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Why do people stay? Insider advantages and immobility

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This paper is part of the research programme „Internationalisation of Labour Markets“

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Abstract

The low mobility of people in Europe is considered a problem for adjustment to asymmetric shocks and regional convergence in the European Monetary Union. We suggest a complement to the traditional migration theories, the insider advantages approach to explain why most Europeans prefer to stay. Staying immobile they have accumulated work- and leisure-oriented insider advantages that are location-specific and would be lost in the case of emigration. Therefore, the longer people have stayed -and the more insider advantages they have accumulated-, the less likely they are to move. Using a new micro dataset covering all people resident in Sweden in 1994 and their mobility experience since 1985, we find a strong positive duration dependence of the probability to stay. Traditional micro-economic characteristics prove helpful in explaining immobility, while regional macro-economic differences have surprisingly little impact on individual mobility decisions. A large proportion of the moves between Swedish labour markets seem to be related to specific life-course events rather than to pure labour market issues.

Zusammenfassung

Wieso ist die Mobilität der Arbeitskräfte innerhalb der Europäischen Union – aller Freizügigkeit zum Trotz – so gering? Traditionelle Theorieansätze vermögen die schwach ausgeprägte Wanderungsintensität der EU-Angehörigen nur begrenzt zu erklären. Denn eigentlich sollten die teilweise beträchtlichen Einkommens- und Beschäftigungsunterschiede zu weit mehr Migration innerhalb der EU führen. In diesem Diskussionspapier entwickeln wir eine Idee, die sehr wohl zu erklären vermag, weshalb für die meisten Menschen „stehen“ die bessere Alternative als „gehen“ ist. Der *Insider-Ansatz* macht deutlich, weshalb für die individuelle Entscheidung eine grenz- und kulturraumüberschreitende Wanderung die *Ausnahme* und nicht die Regel ist. Die empirische Überprüfung mit Hilfe eines neuen originären Mikro-Datensets, das die gesamte schwedische Wohnbevölkerung enthält, bestätigt die These, dass die Verweildauer einen direkten positiven Einfluss auf die Verharrenswahrscheinlichkeit ausübt. Wer lange an einem Ort lebt, wird immer wahrscheinlicher an diesem Ort bleiben!

JEL-codes: F22, J60, R23

1. Introduction^H

In the recently introduced European Monetary Union (EMU) it is no longer possible to react to asymmetric macroeconomic shocks with exchange rate changes. Instead, the necessary adjustments have to take place through (real) price and labour market flexibility or mechanisms of interregional and international transfers.

Compared to the United States, Europe is characterised by comparatively low rates of mobility of people. As a crude rule of thumb, international emigration propensities in Europe have been around or below 0.5 per cent of population. For 1990-95, Obstfeld and Peri (1998) report average annual internal *net* migration rates of 0.31 for Germany and 0.2 for the UK, as opposed to 0.87 for the USA. Blanchard and Katz (1992) showed that between the different States of America migration has played an important role in balancing out temporary regional labour market effects. They find, that 'a decrease in employment of 1 worker in the initial years is associated with an increase in unemployment of 0.3 workers, a decrease in participation of 0.05 workers, and thus an implied increase in net outmigration of 0.65 workers' (Blanchard and Katz 1992:34). Decressin and Fatas (1994) have demonstrated that in Europe the main adjustment to regional labour demand shocks happens through changes in labour market participation rates. Eichengreen (1993) estimates the elasticity of migration on regional wage differentials to be 25 times higher in the US than in Britain. For the Southern European countries Italy and Spain this difference will be even higher (see Faini et al. 1997 for Italy and Bentolila and Jimeno 1995 for Spain).

The relatively low mobility of people within Europe has raised concerns about the economic effects of EMU (see Obstfeld and Peri 1998). It has stimulated discussion about the causes of immobility. Traditional migration theory has been quite successful in explaining causes and consequences of international and internal migration. Less clear it is, however, why most people do not move, despite persistent aggregate regional wage differentials. Traditional migration theories introduce pecuniary transport and transaction costs to explain immobility (for a review see e.g. Greenwood 1993, 1997).

^H The authors are grateful to *Kalle Mäkilä* (Spatial Modelling Centre Kiruna) and *Urban Lindgren* (University of Umeå) for their competent support in processing the raw data. Several participants at research seminars in Umeå, Kiruna and Hamburg as well as at the ESPE annual conference in Amsterdam provided valuable comments. The authors acknowledge financial support by the German Academic Exchange Service and the Swedish Institute (DAAD-SI German-Swedish Research Co-operation Project), the Spatial Modelling Centre in Kiruna and the Swedish Council for Social Research (SFR-project on immigrant's education and performance).

Other standard explanations include institutional obstacles, risk adversity and the ‘option value of waiting’ (Burda, 1995). But while transport and transaction costs have been falling and progress has been made in the European Union to remove obstacles to migration, in many European countries internal migration rates have had a tendency to decrease substantially since the late Sixties and early Seventies. In this paper we suggest an extension to standard explanations of mobility, namely the *insider advantage theory* of immobility. We argue that for most people in Europe it is fully rational not to consider moving because they have accumulated too many location-specific insider advantages over time. Even if substantial macro-economic differences persist on the aggregate level, moving away will generally not be beneficial from an individual point of view, due to the costs of accumulated location-specific insider advantages that would be sunk in case of out-migration. The longer people stay, the more they have accumulated such insider advantages and the less likely they will be to move. Therefore, (im)mobility should be highly duration dependent.

In this paper we use a newly released, very comprehensive micro dataset on people resident in Swedish labour markets in 1994 to test our insider advantages approach. Due to the availability of extensive information about each individual it has been possible to test the partial effect of various factors on the probabilities of staying within the same regional labour market. In line with our insider advantages theory we find substantial empirical support for immobility being strongly duration dependent. Furthermore, duration at a certain location matters more than duration at a workplace. Both socio-economic characteristics and family ties turn out to be important determinants of immobility, while aggregate regional attributes like wage differences or vacancy rates perform badly.

In section 2, we first introduce the insider-advantage approach towards explaining immobility. Section three introduces the data and the model. Section four discusses the results of its estimation on Swedish data. Part five concludes.

2. Explaining (im)mobility

Classical migration theories explain mobility in terms of *differences between* attributes of *places* on the macro level, *group dynamics* and *networking* on the meso level and

socio-economic characteristics and *behavioural strategies* on the micro-level.¹ Studies using aggregate data have shown that changes in place-specific living standards and labour market conditions may explain fluctuations in migration flows (*Ghatak, Levine and Wheatley Price* 1996). However, despite considerable macro-economic differences persisting both between many countries as well as within,² and despite technological and political reductions in the obstacles to migration, the vast majority of people have not and do not consider moving.³ To complicate things even further, migration flows do not necessarily diminish between places that seem very similar on an aggregate level.

Although contributing insights as to why some people move, classical explanations are somewhat unsatisfactory in explaining why most people never consider moving. While *Stark* (1991) and *Stark, Helmenstein and Yegorov* (1997) concentrate on the optimal duration of migration and on return migration we suggest a new approach to explain immobility which we call *the insider-advantage theory*. The insider advantage theory in itself accommodates several elements of traditional explanations but derives some new conclusions with respect to the underlying *dynamics* of mover-stayer decisions.

Under the conventional micro-level migration analysis a decision maker compares her or his present and future level of utility in different macro-level units on the basis of her or his present stock of assets and abilities. In most cases this is not a realistic judgement because a certain part of the abilities and assets of every human being are *location-specific*, in other words they can only be used (or are only in existence) in a specific

1 For a new and comprehensive comparative multidisciplinary survey on theories of migration see Hammar et al. 1997, and for a shorter review that more explicitly treats issues of economic methodology *Bauer and Zimmermann* 1997 and *Greenwood* 1997.

2 Research on international migration has often been conducted separately of research on internal migration (*Korcelli* 1994). In our empirical work, we analyse *regional* in- and out-migration in Sweden. But from an economic or geographic point of view, the distinction between internal and international migration is rather arbitrary. For both 'types' of migration individuals will have to make the same considerations, the only difference being that with increasing geographical and cultural distance the cost of moving and maintaining previous networks increases while the transferability of insider advantages decreases. Accumulating new location-specific knowledge and abilities may become more difficult. That national borders coincide with *the* significant demarcation line between low and high economic, social and cultural costs of moving become more unlikely the more countries integrate economically. Although the quantification of respective effects needs further research, we are thus convinced, that the importance of insider-advantages effects in explaining immobility holds for international migration too.

3 With respect to the decrease in obstacles to migration we think not only of the general reduction in transport and communication costs and the progress in international economic integration. We also refer to political developments like the fall of the 'iron curtain'. *Hunt* (2000) examines why people still live in East Germany. However, she stays within a rather traditional analysis and concludes that convergence in hourly wages is the most important factor to explain the downward trend in German east to west migration.

place. These are what we call *insider-advantages*. They are not transferable to other places of work and residence. An important part of these abilities has to be obtained within a location specific learning process which requires time, information and temporary immobility. Mobility turns such investments into *lost* sunk costs, i.e. costs which are tied to a specific project or - in this case - a specific location and which are lost in the case of out-migration. Strong ties to places, people and projects are constraints to migration (*Malmberg 1997*). Therefore, immobility is a utility maximizing strategy to a majority of people *because the loss of location specific assets and abilities induced by migration would be too severe and because it is immobility which allows individuals to accumulate insider-advantages*.

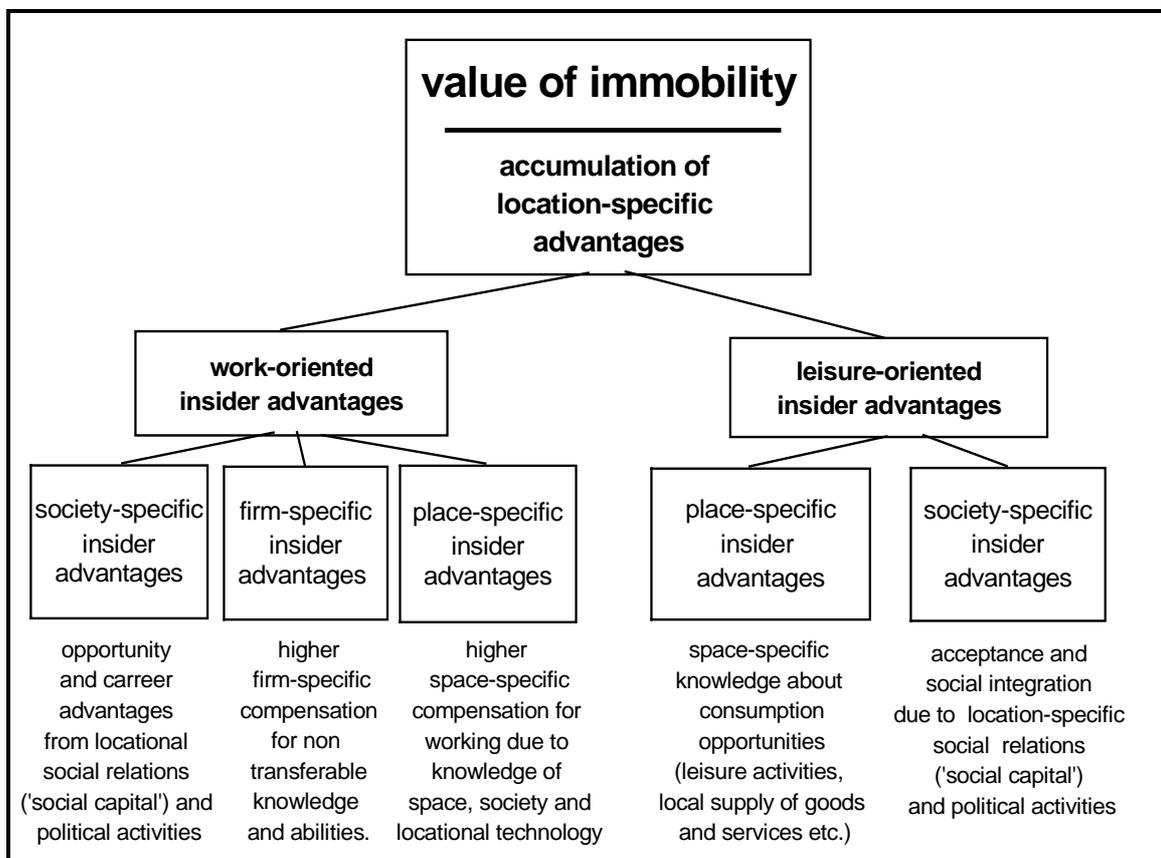
With respect to mobility, *Becker (1962)* and his scholars emphasised that part of the knowledge an individual acquires is often *firm-specific* and can not be transferred to another employment. Migration may therefore result in a decrease of potentially achievable relative wages because firm-specific abilities are 'sunk' in case of a change of workplace. In its exclusive concentration on firm-specific insider advantages, however, Becker's approach seems to us too rigid to satisfactorily explain immobility.⁴

Figure 1 gives a graphical representation of the structure of our insider-advantage idea. It differentiates insider-advantages according to their origin (work- or leisure-related) and specificity (firm-, place- or society-specific).

Place-specific advantages make the individual particularly attractive for all or at least some firms in his region of work. Examples of such insider advantages are expertise in the location-specific preferences, desires and habits of clients or insider knowledge of the peculiarities of the political situation in a region. *Society-specific* advantages broadly emanate from the social relations and political activities an immobile individual builds up within the society in which he/she is residing (lobbying, political networks). Firm-, place- and society-specific work-oriented insider advantages lead to higher revenues for the individual, in the form of wages or other income.

4 For a somewhat different treatment of location-specific advantages emanating from the labour supply side see *Chiswick (1986)*. The insider-outsider concept is of course not a new innovation. It has been used in different fields of economics and became especially popular in labour market economics (see e.g. *Lindbeck and Snower 1986, 1994*).

Figure 1: **The Insider-Advantage Approach towards Immobility**



source: own illustration.

All non-work oriented, consumption focused location-specific knowledge we label *leisure-oriented* location-specific insider advantages. They allow a resident to reach a higher utility level with a given set of monetary or other resources and time. Examples of *place-specific* leisure-oriented insider advantages can range from information about the 'good-value-for-money' Italian restaurant round the corner to knowledge about cultural events and the local housing market. *Society-specific* leisure-oriented insider advantages capture the utility increase a decision-maker and his family get from having friends, being socially integrated, accepted and active at a certain place of residence. These insider advantages result from a locational investment in 'social capital' (Faist 1997) which encompasses a wide range of human contacts, from family relations and friendships to membership of clubs and political parties. Mobility generally induces the loss of most of these abilities and assets and requires new investments in obtaining a 'ticket to entry' at a new place of residence. Place of origin related *networks* of 'compatriots' at the place of destination may lower this loss.

The more developed economies are, and the relatively more important leisure time becomes in comparison to working time, the more leisure-oriented insider advantages ought to matter for the decision to stay or to go. Admittedly leisure-oriented insider advantages are for the most part difficult to quantify in monetary terms. Nevertheless it should be possible to control their importance indirectly. If *duration of stay* increases the probability of staying irrespective of duration of employment or if, for example, having children decreases individual propensities to move, then this is likely to be due to leisure-oriented insider advantages rather than work-oriented ones.

Intertemporally, insider-advantages may be partly recovered and ‘updated’ if one returns, but they nevertheless strongly increase the (opportunity) costs of staying away. There may be some cases where the benefits of being an *outsider* create the very incentive to move (for example a Chinese offering traditional Chinese medical practices to a European clientele in Paris). But such situations tend to be exceptional. While outsider advantages may be an incentive to move *for a few*, our argument is that insider advantages provide reason enough to stay *for most*.

There is some similarity between our insider-advantage approach and the human capital approach. The human capital approach emphasises the point that people are very different in their characteristics and their abilities and that migration may be a form of investment on which the return will occur within a given future time span. The insider-advantage approach stresses that during periods of immobility at a particular location individuals invest in the accumulation of location specific skills, abilities and assets. By this they can increase the realisable individual utility at this location significantly. Therefore there may be very little migration even if on an aggregate level considerable locational differences in average incomes, unemployment risks or endowment with natural amenities exist. There is little migration because individuals rightly expect that a move might decrease her personal utility due to the incurred loss on non-transferable knowledge and the costly need to acquire new insider-advantages in order to get into a similar relative position at the new location.⁵

Hägerstrand (1975, 1993) has pointed to the influence of *constraints* on migration. He identified people’s engagement in everyday projects and activities, such as work, studies, hobbies, friends and family, as decisive for long term decisions and related the

5 In that sense, the insider-advantage approach to explain immobility can also be seen as an alternative, more explicit formulation of traditional migration costs.

propensity to move to the possibility to transfer or substitute these local ‘projects’. Major life events have been identified as major determinants of family migration. Getting a job, starting an education, get married, having babies and buying a house are events that strengthen the ties to a specific place, while events such as losing job, ending education, get divorced and children leaving home increase the propensity to migrate positively.

Important empirical implications of the insider-advantage approach to immobility are that mobility patterns should be *duration dependent* and that the *degree of transferability* of skills, abilities and personal relations ought to be of central importance for observed (im-)mobility behaviour. The more people have accumulated location-specific insider-advantages and the less transferable their abilities and current ‘life-projects’ are, the more likely it is that they stay immobile. Somebody who has moved recently and thus already has lost his accumulated insider-advantages should be more likely to move again. The longer she or he stays at the new place of residence, the smaller the probability of an additional move.⁶

3. The Model and Data

3.1 The Model

We start with a standard neo-classical utility maximising migration function and assume that individuals decide whether to move or not by comparing expected utilities at alternative destinations with their present situation. The net present value NPV is made up by the difference over time between expected discounted utilities at an alternative destination and at the present one. Different kinds of utilities are realised with different probabilities. For our empirical analysis, however, it is impossible to observe actual utilities. What we can observe is the result of the decision making process only: people

6 To exclude some of the standard hypotheses of labour market analysis concerning the effects of duration of stay and to identify the duration dependent and labour market related insider advantage we could also examine whether the annual wage increase of newcomers differs from the one of people that have been there for a longer period already. However, in this paper we leave open whether this analysis might change our empirical results because the data necessary to test the hypothesis properly are not available. Finally, immobility could also be the consequence of a duration dependent higher appreciation of locally segregated cultural or social milieus. It could be that private consumption in a group or network specific context generates positive social consumption externalities. Based on a model by Pollak (1979), Binder and Pearan (1997) have shown that an inclusion of consumption interdependencies does not change the empirical validity of a standard consumption analysis.

either stay or go. If individuals decide to move when the expected net present utility of staying at another location exceeds the one at the present place of residence, we have the relation between utilities and probability stated in the *random utility model*. Here, the decision to stay or go includes, apart from the utility comparison, a place-specific random term ε :

$$prob(stay) = prob\left(\sum_{t=0}^m \left(\left(\sum_{k=1}^n (\rho_k^i u_k^i)_t \right) \cdot (1+\theta)^{-t} \right) + \varepsilon_i > \sum_{t=0}^m \left(\left(\sum_{k=1}^n (\rho_k^j u_k^j)_t \right) \cdot (1+\theta)^{-t} \right) + \varepsilon_j - c_{ij}\right) \quad (1)$$

where $u_k = f(X_k)$, k are different categories of utility, i assigns to the present place of residence and j an alternative location. θ represents the discount factor and c_{ij} covers the (direct) migration costs of moving from i to j .

To simplify notation, let us label the discounted and probability-weighted utilities with U . In line with our insider advantages model we distinguish between two broad categories of utilities, work-oriented utilities UWO and leisure-oriented utilities ULO . Thus (individual) location-specific utilities are conceived as:

$$u_i = \mu_i + UWO_i + ULO_i + \varepsilon_i \quad (2)$$

They result from a fixed but place-specific component μ_i (natural amenities etc.), the sum of work and leisure oriented utilities plus a random but place-specific component ε_i .

With respect to the determination of UWO and ULO individual time horizons and discount factors are obviously dependent on age. The standard migration theory implies that UWO and ULO are furthermore conditional on individual microeconomic characteristics $XMIC$ like education and experience (*Becker* 1962). An individual's family situation (marital status, number of children etc.) may matter for the determination of the disposable household income as well as its use (*Stark and Bloom* 1985, *Stark* 1991). Also we expect region-specific macro factors $XMAC$ like labour market conditions (unemployment and vacancies rates) or general regional attributes (wage level, local opportunities) to be important for the determination of place-specific utilities. Provided that the life-course event theory of mobility proves relevant, we should find utilities to be further dependent on life course events LCE like the formation or disintegration of households, engaging in educational activities, getting unemployed or having a baby. Last but not least, the insider-advantages theory suggests that the

amount of location-specific insider advantages IA an individual has accumulated over time will be important in defining the work and leisure oriented utilities a person can expect to achieve at a certain place. Given our insider advantage hypothesis, we expect IA to be a function of duration of stay and transferability of skills⁷ and abilities. Thus:

$$\begin{aligned} UWO_i &= g(XMIC_i + XMAC_i + XLCE_i + XIA_i) \\ ULO_i &= h(XMIC_i + XMAC_i + XLCE_i + XIA_i) \end{aligned} \quad (3)$$

and consequently, the probability of staying will be determined as:

$$prob(stay = 1) = prob(\mu_i + UWO_i + ULO_i + \varepsilon_i > \mu_j + UWO_j + ULO_j + \varepsilon_j - c_{ij}) \quad (4)$$

Given the discussed determinants of the decision to stay or go, we estimate the individual probability of staying in terms of a probit model as:

$$\begin{aligned} prob(stay = 1) &= \Phi(\mu_{ij} + \beta_1[XIA_{pi} - XIA_{pj}] + \beta_2[XMIC_p] \\ &\quad + \beta_3[XMAC_i, \Delta XMAC_{ij}] + \beta_4[XLCE_p]) \end{aligned} \quad (5)$$

Here, the constant μ_{ij} captures both, differences in location-specific amenities as well as immediate moving costs c_{ij} . To test for the relative importance of the accumulation of work and leisure-oriented insider advantages, we will include both time since last change of employer and time since last change of residence. With respect to other determinants, it is obviously difficult to know whether regressors proxy work or leisure oriented insider effects. Distinguishing between the two remains therefore to some extent a question of interpretation.

3.2 The Data

The empirical investigation in this paper relies on data from the TOPSWING database. This new database links information from various official statistical registers and censuses as provided by Statistics Sweden. It covers anonymised micro data for the total population resident in Sweden between 1985 and 1995, i.e. more than 9 million people. It includes information about an individual's place of residence and work, age, gender,

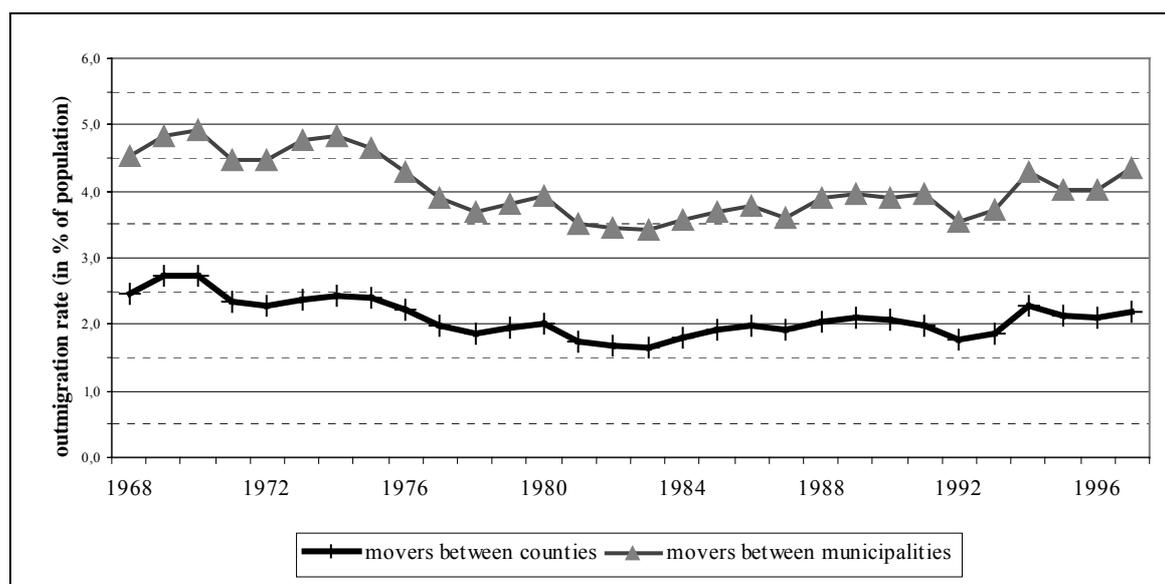
⁷ For a recent discussion of the role of skill transferability in immigrant performance see *Friedberg (2000)*.

education, income, employment, profession as well as household conditions and links to family members (see appendix 1 for further information on the variables used).

In this paper we are interested in inter-regional migration that is not purely residential but involves both, a change of residence and a change of workplace. Our data does not constrain us to use politically defined county borders. Instead, in what follows we will use economically defined *labour market regions* as spatial resolution of our analyses. Labour market regions are defined by Statistics Sweden and the Swedish Department of Finance as to minimise inter-regional commuting (Finansdepartementet 1994). Using these labour market regions we separate the territory of Sweden into 108 different regional labour markets. For this study we have drawn a sample of *all* movers over labour market regions during the years of the study (1994 and 1989) and a control group of 2% of Swedish-born stayers and 20% of non-moving immigrants. In our calculations individual observations have been weighted as to represent the true proportion in total population.

As in many other European countries, mobility in Sweden has not only been low but has also exhibited a tendency to decrease until the last few years when a (small) increase in mobility of especially young and well educated people has been observed. Figure 2 shows how emigration propensities decreased relatively steadily in the 1970s and 1980s and have resurged during the last three years.

Figure 2: **Internal Migration in Sweden 1967-97**



Source: Statistics Sweden.

During 1994 about *15 per cent* of the population in Sweden changed address, but *only 2,3 per cent* of the population had moved over the border of a *labour market region*. If the data period is extended to ten years (1985-1995) 87% of the population still lived in the same labour market region.

Bengtson and Johanson (1993) point out some possible explanations to the trend of decreasing mobility in Sweden. They emphasise the low regional income variations, the increase in public job opportunities and the growing number of two income families; trends that are also found in other developed economies. Indeed, (im)mobility patterns have been similar to those observed in other European countries. Studies of immobility in the Swedish context thus might reveal some Sweden-specific characteristics, but generally speaking the determinants affecting the patterns of immobility should be very similar to the situation in other European countries.

4. Determinants of Immobility: Estimation Results

4.1 Duration and socio-economic Characteristics Matter

Table 1 shows the results of our probit estimations of the propensity to stay in a Swedish labour market for all people aged between 19 and 64 who have stayed for at least 12 months prior to moving and for whom the necessary information is available. The sample comprises 286,356 observations, which allow for a relatively detailed combination of explanatory variables. Results are provided for *five different models* derived from equation (4). These five are all *nested*.⁸ They are built in order to allow checking for the relative importance of our arguments and the stability of the different parameters. Model (1) includes duration variables linked to our insider-advantages hypothesis only. Model (2) adds the ‘classic’ socio-economic micro and region-specific macro factors. Model (3) also includes ‘life-course events’, model (4) checks for the importance of different places of birth and model (5) introduces occupational dummies. An asterix (‘*’) at the end of the Log-L term indicates that a Log-likelihood ratio test *rejects* the hypotheses that the model is *not* significantly better than the less comprehensive nested one with a probability larger than 0.99. It thus indicates that

⁸ Actually, model (1) is nested in (2), (2) in (3), (3) in (4) and (5) but (4) not in (5).

despite the absence of improvements in the pseudo-R² the more comprehensive model includes additional explanatory factors that are *jointly* significant.⁹

Our estimation results provide support for the insider advantage hypothesis that people are immobile because they accumulate location-specific insider advantages which are sunk in case of a move. *The longer people stay at a certain place, the less likely they are to move.* In model (1) we regress the probability of staying on just duration of stay in months, years since last change of employer, number of previous moves and for immigrants years since immigration. Immigrants should be more mobile (because they already lost their insider advantages), but their behaviour should approximate natives' overtime. To control for the possibility that the expected duration effects occur only because one gets older and is therefore less likely to move, we also control for age and allow the effect of age being non-linear by including an age square term in the regression. If immobility were determined mainly by the accumulation of firm and work-specific insider advantages, we would expect 'years since last change of employer' to be a chief determinant of the probability to stay. If leisure-oriented place- and society-specific insider advantages matter more, this should show up in a corresponding importance of the general duration of stay variable. For duration of stay we have checked various specifications, but the simplest linear one applied here proved best.¹⁰

For model 1, age shows the usual significant properties. Immobility is a very age-specific phenomenon. More than two thirds of all movers in Sweden have been between

9 Note that unlike in OLS-regressions it is impossible in binary choice models to calculate an R² that sets true and estimated y into proportion and explains the part of the total variance an estimated model explains. For discrete choice estimation, several goodness of fit indicators have been proposed (for a discussion of the most prominent alternatives see *Amemiya* 1981 and *Veall and Zimmermann* 1992). Most of them aim to approximately mimic the properties of the OLS-R² and are therefore also called pseudo-R².a We calculated and provide two pseudo-R² that have been found to mimic best the properties of the traditional regression R² (*Windmeijer*, 1995). R²-MZL is the indicator proposed by *McKelvey and Zavoina* (1975) and *Laitila* (1995). R²-MF provides the popular likelihood ratio index developed by *McFadden* (1974).

10 Initially it may take some time before a mover reconsiders a move he has just made. Thus we could expect the likeliness to move to be very low initially, then increase considerably and thereafter decrease again. Such a pattern could e.g. be captured by a logistic specification of the duration effect. In an investigation on UK data *Gordon and Molho* (1995) find an 'inverted-U curve effect' of duration for local, residential mobility. In our data on mobility between labour market regions in Sweden, we do *not* find such a non-linear effect. If the probability of moving further on (or back) is low initially and increases only after some time, then this happens within less than one year of stay which is the minimum duration requirement for moves to be included in our investigation. We also did not find any significantly decreasing (or increasing) effect of duration that a polynomial specification of the duration term would capture.

20 and 35 years old. But controlling for this, both duration variables turn out significant and show the expected sign. The probability of staying is thus highly duration dependent. Duration of stay is estimated to be both, much more significant and more important in magnitude, than duration since last change of employer. Two to three additional months of stay in the same labour market make up for one year with the same employer. Although model (1) obviously suffers from omission bias, its goodness of fit is quite remarkable. The 'years since immigration' variable produces the expected effect clearly. Having just recently immigrated, foreign born people are significantly more mobile than native born. The number of previous moves still increases the likelihood of moving significantly, but less than half a year of staying at the same place and employer increases the probability of staying by more than a previous move decreases it.¹¹

Comparing parameter estimates in model (1) to (5) reveals that model 1 suffers from omission bias and therefore overestimates the importance of the duration and age effects. But once we account for individual socio-economic characteristics and regional differences in model (2), the duration parameters continue to be among the most important explanatory factors of mobility behaviour. Even if we add further significant additional explanatory factors in subsequent models the duration effects remain very robust.¹²

11 The more the number of previous moves contributes to the explanatory power of a model, the better one could argue that the migratory behaviour of individuals is due to unobservable factors that divide the population permanently into two heterogeneous groups of movers and stayers. Given the relatively modest importance and significance of previous moves, our results indicate that the above argument does not hold as such: there is more we know about (im)mobility than just explaining migration by previous migration.

12 With our cross-sectional data we can not completely rule out, that the estimated strong duration effect results to some extent also from sorting. A definite answer on the relative importance of the endogenous emergence of reasons to stay versus sorting effects has to be left for further research. But several tests have led us to the conclusion that accumulated insider advantages indeed play an important role here while the sorting effect is probably a relatively minor phenomenon. First, given the relatively modest importance and significance of previous moves relative to the duration of stay effect, our results indicate that unobservable factors that divide the population permanently into two heterogeneous groups of movers and stayers are of minor importance here. There is more we know about (im)mobility than just explaining migration by previous migration. Second, assuming that a break-up of the household e.g. due to divorce or also becoming adult represent "exogenous shocks" that would expose all individuals concerned to a new sorting process, we estimated our models separately for people divorcing and for persons aged 18 to 20. The results (available from the authors on request) show that the duration of staying effect remains relatively stable and highly significant, while other determinants except those related to education, the family and the individual employment status lose their significance.

**Table 1: Probit Estimation Results
Probability of Staying in the Same Swedish Labour Market Region in 1994
(for people aged 19-64 with duration of stay ≥ 12 months and full data avail.)**

<i>explanatory variable</i>	<i>model</i>			(1)			(2)			(3)			(4)			(5)		
	duration variables	duration and socio-economic variables	duration, socio-economic and life-time variables	duration variables	duration and socio-economic variables	duration, socio-economic and life-time variables	duration variables	duration and socio-economic variables	duration, socio-economic and life-time variables	duration variables	duration and socio-economic variables	duration, socio-economic and life-time variables	duration variables	duration and socio-economic variables	duration, socio-economic and life-time variables	duration variables	duration and socio-economic variables	duration, socio-economic and life-time variables
	slope b	z=b/s.e.	marginal b															
constant	-1,1276	-14,95	-0,04173	0,2416	1,50	0,00700	0,40390	2,48	0,01162	0,4106	2,50	0,01181	0,4317	2,63	0,01232	0,4317	2,63	0,01232
age	0,0853	25,51	0,00316	0,0284	7,31	0,00082	0,01983	5,00	0,00057	0,0194	4,88	0,00056	0,0187	4,69	0,00053	0,0187	4,69	0,00053
age squared	-0,0008	-19,42	-0,00003	-0,0002	-3,39	0,00000	-0,00008	-1,61	0,00000	-0,0001	-1,50	0,00000	-0,0001	-1,39	0,00000	-0,0001	-1,39	0,00000
duration of stay in month	0,0082	35,04	0,00030	0,0061	18,17	0,00018	0,00557	16,56	0,00016	0,0056	16,55	0,00016	0,0056	16,50	0,00016	0,0056	16,50	0,00016
years since last employer change	0,0188	5,24	0,00070	0,0114	3,13	0,00033	0,01098	2,98	0,00032	0,0111	3,02	0,00032	0,0103	2,78	0,00029	0,0103	2,78	0,00029
number of prev. moves	-0,0456	-5,18	-0,00169	-0,0296	-2,97	-0,00086	-0,03748	-3,76	-0,00108	-0,0373	-3,74	-0,00107	-0,0374	-3,75	-0,00107	-0,0374	-3,75	-0,00107
years since immigration	0,0142	4,46	0,00052	0,0121	4,04	0,00035	0,01188	3,94	0,00034	0,0120	3,73	0,00035	0,0119	3,94	0,00034	0,0119	3,94	0,00034
ln(income of partner)				0,0413	11,34	0,00120	0,04286	11,45	0,00123	0,0432	11,53	0,00124	0,0436	11,59	0,00125	0,0436	11,59	0,00125
level of education				-0,1264	-2,642	-0,00366	-0,11154	-23,09	-0,00321	-0,1101	-23,19	-0,00317	-0,1096	-21,61	-0,00313	-0,1096	-21,61	-0,00313
migrant*education				0,0547	3,98	0,00158	0,04938	3,58	0,00142	0,0358	3,08	0,00103	0,0469	3,38	0,00134	0,0469	3,38	0,00134
number of children				0,1042	9,95	0,00302	0,09647	8,90	0,00278	0,0962	8,87	0,00277	0,0960	8,82	0,00274	0,0960	8,82	0,00274
married				0,0686	2,83	0,00199	0,05632	2,11	0,00162	0,0545	2,04	0,00157	0,0496	1,85	0,00142	0,0496	1,85	0,00142
living in own house				0,1063	3,72	0,00308	0,12020	4,21	0,00346	0,1204	4,22	0,00346	0,1164	4,08	0,00332	0,1164	4,08	0,00332
unemployed				-0,2895	-19,20	-0,00839	-0,22159	-13,35	-0,00638	-0,2218	-13,36	-0,00638	-0,2261	-13,54	-0,00645	-0,2261	-13,54	-0,00645
out of labour force				-0,3246	-23,24	-0,00940	-0,19231	-11,21	-0,00553	-0,1934	-11,27	-0,00556	-0,1982	-11,48	-0,00566	-0,1982	-11,48	-0,00566
foreign born				-0,2653	-5,18	-0,00768	-0,24875	-4,845	-0,00716	---	---	---	-0,2370	-4,59	-0,00677	-0,2370	-4,59	-0,00677
inc.dif. own-prx. LM				-0,0011	-0,86	-0,00003	-0,00107	-0,79	-0,00003	-0,0011	-0,81	-0,00003	-0,0011	-0,82	-0,00003	-0,0011	-0,82	-0,00003
workers inc. LM own				0,0050	3,28	0,00015	0,00524	3,38	0,00015	0,0052	3,34	0,00015	0,0055	3,54	0,00016	0,0055	3,54	0,00016
relative vacancies rate				-0,0572	-1,49	-0,00166	-0,06075	-1,58	-0,00175	-0,0582	-1,51	-0,00167	-0,0560	-1,44	-0,00160	-0,0560	-1,44	-0,00160
metropolitan dummy				0,1485	7,41	0,00430	0,15201	7,52	0,00437	0,1506	7,44	0,00433	0,1534	7,57	0,00438	0,1534	7,57	0,00438
local share of people in education				0,9581	2,49	0,02776	1,51737	3,86	0,04366	1,5064	3,84	0,04332	1,4965	3,80	0,04271	1,4965	3,80	0,04271
local share of people in industry				-0,5546	-4,90	-0,01607	-0,52783	-4,67	-0,01519	-0,5312	-4,70	-0,01528	-0,5638	-4,95	-0,01609	-0,5638	-4,95	-0,01609
become unemployed							-0,116545	-7,26	-0,00335	-0,1170	-7,29	-0,00337	-0,1183	-7,23	-0,00338	-0,1183	-7,23	-0,00338
partner becomes unemployed							-0,129343	-3,15	-0,00372	-0,1286	-3,14	-0,00370	-0,1246	-3,03	-0,00356	-0,1246	-3,03	-0,00356
new household built							-0,25016	-8,83	-0,00720	-0,2504	-8,83	-0,00720	-0,2495	-8,80	-0,00712	-0,2495	-8,80	-0,00712
household split							-0,20862	-5,83	-0,00600	-0,2085	-5,83	-0,00600	-0,2098	-5,86	-0,00599	-0,2098	-5,86	-0,00599
new baby							-0,06043	-1,71	-0,00174	-0,0598	-1,69	-0,00172	-0,0613	-1,73	-0,00175	-0,0613	-1,73	-0,00175
in education							-0,28718	-18,84	-0,00826	-0,2872	-18,83	-0,00826	-0,2875	-18,74	-0,00821	-0,2875	-18,74	-0,00821

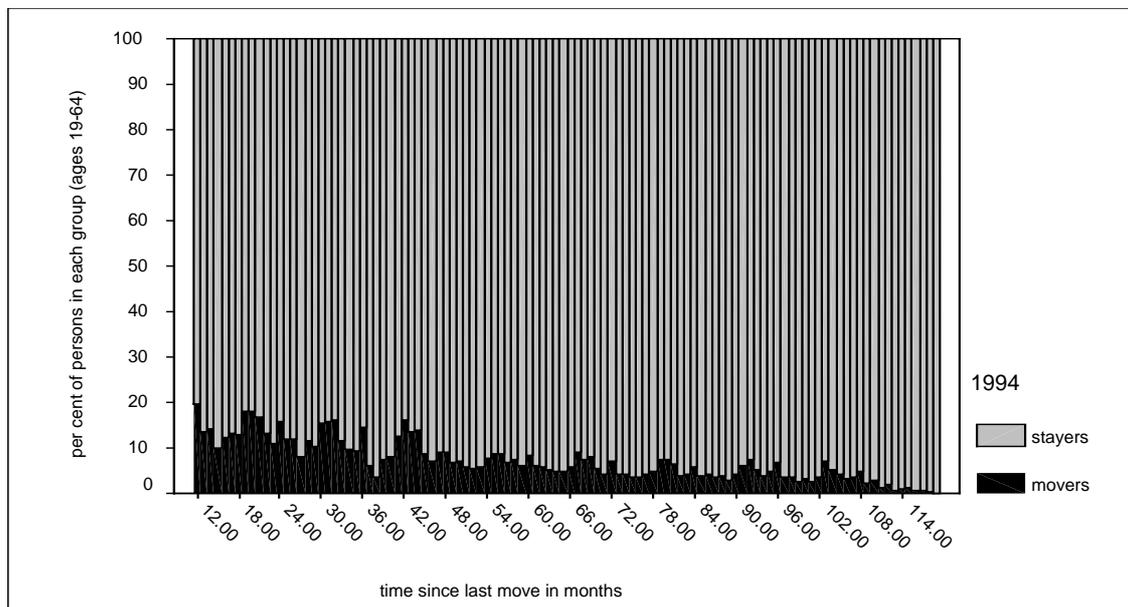
Finnish born	0,0007	0,01	0,00002	---	---	---
other Nordic born	-0,3016	-4,42	-0,00867	---	---	---
Western European born	-0,2144	-2,64	-0,00617	---	---	---
Southern European born	-0,1088	-0,90	-0,00313	---	---	---
Former Yugoslavian born	-0,1273	-1,47	-0,00366	---	---	---
Eastern European born	-0,2393	-1,00	-0,00688	---	---	---
Highly developed non Europ.b.	-0,3446	-2,50	-0,00991	---	---	---
other non-European b.	-0,2015	-3,62	-0,00579	---	---	---
farmer			0,2565	2,454	0,00732	
mining			0,0341	0,621	0,00097	
construction			0,1201	3,654	0,00343	
retail			-0,0207	-0,999	-0,00059	
restaurants and hotels			-0,1645	-5,336	-0,00470	
transport and communication			-0,0402	-1,39	-0,00115	
banking and insurance			-0,1086	-2,396	-0,00310	
real estate business			0,0520	0,992	0,00149	
general public administration			-0,0594	-2,147	-0,00169	
teaching			0,0088	0,341	0,00025	
research			0,0535	0,781	0,00153	
health			0,0043	0,257	0,00012	
personal services			0,0564	0,807	0,00161	
other services			-0,0776	-3,902	-0,00222	
Log-L	-30178	-28528	-28804*	-28530*	-28487*	
R2-ZML	0,64	0,67	0,66	0,67	0,67	
R2-MF	0,86	0,87	0,87	0,87	0,87	
number of observations	286356	286356	286356	286356	286356	

*indicates that a LR-Test of the hypothesis that the restricted model n-1 is equal to the more comprehensive model n may be rejected at a probability > than 0.99.

**see appendix for further remarks on the definition of variables.

Source: own estimations

Figure 3: Propensity to Stay in 1994 by Duration of Stay 1985-93



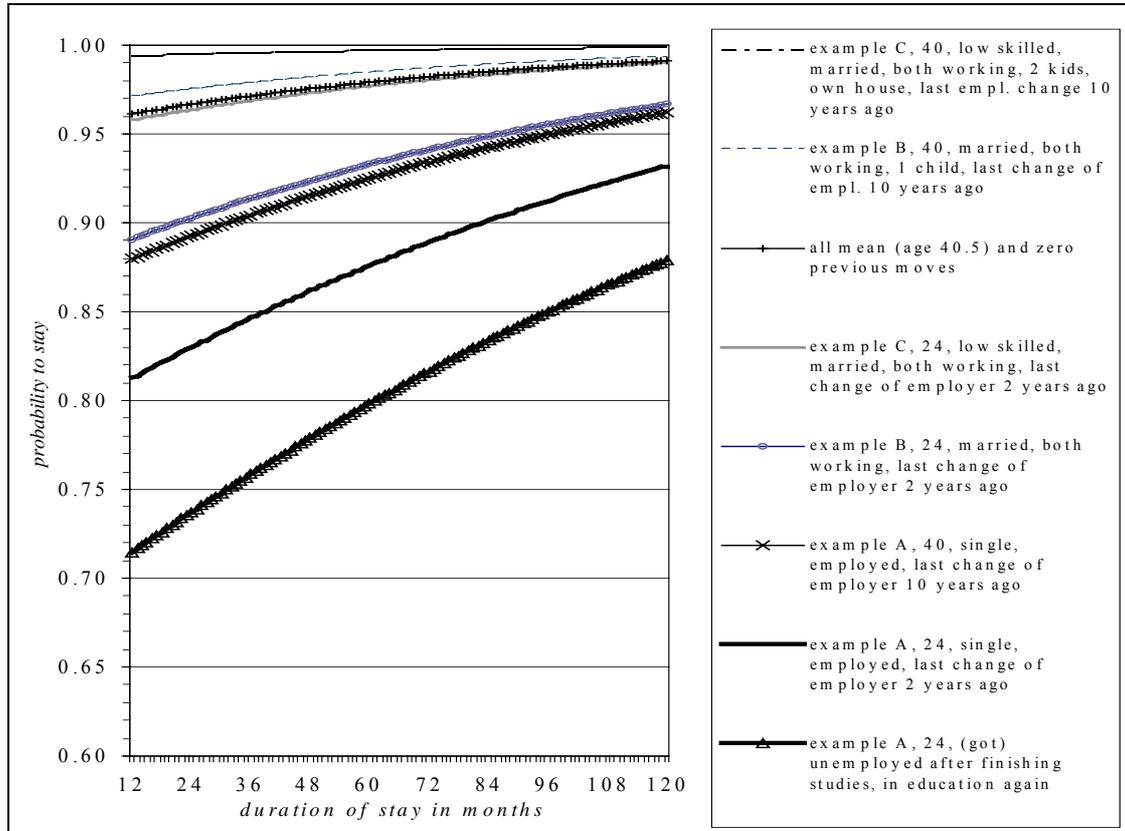
Source: Own calculations based on data from Statistics Sweden as provided in the TOPSWING database, Department of Social and Economic Geography, Umeå University.

Figure 3 illustrates the *unconditional effect* of duration of stay on the probability of staying in our data. It shows that while about *one fifth* of those individuals who have migrated a year ago moved again in 1994, *less than half a per cent* of those who stayed for ten years moved again in 1994. To illustrate the simultaneous working of the different partial effects in our probit model, we have simulated the probability of staying by duration of stay for some typical individuals depicted in figure 4.¹³ It demonstrates how duration of stay makes a more important difference for individuals who are ‘at risk’ of moving.¹⁴

¹³ All the simulations depicted in figure 3 and 5 use the coefficients estimated in model 3.

¹⁴ The *small magnitude* of the duration effect at mean characteristics is first of all because the average individual is immobile prone, but it also results from several different explanatory variables simultaneously moving away from mean characteristics if somebody is less immobile. In probit estimations the predicted mean probability of staying corresponds to the mean distribution of the bivariate variable in the sample. In our case, where about 98 per cent of people are stayers, the predicted probability of staying for individuals with mean characteristics and an average duration of stay is thus about 0.98. In other words, *at average characteristics* and the mean age of 40, all people are highly unlikely to move. The difference in the probability of staying implied by our probit estimation results between the representative average individual who has moved a year ago and the one who has remained in the same region for the last ten years is close to three per cent.

Figure 4: Duration Dependence of the Probability of Staying – Some typical cases



Source: own simulations using estimation results of model 3.

Assume an individual who has just completed first degree university studies, became unemployed and then decided to continue with some further education. Our person is now 24 years old and lives as a single in a rented apartment. For this typical individual ‘A’ the probability of staying ranges between 0.71 and 0.88. Whether the person has stayed for one or for ten years at the same place of residence makes a *difference of 17 per cent in the probability of staying*, while for the 40 year old, less skilled married person ‘C’ who has two kids, owns an own house and has not changed employer during the last ten years the difference amounts to *just half a per cent*. For ‘A’ relative to ‘B’ and ‘C’, higher education as well as being not married and not having a working partner decrease the probability to stay.

The different examples ‘A’, ‘B’ and ‘C’ demonstrate the strong joint effect of age, marital status and duration since employment on the probability to stay. Being 24 or 40 makes a large difference in probability of staying for the highly educated working single named ‘A’, while it is of considerably less importance to the married, low skilled individual ‘C’.

All in all, duration of stay proves to be an important determinant of the probability of staying which becomes enforced by changes in age, family formation etc. that typically occur while people stay immobile. Altogether they explain the strong overall relation between duration of stay and probability of staying shown in graph 3.

Although adding in model (2) individual socio-economic characteristics and regional differences in macro variables increases the goodness of fit only moderately, the increase in the validity of the model as measured in terms of the Log-Likelihood is highly significant.¹⁵ Socio-economic variables show the expected signs and prove significant. Apart from *age*, *education* turns out to be an important determinant of immobility. Presumably the skills of less educated people are less transferable locationally than those of the highly skilled and the return on moving is lower. In previous work using census information on the socio-economic position of individuals we found *less skilled blue collar worker* as well as *farmers* to be particularly immobile while white collar highly skilled are particularly mobile (*Fischer and Malmberg 1998*). *Foreign born* individuals are in general significantly less immobile than the native born, but with years since immigration increasing the difference fades away. As the mobility enhancing effect of education is significantly *less* pronounced for foreign born than for natives, the (im)mobility patterns of high skilled foreign born approach these of the native born faster than those of the unskilled.¹⁶

Houseownership obviously contributes significantly to explaining immobility. Owning a house probably entails individual and place-specific rents that are sunk in case of a move and which are relevant enough to keep people from moving.¹⁷

¹⁵ The fact that the pseudo-R² increases only marginally despite highly significant variables being added is indeed somewhat puzzling. This could e.g. be due to multicollinearity, but correlations between the different variables are all below 0.8.

¹⁶ In our simulations the propensity to stay of a highly skilled foreign born 'A' equals the one of a native born after roughly 11 years while for the unskilled 'C' it may take more than 20 years to line up with their native born 'twin'. At the mean duration of 14 years since immigration (for which estimation results are most reliable) 'average' foreign born individuals are thus still somewhat more mobile than the native born population, even if we account for differences in the other explanatory variables. However, compared to general socio-economic criteria, being foreign born proves to be of relatively marginal importance for the probability of staying.

¹⁷ It could be argued that houseownership is endogenous to the decision to stay immobile. We tend to believe that owning a house is often a prior target that individuals try to achieve without thinking about potential consequences for their (im)mobility. Often they realise what problems and costs a change of house would entail only after having seriously considered a certain move.

Furthermore it proves very fruitful to include the individuals' *family situation*. Not only whether one is *married* or not but even more so whether one has a *working partner* affects the probability of staying strongly. The more a partner earns, the larger the potential costs or insider advantages that are sunk in case of a move.¹⁸ *Having children* significantly increases the probability of staying too. In line with the premises of economic labour market theory people are found to be more mobile if they or a family member becomes unemployed. Our findings thus confirm the literature that stresses the importance of the family in migration decisions (*Bloom and Stark 1985*). The disutility from moving is the sum of all the lost insider advantages of the whole family, including those of school-age children moving schools.

4.2 Poor Performance of Regional Macro Variables

Contrary to what one would expect from traditional migration theory, regional differences in *macroeconomic variables* performed very *poorly* in explaining immobility. We constructed and tested various indicators of regional differences in employment and unemployment intensities, average income and wage levels as well as vacancies rates. They proved usually insignificant and regularly even showed the wrong sign. Because regional employment patterns and wage levels are highly correlated, we had to choose a few particular indicators. As a crude proxy for the possibility that individuals value opportunities in the proximity different than more remote ones, we constructed regional indicators relative to the average in the neighbouring region on the one hand and relative to all other, more remote regions on the other hand. Our estimations suggest that (im)mobility patterns do *not* seem to be dependent on regional employment intensity differences. People tend to be more immobile in regions where worker's *mean income* level is relatively higher. The variable we used measures mean income in thousands of Swedish Kroner for those who earned at least SKr 50,000 a year (as a proxy for regional development). But the effect is very small. The effect of the *difference between the average income level* in the labour market in which one was resident at the beginning of 1994 and the average in the surrounding labour markets turns out to be *insignificant*. This is the more surprising as differences between the

¹⁸ In examining the data a logistic specification of income proved more appropriate than a linear one. Note that this implies that it matters a lot whether or not a partner earns some income from employment. But the marginal effect of additional income on the probability of staying decreases exponentially.

levels of average regional income from work were not that minor: the lowest was more than 40,000 Swedish Kroner or 40 per cent less than the highest average income. The difference between average work incomes in the 'home' and neighbouring regions ranged between SKr -16,000 and SKr +27,000. Also relative vacancy rates turned out to have been insignificant in determining individual probabilities to stay.

Generally, mobility patterns do not show distinct regional patterns in Sweden.¹⁹ One regional difference turns out to be clearly significant and noteworthy, however: People living in the three large metropolitan regions of Sweden (Stockholm, Gothenburg and Malmö) are significantly and considerably more *immobile* than individuals living in the rest of the country. We have tested whether people living in larger, more urban labour markets are generally less mobile because they have more alternative opportunities nearby (we included the size of a region's population in the estimations). We also checked whether the metropolitan effect could be primarily related to regions incorporating university towns. Both hypotheses we had to reject. We are thus inclined to conclude that metropolitan regions offer more scope for the accumulation of location-specific insider advantages and thereby keep people staying.

Furthermore, our results indicate that people are more inclined to leave labour markets that are characterised by a large share of industry, while they are especially likely to stay in labour markets that are characterised by the relatively high importance of the educational sector.

4.3 Life-course Specificity and the Labour Market

The life-course hypothesis stipulates that probabilities of staying or moving are strongly life-course situation-specific. These life events may be labour market related but are also often not. The dissolution of a household e.g. will deprive the splitting individual from a good deal of his society-specific leisure oriented insider advantages. We would thus expect her probability to move significantly. On the other hand, engaging in education constraints the ability to move for a certain period of time, while completing an education will correspondingly decrease the probability to stay. We have added some

¹⁹ Including region-specific fixed dummies results in the estimation of significant coefficients for only 10 out of 108 labour markets. Included in these 10 are the three metropolitan areas covered by the metropolitan dummy.

life-course events for which we had information in our data in model (3). This again significantly improves its validity in terms of log-likelihood very significantly. From model (3) it becomes clear that *being in education* is one of the most important causes for mobility.²⁰ It increases the probability of moving by more than being unemployed. That individuals engaging in education are often also out of the labour force enforces the effect even further and probably explains much of the high relevance of the out of the labour force variable.

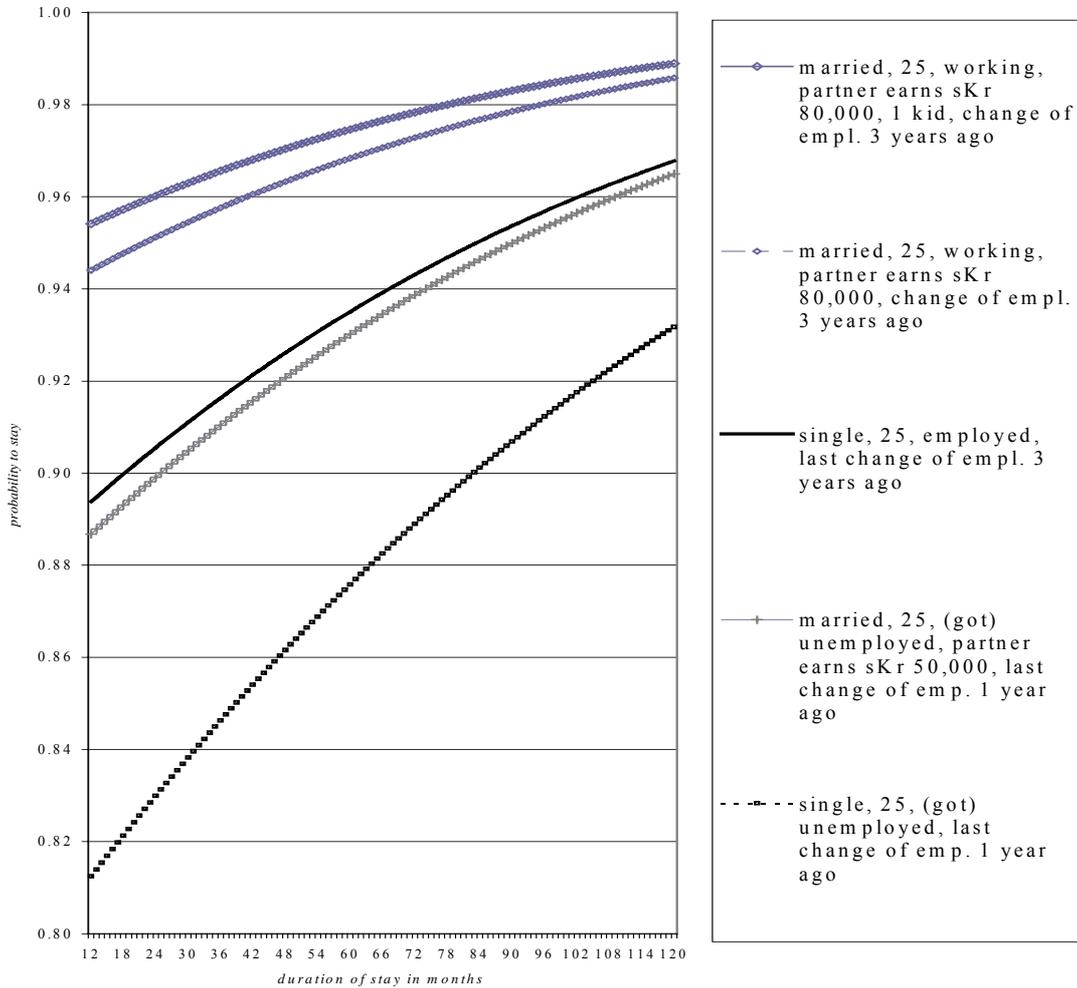
Notwithstanding the fact that most people are young when they move, *building a new* or *splitting* from a previous *household* are also highly significant factors that induce people to move over labour market borders. *Having a baby* may also increase mobility, but for that the estimated coefficient is insignificant. Note also that while *having* a new baby represents a new life-course situation that initially may decrease the probability of staying, having an additional child (who also accumulates place-specific insider advantages) significantly increases immobility.

With respect to labour market issues we have also tested for the importance of *becoming* (and not just being) unemployed in 1994, for both, oneself and the partner, irrespective of the length of actual unemployment and the sum of benefits received. Both 'life events' increase mobility and the coefficient of becoming unemployed oneself was highly significant.²¹

20 Indeed, 23.6 per cent of all movers have been recorded as 'in education'. The corresponding share in the total population has been only 8.1 per cent.

21 The probability that the 'partner gets unemployed' coefficient is significant at the 10 per cent significance level too.

Figure 5: **Duration and Probability of Staying by employment status and family situation**



Source: own simulations using estimation results of model 3.

Labour market issues provide an evident opportunity to illustrate the interaction between labour market issues, family situation and life course events. Figure 5 results from simulations of the probability of staying by duration of stay for a typical individual conditional on her employment and family situation. It shows that the 25 year old single who became unemployed during 1994 is most likely to move, although this will still be highly dependent on her duration of stay. Having just moved a year ago or living at the same place for ten years makes a *difference of 12 per cent to her probability of staying*. If the same individual is married to a partner who earns a substantial income from employment, then this *decreases her probability of moving by a remarkable 4 to 8 per cent*. Indeed, the 25-year-old unemployed who lives with a working partner who earns SKr 80,000 a year turns out *practically as likely to stay as the employed single*.

Being employed and married to a partner who also earns an income of SKr. 80,000 increases the likelihood to stay for the employed by another two to six per cent, depending on the duration of stay. Having a child makes then the minor difference of less than a per cent additional increase in the probability of staying.

In brief the mobility effect of unemployment is not only dependent on individual socio-economic characteristics, but also on whether one *became unemployed recently*, is *single* or married, *has children* or not and last but not least whether the *partner earns* a substantial *own income*. Becoming unemployed is likely to be a relevant incentive to inter-regional labour market mobility *in certain life course situations*, namely when one is young and single or young and married to a non-working partner.

4.4 Place of Birth and Occupation make little Difference

Are individual propensities to move significantly different depending on the *country* somebody comes from? Model (4) checks for this possibility by adding region of origin-specific dummies. Though it seems that immigrants from more developed countries are more mobile than others and the respective coefficients are significant, country-specific effects do not contribute notably to the explanation of the probability of staying. Immigrants are more mobile after immigration and adapt to native patterns over the years,²² but this difference does not significantly depend on their region of origin. Model (4) which distinguishes between different groups of country of birth does not fit the data significantly better than model (3) which includes a general dummy for foreign born only.

In model (5) we test for the hypotheses that mobility patterns are occupational-specific, e.g. due to insider advantages being more important for some occupations than others. Model (5) adds to model (3) 14 *occupational dummies* which all are in reference to occupations in industry. *Farmers* and *construction workers* seem to be significantly more immobile than people occupied in industry, while people working in the *hotel and restaurant* business, banking and insurance, general public administration as well as in different unspecified *services* show significantly higher mobility rates. All other groups

²² This finding corresponds well to the implications of the assimilation literature (*Chiswick* 1986, 1992), but of course the general caveat for cross-sectional investigations applies here too, that one cannot really distinguish cohort from real assimilation effects (*Borjas* 1985)

exhibit no significant differences. Contrary to our expectations individuals engaged in *research* as well as those engaged in *teaching* are *not* found significantly more mobile than industrial workers and those working with real estate were not less mobile. The significantly lower mobility in construction is likely to be a kind of statistical artefact. Construction workers in Sweden are known to be particularly mobile but do not usually change their registered residence when they move to work at a different place for a limited period of time.

Adding occupational dummies to our model does not improve the indicators of goodness of fit. Contrary to the country dummies it does significantly increase the log-likelihood, but this increase is still relatively small. Instead of occupation we have also in vain tested for differences according to *profession*. An indicator measuring the geographical dispersion of jobs over labour markets by occupation did not prove significant neither. All in all we conclude that (im)mobility pattern in Sweden have generally *not been occupational-specific*.

4.5 Group-specific Heterogeneity

On the one hand, the above results have the advantage of being rather general and of making optimal use of the variation in the data. On the other hand, they are unfortunately prone to group-specific heterogeneity that the general model does not manage to capture sufficiently.²³ Out of different group-specific estimations, distinguishing between ‘young’ and ‘old’ and between ‘employed’ and ‘not employed’ seems to cover the most important sources of heterogeneity.²⁴ Separate estimation results of model 3 for all people aged 19 to 29 (the age in which the majority of moves actually occur) as compared to people aged 30 to 64 and for those employed versus

23 What we discuss here concerns heterogeneity with respect to the determinants of mobility (i.e. the coefficients). Another problem which often appears in large cross-sectional data is heterogeneity with respect to the random variance term (*Davidson and McKinnon* 1993). This may first of all affect the standard errors of the estimated coefficients in the sense that they become too large, a problem that is unlikely to affect our results. But in binary choice models it may also bias the coefficients itself (*Yatchew and Griliches* 1984). Some testing for heterogeneity produced inconclusive results. Probit models with heterogeneity are often weakly identified. Multicollinearity is a common problem (*Greene* 1993:423). Unfortunately, standard software procedures – including those implemented in *limdep* that we used- do not allow to estimate heterogeneity corrected probit models with the kind of choice based samples we had to work with.

24 Separate estimations by gender result in minor differences in the estimated coefficients only. Results are available from the authors on request.

those not employed (i.e. either unemployed or out of the labour force) are provided in appendix 2. They show that while the mobility of the young group is estimated to increase strongly and significantly during the first years, *age does not matter* anymore in the estimation of the probability of staying *for the older ones*.²⁵

The mobility enhancing effect of *education* turns out considerably stronger for *the young* group than the older ones, but only for the *native born*. Not too surprisingly, the (very strong) importance of the in education dummy applies to the younger age group only, but somewhat surprisingly the mobility enhancing effect of *being out of the labour force* is significantly stronger for *the older* age group, possibly due to early retirement relocations. The *life-course events that concern the partner* (splitting from an existing household or having a partner who becomes unemployed) are important in the *older age* group *only*. But for both groups, being married and having children increases immobility similarly.

Qualitatively, the separate estimation results for those employed and not employed are rather similar. For both groups, the effect of duration of staying in a labour market is important, highly significant and similar in magnitude. Unexpectedly, years since last change of employer turns out significant for the not employed only. From our point of view it may further underline the importance of place- and society-specific insider advantages relative to firm-specific ones. As one would expect, the *income of the partner*, the ‘migration history’ in terms of *numbers of previous moves* as well as *family and life-course event* specific variables are somewhat *more important for those not employed* than for those employed. The strong mobility enhancing effect of being in education concerns mainly those not employed. It illustrates that an important part of those who are out of the labour force consists of (presumably predominantly young) students and people in vocational training.

To see whether our 1994 results (a time when Sweden was hit by a severe economic downturn) were sensitive to business cycle effects we ran comparative estimations for the probability of staying in 1989 (an absolute boom year in the Swedish economy). The results provided surprisingly little evidence for strong business-cycle specific effects on

²⁵ However, the shift in sign and strong change in magnitude between the two models indicates that neither of the submodels manages to capture correctly a probably gradually changing effect of age on the probability of staying.

immobility.²⁶ Patterns are very similar for both estimations. Contrary to the estimations for 1994, however, the variable capturing differences in average work income in the own versus neighbouring regions was for the 1989 sample significant at the one per cent level and showed the right sign. Also, the mobility enhancing effect of being unemployed was significantly stronger in 1989 than in 1994. But the labour income of a working partner was a more important reason to stay immobile in 1994 than in 1989. Probably, due to more opportunities being available, relative regional work income differences play a somewhat more important role in better economic times while having a partner who still has a job is more of a reason to stay in periods of economic downturn.²⁷

5. Conclusions and Interpretation

Our empirical investigation of mobility between Swedish labour markets identifies immobility as a strong and persistent behavioural strategy for the large majority of people. The estimation results support our argument that insider advantages and duration effects of staying are crucial in gaining a better understanding of the immobility phenomenon. We suggest that people stay because in time they have accumulated so many location-specific insider advantages that would be sunk in the case of migration that moving would decrease their individual utility even if wage levels differ substantially between regions.

Even though the insider advantage approach explains why the migration of people is usually a marginal phenomenon, it also points to the fact that actual mobility may have more important long term effects on regional development. In line with the implications of traditional migration theory It adds to the explanation why those who move do not represent the average population. They are usually those who are young, who possess transferable skills and who are in special life-course situations. Many of them come to stay, because when they accumulate location-specific insider-advantages, get older and/or change their family situation, they will soon find it unattractive to move on.

²⁶ Estimation results are available from the authors on request.

²⁷ The paradox that macro variables have relatively low effects and that for example employment intensities prove insignificant is valid for the 1989 sample too, though. Note also that the income difference variable in the 1989 data will partly take up the effect of differences in vacancies-rates for which no information has been available.

Attracting people is thus bound to have longer lasting effects on the region of immigration through respective changes in demographic composition and skill intensity.

Immobility of people is not (only) a market imperfection but often a necessary condition for individual utility maximisation and the generation of insider advantage intensive knowledge. From an individual point of view, immobility is usually an optimal strategy. Generally, mobility would facilitate macroeconomic regional adjustment in a Monetary Union and may thus generate some positive externalities. But to the extent that immobility allows industries to make more efficient use of insider advantage-intensive knowledge in production and the allocation of leisure time, it is also macroeconomically efficient.

If insider advantages are related to the behaviour of other residents in the local society, our insider advantages approach could explain the existence of internationally sustainable different mobility patterns. In Europe where almost everybody stays insider advantages are especially relevant. By contrast, in places like the US where it is part of the dominant culture to be mobile, it ought to be less rewarding to invest in the accumulation of insider advantages as part of them are at risk when other people and work mates decide to move away.

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APPENDIX 1: Data used in the analysis of immobility patterns

in Swedish regional labour markets in 1989 and 1994

Note: All data has been constructed from anonymised data provided by Statistics Sweden and available from the TOPSWING database, Umeå University. People under investigation concerned individuals aged 19-64 and living for at least one year (before moving) in a regional labour market.

variables:	comment:
stay	1 if stayer, 0 if mover. Movers are people registered as resident in another labour market region then on the last of December the year before.
durstay	duration of stay: number of months since moving into the present region of residence, censored at 120 if never moved.
age	in years, according to population register
sex	1=male, 0=female
level of education	highest level of education completed. Seven levels, from less than 9 years in school to PhD-level. Classes 1 and 2 = low skilled, 3 to 5 = medium skilled, 5 and 6 = high skilled
profession	records from 1990 census, five digit level
sector of occupation	records from 1990 census, three digit level
income	taxed income from employment and self-employment, in 100s of 1990 SKr.
income difference	difference between annual income before and after the year of the move, in 1990 SKr.
employed	earned more than 50,000 SKr from employment or self-employment
unemployed	earned less than 50,000 SKr and received at least SKr 20,000 in unemployment benefits
out of workforce	did neither count as employed nor unemployed
country of birth	eight groups of countries: Finland, other Nordic, Western European, Southern European, Former Yugoslavian, Eastern European, Highly Developed non-European (Australia, Canada, Japan, New Zealand, USA), other non-European born
marital status	1= married, 0 otherwise
kids	number of children
partner's education	highest level of education completed (see above)

partner's income	taxed income from employment, in 100s of 1990 SKr.
house ownership	1 if owner of detached house, 0 otherwise
became employed	found regular employment during year X
became unemployed	lost regular employment during year X
partner became employed	partner found regular employment during year X
partner became unemployed	partner lost regular employment during year X
new household built	individual moved together with partner with whom one shares household
household split	individual moves out of a household shared with partner
new baby	got a child in year X
in education	registered student or participant in other forms of education
inc.dif.own-prx. LM	difference between average workers' income in the labour market region one was living in at the beginning of year X and the average workers' income in neighbouring labour market regions'
workers inc. LM own	average income from employment in own labour market per worker earning at least SKr 50,000 a year
relative vacancies rate	registered vacancies in per cent of regional labour force in own labour market relative to the average in non-neighbouring regional labour markets in the rest of the country
metropolitan dummy	=1 if resident at the beginning of the year in the regional labour market of the metropolitan areas Stockholm, Gothenburg or Malmö, 0 otherwise.

Further macro variables: further macro variables were constructed for mean income, income per worker, employment in per cent of total population, vacancies in per cent of the labour force, occupational specialisation and population density. Also we have put all variables into proportion to the macro variables for surrounding labour market regions and for the rest of the country. But as they were strongly correlated, we chose a few for the final specifications reported here. See the text for further explanations.

Appendix 2a: Probit Estimation Results

Probability of Staying in 1994 by Age Groups*

(for individuals with duration of stay ≥ 12 months and full data avail.)

<i>expl. variable</i>	<i>model group</i>	(3) people aged 19-29			(3) people aged 30-64		
		slope b	z=b/s.e.	marg. b	slope b	z=b/s.e.	marg. b
constant		2,7136	4,65	0,23642	0,8644	2,99	0,86442
age		-0,1921	-4,21	-0,01674	0,0108	1,296	0,01080
age squared		0,0042	4,40	0,00036	0,0000	-0,024	0,00000
duration of stay in month		0,0046	8,78	0,00040	0,0071	15,474	0,00709
years since last employer change		0,0110	2,51	0,00096	0,0283	3,223	0,02831
number of prev. moves		-0,0363	-2,46	-0,00316	-0,0338	-2,521	-0,03380
years since immigration		0,0093	1,85	0,00081	0,0121	3,139	0,01210
ln(income of partner)		0,0462	5,08	0,00402	0,0372	8,854	0,03724
level of education		-0,1635	-18,76	-0,01424	-0,0800	-13,264	-0,08002
migrant*education		0,0792	2,41	0,00690	0,0254	1,64	0,02538
number of children		0,0932	3,55	0,00812	0,0802	6,694	0,08022
married		-0,0113	-0,19	-0,00099	0,0543	1,734	0,05430
living in own house		0,0593	1,29	0,00517	0,1768	4,757	0,17680
unemployed		-0,1176	-4,96	-0,01024	-0,2902	-12,325	-0,29024
out of labour force		-0,0831	-3,22	-0,00724	-0,2547	-10,857	-0,25473
foreign born		-0,3923	-3,21	-0,03418	-0,1238	-2,166	-0,12384
inc.dif. own-prx. LM		0,0012	0,61	0,00010	-0,0038	-1,925	-0,00376
workers inc. LM own		0,0108	4,91	0,00094	-0,0004	-0,169	-0,00037
relative vacancies rate		-0,1269	-2,12	-0,01105	-0,0058	-0,106	-0,00582
metropolitan dummy		0,2349	8,23	0,02047	0,0606	2,102	0,06062
local share of people in education		3,1508	5,74	0,27450	-0,3359	-0,582	-0,33591
local share of people in industry		-0,5584	-3,55	-0,04865	-0,4508	-2,643	-0,45078
become unemployed		-0,1177	-5,52	-0,01025	-0,1363	-5,385	-0,13634
partner becomes unemployed		-0,0468	-0,57	-0,00408	-0,1516	-3,193	-0,15164
new household built		-0,2788	-4,98	-0,02429	-0,2269	-6,769	-0,22692
household split		-0,0421	-0,74	-0,00367	-0,3473	-7,678	-0,34734
new baby		0,0735	1,29	0,00640	-0,1670	-3,588	-0,16703
in education		-0,3747	-19,65	-0,03264	-0,0265	-0,758	-0,02653
Log-L			-15216,3			-13030	
R2-ZML			0,56			0,62	
R2-MF			0,71			0,92	
number of observations			102436			183920	

*see appendix for further remarks on the definition of variables.

Source: own estimations

Appendix 2b: Probit Estimation Results

Probability of Staying in 1994 by Employment Status*

(for individuals with duration of stay ≥ 12 months and full data avail.)

<i>explanatory variable</i>	<i>model group</i>	(3) employed			(3) not employed		
		slope b	z=b/s.e.	marginal b	slope b	z=b/s.e.	marginal b
constant		-0,1293	-0,47	-0,00202	0,4730	2,34	0,02732
age		0,0377	5,36	0,00059	0,0076	1,59	0,00044
age squared		-0,0003	-2,94	0,00000	0,0000	0,71	0,00000
duration of stay in month		0,0082	15,20	0,00013	0,0042	9,54	0,00024
years since last employer change		0,0056	0,74	0,00009	0,0154	3,68	0,00089
number of prev. moves		0,0011	0,07	0,00002	-0,0559	-4,52	-0,00323
years since immigration		0,0174	2,92	0,00027	0,0091	2,63	0,00052
ln(income of partner)		0,0249	3,56	0,00039	0,0425	8,71	0,00245
level of education		-0,1300	-17,48	-0,00204	-0,0976	-14,51	-0,00563
migrant*education		0,0336	1,32	0,00053	0,0433	2,56	0,00250
number of children		0,1130	6,77	0,00177	0,0802	5,56	0,00463
married		0,2044	3,97	0,00320	0,0299	0,90	0,00173
living in own house		0,0846	1,89	0,00133	0,1217	3,18	0,00703
unemployed		- - -	- - -	- - -	- - -	- - -	- - -
out of labour force		- - -	- - -	- - -	0,0298	1,88	0,00172
foreign born		-0,1623	-1,53	-0,00254	-0,2235	-3,75	-0,01291
inc.dif. own-prx. LM		-0,0055	-2,61	-0,00009	0,0019	1,09	0,00011
workers inc. LM own		0,0063	2,58	0,00010	0,0047	2,35	0,00027
relative vacancies rate		0,0189	0,27	0,00030	-0,1092	-2,33	-0,00631
metropolitan dummy		0,0860	2,68	0,00135	0,1960	7,52	0,01132
local share of people in education		-0,4481	-0,74	-0,00702	2,7641	5,37	0,15963
local share of people in industry		-0,7363	-4,07	-0,01153	-0,4266	-2,90	-0,02464
become unemployed		-0,4136	-9,31	-0,00648	-0,1074	-5,91	-0,00620
partner becomes unemployed		-0,2274	-3,51	-0,00356	-0,0650	-1,21	-0,00375
new household built		-0,2785	-6,75	-0,00436	-0,2232	-5,63	-0,01289
household split		-0,2350	-4,57	-0,00368	-0,1749	-3,48	-0,01010
new baby		-0,1274	-2,28	-0,00199	-0,0089	-0,20	-0,00051
in education		-0,1885	-5,72	-0,00295	-0,3496	-20,08	-0,02019
Log-L			-10903			-17481	
R2-ZML			0,67			0,63	
R2-MF			0,92			0,78	
number of observations			137342			149014	

*see appendix for further remarks on the definition of variables.

Source: own estimations