. In fact, in contrast to the main results the marginal effect of risk aversion is significant also within the sample where risk aversion is measured through non-incentivized games. This suggests that workers holding a stable, permanent position consider job mobility as a risky decision, whereas temporary workers may be in an uncertain, more precarious state where moving to another job does not necessarily involve more risks than staying. Furthermore, the evidence indicates that the marginal effect of risk aversion is larger in case of weak labor markets (i.e. when the vacancy rate is low). In tight labor markets workers may be able to partially 'insure' against accepting a bad match and therefore consider moving less risky than in an economy where job opportunities are scarce. As in our main results, the findings for women indicate no significant relation between risk aversion and job mobility, also not for those holding a permanent position or being employed in an industry with a low vacancy rate. This holds across different experimental conditions and specifications (also those with the set of basic controls, not shown in the table).

4.2 Robustness tests

In this section we will first examine to what extent our main results are sensitive to using alternative measures of risk aversion. First, we can test whether the results depend on the participants who made consistent choices in the multiple price list experiment (by using only the sample of individuals who made monotonic decisions or introducing a dummy indicating that the individual made consistent choices). Second, for those who made consistent choices, we can approximate certainty equivalents by using the midpoint between the two certain payoffs where the individual switched from preferring the risky choice to the certain payoff (or the other way around for those facing the games in reversed order) (e.g. Sutter et al., 2013). The results using these alternative measures are qualitatively similar to our main results: risk aversion is significantly negatively related to job mobility within our male sample but not within our female sample.

Interestingly, we are able to compare our main results based on an experimentally elicited risk aversion measure with results using survey-based risk attitude items (see section 3). The findings using these alternative indicators of risk preferences generally

Table 3: Risk aversion and mobility: heterogeneous effects

	(1)	(2)	(3)
Panel A: Men			
ME of risk aversion at:			
Permanent contract	-0.0105**	-0.0141*	-0.00911*
	(0.00430)	(0.00810)	(0.00489)
Temporary contract	0.00503	-0.0425	0.00855
	(0.0229)	(0.0272)	(0.0340)
Nr of individuals	678	273	405
Nr of observations	2729	1084	1645
ME of risk aversion at:			
Low vacancy rate	-0.0103*	-0.0225*	-0.00534
	(0.00572)	(0.0124)	(0.00554)
High vacancy rate	-0.00799	-0.0105	-0.0101
	(0.00685)	(0.0103)	(0.00921)
Nr of individuals	678	273	405
Nr of observations	2729	1084	1645
Panel B: Women			
ME of risk aversion at:			
Permanent contract	0.00159	-0.00255	0.00435
	(0.00583)	(0.00814)	(0.00723)
Temporary contract	0.0185	0.0477	0.0104
	(0.0259)	(0.0297)	(0.0351)
Nr of individuals	603	219	375
Nr of observations	2305	824	1418
ME of risk aversion at:			
Low vacancy rate	0.00393	0.00535	0.00471
	(0.00760)	(0.00912)	(0.0101)
High vacancy rate	0.00217	-0.00374	0.00635
	(0.00959)	(0.0149)	(0.0116)
Nr of individuals	603	219	375
Nr of observations	2305	824	1418
Experimental cond.	Pooled	Incentivized	Hypothetical
Controls	Full	Full	Full

Notes Entries represent average marginal effects (clustered standard errors in parentheses). All models include the full list of controls.
***p<0.01, **p<0.05, *p<0.1

confirm our results reported above: more risk averse workers are less mobile (see Table 4). In fact, for men the effect size of the general risk attitude variable is similar to the effect size obtained using the experimental risk aversion measure (note that we use standardized items of the 11-point scale items). The effect sizes of the items measuring the individual's risk attitude in the leisure and occupational domain are larger, although the 95 percent confidence interval overlaps. Furthermore, the results for women are different from our main results: in contrast with the results based on the experimental risk aversion measure, the marginal effects of risk attitude on job mobility is negative and significant (except for the results based on risk attitude within the financial domain, as in the male sample). The marginal effects based on risk attitude in the leisure and occupational domain are quite precisely estimated. For female workers, the risk attitude items appear to be a stronger predictor of labor market behavior than the experimentally elicited risk aversion measure.

Table 4: Self-assessed risk attitude and job mobility

	(1)	(2)	(3)	(4)
Panel A: Men				
Risk attitude	-0.0159***	-0.00442	-0.0255***	-0.0265***
	(0.00598)	(0.00499)	(0.00662)	(0.00693)
Nr of individuals	583	583	583	583
Nr of observations	2207	2207	2207	2207
Panel B: Women				
Risk attitude	-0.00906*	-0.00501	-0.0137**	-0.0148***
	(0.00533)	(0.00540)	(0.00553)	(0.00558)
Nr of individuals	604	604	604	604
Nr of observations	2202	2202	2202	2202
Domain	General	Financial	Occupation	Leisure
Controls	Full	Full	Full	Full

Notes Entries represent average marginal effects (clustered standard errors in parentheses). All models include the full list of controls.
***p<0.01, **p<0.05, *p<0.1

Another issue is related to our job mobility variable. In principle, we are not able to distinguish between voluntary and involuntary job mobility. This distinction is difficult in general as workers may quit and accept another job if they anticipate being laid off. Although we control in our models with full controls for firm and job characteristics, it is possible that risk seeking workers are more likely to be fired because they select into jobs

that involve a higher layoff risk or behave in such a way that they increase their risk of being fired (for instance, by arriving late at work). As we have demonstrated above, the relation between risk aversion and job mobility is driven by permanent workers. Permanent workers are well protected in the Netherlands and face a relatively low layoff risk: according to the OECD EPL Index, the Dutch system of employment protection legislation for permanent workers is among the most strict systems (OECD, 2013). It is thus unlikely that involuntary job mobility drives our results. However, we further test for this using additional information. For instance, workers who search for another job are asked why they do so. One of the potential reasons respondents can indicate is that they will (probably) loose their current job. Furthermore, we may expect that voluntary job mobility is unlikely to coincide with a wage drop. We obtain similar results (in general somewhat stronger) if we define job mobility in a more strict way and consider workers not to be (voluntarily) mobile between wave *t* and *t+1* if they are on a temporary contract, are searching for another job anticipating job loss or experience a wage decrease between wave *t* and *t+1*. These findings indicate that indeed voluntary job mobility drives the relation between risk aversion and job changes.

Finally, risk preferences may be correlated with time preferences, which may affect the decision to move to another job. In general, evidence suggests that risk aversion is positively related with patience (i.e. risk averse workers have lower discount rates) (Sutter et al., 2013). However, existing evidence on the relation between time preferences and job mobility is inconclusive.[13] Although the LISS does not contain experimental measures of time preferences, some of the survey questions may capture variation in time preferences.[14] Including such questions does hardly change our main finding that risk aversion is negatively related to job mobility within our male sample.

4.3 Does job search intensity drive the results?

Theoretically, both on-the-job search models and learning models predict that more risk averse workers are less mobile between jobs. However, the models differ fundamentally in terms of the underlying mechanisms. On the one hand, in the on-the-job search model investing in job search is a risky activity as the individual has no ex ante information about job offers. Once an offer is located, there is no uncertainty about the value of the job. Risk averse workers are less likely to move to other jobs because they are less

[13] Based on the NLSY, Cadena and Keys (2015) show that impatient individuals move more frequently between jobs, whereas van Huizen and Alessie (2015) found no evidence for such a relation between time preferences and job mobility using the Dutch DHS data.

[14] For instance, the LISS includes items such as 'I am always prepared' and 'I get chores done right away' (both answered on a 5-point scale).

likely to search and receive offers. On the other hand, learning models are based on the assumption that individuals have no or only limited ex ante information about outside jobs. Based on these models, risk averse workers are more critical about (uncertain) outside job offers and are therefore less likely to accept offers. Hence, risk aversion may affect job mobility through the job search or the job acceptance decision (or both).

Although the LISS data does not contain information about acceptance or rejection of job offers, there is information available about job search activities of the respondents. In the previous literature, job search effort has been measured by the time spent on search activities (Krueger and Mueller, 2010), the number of applications in the past month(s) (van der Klaauw and van Vuuren, 2010), the number of job search channels (Manning, 2009) or a combination of some of these indicators (Bloemen, 2005). Here we use three indicators of on-the-job search intensity that are available in the LISS: whether the worker applied for another job in the past two months; the number of applications in the past two months; and the number of job search channels the worker has used in the past two months. We estimate the relation between risk aversion and these job search indicators using probit (when using the job application dummy as dependent variable) and Poisson models (when using the number of applications or search channels as dependent variable). We use the same set of controls as in the mobility estimations, but present only the results using the incentivized sample: in the pooled sample and in the hypothetical experimental condition sample the signs of the relations are generally the same but in almost all cases the marginal effects are insignificant.

The results are presented in Table 5. The results for men generally point out no significant relation between risk aversion and job search effort, although there is some (weak) evidence that risk averse men apply less frequently to other jobs. This suggests that the relation between risk aversion and job mobility is not driven by the job search decision but by the job acceptance decision. Surprisingly, the results indicate that for female workers risk aversion is positively associated with on-the-job search effort: risk averse workers apply more rather than less frequently to other jobs. For the female sample, there is also some evidence that risk aversion is positively related with the number of search channels.

We also examined the relation between the general risk attitude questions and on-the-job search effort (results are not presented here). Overall, the results for men are more consistent than the results discussed above and show a significantly negative relation between risk aversion and search effort. The findings for women are not very robust: the results in models with the basic controls generally indicate a significantly negative association between risk aversion and search, but the marginal effects become insignificant in models with the more extensive list of controls. Hence, whereas we find evidence of

Table 5: Risk aversion and on-the-job search

	Appied (Y/N) Probit		Nr of applications Poisson		Nr of channels Poisson	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Men						
Risk aversion	0.00158	-0.000440	-0.0216	-0.0342*	0.0180	-0.00304
	(0.00614)	(0.00535)	(0.0235)	(0.0208)	(0.0244)	(0.0199)
Nr of individuals	340	268	340	284	340	284
Nr of observations	1560	1187	1560	1274	1576	1285
Panel B: Women						
Risk aversion	0.0144*	0.00486	0.119*	0.0628*	0.0542*	0.0215
	(0.00756)	(0.00756)	(0.0693)	(0.0352)	(0.0289)	(0.0198)
Nr of individuals	318	188	318	239	319	241
Nr of observations	1423	842	1423	1061	1439	1071
Controls	Basic	Full	Basic	Full	Basic	Full

Notes Entries represent average marginal effects (clustered standard errors in parentheses). The results are based on individuals who participated in the incentivized risk aversion experiment. All models include the full list of controls.
***p<0.01, **p<0.05, *p<0.1

a positive relation between the experimentally elicited risk aversion measure and search effort, there is some (weak) evidence of a relation in the opposite direction in several specifications using the self-assessed risk attitude measure.

In general, these empirical results do not provide strong support for the predictions derived from the on-the-job search model. For men, there is no robust evidence that risk aversion is significantly related to search effort (although this depends on the risk aversion measure). For women, the results are even more ambiguous: depending on the specification and the risk aversion measure, the estimated relation between risk aversion and search effort is significantly negative, insignificant or significantly positive.

If job search is indeed a risky activity, it can be expected that more risk averse workers search less intensively. An explanation for the insignificant (and inconsistent) relations could be that the costs of search are relatively small. In that case, the losses due to unsuccessful search are trivial. In contrast, accepting a new job implies sacrificing the current (certain) position and moving to another (uncertain) position: the potential losses generated by this decision are both uncertain and substantial. Although this may explain why the relation between risk preferences and search is insignificant while at the same time the relation between risk preferences and job mobility is negative, it does not explain why risk averse female workers search more intensively on-the-job.

An alternative explanation that may reconcile the findings on both job mobility and on-the-job search effort could be that workers use on-the-job search as a strategy to decrease uncertainty about their future labor market position. Workers may search to obtain information about available jobs or the labor market in general, thereby decreasing the uncertainty involved with the mobility decision. When jobs are a combination of search and experience goods, searching may reduce the ex ante uncertainty about a variety of job aspects. Search may not only affect the job offer arrival rate, but may also decrease the risks related to turnover by generating a more precise signal about job offers. This can explain why risk averse women may search more on-the-job than their risk seeking counterparts. Moreover, given that risk averse workers may not search significantly less (but potentially more), we argue that the negative relation between risk aversion and job mobility is mainly driven by the negative effect on the job acceptance decision.

5 Conclusion and discussion

This paper examines the relation between risk aversion and job mobility. Workers have little ex ante information about outside job offers and therefore quitting the current job and moving to a new one is a risky decision. Moreover, searching for another job involves costs and uncertain rewards and may therefore be considered as a risky investment activity. Theoretically, we therefore expect that risk averse workers shy away from search activities, are more critical about potential outside offers, and consequently move less frequently from one job to another.

We test these predictions by combining data on risk aversion elicited through experiments with actual labor market behavior. The results for men are consistent with the theoretical predictions: risk averse workers are less likely to be mobile on the labor market. In line with our predictions, the effects of risk aversion on job mobility are stronger when the worker holds a permanent contract and when the economic conditions are worse. Furthermore, the findings show that the effects are stronger in the sample that faces real monetary payments in the experiments rather than hypothetical payments: incentivizing subjects seems to matter. The results for women are more ambiguous: overall, the evidence for a negative relation between risk aversion and job mobility is rather weak. Interestingly, some of the findings indicate that risk averse women search more intensively for other jobs.

As the findings show that heterogeneity in risk aversion explains differences in mobility patterns (among male workers), they may explain differences in the income distribution as well: the empirical results provide a new explanation for existing income inequal-

ity. Hence, risk averse individuals may not only select in different occupations or types of education, but also follow different career paths once they have entered the labor market. Because risk averse workers are more likely to stay at their current employer, they may climb the ladder using the internal labor market (i.e. through promotions). Wage growth of risk seeking workers is more likely the result of external job mobility.

The empirical results suggest that the relation between risk aversion and turnover is not driven by higher search intensity, indicating that the job acceptance decision is the central mechanism through which risk preferences affect mobility behavior. Our findings are consistent with the idea that individuals not only search on-the-job to receive a job offer, but may also use it as a strategy to decrease ex ante uncertainty about the quality of outside jobs. This function of job search has remained unexplored in the labor economics literature and deserves further research.

References

Abdellaoui, M., Baillon, A., Placido, L., Wakker, P. P., 2011. The rich domain of uncertainty: Source functions and their experimental implementation. American Economic Review 101 (2), 695–723.

Allen, D. G., Renn, R. W., Moffitt, K. R., Vardaman, J. M., 2007. Risky business: The role of risk in voluntary turnover decisions. Human Resource Management Review 17 (3), 305–318.

Bauernschuster, S., Falck, O., Heblich, S., Suedekum, J., Lameli, A., 2014. Why are educated and risk-loving persons more mobile across regions? Journal of Economic Behavior & Organization 98, 56–69.

Blau, F. D., DeVaro, J., 2007. New evidence on gender differences in promotion rates: An empirical analysis of a sample of new hires. Industrial Relations: A Journal of Economy and Society 46 (3), 511–550.

Bloemen, H. G., 2005. Job search, search intensity, and labor market transitions an empirical analysis. Journal of Human Resources 40 (1), 232–269.

Bonin, H., Dohmen, T., Falk, A., Huffman, D., Sunde, U., 2007. Cross-sectional earnings risk and occupational sorting: The role of risk attitudes. Labour Economics 14 (6), 926–937.

Borjas, G. J., 1981. Job mobility and earnings over the life cycle. Industrial & Labor Relations Review 34 (3), 365–376.

Borjas, G. J., Goldberg, M. S., 1978. The economics of job search: A comment. Economic Inquiry 16 (1), 119–125.

Budria, S., Diaz-Serrano, L., Ferrer-i Carbonell, A., Hartog, J., 2013. Risk attitude and wage growth: replicating shaw (1996). Empirical Economics 44 (2), 981–1004.

Burdett, K., 1978. A theory of employee job search and quit rates. American Economic Review 68 (1), 212–220.

Cadena, B. C., Keys, B. J., August 2015. Human capital and the lifetime costs of impatience. American Economic Journal: Economic Policy 7 (3), 126–53.

Caliendo, M., Fossen, F., Kritikos, A., 2010. The impact of risk attitudes on entrepreneurial survival. Journal of Economic Behavior & Organization 76 (1), 45 – 63.

Croson, R., Gneezy, U., June 2009. Gender differences in preferences. Journal of Economic Literature 47 (2), 448–74.

Dohmen, T., Falk, A., Huffman, D., Sunde, U., June 2010. Are risk aversion and impatience related to cognitive ability? American Economic Review 100 (3), 1238–60.

Dohmen, T., Falk, A., Huffman, D., Sunde, U., 2012. The intergenerational transmission of risk and trust attitudes. Review of Economic Studies 79 (2), 645–677.

Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., Wagner, G. G., 2011. Individual risk attitudes: Measurement, determinants, and behavioral consequences. Journal of the European Economic Association 9 (3), 522–550.

Dustmann, C., Glitz, A., Schönberg, U., Brücker, H., 2016. Referral-based job search networks. Review of Economic Studies 83 (2), 514–546.

Dustmann, C., Pereira, S. C., 2008. Wage growth and job mobility in the united kingdom and germany. Industrial & Labor Relations Review 61 (3), 374–393.

Falco, P., 2014. Does risk matter for occupational choices? experimental evidence from an african labour market. Labour Economics 28, 96–109.

Feinberg, R. M., 1977. Risk aversion, risk, and the duration of unemployment. Review of Economics and Statistics 59 (3), 264–271.

Fouarge, D., Kriechel, B., Dohmen, T., 2014. Occupational sorting of school graduates: The role of economic preferences. Journal of Economic Behavior & Organization 106, 335 – 351.

Harrison, G. W., Lau, M. I., Rutström, E. E., 2007. Estimating risk attitudes in denmark: A field experiment. The Scandinavian Journal of Economics 109 (2), 341–368.

Heitmueller, A., 2005. Unemployment benefits, risk aversion, and migration incentives. Journal of Population Economics 18 (1), 93–112.

Holt, C. A., Laury, S. K., 2002. Risk aversion and incentive effects. American Economic Review 92 (5), 1644–1655.

Ilmakunnas, P., Maliranta, M., Vainiomäki, J., 2005. Worker turnover and productivity growth. Applied Economics Letters 12 (7), 395–398.

Jackson, C. K., 2013. Match quality, worker productivity, and worker mobility: Direct evidence from teachers. Review of Economics and Statistics.

Jaeger, D. A., Dohmen, T., Falk, A., Huffman, D., Sunde, U., Bonin, H., 2010. Direct evidence on risk attitudes and migration. Review of Economics and Statistics 92 (3), 684–689.

Johnson, W. R., 1978. A theory of job shopping. Quarterly Journal of Economics 92 (2), 261–278.

Jovanovic, B., 1979. Job matching and the theory of turnover. Journal of Political Economy 87 (5), 972–990.

Jovanovic, B., 1984. Matching, turnover, and unemployment. Journal of Political Economy 92 (1), 108–122.

Koudstaal, M., Sloof, R., Van Praag, M., 2015. Risk, uncertainty, and entrepreneurship: Evidence from a lab-in-the-field experiment. Management Science 62 (10), 2897–2915.

Krueger, A. B., Mueller, A., 2010. Job search and unemployment insurance: New evidence from time use data. Journal of Public Economics 94 (3), 298–307.

le Grand, C., Tåhlin, M., 2002. Job mobility and earnings growth. European Sociological Review 18 (4), 381–400.

Light, A., McGarry, K., 1998. Job change patterns and the wages of young men. Review of Economics and Statistics 80 (2), 276–286.

Liu, E. M., 2013. Time to change what to sow: Risk preferences and technology adoption decisions of cotton farmers in china. Review of Economics and Statistics 95 (4), 1386–1403.

Maier, M., Argaw, B. A., Maier, M. F., Skriabikova, O. J., 2016. Risk attitudes, job mobility and subsequent wage growth during the early career. No. D18-V3 in Beiträge zur Jahrestagung des Vereins für Socialpolitik 2016. ZBW, Kiel und Hamburg.

Manning, A., 2009. You can't always get what you want: The impact of the uk jobseeker's allowance. Labour Economics 16 (3), 239–250.

Mortensen, D. T., 1986. Handbook of labor economics. Vol. 2. North-Holland, Ch. Job search and labor market analysis, pp. 849–919.

Mortensen, D. T., 2011. Markets with search friction and the dmp model. American Economic Review 101 (4), 1073.

Noussair, C. N., Trautmann, S. T., van de Kuilen, G., 2014. Higher order risk attitudes, demographics, and financial decisions. The Review of Economic Studies 81 (1), 325–355.

Noussair, C. N., Trautmann, S. T., van de Kuilen, G., Vellekoop, N., 2013. Risk aversion and religion. Journal of Risk and Uncertainty 47 (2), 165–183.

OECD, 2013. OECD Employment Outlook 2013. OECD Publishing, Ch. Protecting jobs, enhancing flexibility: A new look at employment protection legislation, pp. 65–126.

Pannenberg, M., 2010. Risk attitudes and reservation wages of unemployed workers: evidence from panel data. Economics Letters 106 (3), 223–226.

Pratt, J. W., 1964. Risk aversion in the small and in the large. Econometrica 32 (1/2), 122–136.

Schmelzer, P., 2012. The consequences of job mobility for future earnings in early working life in germany: Placing indirect and direct job mobility into institutional context. European Sociological Review 28 (1), 82–95.

Shaw, K. L., 1996. An empirical analysis of risk aversion and income growth. Journal of Labor Economics, 626–653.

Siebert, W. S., Zubanov, N., 2009. Searching for the optimal level of employee turnover: a study of a large uk retail organization. Academy of Management Journal 52 (2), 294–313.

Skriabikova, O. J., Dohmen, T., Kriechel, B., 2014. New evidence on the relationship between risk attitudes and self-employment. Labour Economics 30, 176–184.

Sutter, M., Kocher, M. G., Glätzle-Rüetzler, D., Trautmann, S. T., 2013. Impatience and uncertainty: Experimental decisions predict adolescents' field behavior. American Economic Review 103 (1), 510–31.

Tjaden, V., Wellschmied, F., 2014. Quantifying the contribution of search to wage inequality. American Economic Journal: Macroeconomics 6 (1), 134–61.

Tom, S. M., Fox, C. R., Trepel, C., Poldrack, R. A., 2007. The neural basis of loss aversion in decision-making under risk. Science 315 (5811), 515–518.

Topel, R. H., Ward, M. P., 1992. Job mobility and the careers of young men. Quarterly Journal of Economics 107 (2), 439–479.

van der Klaauw, B., van Vuuren, A., 2010. Job search and academic achievement. European Economic Review 54 (2), 294–316.

van Huizen, T., Alessie, R., 2015. Time preferences and career investments. Labour Economics 35, 77 – 92.

Von Gaudecker, H.-M., Van Soest, A., Wengstrom, E., 2011. Heterogeneity in risky choice behavior in a broad population. American Economic Review 101 (2), 664–694.

Appendix A: Experiment

Research into decisional behavior

Some people enjoy taking risks while others prefer to avoid them. In this research we ask you to each time make a choice between two options that can both win you prize money, depending on the throw of a six-sided die. There are no right or wrong choices in this study. The only thing that matters is your personal preference.

You can make money

You can actually win real money here! At the end of this research, the computer will determine at random whether you win any or not. The odds of winning are 1 in 10. If you win, the computer will select (again at random) one of the options that you chose. We then let the computer roll the dice. This is how we determine the amount won by your choice of option. That amount will subsequently be transferred into your bank account. Be sure, therefore, to always choose the option that you really prefer, because that may be the option that the computer selects to determine how much will be paid out to you.

Explanation part 1

In this part you need to choose between two options each time, either "Option L" (left) or "Option R" (right). Here is an example:

A red die is thrown for every option. In the example above, "Option L" wins €45 if a 1,

Optie L	Optie R
	

2 or 3 turns up. If the die turns up a 4, 5, or 6, "Option L" wins €15. "Option R" always wins €25, regardless of what the die turns up.

You can make money

Always choose the option that you truly prefer, since that may be the option selected by the computer if you are really to receive any prize money.

Appendix B: Descriptive statistics

Table B1: Descriptive statistics

	Men		Women	
	Mean	SD	Mean	SD
Job mobility	0.0568	0.231	0.0603	0.238
Risk aversion	-0.153	0.988	0.208	0.888
Age	45.21	10.30	43.05	10.77
Spouse present	0.823	0.381	0.764	0.425
Child present	0.547	0.498	0.500	0.500
Low level of education	0.232	0.422	0.168	0.374
Higher secondary education	0.0674	0.251	0.0833	0.276
Intermediate vocational education	0.303	0.460	0.289	0.454
Higher vocational education	0.294	0.456	0.362	0.481
University	0.103	0.304	0.0972	0.296
Urban area (Y/N)	0.397	0.489	0.414	0.493
Home owner	0.827	0.378	0.798	0.402
Temporary contract	0.0663	0.249	0.0894	0.285
Working hours	37.04	4.959	28.48	7.533
Tenure (months)	163.9	137.9	129.6	113.2
Public sector	0.322	0.468	0.494	0.500
Occupational level:†				
Occupational level: Low	0.279	0.449	0.0738	0.261
Occupational level: Medium	0.537	0.499	0.841	0.366
Occupational level: High	0.184	0.388	0.0855	0.280
Industry:‡				
Industry A	0.334	0.472	0.617	0.486
Industry B	0.259	0.438	0.0638	0.244
Industry C	0.274	0.446	0.207	0.405
Industry D	0.133	0.340	0.112	0.316
Firm size (nr of employees)				
Firm size <100	0.558	0.497	0.633	0.482
Firm size 100-499	0.263	0.440	0.182	0.386
Firm size >500	0.143	0.350	0.138	0.344
Firm size unknown	0.0465	0.211	0.0751	0.264
Year 2008	0.209	0.407	0.202	0.401
Year 2009	0.203	0.403	0.198	0.399
Year 2010	0.169	0.375	0.179	0.383
Year 2011	0.154	0.361	0.161	0.367
Year 2012	0.139	0.346	0.137	0.344
Year 2013	0.126	0.332	0.124	0.329

Table continues on next page

Notes The table provides descriptive statistics of the male (N=2729) and female (N=2305) samples of the pooled regressions with controls (Table 2; Column (2)).
† Low level of occupation includes skilled, supervisory, semi-skilled, unskilled and trained manual work and agrarian professions. Medium level of occupation includes intermediate academic, intermediate supervisory and commercial professions and other mental work. High level of occupation includes higher academic and higher supervisory profession.
‡ Industry A includes government services, public administration, education, healthcare, welfare, environmental services, culture and recreation; B includes agriculture, mining, industrial production, utilities and construction; C includes retail trade, catering, financial and business services, transport, storage and communication; D contains 'other industries'.

Appendix C: Estimation results

Table C1: Main estimation results

	Men		Women	
	(1)	(2)	(3)	(4)
Risk aversion	-0.0859*	-0.0987**	0.0635	0.0306
	(0.0460)	(0.0460)	(0.0535)	(0.0597)
Age	-0.0316***	-0.0109**	-0.0343***	-0.00694
	(0.00387)	(0.00482)	(0.00427)	(0.00495)
Spouse present	0.164	0.211	-0.0211	0.210
	(0.114)	(0.133)	(0.118)	(0.147)
Child present	-0.110	-0.0653	0.0960	0.0679
	(0.0911)	(0.0968)	(0.0964)	(0.109)
Level of education:				
(Ref: lowest category)				
Higher secondary education	0.224	0.0398	0.459***	0.415*
	(0.174)	(0.209)	(0.165)	(0.225)
Intermediate vocational education	0.146	0.139	0.156	0.449**
	(0.131)	(0.136)	(0.146)	(0.179)
Higher vocational education	0.200	0.0920	0.235*	0.648***
	(0.130)	(0.156)	(0.138)	(0.190)
University	0.184	-0.0318	0.436***	0.762***
	(0.153)	(0.194)	(0.163)	(0.227)
Urban area (Y/N)		0.181*		-0.0546
		(0.0937)		(0.0973)
Home owner		0.0971		-0.226*
		(0.123)		(0.126)
Temporary contract		0.705***		0.485***
		(0.121)		(0.139)
Working hours		0.0111		-0.00238
		(0.00915)		(0.00654)
Tenure (months)		-0.00321***		-0.00316***
		(0.000707)		(0.000852)
Public sector		-0.168		-0.122
		(0.150)		(0.135)
Occupational level:†				
(Ref: Low)				
Medium		0.0687		-0.246
		(0.128)		(0.193)
High		0.170		-0.139
		(0.165)		(0.259)
Industry:†				

Table continues on next page

	Men		Women	
	(1)	(2)	(3)	(4)
(Ref: Industry A)				
Industry B		0.0335		0.000615
		(0.168)		(0.214)
Industry C		0.0191		0.346**
		(0.149)		(0.143)
Industry D		0.0445		-0.166
		(0.159)		(0.179)
Firm size (nr of employees)				
(Ref: Firm size<100)				
Firm size 100-499		0.0288		-0.0223
		(0.106)		(0.124)
Firm size >500		0.0477		0.0129
		(0.122)		(0.147)
Firm size unknown		0.151		-0.185
		(0.214)		(0.226)
Year dummies:				
(Ref: Year 2008)				
Year 2009	-0.140	-0.0960	-0.214**	-0.288**
	(0.107)	(0.128)	(0.105)	(0.131)
Year 2010	-0.0681	-0.0659	-0.200*	-0.200
	(0.113)	(0.128)	(0.109)	(0.131)
Year 2011	-0.0239	0.0300	-0.241**	-0.389**
	(0.111)	(0.133)	(0.120)	(0.156)
Year 2012	-0.0577	-0.00522	-0.329**	-0.377**
	(0.118)	(0.142)	(0.129)	(0.157)
Year 2013	-0.429***	-0.353*	-0.444***	-0.451**
	(0.155)	(0.194)	(0.143)	(0.178)
Constant	-0.357	-1.662***	-0.201	-1.062***
	(0.218)	(0.446)	(0.247)	(0.389)
Nr of individuals	781	678	751	603
Nr of observations	3,192	2,729	2,893	2,305
Pseudo R2	0.0788	0.161	0.102	0.154
Log likelihood	-668.6	-499.2	-646.4	-444

Notes Entries represent coefficients (clustered standard errors in parentheses).

† See notes Appendix Table B1 for the description of this variable.

***p<0.01, **p<0.05, *p<0.1