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Family relations, children and interregional mobility, 1970 to 2000

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Introduction

Determinants of labor mobility have been subject to a large number of studies and from a wide range of disciplines, for an overview see Cadwallader (1992). Many of them have focused on mobility with a geographical dimension. While the interest in migration taken by economists is related to central macroeconomic issues such as economic growth and unemployment, geographical mobility, too, has direct consequences for changes in the regional population, the need for social service and for a wide range of socioeconomic issues. Moreover, geographical mobility in terms of migration and commuting impacts differently on the regional population and, consequently, has different implications for regional policy and planning. The effects in mobility on different regions are highly dependent on how individuals choose between migration and commuting.

Standard economic theory suggests that labor migrate in response to wage differentials. Higher wage differentials increase the propensity to move. More specifically, labor migrates from low to high wage areas. As labor migrates to high-wage areas, labor supply is increased at the destination and decreased at the origin, thus equalizing wages.

Generally, the neoclassical model predicts long-term equilibrium but, as noted by Myrdahl (1957), migratory selectivity often reinforces initial regional divergence whereby divergence becomes the rule. While expanding regions may attract both workers and business enterprises, at the same time other regions may experience a less favorable situation. In expanding regions, the increased demand for labor often implies that employers have to offer higher wages in order to attract workers with desired qualifications. Higher wages and brighter future prospects make it attractive not only to migrate to these areas but also for individuals to seek qualifications for occupations that are in high demand. However, since migrants often tend to be young and well-educated (or well-skilled), regions that gain in population as a result of interregional migration will often experience a favorable change in their population composition. Conversely, regions dominated by out-migration often experience a less favorable situation. Out-migration of younger and skilled workers results in population compositions with fewer individuals at family formation ages and a growing share of older people. With fewer in the workforce, the regional tax base will shrink which, in turn, may result in reductions in social service.

In addition, social service in the form of daycare, schools and leisure activities for children and teenagers are important variables that influence migration decisions among individuals at ages of family formation. The accessibility of these services may be of crucial importance to families when they decide to move in or out from a region.

During the three last decades there has been a rapid increase in female labor force participation rates. This increase has gradually changed the family concept. Today, women and men both work and contribute to family earnings so that the dual-earner household has become the standard rather than the single-earner household. A popular view is that the growth in female labor supply has reduced the incentives to migrate for families were both spouses work. There is also some support for this in the literature (see for example Holmlund, 1984). With both spouses working migration decisions become a complicated process. In particular, if both spouses are to find new jobs, regions for destinations have to be sufficiently diversified to offer career opportunities for both spouses. Children are generally supposed to trigger local migration, but to decrease long distance migration. For families with children the accessibility to daycare, schools and social service are important. If children have attained school it may be hard to convince them of the benefits associated with migration when, at the same time, they have to break ties with their schools and friends. In consequence, a reasonable conjecture would be that interregional migration rates, everything else being equal, decrease with the presence of children in the family.

Recent studies, however, indicate that labor market incentives play a minor role for migration over shorter distances, but are more important for long distance migration (SOU, 2003:37; Nordisk Ministerråd, 2002; Fischer et al., 1997). Family formation, consensual unions, separations and the closeness to relatives and friends are factors that seem to have become increasingly important for the decision to migrate. According to Nordisk Minsterråd (2002) migration that took place due to labor market reasons has decreased from around 30 percent of all migrations during the 1950s and 1960s to less than 10 percent during the 1990s. For long distance movers, interregional migration, labor market reasons are more important and accounted for more than one third of the migration rates during the 1990s. Decreased wage-differentials and a higher propensity

for commuting as well as improved and faster communications may have decreased the importance of labor market reasons for migration and made other factors more important.

The objective of this paper is to examine how family unions or, more precisely, the arrival of children has influenced migration during the three last decades. Determinants of migration are analyzed using proportional hazards regression. In previous labor market studies, hazard regressions have mainly been used to analyze different exits from unemployment. Recently this method has also been employed for analysis of migration (Courgeau, 1990), and other labor market transitions, see e.g., Blossfeld & Rowher (1997), Henz & Sundström (2001), Granquist & Persson (1999a, 1999b). Because of the increased propensity for commuting during the observed period, migration rates for the 1970s, 1980s and the 1990s are analyzed separately.

This paper is outlined as follows. Section 2 gives a theoretical framework on migration decisions from a family perspective and discusses how family ties might have influenced the migration decisions during the last 30 years. The empirical method and the data used are described in section 3 and 4. Definitions for geographical mobility are described in section 5, while possible determinants of migration and included covariates are discussed in section 6. Descriptive statistics and results are presented in sections 7 and 8, and concluding remarks drawn in section 9.

Female labor force participation and family migration decisions

During the three last decades, there has been a rapid increase in female labor participation rates. The Swedish welfare system with its extensive family policy[1] and the introduction of an individual based tax system in the early 1970s have been important for the increase in female participation rates in Sweden, see Jans (2003) and Löfström (2003).

Today, most women work during family formation and keep their attachment to the labor market even when the children are small. Unlike parents in other Western countries, Swedish parents have for a long time had a statutory right to be away from work after birth for childrearing with generous economic compensation for loss of income, (Corman, 2002). The Swedish family policy was, however, fairly modest until the middle of the 1960s when a great course change took place. During the years that

[1] Parents are required to be attached to the labor market to become eligible for paternal leave benefits.

followed, paternal leave benefits were extended and the number of places in subsidized daycare expanded rapidly, compensations levels for loss of income due to nursery of sick children and child allowances were raised. As a consequence participation rates among women continuously increased, from little more than 50 percent in the middle of the 1960s to more than 80 percent in the beginning of the 1990s.

[Figure 1, about here]

In 1993 the share of gainfully employed women was nearly as high as the share of gainfully employed men. Since then differences in participation rates between men and women have somewhat increased, participation rates fell to a larger extent for women than for men during the economic recession in the 1990s, a difference that persisted during and after the recovery that later took place.

Increased female labor participation has gradually changed the family concept. Today, women and men both work and contribute to family earnings; dual-earner households have become the rule rather than single-earner households. With the increasing number of dual-earner families in mind it might be beneficial to view family migration as a family investment in human capital, and focus on net family gain from migration rather than individual net gain, see Mincer (1978). Several studies have also shown the need for incorporating the household situation into the analysis of mobility decisions, see for example Mincer (1978), Holmlund (1984), Garvill et al. (2000) and Eliasson et al. (2001).

The analysis framework is built on the hypothesis that families move whenever the decision to move involves a net gain, taking the interests of both spouses into consideration. In a family consisting of one member, (i=1), mobility is assumed to take place whenever $G_i = R_i - C_i > 0$, where G_i is the net real income gain from migration, R_i are the returns and C_i are the costs (including both monetary and non-monetary components), all properly discounted. When two or more members are present in the family and the migration decision requires that all move, migration takes place if:

$$G_f = R_f - C_f > 0, \text{ where } G_f = \sum G_i,\ R_f = \sum R_i, \text{ and } C_f = \sum C_i.$$

The simple decision model used by Mincer can be used to show that family formation by itself may reduce the probability for migration even if the underlying migration propensities for the individual family members are unchanged. Suppose for example that the net gain for one of the spouses is positive and for the other spouse negative, if total family gain is negative this means that one of the spouses will stay along with the other even though his/hers private calculation dictates moving, and he/she becomes a tied stayer. If, on the other hand, family net gain becomes positive, the spouse that will have to move with the other spouse even though he/she would have preferred staying, he/she becomes a tied mover. Further, under reasonable assumptions, it can be shown that equalization between spouses or partners with regard to prospective gains from migration results in lower migration rates. To the extent that the rapid increase in the female labor force participation might be expressed as an equalization of work experience that involves an equalization of gains from migration, the stronger labor force attachment for women may be transformed into reduced migration rates[2].

Increased moving costs for dual-earner households will reinforce these patterns. An obvious example of this is the presence of children in the households. Since family returns from migration ($\sum R_i$) are assumed to increase less than costs ($\sum C_i$) when the household size increases with the presence of children, families will be less likely to migrate than unencumbered persons. Further, marital dissolution restores or creates new

[2] Assume that migration in a two-person household takes place whenever, $G=G_1+G_2>0$, where G is total family net gain from migration and G the gain for spouse i, and that each spouse face a distribution of prospective gains from migration. Next, for simplicity assume that $G_i \sim N(\mu_i,\sigma_i^2)$, with covariance term denoted σ_{12}. For a person living on his own the probability for migration will then be given by: $Pr(G_i>0)=1-F(Z_i)$, where F(.) is the standardized cumulative normal density function and $Z= - \mu_i/\sigma_i$. The mean of the distribution of family net gain is given by $\mu = \mu_1 + \mu_2$, whereas the variance is given by $\sigma^2 = \sigma_1^2+ \sigma_2^2+ \sigma_{12}$, hence the probability of total family net gain is given by: $Pr(G>)=1-F(\underline{Z})$ where $\underline{Z}= -(\mu_1+\mu_2)/(\sigma_1^2+ \sigma_2^2+ \sigma_{12})^{1/2}$. In general the expression for the probability for a one-person household and a two-person household will differ and hence family formation by itself will affect migration probabilities. For example, assume a situation where a two-person household consists of two identical individuals with independent distributions (i.e. $\mu_1=\mu_2$, $\sigma_1^2=\sigma_2^2$and $\sigma_{12}=0$). Marriage between two of these individuals will result in that $\underline{Z}=-2\ \mu_i/(2\ \sigma_i^2)^{1/2} = - \sqrt{2}\mu_i/\sigma_i$, that is $\underline{Z} >Z=1.4$. Supposes for example that 5 per cent of the individuals migrate when single, migration rates for married couples will become much lower, here only 1 per cent. Although, its possible to get family migration rates exceeding individual probabilities for migration, under realistic assumptions individuals living with a partner will be less likely to migrate simply due to probabilistic reasons. Further, if the model is extended to model female/male migration gains as fixed fractions of the gains of men/females $Gfemale=\beta G_{male}$, it can easily be shown that when $\beta \rightarrow 1$ (i.e. the spouses becomes more equal with respect to migration gains) migration probabilities will fall. The examples shown, draws heavily on Holmlund (1984).

private incentives and might for a time cause greater mobility of separated men and women than those both married and those never married.

Mincer (1978) finds empirical evidence confirming that family ties deter migration, while dissolutions seem to foster migration. Similar results are found by Holmlund (1984) using Swedish data for the 1970s. Even though it is assumed that the presence of children in families deter migration, none of the studies analyzes more thoroughly how the presence of children in families have in fact affected migration rates in reality.

The empirical model

To model interregional mobility (geographical migration across the borders of local labor markets) a reduced form model is used, meaning that no theoretical restrictions are examined for the purpose of identifying structural parameters. Hence, there can be no conclusions reached regarding how individuals actual behavior affect structural parameters such as prospective incomes if moving, the search for new jobs and how it has affected migration rates. The conclusions reached concern the determinants for migration and the main question addressed in the study is how childbearing, the timing and the number of children in families have affected migration rates during the three last decades.

The propensity (risk) for migration and how different variables affect migration rates are analyzed by means of Cox proportional hazard models (see e.g. Blossfeld et al., 1989; Blossfeld & Rohwer, 1995). The dependent variable is the hazard rate

$$\lambda(t \mid X(t)) = \lim_{dt \to 0} \frac{P(t, t + dt \mid T \geq t \mid X(t))}{dt} = \frac{f(t)}{1 - F(t)} = \frac{f(t)}{S(t)}, \qquad (1)$$

where T is the time of event of interest, here the length of living in the same local labor market, t is any fixed point in time under risk and P(t, t+dt) the probability that migration occurs in the interval [t, t+dt). X(t) represents the vector of explanatory variables, which may or may not vary with time. The effects of covariates are assumed to be constant over the observation period.

The units of observation are men's and women's spells, length of living in different local labor markets, not the individuals, and thus some may have more than one episode of the same type. If recurrent spells are influenced by unobserved characteristics, the model assumption of independence between episodes will be violated. Consequently there is a possibility that the standard errors of the parameters of interest will be underestimated and the estimates biased. To check for dependence among observations a procedure suggested by Allison (1995) is followed. Different models are estimated for different episodes, models for second episodes are estimated with the duration of the first episode of that type included as a covariate, and so on. If the durations of the first and second episodes are uncorrelated, possible dependence between the episodes can be ignored. While there seem to be a significant relationship between the first and the second episode, no significant relationship is found between the episodes of higher order. Moreover, the significant relationship between the first and the second episode do not alter the main results nor influence the significance or the size of the parameters in interest.

All individuals are followed during three different time-periods, during the 1970s, 1980s and the 1990s. The individual are followed for either 10 years, or until they migrate depending on what first happens. Individuals are allowed to migrate several times (at most 3 times) during the observed time period. Childbearing is included as a time varying variable, indicating the first, the second and the third child and censured thereafter.

Data

The empirical analysis is based on the longitudinal database "LINDA" (for further information see Edin & Fredriksson (2000)). LINDA is a register-based longitudinal data set and consists of a large panel of individuals (with additional information of their households members) followed during the time period 1968-2002. The core of the data is the income registers (Inkomst- och Förmögenhetsstatistiken) and population census data, the latter available for every fifth year from 1960 to 1990. LINDA is a representative sample of 3.5 per cent of the population aged 16-64 and contains information on around 300 000 individuals annually and for each year information on all family members of

sampled individuals are added to the data set. A general feature of the database is that information becomes richer over time, for the period 1960-67 there is only census data for 1960 and 1965, along with information on income and some background characteristics from Statistic Sweden's income registers. As time passes, the income registers become more detailed, and in the 1990's the data were expanded in several ways with information from other registers, such as yearly information on education and unemployment duration.

Additional information on education, housing, local labor markets, civil status, cohabitation, dates of childbirth, local unemployment rates etc has been added by merging Linda with various administrative registers at Statistics Sweden and the Swedish National Labor Market Board.

For the purpose of this study, data was restricted to men and women at ages of family formation, namely 20-44, resulting in a data covering a little more than 100 000 individuals.

Definitions for geographical mobility, the dependent variable

Studies concerned with geographical mobility include a wide range of measures for mobility including migration within and across the border of parishes, municipalities, counties and local labor markets. Studies focusing on migration due to labor market reasons have with few exceptions been concerned with migration across counties. The focus on long way distances stem from that moving over shorter distances, often are driven by housing considerations and other factors influencing locational decisions, i.e. not necessarily linked to job changes or the outcome on the local labor market. There are, however, several reasons to expect that people move due to labor market reasons also within the large and arbitrary borders of counties. Sweden has a large surface to population ratio and some of the counties are of considerable size. For people living in counties covering large areas it is not necessarily possible to search for, or to accept job offers within the county without being prepared to move to a new place of residence.

Besides, in Sweden as in many other countries, changes in interregional commuting constitute a considerable and growing share of geographical mobility. During the last three decades the number of people commuting to work in other municipalities

has more than doubled, from around 500 000 people in 1970 to more than 1 million people in the late 1990s (SCB, 1998). The division of Sweden into local labor markets (from here on referred to as LA), a classification developed by Statistics Sweden, takes interregional changes in commuting into consideration based as it is on yearly statistics for commuting. Local labor markets are according to these definitions assumed to be regional functional units, consisting of integrated housing and working areas, regions where most people can find both a place to live and a place to work. The major advantage is that mobility between local labor markets tends to be motivated by labor market reasons rather than housing conditions etc. An individual that is offered a job within a local market should be able to accept without having to move, while people offered jobs in other labor markets ought to at least consider moving if accepting.

The definition for geographical labor mobility used in this study is based on the division of Sweden into local labor markets. Further, it is implicitly assumed that migration involves a simultaneous job change. For this reason it is important that the definition for geographical mobility handle, as far as it is possible, the increase in interregional commuting during the period. By definition, the classifications and the numbers of local labor markets depend heavily on changes in interregional commuting. The increased number of interregional commuters during the last decades have gradually reduced the number of local labor markets, from 179 in 1970 to 100 in 1998. New classifications for local labor markets have been delivered by Statistics Sweden in 1970, 1980, 1988, 1993, 1998 and 2000. To reduce the influence from increased interregional commuting on geographical migration, the determinants for migration during the 1970s, the 1980s and the 1990s has been estimated separately with the use of LA1970 for the 1970s, LA1980 for the 1980s and LA1998 for the 1990s.

Determinants of migration and included covariates

Many variables are either directly or indirectly linked to migration. According to the neoclassical theory migration is highly depending on income differentials, labor is assumed to migrate from low to high wage areas. Furthermore, a number of studies have suggested that destination incomes have a greater influence on migration flows than does origin income (for an overview see Cadwallader, 1992). A relationship partly conditioned

on variations in cost of living differentials, as there obviously is empirical evidence that variations in cost of living have significant effects on migration. In reality, however, potential destination income is seldom observed. Further, since there are either information available for wage levels at different local labor markets, nor for potential destination income, incomes have been left out completely from the analysis, although they might be of great importance.

Migration is assumed to be closely related to employment opportunities. Migration is likely to rise with the regional unemployment rate, since the degree of competition for available local jobs increases when the number of unemployed grows. Further, individual unemployment implies among many undesirable personal consequences a reduction in the household's current income. Unemployment may also increase the probability for migration because it provides unemployed opportunities for specializing in job search, which in turn might increase the number of job offers from different prospective regional labor markets. To control for the outcome on the residential (origin) local labor in the empirical analysis, rates for open unemployment will be included, with the value taken for the time when the individuals came under observation.

Many studies have shown that individuals are more likely to migrate when they are younger. For young workers decisions to migrate do not only involve how their current skills may be affected but their potential skills as well. Different jobs offer different training opportunities and the decision to migrate may result in greater future opportunities. And since older workers have a shorter expected working life over which to realize the advantages of migrations, migration is expected to decrease with age. In addition family ties and job security are likely to be more important for older people, further decreasing their incentive to migrate, see for example Jans (2002).

Another established fact is that well educated individuals tend to be more likely to migrate, and in particular more likely to make long distance moves. A fact that is often explained by better educated individuals dealing with a labor market that is national rather than local in scale and that they are more effective in job search, i.e. possibly gather and process job information more efficiently (Da Vanzo, 1983). Moreover, higher education also implies higher potential earnings, which leads to a higher probability of moving at a given initial wage rate.

The presence of family ties ought to be of vital importance for the decision to migrate and to result in different actions from those taken in single member households. The process of job seeking on parts of the spouses/partners may suggest different parts of destinations, where an acceptable job offer found by one of the spouses may call for migration even if the other spouse so far has been unsuccessful and not been able to find an acceptable job offer at the same destination (Mincer, 1978). And even if the spouses/partners are engaged in job search pertained to the same destination, their time and effort for finding a new job may differ. In comparison with a person living on his own, the number of potential migration destinations is far more restricted for dual earner families, where the regions for destination has to be sufficiently diversified to offer career opportunities for both the spouses.

The incidence of childbirth in families may also determine migration decisions. Career opportunities in other regions may have to be turned down for the sake of the child/children needs. With children in the family, the accessibility to day-care, schools, and social service becomes important for the well-being and safety of the children. Relatives and friends might become even more important after the arrival of the first child. When the children grow up physical costs of migration will not only include migration costs for the spouses but also costs for the children in terms of changing schools and leaving friends behind.

Persons with frequent contacts with friends and relatives are likely to experience a physical loss if moving and especially if they move far away. It seems that this sort of costs related to migration has increased in importance, see for example Holmlund, (1984), SOU 2003:37; Berggren & Härshammer, (1999), Nordisk Ministerråd, (2002). A hypothesis argued by Fisher et al. (1997, 1998) is that human capital might consist of a part that is specific to the locality and not transferable to other localities or regions. A form of human capital that is built up by learning to know the locality and the people living there, knowledge that it takes time accumulate and which might be important for career opportunities and leisure activities. A decision to migrate will erode this form of human capital. Locational ties might be stronger for families with children, and migration might be held back because of the ties between children and their schools and friends. Further, a common opinion is that migration costs are higher for home owners; an

argument built on assumed difficulties to sell housing at satisfactory prices in more depressed areas. Home ownership may, however, also be regarded as an indicator of locational ties, reflecting the individuals' decision to stay in these localities for some years, thus capturing unobserved propensity to stay in the locality.

Another common empirical finding is that those who have migrated before are more likely to migrate again. A pattern that might depend on the fact that these individuals have less information about the destination, which might lead to unfavorable surprises. Perhaps the decision to migrate did not turn out to be as good as expected. Some of those who migrated might reconsider their previous locational choice and begin to search for new locations once again. Recent migrants might therefore be more likely to migrate to new locations or to return back to where they come from. Information about previous migration may be useful for catching immeasurable heterogeneity among migrants.

Descriptive Statistics

Sample characteristics for episode data divided into movers and stayers are shown in Table 1. According to descriptive statistics, younger, higher educated, singles, divorced and individuals without children were more likely to migrate during all three of the observed periods. While families with children, those still living in the county of birth, and housing owners were less likely to migrate. Swedes have according to these figures been somewhat less likely to migrate than individuals born abroad. A difference that, however, seem to have decreased during the last decade.

That family ties are important is confirmed by these raw data. Married moved to a lesser extent than singles and divorced to a higher degree than both married and singles. The increasing difference between married and unmarried is, however, most likely due to missing information about consensual unions. Presumably, several of those classified as singles were living with a partner, although not as married.

The variable "still in the county of birth", gives the share of individuals that when they come under observation were still living in the same county as where they were born. Those who had not moved from their county of birth when they had reached the age of at least 20, were according to data less likely to move later in life. Those who have

migrated before are more likely to move again is a result often found and which might be interpreted as these individuals having fewer locational ties and smaller costs for moving once again.

House-owners and/or tenant-owners may be seen as proxies for stronger locational ties and therefore less likely to migrate. This is supported by raw data. Individuals who had invested in their housing seem to have been less likely to migrate to other local labor markets.

The descriptive statistics also reveal that some of these factors seem to have become either more or less important over time. While migration among the youngest, aged 20-24, increased from slightly more than 50 per cent in the 1970s to nearly 60 per cent in the 1990s, migration among the older seems to have decreased. The increased number of young migrates are likely to be due to both the increased number of university colleges[3] and the increased number of admitted students for higher education in the 1990s.

As expected, families with children migrated to a lesser extent than those without children. And according to figures, migration rates seem to have become even lower during the 1980s and the 1990s. In Figure 2 and 3 Kaplan Meier survival functions (shows the fraction of individuals remaining in their LA over time) for women and men with and without children is shown. It is evident from these survival functions that families with children are less likely to migrate to another local labor market, especially women and men with more than one child. In addition, when comparing the survival functions for the three decades it seems that the difference in migration rates among those with and without children has increased during the observation period, particularly during the 1990s.

Results

Estimated effects of family formation, the presence of children and other covariates are presented in Table 2 and 3. The effects are estimated for men and women separately. The

[3] In 1977 new university colleges were established in Falun/Borlänge, Gävle/Sandviken, Borås, Kalmar, Karlstad, Kristianstad, Växjö, Örebro.

main interest is how family formation and the arrival of the first, the second and the third child in families have influenced migration rates during the last decades.
According to the estimations family formations as well as family dissolutions are important determinants for migration rates. Married were significantly less likely to migrate than unmarried during the 1970s, to a somewhat lesser extent during the 1980s, while only a small difference due to marital status can be found for the 1990s. The estimated effects for 1980s and the 1990s might stem from the inability to control for cohabiting. The number of couples in consensual unions has increased remarkably since the 1980s and many of those included as unmarried might have been living in consensual unions. Unfortunately, it is not possible to receive any information on consensual unions from Swedish registers. This information would have been valuable for the analysis. Moreover, divorced had significantly higher migration rates than both married and singles during all three periods.

Turning to families with children, it is clearly evident that the arrival of children in the family lowers the propensity of migration, especially when the second child arrives. Families with two children seem to have the lowest propensity for migration, although families with one child and families with three or more children were less likely to migrate than those without children. In that sense, the number of children in the family seems to influence the propensity for migration. The pattern of lower migration rates among families with children also seem to be reinforced during the observed time period. One interesting result is that during the 1970s men with children were at least as likely as or even more likely than men without children to migrate. Both married men with one child and those with three or more children were more likely to migrate, while no significant difference is found for those with two children in comparison with those without children. These migration patterns do not prevail during the 1980s and 1990s and might be related to the increased female labor force participation during the observed period and/or selection. That these results are not found for married women during the 1970s, are most likely due to the fact that young women without children (who in the model are compared to women with children) were much more likely to migrate than young men without children (who in the model are compared to men with children).

Both family formation and family dissolution thereby seem to be important factors behind migration. There is also clear evidence for lower migration rates among families with children, a pattern reinforced during the last two decades. And according to the results, also the number of children in the family matters, families with two children had the lowest migration rates of them all.

Some words should also be mentioned about the other included covariates, most of them turning out as expected. According to estimates, the young and the well-educated individuals had a higher propensity for migration, during all the three observed decades. The results are well confirmed by several earlier studies. Moreover, house-owners and/or tenant-owners were less likely to migrate, either indicating stronger locational ties or capturing an unobserved propensity for staying in the localities. Local unemployment significantly influences migration rates. The outcome on the local labor markets thereby seems to be important. An increase in the local unemployment rate increase migration to other local labor markets with brighter future prospects.

Concluding remarks

According to the findings of this paper family formation, the presence of children and family separations have all been important for the interregional mobility patterns during the last three decades. The presence of family ties thereby seems to be of vital importance for the decision to migrate and to result in different actions from those taken in single member households. The findings clearly indicate that the presence of children in families lowers the propensity for migration. Furthermore, the estimations indicate that migration propensities among families with children have decreased over the last three decades. These findings are most likely related to the rapid increase in female labor force participation rates during the last thirty years. Today, both men and women work and contribute to family earnings and women keep their attachment to the labor market even when the children are small. If the decision to migrate is the result of a rather complicated decision process for people living on their own, it is clearly evident that migration becomes more complicated within families in general and in dual-earner families in particular. In addition, the presence of children clearly increases the costs of migration

and reduces family gains from migration. In all, the results found accords well with family migration suggested by Mincer (1978).

From a regional perspective the decreased migration rates found for families and in particular for families with children, will give rise to long lasting consequences for the regions dominated by out and in migration. Since migrants often tend to be younger and in ages for family formation, this means that regions for destinations are going to gain in population compositions, while regions dominated by out-migration will experience a less favorable situation, migration flows are likely to be reinforced and to create even larger difficulties for regions dominated by out-migration in the future. If those leaving find a partner at the destination regions they will be less likely to return to their former region and in particular if the couples decide to have children.

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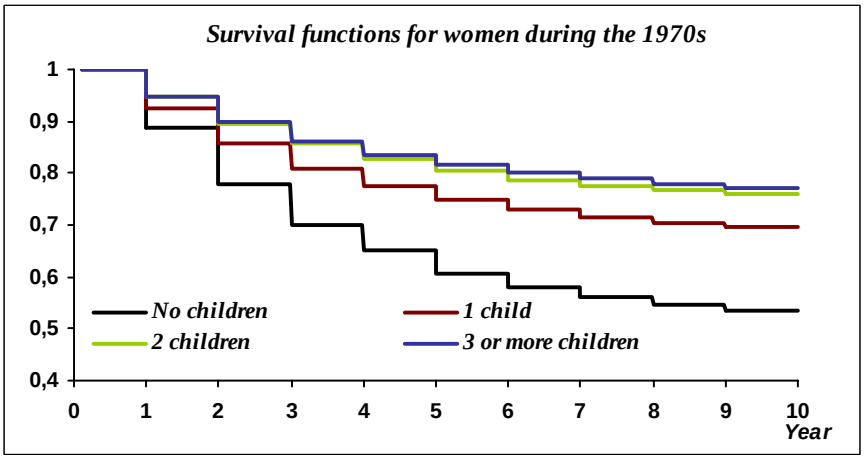
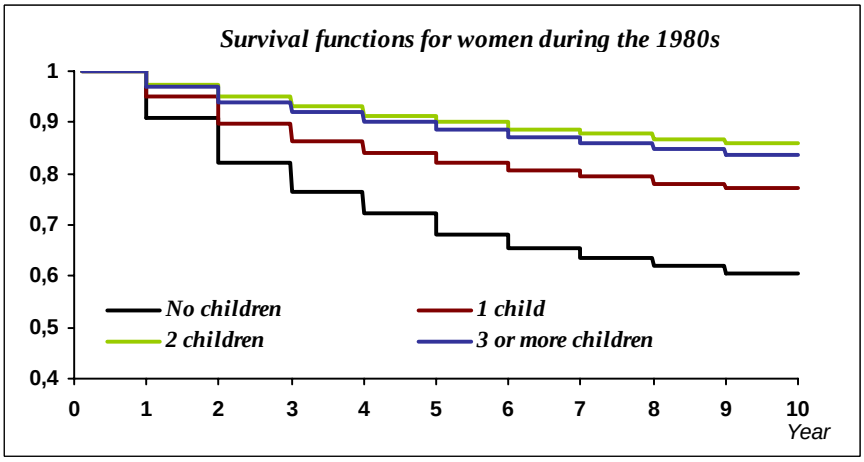
Figure 1: Labor force participation rates, 1964-2002

Source: AKU, Statistics Sweden.

Figure 2a: Kaplan Meier survival functions, women





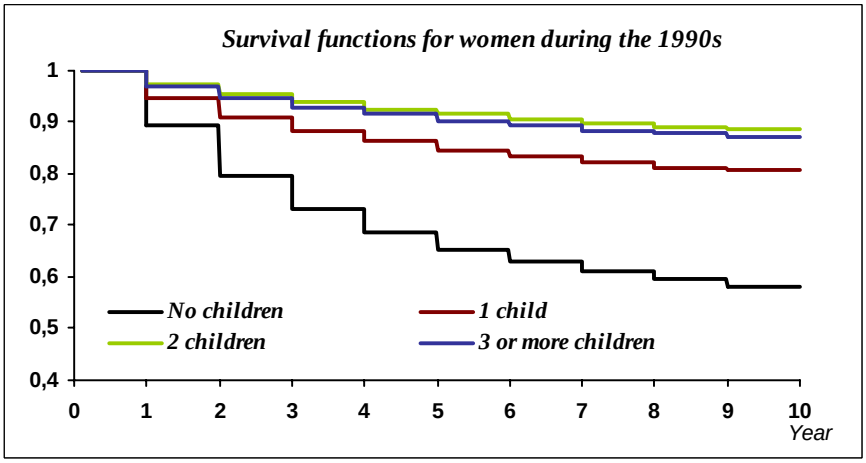
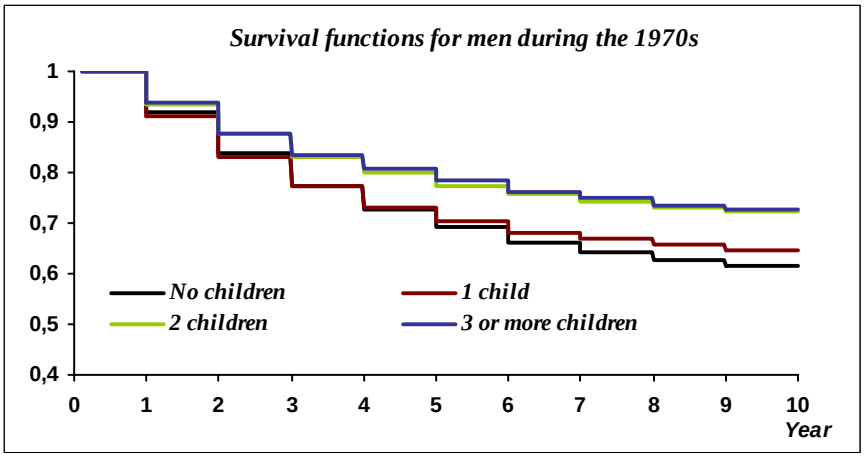
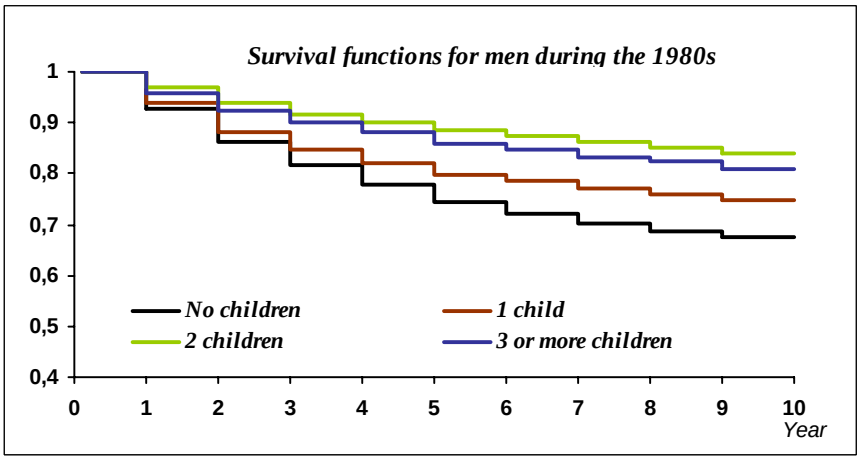


Figure 2b: Kaplan Meier survival functions, men





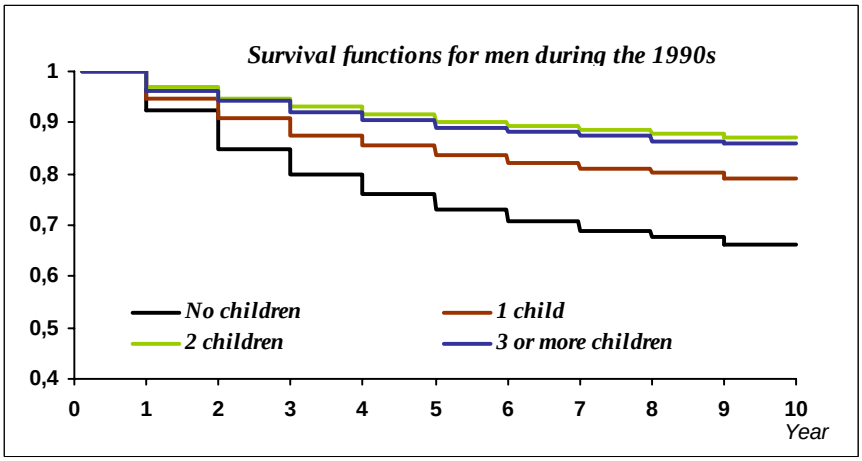


Table 1: Frequencies and means for episodes in the sample, divided into stayers and movers

Variables (%)	1970s		1980s		1990s	
	Stayers	**Movers**	**Stayers**	**Movers**	**Stayers**	**Movers**
Sex						
Women	49.2	48.7	49.2	48.7	49.4	49.8
Men	50.8	51.3	50.8	51.3	50.6	50.2
Age						
20-24	43.8	52.4	42.3	54.6	37.5	58.6
25-29	23.4	25.4	22.2	23.0	23.2	21.3
30-34	14.1	13.0	15.5	13.4	17.4	11.9
35-40	10.3	7.0	11.2	6.8	11.0	5.7
40-44	8.3	2.3	8.8	2.3	10.9	2.5
Means	27.3	25.6	27.6	25.4	28.4	25.1
(std.dev.)	(6.89)	(5.55)	(7.05)	(5.66)	(7.17)	(5.62)
Country of Birth						
Sweden	91.4	90.3	91.1	90.4	89.2	88.3
Nordic Countries	5.1	5.9	4.5	5.1	3.2	2.8
Western Europe	1.0	1.0	0.8	0.9	0.8	0.7
Eastern Europe	1.5	1.6	1.5	1.1	1.6	1.2
Southern Europe	0.5	0.6	0.5	0.4	0.3	0.2
Remaining	0.6	0.5	1.7	2.0	4.8	6.8
Education						
Compulsory	45.5	39.5	28.9	19.1	17.6	12.7
Upper secondary	31.8	38.2	46.3	47.8	58.0	57.9
Post secondary	11.8	13.6	18.3	26.4	22.6	26.8
Not known	10.9	8.7	6.6	6.7	1.8	2.6
Marital Status						
Single	52.4	63.8	64.1	77.4	67.9	83.7
Married	45.0	32.9	31.3	17.4	28.1	12.8
Divorced	2.7	3.4	4.6	5.3	4.0	3.4
Children						
None	34.2	48.2	37.6	61.2	38.9	71.1
1 child	26.7	21.5	23.8	16.5	22.9	12.0
2 children	26.5	20.1	26.4	14.2	25.9	10.5
3^+ children	12.4	10.2	12.2	8.1	12.4	6.3
Housing						
House owner	38.6	37.4	48.0	44.3	46.1	50.6
Tenant-owner flat	12.9	11.4	10.2	9.2	13.4	9.7
Tenancy right	48.6	51.2	41.8	46.6	40.5	39.7
Still living in the county of birth	51.2	35.9	53.0	30.0	53.4	33.3
No. of episodes	160 679	35 376	159 304	26 712	165 765	28 347

Table 2: Maximum-likelihood estimates of proportional factors Cox-proportional regressions for women (aged 20-44), less than 4 moves

	1970s	**1980s**	**1990s**
Age			
20-24	1.096***	1.228***	1.074***
25-29	ref.	ref.	ref.
30-34	0.654***	0.718***	0.683***
35-39	0.444***	0.478***	0.467***
40-44	0.314***	0.342***	0.361***
Education			
Compulsory	0.760***	0.860***	0.953*
Upper secondary	ref.	ref.	ref.
Post secondary	1.348***	1.778***	1.694***
Not known	0.653***	0.967	1.141**
Country of Birth			
Sweden	ref.	ref.	ref.
Nordic Countries	1.081**	1.091**	1.035
Western Europe	1.101	1.046	0.844
Eastern Europe	1.087	0.776**	0.725***
Southern Europe	1.773***	1.110	0.758
Remaining	1.234*	1.095	1.241***
Number of Children			
None	**ref.**	**ref.**	**ref.**
1 child	**0.703*** **	**0.641*** **	**0.562*** **
2 children	**0.681*** **	**0.496*** **	**0.422*** **
3 or more children	**0.812*** **	**0.678*** **	**0.536*** **
Marital Status			
Married	ref.	ref.	ref.
Unmarried	1.300***	1.206***	1.045
Divorced	1.759***	2.014***	1.818***
House owners	0.937***	0.855***	0.783***
Local unemployment	1.275***	1.214***	1.145***
Log Likelihood	-179 756.4	-136 460.9	-146 966.1
Number of episodes	95 427	91 444	95 925

*****/**/* =** Significant at the 1/5/10 per cent level

Table 3: Maximum-likelihood estimates of proportional factors, Cox-proportional regressions for men (aged 20-44)

	1970s	**1980s**	**1990s**
Age			
20-24	1.006	1.051**	0.957*
25-29	ref.	ref.	ref.
30-34	0.747***	0.749***	0.718***
35-39	0.509***	0.523***	0.518***
40-44	0.365***	0.416***	0.444***
Education			
Compulsory	0.688***	0.755***	0.880***
Upper secondary	ref.	ref.	ref.
Post secondary	1.129***	1.870***	1.888***
Not known	0.559***	0.938*	1.267***
Country of Birth			
Sweden	ref.	ref.	ref.
Nordic Countries	1.381***	1.260***	1.333***
Western Europe	1.180**	1.562***	1.250**
Eastern Europe	1.269***	0.951	0.866*
Southern Europe	1.477***	0.762**	1.220
Remaining	1.216**	1.544***	1.754***
Number of Children			
None	**ref.**	**ref.**	**ref.**
1 child	**1.049****	**0.885*****	**0.776*****
2 children	**1.010**	**0.689*****	**0.584*****
3 or more children	**1.186*****	**0.922****	**0.694*****
Marital Status			
Married	ref.	ref.	ref.
Unmarried	1.413***	1.248***	1.062*
Divorced	2.158***	2.093***	1.862***
House owners	0.825***	0.733***	0.752***
Local unemployment	1.320***	1.229***	1.159***
Log Likelihood	-195 579.1	-145 048.5	-149 639.0
Number of episodes	100 624	94 572	98 187

***/**/* = Significant at the 1/5/10 per cent level

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