Risk Aversion and Turnover

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Abstract

Job mobility is inherently risky as workers have limited ex ante information about the quality of outside job options. Heterogeneity in risk aversion may therefore be an important determinant of turnover. This study examines theoretically and empirically the relation between risk aversion and job mobility. We elicit risk preferences using controlled (incentivized) experiments with field subjects from the LISS, a representative Dutch longitudinal survey. Since the data includes detailed information on labor market behavior, we are able to examine the relation between experimentally measured risk preferences and actual job mobility. The findings show that risk averse workers are less likely to move to other jobs. In line with the theoretical predictions, the negative relation between risk aversion and mobility is larger if the worker holds a permanent contract, is in a good job match and when labor market conditions are worse. The evidence indicates that the effects are driven by the job acceptance decision rather than the search decision.

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1. Introduction

Individuals face many risky decisions during their working life. Some of these decisions are riskier than others and some individuals are more risk averse than others (Diamond and Stiglitz, 1974). This study focuses on the role of risk aversion in the decision to move from one job to another. The central premise is that moving is generally more risky than staying and that therefore risk averse workers are reluctant to quit their job and accept another one. Job mobility is risky as it potentially involves substantial changes relative to the status quo. On the one hand, the worker may improve his labour market position by searching for and accepting a new job: the empirical literature shows that job mobility is an important source of wage growth (Topel and Ward, 1992). On the other hand, because the worker has limited information about many aspects of the new job (i.e. in the words of Nelson (1970), jobs are experience goods), after accepting the offer he may realize that he ended up in a poor match. As some rungs may be slippery, climbing up the career ladder involves the risk of falling down.

The two main models in economics to analyze turnover are based on the notion of imperfect information and introduce uncertainty in the labour market. First, (on-the-job) search models assume that there is uncertainty about whether you will find a (better) job (Burdett, 1978; Mortensen, 1986). In search models jobs are pure search goods, so there is no ex ante uncertainty about the quality of the new job - workers simply accept a new wage offer if it is higher than the current wage. In these models, search is a risky decision with certain costs and uncertain rewards. Second, matching models assume that jobs are experience goods: in the extreme case, the jobs are pure experience goods and the worker has no information about the quality of the job (Jovanovic, 1979). Given this uncertainty, accepting a new job is inherently risky.

Since uncertainty plays a central role in the canonical models for the analysis of turnover, it is surprising that the role of risk aversion in turnover decisions has been completely ignored.[1] The theoretical models assume that individuals are risk neutral, and hence there is no heterogeneity in risk preferences. Given that mobility decisions are risky, we argue that interpersonal variation in risk aversion may provide an important explanation for differences in mobility patterns. Existing studies on the role of risk aversion in the labour market focus on pre-entry sorting effects (self-selection) of risk aversion through educational and occupational choice (Bonin et al., 2007). Furthermore, several studies examined the relation between risk preferences and the exit rate out of unemployment (although empirical tests are scarce: see ...ref). More related to this study, Shaw (1996) examines the relation between risk aversion and income, and argues that risk aversion is inversely related to training (and thereby to wage growth). However, she does not examine the underlying mechanism, but rather studies the relation between risk aversion and income growth (relying on noisy proxies for risk aversion). Here we analyze the relation between risk aversion and job mobility and thereby study a mechanism through which risk preferences affect wage growth.

The study derives several new theoretical predictions on the relation between risk preferences and job mobility. In addition to the main effect on mobility, the relation may be more pronounced under certain circumstances: if the worker holds a permanent contract, is in a good job match and when the labour

[1] 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.

market conditions are worse, turnover may be especially risky. We therefore expect a stronger relation between risk aversion and turnover under these conditions. We test these predictions empirically using the LISS, a recent longitudinal panel from the Netherlands. In addition to information on labour market behaviour and a wide range of background characteristics, the data contains measures of risk preferences. Risk preferences are elicited through (incentivized) lab experiments that are taken to the field. This unique dataset thus provides an opportunity to analyze the relation between risk aversion and labour market behaviour, using data from the field (rather than from student subject pools).

The study provides new insights on the determinants of turnover. Turnover is a relevant economic issue, as it affects individuals' careers (and thereby their wage income) (Topel and Ward, 1992; Blau and DeVaro, 2007), is related to firm productivity (Ilmakunnas* et al., 2005; Siebert and Zubanov, 2009), the functioning of the labour market (allocative efficiency) (Jovanovic, 1979; Jackson, 2013; 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. Furthermore, the results may provide a new explanation for the observed income distribution. More specifically, the findings may explain a part of the gender wage gap (studies generally find that women tend to more risk averse than men, see Borghans et al. (2009).

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

2. Theoretical framework

On-the-job search and job matching models - the benchmark theoretical models of turnover - are based on imperfect information. In the first type of models, workers search for other jobs and when an offer is located they accept it if the value of the alternative job is higher than the value of the current job. On-the-job search models assume that workers have perfect information about all aspects of the offered job and therefore there is no ex ante uncertainty about the value of a located job. In contrast, matching models are based on the presumption that workers have no (limited) ex ante information about the job. The new worker learns about the 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 search models jobs are pure search goods and job mobility is due to the arrival of new information about alternative job opportunities, whereas in matching models jobs are pure experience goods and turnover is the result of obtaining new (negative) information about the current job. Here we present the models in a rather stylized form, but they illustrate how heterogeneity in risk aversion may explain variation in job mobility. This is the first paper that derives theoretical predictions on the relation between risk aversion and job mobility (existing studies using search and matching models generally assume risk neutrality or homogeneity).

As many uncertainties about a job involve the non-pecuniary characteristics, in the models we discuss the job is not simplified to a single wage (which is common in many labour economics models and in almost all search models), but the job match has a particular value in terms of utility. The value of the match contains all aspects of the job that generate (dis)utility for holding the job, such as income, working hours, commuting time and satisfaction. In the on-the-job search model workers choose the level of search

effort $s \in [0,1]$ to maximize expected lifetime utility V:

$$rV(y_0) = y_0 - c(s) + q\,[V(u) - V(y_0)] + E\{s\lambda \int_{y_0}^{\bar{y}} [V(y_1) - V(y_0)]\, dF(y)\} \tag{1}$$

where r represents the discount rate, $V(y_0)$ denotes the value obtained from the current job match y_0 and $c(s)$ presents the search costs, which are a monotonically increasing convex function of search effort s. Search costs may be monetary (for instance, related to traveling), but it is likely that the lion's share of the search costs have a non-pecuniary nature: looking for job openings, writing application letters and attending interviews are time and effort consuming activities. If the worker searches he receives expected benefits $E\{.\}$, which depend on the job offer arrival rate $s\lambda$, where $\lambda \in [0,1]$ is an exogenous job market parameter. Job offers (matches) are drawn from the cumulative distribution function $F(y)$. Since the job seeker has perfect information about the job once he has received the offer, the worker accept it if the quality of the alternative match is higher than the quality of the current match ($y_1 > y_0$).

In contrast to not searching - which generates neither costs nor benefits - the gains from search are uncertain. The payoffs for searching depends on whether or not the worker finds a better job. Job search is successful with probability $s\lambda[1 - F(y_0)]$, leading to a payoff equal to $V(y_1) - V(y_0) - c(s)$. With probability $1 - s\lambda[1 - F(y_0)]$, search is unsuccessful and leads to costs $c(s)$. Job search is therefore a risky investment with certain costs and uncertain rewards. Optimal job search effort is determined by setting the marginal costs of search equal to the expected marginal benefits of search:

$$c'(s) = E\{\lambda \int_{y_0}^{\bar{y}} [V(y_1) - V(y_0)]\, dF(y)\} \tag{2}$$

Which can be formulated as:

$$c'(s) = \lambda \int_{y_0}^{\bar{y}} [V(y_1) - V(y_0)]\, dF(y) - p \tag{3}$$

where p is the risk premium, which is positively associated with risk aversion (following Pissarides). Because the gains of search are uncertain, risk aversion decreases the value of the marginal benefits of search and therefore decreases on-the-job search intensity. Consequently, the turnover probability, $s\lambda[1 - F(y_0)]$, declines with p.

The assumption that the job seeker has perfect certainty about (all aspects of) the job is rather strict. Borjas and Goldberg (1978) already pointed out this limitation and stressed that it is unlikely that the individual has no uncertainty about all aspects of the job: "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).

In job matching models risk aversion affects job mobility through the job acceptance rather than the job arrival decision. Assuming that jobs are pure experience goods, the worker has no prior information about alternative jobs. The model presented here follows the central premise of the model of Jovanovic (1979): the individual has more information about the current job than outside job opportunities and new information arrives while on the job. To capture this idea of ex ante uncertainty about match quality, we assume that each period the worker receives an alternative offer and that the quality of the new job match is perceived with a noisy signal $\hat{y}_1$. For simplicity, we assume that the worker has perfect information about the current

job match and that the real value of the job is immediately observed when the job is accepted. The value of the alternative job is given by:

$$V(\hat{y}_1) = \begin{cases} V(y_1) & \text{with probability} \quad [1-\varepsilon] \\ V(y) & \text{with probability} \quad \varepsilon \end{cases} \tag{4}$$

where $V(y)$ is the value of job with match quality y, where y is redrawn from the distribution $F(y)$, which has an lower and upper bound $y \in [\underline{y}, \bar{y}]$. The match may turn out to be better or worse than expected with probability ε. The worker accepts the offer in case it is higher than the reservation job quality y^*, which is defined by:

$$EV(y^*) \geq V(y_0) \tag{5}$$

Or alternatively:

$$V(y^*) - p \geq V(y_0) \tag{6}$$

Equation (6) shows that the worker's reservation match quality increases with the risk premium p and hence with risk aversion. Because the worker has limited ex ante information about the quality of a new job, job mobility is inherently risky. We can now introduce uncertainty about the match in the search model by replacing $V(y_1)$ with $V(\hat{y}_1)$ and allowing for a reservation match quality that is not equal to the current match:

$$rV(y_0) = y_0 - c(s) + E\{s\lambda \int_{y^*}^{\bar{y}} [V(\hat{y}_1) - V(y_0)]\, dF(y)\} \tag{7}$$

Risk averse workers are less likely to quit and leave for another job, as they invest less in job search activities and have a higher reservation match quality level.

Hypothesis 1 *More risk averse workers have lower turnover rates*

Search and matching models lead to the same predictions about the relation between risk aversion and turnover - although risk aversion operates through different decisions. However, the search decision may not be very risky if search costs are quantitatively small, whereas the decision to quit and accept an offer may lead to substantial negative outcomes if the new job turns out to be a bad match. In that case, the well-being (and wage) of the individual may decrease for a significant amount of time and the worker faces a substantial risk of losing the job. We expect therefore that risk aversion mainly affects job mobility through the job acceptance decision. We will test empirically whether risk aversion affects job search behaviour.

In addition to the main effect of risk aversion, we can derive several testable predictions about the size of the effect. The risks related to a job change depend on the individualt's current position (Hypothesis 2a-b) and on the opportunities to mitigate the loss due to accepting a bad job (Hypothesis 2c). First, the potential loss associated with turnover depends on the quality of the current match:

$$V(\hat{y}_1) = \begin{cases} V(y_1) & \text{with probability} \quad [1-\varepsilon] \\ V(y_h) & \text{with probability} \quad \varepsilon[1-F(y_0)] \\ V(y_l) & \text{with probability} \quad \varepsilon[F(y_0)] \end{cases} \tag{8}$$

where $V(y_h) \geq V(y_0)$ and $V(y_l) < V(y_0)$: the redrawn match quality may be higher (y_h)or lower (y_l) than the previous match y_0. When the worker is close to the lower bound of the match quality distribution, separating involves few risks ($F(y_0)$ is close to zero). Even if the job match turns out worse than expected, the worker is likely to improve his position by accepting another position. However, when the current job match quality is near the upper bound of the match quality distribution ($F(y_0)$ approaches 1), moving to a seemingly better job involves the risk of ending up in a poor match ex post. Only risk seekers would quit from a high quality job match. Basically, leaving a good job is more risky than leaving a bad job.

Hypothesis 2a *The size of the negative effect of risk aversion on job mobility increases with the quality of the current job match*

Another testable prediction arises because some jobs may be more flexible than others, i.e. some jobs have higher lay-off rates. If we introduce (match-specific) layoff rates q, staying also involves some risks, as the value of the current match is given by:

$$V(y_0) = \begin{cases} V(y_0) & \text{with probability} \quad [1 - q_0] \\ V(u) & \text{with probability} \quad q_0 \end{cases} \tag{9}$$

where $V(u)$ indicates the utility when the worker is fired and enters unemployment (for simplicity we assume that $V(u) < V(y_0)$). The value of the alternative match can be described as:

$$V(\hat{y}_1) = \begin{cases} V(y_1) & \text{with probability} \quad [1 - q_1 - \varepsilon] \\ V(y) & \text{with probability} \quad \varepsilon \\ V(u) & \text{with probability} \quad q_1 \end{cases} \tag{10}$$

In general, we may expect that the current match offers more employment protection than the alternative match ($q_0 < q_1$), as firing costs increase with tenure and workers may have obtained a permanent contract. Permanent workers may sacrifice their employment protection if they move to another job, so quitting involves substantial risks. In that way, introducing lay-off rates does not change the predictions as formulated in Hypothesis 1 and 2a. When $q_0 < q_1$, the riskiness of moving relative to staying will increase. Furthermore, if the worker is in a good match, q_0 is likely to be low and accepting another job will imply a significantly higher lay-off risk. This is consistent with Hypothesis 2a. However, the assumption that staying is less risky than moving does not always hold. The probability that workers on a temporary contract are retained by their employer is relatively small (compared to permanent workers). Staying in a temporary job may involve more uncertainties than moving. Therefore, the relation between risk aversion and turnover may be weak for temporary workers.

Hypothesis 2b *The relation between risk aversion and job mobility is larger for permanent workers than for temporary workers (i.e. decreases with the lay-off rate)*

The previous predictions (2a-b) relate to the current position of the worker: if the current match is poor or uncertain, the effect of risk aversion is weaker. It's not risky to burn a wrecked ship. A third prediction is related to the worker's opportunity to mitigate a potential loss if the new match turns out to be poor.

When the worker accepted a 'lemon' ($V(y_l)$ in equation 8), he 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 - depends on the economic conditions. When the vacancy rate is high, 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 (implying $V(y_l)$ is relatively high). Even risk averse individuals may not prefer one bird in the hand if there are plenty in the bush. In a tight labor market, job mobility is less risky and therefore the relation between risk aversion and mobility is weaker.

Hypothesis 2c *The size of the negative relation between risk aversion and job mobility decreases with the tightness of the labor market*

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 seeking workers invest more in firm-specific human capital and may therefore be reluctant 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 the search and matching 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 larger levels of firm-specific human capital increase incentives to stay. We therefore argue that the effect of risk aversion through human capital decision is ambiguous.

3. Data and methodology

To test the hypotheses empirically, we make use of the LISS (Longitudinal Internet Studies for the Social sciences) survey, a representative Dutch panel that includes around 5000 households. All five currently available waves between 2008 and 2012 are used in this study. Around 6000 individuals are interviewed in each wave and the panel is unbalanced in the final sample. LISS contains several studies, including the 'Work and Schooling' core study that includes questions on labour market behaviour. The dataset is matched with information on background variables for the respondents provided by LISS. Furthermore, because LISS participants receive reimbursement for completing the survey, the payment infrastructure can be used for conducting incentivized experiments (see below). The analysis is limited to men who hold a paid job and are between the ages 20 and 65 at the time of the interview.(effects for women? similar, though effects insignificant in non-incentivized group)

We elicit risk preferences through an 'artefactual field experiment' (Harrison and List, 2004), i.e. by taking lab experiments to the field. In 2009, 3457 LISS respondents (59.2 percent) participated in an experiment where they had to make 17 binary choices in lottery games. About 40 percent of the subjects (almost 1400) were incentivized through a lottery: one out of ten incentivized subjects was selected as a winner. In

case the subjects were incentivized, it was stressed in the instructions that the subjects could actually earn money (see Appendix). 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.[2] Here we focus on the five games that aim to capture risk aversion. In these games, the subjects had to choose between a certain and a risky option. In all games, the risky option consisted of a 50 percent gain of 5 and a 50 percent gain of 65 euro. The expected value of this option was therefore 35 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.[3]

Table 1: Risk aversion: choices

	Certain payoff	Full sample (All)	Full sample (Incentive)	Selection (All)	Selection (Incentive)
Game 1	20	49.40	44.26	39.08	28.70
Game 2	25	57.67	54.26	48.59	38.26
Game 3	30	68.90	66.10	63.03	57.83
Game 4	35	78.08	76.04	77.11	73.04
Game 5	40	82.68	81.16	83.10	78.70

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)

Table 1 presents the decisions of the subjects. Risk neutral agents opt for the risky option 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 1-4, whereas a risk seeking individual prefers the risky payoff in Game 4-5. The table (full sample) shows that in Game 1 about half of the sample and in Game 2 and 3 a majority choose the certain payoff, while the payoffs were (considerably) lower than the expected value of the risky option (€35). In Game 4 and 5, the certain payoff is also preferred by a large majority. The data therefore indicate that most individuals are risk averse. The selected male workers seem to be more risk seeking than average, opting more frequently for the risky outcome in Game 1-3. A reason could be that men are more risk seeking than women - which is supported by the literature (and that employed are more risk seeking than non-employed individuals??). Furthermore, when the subjects are incentivized, they seem to behave more risk seeking. Since the assignment to the experimental condition (real or hypothetical payoffs) is random, this suggest that incentives matter when eliciting risk preferences. An explanation for this finding is that individuals make their decisions more carefully when faced with real consequences.

We construct an aggregate measure by summing up the number of safe choices.[4] Figure 1 shows the distribution of this aggregated measure. Risk averse agents would prefer the safe outcome two times at most (Game 4 and 5). Again, these figures indicate that most individuals are risk averse. There are some

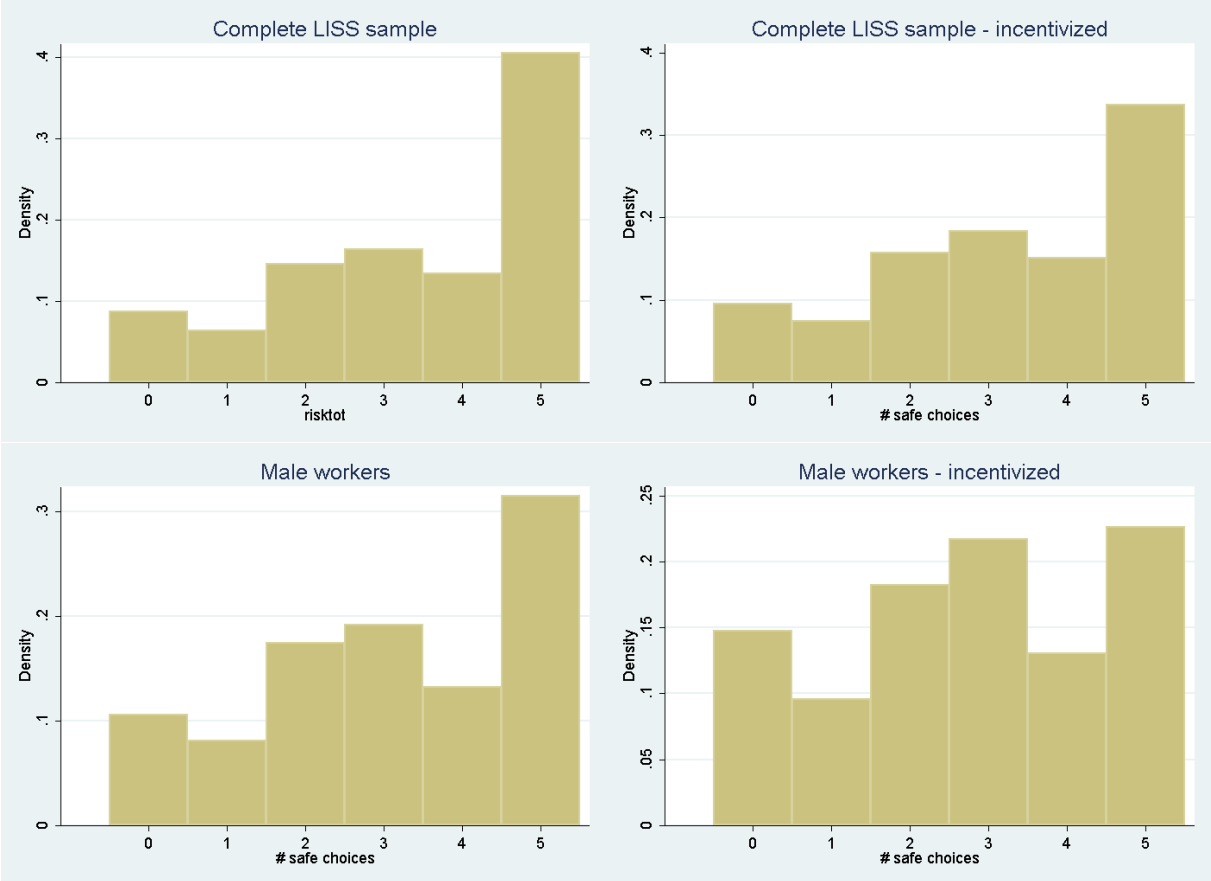
[2]The strategy of randomly selecting winners is followed in several other large-scale (representative) experiments (Von Gaudecker et al., 2011; Harrison et al., 2007; Dohmen et al., 2011). Abdellaoui et al. (2011) show that random selection of winners generates stronger incentives than paying all subjects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

[3]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.

[4]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, which implies that the number of observations decreases considerably.

differences between the distributions: the selected male workers are more risk seeking, as are subjects who faced real payoffs. However, the shapes of the distributions are similar: the ranking of the variable with respect to the frequency is the same in all distributions (except for the '0' outcome which is relatively popular in the incentivized male worker sample). 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 therefore impute the risk aversion variable which was measured in 2009 in the other four years. In that way, the available information from the other waves can be exploited as well.

Figure 1: Distribution of choices



We measure job mobility using items on the year and month of hiring. Unfortunately, the LISS does not contain information on the exact date of the termination of the job, so duration 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. Furthermore, we have no information on the reason why the worker left the employer, so the variable captures both voluntary and involuntary job turnover (however, the data does contain information that we can use to test whether involuntary mobility drives the results, see **??**). We test Hypothesis 1 by estimating the effect of risk aversion on the

probability to move from one employer to another with a random effects probit model:

$$Pr(m = 1 \mid R_i, X_{it}) = \Phi(\gamma R_i + X_{it}^{'} + \alpha_i) \tag{11}$$

where m indicates job mobility, R denotes the individual's risk aversion and X_{it} is vector of individual characteristics that affect job mobility. We use a large number of control variables in the analysis, including individual characteristics (e.g. age, education, children, whether the worker is a homeowner or not[5]), job characteristics (e.g. tenure, working hours, type of employment contract, occupation), firm characteristics (public sector, industry, firm size). To test Hypothesis 2a-c, we estimate but include an interaction term between risk aversion and the variable of interest:

$$Pr(m = 1 \mid R_i, I_{it}, X_{it}) = \Phi(\gamma R_i + \eta I_{it} + \delta I_{it} R_i + X_{it}^{'} + \alpha_i) \tag{12}$$

where I_{it} represents the variable that interacts with risk aversion. To test Hypothesis 2a, we exploit data on job satisfaction to measure the quality of the job match (several other studies have used job satisfaction as a proxy for job match quality, e.g. Clark (2001); Gielen and Tatsiramos (2012)). Following Ferreira and Taylor (2011), we construct an aggregate job satisfaction variable using several questions on satisfaction with different aspects of the job. Match quality is captured by the first factor scores resulting from a factor analysis (estimated by maximum likelihood) on six job satisfaction items (see Appendix for details). Hypothesis 2b is tested by including an interaction between the type of contract and risk aversion. Finally, we use data on industry-specific vacancy rates (second quarter of the year), obtained from CBS Statistics Netherlands, to examine the role of the labour market conditions in the relation between risk aversion and job mobility (Hypothesis 2c). Although all other estimations control for the wave, the year dummies are excluded in the model including the vacancy rate: basically, the variable captures within industry variation over time of the vacancy rate.

4. Results

4.1. Main results

The main findings are presented in table 2 (marginal effects). The base estimations ((1) and (5)) show that there is a negative and significant relation between risk aversion and the probability to move to another job. The size of the effect is larger in the sample that only includes workers who faced real incentives in the lottery experiment (column (5)). The estimations results are consistent with Hypothesis 1.

Concerning the role of the type of employment contract ((2) and (6)),the findings indicate that the relation between risk aversion and job mobility is fully driven by workers on a permanent contract. Since for temporary workers staying may be as risky (or even riskier) than moving, risk aversion has no significant effect on job mobility. Again, the effect is stronger in the incentivized sample. These findings support Hypothesis 2a.

To test hypothesis 2b, we include job satisfaction as a measure of match quality and interact this variable with risk aversion. We estimate the model using a continuous job satisfaction variable and a dummy

[5]Controlling for homeownership is important as homeownership 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 affected by the individual's degree of risk aversion.

indicating good or poor matches (using the median job satisfaction score as a cut-off point). Figure 2 shows the marginal effects of risk aversion estimated at different levels of the job satisfaction distribution; table 2 ((3) and (7)) presents the results using the match quality dummy. In line with the theoretical predictions, the marginal effect of risk aversion increases with the quality of the job match. The results using a match quality dummy show that the relation between risk aversion and mobility is significant for employees in good matches, but insignificant for mismatched workers. Moving to another job implies quitting the current one: this decision is not risky when the worker is in a poor match as it's unlikely that the new match will turn out to be worse than the current one.

Labour market conditions may affect the riskiness of the turnover decision, because they determine the worker's opportunities to mitigate unanticipated losses if the match turns out to be disappointing. The marginal effects plotted in Figure 2 point out that the effect of risk aversion decreases with the vacancy rate. The estimation results using a binary variable indicating a good economic climate (which is defined by the median vacancy rate) show that the effect of risk aversion is completely concentrated in good economic times.

Table 2: Risk aversion and mobility: marginal effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Risk aversion	-0.00892*	-0.00749	-0.00811	-0.00844	-0.0226**	-0.0240**	-0.0208**	-0.0215**
	(0.00524)	(0.00533)	(0.00543)	(0.00524)	(0.00916)	(0.00940)	(0.00934)	(0.00924)
ME of risk aversion at:								
Permanent contract		-0.0109**				-0.0213**		
		(0.00503)				(0.00941)		
Temporary contract		0.0251				-0.0412		
		(0.0308)				(0.0347)		
ME of risk aversion at:								
Poor match			0.00151				-0.00791	
			(0.00833)				(0.0140)	
Good match			-0.0178***				-0.0326***	
			(0.00672)				(0.0121)	
ME of risk aversion at:								
Low vacancy rate				-0.0131*				-0.0335**
				(0.00673)				(0.0132)
High vacancy rate				-0.00378				-0.0120
				(0.00788)				(0.0122)
All incentivized	No	No	No	No	Yes	Yes	Yes	Yes
Observations	1991	1991	1949	1991	818	818	802	818

4.2. Does job search intensity drive the results?

Theoretically, both the job search and the matching model predict that more risk seeking workers are more mobile between jobs. However, the underlying mechanisms are fundamentally different. 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. On the other hand, the matching model is based on the presumption that individuals have no or only limited ex ante information about the job - i.e. jobs are experience goods.

Unfortunately, the LISS data does not contain information about acceptance or rejection of job offers. However, 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) and the job search attitude (Bloemen, 2005). Here we use various indicators: whether the worker searches for a job, 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 (see Appendix for descriptives of the search variables).

We estimate for each of the four dependent models four models: one without interaction terms and three with different interaction terms (type of contract, match quality, vacancy rate). We use the same set of controls as in the mobility estimations, but present only the results using the incentivized sample: in the pooled results 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 3. The first row shows the estimation results for the model without interaction terms. The marginal effect of risk aversion on search intensity is positive in all estimations and significant in two specifications (column (2) and (3)): risk averse workers are significantly more likely to apply for other jobs and apply more frequently. If we allow for interaction terms, the average marginal effect of risk aversion is positive in all and significant in some specifications. The positive effects are more pronounced if the worker is in a permanent contract or in a good match. The findings show that risk averse workers in permanent contracts use significantly more job search channels. Overall, the marginal effects are positive and in a number of specifications significant.

These empirical results are in contrast with the predictions derived from the search model. If job search is indeed a risky activity, it can be expected that more risk averse workers search more intensively. However, the results point out positive (and in some cases) significant relations. The evidence suggest that searching may not be perceived as a risky activity by workers - risk averse workers actually invest more in search activities. An explanation for the insignificant relations could be that the costs of search are certain and relatively small. Hence, the losses due to unsuccessful search may be small. 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, it does not explain why risk averse workers search more on-the-job.

An alternative explanation could be that workers use on-the-job search as a strategy to decrease uncertainty about their future labour market position. Workers may search to obtain information about the jobs or the labour 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. Basically, search may not only affect the job offer arrival rate, but may also decrease the risks related to turnover (i.e. searching decreases ε in equations 8 and 10. Given that risk averse workers do not search significantly less - but rather more - we argue that the negative relation between risk aversion and job mobility is fully driven by the negative effect on the job acceptance decision.

Table 3: Risk aversion and job search effort

	Search (probit)	Applied (probit)	# applications (poisson)	# channels (poisson)
Risk aversion	0.00662	0.0170**	0.0717*	0.0272
	(0.00860)	(0.00822)	(0.0393)	(0.0229)
Risk aversion	0.00320	0.0125	0.0459	0.00837
	(0.00900)	(0.00918)	(0.0487)	(0.0272)
ME of risk aversion at:				
Permanent contract	0.0103	0.0181**	0.0463**	0.0362*
	(0.00821)	(0.00771)	(0.0225)	(0.0208)
Temporary contract	-0.0548	-0.0241	0.0428	-0.128
	(0.0390)	(0.0357)	(0.239)	(0.113)
Risk aversion	0.000644	0.0156*	0.0712	0.0155
	(0.00845)	(0.00888)	(0.0433)	(0.0229)
ME of risk aversion at:				
Poor match	-0.00818	0.00996	0.0713	0.000816
	(0.0158)	(0.0130)	(0.0759)	(0.0423)
Good match	0.0105*	0.0235**	0.0807	0.0319
	(0.00619)	(0.0111)	(0.0626)	(0.0199)
Risk aversion	0.00643	0.0154**	0.0659*	0.0261
	(0.00839)	(0.00780)	(0.0362)	(0.0221)
ME of risk aversion at:				
Low vacancy rate	0.0105	0.0182	0.0746	0.0314
	(0.0110)	(0.0135)	(0.0790)	(0.0347)
High vacancy rate	0.00325	0.0133	0.0652	0.0216
	(0.00978)	(0.00852)	(0.0397)	(0.0260)

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 moving to quitting the current job and moving to a new one is risky. The decision is especially risky when the worker has a stable, protected position and when worker is satisfied with the current match. In those cases, the worker risks losing a valuable position while not knowing whether his new position will be an improvement. In addition, when the economic conditions are worse, the worker may have limited opportunities to mitigate unanticipated losses related to job mobility. These predictions are tested using evidence from the LISS panel, eliciting risk aversion through experiments with field subject. The results are consistent with the theoretical predictions. 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.

As the findings show that heterogeneity in risk aversion explains differences in mobility patterns, they may explain differences in the income distribution as well: the empirical results provide a new explanation for existing income inequality. Hence, risk averse individuals may not only select in different occupations or types of education, once they enter the labour market they also follow different career paths. Because risk averse workers are more likely to stay at their current employer, they may climb the ladder using the internal labour market (i.e. through promotions). Wage growth of risk seeking workers is more likely due to external labour mobility.

The empirical results show 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 behaviour. Individuals may 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 the job. Future research may examine this function of job search in more detail.

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Appendix

Experiment

Research into decisional behavior

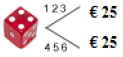
Some people enjoy taking risks while others prefer to avoid them. In this research we ask you to each time make a choice between two options that can both win you prize money, depending on the throw of a six-sided die. There are no right or wrong choices in this study. The only thing that matters is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

Optie L	Optie R
	

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

Summary statistics

Table 4: Summary statistics

Variable	Mean	Std. Dev.
Mobility	0.06	0.238
Risk aversion	-0.153	0.994
Temporary	0.067	0.25
Hours	36.606	5.942
Age	44.975	10.316
Partner	0.829	0.376
No child	0.451	0.498
One child	0.143	0.35
Two children	0.292	0.455
Three+ children	0.114	0.318
Urban	0.62	0.485
Owner	0.824	0.381
Education 1	0.225	0.418
Education 2	0.101	0.302
Education 3	0.29	0.454
Education 4	0.286	0.452
Education 5	0.095	0.293
Supervisor	0.389	0.488
Tenure(mnths)	160.477	137.11
Occupation 1	0.085	0.279
Occupation 2	0.096	0.295
Occupation 3	0.187	0.39
Occupation 4	0.19	0.393
Occupation 5	0.167	0.373
Occupation 6	0.125	0.33
Occupation 7	0.114	0.318
Occupation 8	0.036	0.185
Sector 1	0.198	0.399
Sector 2	0.061	0.24
Sector 3	0.066	0.248
Sector 4	0.037	0.189
Sector 5	0.08	0.271
Sector 6	0.121	0.326
Sector 7	0.136	0.343
Sector 8	0.082	0.274
Sector 9	0.082	0.275
Sector 10	0.136	0.343
Public	0.314	0.464
Size(50)	0.451	0.498
Size(50-99)	0.133	0.339
Size(100-199)	0.14	0.347
Size(200-499)	0.142	0.349
Size(500-999)	0.054	0.227
Size(1K+)	0.081	0.273
Y2009	0.285	0.452
Y2010	0.238	0.426
Y2011	0.185	0.389