Long-Term Trends in Spatial Mobility: An Order-Specific Analysis of Migration of Young Adults in Sweden

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The aim of this study is to investigate spatial mobility over time. Most studies on internal migration focus on spatial redistribution of population and determinants of inter-regional migration flows; surprisingly little research has investigated dynamics of spatial mobility in industrialised societies over time. By using Swedish register data we will calculate annual age standardised migration rates to investigate spatial mobility of young adults (aged 18 to 29) over the last three decades (from 1986 to 2009). We will then disaggregate mobility rates by calculating order-specific migration rates. We will next standardise order-specific mobility rates for educational enrolment and level and for family status to determine how much changes in various life domains of individuals explain the change in mobility levels over time. The analysis shows that migration rates for young adults significantly increased in the 1990s; while all order-specific migration rates increased, the first migration rates grew the most. Changes in population composition, particularly increased enrolment in higher education accounted for much of elevated spatial mobility levels in the 1990s.

Keywords: migration, mobility, life course, standardisation, Sweden

Introduction

There is a long tradition in migration research investigating spatial redistribution of population. Classical studies focussed on inter-regional migration flows and their determinants (Ravenstein 1885; Wilson 1970); subsequent studies have examined migration streams by population subgroups, particularly by age because of the central role age does play in determining migration intensity and directions (Rogers et al. 1983; Kupiszewski et al. 1998). The research on spatial redistribution of population has largely been driven by the need for regional population projections (Wilson and Rees 2005); these provide policy-makers with information required for the monitoring and planning of socio-economic development of regions.

Another research stream has focussed on understanding and explaining individual migration behaviour. This research, usually seen as a micro-level analysis of migration, has its roots in life-paths and life-course paradigms (Hägerstrand 1982; Elder 1994); the main interest is to understand how changes in various life domains of individuals, families or households (usually employment and family relations) explain their migration behaviour (Kulu and Milewski 2007). While most studies have used small-scale longitudinal surveys (Courgeau 1985; Mulder and Wagner 1998; Clark and Davies-Withers 2007), recent research has also exploited large-scale administrative data that have become increasingly available. Research based on register data from Nordic countries is the best-known to exploit opportunities that have recently opened up with an increased availability of administrative data (Fischer and Malmberg 2001; Lundholm 2007; 2010; 2012; Mulder and Malmberg 2011; Kulu and Steele 2013).

While some comparison of trends and patterns over time or across cohorts is ingredient of any migration study, surprisingly little research has examined migration trends over time. Annual migration rates are reported by statistical offices of most countries where data on geographical movement of population are available; however, explicit analysis of trends and determinants is exception rather than a rule (see Rogerson 1987; Lundholm 2007; Cooke 2012). This is particularly striking given a presumption by general public that spatial mobility has recently increased driven by changing nature of work in advanced industrialised countries (i.e. short-term work contracts are increasingly common) and de-standardisation and diversification of life-courses of individuals (cf. Macmillan 2005).

The aim of this study is to investigate spatial mobility in Sweden over time and explain changes in the mobility patterns. We focus on geographical mobility of individuals aged 18 to 29; adolescents and young adults are known to be the most mobile group in industrialised societies (Rogers and Castro 1981), and previous studies on Sweden have also demonstrated elevated migration levels for young adults relative to other age groups (Lundholm 2007). Young adulthood is a time in life when many move for education, to form a family and to start their labour and housing market careers. This can be a stage in life with many subsequent moves. We therefore also examine migration patterns by order (first, second, third etc moves) and standardise migration rates for changes in other life domains of

individuals (education, work, family) to determine how much changes in various life domains of individuals explain the change in mobility levels over time.

We conduct our study in Sweden for the following reasons. First, Sweden belongs to the group of 'advanced economies'; it is a country with high average income and where services and information technology have become dominant employment sectors. Second, Sweden is a society where life-course patterns have significantly diversified in the recent decades; premarital cohabitation, separation, re-partnering and the spread of stepfamilies are more common than in any other industrialised country (Oláh and Bernhardt 2008). Finally, the availability of register data for a longer period of time offers excellent opportunities to conduct a study on spatial mobility: large-scale longitudinal data ensure reliable estimates of spatial mobility over years and make the calculation of disaggregated measures (e.g. order-specific migration rates) possible.

Research on spatial mobility

The best-known study on spatial mobility is a seminal paper by Zelinsky (1971) on 'mobility transition'. In his paper, Zelinsky did not conduct any empirical analysis; rather he set the results of previous studies into a coherent theoretical framework and made predictions of the future trends. Research has shown that spatial mobility increased during industrialisation and modernisation and that this was closely linked to demographic transition. While emigration and rural-urban migration explained much of the increase in spatial mobility in 'transitional' societies, in 'advanced societies', increased interurban migration and circulation became responsible for high mobility levels; residential mobility rates were also high. For 'super-advanced societies' the framework predicted some decline in residential migration and deceleration in some forms of circulation because of improved communication due to technological advancements.

Zelinsky's study has been a source of inspiration for much of migration research; however, studies on trends in spatial mobility over time and across countries are still rare. Long (1991) investigated differences in residential mobility in industrialised countries in the 1970s and 1980s. The study showed, first, a significant variation in residential mobility levels across countries: while residential mobility was relatively high in the U.S., Canada, Australia and New Zealand, the mobility levels were low in many European countries including Britain; he attributed the variation across countries to the differences in housing availability and affordability due to the housing market regulations and potentially also longstanding customs and traditions that govern use of housing and relationship of people to their housing. Second, the analysis showed some decline in mobility levels for most countries over the study period, which the author explained by reduced housing affordability in industrialised countries.

A study by Rogerson (1987) on spatial mobility in the U.S. also reported declining geographical mobility rates. The analysis showed relatively high mobility levels in the 1950s and 1960s and a sharp decline from the mid-1960s to the early 1980s. While changing age

composition of the U.S. population explained some decline in the crude mobility rates, the further analysis also revealed declining age-specific migration rates in the 1970s. The author attributed declining rates to an increased competition at labour and housing market, potentially due to the arrival of 'baby-boomers' to the labour market, and increased female labour force participation. A recent study by Molloy et al. (2011) supported these findings. The authors calculated mobility rates at different spatial scales for the last 30 years and showed a decline in spatial mobility at all levels and across socioeconomic groups. They discussed various factors behind the trend including aging of population, an increased share of homeowners and that of dual earners, improved telecommunications and the end of the 'move-to-South' era, a factor specific to the U.S. context. Interestingly, however, a closer look into the results by age shows that inter-state migration rates were relatively stable for all age groups between 1980 and 2000; some decline was observed only for the past decade. Cooke (2011; 2012) found both short-term and long-term trends of migration decline in the US and explained this as a combination of the recent economic crisis, changing demographic composition and the long-term rise of rootedness.

Studies on other industrialised countries have shown that the recent trends in spatial mobility are not that clear once changing age composition of population is controlled. Bell et al. (2002) discussed various measures of spatial mobility and compared mobility intensities at various spatial scales in Australia and Britain. The analysis revealed that while geographical mobility declined slightly in Britain in the 1980s, the mobility rates increased in Australia, possibly in the early 1990s. Lundholm (2007) examined trends in interregional migration in Sweden over a long period of time. The analysis supported that migration rates significantly declined during the 1970s and 1980s; however, the mobility rates increased again in the 1990s. The patterns differed by population subgroups: while migration levels for families with children declined over time, migration rates for singles and couples without children significantly increased suggesting polarisation of migration patterns by stage in the life course. The declining mobility rates among families and also among employed population were attributed to the increase in the number of dual income families and delayed family formation.

A study by Stillwell and Call (2000) on Spain showed increasing migration rates for working age people between 1988 and 1994; however, intra-provincial mobility increased more than that of inter-provincial, which the authors explained by an increased suburbanisation in Spain during that period; Cannari et al. (2000), in contrast, showed declining mobility rates in Italy between the 1960s and early 1990s largely due to the declining South-North migrations, which they explained by increased differences in the housing costs. Most studies have thus reported the decline in spatial mobility in the 1970s and 1980s; however, the results on trends since the 1990s are less conclusive; these vary across countries and also seem to depend on whether migration or residential mobility is examined.

Population aging has reduced overall spatial mobility in industrialised societies in the recent decades. However, once we control for the effect of changing age composition of population, there are a list of factors that have either hindered or promoted (higher) spatial

mobility. First, spatial mobility levels may have declined in industrialised countries in the recent decades because of an increased share of dual-earner couples; this has significantly reduced migration for the sake of a man's career. Second, research has shown that the share of homeowners increased in many industrialised countries until very recently; this is another factor which may have reduced the levels of spatial mobility. Third, most people in industrialised countries live in urban areas; with the spread of post-secondary educational institutions to smaller cities and towns the need has diminished for young adults to move to another place for the study (traditionally from rural to urban area) and return thereafter. Fourth, with the development of telecommunication technologies, opportunities have opened up to work from home even over long distances; this has made possible of employment changes without the need for residential changes. Fifth, studies have also argued that spatial mobility, particularly residential mobility has declined during the recent recession due to inability of homeowners to sell their houses, which they bought during the economic boom at a high price, and potential buyers to afford these over-priced houses.

There is also a list of factors that have promoted higher spatial mobility in industrialised countries in the recent decades. First, changes in family and fertility patterns have lead to smaller households and a larger single population who has fewer obstacles to move over short or long distances. Further, mobility of young adults may have increased because of delayed family formation; an increased number of individuals in their mid- or late twenties have no children, although they may have a partner. Increased separation, divorce and re-partnering rates is another demographic trend driving higher mobility levels in industrialised societies. Second, spatial mobility may have increased because of the expansion of higher education in many European countries in the recent decades. Third, on employment side, the rise of post-industrial economies and the emergence of post-Fordist economic model have challenged the stability that many generations used to enjoy at labour market; long-term work contracts are in decline and short-term work contracts are increasingly common, particularly among the younger population groups.

This study examines spatial mobility of Swedish population in ages 18 to 29. We extend previous research in the following ways. First, we will calculate age controlled migration measures to investigate spatial mobility of Swedish population over time. While some studies reviewed above have applied age-standardised measures, surprisingly many studies have used the crude migration rate to examine spatial mobility over time; being sensitive to population age composition, clearly this measure is inappropriate for a detailed study of trends in geographical mobility. Second, we will investigate annual mobility rates over a long-time period. Most studies compare geographical mobility rates at two to three time points; the study period is also usually short. Third, we will disaggregate mobility rates by calculating order-specific rates.

The calculation of order-specific mobility rates will provide us with a detailed description of the changes in spatial mobility in Sweden over time. Previous research suggests that movers are more prone to move again and non-movers to stay (Blumen et al. 1955). This may result in a cumulative process were a first move increases the likelihood of

second and third, while early stayers are more likely to remain immobile. However, if late starters have just postponed their life course events and moves, they may catch up in the end. Hence, mobility trends are influenced by changing life course patterns and by process of cumulative mobility and immobility. We therefore stress the importance of examining the order-specific migration rates, to determine whether it is the first, second or third etc. moves that have increased or decreased over time. The study of order-specific migration thus allows to determine whether changes in mobility rates are explained by changed mobility patterns among all population subgroups or whether just some subgroups have become more or less mobile than they used to be (and account for the changes in mobility rates)? To our knowledge no previous study has examined trends in spatial mobility by mobility order. Finally, we will standardise order-specific mobility rates also for place of residence and for changes in other life domains of individuals (education, work, family) to determine how much changes in various life domains of individuals or couples explain the change in mobility levels over time. This is another novelty of this study.

Methodology

Previous research has used two types of measures to investigate trends in spatial mobility over time. Surprisingly many studies have used the crude migration rate:

$$r_t = \frac{M_t}{R_t} \qquad (1)$$

where M_t is the number of migrations in a given population at time t, normally during a year, and R_t is the risk population at time t. Needless to repeat that the crude rate is sensitive to population age structure and should thus be avoided when information on age of movers is available. Research has also used age-specific migration rates with age usually grouped into five or ten-year intervals:

$$r_{t,x} = \frac{M_{t,x}}{R_{t,x}} \qquad (2)$$

where x is for age group.

While the analysis of age-specific rates can provide us with useful information on trends in spatial mobility over time, it does usually remain unclear whether annual migration rates change because of changes in migration behaviour of individuals or due to changes in population composition (e.g. by education or family status). Some studies have proposed to calculate age-specific rates by population subgroups; although this step is a natural ingredient of the 'age-specific approach', the approach itself is inefficient if more than one compositional factor may account for annual variation in migration rates. Another limitation is that no previous study has analysed migration by order. Information on overall mobility levels is a natural starting point of migration research, but it may be useful to also know whether only first migration levels have changed over time or also higher-order mobility has varied.

We develop the methodology for the analysis of spatial mobility over time in two ways: we propose, first, the calculation of order-specific migration rates; and second, the standardisation of migration rates. The order-specific migration rate is:

$$r_t^n = \frac{M_t^n}{R_t^{n-1}} \qquad n > 0 \quad (3)$$

where *n* is for migration order (first, second, ... *n*th). Note that the risk population consists of those individuals who have not yet moved *n*th time. The next step is to standardise order-specific migration rates for population composition. It would be natural to begin with age-standardised rates by using the technique of indirect standardisation:

$$sr_t^n = \frac{M_t^n}{\sum_x R_{t,x}^{n-1} \times a_x^*} \qquad n > 0 \quad (4)$$

where $sr^n{}_t$ is age-standardised *n*th migration rate at time *t* (assume that during a year) and $a^*{}_x$ is a standard age-schedule (age-specific migration rates). The formula provides us with relative migration rates, relative to the levels in standard population (e.g. this can be in a specific year of the same population). Hoem (1987; 1991) has shown a close link between indirect standardisation and hazard regression (or survival analysis); effectively, the latter can be considered as an improved indirect standardisation, which includes all features of modern statistical analysis. A hazard model for the calculation of age-standardised order-specific migration rates can be formalised as follows:

$$h_t^n = c_t^n \times \exp\{a_t^n\} \qquad (5)$$

where $h^n{}_t$ is the hazard of *n*th migration for an individual at year *t*; $c^n{}_t$ is a set of parameters to measure the effect of calendar year on the hazard of *n*th move (or the baseline hazard). $a^n{}_t$ denotes the parameters describing the effect of individual age. (The reader may have used to see age-specific rates as the baseline for the model, but the order of components does not matter.) We can standardise the annual migration rates not only for age, but also for further factors:

$$h_t^n = c_t^n \times \exp\{\sum_k \beta_k^n x_{kt}^n\} \quad (6)$$

where $x^n{}_{kt}$ are the values of a set of covariates with *k* covariates (e.g. age, duration (if any), education, place of residence etc) and $\beta^n{}_k$ denotes the parameters describing the effects of the covariates.

Data

We will use data from the Population Register of Sweden. Our research population consists of individuals born between 1957 and 1991. We study their spatial mobility in ages 18 to 29 for the period of 1986 to 2009. First, for this period we have information on their full residential histories allowing the calculation of annual migration rates by order. Second, information on socio-demographic characteristics of individuals (e.g. education, marital

status) is available since 1986 allowing the calculation of standardised migration rates. In total, there are 5,645,556 individuals in the Population Register who have been in the risk population at least once during the observation period; for the analysis we have drawn a five-percent random sample of 282,278 individuals.

Information on the individual place of residence is available at the end of each year (31st December) at different levels: parish (1840 parishes), municipality (290) and labour market area (72). In this study we focus on migrations (i.e. long-distance moves); we define migration as a move between two labour market areas (as measured in 2001). Individuals who die or leave the country in year *t* are censored at the death or emigration (i.e. leave the risk set). Individuals who enter into the country (immigrants) in year *t* are at the risk for first internal migration since year *t*+1. Similarly, for return migrants only moves within Sweden are used to determine migration order. Our sensitivity analysis with and without immigrants (and return migrants) showed no significant changes in the results.

We standardise migration rates for a set of socio-demographic variables (see next section). Our controls include age (one-year age groups), duration since previous migration (if any), educational enrolment (not enrolled, enrolled), educational level (low, medium, high), marital status (single or divorced, married), the presence of children (childless, parent) and the place of residence (six groups by the size of labour market area). If an individual moved in year *t* and her/his socio-demographic characteristics also changed, then the change in socio-demographic characteristics was assumed to happen before migration. This is important to bear in mind when we interpret the effects of socio-demographic characteristics in multivariate analysis. The distribution of risk time and migration events by covariates is provided in Table 1.

Results

We first calculated annual unstandardised (or crude) migration rates (without migration order) for young adults (aged 18 to 29) over the period from 1986 to 2009. Annual migration rates were at the level of 0.05 in the second half of the 1980s and in the first half of the 1990s, which was 50 migration events per 1000 person-years; thereafter migration rates significantly increased and reached the level of 0.07–0.08 in the first decade of the 21st century (Figure 1). The migration rates thus increased about 60% in the 1990s. We then standardised annual migration rates for age (one-year age groups) to determine how much changes in the age structure of young adults shaped the trends. We see that there was not much difference between unstandardised and age-adjusted rates (Figure 2). Spatial mobility levels were thus much higher in the 2000s than in the late 1980s and 1990s.

Next we standardised migration rates for educational enrolment. The annual variation in mobility levels declined significantly (Figure 3). We then also controlled for educational level; the differences in spatial mobility across years further declined. We observed a decline in migration rates in the early 1990s and some increase thereafter. Most importantly, the

annual migration rates in the 2000s were only slightly higher than in the 1980s once we had controlled for educational enrolment and level of individuals. In the final step, we also included in the model individual marital and parental status, and place of residence. The results did not change much. The analysis thus showed that the changes in educational enrolment (i.e. the increase of student population and more students registered in the university town) and also in educational level explained much of the increase in migration rates in the second half of the 1990s. The effects of control variables were as expected: students had 2.2 times higher risk of moving than non-students (note that individuals were 'enrolled in education' in the year when they moved to the place of studies or left it); the propensity of moving increased with an increase in the level of education; married individuals, particularly those with children were less likely of moving long distances than single childless individuals; out-migration rates were the highest in rural areas and small towns and the lowest in the two largest cities, Stockholm and Gothenburg (Table 2).

In order to gain a better understanding of migration trends among young adults over time we calculated order-specific rates with and without controlling for individual socio-demographic characteristics. The first migration rates largely followed overall trends; the rates increased significantly in the 1990s and in the first decade of the 21st century the first migration rates were 50% higher than in the late 1980s (Figure 4). Once we controlled for educational enrolment and level the differences across years vanished. Similarly, the second migration rates increased in the 1990s, although the increase was smaller than for the first migration levels; again the changes in population composition by educational enrolment and level largely accounted for the annual variation in migration rates; interestingly, however, the second migration rates for young adults were still somewhat (about 10%) higher in the 2000s than in the 1980s even after standardisation for socio-demographic characteristics (Figure 5). Additionally we calculated the third and fourth migration rates for young adults. We observed an increase in higher-order migration rates in the 1990s, although the increase was much smaller than it was for the first migration rates (Figure 6). Again, the annual differences in migration rates largely vanished once we standardised the rates for socio-demographic characteristics, particularly for educational enrolment and level (Figure 7). Interestingly, however, standardised migration rates experienced some decline in the early 1990.

In our further analysis we explored trends in spatial mobility by age and sex. The age-specific analysis of migration rates (without migration order) showed that the rates increased the most (80%) for individuals aged 18 to 22 supporting the importance of moves related to studies. Mobility levels also increased among those aged 23 to 29 (Figure 8a and 8b). Again, once we controlled for educational enrolment and level the variation in annual mobility rates declined significantly. Our further analysis showed that first migrations largely determined spatial mobility levels in ages 18 to 22, whereas second moves were mostly responsible for elevated spatial mobility levels in ages 23 to 29 we initially observed (see Figures 10a and 10b in Appendix 1). This finding supports the idea that migrations related to the start and end of studies largely explained increased spatial mobility in the 1990s. We also conducted analysis by sex to detect any differences between males and females. Our analysis showed

that males and females experienced similar migration patterns during the observation period (Figure 9).

Summary and discussion

In this study we analysed spatial mobility of young adults (aged 18 to 29) in Sweden from 1986 to 2009. We proposed a methodology to calculate order-specific migration rates and to standardise migration rates for socio-demographic characteristics of population. First, the analysis showed that migration rates for young adults significantly increased in the 1990s; while all order-specific migration rates increased, the first migration rates grew the most. Second, changes in population composition, particularly increased enrolment in higher education accounted for much of elevated mobility levels in the 1990s. Once we controlled for educational enrolment and level the variation in annual mobility rates largely vanished. Third, males and females experienced similar trends in spatial mobility in the last three decades.

Previous research on spatial mobility in industrialised countries suggests that mobility levels have either declined (the U.S.) or increased (mostly Europe), whereas our analysis shows that once we control for increased educational enrolment spatial mobility levels have remained stable over a longer period of time; this is despite the wider economic and demographic changes that predict changes in spatial mobility levels. Recent European studies have similarly reported a significant increase in migration rates in the 1990s (Shuttleworth and Champion 2013; Heins 2013); our own analysis of migration rates for young adults in other Nordic countries (e.g. Finland) supports these findings. We believe that the spread of post-secondary education in many European countries in the 1990s and the increased educational level of population accounts for increased mobility levels. Interestingly, once we controlled for compositional changes migration rates were about 20% lower in the early 1990s than in the periods prior to or after that. The early 1990s was a time of economic recession in Sweden; the analysis thus suggest that economic cycles rather than other factors may explain short-term fluctuations in spatial mobility levels, at least among working age population. The fact that migration rates declined in 2009 seems to further support this argument, although we should be cautious making final conclusions based on the data from one year only.

The analysis thus suggested that the spread of tertiary education had a positive effect on the level of spatial mobility in the 1990s among young adults. Previous studies show that the enrolment rates indeed significantly increased in Sweden in the 1990s. Although increased enrolment rates accounted for most elevated spatial mobility in the 1990s, a change in the registration of students' place of residence since 1991 may also played some role, particularly in the first half of the 1990s. Research shows that the number of students registered as residents of the university town increased from 50 percent in the 1980s to 90 percent in 1994 as a result of a new law for civil registration 1991 (Linköpings kommun 2014).

The results of this study are based on the analysis of moves between labour market areas; however, it is possible that the effect of economic and particularly demographic changes becomes visible only when we analyse moves at other spatial scales, particularly short-distance moves. In our further analysis we calculated mobility rates for moves between parishes including thus both short- and long-distance moves. The levels of all residential changes increased in the 1990s, although the increase was modest relative to that for migrations only (see Figure 11 in Appendix 1). Once we controlled for educational enrolment and level the differences in spatial mobility levels across years disappeared supporting that education-related long-distance moves were largely responsible for increased mobility levels in the 1990s. Although future research should explore in detail mobility levels at different spatial scales, the results suggest that changing migration levels were likely the most important development in spatial mobility in Sweden in the past decades.

Future research should also investigate spatial mobility by the destination of move, e.g. by distinguishing between large cities, other urban areas and small towns and rural areas. Another important area to study are trends in spatial mobility by population subgroups. We examined patterns by age and sex among young adults, but spatial mobility by various population subgroups, including age groups other than young adults may reveal some interesting patterns. Previous research suggests that migration rates for families with children may have declined over time, whereas mobility levels for singles and couples without children may have increased (Lundholm 2007). The proposed approach can be easily extended to accommodate various needs of the analysis of spatial mobility. Using Swedish register data this study showed that spatial mobility among young adults significantly increased in the 1990s and the increased enrolment rates were largely responsible for the elevated mobility levels.

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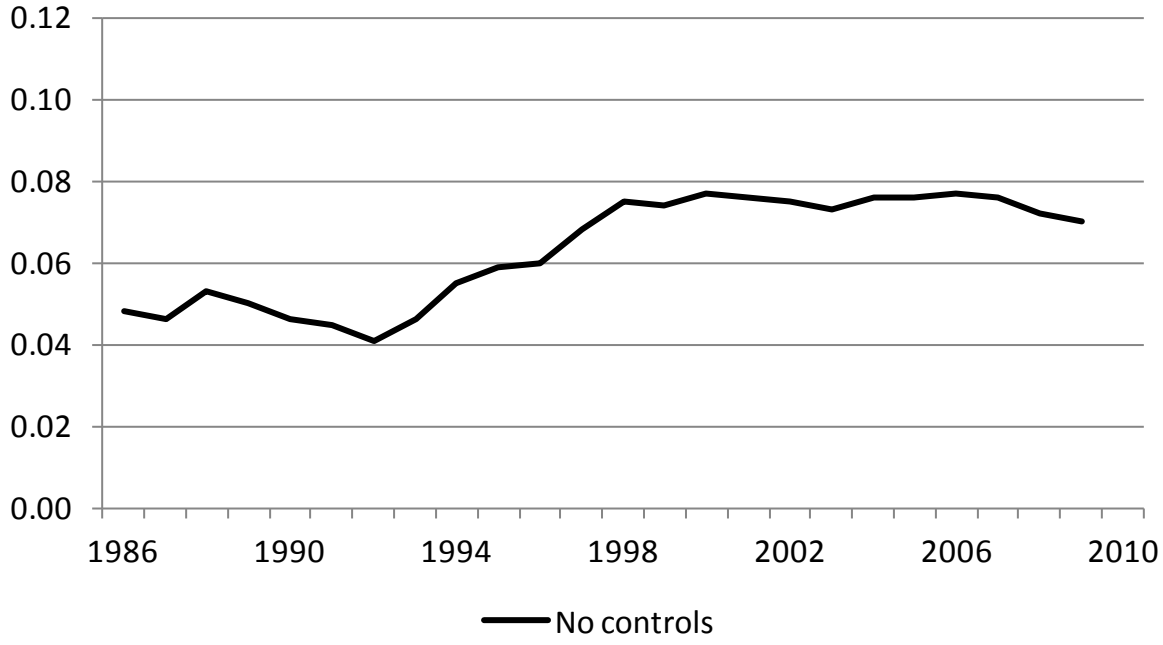

Figure 1. Annual Migration Rates, 1986-2009.

Source: The authors' calculations based on the Population Register of Sweden, 1986-2009

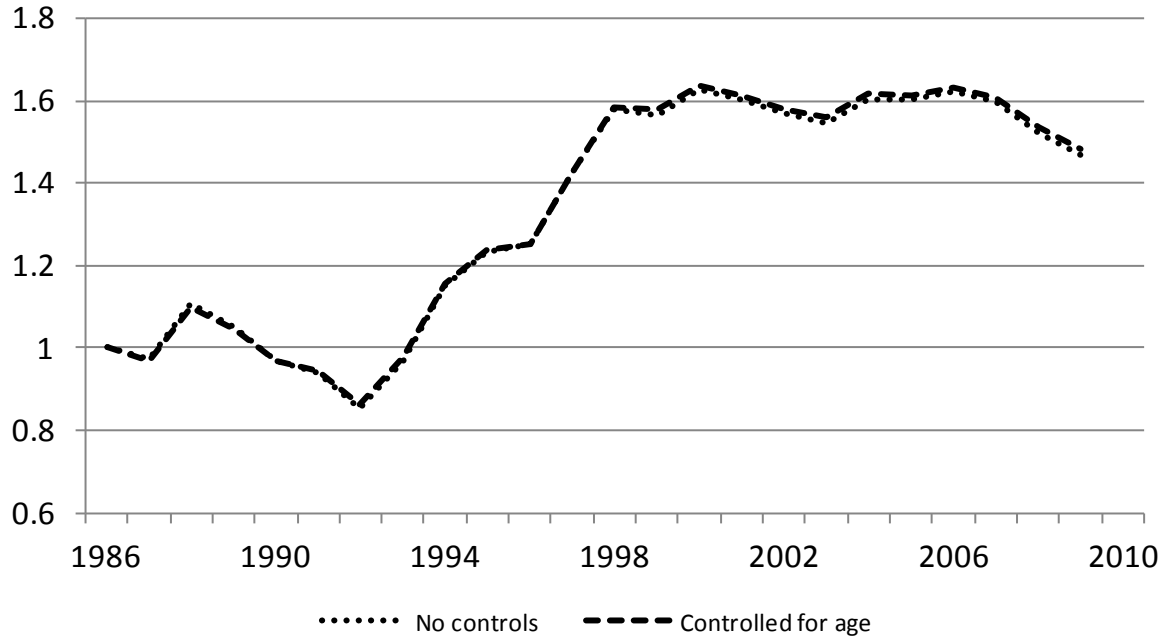

Figure 2. Relative Migration Rates, 1986-2009.

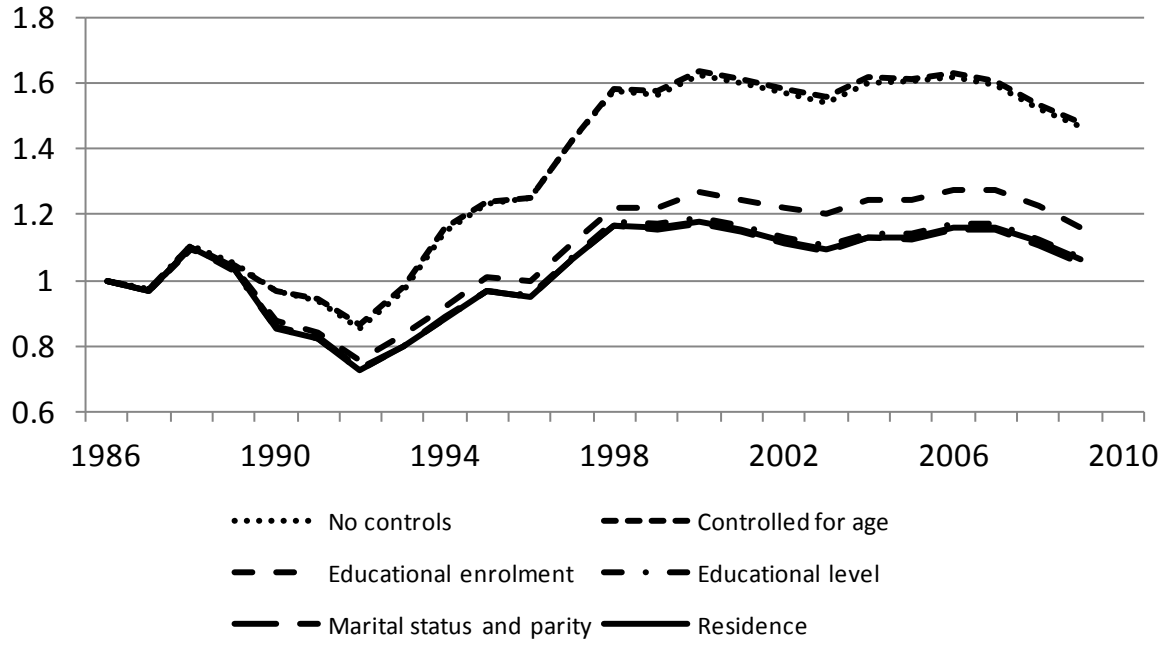

Figure 3. Relative Migration Rates, 1986-2009.

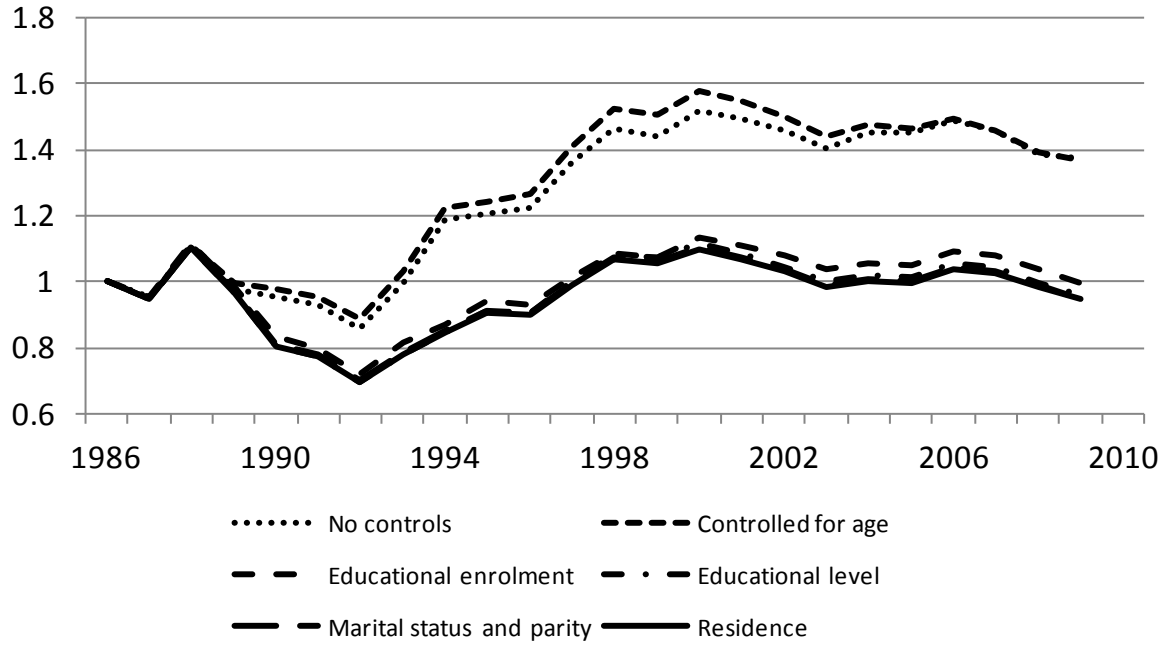

Figure 4. Relative First Migration Rates, 1986-2009.

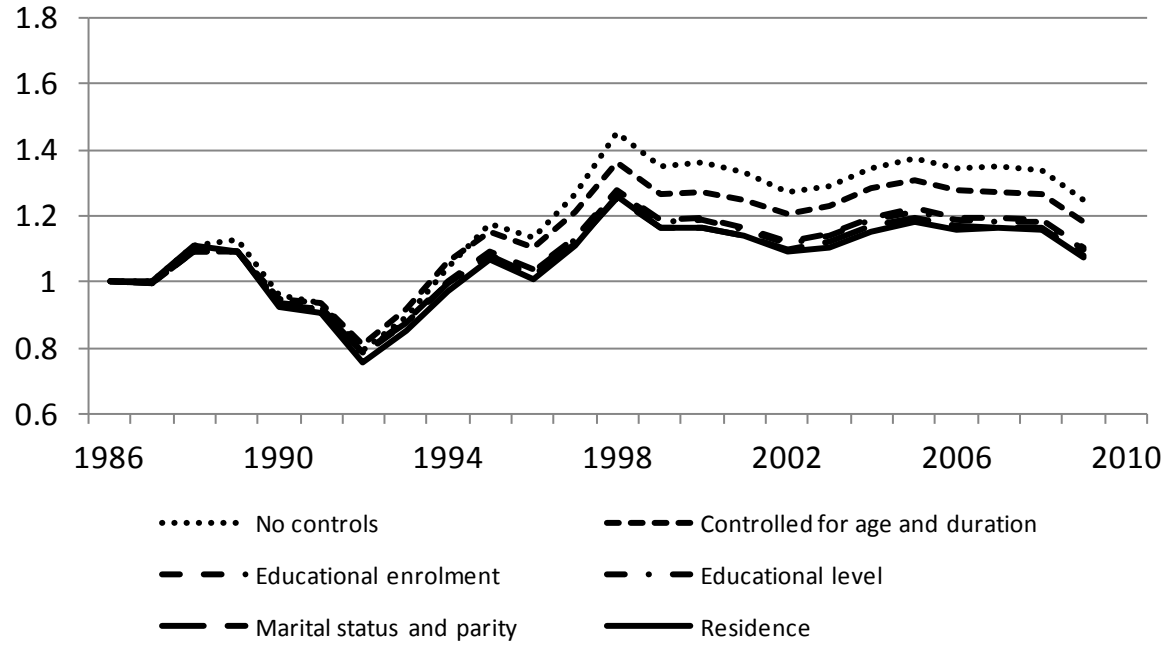

Figure 5. Relative Second Migration Rates, 1986-2009.

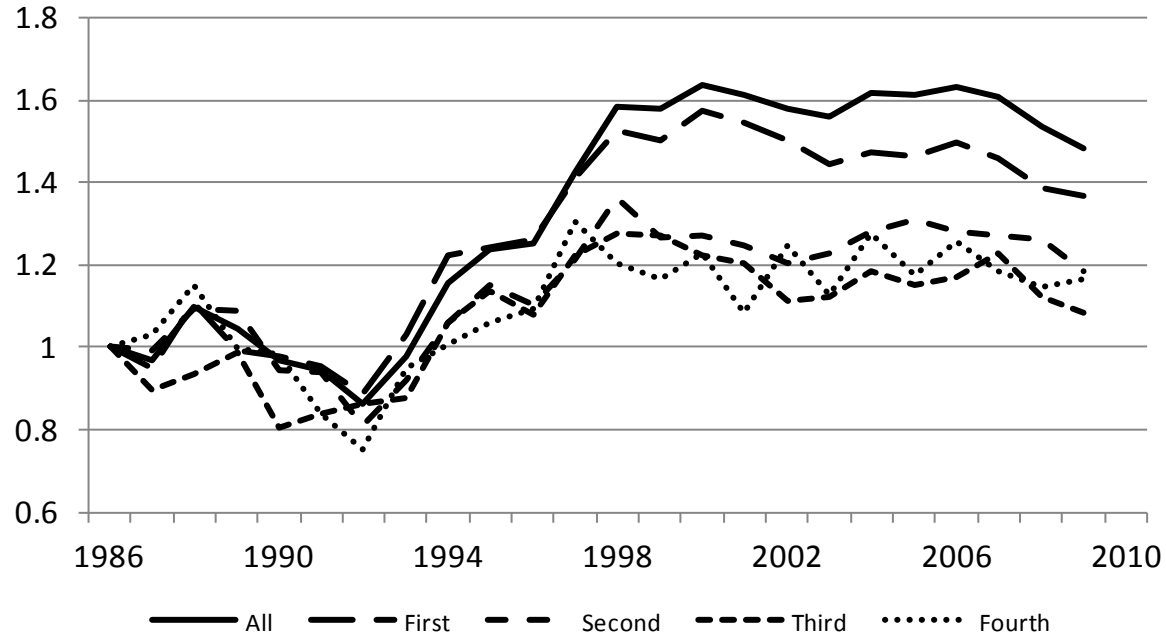

Figure 6. Relative Migration Rates by Order, 1986-2009.

Standardised for one-year age groups and duration since previous migration (if any)

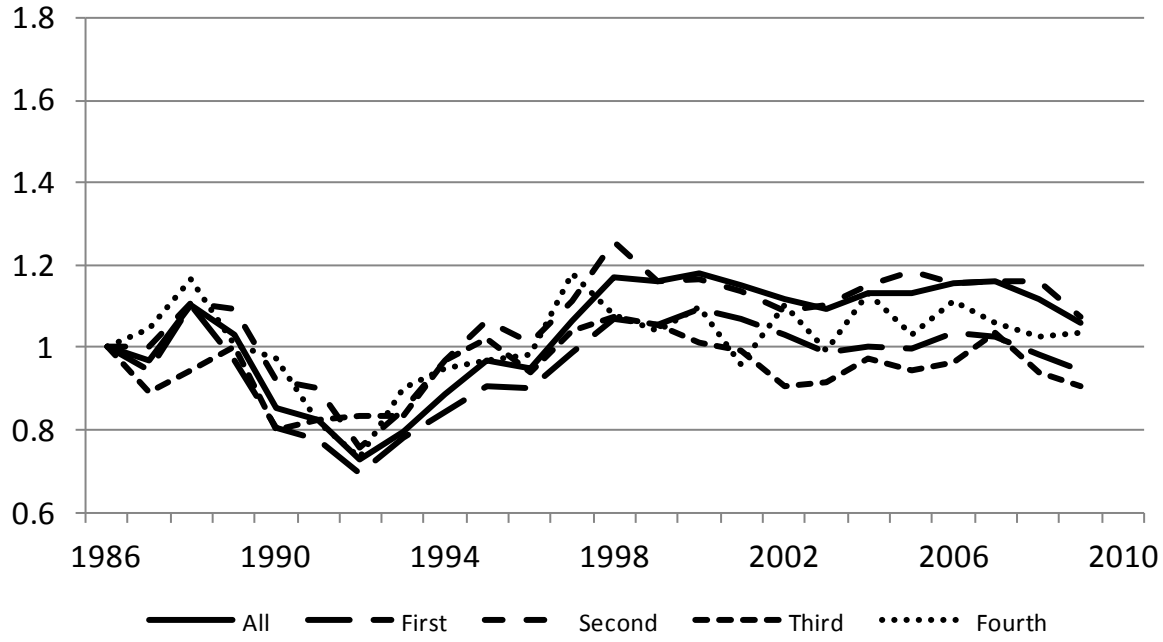

Figure 7. Relative Migration Rates by Order, 1986-2009.

Standardised for one-year age groups, duration since previous migration (if any), educational enrolment and level, marital status and parity, residence

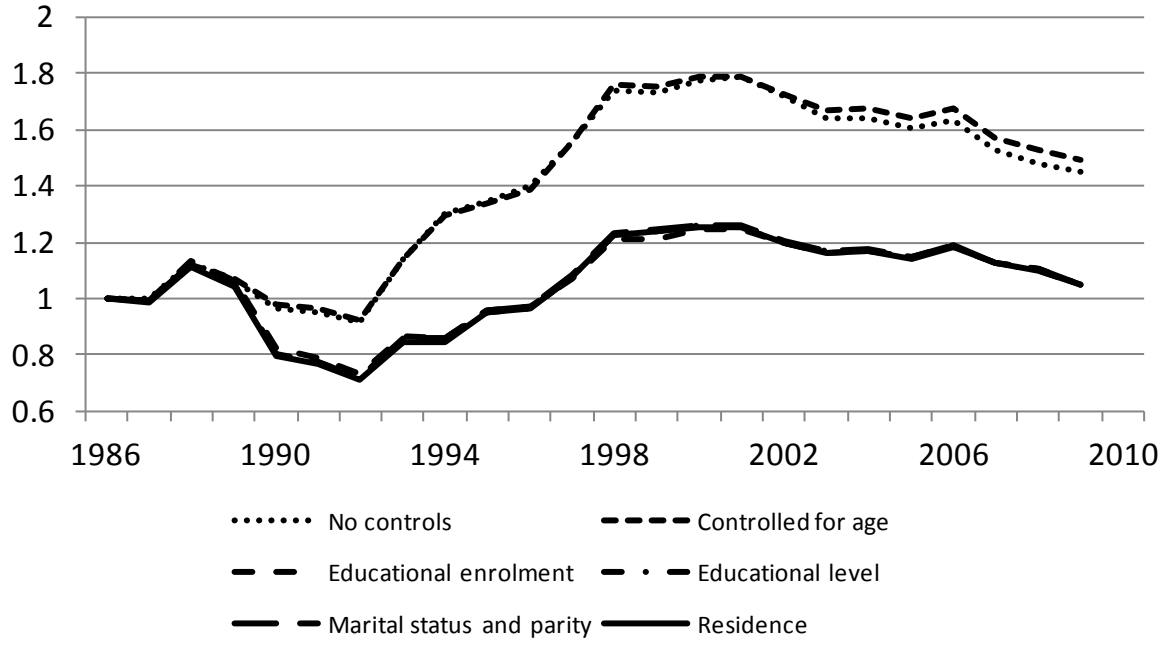

Figure 8a. Relative Migration Rates for Age Group 18-22, 1986-2009.

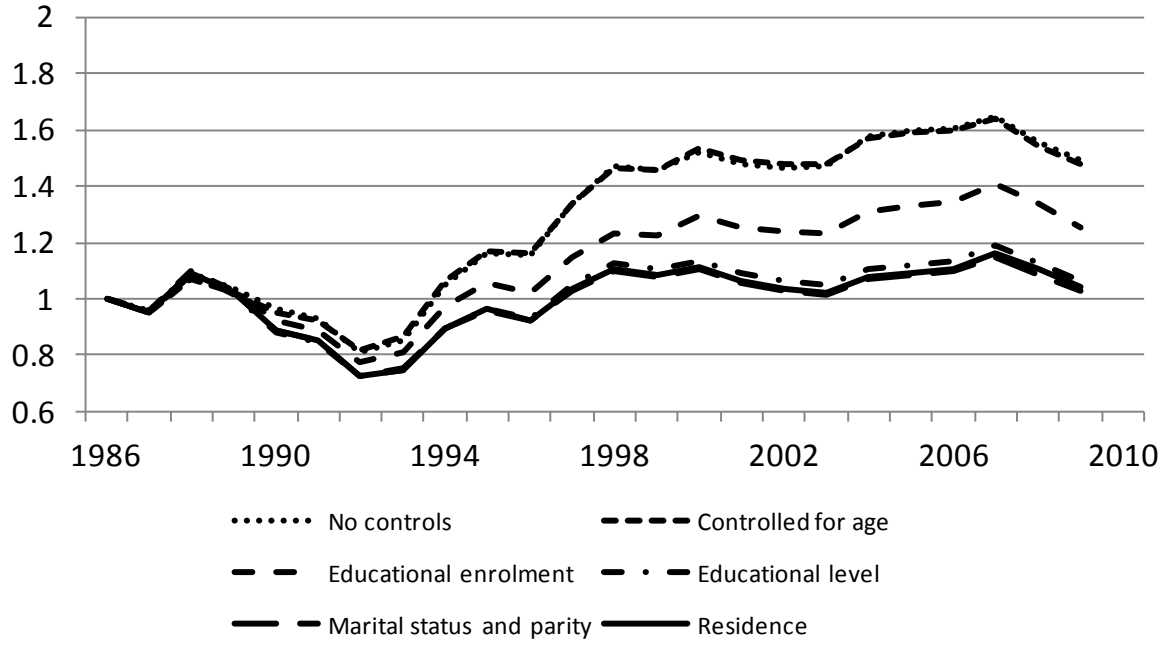

Figure 8b. Relative Migration Rates for Age Group 23-29, 1986-2009.

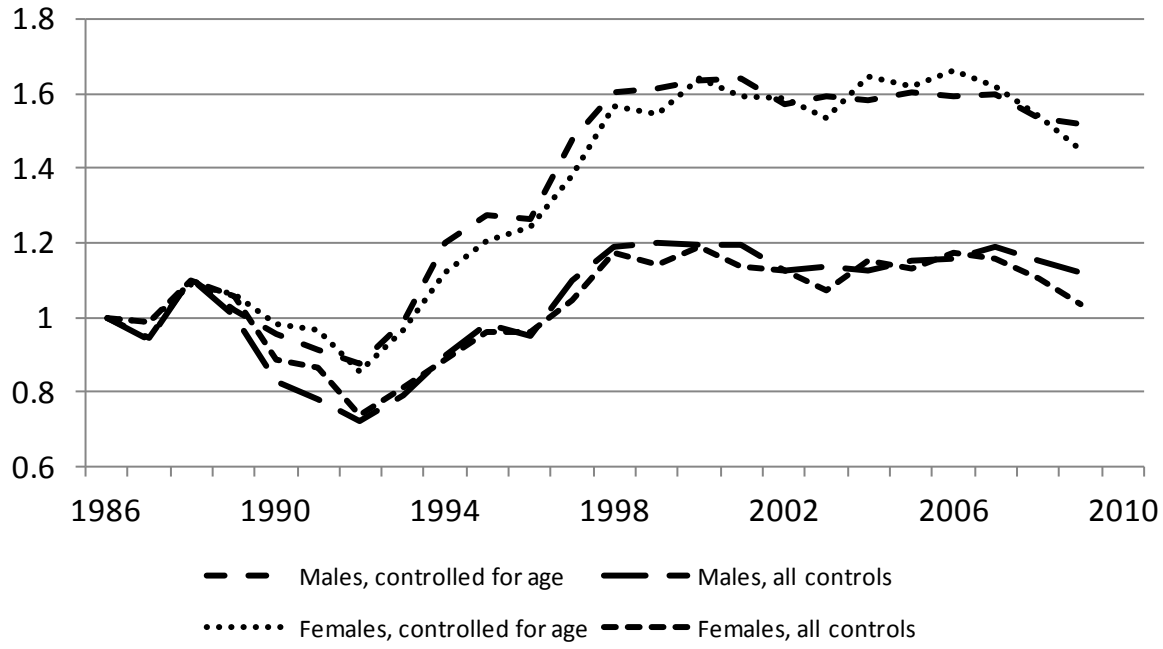

Figure 9. Relative Migration Rates by Sex, 1986-2009.

Note: Migration rate in 1986 is the reference point.

Table 1. Person-years and Migrations by Categories of Control Variables.

	Person-years	Migrations		Person-years	Migrations
Year			*Age*		
1986	66611	3168	18	129557	2048
1987	66514	3085	19	128755	6879
1988	66883	3519	20	128187	10047
1989	67291	3358	21	128273	11147
1990	67910	3121	22	128414	10917
1991	68148	3044	23	128508	10310
1992	68348	2777	24	128346	9697
1993	67981	3131	25	128204	9196
1994	66971	3666	26	128157	8098
1995	65636	3855	27	128420	7003
1996	64374	3836	28	128543	5951
1997	63221	4289	29	128893	5132
1998	62658	4700	*Educational level*		
1999	62293	4639	Low	305920	10212
2000	61707	4773	Medium	881593	50061
2001	61040	4653	High	318464	35354
2002	60408	4504	Missing	36280	798
2003	60266	4423	*Educational enrolment*		
2004	60193	4590	Not enrolled	1029892	47160
2005	60460	4615	Enrolled	512365	49265
2006	61162	4712	*Marital status*		
2007	62395	4740	Single or divorced	1404632	90742
2008	64050	4630	Married	137625	5683
2009	65737	4597	*Parental status*		
Place of residence			Childless	1264768	87074
Large city regions	536163	29293	Parent	277489	9351
City regions	386780	26579			
Towns	367410	25151	Total	1542257	96425
Medium-sized towns	214989	13396			
Small towns and rural areas	24407	1758			
Missing	12508	248			

Source: Calculations based on the Swedish register data.

Table 2. Relative Migration Rates by Control Variables.

Age		
18	0.16	***
19	0.51	***
20	0.94	***
21	1.04	***
22	1.00	
23	0.95	***
24	0.92	***
25	0.92	***
26	0.86	***
27	0.80	***
28	0.71	***
29	0.64	***
Educational level		
Low	0.81	***
Medium	1.00	
High	1.63	***
Missing	0.51	***
Educational enrolment		
Not enrolled	1.00	
Enrolled	2.21	***
Marital status		
Single or divorced	1.00	
Married	0.96	**
Parental status		
Childless	1.00	
Parent	0.64	***
Place of residence		
Large city regions	1.00	
City regions	1.29	***
Towns	1.41	***
Medium-sized towns	1.49	***
Small towns and rural areas	1.80	***
Missing	0.97	

The model also includes calendar year.
Source: Calculations based on the Swedish register data.
Significance: '*'=10%; '**'=5%; '***'=1%.

Appendix.

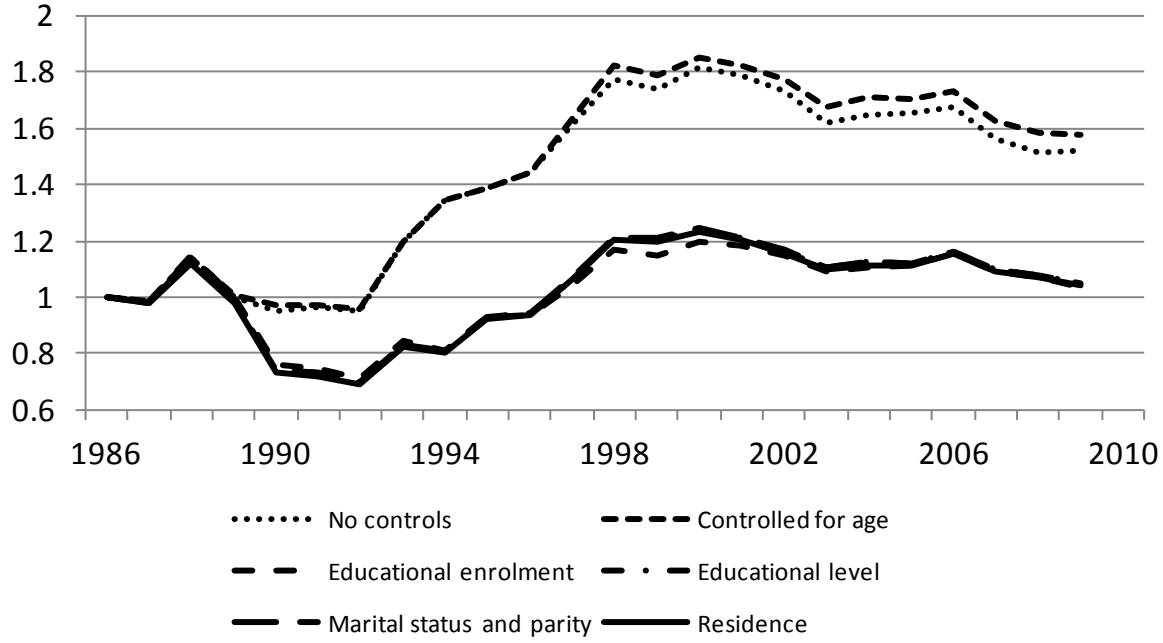

Figure 10a. Relative First Migration Rates for Age Group 18-22, 1986-2009.

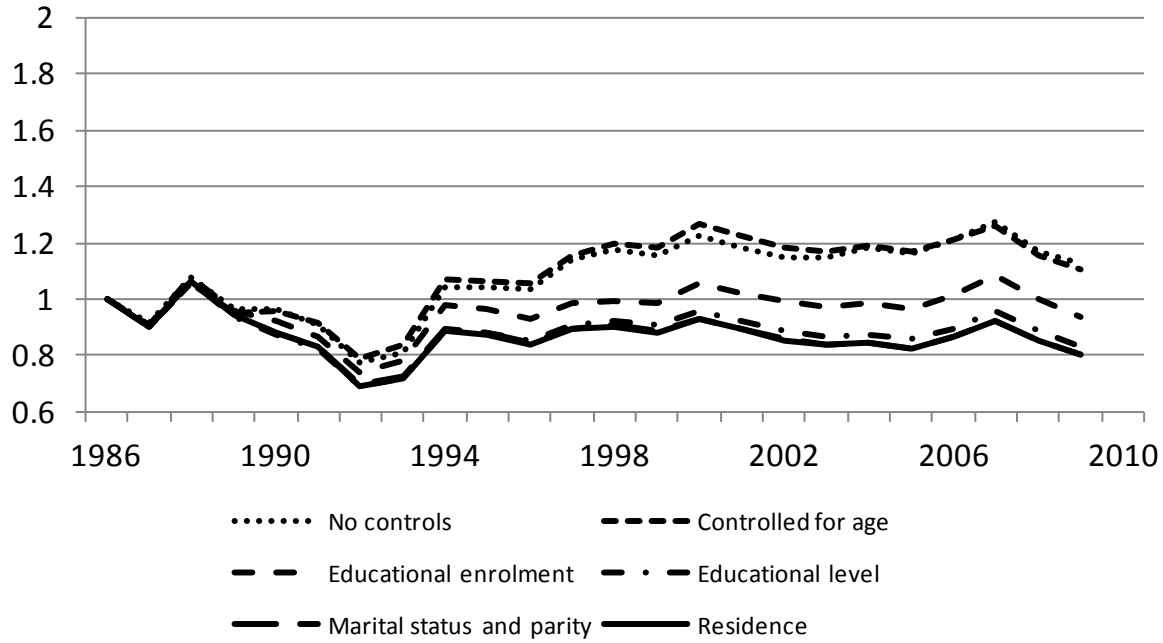

Figure 10b. Relative First Migration Rates for Age Group 23-29, 1986-2009.

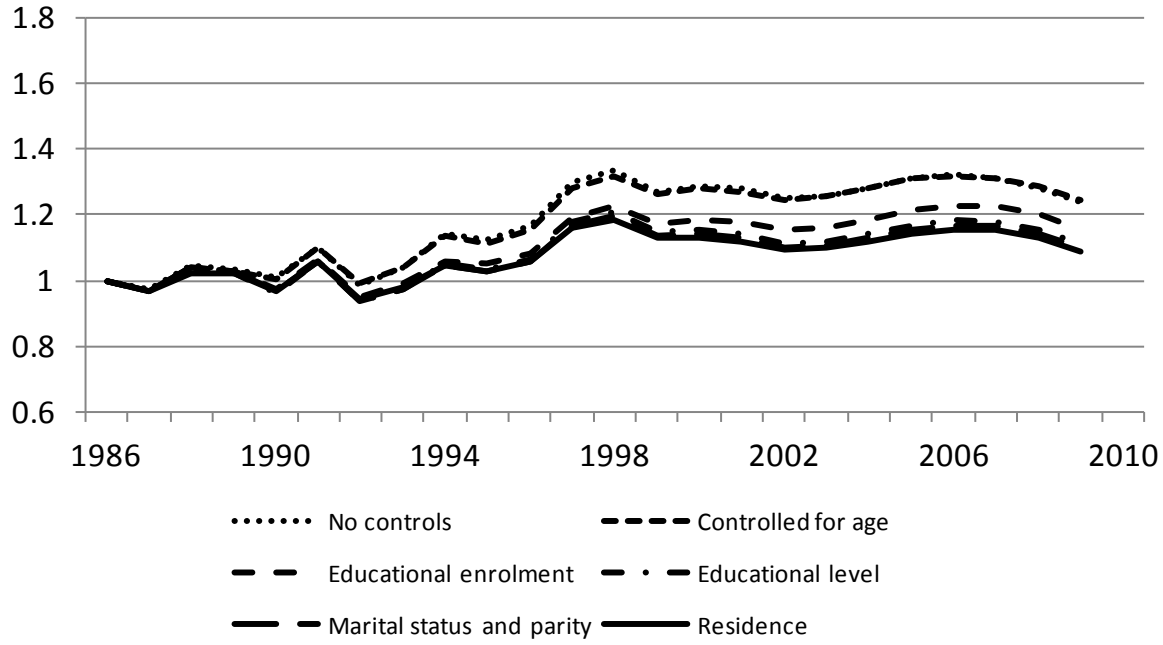

Figure 11. Relative Rates of Inter-Parish Moves, 1986-2009.