Keeping up with the Joneses by finding a better-paid job - The effect of relative income on job mobility

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Abstract

It has been shown that a person's relative income – compared to a reference group – has a negative impact on self-reported happiness. This suggests that people who aim at increasing their happiness should try to find a better-paid job if their relative income is low. In this paper we study this hypothesis by estimating the effect of relative income on job mobility, using a dataset containing information on roughly four million Dutch employees. We consider three different reference groups: people who live in the same neighborhood, people who work for the same employer, and people who share certain demographic characteristics. Our findings suggest that workers compare their own income to that of their neighbors, and low relative income is associated with higher job mobility. We conclude that low relative income (compared to the neighbors) reduces workers' happiness, and workers react to this by finding a new job which may offer the prospect of higher pay.

Keywords

Relative income, job mobility, happiness, social status

JEL Codes

D10, J62, R23

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1 Introduction

There is increasing empirical evidence for a negative relationship between measures of individual well-being and relative income (Ferrer-i-Carbonell, 2005; Luttmer, 2005). The happiness literature suggests that once people earn enough income to satisfy basic needs such as food and shelter, they also pay attention to relative income as an indicator of social status. Low relative income goes hand in hand with a low status, and this is likely to reduce individual happiness.

Upon reviewing this prospering stream of literature, two questions come to mind. The first question concerns the choice of a reference group. The notion of relative income, after all, implies that people compare their actual income to a reference or norm, which is usually taken to be the average (or median) income of some reference group. The reference group may include all the individual's compatriots (Easterlin, 1995), people with similar demographic characteristics (McBride, 2001), people who work in similar jobs (Clark and Oswald, 1996), or people who live in the same neighborhood (Clark *et al.*, 2009; Luttmer, 2005). Although there is widespread agreement on the importance of relative income, there is as yet no consensus on the relevant reference group (or groups).

The second question concerns the influence of relative income on people's behavior. The literature discusses the relationship between the effect of relative income or status on individual well-being, but it rarely addresses the question of how people react to this. If a person is unhappy because of low relative income, she may try to increase her relative income. An obvious way to do this is to find a better-paid job, so we may speculate that relative income affects the job mobility of individuals.

The present paper contributes to the literature by addressing these two related questions. The first question is: What is the relevant reference group? The second question is: Does relative income affect the job mobility of people? To this end, we examine a large dataset obtained from Statistics Netherlands (CBS) which contains data on roughly four million employees. A major strength of this dataset is the high degree of regional disaggregation; there are 10,864 regions containing on average 365 employees. In most cases, these regions are small enough to be treated as 'neighborhoods' in the true sense of the word.

The paper is structured as follows. In section 2, we discuss the related literature and draw some conclusions from it. These conclusions are then used to formulate plausible hypotheses in section 3. In section 4 we describe the dataset. Section 5 reports the results of our estimations, and section 6 concludes.

2 Related Literature

Our paper draws inspiration from the empirical literature on happiness, which suggests that relative income is an important determinant of individual happiness or well-being‡. Traditionally, economists have always acknowledged a relationship between income and individual happiness, but the focus on relative rather than absolute income is comparatively new. In a seminal paper, Easterlin (1974) found that growth in GDP per capita, at least in advanced industrial economics, has failed to increase the survey-based measures of self-reported happiness. This observation, which known as the "Easterlin paradox", seemed to contradict traditional economic theory, which suggested that individual happiness depends to a large extent on individual income. If the theory was correct, increases in GDP per capita should raise the average reported level of happiness.

Explanations for the Easterlin paradox relied on the hypothesis that people do not only care about absolute income but also about relative income – their own income compared to other individuals in a reference group. Easterlin himself later argued that "judgments of personal well-being are made by comparing one's objective status with a subjective living level norm, which is significantly influenced by the average level of living of the society as a whole" (Easterlin, 1995, p. 36). This line of thought suggests that, once the bare necessities of life are secured, individuals do not care so much about the level of income which they receive but rather about their status in society. Naturally, relative income is an important indicator for status: Earning more than one's neighbors suggests that one has a higher status.

There are, of course, other ways to display a certain status in society. It was Thorstein Veblen (1899) who coined the term "conspicuous consumption" for the consumption of certain goods whose primary purpose is to display the status of those who consume them. However, the level of individual consumption expenditure is constrained by and strongly correlated with individual income. The empirical literature therefore focuses on income, partly because income data is more readily available. There are now a growing number of studies, and they unanimously agree in their finding that relative income has a significant effect on individual well-being. Clearly, people do not only care about their own income, they also care about how their income compares to the income of others.

However, it is not clear who the "others" are. The literature does not agree on the relevant reference group; different authors seem to have different reference groups in mind. Clark and Oswald (1996) found that "workers' reported satisfaction levels are shown to be inversely related

‡ Although some may argue that there are subtle differences between "happiness", "well-being" and "satisfaction", many authors use these terms more or less interchangeably. In this paper we adopt the latter approach.

to their comparison wage rates" (Clark and Oswald, 1996, p. 359). In their case, "comparison wage rates" were constructed by "estimating a conventional earnings equation on the whole cross-section of employees, and the using this regression equation to predict an earnings level […] for each person. These […] levels correspond to the income of 'typical' employees of given characteristics" (Clark and Oswald, 1996, p. 368). Thus, Clark and Oswald are assuming that workers compare the income which they actually earn to what "similar" people (with the same education, of same age, working in the same occupation) earn. However, they argue that "[a]rguably it is close co-workers' wages that matter most to an individual […], but that cannot easily be explored with these data" (Clark and Oswald, 1996, footnote 13). Other papers come to the conclusion that the reference group consists of neighbors (Clark *et al.*, 2009; Luttmer, 2005). Of course, these findings need not be contradictory. It is possible that people have several reference groups in mind. However, further research in this direction could clearly be beneficial for a better understanding, especially given the high importance of the related findings.

The findings of the happiness literature with respect to relative income are of paramount importance for economic theory as well as economic policy. On the policy side, it has to be realized that individual well-being depends not only on absolute income but also on relative income and various nonmonetary aspects of life, and further growth in national income should not necessarily be the primary objective of economic policy. On the theoretical side, we have to recognize that models which focus exclusively on absolute income may misrepresent actual human behavior. The model of homo oeconomicus is based on the assumption that individuals make decisions which maximize their happiness (i.e. utility). If we accept this assumption and realize that relative income significantly affects individual happiness, it stands to reason that relative income will also affect individual behavior.

In the following section, we continue this line of thought and show how we can use the available data to shed more light on the effects of relative income on the actual behavior of individuals, notably on their job mobility.

3 Hypotheses

The happiness literature says that low relative income makes people unhappy. However, it does not really address the question how people react to this. In this paper we follow the established economic theory, which assumes that people strive for happiness. This working hypothesis has usually been confirmed by the facts[§]. It follows that if low relative income is bad for happiness, people will try to earn a higher income, compared to a reference group. If somebody earns an

[§] The possibility that people can make mistakes and fail to maximize well-being does not invalidate the hypothesis that they *try* to maximize well-being.

income which is low compared to the reference group, he will try to raise his income. One obvious way to do this is to find a new job. Therefore, we hypothesize that people whose income is relatively low, compared to the reference group, are more likely to find a new job. Thus, there should be a statistically significant effect of relative income on job mobility. Furthermore, we would like to identify the relevant reference group. As argued above, the happiness literature suggests three main candidates: neighbors, colleagues or co-workers, and "similar" people (persons with similar characteristics such as age, education, and firm tenure).

Based on these arguments, we set up the following model to explain the job mobility of workers:

$$M0) \quad JOBMOB = b_0 + b_1*x_1 + \ldots + b_n*x_n + b_{Rj}*RELINC_j$$

JOBMOB is a dummy variable which is equal to one if a worker moves from her old job to a new job, b_0 is a constant term, and $(b_1,\ldots b_n)$ is a vector of n coefficients corresponding to a vector $(x_1,\ldots x_n)$ containing n explanatory variables. $RELINC_j$ is the worker's income compared to reference group j (i.e. worker's income divided by the average income of reference group j), and b_{Rj} is the effect of $RELINC_j$ on JOBMOB. The reference group j can consist, for example, of neighbors, colleagues, "similar" people.

The model specified above can be used to test a number of hypotheses. Our motivation for writing this paper was that we suspected that b_{Rj} will be larger than zero for at least one j. This hypothesis is based on two arguments: First, low relative income reduces individual happiness. Second, people strive to increase happiness. Therefore, we expect that if people are unhappy due to low relative income, they will try to increase their relative income, and one way to do this is to find a new job. Therefore, $RELINC_j$ should have a positive effect on JOBMOB.

However, we do not know in advance what the correct j is. It could be neighbors, colleagues, "similar" people, or some other reference group. Therefore, the model specified above can also be used to test for the size and significance of b_{Rj} for different values of j. This procedure allows us to identify the relevant reference group (or groups, for it could be more than one). In the following section, we describe the precise definition of the reference groups and how we used the available data to test our hypotheses.

4 The Dataset

4.1 Data sources

The data employed in this study were provided by Statistics Netherlands (CBS). Information on employees and their households originates from the Social Statistical Database (SSB) which is compiled on the basis of register and survey data from two main sources: Personal information (e.g. date of birth, gender, address) stems from the municipal registration system (GBA), also holding information regarding one's marital status, registered cohabitation, and household composition. Data regarding employees' jobs (e.g. duration of employment, salary, hours worked per week) originates from the Fibase, a database delivered by the Dutch Tax Administration. Furthermore, data concerning higher education stem from the Dutch central student register (CRIHO), which is based on information derived from the Informatie Beheer Groep, a Dutch governmental institution.

Based on the micro-level data at hand, the average salaries earned by various potential 'reference groups' (e.g. neighborhood, firm, other workers with similar characteristics) could be calculated, and each employee's salary could be put in relation to these reference values.

While information regarding employees' duration of employment is available with exact start and end dates, individuals' personal characteristics (e.g. marital status, place of residence, number of children) are only determined one a year at a specific reference date (last Friday in September). In order to analyze job mobility between the years 2003 and 2004, we therefore selected all employees who held a job at the reference dates in September 2003 and in September 2004, since only at those points in time, reliable information regarding all variables of interest is available.

We selected only fulltime workers, since it is problematical to investigate job mobility if a employee holds several jobs at the same time. Furthermore, only employees who were between 23 (minimum age required in the Netherlands in order to be eligible to receive the 100% minimum wage) and 65 (normal retirement age in the Netherlands) years of age.

Since information regarding higher education (university/college degree) is only available and reliable for employees who were younger than 41 in 2003, we further limited our analysis to employees aged 23-40.

The analysis benefits from the fact that detailed information regarding the neighborhood (8-digit regional code) a person resides in is available. The Netherlands consist of 10,829 neighborhoods which were inhabited by at least one employee in 2003, allowing for an extremely high geographical resolution: on average, 365 employed persons between the ages of 23 and 65 lived in a suchlike neighborhood in 2003, and half of these neighborhoods were inhabited by less than

150 workers. In comparison, earlier studies such as Luttmer (2005) worked with PUMA areas containing on average 150.000 individuals.

The dataset consists of nearly four million (3.952.062) employees aged 23-65.

4.2 Variables

In the following, we define the variables that will be used in the statistical analysis and show some descriptive statistics in order to familiarize the reader with the dataset. We distinguish two types of variables: control variables and relative income indicators. The former are variables that are shown in the literature to be closely correlated with job mobility, and are included in all regressions to improve the explanatory power of the model and to avoid omitted variable bias. The latter are the variables that indicate relative income with respect to three different reference groups: neighbors, colleagues, and "similar" persons.

Table 1: Descriptive statistics of control variables, full sample

Variable	N	Minimum	Maximum	Mean	Std. deviation
AGE	3,952,062	23	65	40.26	10.18
FIRM_TENURE	3,952,062	0	50	7.80	8.14
PARTNER	3,952,062	0	1	0.72	0.45
NR_OF_CHILDREN	3,952,062	0	17	0.94	1.10
DAILYSAL_2003	3,952,062	23.35	22,015.89	96.93	62.29
REGIO_DAILYSAL_2003	3,952,062	29.48	602.96	96.93	18.51

Table 1 shows the descriptive statistics of the six control variables that will be included in all regressions. The first of these variables is AGE (age of worker in years). Its values range from 23 (the youngest worker in the full sample) to 65 (the oldest worker in the full sample). The mean age of workers in the full sample is 40.26 years, with a standard deviation of 10.18. The second control variable is FIRM_TENURE (tenure of worker with current employer in years). It ranges from zero to 50 years, with a mean of 7.80 and a standard deviation of 8.14. The third control variable is PARTNER (a dummy which is equal to one for workers who have a partner and zero otherwise). This dummy indicates whether a person is either married, or in a registered partnership. Like most dummy variables, it ranges from zero to one. Its mean is 0.72 and its standard deviation is 0.45. The fourth control variable is NR_OF_CHILDREN (number of children who live in the household). It ranges from zero to 17. This does not mean that one of the workers has 17 children; it means that 17 children live in the same household, which may consist of more than one family or include foster children. The mean is 0.72, with a standard deviation of 1.10. DAILYSAL_2003 (a person's daily salary in 2003) ranges from €23.35 to

€22015.89, with a mean of €96.93 and a standard deviation of 62.29. That is, the distribution is strongly skewed to the right, with the majority of workers clustered around and below the mean value and a small number of extremely high-income earners far to the right. The sixth and last control variable is REGIO_DAILYSAL_2003 (average daily salary of workers who live in the same neighborhood). It ranges from €29.48 to €602.96, with a mean of €96.93 (like DAILYSAL_2003, naturally) and a standard deviation of 18.51.

Table 2: Descriptive statistics of relative income indicators, full sample

Variable	N	Minimum	Maximum	Mean	Std. deviation
SAL_REL_NEIGHB	3,952,062	0.06	166.68	1.00	0.53
SAL_REL_COLL	3,952,062	0.02	79.05	1.00	0.42

Table 2 shows the descriptive statistics of the relative income indicators. SAL_REL_NEIGHB is the worker's income relative to (i.e. divided by) the average income in her neighborhood. Workers with a value of 1.00 earn exactly as much as their neighbors do, on average. Workers with a higher (lower) value earn more (less) than their neighbors. The mean value is of course equal to one (this is also true for the other relative income indicators). The table shows that SAL_REL_NEIGHB ranges from 0.06 to 166.68. This means that the worker with the lowest income earns only 6% of what her neighbors (on average) earn, while the worker with the higher income earns almost 167 times as much as her neighbors. SAL_REL_COLL is the worker's income relative to the average income of her colleagues (people who work in the same firm). It ranges from 0.02 (for a worker who earns only 2% of what her colleagues earn on average) to 79.05 (for a worker who earns 79 times as much as her colleagues).

Table 3: Descriptive statistics of control variables, restricted sample

Variable	N	Minimum	Maximum	Mean	Std. deviation
AGE	2,066,304	23	40	31.95	5.00
FIRM_TENURE	2,066,304	0	26	4.52	4.37
PARTNER	2,066,304	0	1	0.65	0.48
NR_OF_CHILDREN	2,066,304	0	16	0.82	1.04
DAILYSAL_2003	2,066,304	23.35	22,015.89	86.37	47.89
REGIO_DAILYSAL_2003	2,066,304	29.48	484.15	95.41	16.41

Table 3 shows the descriptive statistics of our control variables for the restricted sample. The age of workers ranges from 23 to 40 in the restricted dataset, because workers over 40 years were excluded. Naturally, both the mean and the standard deviation are much lower than in the full sample; the mean age of workers is now close to 32 years, and the standard deviation is 5.00.

Firm tenure ranges from zero years to 26 years, with a mean of 4.52 and a standard deviation of 4.37. The number of children ranges from zero to 16. The mean is 0.82, with a standard deviation of 1.04. The daily salary ranges from €23.35 to €22,015.89, with a mean of €86.37 and a standard deviation of €47.89.

Table 4: Descriptive statistics of relative income indicators, restricted sample

Variable	N	Minimum	Maximum	Mean	Std. deviation
SAL_REL_NEIGHB	2,066,304	0.07	166.68	0.91	0.43
SAL_REL_COLL	2,066,304	0.02	71.19	0.92	0.32
SAL_REL_SIMIGROUP	2,066,304	0.13	211.29	1.00	0.51

Finally, Table 4 shows the descriptive statistics of our relative income indicators for the restricted sample. For all three variables, both range and standard variation are now slightly smaller than in the full sample, as some very high income earners have been excluded because they are older than 40. The exclusion of mostly high income earners also explains why the mean of SAL_REL_NEIGHB and SAL_REL_COLL is now smaller than one: the average income of people in the same region and the same firm includes workers of all ages, but in the restricted sample only young workers (below 41) are included. Their income is, on average, lower than that of workers above 40 years of age. SAL_REL_SIMIGROUP is the worker's income relative to a group of "similar" workers, which we defined along three characteristics: age, education, and firm tenure. It ranges from 0.13 (for a worker who earns 13% of what people in the "similar" group earn on average) to 309.72 (for a worker who earns 309 times as much). The variable SAL_REL_SIMIGROUP cannot be computed in the full sample because detailed information on education is available only for workers who are less than 41 years old. This was in fact our main reason for working with a restricted sample, and it explains why SAL_REL_SIMIGROUP appears in Table 4 but not in Table 2.

In the following, we concentrate our discussion on the restricted sample.

5 Findings

5.1 Control Variables

In order to test for the explanatory power of the five control variables, we first ran a regression to estimate the coefficients ($b_0 \ldots b_6$) of the following model:

M1) JOBMOB $= b_0 + b_1$*AGE $+ b_2$*FIRM_TENURE $+ b_3$*PARTNER
$+ b_4$*NR_OF_CHILDREN $+ b_5$*DAILYSALARY_2003
$+ b_6$*REGIO_DAILYSAL_2003

Table 5: Estimation of M1

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
AGE	-0.016	0.000	983.035	1	0.000	0.985
FIRM_TENURE	-0.191	0.001	49261.246	1	0.000	0.826
PARTNER	-0.145	0.005	963.033	1	0.000	0.865
NR_OF_CHILDREN	-0.008	0.002	11.724	1	0.000	0.992
DAILYSAL_2003	-0.002	0.000	907.965	1	0.001	0.998
REGIO_DAILYSAL_2003	0.000	0.000	0.249	1	0.618	1.000
Constant	-0.615	0.018	1136.335	1	0.000	0.541

Dependent variable: JOBMOB

The results are reported in Table 5. With the exception of REGIO_DAILYSAL_2005, all variables are highly significant (p-value ≤ 1). The effects are of the expected direction. Higher age and longer firm tenure are associated with lower job mobility. This is plausible, because older workers are more likely to have found a job which matches their skills, and those with longer tenure are likely to have acquired more firm- or job-specific human capital (Bergin, 2008; Henneberger and Sousa-Poza, 2002; Kronenberg and Carree, 2010). Workers who have a partner and/or children are also less likely to move to a new job, indicating that these employees behave altrustically towards other members of the household and want to avoid the possible relocation that might accompany a job change (Becker, 1981; Kronenberg and Carree, 2010; Linneman and Graves, 1983; Molho, 1987; Sjaastad, 1962). The effect of a high daily salary on job mobility is negative as well, perhaps because workers with a high salary may have been lucky to find an

extraordinarily well-paid job and consider further job search unattractive (Bergin, 2008; Burdett, 1978; Henneberger and Sousa-Poza, 2002; Kronenberg and Carree, 2010).

5.2 The Effect of Relative Income on Job Mobility

In order to test the effects of relative income with respect to three different reference groups, we ran a number of regressions for different models. Starting from model M1, we introduced one relative income indicator at a time and tested for its effect and significance. Finally, we introduced a model with all three relative income indicators. Since REGIO_DAILYSAL_2003 was not significant in M1, we tried all models with and without REGIO_DAILYSAL_2003 in order to test for robustness of the results.

Table 6: Estimated effects of relative income on job mobility

Variable \ Model	M2	M3	M4	M5	M6	M7	M8	M9
AGE	-0.015	-0.016	-0.018	-0.018	-0.007	-0.007	-0.010	-0.010
FIRM_TENURE	-0.190	-0.191	-0.192	-0.192	-0.188	-0.188	-0.189	-0.189
PARTNER	-0.146	-0.145	-0.151	-0.151	-0.144	-0.144	-0.151	-0.151
NR_OF_CHILDREN	-0.009	-0.008	-0.016	-0.016	-0.011	-0.011	-0.020	-0.020
DAILYSAL_2003	0.002	-0.001	-0.007	-0.007	-0.006	-0.006	-0.005	-0.008
REGIO_DAILYSAL_2003	-0.004		0.001		0.000		-0.003	
SAL_REL_NEIGHB	-0.470	-0.132					-0.488	-0.209
SAL_REL_COLL			0.817	0.814			0.806	0.812
SAL_REL_SIMIGROUP					0.357	0.355	0.322	0.321
Constant	-0.246	-0.591			-0.970	-0.984	-0.858	-1.142

Dependent variable: JOBMOB

All estimates were significant at the 0.1% error level (p-value≤0.001).

The results are reported in Table 6. Models M2 and M3 include SAL_REL_NEIGHB, M4 and M5 include SAL_REL_COLL, M6 and M7 include SAL_REL_SIMIGROUP, M8 and M9 include all three relative income indicators. The results first four control variables are very robust. The estimated coefficient on FIRM_TENURE varies only marginally between -0.192 (M4 and M5) and -0.188 (M6 and M7). Likewise, the estimated coefficient on PARTNER is always -0.151 (M4 and M5) and -0.144 (M6 and M7). The coefficients on AGE and NR_OF_CHILDREN are subject to a slightly larger variation (from -0.018 to -0.007 and from -0.020 to -0.009, respectively)

but can still be considered robust. The only non-robust coefficient is that on DAILYSAL_2003, which is negative in model M3 to M9 but positive in M2. The reason for this is probably the inclusion of DAILYSAL_2003, REGIO_DAILYSAL_2003, and SAL_REL_NEIGHB in M2, which is likely to cause multicollinearity.

However, for our present purposes the coefficients of the relative income indicators are much more relevant. SAL_REL_NEIGHB behaves in the expected way: The coefficient is negative in all models in which SAL_REL_NEIGHB is included. This suggests that workers who earn relatively less than their neighbors (on average) are more likely to switch jobs than workers who earn more than their neighbors. This finding provides support to the happiness literature which suggests that people compare their status to that of their neighbors and feel unhappy when their own status is comparatively low. This feeling of unhappiness apparently leads them to find a new job, which may provide an opportunity to increase their relative income.

Interestingly, the results for SAL_REL_COLL and SAL_REL_SIMIGROUP go in the opposite direction. Their coefficients are positive in all cases. This suggests that workers who earn a higher income than their colleagues and/or people with "similar" characteristics are not induced to find a new job. In fact, they are *less* likely to switch jobs.

5.3 Further Hypotheses

Since our findings show that individuals who are relatively deprived are more inclined to switch jobs, it should follow that these individuals switch to better-paid jobs in order to improve their position. Table 7 – referring to job changers only – presents some suggestive evidence: The correlation between SAL_REL_NEIGHB and SAL_INCREASE (the difference between the worker's daily salary in 2004 and in 2003) is negative and significant, indicating that earning a salary (in 2003) which is low compared that of one's neighbors is related to a salary increase after the job change.

Table 7: Correlation between SAL_REL_NEIGH and SAL_INCREASE

		SAL_REL_NEIGHB	SAL_INCREASE
SAL_REL_NEIGHB	Pearson Correlation	1	-0.140(**)
	Sig. (2-tailed)		0.000
	N	343,121	343,121
SAL_INCREASE	Pearson Correlation	-0.140(**)	1
	Sig. (2-tailed)	0.000	
	N	343,121	343,121

**** Correlation is significant at the 0.01 level (2-tailed).**

Furthermore, we ran a regression to determine the effect of SAL_REL_NEIGHB on SAL_INCREASE, controlling for other possible influences on salary increase such as age, firm tenure, etc. As Table 8 indicates, the negative effect of SAL_REL_NEIGHB on SAL_INCREASE is strongly significant, indicating that individuals which are relatively deprived compared to their neighbors will be more likely to obtain a salary increase when changing jobs. This finding suggests that their decision to switch jobs is largely motivated by the desire earn a higher income, whereas other people may switch jobs also for nonfinancial motives (e.g. shorter commuting distance or "soft" factors such as workplace environment).

Table 8: Estimated effect of relative income on salary increase

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
AGE	-0.008	0.000	371.167	1	0.000	0.992
FIRM_TENURE	-0.020	0.001	705.711	1	0.000	0.980
PARTNER	0.081	0.008	111.136	1	0.000	1.085
NR_OF_CHILDREN	0.029	0.003	70.871	1	0.000	1.029
DAILYSAL_2003	0.001	0.000	45.225	1	0.000	1.001
SAL_REL_NEIGHB	-1.035	0.022	2,229.677	1	0.000	0.355
Constant	0.846	0.015	3,107.551	1	0.000	2.331

Dependent variable: SAL_INCREASE

Finally, one might hypothesise that the level of education influences the way in which people compare their own income to that of others. Generally, people who earn a university degree are more likely to move to other parts of the country than people who do not finish a university education, partly because the former are usually more specialised and may not be able find a good job-skill match in their hometown. People with low education, by contrast, are usually less specialised and will often find a good job-skill match in their hometown. Thus, highly educated

workers may have less contact with their neighbours simply because they have known them for a shorter amount of time, whereas low-educated workers, who are more likely to stay in the hometown, know many of their neighbours since infancy. If these considerations are correct, highly educated workers may have a different reference group in mind when assessing their own income relative to others. The effect of SAL_REL_NEIGHB may be stronger for low-educated workers, and the effects of the other two reference groups may also be different.

In order to test this hypothesis, we split our restricted sample into two sub-samples, one with only highly educated workers and the other with only low-educated workers, and ran all the regressions (M1 to M9) with the relative income variables. For the low-education workers, we observed no significant changes. However, with the high education subsample we made some slightly different observations, as shown in Table 9.

Table 9: Regression results for high education subsample

Variable \ Model	M2	M3	M4	M5	M6	M7	M8	M9
AGE	-0.009	-0.010	-0.015	-0.142	-0.018	-0.018	-0.013	-0.018
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FIRM_TENURE	-0.173	-0.174	-0.174	-0.175	-0.178	-0.178	-0.173	-0.175
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PARTNER	-0.167	-0.165	-0.169	-0.168	-0.163	-0.163	-0.173	-0.172
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NR_OF_CHILDREN	-0.000	0.000	-0.002	-0.001	0.003	0.005	-0.004	-0.004
	(0.993)	(0.934)	(0.762)	(0.856)	(0.567)	(0.329)	(0.368)	(0.413)
DAILYSAL_2003	0.003	0.000	-0.007	-0.006	-0.001	-0.001	0.000	-0.002
	(0.000)	(0.614)	(0.000)	(0.000)	(0.029)	(0.075)	(0.807)	(0.000)
REGIO_DAILYSAL_2003	-0.004		0.002		0.002		-0.004	
	(0.000)		(0.000)		(0.000)		(0.000)	
SAL_REL_NEIGHB	-0.713	-0.342					-0.751	-0.382
	(0.000)	(0.000)					(0.000)	(0.000)
SAL_REL_COLL			0.646	0.637			0.647	0.649
			(0.000)	(0.000)			(0.000)	(0.000)
SAL_REL_SIMIGROUP					-0.182	-0.188	-0.003	-0.084
					(0.004)	(0.003)	(0.958)	(0.177)
Constant	-0.322	-0.697	-1.047	-0.871	-0.649	-0.495	-0.440	-0.701
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Dependent variable: JOBMOB

P-values in parentheses

Table 9 shows the results for the high education subsample. The most striking observation is the estimated coefficient on SAL_REL_SIMIGROUP. In models M6 and M7 it is negative and highly significant (p-value<1%). This is in contrast with our findings for the sample including workers of all educational backgrounds (Table 6). Thus, it would appear that highly educated workers do compare their income to that of workers with similar characteristics, and if their relative income is low, they are more likely to find a new job. However, in model M8 and M9 the coefficient on SAL_REL_SIMIGROUP, while still negative, is no longer significant, as the corresponding p-values amount to 0.958 (M8) and 0.177 (M9).

Another interesting observation can be made with respect to the number of children. Previously (Table 6) we found a negative and highly significant effect of NR_OF_CHILDREN on JOBMOB. In the high education subsample, by contrast, the effect is not significant and may even be positive. Thus, a higher number of children does not appear to reduce the job mobility of highly educated workers. A possible explanation could be that highly educated workers have the means to pay for childcare services.

6 Conclusion

In this paper we have studied the effects of relative income on job mobility, using a sample of roughly four million Dutch employees. The main goals of our study were to find out whether relative income induces higher job mobility and to identify the relevant reference group. Our findings suggest that workers who earn less than their neighbors (on average) are more likely to switch jobs. This lends support to the hypothesis that workers compare their own income to that of their neighbors, and those who earn less than their neighbors try to improve their relative income by finding a new job. Speaking loosely, these workers are trying to keep up with the Joneses (their neighbors) by finding a better-paid job.

This finding is consistent with the recent happiness literature, where it has been argued that low relative income reduces individual happiness. Furthermore, our results suggest that workers do not passively endure the happiness-reducing effect of low relative income: they try to increase their relative income by finding a new job. This finding is encouraging; it suggests that there is a certain degree of competition on the labor market, which may lead to more search efforts. Such efforts in turn may increase labor productivity by improving the average quality of "matches" between workers skills and job requirements.

The happiness literature has also suggested that people care about their relative income compared to co-workers and other people with similar characteristics (e.g. age, education, years of tenure). According to our findings, however, these relative comparisons are not associated with higher job mobility. On the contrary, they tend to be associated with lower job mobility. These observations are hard to reconcile with the happiness literature. Two possible explanations come to mind. First, people may not treat colleagues and "similar" people as reference groups. Second, workers may pay attention to these reference groups but may be unable (or believe to be unable) to improve their relative income by finding a new job, perhaps because their productivity is low due to factors for which we did not have data (e.g. intrinsic motivation or giftedness).

The findings of our study are relevant for economic policy and theory, since job mobility is an important issue in both areas. They are also relevant for firms and personnel departments, which

may want to know the likelihood of workers remaining in their jobs as a function of their salaries. Since firms know where their employees live, they can estimate their employees' relative income compared to their neighbors. Ceteris paribus, workers who live in "rich" neighborhoods, where average income is higher than the salary they receive, are more likely to leave their current job.

Appendix: List of Variables

Variable	Definition
AGE	Age of worker in years
FIRM_TENURE	Tenure of worker (time spent working for current employer) in years
PARTNER	Dummy variables (one for workers who have a partner, zero otherwise)
NR_OF_CHILDREN	Number of children who live in the worker's household
DAILYSAL_2003	Daily salary in 2003
REGIO_DAILYSAL_2003	Average daily salary of all workers in the neighborhood
SAL_INCREASE	Increase in worker's daily salary between 2004 and 2003
SAL_REL_NEIGHB	Worker's salary divided by average salary in the neighborhood
SAL_REL_COLL	Worker's salary divided by average salary of workers in the same firm
SAL_REL_SIMIGROUP	Worker's salary divided by average salary of a group of "similar" persons
JOBMOB	Dummy variable for job mobility (1 in case of job switch, 0 otherwise)

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