

Internal Migration and Life Satisfaction: Well-Being Paths of Young Adult Migrants

Malgorzata Switek

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Abstract Internal migration is typically associated with higher income, but its relation with life satisfaction remains unclear. Is internal migration accompanied by an increase in life satisfaction and does this increase depend on the reason for moving? What are the aspects of life underlying overall life satisfaction that change following migration? These questions are addressed using longitudinal data from the Swedish Young Adult Panel Study. Migration is defined as a change in municipality of residence. Comparing migrants to non-migrants, it is found that internal migration is accompanied by a short to medium term increase in life satisfaction for those who move due to work (work migrants), as well as those who move for other reasons (non-work migrants). However, only work migrants display an improvement in life satisfaction that remains significant 6 or more years following the move. Work and non-work migrants also differ in the aspects of life that change following migration. For work migrants the move is accompanied by an improvement in occupational status positively associated with well-being 6–10 years after the move. For non-work migrants, a persisting increase in housing satisfaction follows migration, but this housing improvement is accompanied by only a short to medium term increase in overall well-being.

Keywords Internal migration · Life satisfaction · Occupational status · Domain analysis

Life is like riding a bicycle – in order to keep your balance, you must keep moving.
-Albert Einstein

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M. Switek (✉)
University of Southern California and IZA, 3620 South Vermont Avenue, KAP 300,
Los Angeles, CA 90089, USA
e-mail: switek@usc.edu

1 Introduction

The life of a young adult is filled with changes and transitions. Choosing a community in which to live, finishing education, getting married—these are important events experienced early in life and that potentially influence future happiness. This paper discusses the association between one such life event—internal migration—and life satisfaction. The particular relevance of studying migration is best illustrated by its prevalence: in the United States, almost one-third of total population lived in a state different from where they were born in 2009 (Molloy et al. 2011). Is internal migration of young adults accompanied by an increase in life satisfaction? Does the change in migrants' life satisfaction depend on the reason why the decision to move was made? What are the aspects of life—such as housing or financial situation—underlying overall life satisfaction that are altered following internal migration? These are the questions addressed here.

A longitudinal survey of young adults in Sweden along with collated information from Statistics Sweden are used. To evaluate the association between internal migration and life satisfaction, life satisfaction levels of migrants and non-migrants are compared before and after the move. To assure comparability between these two groups, the analysis controls for the main differences between them such as fixed personality traits, shocks to the community of origin, and various life transitions that often accompany migration. Migrants who move for work related reasons and those who move for other (non-work related) reasons are analyzed separately to allow for different outcomes depending on the reason for moving. Other transitions that are characteristic of young adults, such as education completion, changes in marital status, and the birth of a child, are controlled for to avoid confounding effects. After investigating the change in life satisfaction following migration, an analysis of changes in specific life aspects for the movers is carried out to identify the possible factors underlying the association between well-being and migration.

The decision to move is usually treated in economics as the result of a cost-benefit analysis, and as such it is expected to increase an individual's utility. Results of previous studies suggest that internal migration is generally accompanied by improvements in objective circumstances that partially depend on the reason for moving: income for migrants who move due to work, and housing conditions for those who move for residential reasons. The association between migration and subjective well-being has only become a focus of study in recent years and considerably less research has been conducted in this area. Findings to date suggest that internal migration is positively associated with housing satisfaction, but its association with overall life satisfaction remains unclear.

The present paper contributes to previous literature by analyzing the association between life satisfaction and internal migration for a specific group of migrants: young adults aged 22–30 before the move. The focus on young adults is motivated by previous findings that show that the destination and reason for moving may vary by age, and by the high prevalence of internal moves among young cohorts. Additionally, the analysis distinguishes between those who move for work, and those who move for other reasons. Doing this further reduces the diversity in the migrant sample and provides new information on the differences in well-being changes for work and non-work migrants.

Life satisfaction depends on many aspects of one's life, such as the financial, health, housing, and job situation. These different parts of everyday life are commonly referred to in the subjective well-being literature as "life domains" (Rojas 2004). The final step of the analysis acknowledges the importance of these domains in explaining life satisfaction trends by examining the life aspects altered following a move. Specifically, changes in the financial, housing, and job domains accompanying migration are studied separately for

work and for non-work migrants to clarify the possible factors underlying the association between migration and life satisfaction.

2 Literature Review

In both economics and demography migration is typically viewed as the result of a cost-benefit analysis in which people evaluate various monetary and non-monetary aspects of moving and make the decision to migrate if they believe this will maximize their utility (Sjaastad 1962; Harris and Todaro 1970; Speare 1974; De Jong and Fawcett 1983). The monetary factors considered in this decision usually include income and labor market opportunities (Bartel 1979; Ghatak et al. 1996); the non-monetary aspect predominantly considered has been residential satisfaction (Diaz-Serrano and Stoyanova 2009).

A vast empirical literature has been developed to evaluate whether internal migration leads to an increase in income. Early analyses of cross-sectional data for the United States in which income levels of migrants are compared to those of non-migrants (either from the place of origin or the place of destination) provide mixed results possibly due to a selection bias (Lansing and Morgan 1967; Weiss and Williamson 1972). More recent studies have used panel data which allows to control for fixed differences between migrants and non-migrants thus accounting for a large part of the bias due to selection into migration. The surveys used in these studies are mostly from the United States and other developed countries such as Canada, Great Britain, and New Zealand. Their results suggest that the association between migration and income gains is complex and depends on age, reason to move, gender, and marital status. Generally, young males who move due to work-related reasons experience the highest income gains from migration (Bartel 1979; Finnie 1999; Böheim and Talor 2007). However, the positive association between migration and income does not always hold, as in the case of married women whose income may decline following a move (Cooke and Bailey 1996; Blackburn 2009; Morrison and Clark 2011).

The issue of residential mobility and its outcomes has also been vastly explored. Residential dissatisfaction due to poor dwelling conditions is found to be an important predictor of migration in both the United States and Europe (Speare 1974; Diaz-Serrano and Stoyanova 2009). However whether the decision to migrate improves a person's housing conditions may depend on various circumstances including life-cycle events and the reasons that trigger the move (Barcus 2004; Rabe and Taylor 2010).

Analyses of the association between migration and well-being using life satisfaction measures are less common. Even if income and housing conditions are found to improve following migration, this may not translate into higher life satisfaction if aspirations increase together with the objective circumstances (Easterlin 2001a; Easterlin and Angelescu 2009). In empirical analysis, an ongoing debate about the long-term importance of income in affecting life satisfaction changes remains unsettled (Oswald 1997; Frijters et al. 2004, 2006). Additionally, the financial and housing domains are not the only aspects of life likely to change after migration, implying the need for a more comprehensive well-being measure (such as life satisfaction) to assess the final well-being changes of migrants.

Studies using cross-sectional data for immigrants in the United States and for internal movers in China typically find that life satisfaction of migrants is lower than that of non-migrants (Knight and Gunatilaka 2010; Bartram 2011). Still, cross-sectional comparisons may suffer from a selection bias due to differences between migrants and non-migrants. To avoid this bias, De Jong et al. (2002) used data for internal migrants in Thailand that included questions about the migrants' own perception of how the move had affected their

satisfaction with employment conditions, living environment, and community facilities. Their findings suggest that a non-trivial proportion of migrants report decreased satisfaction levels after the move. These results, however, could be affected by the existence of a recall bias in past satisfaction levels (Easterlin 2001a).

The results of panel studies assessing the relationship between internal migration and life satisfaction are mixed. In a paper focusing on German residential migrants, Nakazato et al. (2011) find that while housing satisfaction does increase following migration, overall life satisfaction does not. A different study considering migrants from East to West Germany, however, does find a positive long-term association between migration and life satisfaction (Melzer 2011). Finally, in two recent papers using the British Household Panel Survey, Nowok et al. (2013) and Findlay and Nowok (2012) find that life satisfaction of migrants deteriorates prior to the move and recovers at the time of the migration. Though these authors do not find any long lasting effects of migration on life satisfaction (Nowok et al. 2013), they do observe significant long-lasting improvements in housing satisfaction for the migrants (Findlay and Nowok 2012).

Differences in the composition of the migrant sample may provide an explanation for the mixed results of previous longitudinal studies. The main focus in the analysis by Nakazato et al. (2011), which finds a positive association between migration and housing (but not life) satisfaction, is on residential migrants. In contrast, the studies by Nowok et al. (2013), and Findlay and Nowok (2012) do not impose any restrictions on the migrant sample. Their findings of no change in life satisfaction may therefore be due to confounding changes for migrants with different characteristics. Finally, while Melzer (2011) does not restrict the migrant sample, considering the circumstances of the German reunification it is likely that the migrants in her analysis were mostly young people moving for work reasons. The present study contributes to previous literature by focusing on more homogenous groups of migrants: young adults who move for work and those who move for non-work reasons. By focusing on Sweden, a developed European country not unlike Germany or Great Britain, its results are comparable to those previously discussed.

3 Data Description

The main data source is the Young Adult Panel Study (YAPS) collated with Swedish register information (www.suda.su.se/yaps). The YAPS consists of a longitudinal survey designed by Eva Bernhardt from Stockholm University, carried out in Sweden in the years 1999, 2003, and 2009. Of these 3 years, two are used in the analysis, corresponding to the surveys conducted in 1999 and 2009, respectively. Main socio-economic characteristics (such as civil status or income) in the YAPS dataset are obtained from the Statistics Sweden Register data compilations (specifically, from the Register of Education, Register of Income and Taxation, and the Total Population Register) which was linked with the survey information for respondents interviewed in 2009. The analysis was restricted to years 1999 and 2009 because register data was missing for a large portion of the population interviewed in 2003.

Although YAPS contains information for over 3,000 individuals, only a portion of the respondents participated in all consecutive surveys. The sample under study is restricted to those interviewed in both 1999 and 2009, and for whom information on the main variables of interest is available. From the 2,820 people initially interviewed in 1999, 56 % were re-interviewed 10 years later reducing the sample of observations to 1,575 individuals, a small portion of whom did not answer some of the relevant questions and had to be

dropped from the regression analysis.¹ The high attrition rate may create worries about the possible existence of a selection bias. The methodology used throughout the analysis, which controls for individual fixed effects, community-specific shocks, and a number of time-varying observable characteristics, should account for an important part of the differences between attritors and non-attritors. An additional analysis of the remaining differences between attritors and non-attritors provides reassurance that the residual selection bias is small in magnitude, and is therefore unlikely to influence the results of the study (Appendix 1).

The two main variables employed in the analysis are life satisfaction and migration. Life satisfaction is measured in all waves of the YAPS using the answer to the question: “How satisfied are you with your life in general?” Response categories are given on a scale from 1 to 5, with 1 corresponding to “very dissatisfied” and 5 to “very satisfied”. Migration status is established using Swedish register information on place of residence in 1999, 2003 and 2009. A person is classified as a migrant if he/she changed his/her municipality of residence in the years under analysis (including those who reported a different municipality in 2003 and later moved back), and as a non-migrant if no such change took place. Sweden is organized into 290 municipalities grouped within 21 counties. Around half of those classified as migrants changed their county as well as municipality of residence, of which a big proportion (69 %) involved moves between counties separated by 100 miles or more.² For those migrants who changed municipalities within a county the distance traveled was smaller, averaging about 25 miles. Because of this difference, robustness tests separating the between- and within-county movers are conducted.

The question used to divide migrants into work and non-work migrants was included in 2009 only and asks: “What was the most important reason for you to move?” The possible response categories for this question include “my work/studies” as well as other seven options (Table 13 in Appendix 2). Using the answer to this question, migrants were classified as either work migrants if they chose “my work/studies” as their main reason to move, or non-work migrants if they chose any of the other response categories. Given the long time span between the two surveys, migrants are also divided based on the self-reported year in which they moved into more recent migrants (if they had moved less than 6 years before the 2009 survey), and less recent migrants (if they had moved 6 years or more ago).³

Because of limited domain information in the YAPS survey, the life domain analysis is restricted to aspects related to the financial, job, and housing domains. Variables used to assess changes in these domains include: work income, relative income, and economic satisfaction for the financial domain; occupation status, and satisfaction with what the person is currently doing for the job domain; and satisfaction with housing for the housing domain. Work income is given on individual level and is adjusted for inflation using the Consumer Price Index obtained from Statistics Sweden (Statistics Sweden Database, 2011). Income from the years previous to the survey (1998 and 2008 respectively) is used because interviews were conducted at the beginning of a year and so satisfaction levels of the respondents are likely to reflect their past years’ income. Relative income is constructed as the difference

¹ For complete information on the number of observations available for each of the main variables included in the study, see Table 11 in Appendix 2.

² The distance traveled by those who changed counties of residence was roughly approximated using the distance between the centers of county of origin and county of destination.

³ The threshold of 6 years is chosen because it allows to split the movers into roughly two equal sized groups, assuring an appropriate number of observations in both the less and more recent migrant categories.

between an individual's income and the average income of his/her municipality of residence with robustness tests changing the reference category to municipality of origin.

To create the occupation status, respondents are first classified into one of nine occupational categories constructed combining survey questions on main occupation and on main activity. Subsequently the nine occupation categories are divided into four groups depending on the respective status associated with each occupation. The criteria for this division are based on the Standard International Occupational Prestige Scale (SIOPS) as updated by Ganzeboom and Treiman (1996). The final categories represent an ordinal variable on a scale of 1–4, with 1 corresponding to the lowest and 4 to the highest occupation status.

Three additional satisfaction variables are used in the domain analysis: satisfaction with economic situation, with housing, and with what the person is currently doing.⁴ Though satisfaction with what the person is currently doing is used to capture occupational satisfaction, it represents an imperfect measure of the job domain.⁵ Therefore occupational status represents the preferred job domain measure, and satisfaction with what the person is currently doing (from now on referred to as satisfaction with occupation) is used to complement the analysis.

The control variables used include birth cohort, change in marital status, education completion, birth of a child, and the final education level. Given the young age of the subjects surveyed, the widowed and divorced groups are very small and are therefore combined for the purpose of the analysis. Education completion and birth of a child are measured by bivariate variables with value 1 if the given event took place between 1999 and 2009, and 0 otherwise. Lastly, final education level is a categorical variable that represents the highest level of education achieved by 2009. For additional description of these variables, see Appendix 2.

Migrants in this study are mostly young, unmarried, and have higher final education levels than non-migrants (Table 1). While in 1999 migrants are more likely to be unmarried than non-migrants, in 2009 the marriage rates of the two groups are very close. Similar patterns are true for education completion and parenting: in 1999 migrants are less likely to have experienced either of these events, though by 2009 the likelihoods of education completion and having a child for migrants and non-migrants are nearly the same. Regarding the satisfaction levels, migrants are generally less satisfied with their life, financial situation, and housing before (but not after) the move. Finally, important differences between work and non-work migrants can be observed reflecting the need to study the two groups separately.

4 Methods

The main problem faced in the analysis of the association between migration and life satisfaction is the lack of a perfect control group. Though optimally one would like to compare the migrants' life satisfaction to what it would have been had they not moved, in

⁴ Satisfaction with relationship with partner, though available in the survey, is not used due to high non-response rates in both years (Table 11 in Appendix 2).

⁵ The response to this question measures satisfaction with any activity that the person was currently doing, which should most often, but not always, be interpreted as occupation. Additionally, the question prior to this changed in between 1999 and 2009 from one related to work (importance of being successful at work) to one related to religion (importance of religion).

Table 1 Descriptive statistics of migrants and non-migrants before and after the move, by reason to move

	Work migrants	Non-work migrants	All migrants	Non-migrants	Total
<i>Statistics before the move (1999)</i>					
Mean life satisfaction	3.79	3.87	3.85	3.97	3.92
Mean work income	96.57	109.53	109.84	125.14	118.69
Mean relative income	-27.92	-14.12	-16.23	2.95	-5.04
Mean income muni of residence	124.50	123.64	126.08	122.19	123.80
Mean occupation status	1.59	1.73	1.70	1.84	1.78
Mean economic satisfaction	3.07	3.06	3.08	3.13	3.11
Mean satisfaction with occupation	3.99	3.84	3.88	3.76	3.81
Mean housing satisfaction	3.41	3.57	3.53	3.80	3.69
Percent male	50.0	42.7	45.5	43.9	44.6
Percent unmarried	93.8	89.3	91.4	81.8	85.8
Percent married	5.8	9.2	7.4	17.4	13.2
Percent divorced/widowed	0.4	1.4	1.2	0.9	1.0
Percent with education completed	38.5	49.3	46.5	63.4	56.4
Percent with post-secondary education	61.5	50.4	52.1	36.4	43.0
Percent with child in household	6.2	13.5	11.0	35.8	25.6
Percent from 1976 cohort	53.5	45.8	47.8	29.9	37.4
Percent from 1972 cohort	27.9	33.7	32.3	36.1	34.5
Percent from 1968 cohort	18.6	20.5	20.0	33.9	28.1
Percent of total	14.37	22.06	41.39	58.61	100.00
<i>Statistics after the move (2009)</i>					
Mean life satisfaction	3.99	3.99	4.01	3.92	3.96
Mean work income	270.08	218.34	241.51	229.99	234.64
Mean relative income	101.22	57.53	75.51	74.12	74.56
Mean income muni of residence	168.86	160.81	166.00	155.87	160.08
Mean occupation status	2.41	2.24	2.29	2.13	2.20

Table 1 continued

	Work migrants	Non-work migrants	All migrants	Non-migrants	Total
Mean economic satisfaction	3.68	3.47	3.58	3.49	3.53
Mean satisfaction with occupation	4.04	3.92	3.97	3.92	3.94
Mean housing satisfaction	3.80	4.03	3.97	3.99	3.98
Percent male	50.0	42.7	45.5	43.9	44.5
Percent unmarried	54.9	47.0	50.2	49.2	49.6
Percent married	41.6	49.0	45.9	44.9	45.4
Percent divorced/widowed	3.5	4.0	3.8	5.9	5.0
Percent with education completed	91.2	92.2	92.0	91.8	91.9
Percent with post-secondary education	77.9	64.3	67.1	48.4	56.2
Percent with child in household	49.1	70.3	63.5	69.5	67.0
Percent from 1976 cohort	53.5	45.8	47.8	29.9	37.4
Percent from 1972 cohort	27.9	33.7	32.3	36.1	34.5
Percent from 1968 cohort	18.6	20.5	20.0	33.9	28.1
Percent of total	14.37	22.06	41.39	58.61	100.00

Because of missing values for the reason-to-move variable, not all migrants could be classified as work or non-work migrants
 The averages all calculated for all respondents available for 1999 and 2009, and answering the question

practice this counterfactual is not observed. Therefore, one is left with the second-best option: comparing the life satisfaction of migrants to that of non-migrants controlling for the differences between the two groups. These differences may be either observable (such as marital status) or unobservable (such as personality), and may explain some of the relative well-being improvements following migration (Pekkala and Tervo 2002). Observable differences may be accounted for using appropriate control variables. Controlling for unobservable differences, however, may be more challenging.

The following analysis controls for all unobservable differences between migrants and non-migrants that are either fixed at the individual level (such as personality traits), or that represent one-time community-level shocks associated with migration. An example of the latter is an economic crisis that induces massive layoffs. Massive layoffs could permanently lower life satisfaction among the residents of the affected community at the same time as making them more likely to migrate to a region not hit by the crisis. For a shock of this type to affect both the change in life satisfaction and the likelihood of migration it needs to take place between times 0 and 1 (implying its effect would be present in time 1 but not 0). Such unobservable shocks to the migrant's community-of-origin, while representing a potentially important source of bias, have rarely been controlled for in internal migration literature.

The following econometric model represents the life satisfaction of individual i , in community c , at time t , taking into account the effects previously described:

$$Y_{ict} = \mu_t + \eta_i + \theta_{co} * t + \gamma M_i * t + \beta' x_{it} + \varepsilon_{ict} \quad (1)$$

where Y_{ict} is the outcome variable of interest (in this case life satisfaction); μ_t is a time effect; η_i is the individual fixed effect; θ_{co} captures the effect of the shock to the community of origin; t is a time dummy; M_i is a migration dummy equal to 1 for migrants and 0 for non-migrants; x_{it} is a vector of observable characteristics; and ε_{ict} is an error term that is allowed to be correlated for the same individual over time, and for different individuals within a community. The effect of the shock to the community of origin on life satisfaction captured by θ_{co} is only present at time 1 (after the shock), which is why it appears interacted with a time dummy in the model.⁶ With the two period approach used in the analysis (where 1999 and 2009 represent times 0 and 1 respectively), the fixed effects model is analytically equivalent to a first-difference model. Therefore the above specification (1) may be implemented using the following first-difference regression:

$$\Delta Y_{ic} = \lambda_{0,1} + \theta_{co} + \gamma M_i + \beta' \Delta x_i + \Delta \varepsilon_{ic} \quad (2)$$

where $\lambda_{0,1}$ captures a time trend between periods 0 and 1; the individual fixed effects have been eliminated; the community of origin shock is controlled for by including a vector of community-of-origin dummies represented by θ_{co} ; Δx_i controls for changes in observable characteristics; and γM_i captures the association between migration and the change in life satisfaction. The community dummies denote the county, not municipality, of residence because of the large number of municipalities (over 250) which complicates the use of municipality dummies. Specification (2) does not control for community fixed effects such as weather mainly because the change in community characteristics is essentially a cost or

⁶ This statement holds under the assumption that the shock is related to the decision to migrate and therefore migrants will have been present at community c during its occurrence and will only make the decision to move after this event. If no shock occurs at a community between periods 0 and 1 or if a shock takes place that is unrelated to the migration decision, then it would not be a source of endogeneity and so it would not bias the results. In that case $\theta_{c(t-1)} = 0$.

benefit of migration itself. To assure robustness, a further analysis of this issue is outlined in Appendix 4.

The estimation procedure employs first difference OLS regressions.⁷ Standard errors are clustered according to the community of residence at both times 0 and 1⁸ and robustness tests clustering standard errors at the level of municipality and county of origin are conducted. To distinguish the different trends in life satisfaction depending on the reason for moving all regressions are also run using separate dummies for work and non-work migrants. Finally, given the long time span in between the two surveys (10 years), separate regressions are run for more recent movers (moved within the past 6 years) and less recent (moved 6 years or more before 2009) movers. Non-migrants are used as the reference category throughout the analysis.

The observable characteristics included in (2) represent common life events that are likely to influence both life satisfaction and the likelihood of migration. Specifically, changes in marital status, completion of formal education, and the birth of a child are controlled for. All these are potentially more likely to take place for migrants than non-migrants, and to have significant effects on life satisfaction (Zimmermann and Easterlin 2006; Chen and Rosenthal 2008; Rabe and Taylor 2010; Myrskylä and Margolis 2014). Additional control variables include birth cohort of the respondent, and final level of education. These allow for differences in life satisfaction trends depending on the person's age and educational achievement, both of which have been suggested to exist by previous literature (Blanchflower and Oswald 2008; Easterlin 2001b). Though changes in occupation may affect life satisfaction and migration, they are not included as control variables since changes in the job domain (including improvements in occupation status) are considered as a possible factor underlying the association of migration with life satisfaction.

The main assumption behind (2), is that the individual and community effects described are the only unobservable sources of endogeneity. In reality other sources, like individual time-varying differences between migrants and non-migrants, may exist. For example, migrants may represent a selected sample of highly motivated respondents whose life satisfaction would increase regardless of whether they had moved or not. The analysis partially accounts for the higher motivation of the migrants in two ways. First, controlling for final level of education should capture some of the effects of a person's motivational profile. Second, as an additional test, the well-being change of migrants whose occupational status increased during the period under analysis is compared to that of non-migrants with a similarly high occupational trajectory. Still, it should be recognized that unobserved time-varying differences may remain a problem.

To account for the remaining endogeneity an instrumental variable could be used. Suitable instruments for migration are difficult to obtain and have rarely been found (for an example, see Munshi 2003). The use of life satisfaction as a dependent variable creates further complications as few factors affecting a person's decisions (such as a natural disaster) are likely to satisfy the second stage assumption of the instrumental analysis. Still, the possibility of instrumenting for migration in the present analysis was explored by using

⁷ Though life satisfaction and some of the other dependent variables are ordinal, the first difference OLS model is preferred due to the complications arising from assuming fixed-effects with ordered models (Wooldridge 2010). Additionally, it has been shown that assuming either ordinality or cardinality of satisfaction answers provides virtually the same empirical results, and that the benefits of including fixed-effects exceed the losses of using a non-linear model in these estimations (Ferrer-i-Carbonell and Frijters 2004).

⁸ This implies that with two communities, for example, four separate clusters would be used: for those living in community c_a at times 0 and 1, c_b at times 0 and 1, c_a at time 0 and c_b at time 1, and c_b at time 0 and c_a at time 1.

two of alternative IV models. First, information on the geographical area in which the respondent reported growing up was combined with questions from the 1999 survey reflecting the respondent's expectations for the future (and therefore probability of migration) to instrument for migration.⁹ Whether these instruments are valid is debatable. Still, given that a person does not select their location as a child, and that expectations in 1999 have a direct effect on migration but do not necessarily affect life satisfaction in 2009 through any other channel, this combined set of variables may be assumed to be uncorrelated with the error term in the second stage. However, these instruments prove to be quite weak. In a two-stage-least-square model their partial R^2 is only 0.016, and their robust F-statistic is approximately 4. Since an F-statistic below 5 is typically considered as a sign of extreme finite-sample bias (Cameron and Trivedi 2005), this set of variables clearly does not constitute a good enough instrument.

Second, in an attempt to find stronger instruments, information on the person's job situation prior to migration was included into the set of variables used to instrument migration. The job related variables ask the respondents in 1999 whether they believe their current job pays well, is often stressful, offers good career possibilities and opportunities to develop competence, and provides a good social environment with fellow workers.¹⁰ In a two-stage-least-square model, the partial R^2 of these instruments is 0.033, and their F-statistic is around 7. This suggests a stronger set of instruments, though still does not satisfy the common requirement of an F-statistic of 10 or above. The validity of this joint set of instrumental variables, however, becomes hard to argue as it is likely that a person's job situation in 1999 affects future life satisfaction through mechanisms not related to migration, such as the likelihood of a promotion, which would be captured by the error term. Given the special importance of instruments to be exogenous if they are weak, it is highly likely that the IV parameter estimates from this type of model may turn out to be more inconsistent than the parameter estimates from the previously suggested OLS model (Cameron and Trivedi 2005). In view of the problems and limitations related to the use of the IV method in the present analysis, the OLS model (2) is considered to represent the most suitable approach, and is used throughout the analysis.¹¹

Out of the 643 migrants in the analysis, 77 did not answer the reason to move question. This implies a great loss of power when migrants are divided into work and non-work movers. Two methods are used to deal with the missing data: likewise deletion and multiple imputation (MI).¹² The MI method used is imputation by chained commands (ICE), in which imputed values for the missing variable are generated from a series of univariate models based on a group of personal features,¹³ and only the imputed values for

⁹ The exact set of instrumental variables used is: (1) "home when growing up", reference category: Stockholm/Gothenburg/Malmö (large cities), other categories: medium size city, rural area, abroad; (2) two expectation variables: in five years respondent expects to earn a lot of money/in five years respondent expects to work part-time to have time for family, response categories: yes/maybe/no, coded on a scale of 1–3.

¹⁰ Response categories: does not apply at all/applies partially/applies completely, coded on a scale of 1–3.

¹¹ The estimates from the IV models mentioned are all available from the author upon request.

¹² Out of the traditional techniques employed to treat missing data, likewise deletion has been suggested to be as good as any of the other approaches. However, when large proportions of data are missing more advanced methods, such as multiple imputation, have been found to work best (Scheffer 2002).

¹³ The exact model for the multiple imputation of reason to migrate (a binary variable for migrants defined as work or other) included the following variables: birth cohort, dummies for completion of education and birth of a child, changes in civil status, life satisfaction in 99 and 09, work income in 99 and 09, occupation status in 99 and 09, satisfaction with housing in 99 and 09, economic satisfaction in 99 and 09, satisfaction with occupation in 99 and 09. For more information on the ICE method and how its results compare to other imputation techniques see Ambler and Omar (2007).

the main variable of interest are kept to avoid introducing further noise into the estimation (method suggested in von Hippel 2007). ICE was preferred over multivariate normal imputation because of its superiority imputing ordinal variables. A robustness check using OLS likewise deletion is presented in Appendix 3.

Given the 10 years in between the surveys used, concerns may arise that criteria of evaluation of life satisfaction could change during this long time period. Two tests are used to assure that this does not influence the results. First, if the criteria used to evaluate life satisfaction in 1999 are different from those used in 2009, then one may expect the coefficients of a regression of life satisfaction on socio-demographic determinants such as marital status or income to change over time. To check whether this is the case, such regressions are run separately for 1999, 2003, and 2009 using the sample of respondents answering all three surveys. The most important change in coefficients between the 3 years appears in the association between having children and well-being (Table 14 in Appendix 3). While in 1999 and 2003 having a child is related to a significant increase in life satisfaction, the coefficient on children is considerably smaller and insignificant in 2009. This change is likely due to the decreasingly positive effect of having a new child on well-being (Myrskylä and Margolis 2014; Switek 2013). The influence of the other variables on life satisfaction is stable throughout the period. As usually observed (Clark and Oswald 1996; Zimmermann and Easterlin 2006), life satisfaction is positively and significantly associated with income and marriage. Men in all surveys are less satisfied than women, and age, being divorced, and education do not have a significant influence on well-being. Based on these results, the determinants of life satisfaction appear mostly stable over time. To further assure that preference changes do not present a problem, an additional test of the stability of the results is presented as a robustness check in the results section.

The factors underlying the relationship between migration and life satisfaction are examined by considering changes in the different life aspects (or life domains) that compose overall life satisfaction. The analysis of life domains is not new to the subjective well-being literature (Rojas 2004; Easterlin and Sawangfa 2009). For each of the three life domains considered—financial, housing, and job—its relationship with migration is assessed using regressions with dependent variables related to this domain. The main assumption is that if an increase in life satisfaction for migrants is accompanied by improvements in a given life domain, then this domain represents a likely factor underlying the migration/life satisfaction relationship.

5 Results

5.1 Migration and Life-Satisfaction

The change in life satisfaction following migration is generally positive, but whether or not it remains significant 6–10 years after the move depends on the reason for moving. Pooling all migrants, a significant increase in life satisfaction (relative to non-migrants) is observed for both those who moved less than 6 years, and those who moved 6 years or more prior to 2009 (Table 2, Panel A). These findings are robust to the specification: the coefficients on migration are highest in a reduced form regression where migration is the only explanatory variable, and fall slightly (but remain significant) when variables allowing for differential time trends by final level of education and by cohort are included. Controlling for

Table 2 Change in life satisfaction as dependent variable, migration (all and by reason to move), cohort, changes in marital status, completion of education, and child birth as explanatory variables

	Whole sample			More recent migrants (<6 years)			Less recent migrants (6+ years)		
	1	2	3	5	6	7	9	10	11
<i>Panel A: OLS regressions for all migrants pooled</i>									
All migrants	0.209 (3.65)***	0.168 (2.63)***	0.165 (2.56)**	0.231 (3.07)***	0.192 (2.24)**	0.187 (2.16)**	0.185 (3.06)***	0.149 (2.38)**	0.139 (2.20)**
Married_fd			0.003 (0.05)			-0.051 (0.63)			0.014 (0.15)
Div/wid_fd			-0.048 (0.41)			0.003 (0.03)			-0.051 (0.35)
Educ completion			0.081 (1.61)			0.08 (1.28)			0.083 (1.42)
Child birth			-0.025 (0.38)			-0.04 (0.47)			-0.014 (0.18)
Final educ level		0.027 (1.21)	0.011 (0.45)		0.032 (1.11)	0.019 (0.69)		0.010 (0.51)	-0.007 (0.31)
Cohort dummies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
County of origin	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,541	1,535	1,532	1,216	1,210	1,208	1,211	1,206	1,203
R-squared	0.01	0.02	0.02	0.01	0.02	0.03	0.01	0.01	0.02
<i>Panel B: MI ICE regressions separating work and non-work migrants</i>									
Work migrants	0.266 (3.13)***	0.217 (2.28)**	0.214 (2.3)**	0.305 (2.38)**	0.257 (1.87)*	0.239 (1.73)*	0.237 (2.64)***	0.192 (2.07)**	0.189 (2.11)*
Non-work migrants	0.175 (2.86)***	0.142 (2.20)**	0.139 (2.11)**	0.199 (2.52)**	0.167 (1.92)	0.166 (1.89)*	0.144 (1.92)*	0.117 (1.56)	0.101 (1.34)
Married_fd			0.003 (0.04)			-0.050 (0.6)			0.011 (0.12)
Div/wid_fd			-0.051 (0.44)			0.007 (0.05)			-0.059 (0.41)

Table 2 continued

	Whole sample			More recent migrants (<6 years)			Less recent migrants (6+ years)		
	1	2	3	5	6	7	9	10	11
Education completion			0.081 (1.61)			0.081 (1.31)			0.082 (1.39)
Child birth			-0.018 (0.28)			-0.036 (0.43)			-0.009 (0.11)
Final education level		0.025 (1.11)	0.008 (0.35)		0.030 (1.06)	0.018 (0.64)		0.009 (0.44)	-0.009 (0.38)
Cohort dummies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
County of origin	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,541	1,535	1,532	1,216	1,210	1,208	1,211	1,206	1,203

t-statistics in parentheses, standard errors clustered at change in county level

* Significant at 10 %, ** significant at 5 %, *** significant at 1 %

covariates possibly related to migration (changes in marital status, education completion, and birth of a child) and for the county-of-origin dummies has little additional effect.¹⁴

Dividing migrants into those who move for work related, and those who move for non-work related reasons, interesting differences between the two groups are found. While work migrants experience a significant long-lasting increase in life satisfaction, the life satisfaction of non-work migrants increases significantly only for those who moved within the last 6 years, but not for those who moved 6 years or more prior to 2009 (Table 2, Panel B). Focusing on work movers first, the association between migration and life satisfaction is positive and significant in all specifications regardless of time gone by since the move. Using the preferred specification (with the full set of control variables) the differential increase in life satisfaction for the pooled sample of more and less recent work migrants (relative to non-migrants) is approximately 0.21 which seems sizeable considering that the change in life satisfaction for the average young adult over the same time period was only 0.04 (Table 1).

For non-work migrants the story is slightly different. With the preferred specification, only those who moved within the last 6 years display a significant increase in life satisfaction above that of non-migrants. For those who moved 6 years or more prior to 2009, the association between non-work migration and life satisfaction remains positive, but loses its significance (Table 2, Panel B, Columns 7 and 11). For those non-work migrants who moved within the last 6 years and for whom a significant association is found, the magnitude of the increase in life satisfaction above that of non-migrants is approximately 0.17. This magnitude is lower than that experienced by recent work migrants (0.24), but remains significant and sizeable compared to the average change in life satisfaction (0.04). For the less recent non-work migrants, however, the positive association with life satisfaction loses its significance in all specifications except for the reduced form regressions where it remains only marginally significant at 10 %.

The findings regarding the association between internal migration and life satisfaction suggest that a weaker long term increase in life satisfaction accompanies non-work migration than work migration. The difference in the change in life satisfaction between work and non-work migrants could be due to different factors underlying the well-being improvement for the two groups. This possibility is further discussed in what follows. Because of the overall robustness of results to the specification, the remainder of the analysis uses the preferred specification that includes the full set of socio-demographic and county of origin variables.

5.2 Life Domains Behind the Migration and Life Satisfaction Association

In the case of migrants who move for work reasons, changes in life domains following the move are complex. In the short term, work migrants experience an improvement relative to non-migrants in the job domain (specifically in occupational status) (Table 3), but not in the economic or housing domains (Tables 4, 5). In the long term, the relative improvement in occupational status for work migrants remains, and is joined by significantly higher levels of absolute and relative income and housing satisfaction as compared to non-migrants.

Taking a detailed look at the job domain, relative improvements in occupational status can be observed for both more and less recent work movers, suggesting that work-related

¹⁴ Additional regressions using a specification controlling for the change in county-specific characteristics further confirm these results (Appendix 4).

Table 3 OLS regressions, job domain variables (change in occupational status and satisfaction with occupation) as dependent variables, migration (all and by reason to move), cohort, changes in marital status, completion of education, and child birth as explanatory variables

	Change in occupational status				Change in satisfaction with occupation							
					Whole sample				Less recent migrants			
					(10 years)				(6 years or more)			
	1	2	3	4	5	6	7	8	9	10	11	12
All migrants	0.144 (2.65)***		0.16 (1.74)*		0.159 (2.28)**		-0.07 (0.78)		-0.052 (0.46)		-0.1 (1.1)	
Work migrant		0.359 (3.65)***		0.305 (2.28)**		0.413 (3.13)***		-0.136 (1.23)		-0.087 (0.6)		-0.189 (1.43)
Non-work migrant		0.028 (0.49)		0.103 (1.02)		-0.041 (0.68)		-0.034 (0.35)		-0.038 (0.29)		-0.029 (0.26)
Married_fd	0.183 (3.90)***	0.179 (3.84)***	0.134 (2.50)**	0.139 (2.59)**	0.193 (3.55)***	0.178 (3.24)***	-0.058 (0.84)	-0.057 (0.83)	-0.093 (1.11)	-0.094 (1.12)	-0.066 (0.84)	-0.061 (0.78)
Div/wid_fd	0.195 (1.22)	0.185 (1.17)	0.226 (1.18)	0.237 (1.23)	0.007 (0.04)	-0.032 (0.17)	0.081 (0.61)	0.085 (0.63)	0.076 (0.34)	0.073 (0.33)	0.067 (0.42)	0.082 (0.49)
Education completion	0.918 (13.9)***	0.919 (13.6)***	0.918 (12.4)***	0.920 (12.5)***	0.891 (11.0)***	0.881 (10.6)***	0.102 (1.33)	0.101 (1.31)	0.105 (1.2)	0.105 (1.19)	0.064 (0.68)	0.066 (0.71)
Child birth	-0.221 (4.89)***	-0.192 (4.57)***	-0.219 (4.03)***	-0.208 (3.85)***	-0.198 (3.67)***	-0.168 (3.21)***	0.104 (1.45)	0.095 (1.32)	0.103 (1.32)	0.100 (1.31)	0.115 (1.46)	0.104 (1.31)
Final education level	0.203 (7.62)***	0.193 (7.36)***	0.199 (6.79)***	0.195 (6.72)***	0.205 (7.02)***	0.197 (6.61)***	-0.001 (0.04)	0.002 (0.08)	0.030 (1.07)	0.031 (1.11)	-0.009 (0.32)	-0.006 (0.21)
Constant	-0.395 (3.21)***	-0.364 (3.01)***	-0.305 (2.36)**	-0.290 (2.26)**	-0.478 (3.80)***	-0.455 (3.55)***	0.096 (1.02)	0.086 (0.92)	-0.013 (0.13)	-0.017 (0.16)	0.169 (1.58)	0.160 (1.45)
Observations	1,462	1,462	1,147	1,147	1,146	1,146	1,513	1,513	1,189	1,189	1,185	1,185
R-squared	0.36		0.36		0.35		0.02		0.02		0.02	

Regressions with work/non-work migrants ran using MI ICE

t-statistics in parentheses, standard errors clustered at change in county level

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

Table 4 OLS regressions, financial domain variables (change in income, relative income, and economic satisfaction) as dependent variables, migration (all and by reason to move), cohort, changes in marital status, completion of education, and child birth as explanatory variables

	Change in work income				Change in relative income							
	Whole sample (10 years)	More recent migrants (less than 6 years)	Less recent migrants (6 years or more)		Whole sample (10 years)	More recent migrants (less than 6 years)	Less recent migrants (6 years or more)		Whole sample (10 years)	More recent migrants (less than 6 years)	Less recent migrants (6 years or more)	
	1	2	3	4	5	6	7	8	9	10	11	12
All migrants	3.488 (0.45)		-1.275 (0.14)		11.131 (1.07)		-1.726 (0.24)		-5.195 (0.59)		5.707 (0.59)	
Work migrant		34.096 (3.01)***		27.864 (1.61)		41.192 (2.91)***		25.723 (2.44)**		22.110 (1.31)		30.968 (2.3)**
Non-work migrant		-12.797 (1.54)		-12.861 (1.37)		-11.604 (0.88)		-16.331 (1.93)*		-16.055 (1.69)*		-13.402 (1.05)
Married_fd	9.138 (1.06)	8.761 (1.05)	3.229 (0.37)	4.201 (0.49)	9.221 (1.04)	7.629 (0.9)	7.488 (0.93)	7.148 (0.91)	1.898 (0.24)	2.808 (0.37)	7.809 (0.88)	6.472 (0.75)
Div/wid_fd	30.357 (1.44)	28.584 (1.41)	24.762 (0.94)	26.874 (1.03)	29.132 (1.4)	24.409 (1.18)	30.052 (1.46)	28.456 (1.43)	24.345 (0.94)	26.319 (1.02)	28.305 (1.39)	24.336 (1.19)
Educ completion	39.549 (4.52)***	39.818 (4.45)***	45.022 (5.53)***	45.602 (5.47)***	33.297 (3.44)***	32.531 (3.32)***	41.912 (4.42)***	42.156 (4.35)***	45.242 (5.39)***	45.786 (5.32)***	36.268 (3.61)***	35.628 (3.49)***
Child birth	-29.097 (4.91)***	-24.977 (4.2)***	-21.322 (2.67)***	-19.270 (2.33)**	-30.385 (4.86)***	-26.791 (4.38)***	-26.958 (4.67)***	-23.262 (3.95)***	-18.838 (2.30)**	-16.915 (1.99)**	-29.191 (5.08)***	-26.170 (4.55)***
Final educ level	20.463 (10.07)***	19.051 (9.05)***	19.258 (8.76)***	18.384 (8.33)***	20.638 (10.90)***	19.695 (9.67)***	18.580 (9.13)***	17.314 (8.11)***	18.083 (8.50)***	17.264 (8.01)***	18.897 (9.63)***	18.105 (8.53)***
Constant	26.638 (1.76)*	30.835 (2.05)**	33.499 (2.78)***	36.351 (3.13)***	28.635 (2.40)**	31.295 (2.48)**	-0.205 (0.02)	3.557 (0.26)	2.679 (0.24)	5.349 (0.48)	-1.890 (0.16)	0.342 (0.03)
Observations	1,564	1,564	1,231	1,231	1,229	1,229	1,564	1,564	1,231	1,231	1,229	1,229
R-squared	0.11		0.1		0.1		0.1		0.1		0.09	

Table 4 continued

	Change in economic satisfaction					
	Whole sample (10 years)			More recent migrants (less than 6 years)		Less recent migrants (6 years or more)
	13	14	15	16	17	18
All migrants	0.012 (0.21)		-0.078 (1.01)		0.114 (1.45)	
Work migrant		0.050 (0.53)		-0.089 (0.52)		0.149 (1.33)
Non-work migrant		-0.008 (0.12)		-0.073 (0.85)		0.088 (0.89)
Married_fd	0.046 (0.8)	0.045 (0.79)	0.068 (1.08)	0.068 (1.09)	-0.001 (0.02)	-0.003 (0.05)
Div/wid_fd	-0.117 (1)	-0.119 (1.02)	-0.082 (0.64)	-0.084 (0.66)	-0.281 (2.04)**	-0.287 (2.11)**
Educ completion	0.410 (5.22)***	0.411 (5.22)***	0.443 (6.20)***	0.443 (6.2)***	0.414 (3.89)***	0.413 (3.83)***
Child birth	-0.077 (1.51)	-0.071 (1.39)	-0.078 (1.36)	-0.079 (1.35)	-0.108 (1.63)	-0.103 (1.6)
Final educ level	0.073 (3.95)***	0.071 (3.82)***	0.077 (4.06)***	0.077 (4.07)***	0.072 (3.70)***	0.071 (3.71)***
Constant	-0.093 (0.85)	-0.088 (0.79)	-0.122 (1.04)	-0.124 (1.05)	-0.023 (0.2)	-0.020 (0.17)
Observations	1,546	1,546	1,217	1,217	1,215	1,215
R-squared	0.06		0.06		0.07	

Regressions with work/non-work migrants ran using MI ICE

t-statistics in parentheses, standard errors clustered at change in county level

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %, ** significant at 5 %, *** significant at 1 %

Table 5 OLS regressions, housing domain (satisfaction with housing) as dependent variable, migration (all and by reason to move), cohort, changes in marital status, completion of education, and child birth as explanatory variables

	Changes in satisfaction with housing					
	Whole sample (10 years)			More recent migrants (less than 6 years)		
	OLS 1	MI ICE 2	OLS 3	MI ICE 4	OLS 5	MI ICE 6
All migrants	0.206 (3.30)***		0.095 (1.14)		0.283 (3.38)***	
Work migrant		0.203 (2.14)**		-0.083 (0.53)		0.356 (2.64)***
Non-work migrant		0.207 (2.99)***		0.165 (1.86)*		0.227 (2.51)**
Married_fd	-0.089 (1.01)	-0.089 (1.02)	-0.008 (0.08)	-0.014 (0.14)	-0.186 (1.87)*	-0.190 (1.89)*
Div/wid_fd	-0.230 (1.49)	-0.230 (1.49)	-0.111 (0.57)	-0.124 (0.64)	-0.349 (1.65)	-0.361 (1.66)*
Educ completion	-0.041 (0.62)	-0.041 (0.62)	-0.055 (0.6)	-0.058 (0.64)	-0.020 (0.24)	-0.021 (0.27)
Child birth	0.138 (1.39)	0.138 (1.38)	0.093 (0.79)	0.081 (0.67)	0.194 (1.79)*	0.203 (1.91)*
Final educ level	0.038 (1.36)	0.038 (1.38)	0.061 (1.66)	0.067 (1.79)*	0.038 (1.48)	0.035 (1.43)
Constant	0.121 (1.03)	0.120 (1.02)	-0.102 (0.63)	-0.119 (0.74)	0.214 (1.72)*	0.221 (1.8)*
Observations	1,535	1,535	1,209	1,209	1,205	1,205
R-squared	0.03		0.03		0.04	

Regressions with work/non-work migrants ran using MI ICE

t-statistics in parentheses, standard errors clustered at change in county level

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

Table 6 Changes in life satisfaction by migrant type, and change in occupational status

	Work migrants					Non-work migrants						
	N		Life satisfaction			N		Life satisfaction				
	% total		1999	2009	99–09	Diff. in change versus non-migs		1999	2009	99–09	Diff. in change versus non-migs	
Occup status improved (change 99–09 > 0)	147	68.4 %	3.75	4.03	0.286	0.277***	169	52.3 %	3.81	3.98	0.172	0.163*
No change in occup status (change 99–09 = 0)	54	25.1 %	3.81	3.98	0.167	0.264*	128	39.6 %	3.88	4.02	0.141	0.238**
Occup stat deteriorated (change 99–09 = 0)	14	6.5 %	4.00	3.86	–0.143	0.020	26	8.0 %	4.04	3.92	–0.115	0.048
Total	215	100.0 %	3.78	4.01	0.228	0.290	323	100.0 %	3.86	3.99	0.136	0.198
All migrants												
	N		Life Satisfaction			N		Life Satisfaction			Diff. in change versus non-migs	
	% total		1999	2009	99–09	Diff. in change versus non-migs		1999	2009	99–09	Diff. in change versus non-migs	
Occup status improved (change 99–09 > 0)	346	57.2 %	3.80	4.01	0.21	0.205***	332	39.7 %	3.94	3.95	0.009	Reference category (omitted)
No change in occup status (change 99–09 = 0)	209	34.5 %	3.89	4.03	0.15	0.245***	412	49.3 %	4.08	3.99	–0.097	
Occup stat deteriorated (change 99–09 = 0)	50	8.3 %	4.04	4.02	–0.02	0.143	92	11.0 %	3.84	3.67	–0.163	
Total	605	100.0 %	3.85	4.02	0.17	0.234	836	100.0 %	4.00	3.94	–0.062	

*** Significant at 1 %; ** significant at 5 %; * significant at 10 %

migration is followed by a lasting improvement in this domain (Table 3, Columns 2, 4, and 6). The magnitude of this increase in occupational status for work migrants is substantial. The status change associated with work migration represents between one third and one half of the status improvement due to education completion, and is stronger than the relation between status and final education level. Interestingly, however, satisfaction with occupation does not improve for either the more, or the less recent work migrants (Table 3, Columns 8, 10, and 12). The lack of a significant change in satisfaction with occupation could be due to the long work hours associated with jobs that provide a high relative status¹⁵ as increased hours of work have been found to decrease satisfaction (Clark and Oswald 1996; Rätzl 2012). However, it is also possible that the absence of a significant change in occupational satisfaction is due to this question's limitations.¹⁶ Though either reason could be true, the latter seems more likely given the lack of an association between other factors that one could expect to affect job satisfaction (such as education completion or final level of education) and satisfaction with occupation as measured here.

Work migrants who moved 6 years or more prior to 2009 also experience a significant increase in both absolute and relative income¹⁷ as compared to non-migrants (Table 4, Columns 6 and 12), though this does not hold for the more recent work movers (Table 4, Columns 4 and 10). For less recent movers, the increase in absolute income associated with work-related migration is stronger than the association between income and education completion. The strong relation between work migration and income present 6–10 years after the move suggests that the occupational status improvement experienced by work migrants may positively influence their future career and earnings paths. Despite these significant income changes, however, the economic satisfaction of less recent work migrants does not increase above that of non-migrants (Table 4, Column 18). The differential increase in absolute income may not be accompanied by a relative change in economic satisfaction because of adaptation. The more unexpected lack of similarities between the relative income and economic satisfaction changes is likely the result of limitations of the reference group. Due to data restrictions, the reference group here is composed of all those living in the respondent's municipality of residence with no consideration for age, gender, or other characteristics, limiting the accuracy of the findings regarding relative income.

Finally, while no significant change is observed in the housing domain for the more recent movers, work migrants who moved 6–10 years prior to 2009 are significantly more satisfied with their housing than non-migrants (Table 5, Columns 4 and 6). This finding could stem from the long term spill-over effects from the improvement in occupational status into the financial domain. In the long term, work migrants who are set on high achieving career and earning paths may be more likely than non-migrants to make improvements in their residential conditions thereby materializing their higher status.

The results for work migrants suggest that changes in occupational status are an important factor underlying their increase in well-being. Given the low life satisfaction level of work

¹⁵ While hours worked increased for those whose occupational status improved between 1999 and 2009 by 5.73, for those for whom status remained the same hours worked decreased by −2.62.

¹⁶ For a full discussion of this variable, refer to the data description section.

¹⁷ The similarity in the differential (with respect to non-migrants) absolute and relative income changes is due to the move patterns: for the average migrant the incomes of the municipalities of origin and of destination are almost the same (160 vs. 166 thousand kronas in 2009). This implies that the reference incomes for migrants and non-migrants are very close in magnitude. If the reference incomes were exactly the same at both time 0 and time 1, then the difference between migrants and non-migrants in absolute and relative income changes would be the same. Numerically, where RY = relative income, and AY = absolute income: $\Delta RY^M - \Delta RY^{NM} = [(AY_1^M - c1) - (AY_0^M - c0)] - [(AY_1^{NM} - c1) - (AY_0^{NM} - c0)] = \Delta AY^M - \Delta AY^{NM}$.

movers prior to migration (Table 1), however, concerns could be raised regarding the need of a status improvement for the increase in life satisfaction to occur. An alternative approach may suggest that work migrants are “catching up” to the satisfaction level of non-migrants, implying that their life satisfaction would experience a relative increase regardless of the change in status. Two facts suggest that this alternative is incorrect. First, over 68 % of work migrants experience a strict increase in occupational status, a proportion that is significantly higher than that of non-migrants and non-work migrants (40 and 52 %, respectively) (Table 6). Additionally, work migrants whose status improves have a higher increase in life satisfaction than those whose status remains the same or deteriorates. In fact, work migrants whose status deteriorates experience a slight decrease in absolute life satisfaction, and no change in life satisfaction relative to non-migrants. In contrast, work migrants whose status improves experience a significant increase in life satisfaction above that of non-migrants (Table 6).

The previous findings highlight the importance of combining migration with occupational improvements. Only work migrants whose occupational status improves or remains equal experience a relative increase in life satisfaction; at the same time, the increase in life satisfaction of those who experience an occupational improvement is higher when it is accompanied by migration. Notice, that this result also provides support for the finding that work-related migration is accompanied by an increase in life satisfaction relative to what it would have been had the migrants not moved. As discussed in the methods section, one of the possible differences between migrants and the comparison group (non-migrants) could lay in the higher motivation levels of the migrants. Since people with similar occupational trajectories are likely to have similar levels of motivation, the comparison within respondents with comparable changes in occupational status should partially account for different motivation levels. The results therefore suggest that even within a group of highly-motivated individuals, that is people whose occupational status improves, life satisfaction increases most for those who move. Regression results that control for the correlates of migration further confirm this finding (Table 15 in Appendix 3).

Non-work migrants represent a different case: for them, the short to medium term increase in life satisfaction associated with migration appears to be related mostly to positive changes in the housing domain. Housing satisfaction of non-work migrants displays improvements above those of non-migrants for both, those who moved less than, and more than 6 years prior to 2009 (Table 5, Columns 4 and 6). However, the job and financial domains do not appear to be significantly related to non-work migration. In the job domain, neither occupational status nor satisfaction with occupation significantly change as compared to non-migrants following the non-work related move (Table 3, Columns 2–6, and 8–12). Regarding financial aspects, income levels—absolute and relative—decline slightly, though generally not significantly, for non-work migrants as compared to non-migrants in both the shorter and longer time periods considered (Table 4, Columns 4 and 10, and 6 and 12). At the same time no significant economic satisfaction changes are experienced in either time period (Table 4, Columns 16 and 18).

The lack of an association between migration and the job and financial domains for non-work migrants suggests that, unlike work migrants, those who move for reasons other than work are not set on high-achieving career or income paths. However, they do experience an increase in housing satisfaction soon after migration that persists over time and is likely to be reflective of the motivation behind the non-work migrants’ move. This housing improvement, however, is not accompanied by a long-lasting increase in life satisfaction, which could be due to either long term adaptation to material circumstances such as housing, or to the financial burdens that accompany dwelling improvements suggested by previous authors (Nakazato et al. 2011).

5.3 Robustness Tests

Five robustness tests are carried out and confirm the previous findings. First, because migrants who moved between counties traveled considerably longer distances than those who moved within a county, the two groups are considered separately (Table 16 in Appendix 3). As could be expected, the strength of the well-being change following a move is proportional to the distance traveled. While almost all of the results for the between-county movers remain significant and of the correct direction, the significance of the well-being change is lost for the within-county movers. Still, the direction of the results for the shorter distance moves confirms the main findings. The main difference between the results of this robustness test and those in the previous section is that when within-county movers are considered alone, the decrease in income of the non-work migrants becomes not only negative, but also significant. Additionally, for work migrants the occupational and financial benefits of migration are greater for those who moved between counties than for those who moved within counties.

Second, to test the results based on estimates obtained through imputation, the sample is restricted to respondents who answered the reason to move question and OLS regressions (instead of MI ICE) are run (Table 17 in Appendix 3). Given the reduction in the sample of migrants, the main effect of this test is to decrease the power of some results. However, the main findings remain unchanged: the increase in life satisfaction is still significant in the long term for work migrants (but not non-work migrants), and this increase is accompanied by a significant status improvement (Table 17 in Appendix 3).

Third, as argued by Akay et al. (2012), migrants may compare themselves to the people from their community of origin (not of destination) when determining relative standing. To address this issue the relative income regressions are run using the average income of the municipality of origin as reference for the migrant groups. The results provided by these estimates are very similar to those shown previously: work migrants experience an increase compared to non-migrants in relative income over the longer term, while non-work migrants experience negative, though not strongly significant, relative income changes (Table 18 in Appendix 3).

Because the community of residence in 1999 may represent a more appropriate level for clustering than the change in community previously used, as the fourth robustness test regressions are re-estimated using standard errors clustered at the level of municipality of origin. Municipalities, not counties, are used for clustering, because of the problems that may arise when few clusters (in this case 22) are used.¹⁸ Using this clustering method has some limited effects on the significance levels; the increase in housing satisfaction, for example, is no longer significant for non-work migrants in the shorter time period. Still, the main results remain qualitatively unchanged (Table 19 in Appendix 3).

Finally, as discussed in the methods section, concerns may be raised that the criteria used to evaluate life satisfaction could change during the 10 year period under analysis. To test whether this could affect the results separate regressions are estimated for the sub-periods 1999–2003 and 2003–2009 using a restricted sample of respondents for whom information is available for all surveys. Due to the reduction in the number of observations that this requires, many of the coefficients in these regressions lose their significance (Table 20 in Appendix 3). Still, the association between migration and life satisfaction

¹⁸ Regressions were also run using county-level clustering and adjusting for few clusters by using a T distribution with 21 degrees of freedom. The results using this method (available upon request), confirm the results of the main section.

remains positive in both periods. These results hold for all migrants together as well as considering work and non-work migrants separately.¹⁹ In summary, the results of all five robustness tests carried out mostly confirm the findings from the main findings.

6 Conclusions

Previous studies have found that changes in objective well-being following migration may depend on characteristics of the migrants such as reason to move or age. In life satisfaction analyses, however, little consideration has been given to the reason for moving or other distinctive traits of the migrant group. The present analysis uses a longitudinal approach to assess the change in life satisfaction that accompanies migration of young adults, dividing the sample into those moving for work, and those moving for other (non-work) reasons. Findings suggest that the change in life satisfaction following internal migration is generally positive, but its persistence depends on the reason to move. While both work and non-work migrants experience a significant improvement in life satisfaction following moves within the past 6 years, only work migrants display a significant increase in life satisfaction 6–10 years after the move.

The difference between work and non-work migrants in the results for the long term association between life satisfaction and migration may be explained by the life domains that change following their moves. Those who migrate for work reasons experience an improvement in occupational status which sets them on a relatively high-achieving career path. This higher occupational status and its long term material spillovers are accompanied by a persistent increase in life satisfaction. While an improvement (or at least no change) in occupational status is necessary for the increase in work-migrants' life satisfaction to occur, it cannot fully account for this increase. Non-work migrants experience an increase in housing satisfaction that is accompanied by life satisfaction improvements in the shorter, but not in the longer, term. The lack of a long-lasting relation between changes in housing and life satisfaction may be due to the high costs associated with better housing suggested by previous studies or to adaptation to material domains. The finding that the relationship between migration and long term change in life satisfaction may depend on the reason to move could explain the mixed results of earlier analyses which have typically combined all migrants regardless of reason for moving.

Appendix 1: Attrition in the Young Adult Panel Study

Given its longitudinal nature, the YAPS survey faces the inevitable problem of attrition. Of the 2,820 individuals first interviewed in 1999, 1,575 were successfully re-interviewed in 2009. This generated an attrition rate of 44 % over the 10 year period, which is similar to the rates typically observed in longitudinal surveys from other developed countries (Beckett et al. 1988; Abraham et al. 2006). The high non-response in the YAPS gives rise to concerns about the existence of an attrition bias. In what follows, first, the main

¹⁹ While the information on the reason to move is only available in 2009, the question asked specifically about the reason of the “most recent long distance move”. For those moving between 1999 and 2003 and remaining in the same municipality thereafter, the reason to move reported in 2009 should therefore correspond to the move taking place in the previous period. Still, given the possible lack in accuracy that this imposes, the results estimated for work and non-work migrants separately should be considered limited.

Table 7 Comparison of the characteristics at baseline (1999) of surveyed people who consequently attrit (not interviewed in 2009) and do not attrit (interviewed in 2009)

	Complete sample		Non-attritors		Attritors	
	N	Mean (%)	N	Mean	N	Mean
Life satisfaction	2,785	3.91	1,560	3.92	1,225	3.9
Self reported income (in 1,000 SEK)	2,800	101	1,573	104	1,227	97
Economic satisfaction	2,789	3.05	1,564	3.11	1,225	2.97
Satisfaction with housing	2,776	3.7	1,556	3.69	1,220	3.73
Satisfaction with partner	2,075	4.47	1,159	4.45	916	4.49
Satisfaction with occupation	2,751	3.78	1,551	3.81	1,200	3.76
Educ level 1999**	2,782	11.98	1,565	12.19	1,217	11.71
Hours worked per week	2,014	37.47	1,132	37.79	882	37.06
% Male	1,320	46.80	702	44.57	618	49.64
% Studying	208	7.71	121	7.94	87	7.40
% Cohort 1976 (age 22)	1,107	39.30	589	37.40	518	41.60
% Cohort 1972 (age 26)	973	34.50	543	34.50	430	34.50
% Cohort 1968 (age 30)	740	26.20	443	28.10	297	23.90
% Married	393	14	208	13.20	185	15.10
% Swedish background	2,283	80.96	1,336	84.83	947	76.06
% Polish or Turkish background	537	19.04	239	15.17	298	23.94

Bold values imply that the mean or % for attritors and non-attritors are statistically different at 5 % significance level

** Information reported in 1999; different from Register information used in study

characteristics at baseline of the people who attrit (are not re-interviewed in 2009) and who do not attrit are compared. Then, two main problems related to attrition are discussed: selection on migration, and selection on unobserved time-varying characteristics related to the changes in the dependent variables of the study.

At baseline, attritors have generally lower income,²⁰ lower economic satisfaction, and less years of education, then the people who are interviewed in both 1999 and 2009. Attritors are also more likely to be male, young, and have Swedish background (Table 7). The first series of characteristics related to income and education, stands in opposition to what has been observed in previous studies in both developing (Thomas et al. 2001, 2012) and developed countries (Hausman and Wise 1979; Beckett et al. 1988), where attrition has been found to have a positive association with income and education levels. This difference is probably due to the specific design of the YAPS survey which targets young adults (ages 22–30 in 1999), and therefore has a high relative proportion of student respondents (characterized by low income) at the time of the first survey. Given that young people are more likely to leave the survey, a higher percentage of attritors would have not achieved their final levels of education in 1999, lowering the average education level of this group, as well as their income and economic satisfaction.

The relationship between the birth cohort and attrition is similar to that observed in previous literature, with younger cohorts being more likely to attrit in subsequent

²⁰ The income variable used here is self-reported income in 1999, and is different from the Register data used in the study. The Register data could not be used to analyze the problem of attrition, as it is only available for the people who are interviewed in 2009—consequently, it is only available for non-attritors.

interviews. The difference in the attrition rates of people with Swedish and non-Swedish background may be related to previous findings that early life experience and parent characteristics are related to attrition (Thomas et al. 2012). Interestingly, higher levels of attrition are not associated with more hours worked per week, as could be expected if busy people were less likely to be re-interviewed. Previous studies conducted with surveys from the United States have found that non-contact is in fact associated with longer work times, though the same did not hold for refusals, with refusal rates showing no association with work time (Abraham et al. 2006).

Attrition in the YAPS survey could represent a major problem if it was selective on migration given that the main focus of the present study is on comparisons of migrants and non-migrants. Past research has found that attrition in longitudinal surveys may, in fact, be selective on migration. This problem arises especially in the case of surveys performed in developing countries (Thomas et al. 2001, 2012), as in developed countries non-response rates in surveys are mostly associated with refusals as opposed to failure to contact the respondents. Still, Abraham et al. (2006) find that non-contact rates may also be high in developed countries, as documented by their observations about the American Time Use Survey.

The problem of attrition due to migration should be lessened in the YAPS due to the access of the employees of Statistics Sweden, who were in charge of the data collection, to the Swedish Register records. The Register consists of data collected by the Swedish Tax Agency and includes specific information about current place of residence for all individuals. Access to this information should potentially make the task of following migrants considerably easier than in countries with less precise demographic information on their inhabitants.

A comparison of non-contact versus refusal rates in the YAPS could be informative, as non-response associated with non-contact may be more related to trouble finding a person who has moved. Unfortunately, the YAPS survey was performed by mail, and no information of non-contact versus refusal rates was collected. Still, because attrition is generally associated with similar demographic characteristics across different surveys (Zabel 1998), a comparison of the characteristics of attritors in the YAPS to the characteristics of attritors due to non-contact in other surveys could provide insight into this problem. In developed countries such as the United States, non-contact is typically associated with being single, working longer hours, and being a high school graduate (Abraham et al. 2006). In the YAPS, the proportion of people married and the hours worked at baseline are not statistically different for attritors and non-attritors. Moreover, attritors have significantly less years of education, which is the opposite of the association between education and non-contact found by Abraham and co-authors. If the same associations between non-contact and demographic characteristics hold for Sweden as for United States, this could imply that a big proportion of attrition in the YAPS is due to refusal. Still, it is not clear that Swedish attrition should follow the same patterns as those observed in studies from other countries, and so the previous implication may be considered inconclusive.

An additional indirect test of selection on attrition used by previous literature consists of comparing characteristics of interest of the observed survey sample to those of a similar sample of the general population (Groves 2006). Using this method, a test of attrition selective on migration in the YAPS is performed comparing rates of mobility by cohort of survey respondents interviewed in both years to those of the general population of Sweden (Table 8). For every cohort, the mobility of the general population is slightly above that of the non-attritors from YAPS, with the difference between the two populations being highest for the 1976 cohort. For all cohorts combined, the difference in the migration proportions between the general population and the YAPS is 3 % (44 % for general population and 41 %

Table 8 Proportion of mobility by cohort: general population versus YAPS non-attritors

Cohort	% Migrants		
	General pop. (register) (%)	YAPS non-attritors (%)	Difference (%)
1968	31.16	29.35	1.81
1972	44.04	38.67	5.37
1976	57.65	52.98	4.67
Total	43.63	41.39	2.24

for YAPS). This difference implies that, though selection on migration might have certainly taken place in the YAPS survey, the magnitude of this selection appears small.

The second way in which attrition could bias the results is through selection on time-varying characteristics associated with either changes in life satisfaction or any of the other dependent variables used. To analyze this issue of selective attrition, the panel structure of the data is used to implement a test described by Wooldridge (2010). Selective attrition may represent a source of bias if it is correlated with the error term conditional on the explanatory variables (including the variable of interest, in this case migration). That is, in the model $Y_{ic} = \beta'x_i + \eta_i + \varepsilon_{ic}$ the condition $E(\varepsilon_{ic}|x_i, a_i, \eta_i) = 0$ (where a_i represents attrition) must be satisfied to assure consistency of the parameter estimates (Wooldridge 2010). To test for this Wooldridge suggests adding to the equation a lead attrition indicator (that turns to one in the period before attrition) and testing for its significance using a standard t test. If the attrition indicator turns out to be not significant in this regression, that indicates that attrition should not represent a source of bias.

To implement the above method in the present analysis requires using the intermediate 2003 survey. Since some of the respondents who attrited between 1999 and 2009 still participated in the 2003 survey, using this data allows to estimate the first-difference model with the 99–03 variables adding future attrition (in the period 03–09) into the model. To assure robustness to the possible correlation between attrition and the explanatory variables, this test should control for all explanatory variables included in the original model (including migration). This rises a practical issue, as Register data on municipality of residence (used to determine migration) and on some of the control variables (such as education) is only available in the YAPS survey for the respondents who participated in the 2009 round, and is therefore missing for all attritors. Due to the absence of the Register data, migration may not be directly included into the model when estimating the first-difference regression using the 99–03 variables. Still, in an attempt to control for the correlation between attrition and migration, 1999 variables expected to determine the probability of future migration are included into the model testing for attrition bias.²¹ Additionally, since education completion is also unavailable (due to absence of Register data on education), a first difference in the student dummy is used to proxy for education completion. Estimating this full model attrition proves not to be a significant determinant of any of the dependent variables used in the analysis (Table 9). This indicates that attrition is unlikely to be selective on the first difference variables used in the main analysis.

²¹ The variables included are: place of residence when growing up (large city, medium sized city, small city, or abroad), expectations about the future related to money and parenting/parental-leave, and information on a respondent's job situation in 1999 (whether it pays well, is stressful, presents good career possibilities and opportunities to develop competence, and provides a good social environment). This is the same set of variables used in an attempt to construct an instrument for migration in the main section of the paper.

Table 9 Test for attrition bias: OLS regressions of variables of interest (in 99–03 changes) regressed on attrition in 2009 and control variables

	Life satisfaction	Income	Occupation status	Economic satisfaction	Housing satisfaction	Occupation satisfaction
Attrit99_09	-0.039 (0.68)	-6.952 (1.21)	-0.037 (0.66)	0.021 (0.32)	-0.058 (0.75)	0.066 (0.92)
1972 c.	0.028 (0.4)	-18.743 (2.67)**	-0.13 (1.89)*	0.151 (1.77)*	0.166 (1.69)*	-0.162 (1.89)*
1968 c.	-0.087 (1.16)	-28.775 (3.99)**	-0.167 (2.40)**	0.144 (1.75)*	0.124 (1.27)	-0.091 (1)
Married FD	-0.0004 (0)	25.089 (3.05)**	-0.025 (0.33)	0.117 (1.28)	0.15 (1.41)	0.188 (1.86)*
Div/wid FD	0.2 (0.69)	43.839 (2.48)*	0.058 (0.25)	-0.365 (1.64)	0.292 (1.09)	-0.082 (0.3)
Student FD	-0.291 (0.77)	-18.685 (0.88)	-0.85 (4.35)**	-0.426 (1.29)	0.608 (1.49)	0.473 (1.6)
Child born	0.213 (3.21)***	-1.099 (0.18)	0.009 (0.15)	-0.118 (1.65)	0.102 (1.21)	0.057 (0.69)
Expectations (parenting)	0.051 (1.65)*	10.173 (3.67)**	0.031 (1.13)	0.017 (0.49)	0.015 (0.38)	-0.052 (1.35)
Expectations (money)	0.027 (0.85)	-12.56 (4.39)**	-0.071 (2.29)**	0.028 (0.7)	0.055 (1.18)	-0.021 (0.46)
Grew up: medium city	0.028 (0.41)	-11.867 (1.68)*	-0.077 (1.17)	0.05 (0.63)	-0.079 (0.88)	-0.02 (0.24)
Grew up: rural town	0.022 (0.25)	-14.842 (1.62)	-0.138 (1.78)*	0.033 (0.33)	-0.087 (0.77)	0.056 (0.53)
Grew up: abroad	0.2 (0.53)	25.031 (0.67)	0.219 (0.48)	-0.292 (0.72)	1.234 (2.94)***	0.581 (1.24)
99 job (pays well)	-0.071 (1.61)	10.723 (2.53)**	-0.116 (2.65)**	-0.351 (6.82)***	-0.115 (1.90)*	-0.195 (3.48)***
99 job (stressful)	0.046 (1.02)	5.266 (1.25)	-0.109 (2.46)**	-0.045 (0.84)	-0.035 (0.59)	0.09 (1.55)

Table 9 continued

	Life satisfaction	Income	Occupation status	Economic satisfaction	Housing satisfaction	Occupation satisfaction
99 job (competence)	0.007 (0.14)	18.524 (4.08)***	-0.097 (2.02)**	-0.013 (0.22)	0.094 (1.42)	-0.211 (3.38)***
99 job (career)	0.028 (0.53)	26.262 (4.55)***	0.082 (1.57)	0.024 (0.4)	0.117 (1.70)*	-0.164 (2.60)***
99 job (soc. env.)	-0.1 (2.00)**	-3.28 (0.71)	0.022 (0.48)	-0.06 (1.06)	0.007 (0.11)	-0.171 (2.74)***
Constant	-0.009 (0.04)	2.613 (0.13)	0.825 (3.64)***	0.698 (2.65)***	-0.225 (0.74)	1.527 (5.64)***
Observations	1,320	1,338	1,340	1,325	1,319	1,304
R-squared	0.02	0.16	0.03	0.06	0.03	0.09

Robust t statistics in parentheses

* Significant at 10 %, ** significant at 5 %, *** significant at 1 %

Table 10 Mean disposable income (in hundreds of SEK) from Register, whole population (1968, 1972 and 1976 cohorts) and YAPS (non-atritors), by migration status, by year

Period	Register			YAPS		
	1998	2007	Change	1998	2007	Change
Migrant	1,052	2,262	1,209	1,075	2,382	1,307
Non-migrant	1,132	2,076	944	1,138	2,227	1,089
Both migrants and non-migrants	1,097	2,157	1,060	1,112	2,290	1,178
Difference migrants–non-migrants	−80	186	265	−63	155	218

Finally, as a last test for selective attrition, a comparison may be carried out between the changes in a clue variable for the selected sample of respondents interviewed in both 1999 and 2009, and the changes in the same variable for the general population. This comparison is carried out for income changes (Table 10). There are two main reasons to use income for this test. First, disposable income is readily available from the Statistics Sweden for both, the YAPS sample, and the general population. Second, attrition has been specifically found to be selective on changes in returns to human capital, such as education (Thomas et al. 2012), which could possibly be reflected in changes in disposable income.

For both migrants and non-migrants observed in the YAPS survey in 1999 and 2009, the changes in disposable income are slightly above those of the general population.²² Because the present study is based on the comparison of migrants versus non-migrants, one may be especially interested in comparing the difference in changes in income for these two groups for the YAPS sample and the general population. For the sample of non-atritors from YAPS, the difference between changes in income for migrants and non-migrants is 21,800 SEK; the difference between the migrant groups for the general population is 26,500 SEK (Table 10). The closeness between these two differences is reassuring.

Because of the high levels of attrition in the YAPS survey, concerns with possible bias may certainly arise. However, given the previous analysis selective attrition on migration, though possible, appears to be generally small in magnitude. The first-difference regression analysis used in the study allows to control for all time invariant unobserved characteristics that could be related to both attrition and the variables of interest. Though the possibility of time varying unobserved characteristics related to attrition remains, the tests performed (using first difference variables over 99–03 and a comparison of the changes in income for migrants and non-migrants for the YAPS sample and the general population) both provide results indicating that the first difference variables do not appear to be selective on attrition. In conclusion, the results of the analysis performed in this section provide reassurance that the possible attrition bias in the survey should not have a strong effect on the main results of the study.

Appendix 2: Description of Variables Used in the Study

See Tables 11, 12 and 13.

²² The general population encompasses all inhabitants of Sweden born in the 1968, 1972 and 1976 cohorts for whom Register information was available in 1999 and 2009.

Table 11 Number of people surveyed answering each question in both 99 and 09, by migration status and reason to move, by cohort

	All three cohorts combined						1976 cohort					
	Work migrants			Non-work migrants			All migrants			Non-migrants		
	Work migrants	Non-work migrants	Total	Work migrants	Non-work migrants	Total	Work migrants	Non-work migrants	All migrants	Work migrants	Non-migrants	Total
Life satisfaction	218	338	630	911	1,541	1,541	115	153	296	277	573	573
Economic satisfaction	220	340	636	919	1,555	1,555	117	152	299	281	580	580
Satisfaction with house	219	341	632	912	1,544	1,544	116	153	299	275	574	574
Satisfaction with occupation	222	334	629	893	1,522	1,522	118	153	301	275	576	576
Satisfaction with partner	121	244	415	642	1,057	1,057	59	103	177	167	344	344
Occupation group	215	326	609	860	1,469	1,469	115	148	289	266	555	555
Civil status	222	344	643	930	1,573	1,573	118	156	304	283	587	587
Education	221	343	641	923	1,564	1,564	117	155	302	280	582	582
Work income	222	344	643	930	1,573	1,573	118	156	304	283	587	587
Disposable income	222	344	643	930	1,573	1,573	118	156	304	283	587	587
1972 cohort												
1968 cohort												
1972 cohort												
1968 cohort												
Life satisfaction	61	115	205	327	532	532	42	70	129	307	436	436
Economic satisfaction	62	117	208	328	536	536	41	71	129	310	439	439
Satisfaction with house	62	117	205	328	533	533	41	71	128	309	437	437
Satisfaction with occupation	62	114	202	322	524	524	42	67	126	296	422	422
Satisfaction with partner	34	84	141	237	378	378	28	57	97	238	335	335
Occupation group	59	111	197	307	504	504	41	67	123	287	410	410
Civil status	62	117	209	334	543	543	42	71	130	313	443	443
Education	62	117	209	331	540	540	42	71	130	312	442	442
Work income	62	117	209	334	543	543	42	71	130	313	443	443
Disposable income	62	117	209	334	543	543	42	71	130	313	443	443

Table 12 Description of all variables used in the analysis (listed in alphabetical order)

Variable	Question asked	Response categories
Average municipality work income	Average “income from work before tax” of all (including those not interviewed by YAPS) residents of a given municipality	Real number given in thousands of SEK
Child born	Dummy variable taking on the value 1 if the person reported having a child born in between 1999 and 2009, and 0 otherwise	0—other 1—child born in between 99 and 09
Civil status	Civil status from Swedish register	(1) unmarried; (2) married; (3) widowed; (4) divorced
Cohort	Register data for year person was born	
County	County of residence from Swedish register	
Economic satisfaction	Answer to the “economic satisfaction” question from the YAPS survey	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied
Educ_level	Education from the Swedish register data	Compulsory 9 years Secondary <3 years Secondary 3 years Post-secondary <3 years Post-secondary ≥3 years/postgraduate
Educ_years	Years of education constructed based on the education level obtained from register data	Education years assigned as follows: Compulsory education—9 years Secondary less than 3–10.5 years Secondary 3–12 years Post-secondary less than 3–13.5 years Post-secondary more than 3 years/postgraduate—16.5 years
Education completion	Dummy variable taking on the value 1 if the person has achieved her highest education level after 1999, and 0 otherwise	0—other 1—education completed
Gender	Register data for gender of person surveyed	
Life satisfaction	Answer to the “life satisfaction” question from the YAPS survey	scale 1–5 with 1—very dissatisfied, and 5 = very satisfied
Migrant	Person who, according to register data, changed municipality in the period 1999–2009 (including multiple changes and return migration)	0—other 1—migrant
Municipality	Municipality of residence from Swedish register	

Table 12 continued

Variable	Question asked	Response categories
Nonmigrant	Person who, according to register data, did not change municipality in the period 1999–2009	0—other 1—non-migrant
Occupation category	Classification constructed from two questions: (1) What is your main occupation? What are your main tasks at work? (2) What is your current main activity?	Occupation categories used in the paper are divided into following groups: (1) student; (2) unemployed; (3) goods production; (4) service production; (5) assistant non-manual; (6) intermediate non-manual; (7) farmer/self-employed; (8) professional/higher non-manual/executive
Occupational status	Classification of occupation categories into 4 levels (high, medium high, medium low, and low) based on the Standard International Occupational Prestige Scale Occupations were classified as follows: High: professional/higher non-manual/executive medium high: intermediate non-manual, farmer/self-employed Medium low: goods and service production, assistant non-manual Low: unemployed and student	Scale 1–4 with 1—low, and 4 = high
Other_migrant	Person who, according to register data, changed municipality in the period 1999–2009 (including multiple changes and return migration) and listed something other than “work/studies” as main reason of move in the YAPS survey	0—other 1—migrant due to non-work reasons
Postsecondary final education	Dummy variable taking on the value 1 if the person has a post-secondary education in 2009, and 0 otherwise	0—secondary or less educ in 2009 1—post-secondary educ in 2009
Relative income (with respect to mun. of origin)	The difference between individual work income minus average work income of the municipality of origin (that is, municipality of residence in 1999)	Real number given in thousands of SEK
Relative income (with respect to mun. of residence)	The difference between individual work income minus average work income of the municipality of residence at time of the survey.	Real number given in thousands of SEK
Satisfaction with housing	Answer to the “satisfaction with housing” question from the YAPS survey	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied

Table 12 continued

Variable	Question asked	Response categories
Satisfaction with partner	Answer to the “satisfaction with partner: question from the YAPS survey	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied
Satisfaction with what the person is doing	Answer to the “satisfaction with what the person is doing” question from the YAPS survey	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied
Work income	Register information on “income from work before tax” for the years 1998 and 2008 (in thousands of SEK)	Real number given in thousands of SEK
Work_migrant	Person who, according to register data, changed municipality in the period 1999–2009 (including multiple changes and return migration) and listed “work/studies” as main reason of move in the YAPS survey	0—other 1—migrant due to work reasons

Table 13 Description of original survey questions used in the analysis

Variable	Question asked	Response categories
child born (year/month)	Self-reported year in which children 1–5 were born	Year and month recorded separately
Economic satisfaction	Are you satisfied or dissatisfied with your economic situation?	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied
Life satisfaction	Are you satisfied or dissatisfied with life in general right now?	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied
Main activity	What is your current main activity?	Open ended response from survey regrouped as: (1) permanent employment; (2) casual/limited employment; (3) self-employed; (4) studies; (5) “kunskapslyftet”; (6) employment measures; (7) unemployed ≥6 months; (8) unemployed < 6 months; (9) parental leave; (10) housekeeping; (11) military; (12) retired; (13) on long term sick leave; (14) doctoral student; (15) on leave from work; (16) other
Long distance move (year/month)	When did you last make a long distance move? (year and month)	Year and month recorded separately
Occupation	What is your main occupation? What are your main tasks at work?	Open ended response from survey regrouped as: (1) unskilled in good production; (2) unskilled in service production; (3) skilled in goods production; (4) skilled in service production; (5) assistant non-manual, lower level i; (6) assistant non-manual, lower level ii; (7) intermediate non-manual; (8) professionals and other higher non-manual; (9) upper-level executives; (10) self-employed professionals; (11) entrepreneurs; (12) farmers
Reason_move	What was the most important reason for you to move?	My work/studies; My partners work/studies; I wanted to move to my partner; I wanted to come closer to friends and family; I wanted a change of environment; I wanted to move back to where I grew up; My partner wanted to move; Other, namely...
Satisfaction with housing	Are you satisfied or dissatisfied with your housing situation?	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied
Satisfaction with partner	Are you satisfied or dissatisfied with your relationship with your partner?	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied
Satisfaction with what the person is doing	Are you satisfied or dissatisfied with what you are currently doing?	Scale 1–5 with 1—very dissatisfied, and 5 = very satisfied

Appendix 3: Additional Regression Results

See Tables 14, 15, 16, 17, 18, 19 and 20.

Table 14 OLS regressions, life satisfaction in 1999, 2003, and 2009 as dependent variable, socio-demographic characteristics as explanatory variables

	Lifesat 99	Lifesat 03	Lifesat 09
Age	0.117 (0.7)	0.273 (1.45)	0.274 (1.25)
Age sq.	−0.003 (0.79)	−0.005 (1.61)	−0.004 (1.33)
Married	0.198 (2.57)**	0.189 (3.34)***	0.317 (6.20)***
Div/wid	0.116 (0.67)	−0.23 (1.1)	0.02 (0.17)
Child in household	0.248 (3.49)***	0.312 (5.41)***	0.067 (1.17)
Educ level	0.022 (0.92)	0.013 (0.64)	0.008 (0.41)
Work income	0.001 (2.63)***	0.001 (5.06)***	0.001 (4.11)***
Men	−0.105 (2.04)**	−0.148 (3.01)***	−0.201 (3.86)***
Constant	2.423 (1.14)	−0.134 (0.05)	−1.108 (0.27)
Observations	1,357	1,365	1,360
R-squared	0.03	0.07	0.07

Robust t statistics in parentheses

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

Table 15 Results dividing respondents by occupational status trajectory and reason for moving (MI ICE with OLS)

	Occupational status improved			No change in occupational status			Occupational status deteriorated		
	All	More recent	Less recent	All	More recent	Less recent	All	More recent	Less recent
Work migrant	0.236 (2.04)**	0.236 (1.46)	0.238 (1.83)*	0.332 (2.46)**	0.423 (1.67)	0.247 (1.88)*	0.068 (0.22)	0.479 (1.05)	-0.549 (1.04)
Non-work migrant	0.125 (1.12)	0.155 (1.52)	0.078 (0.47)	0.191 (1.97)*	0.224 (1.48)	0.178 (1.56)	0.038 (0.23)	0.203 (0.9)	-0.089 (0.39)
Married_fd	0.036 (0.44)	0.002 (0.02)	-0.006 (0.06)	-0.092 (1.15)	-0.122 (1.23)	-0.077 (0.72)	0.078 (0.31)	-0.127 (0.41)	0.123 (0.43)
Div/wid_fd	-0.166 (0.65)	-0.271 (1.17)	-0.105 (0.27)	0.099 (0.44)	0.292 (1.37)	0.027 (0.1)	-0.689 (2.53)**	-0.582 (1.89)*	-0.621 (2.35)**
Educ completion	-0.043 (0.58)	0.068 (0.79)	-0.107 (1.47)	0.241 (2.45)**	0.206 (1.84)*	0.289 (2.62)**	-0.648 (1.42)	-0.716 (1.2)	-0.999 (2.09)**
Child birth	0.006 (0.08)	-0.024 (0.31)	0.078 (0.73)	-0.049 (0.48)	-0.087 (0.64)	-0.056 (0.52)	0.308 (1.35)	0.396 (1.59)	0.309 (1.14)
Final educ level	0.029 (0.69)	-0.001 (0.02)	0.004 (0.07)	0.002 (0.06)	0.041 (1.07)	-0.019 (0.51)	0.058 (0.66)	0.039 (0.32)	0.133 (1.71)
Constant	-0.018 (0.08)	0.110 (0.47)	0.227 (0.93)	-0.107 (0.7)	-0.228 (1.25)	-0.015 (0.1)	-0.420 (0.78)	-0.464 (0.63)	-0.867 (1.96)*
Observations	676	507	496	617	505	512	141	115	115

t-statistics in parentheses, standard errors clustered at change in county level

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

Table 16 Results for work/non-work migrants, dividing moves into between-county and within-county

	Life satisfaction			Occupational status		
	Between-county		Within-county	Between-county		Within-county
	More recent	Less recent	More recent	More recent	Less recent	More recent
Work migrant	0.228 (1.66)*	0.220 (1.95)*	0.261 (0.85)	0.302 (1.83)*	0.674 (5.58)***	0.377 (2.32)**
Non-work migrant	0.097 (1.11)	0.163 (1.31)	0.223 (1.77)*	0.161 (1.42)	-0.009 (0.08)	0.042 (0.31)
Married_fd	-0.042 (0.43)	-0.049 (0.49)	-0.074 (0.78)	0.130 (2.14)**	0.184 (3.2)***	0.150 (2.77)**
Div/wid_fd	0.020 (0.13)	-0.046 (0.29)	-0.009 (0.07)	0.125 (0.57)	-0.020 (0.09)	0.176 (0.88)
Educ completion	0.114 (1.64)	0.094 (1.33)	0.046 (0.68)	0.894 (11.45)***	0.851 (10.69)***	0.886 (10.6)***
Child birth	-0.026 (0.28)	-0.014 (0.15)	-0.048 (0.51)	-0.193 (2.86)***	-0.172 (2.64)***	-0.181 (3.64)**
Final educ level	0.013 (0.51)	-0.001 (0.05)	0.010 (0.36)	0.189 (6.18)***	0.205 (6.87)***	0.204 (7.15)***
Constant	-0.005 (0.04)	0.073 (0.62)	-0.028 (0.21)	-0.287 (2.16)**	-0.432 (3.49)***	-0.367 (2.98)***
Observations	1,075	1,037	1,029	1,019	982	974
Work income						
Satisfaction with occupation						
	Between-county		Within-county	Between-county		Within-county
	More recent	Less recent	More recent	More recent	Less recent	More recent
Work migrant	-0.049 (0.28)	-0.214 (1.51)	-0.189 (0.95)	38.211 (1.89)	51.851 (2.73)***	1.483 (0.04)
Non-work migrant	-0.129 (0.8)	-0.193 (1.09)	0.056 (0.27)	-0.511 (0.03)	12.939 (0.88)	-25.277 (2.28)**
						29.092 (1.85)*
						-29,246 (1.8)*

Table 16 continued

	Satisfaction with occupation				Work income			
	Between-county		Within-county		Between-county		Within-county	
	More recent	Less recent	More recent	Less recent	More recent	Less recent	More recent	Less recent
Married_fd	-0.095 (1.04)	-0.108 (1.22)	-0.107 (1.2)	-0.055 (0.64)	2.502 (0.29)	4.217 (0.51)	2.360 (0.28)	4.967 (0.58)
Div/wid_fd	0.046 (0.18)	0.142 (0.55)	0.108 (0.43)	0.049 (0.26)	24.290 (0.99)	24.277 (1.05)	24.614 (0.9)	20.596 (0.92)
Educ completion	0.062 (0.67)	0.076 (0.79)	0.115 (1.12)	0.056 (0.53)	42.689 (4.27)***	31.900 (3.71)***	42.836 (5.51)***	38.593 (3.72)***
Child birth	0.088 (1.05)	0.113 (1.33)	0.104 (1.24)	0.093 (1.08)	-13.965 (1.75)	-26.780 (2.79)***	-22.595 (2.43)**	-18.648 (3.24)***
Final educ level	0.031 (0.98)	0.012 (0.4)	0.035 (1.28)	0.010 (0.33)	17.478 (7.4)**	20.404 (9.77)***	18.870 (10.4)***	17.689 (8.74)***
Constant	0.076 (0.55)	0.090 (0.69)	-0.056 (0.56)	0.115 (1)	35.751 (2.68)***	32.053 (2.85)***	44.163 (3.94)***	42.282 (3.72)***
Observations	1,055	1,020	1,012	1,043	1,094	1,058	1,052	1,086
	Relative income				Economic satisfaction			
	Between-county		Within-county		Between-county		Within-county	
	More recent	Less recent	More recent	Less recent	More recent	Less recent	More recent	Less recent
Work migrant	31.268 (1.61)	33.280 (1.84)*	0.987 (0.03)	28.662 (1.64)	-0.197 (1.18)	0.331 (2.6)**	0.226 (0.55)	-0.067 (0.7)
Non-work migrant	-3.057 (0.21)	10.520 (0.73)	-28.572 (2.56)**	-30.111 (1.92)	-0.188 (1.44)	0.080 (0.6)	0.040 (0.37)	0.087 (0.67)
Married_fd	2.212 (0.26)	3.509 (0.43)	0.475 (0.06)	3.842 (0.45)	0.062 (0.79)	-0.001 (0.01)	0.046 (0.67)	0.026 (0.35)
Div/wid_fd	24.929 (1.03)	26.451 (1.16)	23.426 (0.86)	18.819 (0.85)	-0.214 (1.38)	-0.213 (1.43)	-0.138 (1.05)	-0.359 (2.61)**

Table 16 continued

	Relative income			Economic satisfaction					
	Between-county			Within-county			Within-county		
	More recent	Less recent		More recent	Less recent		More recent	Less recent	
Educ completion	42.583 (4.18)***	34.351 (3.97)***		43.517 (5.45)***	40.303 (3.71)***		0.444 (5.1)***	0.383 (3.76)***	0.469 (4.44)***
Child birth	-11.541 (1.43)	-25.358 (2.71)***		-22.270 (2.33)**	-19.418 (3.47)***		-0.079 (1.02)	-0.132 (1.84)*	-0.078 (1.12)
Final educ level	16.664 (7)***	19.183 (9.02)***		17.674 (10.14)***	16.366 (7.86)***		0.077 (3.94)***	0.081 (4.27)***	0.065 (3.34)***
Constant	3.406 (0.3)	-1.142 (0.11)		10.368 (1.05)	8.658 (0.74)		-0.116 (0.96)	0.009 (0.09)	-0.030 (0.25)
Observations	1,094	1,058		1,052	1,086		1,082	1,047	1,072
Housing satisfaction									
	Between-county			Within-county					
	More recent			Less recent			More recent		
	More recent	Less recent		More recent	Less recent		More recent	Less recent	
Work migrant	-0.067 (0.33)			0.358 (1.86)*			-0.163 (0.61)		0.340 (1.44)
Non-work migrant	0.096 (0.69)			0.434 (2.89)***			0.215 (1.76)*		0.102 (0.85)
Married_fd	-0.046 (0.44)			-0.131 (1.18)			-0.060 (0.53)		-0.180 (1.64)
Div/wid_fd	-0.166 (0.74)			-0.266 (1.17)			-0.222 (1.01)		-0.406 (1.69)
Educ completion	-0.009 (0.1)			-0.019 (0.22)			-0.096 (1)		-0.040 (0.44)
Child birth	0.121 (1.07)			0.183 (1.57)			0.094 (0.67)		0.181 (1.53)

Table 16 continued

	Housing satisfaction			
	Between-county		Within-county	
	More recent	Less recent	More recent	Less recent
Final educ level	0.050 (1.45)	0.034 (0.94)	0.077 (2.07)*	0.052 (2.37)**
Constant	-0.017 (0.11)	0.127 (0.76)	-0.107 (0.65)	0.160 (1.26)
Observations	1,072	1,040	1,031	1,062

t-statistics in parentheses, standard errors clustered at change in county level

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

Table 17 Results using likelihood deletion instead of MI ICE estimation (OLS)

	Change in life satisfaction			Change in occupational status			Change in satisfaction with occupation			Change in work income		
	All	More recent	Less recent	All	More recent	Less recent	All	More recent	Less recent	All	More recent	Less recent
Work migrant	0.194 (2.03)**	0.239 (1.70)*	0.169 (1.92)*	0.367 (3.77)***	0.293 (2.19)**	0.43 (3.45)***	— (1.19)	—0.065 (0.42)	—0.186 (1.42)	32.313 (2.78)***	23.985 (1.37)	41.151 (2.93)***
Non-work migrant	0.124 (1.79)*	0.16 (1.88)*	0.079 (0.91)	0.056 (0.84)	0.128 (1.12)	0.001 (0.01)	— (0.8)	—0.082 (0.66)	—0.076 (0.6)	—13.18 (1.41)	—13.244 (1.27)	—10.526 (0.69)
Married_fd	—0.011 (0.16)	—0.046 (0.58)	—0.009 (0.09)	0.171 (3.51)***	0.123 (2.23)**	0.181 (3.26)***	—0.06 (0.81)	—0.084 (0.97)	—0.074 (0.92)	8.066 (1.06)	2.123 (0.3)	7.401 (0.85)
Div/wid_fd	—0.07 (0.53)	0.001 (0.01)	—0.072 (0.48)	0.116 (0.67)	0.179 (0.89)	—0.066 (0.36)	0.105 (0.78)	0.092 (0.39)	0.093 (0.59)	26.408 (1.31)	22.57 (0.91)	23.805 (1.15)
Educ completion	0.091 (1.63)	0.085 (1.26)	0.087 (1.42)	0.938 (13.0)***	0.917 (11.9)***	0.909 (11.2)***	0.081 (0.98)	0.115 (1.3)	0.027 (0.28)	39.563 (4.46)***	43.902 (5.24)***	35.274 (3.54)***
Child birth	—0.025 (0.37)	—0.042 (0.5)	—0.01 (0.12)	—0.183 (3.68)***	—0.203 (3.29)***	—0.164 (3.09)***	0.085 (1.14)	0.089 (1.12)	0.106 (1.32)	—25.699 (4.06)***	—18.8 (2.17)**	—27.649 (4.13)***
Final educ level	0.018 (0.69)	0.016 (0.57)	0.005 (0.18)	0.183 (6.64)***	0.186 (6.41)***	0.195 (6.54)***	0.014 (0.51)	0.032 (1.09)	0.007 (0.25)	18.811 (8.53)***	18.305 (8.33)***	19.101 (8.31)***
Constant	—0.083 (0.69)	—0.047 (0.36)	0.005 (0.05)	—0.31 (2.54)**	—0.232 (1.92)*	—0.453 (3.55)***	0.056 (0.54)	—0.001 (0.01)	0.112 (0.99)	30.608 (1.86)*	36.062 (3.03)***	33.054 (2.39)**
Observations	1,457	1,176	1,164	1,393	1,117	1,109	1,439	1,156	1,148	1,486	1,198	1,189
R-squared	0.03	0.03	0.02	0.37	0.36	0.37	0.02	0.02	0.02	0.12	0.11	0.11

Table 17 continued

	Change in relative income			Change in economic satisfaction			Change in housing satisfaction		
	All	More recent	Less recent	All	More recent	Less recent	All	More recent	Less recent
Work migrant	23.338 (2.20)**	17.48 (1.05)	30.288 (2.29)**	0.044 (0.46)	-0.12 (0.75)	0.165 (1.42)	0.181 (2.00)**	-0.093 (0.59)	0.349 (2.63)***
Non-work migrant	-16.149 (1.73)*	-15.328 (1.45)	-12.755 (0.87)	-0.054 (0.79)	-0.135 (1.47)	0.08 (0.78)	0.205 (2.70)***	0.167 (1.80)*	0.248 (2.34)**
Married_fd	7.185 (0.99)	1.405 (0.21)	6.516 (0.76)	0.03 (0.53)	0.068 (1.15)	-0.019 (0.27)	-0.096 (1.03)	-0.016 (0.16)	-0.194 (1.85)*
Div/wid_fd	26.622 -1.35	21.782 (0.89)	24.419 (1.2)	-0.167 (1.19)	-0.16 (1.13)	-0.278 (2.03)**	-0.277 (1.59)	-0.171 (0.91)	-0.378 (1.70)*
Educ completion	42.358 (4.36)***	44.441 (5.10)***	38.689 (3.72)***	0.402 (4.75)***	0.454 (5.82)***	0.389 (3.58)***	0.005 (0.08)	-0.011 (0.13)	-0.011 -0.14
Child birth	-23.861 (3.85)***	-16.466 (1.86)*	-26.575 (4.19)***	-0.056 (1.05)	-0.072 (1.23)	-0.092 (1.44)	0.128 (1.36)	0.093 (0.8)	0.187 (1.80)*
Final educ level	17.11 (7.63)***	17.193 (7.96)***	17.519 (7.24)***	0.074 (3.82)***	0.077 (4.14)***	0.073 (3.81)***	0.037 (1.39)	0.062 (1.79)*	0.035 -1.41
Constant	2.927 (0.21)	4.468 (0.41)	1.782 (0.13)	-0.111 (0.91)	-0.152 (1.24)	-0.008 (0.07)	0.125 (0.97)	-0.089 (0.54)	0.216 (1.78)*
Observations	1,486	1,198	1,189	1,469	1,184	1,175	1,462	1,177	1,168
R-squared	0.11	0.1	0.1	0.06	0.07	0.07	0.03	0.03	0.04

t-statistics in parentheses, standard errors clustered at change in county level

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %, ** significant at 5 %, *** significant at 1 %

Table 18 Results changing the reference group for relative income to municipality of origin (instead of residence)

	All migrants		Work/non-work migrants			
	OLS		MI ICE with OLS			
	All	More recent migrants	Less recent migrants	All	More recent migrants	Less recent migrants
All migrants	0.084 (0.01)	-6.021 (0.7)	10.397 (0.97)	32.675 (2.88)***	24.066 (1.44)	42.753 (2.82)***
Work migrant						
non-work migrant						
Married_fd	5.404 (0.61)	-1.017 (0.11)	7.378 (0.82)	5.190 (0.61)	-0.013 (0)	6.020 (0.7)
Div/wid_fd	26.713 (1.22)	22.485 (0.81)	27.573 (1.29)	25.035 (1.2)	24.662 (0.9)	22.532 (1.06)
Educ completion	38.745 (4.23)***	43.605 (5.39)***	29.680 (2.85)***	38.863 (4.15)***	43.729 (5.28)***	29.385 (2.8)***
Child birth	-29.225 (4.57)***	-21.588 (2.52)**	-28.993 (4.55)***	-24.724 (3.86)***	-19.516 (2.21)**	-25.032 (4.08)***
Final educ level	18.273 (8.78)***	17.072 (7.56)***	18.795 (9.43)***	16.859 (7.8)***	16.232 (7.07)***	17.828 (8.16)***
Constant	0.670 (0.05)	8.418 (0.8)	-1.171 (0.1)	4.385 (0.3)	11.051 (1.09)	0.936 (0.07)
Observations	1,474	1,159	1,157	1,474	1,159	1,157
R-squared	0.09	0.09	0.08			

t-statistics in parentheses, standard errors clustered at change in county level

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %, ** significant at 5 %, *** significant at 1 %

Table 19 Results for work/non-work migrants clustering the standard errors at level of municipality of origin

	Change in life satisfaction				Change in occupational status				Change in satisfaction with occupation				Change in work income			
	More recent		Less recent	All	More recent		Less recent	All	More recent		Less recent	All	More recent		Less recent	
	All	More recent	Less recent		All	More recent	Less recent		All	More recent	Less recent		All	More recent	Less recent	
Work migrant	0.214 (2.63)***	0.239 (2.01)**	0.189 (1.97)**	0.359 (3.88)***	0.305 (2.23)**	0.413 (3.46)***	-0.136 (1.31)	-0.087 (0.54)	-0.189 (1.7)*	34.096 (2.51)**	27.864 (1.53)	41.192 (2.67)***				
Non-work migrant	0.139 (2.35)**	0.166 (2.24)**	0.101 (1.1)	0.028 (0.4)	0.103 (1.01)	-0.041 (0.5)	-0.034 (0.4)	-0.038 (0.35)	-0.029 (0.24)	-12.797 (1.25)	-12.861 (0.97)	-11.604 (1.05)				
Married_fd	0.003 (0.05)	-0.050 (0.75)	0.011 (0.17)	0.179 (3.03)***	0.139 (2.06)**	0.178 (2.86)***	-0.057 (0.76)	-0.094 (1.12)	-0.061 (0.76)	8.761 (1.05)	4.201 (0.41)	7.629 (0.94)				
Div/wid_fd	-0.051 (0.36)	0.007 (0.05)	-0.059 (0.36)	0.185 (1.26)	0.237 (1.39)	-0.032 (0.22)	0.085 (0.58)	0.073 (0.39)	0.082 (0.49)	28.584 (1.77)*	26.874 (1.52)	24.409 (1.42)				
Educ completion	0.081 (1.06)	0.081 (0.93)	0.082 (0.91)	0.919 (11.9)***	0.920 (11.7)***	0.881 (10.5)***	0.101 (1.17)	0.105 (1.05)	0.066 (0.68)	39.818 (4.67)***	45.602 (5.52)***	32.531 (3.27)***				
Child birth	-0.018 (0.32)	-0.036 (0.54)	-0.009 (0.13)	-0.192 (3.84)***	-0.208 (3.49)	-0.168 (2.62)***	0.095 (1.35)	0.100 (1.3)	0.104 (1.23)	-24.977 (3.45)***	-19.270 (2.05)**	-26.791 (2.95)***				
Final educ level	0.008 (0.26)	0.018 (0.48)	-0.009 (0.24)	0.193 (7.62)***	0.195 (7.43)	0.197 (6.59)***	0.002 (0.08)	0.031 (1.07)	-0.006 (0.2)	19.051 (6.07)***	18.384 (6.26)***	19.695 (5.46)***				
Constant	-0.047 (0.32)	-0.076 (0.47)	0.073 (0.43)	-0.364 (3.25)***	-0.290 (2.44)*	-0.455 (3.32)***	0.086 (0.62)	-0.017 (0.12)	0.160 (1.05)	30.835 (1.69)*	36.351 (2.23)***	31.295 (1.54)				
Observations	1,532	1,208	1,203	1,462	1,147	1,146	1,513	1,189	1,185	1,564	1,231	1,229				
	Change in relative income				Change in economic satisfaction				Change in housing satisfaction							
	More recent		Less recent	All	More recent		Less recent	All	More recent		Less recent	All	More recent		Less recent	
	All	More recent	Less recent		All	More recent	Less recent		All	More recent	Less recent		All	More recent	Less recent	
Work migrant	25.723 (2.09)**	22.110 (1.31)	30.968 (2.12)**	0.050 (0.46)	-0.089 (0.44)	0.149 (1.38)	0.203 (1.78)*	-0.083 (0.45)	0.356 (2.63)***							
Non-work migrant	-16.331 (1.56)	-16.055 (1.14)	-13.402 (1.3)	-0.008 (0.11)	-0.073 (0.72)	0.088 (0.89)	0.207 (2.71)***	0.165 (1.65)	0.227 (1.96)*							
Married_fd	7.148 (0.86)	2.808 (0.28)	6.472 (0.8)	0.045 (0.79)	0.068 (0.99)	-0.003 (0.05)	-0.089 (1.11)	-0.014 (0.16)	-0.190 (2.18)**							

Table 19 continued

	Change in relative income			Change in economic satisfaction			Change in housing satisfaction		
	All	More recent	Less recent	All	More recent	Less recent	All	More recent	Less recent
Div/wid_fd	28.456 (1.78)*	26.319 (1.51)	24.336 (1.43)	-0.119 (0.92)	-0.084 (0.53)	-0.287 (2.1)**	-0.230 (1.42)	-0.124 (0.66)	-0.361 (2.0)**
Educ completion	42.156 (4.96)***	45.786 (5.53)***	35.628 (3.62)***	0.411 (4.94)***	0.443 (4.78)***	0.413 (4.55)***	-0.041 (0.53)	-0.058 (0.63)	-0.021 (0.25)
Child birth	-23.262 (3.15)***	-16.915 (1.79)*	-26.170 (2.86)***	-0.071 (1.17)	-0.079 (1.1)	-0.103 (1.7)*	0.138 (1.82)**	0.081 (0.96)	0.203 (2.47)**
Final educ level	17.314 (5.66)***	17.264 (5.87)***	18.105 (5.06)***	0.071 (2.57)**	0.077 (2.43)**	0.071 (2.24)**	0.038 (1.31)	0.067 (1.99)**	0.035 (1.28)
Constant	3.557 (0.21)	5.349 (0.33)	0.342 (0.02)	-0.088 (0.55)	-0.124 (0.71)	-0.020 (0.11)	0.120 (0.89)	-0.119 (0.66)	0.221 (1.78)*
Observations	1,564	1,231	1,229	1,546	1,217	1,215	1,535	1,209	1,205

t-statistics in parentheses

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %, ** significant at 5 %, *** significant at 1 %

Table 20 Results for the two sub-period 1999–2003, and 2003–2009 (restricted sample used)

	Change in life satisfaction			
	1999–2003 migrants		2003–2009 migrants	
All migrants	0.093 (1.07)		0.104 (1.48)	
Work migrant		0.088 (0.6)		0.078 (0.77)
Non-work migrant		0.136 (1.47)		0.048 (0.62)
Married_fd	0.029 (0.4)	0.012 (0.15)	0.038 (0.66)	0.014 (0.23)
Div/wid_fd	0.263 (0.85)	0.174 (0.61)	−0.186 (1.11)	−0.226 (1.33)
Educ completion	0.042 (0.64)	0.044 (0.63)	0.123 (1.03)	0.137 (1.19)
Child birth	−0.141 (2.54)**	−0.145 (2.63)***	−0.076 (0.89)	−0.092 (0.95)
Final_educ_level	−0.007 (0.25)	−0.009 (0.29)	0.037 (1.85)*	0.04 (1.86)*
Constant	−0.014 (0.1)	0.0001 (0)	−0.099 (0.83)	−0.109 (0.95)
Observations	1,359	1,315	1,356	1,318
R-squared	0.02	0.02	0.02	0.02

t-statistics in parentheses, standard errors clustered at change in county level

Additional control variables for all regressions include cohort of birth and county of origin

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

Appendix 4: Specification Used to Control for Fixed Community Effects

The original specification used in the main part of the analysis is:

$$\Delta Y_{ci} = \lambda_{0,1} + \theta_{co} + \gamma M_i + \beta' \Delta x_i + \Delta \varepsilon_{ci} \quad (3)$$

where ΔY_{ci} is the change in life satisfaction in between times 0 and 1, $\lambda_{0,1}$ captures the time trend between times 0 and 1, θ_{co} controls for the community of origin (i.e. the community of residence at time 0) of both migrants and non-migrants, γM_i captures the effects of migration, $\beta' \Delta x_i$ is a vector that controls for changes in observable characteristics, and $\Delta \varepsilon_{ci}$ is the error term. Because specification (2) does not control for the change in the community fixed effects experienced by migrants (such as the different weather conditions between community of origin and destination), these effects are captured by both θ_{co} and γ . Conditional on being a migrant, θ_{co} captures the effect of both, the one-time shock to the community of origin, φ_{co} , and the fixed effect of the community of origin, ρ_{co} , lost following the move conditional on being a migrant. Therefore:

$$\theta_{co} = \varphi_{co} - \rho_{co} * M_i$$

At the same time, γ captures the effect of both migration, α , and the fixed effect of the community of destination that is gained after the move conditional on being a migrant. Therefore:

$$\gamma M_i = (\alpha + \rho_{cd}) * M_i$$

The previous implies that (2) may be re-written as:

$$\Delta Y_{ci} = \lambda_{0,1} + \varphi_{co} + (\rho_{cd} - \rho_{co}) * M_i + \alpha * M_i + \beta' \Delta x_i + \Delta \varepsilon_{ci} \quad (3b)$$

To capture the true effect of the shock, φ_{co} , and of migration, α , it is therefore necessary to include additional control variables for the fixed effects of both community of origin and destination conditional on being a migrant. This could be implemented by including two additional vectors of dummy variables: community of origin interacted with migration (1 if migrant originally from community c , 0 otherwise), and community of destination interacted with migration (1 if migrant living in community c after the move, 0 otherwise). However, doing so not only implies a big loss in power for the estimation (due to the additional 42 dummy variables), but also introduces serious multicollinearity issues between the control variables and the main variable of interest (migration).

To reduce the concerns regarding power and multicollinearity, an additional assumption is introduced into the estimation. Assuming that the fixed effect lost by migrants moving out of community c is equal to the fixed effect gained by migrants moving into the same

Table 21 Change in life satisfaction as dependent variable

	All migrants		More recent migrants (< 6 years since move)		Less recent migrants ($6+$ years since move)	
	OLS	MI ICE	OLS	MI ICE	OLS	MI ICE
All migrants	0.162 (2.40)*		0.19 (2.12)*		0.146 (2.25)*	
Work migrant		0.209 (2.11)*		0.247 (1.8) ⁺		0.217 (2.24)*
Non-work migrant		0.138 (2.03)*		0.168 (1.81) ⁺		0.097 (1.27)
Married_fd	0.01 (0.13)	0.009 (0.12)	-0.051 (0.61)	-0.050 (0.59)	0.013 (0.13)	0.009 (0.1)
Div/wid_fd	-0.041 (0.36)	-0.045 (0.39)	-0.001 (0.01)	0.002 (0.01)	-0.057 (0.39)	-0.069 (0.48)
Education completion	0.084 (1.64)	0.084 (1.64)	0.092 (1.46)	0.094 (1.49)	0.086 (1.47)	0.085 (1.43)
Child birth	-0.036 (0.54)	-0.031 (0.47)	-0.05 (0.58)	-0.046 (0.54)	-0.018 (0.22)	-0.012 (0.15)
Final education level	0.01 (0.43)	0.008 (0.34)	0.017 (0.61)	0.015 (0.55)	-0.005 (0.23)	-0.007 (0.31)
Cohort dummies	Yes	Yes	Yes	Yes	Yes	Yes
County of origin	Yes	Yes	Yes	Yes	Yes	Yes
Change in county	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,532	1,532	1,208	1,208	1,203	1,203
R-squared	0.04		0.05		0.04	

Regressions with full specification including migration (all and by reason to move), cohort, changes in marital status, completion of education, child birth, final education level, county-of-origin dummies, and change in county ordinal variables as explanatory variables

t-statistics in parentheses, standard errors clustered at change in county level

⁺ Significant at 10 %; * significant at 5 %; ** significant at 1 %

community c (that is, assuming that the fixed effects are symmetric for gains and losses), these could be captured using a vector of ordinal variables with values 1 (if a person moved into community c), -1 (if a person moved out of community c), and 0 (if a person neither moved in nor out of community c). Such ordinal variables for each community capture the symmetric effect of moving in, or out of the community. This implies the following specification:

$$\Delta Y_{ci} = \lambda_{0,1} + \varphi_{co} + (\rho_{c_change}) * M_i + \alpha * M_i + \beta' \Delta x_i + \Delta \varepsilon_{ci} \quad (3c)$$

where ρ_{c_change} is a vector of the community-specific ordinal variables with values 1, -1 , and 0. To avoid a big loss of power and to reduce the multicollinearity introduced by additional dummy variables, the assumption of symmetric community fixed-effects is imposed on the estimation, and specification (3c) is used in Table 2, Columns 4, 8, and 12 (Table 21).

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