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Internal migration and life satisfaction: Well-being effects of moving as a young adult

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Internal Migration and Life Satisfaction: Well-Being Effects of Moving as a Young Adult

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of Labor

Internal Migration and Life Satisfaction: Well-Being Effects of Moving as a Young Adult

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ABSTRACT

Internal Migration and Life Satisfaction: Well-Being Effects of Moving as a Young Adult*

Migration typically leads to higher income, but its association with life satisfaction remains unclear. Is migration accompanied by an increase in life satisfaction? If it is, is the increase in income responsible or are other life domains driving the satisfaction changes? These two questions are addressed using longitudinal data from a Swedish Young Adult Panel Study for 1999 and 2009. Comparing migrants to non-migrants, it is found that internal migration is accompanied by an increase in life satisfaction. This increase is observed for both, migrants who move due to work and those who move due to non-work reasons. This finding holds regardless of other life transitions that may accompany migration, such as marriage and joining the labor market. However, different factors account for the increase in life satisfaction for work and non-work migrants. For non-work migrants, it is greater housing satisfaction that leads to an improvement in life satisfaction. Moreover, no increase in income relative to non-migrants is found for this group. For work migrants, although their income increases compared with non-migrants, this increase does not seem to explain the differential improvement in life satisfaction because of a lack of improvement in their economic satisfaction (compared to non-migrants). Rather, it is the higher relative status arising from occupational advancement that seems to contribute to the higher life satisfaction for work migrants.

JEL Classification: J0, J61, O15, R23

Keywords: internal migration, life satisfaction, relative status, housing satisfaction

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

-Albert Einstein

1.Introduction

The life of a young adult is filled with changes and transitions. Finding a place to establish one's own future, finishing education, getting married – these are all life events experienced in the early adult life and that potentially tailor future happiness. This paper discusses the association between one such life event – specifically, migration – and life satisfaction changes. Is internal migration accompanied by changes in life satisfaction of young adults and are these changes positive? What are the channels through which migration and life satisfaction are related? Is income one of the main drivers of the association between migration and life satisfaction? These are the questions addressed.

A longitudinal survey of young adults in Sweden, along with information from the Statistics Sweden, are used to answer the above questions. To assess the association between internal migration and life satisfaction, life satisfaction levels of migrants and non-migrants are compared before and after the move. Other life transitions characteristic of young adults, such as labor market transitions or changes in marital status, are controlled for to avoid possible confounding effects. After investigating the changes in life satisfaction that accompany migration, the channels through which these changes operate are examined. To assess these channels, specific life domains representing major aspects of life that contribute to overall happiness – such as the economic, housing, or work satisfaction – are considered. The migrants are divided into those who move for work and non-work reasons throughout the analysis.

Until now, most economic literature has focused on the analysis of the effects of internal migration on income changes. In general, its findings point to a positive association between migration and income. Considerably fewer studies have been carried out analyzing changes in subjective well-being that accompany internal migration, and their results have been much less clear. The unavailability of good longitudinal data providing information about migrants' satisfaction levels both before and after the move, has represented a big limitation for these studies. The few existing panel analyses mostly indicate that migration and life satisfaction do in

fact display a positive association. On the related concept of mental health no consensus has been reached either, though the existing evidence suggests a positive association between international migration and mental well-being.

The present paper contributes to the previous literature in several ways. First, the panel structure of the data allows for a comparison of life satisfaction before and after the move for both migrants and non-migrants. Second, the analysis controls for other life transitions experienced by young adults, such as getting married or joining the labor market, which assures a more accurate isolation of the effects of migration. Third, people who migrate for different reasons (work and non-work) are considered separately to see whether the relationship between migration and life satisfaction differs for the two migrant groups. Finally, the relationship between migration and satisfaction with specific aspects of life contributing to life satisfaction – referred to as life domains – is considered. Specifically, the financial, housing, and work domains are analyzed. This domain analysis further clarifies the mechanisms behind the migration and life satisfaction relationship.

The findings show that internal migration is associated with an increase in life satisfaction for all migrants regardless of the reason behind the move. For both work and non-work migrants, the improvements in life satisfaction are mostly unrelated to changes in the financial domain. For work migrants, the positive relationship between migration and life satisfaction is partly due to relative status improvements that accompany occupational mobility during migration. For non-work migrants, increments in housing satisfaction are observed to accompany the increase in life satisfaction.

2. Literature Review

The objective well-being effects of migration have been extensively discussed in the economic literature. Economists have focused mostly on the monetary costs and benefits of internal migration, viewing changes in personal income as one of the main consequences of a move. The roots of this approach may be found in seminal papers that view internal migration as a resource allocation mechanism meant to distribute people from places with low income opportunities to place with high income opportunities (Sjaastad 1962, Harris and Todaro 1970).

Assessing the relationship between migration and income has, however, proven to be a difficult task because of the inexistence of a good comparison group. In theory one would want

to know what the migrants' income would have been if they had not moved. In practice, this is not possible. Early studies of the effects of internal migration on income perform cross-sectional analyses in which the incomes of the non-migrants (either from the place of origin or the place of destination) are used as a comparison group for the incomes of migrants (Lansing and Morgan 1967, Weiss and Williamson 1972). To account for the differences between the migrants and non-migrants, these papers use extensive sets of control variables. Their results are mixed depending on the migration and control groups used, but mostly favor the idea that internal migration does induce income gains for the migrants.

Since migrants are likely to possess unobservable traits that distinguish them from non-migrants, cross-sectional comparisons are subject to a serious selectivity bias problems (Antel 1980, Borjas et al 1992). Panel studies considering income levels both before and after the move have been used as an alternative to the cross-sectional analyses. By analyzing changes, rather than levels, of income, panel studies are able to control for all fixed differences between migrants and non-migrants that may bias the results, accounting for a considerable part of the selectivity bias. This type of studies have also found that, in general, migration is associated with an increase in income, though the effects of migration on income gains may vary by age, reason of move (Bartel 1979), and gender (Lichter 1983, Cooke and Bailey 1996, Finnie 1999, Blackburn 2009).

The association between migration and higher income must not necessarily imply an association between migration and subjective well-being for at least two reasons. First, increasing income may be associated with increasing aspirations for the migrants, which may in turn result in a constant life satisfaction level (Easterlin 2001a, Easterlin and Angelescu 2009). Second, the financial domain is not the only life aspect affected by migration that influences changes in subjective well-being. Migration may affect satisfaction with place of residence, current occupation, friendships, and number of other life domains. The final association between migration and life satisfaction should reflect the composite impact of all the life domain changes as well as the personal adaptation effects.

Unfortunately, due to limited longitudinal data on life satisfaction and migration, the effects of migration on subjective well-being have not been analyzed thoroughly. Cross-sectional studies point to a negative association between migration and life satisfaction (Knight and Gunatilaka 2007, Bartram 2011). However, these studies suffer from the same selectivity bias

problems as the cross-sectional income-effect analyses discussed above. In a study of Thailand's migrants, DeJong and coauthors try to control for the self-selection problem of cross-sectional data by employing questions about the migrants' own perception of whether the move increased or decreased their satisfaction levels (DeJong et al 2002). The authors' findings indicate that a non-trivial proportion of migrants report decreased satisfaction levels after the move. However, these results may not be considered conclusive either, as it has been found that self-reported past and future life satisfaction levels are in general inaccurate (Easterlin 2001a).

Nowok and coauthors present one of the few longitudinal analyses of the effects of internal migration on life satisfaction (Nowok et al 2011). Employing the British Household Panel Study they find an association between migration and increasing life satisfaction during the year of the move. Their results also show a drop in life satisfaction of migrants three years prior to the move, which may affect the increase in life satisfaction accompanying migration. The authors do not, however, provide an explanation of the causes behind the decrease in life satisfaction prior to migration, nor do they analyze the life domains affecting the changes in life satisfaction after the move.

Studies of the relationship between other satisfaction variables and migration using panel data sets are also rare. The one area that does provide some conclusive results consists of analyses of residential migration. In general, these studies find that housing satisfaction increases as an effect of residential migration (Barcus 2004, Diaz-Serrano 2006). At the same time, bad dwelling characteristics and dissatisfaction with housing is found to be a significant factor increasing the likelihood of migrating for residential reasons (Diaz-Serrano 2006).

A different category of studies closely related to the literature on migration and life satisfaction, is the one assessing the effects of migration on mental health. Mental health of migrants (especially international migrants) as compared to non-migrants has been amply studied by psychologists (Vega et al 1987, Ying 1996, Vega et al 1998). Unfortunately, again, very few studies that would account for the self-selection effect have been carried out in this literature. Summarizing its main findings, Bhugra concludes that, while migration may be a stress-inducing phenomenon, migrant experiences present a lot of variance, and that the impact of migration on mental disorders such as depression is not straightforward (Bhugra 2004a and 2004b).

An important contribution to the economic literature on international migration and mental well-being is made by Stillman and coauthors (Stillman et al 2009). Based on a natural

experiment from The Kingdom of Tonga, their study compares the mental health of migrants to that of potential migrants, that is, people who would wish to migrate but are (randomly) not allowed to do so. Since being selected randomly into migration is uncorrelated with personal traits, the authors use the random selection as an instrumental variable to estimate the unbiased relationship between migration and mental health. Their findings show that the act of moving from Tonga to New Zealand has a positive effect on mental health of migrants. However, the effects of international and internal migration are likely to differ in a number of ways. Therefore, in spite of its importance, the study by Stillman and coauthors cannot be extrapolated to shed further light on the effects of internal migration. In summary, the association between subjective well-being (as measured by life satisfaction or by mental health) and internal migration remains an open question.

3. Data description

Two main data sources are used: the Young Adult Panel Study (YAPS), carried out in Sweden (www.suda.su.se/yaps), and Swedish register information. The YAPS consists of a longitudinal survey designed by Eva Bernhardt from Stockholm University carried out in the years 1999, 2003, and 2009. It contains data on around 3500 individuals, many of whom were followed throughout the three stages of the study. The Swedish register data contains information on all Swedish individual's main socio-economic characteristics (such as civil status, place of residence and income), and is compiled by Statistics Sweden. Information from the two sources was linked for all individuals interviewed in 2009 to obtain a more complete social, economic, and demographic data set.

Although YAPS interviewed over 3000 individuals in the three years during which it was carried out, only a portion of these people participated in the three waves of the study. The present analysis includes only individuals who were interviewed in both 1999 and 2009, and for whom information on the main variables of interest is available. From the 2820 people initially interviewed in 1999, 56% could be re-interviewed ten years later reducing the sample of observations to 1575 individuals, a small portion of whom did not answer certain survey questions used and had to be dropped from the regression analysis[1]. The high attrition rate may

[1] For complete information on the number of observations available for each of the main variables included in the study, see Table B1, Appendix B.

create worries about the possible existence of a selectivity bias. The methodology used throughout the analysis, which controls for all individual level fixed effects as well as some of the main time-varying individual and community level effects, should account for an important part of the differences between attritors and non-attritors, significantly reducing the problems due to selectivity into attrition. A detailed analysis of the remaining differences between attritors and non-attritors provides reassurance that the remaining selectivity bias is small in magnitude, and does not have an important effect on the results of the study (Appendix A).

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 meaning very dissatisfied and 5 very satisfied. Migration status is established using the Swedish register information about the place of residence of each individual in 1999, 2003 and 2009. A person is classified as a migrant if she changed her municipality 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 in place of residence took place. Given the average size of municipalities in Sweden, which is slightly above 500 square miles (Statistics Sweden, 2012), this type of migration would roughly correspond to moving in between two cities of the United States.

The question used to divide the migrants into work and non-work migrants was included in 2009 only and asks the following: "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 that were unrelated to the person's work (Table B4, Appendix B). Using the answer to this question, the 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.

The variables used to analyze the channels through which migration and life satisfaction are related include disposable and work income, satisfaction with other life domains (financial, housing, and work), and information on current occupation. Disposable and work income for 1998 and 2008 are given on individual level and are obtained from the Swedish register records. Income from the years previous to the survey is used, because in both 1999 and 2009 the interviews were conducted at the beginning of the year (between March and May). Therefore,

during the time of the survey, the satisfaction levels of the respondents were likely to reflect their past years' income. Both disposable and work income from 2008 are adjusted for inflation using the Consumer Price Index available from the Statistics Sweden data bank.

The three additional satisfaction variables used are satisfaction with the economic situation, with housing, and with current occupation. Satisfaction with relationship with partner, though available in the survey, is not used due to high non-response rates in both years (Table B1, Appendix B). All satisfaction questions were asked using the same format and response scale as life satisfaction. Occupational categories are constructed by combining two survey questions: main occupation, used to classify people as students and unemployed; and main activity, used to classify people into different production sectors of the economy, such as services, non-manual, or professional. The final classification used, groups people as being part of one of the following occupations: student, unemployed, goods production, service production, assistant non-manual, intermediate non-manual, farmer/self-employed, and professional/higher non-manual/executive. These occupations are further subdivided into low, medium, and high status occupations using the Standard International Occupational Prestige Scale (SIOPS) as updated by Ganzeboom and Treiman (Ganzeboom and Treiman, 1996).

The control variables considered are education level, civil status, and a labor market transition indicator. Education is obtained from the Swedish register where it is reported using six possible levels: compulsory 9 years, secondary less than 3 years, secondary 3 years, post-secondary less than 3 years, post-secondary 3 years or more, and postgraduate. For the purpose of the analysis the last two levels are combined into one category labeled "post-secondary education." The five educational categories obtained are used to approximate the years of education for each individual, setting each level to 9, 10.5, 12, 13.5 and 16.5 years accordingly. Civil status is also obtained from the Swedish register, which provides information on whether the person is unmarried, married, widowed or divorced. Given the young age of the subjects surveyed, the widowed and divorced groups are both quite small and are therefore combined for the purpose of the analysis.

The labor market transition variable is used to control for the life satisfaction effects of finishing studies and entering the labor market. It consists of an indicator variable that takes on the value of 1 if the person has reached her highest level of education after 1999 and is actively participating in the labor market in 2009 (that is, has reported an occupation or main activity

other than student, unemployed, or housekeeping), and 0 otherwise[2]. Due to its nature, it is closely related to the education and occupation variables, but cannot be completely captured by either of them[3]. For further description of these and other variables employed, see Appendix B.

4. Patterns of internal migration

The main socio-demographic characteristics of migrants in this study are consistent with those usually observed in developed countries: migrants are mostly young, unmarried, and have higher final education levels than non-migrants. Of the three cohorts considered (born in 1976, 1972, and 1968), the youngest presents the highest level of mobility during the decade under analysis (Table 1). The higher migration rates of the 1976 cohort are consistent with a couple of important demographic findings. First, the age patterns of migrants have been long documented as following regularities, with the rates of migration peaking during young adulthood (Thomas 1938, Beshers and Nishiura 1960, Pandit 1997, Fischer and Malmberg 2001). Second, the 1976 cohort is smaller than the previous ones; it has been observed that smaller cohorts have higher migration rates than larger cohorts because of better labor market conditions (Pandit 1997).

Given the young age of all respondents during the first interview – 22 for the youngest cohort and 30 for the oldest – it is not surprising that the overall percent of people married is much higher in 2009 than in 1999 (45% as compared to 13%). Migrants are more likely to be unmarried in 1999 than non-migrants, though by 2009 the marriage rates of the two groups are similar (Table 1). The lower initial marriage rates among migrants are consistent with the majority of them belonging to the youngest cohort, and with the finding that movers concentrate among those with fewer social ties at the place of origin (Fischer and Malmberg 2001, Michaelides 2011). Migrants are also more likely to be still studying in 1999 than non-migrants, and to have higher education levels in both 1999 and 2009 (Table 1). This pattern coincides with studies finding that Swedes with higher education levels are more prone to move (Kupiszewski et al 2001). The higher percent of students among migrants in 1999 is probably observed because

[2] For the detailed reasoning behind the construction of the labor market indicator, see the methods section.

[3] Though the labor market transition indicator is closely related to changing occupations from "student" to any other, it is not equivalent to such a change. This is because the definition of labor market transition used does not imply the need to be a student in 1999 – as long as the highest education level is achieved after this year, any occupation may have been reported during the first survey. This broader definition is used because of the findings that many young adults in Sweden take a year or more off before college to travel or work at a low paid occupation before continuing their studies (Cook and Furstenberg 2002).

completion of schooling and the subsequent transition into the labor market are both strongly associated with migration (Fischer and Malmberg 2001).

As is true of many other developed countries, internal migration in Sweden has been characterized by flows from both rural to urban (urbanization) and urban to rural (counter-urbanization) areas in the past decades (Kupiszewski et al 2001, Plane et al 2005). For the purpose of the present study, migration between all types of counties and municipalities is combined for two reasons. First, the main focus of the analysis is on the association between any internal move and life satisfaction, regardless of the destination. Second, considering the YAPS migrants as a whole, the share of overall migration between urban and rural areas, whatever the direction, is small. Dividing the Swedish counties into predominantly urban and predominantly rural[4], it is observed that over 70% of the migrants in the sample move within counties of a given type (Table 2). For the remaining 30%, the direction of internal migration is associated with the age of the migrant. The migrants from the youngest cohort are the most likely to make a move from a rural to an urban county, and those from the oldest cohort are the most likely to make a move in the opposite direction. This is consistent with what has been observed for recent migration patterns in Sweden (Kupiszewski et al 2001).

5. Methods

The main problem faced assessing the effects of migration on life satisfaction, is the lack of a perfect comparison group. Though in theory one would like to compare the migrants' life satisfaction to what it would have been had they not moved, in practice this counterfactual is impossible to observe. Therefore one is left with the second best option: comparing the life satisfaction of migrants to that of non-migrants, controlling for the possibility of endogeneity due to a selectivity bias that arises when migrants and non-migrants differ in ways related to both life satisfaction and migration. Some of these problematic differences are observable and may be accounted for in a regression using an appropriate set of control variables. Some are unobservable and need to be controlled for in different ways. This section describes the methods used in the analysis, focusing first on the techniques used to account for the differences between

[4] This division was based on the OECD Territorial Review of Sweden (OECD 2010). Stockholm, Vastra Gotaland, and Skane are the three counties classified as predominantly urban; the rest of the counties are classified as predominantly rural.

migrants and non-migrants. The final part of the section discusses the analysis of the channels through which migration and life satisfaction may be related.

5a. Dealing with endogeneity – the problem of unobservables

Unobservable characteristics that affect both migration and life satisfaction may be of two types: fixed and time-varying. An important type of fixed characteristics that could represent a source of endogeneity are individual level personality traits that make specific people more prone to migration. For example, imagine that optimists are both, more likely to migrate, and to report higher life satisfaction. Since optimism is unobservable – making it impossible to control for – its relationship with life satisfaction and migration could potentially bias the analysis.

Other types of unobservable characteristics may be time-varying. A good example are community level shocks taking place between the two dates of the surveys. Imagine the case of a natural disaster, such as a flood. A flood could permanently lower life satisfaction of the people affected by it and, at the same time, have damaging effects on the community where it occurs, influencing the likelihood of its residents to become migrants. These shocks represent unobservable externalities and introduce another source of bias. Notice that the community shocks are different from community fixed effects (such as weather) which remain constant over time, and may be accounted for by introducing place of residence controls. The community shocks are, on the contrary, time varying, and should therefore be accounted for separately.

The following model represents the life satisfaction of individual i, in community c, at time t, taking into account the variables previously described that could affect both life satisfaction and migration:

(1) $Y_{cit} = \mu_t + \eta_i + \theta_c + \rho_c * t + \beta' x_{it} + \gamma M_{it} + \varepsilon_{cit}$

where:

Y_{cit} 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_c is the community fixed effect (e.g. weather); ρ_c is the external shock affecting the community between periods 0 and 1 (e.g. a flood); t is a time dummy; x_{it} is a vector of observable individual characteristics; M_{it} is the migration status which at time 0 is equal to 0 for all individuals, and at time 1 is equal to 0 for non-migrants and to 1 for migrants; and ε_{cit} is an error term that is allowed to be correlated for the same individual over time, and for different individuals within a community, but that is assumed to be uncorrelated for individuals from

different communities. Notice that since ρ_c occurs after time 0, it will only affect life satisfaction of the people originally from community c, at time 1 (which is why it is being interacted with a time dummy). Also, since the effect of the shock is assumed to be permanent, it will influence Y_{cit} for all people originally from the affected region regardless of their place of residence in the next period (i.e. regardless of their decision to migrate or not in between periods 0 and 1)[5].

The time-varying individual and community level unobservable characteristics from model (1) may be captured in the following econometric regression:

$$(2a)\quad Y_{cit} = \mu D_t + \eta_i + \theta_c * D_{ct} + \rho(D_{c0} * D_t) + \gamma(M_i * D_t) + \beta' x_{it} + \varepsilon_{cit}$$

where:

D_t is the time dummy equal to 0 at t=0 and 1 at t=1; D_{ct} is a vector of dummies for the community of residence at time t; D_{c0} is a vector of dummies for the original community of residence (i.e. place of residence at time 0); M_i is the migration dummy equal to 0 for non-migrants and 1 for migrants; and ε_{cit} is the error term. Taking a first difference (FD) of (2a) to account for the individual fixed effects yields the final regression employed in the analysis:

$$(2b)\quad \Delta Y_{ci} = \mu + \theta(D_{c1} - D_{c0}) + \rho D_{c0} + \gamma M_i + \beta' \Delta x_i + \Delta \varepsilon_{ci}$$

Here the individual fixed effect has been eliminated using the first difference. The community fixed effects and the regional shocks are both controlled for by including $(D_{c1} - D_{c0})$ and D_{c0} respectively. Using this approach, the regression employed in the analysis avoids the fixed and time-varying biases discussed above. In this setting M_i captures the pure association between being a migrant and a life satisfaction change, controlling for the observable differences between migrants and non-migrants.

In (2b) any binomial control is converted into a categorical variable taking on the values of -1, 0 or 1. For example, in the case of a dummy for residence in a given community at time t, the FD regression will include variables taking on the value of -1 if a person left this community

[5] This statement holds under the assumption that the shock is related to the decision to migrate and therefore the 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 $\rho_c = 0$.

between periods 0 and 1, 1 if the person entered it, and 0 if the person neither left nor entered this community.[6] The community dummies used are based on the county of residence, which is a more comprehensive geographic unit than municipality. Since the migration status of a person is defined using the municipality changes, municipality of residence may be considered as a more appropriate control. However, due to the large number of municipalities (over 250 as compared to 21 counties), the use of controls at the more specific regional level results impractical. As a robustness check, an alternative classification of migration status is employed, defining a person as a migrant if she changed her *county* of residence between 1999 and 2009. The regression results of the robustness check confirm the main results of the study presented in the following section (Tables C1 and C2, Appendix C).

The main assumption behind regression (2b), is that the individual and regional effects described are the only sources of endogeneity. In reality, other sources – like household time-varying shocks or interactions between fixed and time-varying effects – may exist. A good way of controlling for any source of endogeneity would be by using an instrumental variable. However, suitable instruments for migration are difficult to obtain and have been found only in rare cases (for example, see Munshi 2003). Given that the use of weak instruments has been shown to lead to substantial biases (Wooldridge 2002), the model presented in (2b), which controls for unobservable individual and community effects, is considered as the most suitable approach.

Two final methodological concerns regarding the regression analysis faced are the ordinal nature of the life satisfaction variable, and a problem of missing values in the reason to move question used to divide migrants into work and non-work migrants. In spite of the ordinality of the dependent variable, the OLS approach is used in the analysis of the categorical satisfaction variables. This is done to avoid the problems that arise when maximum likelihood methods are used in the analysis of FD regressions (Han and Philips 2011). Also, previous analyses have shown that the use of OLS with categorical variables that contain as few as three categories lead to very similar results to those obtained by non-linear methods (Blanchflower and Oswald 2004), justifying the use of OLS in life satisfaction studies. As to the missing data problem (out of the 643 migrants in the analysis, 77 did not answer the reason to move question), two methods are

[6] Notice that the same applies to the clustering of the standard errors, which in the main regressions are clustered at the *change* in community level representing a separate cluster depending on each person's community of residence at both times 0 and 1.

used: likewise deletion and multiple imputation (MI)[7]. Specifically, the MI method used was imputation by chained commands (ICE), in which imputed values for the missing variable are generated from a series of univariate models.[8] ICE was preferred over multivariate normal imputation as it is easier to implement when ordinal variables are imputed.

5b. The choice of observable control variables

Choosing the control variables to be included in the regressions analysis one should ask: what are the observable characteristics of an individual that may affect both, her life satisfaction and whether she becomes a migrant or not? Marriage and entering the labor market are two important transitions that may accompany migration and influence a person's life satisfaction. As seen in the previous section, migrants are more likely to be unmarried in 1999 and to change marital status in between the two surveys than non-migrants. At the same time, marriage has been found to significantly increase life satisfaction (Zimmermann and Easterlin 2006). Therefore changes in marital status are included as control variables to avoid confounding the effects of marriage with those of migration. Previous literature has also found that the migration patterns of young adults seem to be strongly related to labor market changes (Graves 1979, Cuba and Hummon 1993, Chen and Rosenthal 2008). The migrants observed in the YAPS are more likely to be studying in 1999 than non-migrants (Table 1) making them more likely to make a labor market transition in the period between the two surveys. Transitioning into the labor market is very likely to have a strong impact on a young adult's well-being (Murphy et al 2010), and should therefore be controlled for to avoid confounding its effects with those of migration.

Changes in education and occupation may both be related to migration and life satisfaction. However, they are not included as control variables in the main regressions for different reasons. Changes in education are omitted because of multicollinearity concerns that

[7] 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).

[8] Using this technique a single variable is imputed based on a group of personal characteristics which includes both the independent and dependent variables from the regression model (von Hippel 2007). 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: cohort of birth, gender, years of education in 99, life satisfaction in 99 and 09, disposable and work income in 99 and 09, municipality of residence in 99 and 09, satisfaction with housing in 99 and 09, economic satisfaction in 99 and 09, satisfaction with occupation in 99 and 09, civil status in 99 and 09, and occupation in 99 and 09. For more information on the ICE method and how its results compare to other imputation techniques see Ambler et al 2007.

arise due their close relation to labor market transitions (for regressions including changes in education see the robustness analysis in Appendix C, Tables C3 and C4). Changes in occupation are not included as control variables since occupational shifts leading to relative status improvements are considered as one of the possible channels through which migration and life satisfaction may be related. Finally, age and final education level may also differ between migrants and non-migrants. These variables, though related to life satisfaction in levels, should not affect life satisfaction changes for migrants and non-migrants differently, and therefore are not included as control variables in the first difference regressions[9].

5c. Assessing the channels behind the life satisfaction/migration association

The methods so far outlined bear on answering the first question of the study which addresses the relationship between migration and life satisfaction. The second question asks about the channels behind this relationship. To assess these channels, different aspects of life – referred to as life domains – that compose overall life satisfaction are analyzed. The analysis of life domains is not new to the subjective well-being literature. Specific life domains – such as satisfaction with economic situation, family, work, and health – have been found to explain patterns of life satisfaction over time in the United States (Easterlin and Sawangfa 2009). A life event may, moreover, affect different life domains in opposite directions. For example, in the United States, as people age their satisfaction with health decreases, but their satisfaction with the economic situation increases over time, contributing to a fairly flat life satisfaction pattern over the life cycle (Easterlin 2006). Given that migration is accompanied by changes in several aspects of life – such as income, housing, and work – one could expect that such an event may affect life satisfaction by impacting several life domains in, possibly, differing ways.

Three life domains – financial, housing, and work – are considered as possible channels for the association between life satisfaction and internal migration. For each, its relationship with

[9] The ceteris paribus (i.e. controlling for individual characteristics) relationship between age and life satisfaction presents a U pattern, reaching the low point around age 46 in European countries (Blanchflower and Oswald 2008). Given their young age, all YAPS respondents are on the down-turn of the life satisfaction/age relationship between the time of the two interviews. Therefore the change in age should affect the change in life satisfaction similarly for all of them, regardless of the migration status. Cohort effects, which have been found to significantly influence life satisfaction (Easterlin 2001b), are fixed and are eliminated in the first difference regression used. The case of final education is similar. Obtaining a college education sets people on a different life trajectory with consistently higher life satisfaction levels (Easterlin 2001b). However, by the age of 22, which is the age of the youngest cohort during the first interview, this trajectory has been already defined, and so it represents a fixed effect.

migration is assessed. The main assumption is that if the increase in life satisfaction for migrants as compared to non-migrants comes accompanied by improvements in a specific life domain, than this domain represents a likely channel behind the migration/life satisfaction relationship. To analyze the association between the financial domain and migration, regression (2b) is ran with income and economic satisfaction as dependent variables. For the housing domain, the same procedure is followed with housing satisfaction as the dependent variable. To analyze the work domain a two-fold approach is taken. First satisfaction with current occupation is used as a dependent variable in regression (2b), and second changes in occupations leading to relative status improvements are analyzed. This two-fold approach is used for the work domain because relative status changes have been shown to have lasting effects on life satisfaction (DiTella et al. 2010). Therefore a person who changes occupations as a result of migration may benefit from either a job that she is more satisfied with, or a job that provides her with a higher relative status.

To assess whether the patterns of occupational changes are different for migrants than non-migrants, and whether these differences could be conducive to higher relative status for the migrant group, occupations are divided into those associated with low, middle, and high relative occupational status. This division is made based on the SIOPS measure, which assigns an internationally comparable prestige score to each occupation, as updated by Ganzeboom and Treiman (Ganzeboom and Treiman, 1996). Though the occupation groups used in the analysis do not allow for an exact matching to scores on the SIOPS scale, some clear patterns emerge. The professional/higher non-manual/executive groups are all ranked highly above the other occupations on the prestige scale, and are therefore considered as the high relative status group. Workers in the goods and service production, assistant and intermediate non-manual workers, and farmers and self-employed non-professionals are all considered as having a medium relative status. Finally, the students and unemployed, being out of the labor market are assigned into the low relative status category.

Using this division, mobility matrices are constructed that reflect movements in between occupations with different relative status ranking. That is, if a person is a student in 1999 and a professional worker in 2009, this will be reflected as a movement from a low to a high relative status occupation. The analysis of these movements helps to identify patterns of occupational changes that could lead to improvements in relative status. If this aspect of the work domain is an important channel behind increasing life satisfaction for migrants, than we would expect a higher

mobility from lower to higher relative status occupations for migrants than for non-migrants. In the opposite case, an absence of differences in the occupational mobility patterns for migrants as compared to non-migrants, would indicate that the relative status aspect of the work domain is not behind the life satisfaction/migration association.

6. Results

6a. Migration and life satisfaction

Does life satisfaction increase more for internal migrants than for non-migrants? The answer to this question is a robust yes, and it holds regardless of other life transitions that may accompany young adulthood, and regardless of the reasons behind migration. Life satisfaction increases more for migrants than for non-migrants both when the whole sample is considered, and when the sample is divided into those who are, and who are not going through a labor market transition in the decade under analysis (column 12, Table 3). When migrants are divided into those who move for work and non-work reasons the positive association remains: both work and non-work migrants experience higher increases in life satisfaction than non-migrants regardless of whether they are, or are not, going through a labor market transition (columns 4 and 8, Table 3). Regression results further confirm these findings. Migration presents a positive and significant association with changes in life satisfaction controlling for time-varying and fixed sources of endogeneity, and for both marital and labor market transitions (columns 1 and 2, Table 4). Again, the positive and significant association holds when the migrants are divided into those who move for work and non-work reasons (columns 3-6, Table 4).

The importance of considering other life transitions in the analysis of migration is also made clear in the results. Going through a labor market transition, in itself, has a positive effect on the change in life satisfaction (column 15, Table 3). At the same time, a much higher proportion of migrants than non-migrants – 46% of all migrants, as compared to only 28% of non-migrants – goes through this transition, which creates a positive bias in the relationship between migration and life satisfaction. The migration and life satisfaction relationship is robust to this bias (column 2, Table 4). However, the mere existence of this problem illustrates the need to control for life transitions in the regression analysis.

6b. The channels behind the migration and life satisfaction association

To assess the channels behind the positive association between migration and life satisfaction, changes in three different life domains – financial, housing, and work – are analyzed. One would expect that if a specific life domain is driving the migration/life satisfaction association, then improvements in this life domain should be observed for migrants as compared to non-migrants. For example, imagine that the increase in life satisfaction for work migrants is due exclusively to financial improvements. In that case an increase in both income and economic satisfaction should be observed for work migrants as compared to non-migrants; no differential improvements in the other life domains should be observed for this migrant group. Since the effects of migration on specific life domains may depend on the reason behind the move, in what follows work and non-work migrants are considered separately.

The channels behind the increasing life satisfaction do in fact differ for work and non-work migrants. In the case of work migrants, the effects of migration are complex: even though work migrants experience increases in income above those of non-migrants, it is the work, not the financial, domain (and specifically its relative status aspect) that seems to contribute to these life satisfaction improvements. Being a work migrant – compared with being a non-migrant – is significantly and positively related to both work income and disposable income changes over the period under analysis, but has an insignificant effect on economic satisfaction and housing satisfaction changes (columns 2-12 Table 5). The lack of an association between work migration and changes in economic satisfaction, implies that this type of migrants adapt fully to their new income and do not experience improvements in the financial domain, discarding this as a possible channel behind their increasing life satisfaction. The housing channel is also rejected due to the null effect of work migration on changes in satisfaction with housing. Therefore, while the results confirm the findings of previous literature that income increases are observed for work-migrants as compared to non-migrants, they also indicate that these income increases, and in general the financial domain, are not the drivers behind the association between work migration and life satisfaction.

An analysis of changes in the work domain, and specifically of the relative status changes that accompany migration, indicates that relative status improvements are the ones contributing to the association between work migration and life satisfaction. Work migrants generally display a higher mobility in between occupations with different relative status – only 34% of work migrants, as compared to 65% of non-migrants, stay in occupations with the same relative status

in between 1999 and 2009, and the two values are statistically different at a 1% significance level[10] (Table 6). In 2009, the majority (60%) of work migrants have an occupation with a higher relative status than that of their occupations in 1999, that is, experience an improvement in relative status. In comparison, only 29% of non-migrants experience an improvement in relative status in between 1999 and 2009. This significant difference in occupational mobility patterns, with a higher proportion of work-migrants than of non-migrants experiencing improvements in relative status, holds for work-migrants regardless of whether they do or do not go through a labor market transition (Table 6). The higher increase in relative status improvements for work migrants as compared to non-migrants seems therefore indicative of the status aspect of the work domain being an important channel contributing to the positive association of work migration with life satisfaction.

Two caveats should be made regarding the association between relative status and work migration. First, though work migrants do experience an improvement in relative status as compared to non-migrants, their satisfaction with occupation does not experience a similar increase in comparison to non-migrants (columns 14 and 15 Table 5). This could imply that occupations with a higher relative status are not necessarily the ones providing the highest satisfaction with occupation. Further analysis of the data shows that while life satisfaction seems to be clearly highest among people in the high status occupations and lowest among those in low status occupations, the same does not hold for satisfaction with occupation (Table B2, Appendix B). In fact, being a student, which is considered a low status occupation is associated with a high satisfaction with occupation, but not with a high life satisfaction in both 1999 and 2009 (Table B2). This discrepancy in the ranking of occupations according to their life satisfaction and satisfaction with occupation (which may be due to, precisely, the lower status associated with being a student), is the reason why the relative status improvements observed for work migrants are not accompanied by increases in satisfaction with occupation as compared to non-migrants.

The second caveat to be made regarding relative status improvements, is that while these are in fact associated with an increase in life satisfaction for work migrants, they cannot account for the totality of the positive association between life satisfaction and work migration. Comparing life satisfaction changes in 1999-2009 for people who do and do not go through a

[10] From here on, whenever the statistical significance of a difference between two means is mentioned it is given at 1% significance level.

relative status improvement shows that life satisfaction changes are always more positive (or less negative) for those with a relative status improvement, regardless of whether the person is a non-migrant, work migrant, or non-work migrant (Table 7). However, accounting for the relative status improvement does not completely eliminate the increase in life satisfaction for work migrants as compared to non-migrants. Considering exclusively people who experience a status improvement in 1999-2009, work migrants still experience a higher increase in life satisfaction than non-migrants (Table 7), indicating that the positive association between life satisfaction and work migration is only partially driven by status improvements.

Non-work migrants represent a different case: for them, the relationship between migration and life satisfaction appears to be mediated mostly through improvements in the housing domain. Housing satisfaction of non-work migrants displays increases above those of non-migrants, as captured by the positive and highly significant effects of non-work migration on satisfaction with housing (columns 11 and 12, Table 5). The financial and work domains, on the contrary, do not appear to be strongly associated with non-work migration. In the financial domain, neither income nor economic satisfaction have a positive association with non-work migration, displaying coefficients that are mostly non-significant and in some cases even negative (columns 2-9, Table 5). The lack of a positive association between income and non-work migration is especially interesting, as it indicates that income increases are not necessary for migration to be accompanied by life satisfaction improvements. Life satisfaction improves for non-work migrants as compared to non-migrants in spite of an absence in income increases (relative to non-migrants).

Finally, the analysis of the work domain does not indicate significant improvements for non-work migrants as compared to non-migrants. Satisfaction with current occupation does not display a significant association with non-work migration (columns 14-15, Table 5). Moreover, though a bigger proportion of non-work migrants than of non-migrants experiences improvements in relative status in the period under analysis – 43% versus 29% – the significance of the difference in relative status transition patterns for non-work migrants as compared to non-migrants becomes questionable once labor market transitions are considered. For those not going through a labor market transition, the proportion of non-work migrants experiencing a relative status improvement is not significantly different from the proportion of non-migrants with similar status improvements. For those who do go through a labor market transition, the

proportions of non-work migrants as compared to non-migrants who experience relative status improvements are only significantly different at a 5% (but not 1%) level. Therefore, it is unlikely that the work domain is responsible for the increase in life satisfaction for non-work migrants.

7. Conclusions

Previous studies have found a positive association between migration and objective well-being as measured by variables such as income, but until now little conclusive evidence has been found on an association between internal migration and changes in subjective well-being. The present study uses a longitudinal approach to assess the changes in life satisfaction that accompany migration by comparing satisfaction levels of migrants and non-migrants before and after the move. Strong evidence of a positive association between internal migration and life satisfaction is found for young adults in Sweden. This association is true for people who move due to work and non-work reasons, and holds controlling for some of the main sources of endogeneity often present in regressions analyzing the effects of migration, and for other life transitions that may occur during young adulthood.

Life satisfaction increases through different channels depending on the reason behind migration. For work migrants, relative status improvements in the work domain seem to contribute to (though not fully account for) the increase in life satisfaction that accompanies migration. Though work migrants experience an increase in income above that of non-migrants, they do not experience a similar improvement (relative to non-migrants) in satisfaction with economic situation. The fact that work migrants' economic satisfaction does not increase more than that of non-migrants despite their greater income growth, implies adaptation to higher earnings and null association between migration and the financial domain. For non-work migrants, increasing satisfaction with housing contributes to the positive association between migration and life satisfaction. Non-work migrants do not experience increases in income or economic satisfaction above those of non-migrants, and they do not display the occupational changes conducive to significant relative status improvements observed for the work migrants.

The finding that migration affects life satisfaction through different channels for work than for non-work migrants is interesting for two reasons. First, it demonstrates the importance of considering work and non-work migrants separately, especially in studies that analyze the well-being effects of migration. Second, it indicates that an increase in income is neither

sufficient nor necessary for a positive relationship to exist between migration and life satisfaction. Work migrants, who do experience an increase in income above that of non-migrants, seem to adapt to their higher earnings. It is the improvement in relative status accompanying occupational changes that contributes to life satisfaction increases for this migrant group. Non-work migrants do not experience a differential increase in income, and yet do experience life satisfaction increases accompanying migration because of improvements in their housing situation.

The findings of the study are specific to internal migration in a developed country where both urbanization and counter-urbanization processes are occurring and may not extend to developing countries. Analyses of the subjective well-being effects of different types of migration until now have been restricted by the lack of longitudinal data that include measures of life satisfaction. The few existing life satisfaction studies that have worked with panel data have not considered changes in specific life domains associated with migration. An interesting possibility for future research is the assessment of life satisfaction and life domain changes for other types of migrants – such as international migrants – to see whether their experiences are similar to those of the internal migrants described in this study.

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Tables

Table 1. Descriptive statistics of migrants before and after the move, by municipality migration status, all three cohorts and final education levels combined						
	Statistics before the move (1999)					
	All migrants	Non-work migrants	Work migrants	Reason of move missing	Nonmigrants	Total
	Mean	Mean	Mean	Mean	Mean	Mean
Mean life satisfaction	3.85	3.87	3.79	3.96	3.97	3.92
Mean disposable income	107.54	106.11	103.18	126.49	113.8	111.242
Mean work income (with replacements)	113.28	113.38	99.16	153.52	131.92	124.301
Mean satisfaction with house	3.54	3.57	3.42	3.75	3.79	3.69
Mean economic satisfaction	3.09	3.07	3.08	3.18	3.13	3.11
Mean satisfaction with occupation	3.88	3.85	3.98	3.72	3.76	3.81
Mean years of education	12.91	12.82	13.26	12.27	12.24	12.51
Percent male	45.70%	43.00%	50.00%	45.50%	43.80%	44.60%
Percent married	7.50%	9.30%	5.90%	3.90%	17.20%	13.20%
Percent divorced/widowed	1.10%	1.20%	0.50%	2.60%	1.00%	1.00%
Percent studying	12.10%	11.90%	15.70%	2.60%	4.90%	7.90%
Percent of professionals, higher non-manual, and executive workers	10.70%	10.00%	11.90%	10.40%	7.50%	8.80%
Percent from 1976 cohort	47.30%	45.30%	53.20%	39.00%	30.40%	37.30%
Percent from 1972 cohort	32.50%	34.00%	27.90%	39.00%	35.90%	34.50%
Percent from 1968 cohort	20.20%	20.60%	18.90%	22.10%	33.70%	28.20%
	Statistics after the move (2009)					
	Mean	Mean	Mean	Mean	Mean	Mean
Mean life satisfaction	4	3.98	4	4.15	3.92	3.96
Mean disposable income	211.48	200.388	222.34	229.72	201.17	205.39
Mean work income (with replacements)	260.11	238.25	287.14	279.82	242.05	249.43
Mean satisfaction with house	3.97	4.03	3.81	4.18	3.99	3.98
Mean economic satisfaction	3.58	3.47	3.68	3.75	3.49	3.53
Mean satisfaction with occupation	3.97	3.93	4.03	3.99	3.91	3.94
Mean years of education	14.39	14.204	15.02	13.42	13.19	13.68
Percent male	45.70%	43.00%	50.00%	45.50%	43.80%	44.60%
Percent married	45.60%	48.80%	41.00%	44.20%	45.20%	45.30%
Percent divorced	3.90%	4.10%	3.60%	3.90%	5.80%	5.00%
Percent studying	0.50%	0.90%	0.00%	0.00%	0.50%	0.50%
Percent of professionals, higher non-manual, and executive workers	33.70%	29.10%	44.30%	22.10%	18.50%	24.70%
Percent from 1976 cohort	47.30%	45.30%	53.20%	39.00%	30.40%	37.30%
Percent from 1972 cohort	32.50%	34.00%	27.90%	39.00%	35.90%	34.50%
Percent from 1968 cohort	20.20%	20.60%	18.90%	22.10%	33.70%	28.20%

Table 2. Frequency and percent of migrants, by type of migrant and cohort, moving in between county types (urban/rural)								
	1976 cohort		1972 cohort		1968 cohort		All cohorts	
Move pattern	N	%	N	%	N	%	N	%
Within urban counties	32	5.45	20	3.68	9	2.03	61	3.88
Within rural counties	53	9.03	24	4.42	8	1.81	85	5.40
Urban to rural county	22	3.75	18	3.31	22	4.97	62	3.94
Rural to urban county	74	12.61	35	6.45	17	3.84	126	8.01
Non-county migrant	123	20.95	112	20.63	74	16.70	309	19.64
Non-migrant	283	48.21	334	61.51	313	70.65	930	59.12
Total	587	100.00	543	100.00	443	100.00	1573	100.00
	Work migrants		Other migrants		All migrants		Total population	
Move pattern	N	%	N	%	N	%	N	%
Within urban counties	29	13.06	32	9.3	61	9.49	61	3.88
Within rural counties	37	16.67	47	13.66	85	13.22	85	5.4
Urban to rural county	20	9.01	41	11.92	62	9.64	62	3.94
Rural to urban county	62	27.93	63	18.31	126	19.60	126	8.01
Non-county migrant	74	33.33	161	46.8	309	48.06	309	19.64
Non-migrant							930	59.12
Total	222	100	344	100	643	100	1,573	100

Table 3. Mean LS for migrants (by reason to move) and non-migrants, by labor market transition status, by year															
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
	LM transitions				**No LM transitions**				**Whole population**				**LM transition - No LM transition**		
		Mean LS				Mean LS				Mean LS			Mean LS		
	N	1999	2009	Change	N	1999	2009	Change	N	1999	2009	Change	1999	2009	Change
Work migrants	121	3.76	4.06	0.30	101	3.82	3.92	0.10	222	3.79	4.00	0.21	-0.06	0.14	0.20
Non-work migrants	146	3.81	4.03	0.21	196	3.90	3.94	0.04	344	3.87	3.98	0.11	-0.09	0.08	0.17
All migrants	294	3.80	4.04	0.24	344	3.89	3.98	0.09	643	3.85	4.00	0.15	-0.09	0.06	0.15
Non-migrants	264	3.89	3.92	0.03	654	4.01	3.93	-0.08	930	3.97	3.92	-0.05	-0.11	-0.01	0.11
Total	558	3.84	3.98	0.14	998	3.97	3.95	-0.02	1573	3.92	3.96	0.03	-0.12	0.04	0.16

Table 4. OLS and MI ICE regressions: Life satisfaction as dependent variable, regressed on migrant dummy (pooled and by reason) with non-migrants as reference group						
	Life satisfaction					
	(1)	(2)	(3)	(4)	(5)	(6)
			OLS		MI ICE	
all migrants	0.196	0.174				
	(3.27)**	(2.60)*				
work migrant			0.26	0.222	0.264	0.232
			(2.77)**	(2.21)*	(2.87)**	(2.37)*
non-work migrant			0.151	0.132	0.160	0.144
			(2.21)*	(1.82)+	(2.49)*	(2.05)*
married FD		0.006		-0.006		0.006
		(0.1)		(0.1)		(0.11)
divorced/widowed FD		-0.055		-0.08		-0.057
		(0.48)		(0.6)		(0.49)
lm_transition		0.116		0.132		0.111
		(2.52)*		(2.55)*		(2.4)*
Constant	-0.039	-0.064	-0.037	-0.06	-0.040	-0.064
	(1.44)	(2.00)*	(1.38)	(1.79)+	-1.46	(2.06)*
Observations	1541	1526	1467	1454	1541	1526
R-squared	0.03	0.03	0.03	0.04		
t-statistics in parentheses, standard errors clustered at change in county level						
+ significant at 10%; * significant at 5%; ** significant at 1%						

Table 5. OLS and MI ICE regressions: Different life domains as dependent variables, regressed on migrant dummy (pooled and by reason) with non-migrants as reference group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Economic domain									Housing domain			Work domain		
	Work income			Disposable income			Economic satisfaction			Satisfaction with housing			Satisfaction with occupation		
	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE
all migrants	2.184			6.808			0.013			0.2			-0.079		
	(0.32)			(1.51)			(0.27)			(2.96)**			(0.83)		
work migrant		29.168	29.660		18.474	18.975		0.018	0.027		0.138	0.157		-0.157	-0.150
		(2.72)**	(2.95)**		(2.52)*	(2.76)**		(0.21)	(0.31)		(1.36)	(1.52)		(1.39)	(1.34)
non-work migrant		-12.413	-12.062		0.592	0.501		-0.03	0.006		0.228	0.222		-0.072	-0.040
		(1.48)	(1.71)+		(0.1)	(0.08)		(0.47)	(0.1)		(3.03)**	(3.13)**		(0.74)	(0.39)
married FD	5.567	4.637	5.862	13.28	13.086	13.409	0.05	0.043	0.050	-0.034	-0.039	-0.034	-0.031	-0.035	-0.032
	(0.61)	(0.56)	(0.67)	(2.54)*	(2.75)**	(2.65)**	(0.94)	(0.82)	(0.94)	(0.43)	(0.47)	(0.43)	(0.51)	(0.55)	(0.52)
div/wid FD	19.889	14.633	18.954	30.855	27.028	30.435	-0.148	-0.203	-0.148	-0.218	-0.264	-0.217	0.088	0.114	0.091
	(0.97)	(0.72)	(0.94)	(2.50)*	(2.48)*	(2.51)*	(1.36)	(1.54)	(1.37)	(1.41)	(1.43)	(1.4)	(0.64)	(0.83)	(0.65)
LM transition	69.955	67.509	67.815	14.779	14.232	13.829	0.525	0.523	0.524	-0.035	0.009	-0.031	0.12	0.119	0.128
	(9.92)**	(9.08)**	(9.31)**	(4.38)**	(4.00)**	(4.09)**	(7.58)**	(7.04)**	(7.38)**	-0.42	(0.1)	(0.38)	(1.99)*	(1.78)+	(2.05)*
Constant	101.692	100.328	101.447	102.677	100.651	102.570	0.188	0.176	0.188	0.379	0.375	0.380	0.13	0.158	0.130
	(12.96)**	(15.13)**	(14.52)**	(26.31)**	(30.89)**	(28.5)**	(6.42)**	(5.46)**	(6.38)**	(8.64)**	(8.38)**	(8.66)**	(2.11)*	(3.17)**	(2.14)*
Observations	1556	1482	1556	1556	1482	1556	1540	1466	1540	1530	1460	1530	1508	1437	1508
R-squared	0.11	0.12		0.07	0.07		0.08	0.08		0.03	0.03		0.02	0.03	

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

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

All regressions include county controls corresponding to D_{co} and ($D_{c1} - D_{co}$) from model (2b).

Table 6. Occupational mobility in 1999-2009 between low/middle/and high relative status occupations, for migrants and non-migrants, by reason to move, and labor market transition

All respondents, both going and not going through LM transitions

Non-migrant					All migrants				
	rel. status in 2009					rel. status in 2009			
rel. status in 1999	High	Med	Low	Total	rel. status in 1999	High	Med	Low	Total
High	4.8%	2.3%	0.3%	7.4%	High	6.9%	3.6%	0.0%	10.5%
Med	6.6%	58.7%	3.1%	68.5%	Med	8.9%	37.1%	2.8%	48.8%
Low	7.6%	15.0%	1.5%	24.1%	Low	18.2%	21.2%	1.3%	40.7%
Total	19.0%	76.0%	5.0%	100.0%	Total	34.0%	61.9%	4.1%	100.0%
Work migrants					Non-work migrants				
	rel. status in 2009					rel. status in 2009			
rel. status in 1999	High	Med	Low	Total	rel. status in 1999	High	Med	Low	Total
High	7.9%	3.7%	0.0%	11.6%	High	7.1%	2.8%	0.0%	9.8%
Med	8.4%	25.1%	1.9%	35.3%	Med	8.6%	41.7%	3.4%	53.7%
Low	28.4%	23.7%	0.9%	53.0%	Low	13.8%	20.9%	1.8%	36.5%
Total	44.7%	52.6%	2.8%	100.0%	Total	29.4%	65.3%	5.2%	100.0%

Respondents going through LM transitions

Non-migrant					All migrants				
	rel. status in 2009					rel. status in 2009			
rel. status in 1999	High	Med	Low	Total	rel. status in 1999	High	Med	Low	Total
High	2.0%	1.6%	0.0%	3.6%	High	1.8%	0.7%	0.0%	2.5%
Med	9.7%	34.3%	0.0%	44.0%	Med	8.3%	21.7%	0.0%	30.0%
Low	21.8%	30.6%	0.0%	52.4%	Low	33.6%	33.9%	0.0%	67.5%
Total	33.5%	66.5%	0.0%	100.0%	Total	43.7%	56.3%	0.0%	100.0%
Work migrants					Non-work migrants				
	rel. status in 2009					rel. status in 2009			
rel. status in 1999	High	Med	Low	Total	rel. status in 1999	High	Med	Low	Total
High	1.7%	1.7%	0.0%	3.4%	High	1.5%	0.0%	0.0%	1.5%
Med	6.8%	13.6%	0.0%	20.3%	Med	8.0%	26.3%	0.0%	34.3%
Low	44.1%	32.2%	0.0%	76.3%	Low	27.7%	36.5%	0.0%	64.2%
Total	52.5%	47.5%	0.0%	100.0%	Total	37.2%	62.8%	0.0%	100.0%

Respondents not going through LM transitions

Non-migrant					All migrants				
	rel. status in 2009					rel. status in 2009			
rel. status in 1999	High	Med	Low	Total	rel. status in 1999	High	Med	Low	Total
High	5.8%	2.6%	0.5%	8.9%	High	11.2%	6.0%	0.0%	17.2%
Med	5.4%	68.8%	4.4%	78.6%	Med	9.1%	50.2%	5.1%	64.4%
Low	1.8%	8.7%	2.0%	12.5%	Low	5.4%	10.6%	2.4%	18.4%
Total	13.0%	80.1%	6.9%	100.0%	Total	25.7%	66.8%	7.6%	100.0%
Work migrants					Non-work migrants				
	rel. status in 2009					rel. status in 2009			
rel. status in 1999	High	Med	Low	Total	rel. status in 1999	High	Med	Low	Total
High	15.5%	6.2%	0.0%	21.6%	High	11.2%	4.8%	0.0%	16.0%
Med	10.3%	39.2%	4.1%	53.6%	Med	8.5%	53.2%	5.9%	67.6%
Low	9.3%	13.4%	2.1%	24.7%	Low	3.7%	9.6%	3.2%	16.5%
Total	35.1%	58.8%	6.2%	100.0%	Total	23.4%	67.6%	9.0%	100.0%

Table 7. Life satisfaction changes for those with and without occupational status improvements, by migration status and reason to move, by labor market transition										
People going through LM transition, and not going through LM transition combined										
	All respondents		Migrants		Non-migrants		Work migrants		Non-work migrants	
	N	LS change 99-09	N	LS change 99-09	N	LS change 99-09	N	LS change 99-09	N	LS change 99-09
Without status improvement	907	-0.02	308	0.10	599	-0.08	83	0.18	181	0.06
With status improvement	534	0.13	289	0.25	245	-0.01	128	0.28	139	0.22
Total	1441	0.04	597	0.17	844	-0.06	211	0.24	320	0.13

Appendix A

Attrition in the Young Adult Panel Study

Given its longitudinal nature, the YAPS survey faces the inevitable problem of attrition. Out of the 2820 individuals first interviewed in 1999, 1575 were successfully re-interviewed in 2009. This generated an attrition rate of 44% over the period of 10 years, similar to the rates observed in other longitudinal surveys carried out in developed countries such as the United States (Becketti 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 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: selectivity on migration, and selectivity on unobserved time-varying characteristics related to the changes in the dependent variables of the study.

At baseline, attritors have generally lower income[11], 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 A1). 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 and 2012) and developed countries (Hausman and Wise 1979, Becketti et al 1988), where attrition has been found to have a positive association with higher income and education levels at baseline. This difference, however, is probably due to the specific design of the survey employed in the present study which targets young adults (ages 22 to 30 in 1999). Given the young age distribution of the YAPS respondents, some of those interviewed in 1999 (especially the youngest ones) could be expected to be still studying, and therefore have lower income and economic satisfaction. 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 interviews. The difference in the attrition rates of people with Swedish and non-Swedish background may be

[11] 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.

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 and 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 and co-authors (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 could facilitate the task of following the people who had moved between the surveys, making it considerably easier than what it is 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 so no information of non-contact versus refusal rates was collected. Previously it has been found that attrition is, in general, associated with similar demographic characteristics across different surveys (Zabel 1998). Therefore a comparison of the characteristics of attritors in the YAPS to the characteristics of people who were not re-interviewed due to non-contact in other surveys in developed countries could be insightful.

Abraham and co-authors analyze attrition in a survey with relatively high non-contact rates (the American Time Use Survey) for a developed country (Abraham et al 2006). They find

that non-contact is associated with being single, working longer hours, and being a high school graduate. 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 indirect test of selectivity 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 selectivity of attrition on migration in the YAPS is performed by comparing rates of mobility of the people interviewed in both years of the survey, to the rates of mobility of the general population of Sweden. Specifically, the percentages of people who changed municipalities between 1999 and 2009, by cohort, from the YAPS and the general population are compared (Table A2). 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% for YAPS). This difference implies that, though selectivity on migration might have certainly taken place in the YAPS survey, the magnitude of this selectivity appears small.

The second reason why attrition could bias the results is if it was selective on unobserved time-varying characteristics associated with either changes in life satisfaction or any of the other dependent variables used. Based on the analysis of baseline characteristics it appears that, in levels, attrition is not highly associated with most of the dependent variables used, with income and economic satisfaction being the two exceptions (Table A1). To further analyze the relationship between attrition and the dependent variables a test from previous literature (Fitzgerald et al 1998) is used. The test checks the significance of attrition by employing regressions of the main dependent variables at baseline on subsequent attrition and control

variables. If attrition is in fact a problem, then its coefficient in such regressions should be significant.

Attrition is not significant, both with and without additional control variables, for life satisfaction, satisfaction with housing, and satisfaction with occupation. This indicates that, most likely, attrition is not selective on these variables. Controlling for the personal characteristics that are accounted for in the main regressions[12], attrition loses its significance in the income regression, and remains statistically significant at only 5% for economic satisfaction (Table A3).

The dependent variables used in the previous regressions are in levels, whereas those used in the main part of the paper are all first difference dependent variables. The first difference variables should be more robust to possible selection problems, as they implicitly control for any fixed characteristics of the respondents that could be related to their subsequent non-response. Still, previous research has shown that attrition could also be related to time-varying unobserved characteristics that could bias the results of a first-difference regression (Thomas et al 2012).

Since attritors are not interviewed in 2009, it is impossible to check whether the changes in the variables of interest over the period under analysis (99-09) differ depending on whether a person drops out of the survey or not. However, two additional tests may be performed using first difference, as opposed to level, variables to approximate the methods used in the study. First, even though the attritors are not observed in 2009, some of them did participate in an intermediate survey performed in 2003. Using these 2003 responses, a comparison of the 99-03 changes in the main variables of interest may be performed between people who remain in the survey in 2009 and those who eventually drop out (the attritors). Using these 99-03 first difference variables, regressions on future attrition alone, and with the available control variable[13] are performed. Attrition is not significant in any of these regressions (Table A4), indicating that the change in the variables of interest is unlikely to be selective on attrition.

The second test performed using first difference variables consists of comparing the changes in a clue variable for the sample of respondents from the YAPS interviewed in both

[12] Note that, though time invariant characteristics (such as gender or having a Swedish background) are not used as controls in the main regressions, they are still being taken into account, as the first-difference regressions used automatically control for individual fixed effects. Also, these regression is unable to control for labor market transitions, as the year in which highest education level was achieved is unavailable for attritors. Instead, occupational controls are included.

[13] Though the regressions in the study also employ labor market transitions as a main control variable, this variable is unavailable for attritors since the identification of the labor market transition is based on information on occupation and education in 2009.

1999 and 2009, to the changes in the same variable for the general population. This comparison is carried out for income changes (Table A5). 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.[14] 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-attritors from YAPS, the difference between changes in income for migrants and non-migrants is 21800 SEK; the difference between the migrant groups for the general population is 26500 SEK (Table A5). 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. 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 two additional 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 attirition bias in the survey should not have a strong effect on the main results of the study.

[14] 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 A1. 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	2785	3.91	1560	3.92	1225	3.9
Self reported income (in 1000 SEK)***	2800	101	1573	**104**	1227	**97**
Economic satisfaction	2789	3.05	1564	**3.11**	1225	**2.97**
Satisfaction with housing	2776	3.7	1556	3.69	1220	3.73
Satisfaction with partner	2075	4.47	1159	4.45	916	4.49
Satisfaction with occupation	2751	3.78	1551	3.81	1200	3.76
Educ level 1999**	2782	11.98	1565	**12.19**	1217	**11.71**
Hours worked per week	2014	37.47	1132	37.79	882	37.06
% Male	1320	46.80%	702	**44.57%**	618	**49.64%**
% Studying	208	7.71%	121	7.94%	87	7.40%
% Cohort 1976 (age 22)	1107	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	2283	80.96%	1336	**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						

Table A2. Proportion of mobility by cohort: general population vs. YAPS non-attritors			
	% Migrants		
Cohort	General Pop. (Register)	YAPS non-attritors	Difference
1968	31.16%	29.24%	1.92%
1972	44.04%	38.61%	5.43%
1976	57.65%	51.35%	6.31%
Total	43.63%	40.65%	2.98%

Table A3. Indirect test for attrition bias -- OLS regressions of variables of interest (in levels) on future attrition and control variables										
	Life satisfaction		**Self-reported income**		**Economic satisfaction**		**Satisfaction with housing**		**Sat with occupation**	
attrit99_09	-0.028	0.006	-7.711	-3.426	-0.139	-0.099	0.043	0.058	-0.053	-0.005
	(0.79)	(0.18)	(2.57)*	(1.4)	(3.19)**	(2.33)*	(1)	(1.33)	(1.22)	(0.13)
male		-0.157		16.506		-0.078		0.118		0.007
		(4.18)**		(6.39)**		(1.32)		(1.92)+		(0.13)
swedish		0.174		5.127		0.109		-0.149		-0.051
		(3.56)**		(1.68)+		(2.49)*		(3.27)**		(1.18)
married		0.247		3.437		0.186		0.146		0.05
		(4.63)**		(0.9)		(2.97)**		(2.38)*		(0.77)
divorced/widowed		-0.172		-21.811		-0.459		0.023		-0.287
		(1.33)		(2.79)**		(2.66)**		(0.14)		(1.56)
student		-0.433		8.433		-0.395		-0.099		-1.512
		(3.77)**		(1.55)		(3.54)**		(0.81)		(11.84)**
unemployed		0.145		49.545		0.567		0.296		-0.376
		(2.22)*		(11.71)**		(7.42)**		(3.87)**		(4.97)**
service production		0.134		27.726		0.344		0.223		-0.479
		(2.41)*		(8.87)**		(5.14)**		(3.29)**		(7.25)**
assistant non-manual		0.085		30.803		0.594		0.119		-0.323
		(1.3)		(7.19)**		(7.56)**		(1.42)		(4.12)**
intermediate non-manual		0.118		26.111		0.766		0.161		-0.002
		(2.08)*		(5.89)**		(11.09)**		(2.27)*		(0.04)
farmers/self-employed		0.299		22.573		0.926		0.378		0.208
		(2.98)**		(2.59)**		(6.96)**		(2.86)**		(1.84)+
professional/higher non-manual/exec		0.165		22.633		0.897		0.148		0.075
		(2.37)*		(3.25)**		(11.16)**		(1.76)+		(0.95)
1972 cohort		0.05		60.677		-0.012		0.083		0.045
		(1.14)		(20.99)**		(0.23)		(1.53)		(0.86)
1968 cohort		0.009		100.911		0.025		0.154		-0.021
		(0.17)		(27.53)**		(0.39)		(2.42)*		(0.34)
Constant	3.924	3.722	104.267	21.504	3.111	2.699	3.686	3.428	3.808	4.032
	(170.72)**	(65.48)**	(51.42)**	(6.45)**	(109.69)**	(39.80)**	(133.10)**	(48.15)**	(137.83)**	(65.17)**
Observations	2785	2688	2800	2717	2789	2692	2776	2681	2751	2661
R-squared	0	0.05	0	0.4	0	0.12	0	0.03	0	0.11
Robust t statistics in parentheses										
* significant at 5%; ** significant at 1%										

	Table A4. Indirect test for attrition bias -- OLS regressions of variables of interest (in 99-03 changes) on attrition in 2009 and control variables									
	Life satisfaction		**Self-repored income**		**Economic satisfaction**		**Satisfaction with housing**		**Sat with occupation**	
attrit99_09	-0.05	-0.05	-4.536	-4.435	0.043	0.043	-0.065	-0.065	0.067	0.067
	(1.06)	(1.06)	(0.94)	(0.92)	(0.75)	(0.75)	(1.08)	(1.07)	(1.05)	(1.05)
married FD		0.048		25.345		0.108		0.196		0.105
		(0.78)		(3.46)**		(1.36)		(2.25)*		(1.27)
div/wid FD		0.117		41.993		-0.292		0.199		-0.289
		(0.52)		(2.20)*		(1.4)		(0.94)		(1.12)
Constant	0.023	0.015	70	66.47	0.122	0.112	0.103	0.077	-0.003	-0.012
	(0.83)	(0.53)	(25.44)**	(23.59)**	(3.70)**	(3.26)**	(2.93)**	(2.09)*	(0.08)	(0.32)
Observations	2049	2049	2086	2086	2052	2052	2046	2046	2004	2004
R-squared	0	0	0	0.01	0	0	0	0	0	0
Robust t statistics in parentheses										
* significant at 5%; ** significant at 1%										

Appendix B. Description of variables used in the study

Table B1. 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	Total	Work migrants	Non-work migrants	All migrants	Non-migrants	Total
Life satisfaction	218	338	630	911	1541	115	153	296	277	573
Economic satisfaction	220	340	636	919	1555	117	152	299	281	580
Satisfaction with house	219	341	632	912	1544	116	153	299	275	574
Satisfaction with occupation	222	334	629	893	1522	118	153	301	275	576
Satisfaction with partner	121	244	415	642	1057	59	103	177	167	344
Occupation group	215	326	609	860	1469	115	148	289	266	555
Civil status	222	344	643	930	1573	118	156	304	283	587
Education	221	343	641	923	1564	117	155	302	280	582
Work Income	222	344	643	930	1573	118	156	304	283	587
Disposable Income	222	344	643	930	1573	118	156	304	283	587
	1972 cohort					1968 cohort				
	Work migrants	Non-work migrants	All migrants	Non-migrants	Total	Work migrants	Non-work migrants	All migrants	Non-migrants	Total
Life satisfaction	61	115	205	327	532	42	70	129	307	436
Economic satisfaction	62	117	208	328	536	41	71	129	310	439
Satisfaction with house	62	117	205	328	533	41	71	128	309	437
Satisfaction with occupation	62	114	202	322	524	42	67	126	296	422
Satisfaction with partner	34	84	141	237	378	28	57	97	238	335
Occupation group	59	111	197	307	504	41	67	123	287	410
Civil status	62	117	209	334	543	42	71	130	313	443
Education	62	117	209	331	540	42	71	130	312	442
Work Income	62	117	209	334	543	42	71	130	313	443
Disposable Income	62	117	209	334	543	42	71	130	313	443

Table B2. Mean life satisfaction and satisfaction with occupation, by occupation category and occupational status, by year, by migrant status												
Occupation status	**Occupation category**	**Life satisfaction**										
		Migrants				Non-Migrants				All		
		1999		2009		1999		2009		1999		2009	
		N	Mean LS	N	Mean LS	N	Mean LS	N	Mean LS	N	Mean LS	N	Mean LS
Low	Student	236	3.78	18	3.89	176	3.86	33	3.36	412	3.82	51	3.55
Low	Unemployed	20	3.25	8	4.13	33	3.85	12	3.42	53	3.62	20	3.70
Medium	Goods production	45	3.69	32	3.88	125	3.97	113	3.84	170	3.89	145	3.85
Medium	Service production	86	3.85	58	4.00	192	4.07	148	3.94	278	4.00	206	3.96
Medium	Assistant non-manual	62	3.95	64	4.09	107	3.98	122	3.93	169	3.97	186	3.99
Medium	Intermediate non-manual	104	3.91	198	3.96	159	4.04	243	4.01	263	3.99	441	3.99
Medium	Farmers/self-employed	8	4.63	25	3.84	32	4.03	55	3.98	40	4.15	80	3.94
High	Professional/higher non-manual/executives	68	4.04	208	4.08	67	4.01	164	3.98	135	4.03	372	4.03
		Satisfaction with occupation											
		Migrants				Non-Migrants				All			
		1999		2009		1999		2009		1999		2009	
		N	Mean Sat occup	N	Mean Sat occup	N	Mean Sat occup	N	Mean Sat occup	N	Mean Sat occup	N	Mean Sat occup
Low	Student	234	4.09	17	4.18	177	4.00	33	3.73	411	4.05	50	3.88
Low	Unemployed	22	2.45	6	2.17	33	2.73	11	2.18	55	2.62	17	2.18
Medium	Goods production	44	3.68	33	3.67	124	3.72	112	3.58	168	3.71	145	3.60
Medium	Service production	86	3.55	56	3.64	188	3.45	145	3.81	274	3.48	201	3.76
Medium	Assistant non-manual	65	3.52	62	3.81	106	3.84	122	3.89	171	3.72	184	3.86
Medium	Intermediate non-manual	104	4.12	200	3.94	156	3.95	246	4.08	260	4.02	446	4.02
Medium	Farmers/self-employed	8	4.75	26	4.31	31	4.13	53	4.23	39	4.26	79	4.25
High	Professional/higher non-manual/executives	68	4.01	208	4.17	67	4.09	161	4.14	135	4.05	369	4.16

Table B3. Description of all variables used in the analysis		
Variable	**Question asked**	**Response categories**
Migrant	Person who, according to register data, changed municipality in the period 1999-2009 (including multiple changes and return migration)	0 - other 1 - migrant
non-migrant	Person who, according to register data, did not change municipality in the period 1999-2009	0 - other 1 - non-migrant
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
non-work 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
life satisfaction	Answer to the "life satisfaction" question from the YAPS survey	scale 1 - 5 with 1 - very dissatisfied, and5 = very satisfied
work income	Register information on "income from work before tax" for the years 1998 and 2008 (in thousands of SEK)	
disposable income	Register information on "disposable income" for the years 1998 and 2008 (in thousands of SEK)	
economic satisfaction	Answer to the "economic satisfaction" question from the YAPS survey	scale 1 - 5 with 1 - very dissatisfied, and5 = very satisfied
satisfaction with housing	Answer to the "satisfaction with housing" question from the YAPS survey	scale 1 - 5 with 1 - very dissatisfied, and5 = very satisfied
satisfaction with occupation	Answer to the "satisfaction with what the person is doing: question from the YAPS survey	scale 1 - 5 with 1 - very dissatisfied, and5 = very satisfied
satisfaction with partner	Answer to the "satisfaction with partner: question from the YAPS survey	scale 1 - 5 with 1 - very dissatisfied, and5 = very satisfied
labor market transition	Dummy variable taking on the value 1 if the person has achieved her highest education level after 1999, and is a part of the labor force (not a student, unemployed, or house worker) in 2009, and 0 otherwise	0 - other 1 - completed labor market transition
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) Assistnat non-manual 6) Intermediate non-manual 7)Farmer/self-employed 8) Professional/higher manual/executive

Table B3 continued		
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 years - 10.5 years secondary 3 years - 12 years post-secondary less than 3 years - 13.5 years post-secondary more than 3 years/postgraduate - 16.5 years
civil status	Civil status from Swedish register	1. unmarried; 2. married; 3. widowed; 4. divorced
Cohort	Register data for year person was born	
Gender	Register data for gender of person surveyed	
County	County of residence from Swedish register	
municipality	Municipality of residence from Swedish register	

Table B4. Description of original survey questions used in the analysis		
Variable	**Question asked**	**Response categories**
life satisfaction	Are you satisfied or dissatisfied with life in general right now?	scale 1 - 5 with 1 - very dissatisfied, and5 = very satisfied
economic satisfaction	Are you satisfied or dissatisfied with your economic situation?	scale 1 - 5 with 1 - very dissatisfied, and5 = very satisfied
satisfaction with housing	Are you satisfied or dissatisfied with your housing situation?	scale 1 - 5 with 1 - very dissatisfied, and5 = 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, and5 = very satisfied
satisfaction with partner	Are you satisfied or dissatisfied with your relationship with your partner?	scale 1 - 5 with 1 - very dissatisfied, and5 = very satisfied
long_distance_move	When did you last make a long distance move? (year and month)	Year and month recorded separately
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.....
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-emplooyed professionals 11. entrepreneurs 12. farmers
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. "kunskapslyftetet": 6. employment measures: 7. unemployed >= 6 months 8. unemployed < 6 months: 9. parental leave 10. Housekeeping: 11. Military: 13. retired 14. on long term sick leave: 15. doctoral student 16. on leave from work 17. other

Appendix C. Robustness checks

Table C1. OLS and MI ICE regressions: Life satisfaction as dependent variable, regressed on *county* migrant dummy (pooled and by reason) with non-migrants as reference group						
	Life satisfaction					
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS		OLS		MI ICE	
all migrants	0.214	0.183				
	(4.03)**	(3.41)**				
work migrant			0.27	0.231	0.27	0.239
			(3.07)**	(2.60)*	(3.09)**	(2.62)**
non-work migrant			0.175	0.149	0.172	0.147
			(2.37)*	(2.03)*	(2.35)*	(2.01)*
married FD		0.015		0.015		0.015
		(0.26)		(0.26)		(0.17)
divorced/widowed FD		-0.055		-0.056		-0.056
		(0.47)		(0.48)		(0.48)
lm_transition		0.116		0.114		0.114
		(2.53)*		(2.48)*		(2.47)*
Constant	0.02	-0.014	0.021	-0.013	0.02	-0.013
	(1.88)+	(0.49)	(1.94)+	(0.47)	(1.9)+	(0.47)
Observations	1541	1526	1538	1524	1541	1526
R-squared	0.03	0.03	0.03	0.03		
t statistics in parentheses, standard errors clustered at change in county level						
+ significant at 10%; * significant at 5%; ** significant at 1%						

Table C2. OLS and MI ICE regressions: Different life domains as dependent variables, regressed on *county* migrant dummy (pooled and by reason) with non-migrants as reference group															
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Economic domain									Housing domain			Work domain		
	Work income			Disposable income			Economic satisfaction			Satisfaction with housing			Satisfaction with what currently doing		
	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE
all migrants	23.134			9.73			-0.032			0.18			-0.128		
	(2.93)**			(1.53)			(0.46)			(2.13)*			(1.33)		
work migrant		41.332	41.606		21.323	21.594		0.005	0.005		0.08	0.086		-0.152	-0.144
		(3.14)**	(3.22)**		(2.11)*	(2.16)*		(0.05)	(0.05)		(0.65)	(0.69)		(1.24)	(1.15)
non-work migrant		10.579	9.397		1.625	0.906		-0.054	-0.059		0.253	0.250		-0.119	-0.115
		(0.98)	(0.89)		(0.21)	(0.12)		(0.53)	(0.59)		(2.45)*	(2.44)*		(0.9)	(0.88)
married FD	5.049	5.131	5.296	13.59	13.592	13.749	0.052	0.053	0.053	-0.023	-0.027	-0.024	-0.034	-0.038	-0.034
	(0.55)	(0.57)	(0.59)	(2.52)*	(2.55)*	(2.58)**	(1.01)	(1.02)	(1.03)	(0.28)	(0.33)	(0.3)	(0.54)	(0.61)	(0.54)
div/wid FD	19.901	19.418	19.484	30.868	30.531	30.601	-0.148	-0.148	-0.149	-0.218	-0.217	-0.215	0.088	0.087	0.089
	(0.97)	(0.95)	(0.95)	(2.51)*	(2.47)*	(2.48)*	(1.36)	(1.36)	(1.36)	(1.4)	(1.4)	(1.39)	(0.64)	(0.63)	(0.64)
lm_transition	66.656	65.991	65.808	14.383	13.985	13.838	0.532	0.531	0.531	-0.028	-0.022	-0.024	0.127	0.13	0.128
	(9.03)**	(8.81)**	(8.77)**	(3.87)**	(3.72)**	(3.68)**	(7.71)**	(7.62)**	(7.63)**	(0.31)	(0.24)	(0.26)	(1.90)+	(1.94)+	(1.91)+
Constant	100.106	100.281	100.291	104.361	104.519	104.480	0.196	0.196	0.196	0.439	0.44	0.438	0.111	0.115	0.111
	(17.74)**	(17.95)**	(17.97)**	(36.98)**	(37.09)**	(37.25)**	(6.65)**	(6.65)**	(6.66)**	(9.38)**	(9.69)**	(9.43)**	(3.00)**	(3.13)**	(3.00)**
Observations	1556	1554	1556	1556	1554	1556	1540	1538	1540	1530	1528	1530	1508	1506	1508
R-squared	0.11	0.12		0.07	0.07		0.08	0.08		0.03	0.03		0.02	0.02	
t statistics in parentheses, standard errors clustered at change in county level															
+ significant at 10%; * significant at 5%; ** significant at 1%															

Table C3. OLS and MI ICE regressions: Life satisfaction as dependent variable, regressed on migrant dummy (pooled and by reason) with non-migrants as reference group, *controlling for years of education changes*			
	Life satisfaction		
	(1)	(2)	(3)
	OLS	OLS	MI ICE
all migrants	0.179		
	(2.51)*		
work migrant		0.225	0.235
		(2.15)*	(2.31)*
non-work migrant		0.138	0.150
		(1.83)+	(2.05)*
married FD	0.01	-0.001	0.011
	(0.17)	(0.01)	(0.18)
divorced/widowed FD	-0.047	-0.072	-0.049
	(0.39)	(0.53)	(0.41)
lm_transition	0.084	0.106	0.080
	(0.88)	(1.08)	(0.84)
educ_years FD	0.008	0.006	0.007
	(0.31)	(0.22)	(0.3)
Constant	-0.069	-0.065	-0.069
	(2.09)*	(1.89)+	(2.13)*
Observations	1523	1451	1523
R-squared	0.03	0.04	
t statistics in parentheses, standard errors clustered at change in county level			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Table C4. OLS and MI ICE regressions: Different life domains as dependent variables, regressed on migrant dummy (pooled and by reason) with non-migrants as reference group, *controlling for years of education changes*															
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Economic domain									Housing domain			Work domain		
	Work income			Disposable income			Economic satisfaction			Satisfaction with housing			Satisfaction with what currently doing		
	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE	OLS	OLS	MI ICE
all migrants	2.183			6.84			0.018			0.196			-0.076		
	(0.33)			(1.53)			(0.37)			(2.98)**			(0.79)		
work migrant		29.459	29.957		18.734	19.239		0.03	0.038		0.127	0.146		-0.154	-0.148
		(2.79)**	(3.01)**		(2.60)*	(2.84)**		(0.35)	(0.44)		(1.31)	(1.48)		(1.35)	(1.3)
non-work migrant		-12.502	-12.164		0.537	0.437		-0.028	0.008		0.227	0.222		-0.07	-0.037
		(1.49)	(1.73)+		(0.09)	(0.07)		(0.43)	(0.13)		(3.03)**	(3.13)**		(0.71)	(0.36)
married FD	5.445	4.473	5.714	13.179	12.928	13.297	0.049	0.042	0.050	-0.031	-0.036	-0.031	-0.03	-0.032	-0.030
	(0.6)	(0.54)	(0.65)	(2.50)*	(2.72)**	(2.62)**	(0.93)	(0.8)	(0.94)	(0.4)	(0.44)	(0.4)	(0.48)	(0.51)	(0.49)
div/wid FD	19.401	14.268	18.411	29.926	26.259	29.476	-0.154	-0.209	-0.155	-0.216	-0.261	-0.214	0.099	0.125	0.101
	(0.93)	(0.7)	(0.9)	(2.40)*	(2.40)*	(2.41)*	(1.4)	(1.55)	(1.41)	(1.4)	(1.43)	(1.4)	(0.71)	(0.88)	(0.71)
lm_transition	75.32	70.618	73.427	27.3	25.439	26.457	0.617	0.605	0.615	-0.021	0.007	-0.017	-0.008	-0.025	-0.003
	(6.82)**	(5.92)**	(6.55)**	(3.57)**	(3.17)**	(3.47)**	(5.00)**	(5.06)**	(4.96)**	(0.18)	(0.06)	(0.14)	(0.06)	(0.17)	(0.02)
educ years FD	-1.753	-0.98	-1.831	-4.203	-3.763	-4.239	-0.031	-0.028	-0.031	-0.006	-0.001	-0.006	0.042	0.047	0.042
	(0.49)	(0.25)	(0.5)	(1.97)+	(1.6)	(1.96)*	(0.87)	(0.78)	(0.88)	(0.16)	(0.01)	(0.15)	(1.04)	(1.04)	(1.03)
Constant	102.062	100.693	101.884	103.309	101.31	103.232	0.195	0.184	0.195	0.374	0.368	0.374	0.124	0.151	0.124
	(12.62)**	(14.64)**	(14.11)**	(25.92)**	(31.00)**	(28.13)**	(6.56)**	(5.66)**	(6.5)**	(8.46)**	(8.19)**	(8.49)**	(2.06)*	(3.14)**	(2.08)
Observations	1553	1479	1553	1553	1479	1553	1537	1463	1537	1527	1457	1527	1505	1434	1505
R-squared	0.11	0.12		0.07	0.07		0.08	0.08		0.03	0.03		0.02	0.03	
t statistics in parentheses, standard errors clustered at change in county level															
+ significant at 10%; * significant at 5%; ** significant at 1%															
All regressions include county controls corresponding to D_{co} and ($D_{c1} - D_{co}$) from model (2b).															