California Center for Population Research
University of California - Los Angeles

The Urban Hierarchy and Domestic Migration: The Interaction of Internal Migration, Disposable Income and the Cost of Living, Sweden 1993-2002

Martin Korpi
William A. V. Clark
Bo Malmberg

PWP-CCPR-2010-026

November 2010

California Center for Population Research
On-Line Working Paper Series

REVISION SUBMITTED TO JOURNAL OF ECONOMIC GEOGRAPHY (UK)

The Urban Hierarchy and Domestic Migration: The Interaction of Internal Migration, Disposable Income and the Cost of Living, Sweden 1993-2002

Martin Korpi[1]

Stockholm School of Economics, EHFF

Institute for Futures Studies, Stockholm

William A.V. Clark

Geography Department, UCLA, Los Angeles

Bo Malmberg

Department of Human Geography, University of Stockholm

Abstract:

This paper examines the variation in gains and losses from migration within the Swedish urban hierarchy. The central questions focus on whether increases in disposable income outweigh the associated increases in housing costs, especially with movements up the urban hierarchy to larger and more expensive locations. The paper extends the literature which considers cost of living adjustments associated with individual and household migration. The questions are addressed using Swedish Census data for 3.5 million individuals and two fixed effect panel models are estimated for four consecutive time periods, 1993-2002. The results consistently show relatively higher increases in disposable income moving up the urban hierarchy. Taking changes in housing expenditure into account, this pattern is however reversed; the largest gains are made by households moving from larger to smaller labour markets, a significantly smaller share of total domestic migration. The results point to factors beyond short term nominal income gains as important in explaining the bulk of domestic migration.

Keywords: local labour markets, housing demand, regional migration
JEL-codes: O61, O15, R21, R22.

[1] We are greatful for comments from Professor Michael J. Greenwood, Professor Ying Pan and seminar participants at the proceedings of the Western Regional Science Association, February 22-25th 2009, Napa, California.

Introduction

There is a well documented relationship between internal migration and changes in labour force participation rates and nominal wages. The results, both for Sweden and other OECD countries, fairly consistently show that migration is most often associated with positive changes in nominal individual and family income and that regional differences in employment opportunities have the expected effects on migration (for a discussion, see e.g. Nakosteen and Westerlund, 2004; Nakosteen and Zimmer, 1982; Hunt and Kau, 1985; Fredriksson, 1999). Few of these studies, however, specifically take into account how the conclusions hold when changes in housing costs are factored into the outcomes. Taking these into account, gains and losses from migration are more complex than when nominal income alone is examined (Davies Withers and Clark, 2006). Not surprisingly perhaps, family wage income increases with movements to larger metropolitan areas and decreases with movements to small cities and towns. Considering the associated changes in housing costs the picture is however more diverse, with many families seeing housing costs rising more than family income when moving to a more expensive urban area and the opposite pattern for families moving to more affordable, less densely populated areas.

The paper at hand builds upon this last approach. Combining unique individual level panel data for a majority of the Swedish working-age population with detailed data on regional housing cost disparities, the paper calculates changes in both disposable income and disposable income net housing costs, associated with in-between labour market migration. More specifically, three research questions are addressed: *(i)* what are the immediate changes in disposable income and disposable income post housing expenditure, for regional migrants, and are these changes empirically robust to controls for observable and non-observable individual characteristics? (*ii*) Does the notion that households move for higher income also hold while taking differences in regional housing costs into account? Further, in line with both traditional and recent approaches (Ravenstein, 1885; Henrie and Plane, 2008; Plane, Henrie and Perry, 2005; Lindgren, 2003), we argue that internal migration can fruitfully be analyzed as a phenomena happening within the urban hierarchy and that outcomes for migrant households are much dependent on the direction of migration. Given that we have a strong gradient to housing costs within the hierarchy (outlined below), we also ask *(iii)*; how do family disposable income and disposable income net housing costs vary depending on the direction of the move; upwards vs. downwards in the urban hierarchy?

To carry out the analyses, using data for both single and two person households, we employ a structured set of three year panel models extending over the period 1993 to 2002. Controlling for age, educational attainment, job changes, movements in and out of employment as well as individual fixed effects, we test for migration effects on both disposable income and disposable income adjusted for housing expenditure. In addition to movements within the urban hierarchy we also test separately for interaction effects of movements in and out of population growth regions.

The paper argues that factoring housing costs and costs of living into the question of gains and losses from internal migration, and situating movements within the urban hierarchy, has potential consequences for the behavioural analysis of internal migration. In short, we find relatively higher increases in disposable income for households moving up the hierarchy (and into population growth regions). Taking housing expenditure into account, this pattern is however reversed; the largest gains are made by moving from larger to smaller labour markets (and out of population growth regions), a significantly smaller share of total domestic migration. Given that these findings are not just reflections of tastes for quality of housing (discussed below), these differences in outcome put focus on other factors than short term economic gains as explaining the lion's share of internal migratory movements, factors such as amenities, long term economic gain etc. The substantial post housing expenditure gains in income for some of these migrants also illustrate a strong incentive for moving down the urban hierarchy and out of population growth regions.

The findings are also interesting in light of seemingly unrelated areas of research. For example, in the debate over the economic effects of immigration (in the US and elsewhere) an influential argument has been that these effects cannot be traced by comparing local labour markets for shares of foreign born workers and economic outcomes for native born potentially competing with immigrant labour (the so-called "area approach"). This because international and domestic migrants are assumed to react to any downward pressure on wages by moving out of growth areas experiencing positive net inflows, thus largely nullifying wage disparities between regions (Borjas, G. J., 1994). By showing that the potential gains from moving down the hierarchy (and out of population growth regions) are very substantial compared to the gains from moving up (and in), this research also highlights a potentially important economic incentive explaining these counter urban movements. In consequence, migratory outflows

from growth regions which are assumed to be responses to downward wage pressure (an assumption subject to debate, see e.g. Friedberg and Hunt, 1995), can to some extent be responses to local costs of living.

The paper is structured as follows. In section 2 we discuss theory and previous studies, while data and methods are outlined in section 3 and descriptive statistics in section 4, respectively. Models and statistical results are provided in section 5 and 6 while section 7 concludes.

2. Theory and Previous Studies

There are two main bodies of theory with respect to the study of inter-regional migration - labour market economic equilibrium and family negotiation. The traditional approach within the first of these two has almost always been to assume that people migrate in search of economic opportunities and increased income. The standard interregional migration models use variations in employment and wage rates to predict the size of the interregional flows (Greenwood, 1985; Isserman, Taylor, Gerking and Schubert, 1986; Hunt and Kau, 1985). This also goes for situations in which the interregional migration models have been extended to examine family movements, the focus is still on the notion that families move in expectation of long-term economic gains and that those economic gains outweigh the costs of moving. Even the most recent research by those focusing on interregional international flows still privilege the economic motivation for changing locations (Borjas, G., Bronars and Trejo, 1992), although the work sometimes raises questions about the role of wage differentials alone (Newbold, 1996; Pellegrini and Fotheringham, 1999).

In the past two decades, there has been research questioning the focus solely on wages as the motivation for migration, arguing that there is likely a more complex interpretation of regional population. Part of a more complex interpretation invokes the role of amenities and quality of life as stimuli to migration, another part recognizes the embedded nature of migration in changes in the cost of living, and yet another emphasis is on the way in which migration is negotiated within family structures.

In an attempt to measure the role of amenities in migration Roback (1982) argued that if we assume that residents are indifferent between cities with respect to rents and wages we can

calculate the effect of amenities on rents and wages from the derivatives of the equilibrium price and wages. This work did not deal with the behavioural responses to differences in rents and amenities but it did emphasize that there are a set of points in rent- wage- population space that will satisfy local labour market equilibrium, and it provided a theoretical underpinning to construct measures of the residents' willingness to pay for quality of life. In this and related research it is the individual and household response to different quality of amenities (individual disequilibrium) that creates the migration which in turn is supposed to bring the labour market into equilibrium. Regardless of whether or not these individual migratory movements actually bring about labour market equilibrium, by way of extension we can argue that it is a resident's willingness to pay more for housing (rent) along with higher wages which is one important element of understanding an individual or a household's response to individual disequilibrium and their choice within the urban hierarchy.

The process by which households relate increases in wages to increasing housing costs or decreased wages and lower housing costs, can of course bring about gains for some workers and losses for others consequent on migration.[2] Dumond et al (1999) showed that with an adjustment for cost of living some workers in the United States in the South realized significant gains when they moved but others, especially those moving to large Metropolitan areas were likely to have losses (the large city disadvantage) when costs of living were taken into account, even though wages are in general higher in large metropolitan areas. Other work on the impacts of variations in the cost-of-living on migration examined the effects of regional house price dispersion on interregional population mobility by looking at place-to-place migration in the context of the relative labour market opportunities in the origin and destination regions and regional house prices (Gabriel, Shack-Marquez and Wascher, 1992; Berger and Blomquist, 1992). They showed that not only wage differences but also housing costs play a role in the likelihood of inter-regional moves. For Sweden, similarly, Nakosteen and Westerlund (2004) find significant positive effects from regional migration on gross real income, i.e. corrected for inflation, while also seeking to take into account the effects of differences in costs of housing on these migrant outcomes. In their approach, post migration gross income is deflated with a factor combining general municipality level housing cost indexes and the average – national level – share of income going into housing (for Sweden, usually about one third of disposable income).

[2] In the Roback formulation, in equilibrium, households are indifferent to combinations across cities.

The interaction of housing costs and migration outcomes can also be interpreted through the lens of gender roles in the migration process. A series of papers show how the effects of migration are played out for men and women when women's labor force participation is entered into the migration dynamic (Clark, W. A. V. and Davies Withers, 2002; Davies Withers and Clark, 2006; Fosu, 1999). These papers show how the effects of migration are played out for men and women when women's labour force participation is entered into the migration model. The findings show that women's labour market entry and exit plays an important role in the outcomes of regional migration. Women leave the labour force when the migration is to a more affordable place but, in contrast, they may enter the labour market when the move involves a change to a more expensive location. Clearly, there are family negotiated strategies related to migration. It is no longer simply a single "bread winner" decision, at least in the US, and it may be through affordability that the gender negotiation of family migration is played out. Although not the primary focus in the present paper, in light of these results we introduce control for changes in labour force participation of spouses and additional household members when estimating household outcomes of migration into more expensive or more affordable housing markets.

The studies reviewed above approach the kinds of questions that we are examining in the present analysis. They are attempts to examine wage differentials in the contexts of housing costs on the impact of place to place migration and, implicitly or explicitly, all are dependent on the basic theories which invoke the equilibrating labour market process as the force in inter regional migration. In this context it is however important to recognize that migration may not be something which actually brings about labour market equilibrium. Indeed, when looking at Swedish post WWII domestic migration and regional development, it is hard to argue for anything of the kind, at least if we with this concept imagine anything approaching stable equilibrium (ERU, 1970; Håkansson, 2000). Using somewhat different terminology, regional disequilibrium is also the approach taken within traditional economic geography such as in Myrdal (1957), Pred (1966), Hirschman (1958) or the growth-pole theories of Perroux (1961; Darwent, 1969). In this literature, the focus is on the often very uneven process of regional development where domestic migration is treated as a partly self-reinforcing mechanism, with positive net migration into growth regions giving way to increasing local division of labour and demand for housing and local services, something which in turn entails further investments, increasing demand for workers and continued positive net migration. And, as a

concomitant development, the opposite pattern and reverse mechanisms to some extent being at work in depopulating regions. Similar notions of the role domestic migration as part of 'cumulative causation' processes have also been embraced within the emerging literature in spatial economics. In the present paper, as it is not of direct relevance, we do not explicitly put our foot down as to the correctness of any of these two approaches, but the theoretical differences are relevant as a backdrop when interpreting our results.

In the past decade the rapid changes in the housing markets have further complicated the migration process. Interregional migration is occurring within a rapidly changing housing market with substantially increasing housing costs, particularly in regions experiencing population growth. While there have always been housing cost differentials across regions and metropolitan areas, it appears that recent price changes are exacerbating regional and metropolitan differences. Both in Sweden, as well as in the United States and Europe in general, migration decisions are now being taken in a context of significant house price changes in which prices have risen to new highs. For example, in the U.S., where previously house price differences between the very large cities and small metropolitan areas were in the nature of 10 to 15 percent, now those house price differences are often in the nature of 50 percent or more (Mapezzi, Chun and Green, 1998). And for Sweden, similar though not as marked discrepancies have emerged with this development particularly taking off during the second half of the 1990s (Korpi, forthcoming). It is possible that increasing outflows from the larger labour markets and metropolitan areas to some extent can be seen in light of these increasing regional housing cost disparities (Rodda, 2005). Clearly migration is still attracted to the large labour markets and we would not expect it to decline, but increasing housing costs may have important impacts on the differential flows between places.

Further, we should point out that the research in this paper is of course set within the context of dwelling and neighborhood choice and clearly the motivation for leaving one area and choosing another is complex. Much of the research on relocation emphasizes the role of the movement by young households, the role of bringing housing needs into equilibrium with housing space and the complexity introduced by the moves of dual earner households (Clark, William A.V and Dieleman, 1996; LeClere and McLaughlin, 1997). The research has also shown that increasingly the socio-economic status of neighborhoods plays a role in moving behavior (Galster, 2001; VanHam and Feitgen, 2008; Clark, William A.V, Deruloo and Dieleman, 2006). However, as this review of the literature suggests, at the regional level the

trade offs between earnings and the costs of the move, including attempts to adjust housing costs, are still under-investigated in the process of regional movements. We now turn to this our basic research question, to what extent are regional housing costs disparities a possible motive for internal migration?

3. Data and Methods

The study utilizes three data sources. Firstly, we calculate median regional rent cost for municipalities and labour markets using data from the Swedish Survey of Housing and Rents, BHU.[3] This database consists of bi-yearly survey data where respondents are surveyed about rents, mortgage payments, nominal housing costs and questions regarding standard of housing and living space. Second, for data on income and other individual characteristics, we utilize a longitudinal database covering all individuals living in Sweden sometime between the years 1990-2004. This database (PLACE) has been compiled in cooperation between Statistics Sweden (SCB), The Department of Social and Economic Geography and the Institute for Housing and Urban Research (IBF), both at Uppsala University. The database details place of residence and work plus a series of individual level data, including educational and occupational status as well as source and level of income. Thirdly, added to this data, for information on tenure and forms of ownership we also utilize government housing registry data for all privately and publicly owned housing.

The sample size of the Housing and Rent Survey is not sufficient to get statistically accurate geographical data for each municipality (total sample size is around 8000 for each survey). Thus, we are faced with a trade off between the accuracy of the estimated housing costs on the one hand and geographical level of detail on the other. If we use only municipalities with sufficient sample size for each separate year of the survey, to get sufficient sample size (statistical accuracy) we then have to cluster geographical areas into a few large regional aggregations, and the calculated average costs of housing for these regions may well hide large geographical variation. On the other hand, if we pool the different surveys, i.e. different years, into one data set and thereby increase sample size and the possible geographical level of detail, we lose accuracy in our housing cost estimates since housing costs of course change over time.

[3] *Bostads- och hyresundersökningarna.*

We use a comprehensive strategy. First, we pool the different surveys in pairs with one year in between (this lessens the impact of housing price change), and use a minimum sample size of twenty to determine geographical level of detail.[4] This principle of a minimum sample size is then applied for the three broad types of tenure included in the Housing and Rent Survey; rent housing, small single family houses and privately owned apartments/condos. As a consequence, since the first two of these types are more prevalent on the Swedish housing market, the number of municipalities with sufficient sample size to determine housing costs for privately owned apartments is smaller than the equivalent number for the other two types of housing.

As noted, pooling surveys from different years into one sample generates some uncertainty concerning the housing cost estimates, to a lesser degree when it comes to rent housing (Swedish rent housing is mostly a regulated affair and rents increase only slowly), to a larger degree for private homes and apartments which are subject to larger fluctuations over time. As the pooling is done within comparatively short intervals, this problem is however not likely large enough to compromise our results.

To calculate the short term gains and losses from migration, following Clark and Davies Withers (2006), we use a simple approach where income and housing costs for individual migrant households are compared in the year before and after the year of the move. In other words, individuals are thereby given one year to find work or however else 'adjust' at the place of destination and to the new labour market conditions.

Migrants, in turn, are defined as households moving in between local labour markets. According to the definition of local labour markets used here (LA98), Sweden can be divided into 100 local labour markets comprising some 290 municipalities, the main separation criteria for these being the share of working age population commuting out of a municipality on a daily basis (Statistics Sweden, 2003).

[4] As we are aware that sample sizes here are somewhat small, we also test our results using 30 as minimum for housing expenditure estimates. Even though this measure significantly reduces the number of individual households, this has a very marginal effect on the regression estimates (these tables are available from the authors but can not be included here).

The geographical level of accuracy of housing costs (i.e. yearly household housing expenditure, including both rent and mortgage payments) within each of the municipalities included in the analysis is very precise. PLACE-data, combined with register data on property and housing taxes for the years 1995 and 2000, enables us to produce estimates of ownership form, or tenure, within 10 000 square-meters for all inhabited areas in Sweden. As we can combine these estimates with our Housing and Rent Survey data for different types of tenure within each municipality, we are therefore able to produce municipality and tenure specific 100 by 100 meter housing costs estimates for each municipality included in the analysis (around 328 by 328 feet). As PLACE-data contains the equivalent 10 000 square-meter housing coordinates for individuals, we thereby get very detailed housing costs estimates at both migrant origin and migrant destination.

To repeat, and for clarification, our housing cost estimates are based on median yearly household expenditure for each of the three different tenure types included in the Housing and Rent Survey, and the estimates encompass both mortgage and rent payments as well as being adjusted for housing subsidies. To our knowledge this data is unique in detail and constitute the best available source of information for a study of this type, both for Sweden and elsewhere.

Are increasing mortgage and rent payments a potential bias in our estimates? To be sure, a household moving into an area may face substantially larger mortgage commitments compared to those previously residing there. Since no data exists on individual household housing expenditure for households included in the study, this is a problem we cannot fully address. However, since price increases have in general been higher in the larger cities and population growth regions of Sweden, and increases in the lone-to-value ratio are therefore also likely higher in these areas, if anything, our results below somewhat underestimate the differences in outcomes depending on the direction of the move.

Finally, as for our individual level register data, for each studied time-period the initial population consists of all individuals aged 18-64. From this we exclude those living in municipalities for which we do not have housing cost estimates, and households with zero disposable income in any of the two consecutive years. In order to reduce the influence of outliers on the estimates we also exclude single-person households with increases in annual disposable income exceeding 340 000 Swedish crowns, for the years 1993-1995, and

increases corresponding to double that amount for two person households (these thresholds are adjusted for average wage growth for our other studied time-periods). The exclusion of these outliers (around 10 000-15 000 depending on the studied time-period) leads to somewhat lower migration effects but does not change our main findings. Our remaining population consists of around 1.9 million households made up of some 3.5 million individuals.[5]

The available Housing and Rent survey data enables us compare migration and changes to disposable income over four three-year periods; 1993-1995, 1995-1997, 1997-1999, 2000-2002. All statistics correspond to estimates made for December each year.

Descriptive figures and statistics

4.1. Regional housing cost disparities

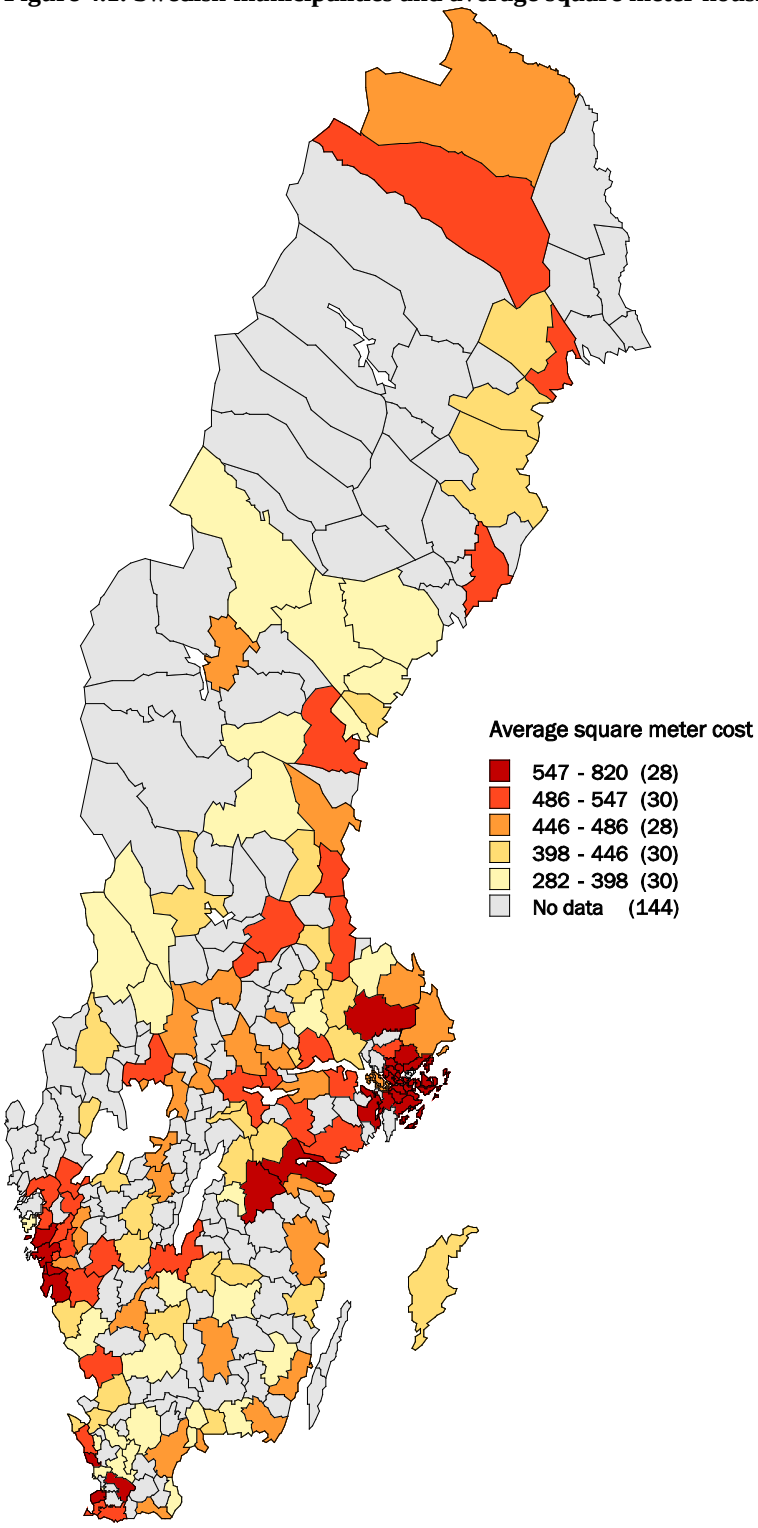
As an illustration of regional differences in the costs of housing, we map average yearly square meter expenditure using data from the Housing and Rent Survey pooled for 1997-1999 (figure 4.1). As expected, the three major urban areas, Stockholm, Gothenburg and Malmö, show the highest average costs while these tend to be lower in relatively more peripheral areas. However, this broad general picture contains considerable regional variation, with some less densely populated areas also showing relatively high average levels. This is true even after taking some very small sample sizes into account.

A different take on this same data is also seen in figure 4.2., plotting a broad measure of average square-meter costs and agglomeration size as measured by the size of local labour market population. Square-meter prices, measured as an average for all forms of tenure for municipalities within each labour market for which we have sufficient data within, clearly increase with size of local labour market population. The pattern of a positive relationship between local population size and different economic characteristics that are often found in

[5] The procedure also makes our results somewhat comparable to a previous Swedish study (Nakosteen and Westerlund, 2004) based on a much smaller sample but where corresponding wage income increases of about the same order are disregarded as outliers. What we do is essentially take their threshold increases, 500 000 crowns for ’94 -’95 and single households, and decrease this amount with an average tax rate of 32 percent to get the equivalent increases in disposable post taxation income.

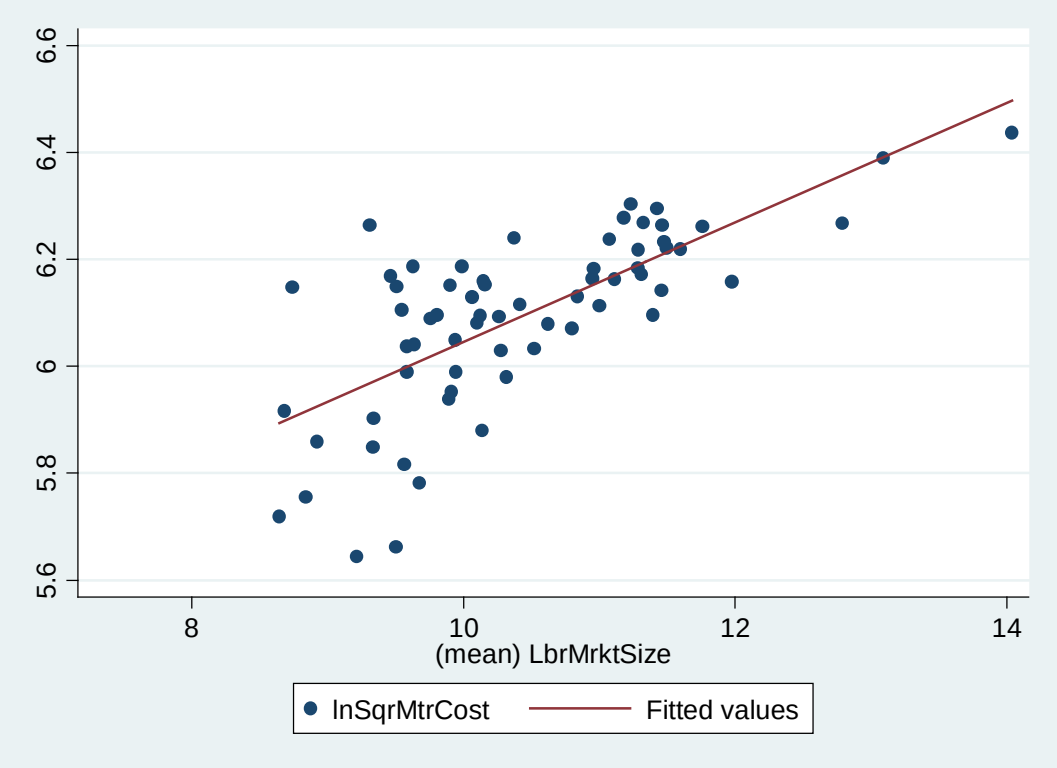
studies of the urban hierarchy, for example as regarding wage levels, income inequality and business diversification, thus also seems valid for housing prices and cost of living (Korpi, 2008; Strömquist and Johansson, 1998).

Figure 4.1. Swedish municipalities and average square meter housing costs, 1997-1999.



Source: Statistics Sweden and IBF. Map by Oskar Karlin, Stockholm University.

Figure 4.2. Log average square meter costs, and log size of local labour market population, 1997-1999.



Sources: Statistics Sweden and the Institute for Housing - and Urban Research (IBF). Calculations by the authors

4.2. Household migration patterns, 1993-2002.

During the 1990's and continuing into the following decade, only a few regions and their local labour markets show positive net migration rates. Primarily these areas constitute the larger, and generally more expensive major metropolitan areas with a handful of the others showing similar patterns, their composition varying somewhat over the studied time period. As illustration of these migrant patterns, in Table 4.1 we decompose the migration data for each three-year period into four major groups; upwards and downwards in the urban hierarchy (i.e. migration from smaller to larger, and from larger to smaller labour markets) and into and out of population growth regions, that is, migrants moving from labour markets experiencing net decreasing migration rates to labour markets experiencing positive net migration, and vice versa.

As a rule, and for the whole time period, the lion's share of domestic migration is directed into relatively larger labour markets (table 4.1.), in other words, upward movements as opposed to downward movements in the urban hierarchy, while a smaller share heads the

opposite direction. This, by definition, also goes for those regions experiencing positive net migration rates, even though their composition varies slightly over time. Consistently, although substantial in numbers, the migrants heading out from these relatively fewer population growth regions represent a significantly smaller share of migrants as opposed to those heading into the population growth regions. As seen below, this is true both looking at the migrant shares within our different samples (table 4.1.) and the whole working age population (see appendix, table A3).

Table 4.1. Regional migration flows by direction. No. of individual migrants, ages 18-64. 1993-2002 (percent of sample total in parenthesis).

Migrant direction	1993-1995	1995-1997	1997-1999	2000-2002
To larger labour markets	38022 (65.0)	44929 (65.6)	49073 (64.1)	41588 (63.4)
To smaller labour markets	20506 (35.0)	23561 (34.4)	27459 (35.9)	24012 (36.6)
Total no. migrants	58528 (100)	68490 (100)	76532 (100)	65600 (100)
Out of which:				
Depopulating to growth region	21881 (37.4)	26121 (38.1)	28229 (36.9)	20800 (31.7)
Growth to depopulating	10268 (17.5)	12298 (18.0)	13426 (17.5)	9032 (13.8)
Other	26379 (45.1)	30071 (43.9)	34877 (45.6)	35768 (54.5)

Source: Statistics Sweden (SCB), calculations by the authors

4.3. Changes in household income and housing costs.

Table 4.2 shows to what extent migration related changes in income and housing costs differ depending on the 'hierarchical' direction of the move. The table is organized in the same way as table 4.1. and shows, for every time period studied, that migrants moving towards larger metropolitan areas experience larger increases in disposable income than migrants that move to smaller regions. Migrant households belonging to the first of these two groups experience increases in disposable income in between 11 to around 26 percent respectively, but also the largest changes in housing costs, with median increases of around eight to twelve percent. On the other hand, migrant households heading in the opposite direction also experience substantial – but not as high – income increases. In this case however, median housing costs decrease by around four to nine percent depending on the period of time. Thus, in terms

defined as the elasticity between income changes and changing housing costs associated with the migrant decision, the households moving to larger labour markets experience less of a net gain in income as compared to the latter type, i.e., households moving out of larger metropolitan areas to more affordable housing.

Table 4.2. Median percent change in household disposable income and housing- and square meter costs, by migrant direction. Migrant households, ages 18-64.

Migrant direction	1993-1995	1995-1997	1997-1999	2000-2002
To larger labour markets	0.11 Δ Dsp. Inc 0.11 Δ Hsng. cost 0.10 Δ m^2 cost	0.14 Δ Dsp. Inc 0.08 Δ Hsng. cost 0.11 Δ m^2 cost	0.22 Δ Dsp. Inc 0.08 Δ Hsng. cost 0.12 Δ m^2 cost	0.26 Δ Dsp. inc 0.12 Δ Hsng. cost 0.10 Δ m^2 cost
To smaller labour markets	0.08 Δ Dsp. Inc -0.07 Δ Hsng. cost -0.09Δ m^2 cost	0.11 Δ Dsp. Inc -0.05 Δ Hsng. cost -0.09 Δ m^2 cost	0.15 Δ Dsp. Inc -0.04 Δ Hsng. cost -0.11 Δ m^2 cost	0.18 Δ Dsp. inc -0.09 Δ Hsng. cost -0.11 Δ m^2 cost
Depopulating to growth region	0.11 Δ Dsp. Inc 0.16 Δ Hsng. cost 0.14 Δ m^2 cost	0.15 Δ Dsp. Inc 0.12 Δ Hsng. cost 0.15 Δ m^2 cost	0.24 Δ Dsp. Inc 0.09 Δ Hsng. cost 0.15 Δ m^2 cost	0.25 Δ Dsp. inc 0.10 Δ Hsng. cost 0.13 Δ m^2 cost
Growth to depopulating region	0.08 Δ Dsp. Inc -0.10 Δ Hsng. cost -0.13 Δ m^2 cost	0.11 Δ Dsp. Inc -0.08 Δ Hsng. cost -0.13 Δ m^2 cost	0.14 Δ Dsp. Inc -0.05 Δ Hsng. cost -0.14 Δ m^2 cost	0.18 Δ Dsp. inc -0.07 Δ Hsng. cost -0.13 Δ m^2 cost
Non-migrants, growth regions	0.03 Δ Dsp. Inc	0.06 Δ Dsp. Inc	0.09 Δ Dsp. Inc	0.13 Δ Dsp. inc
Non-migrants, depopulating regions	0.03 Δ Dsp. Inc	0.04 Δ Dsp. Inc	0.07 Δ Dsp. Inc	0.12 Δ Dsp. inc

Source: Statistics Sweden (SCB), calculations by the authors

To conclude, migrants moving from, as compared to migrants moving into, the larger urban areas, i.e. 'down' vs. 'upwards' in the urban hierarchy respectively, seem to experience the largest net gains after taking changing housing costs into account. This pattern also seems fairly stable over time. It should also be noted that, regardless of migrant direction, the median income increase for migrant households are larger than median increases for the population that remain at origin, this regardless if we look at income development in depopulating regions or income development within growth regions (see table 4.2).

5. **Statistical models**

These descriptive patterns do of course not say much about the reasons behind these migration income effects. For example, by and large, migrants represent a younger cross-section of the working age population as compared to the non-movers, and, as young workers are generally on a steeper income growth trajectory than their older counterparts the differing income development seen in table 4.2 may therefore largely be a reflection of the migrants' younger age.[6] Similarly, it is sometimes argued that higher income among migrants is – to an uncertain degree – a reflection of potential migrant-specific individual characteristics like ambition, talent and drive, characteristics that are often hard to control for in ordinary OLS models (the problem of self-selection in studies of migration). And since we never know the contra factual result – what they would have earned staying behind – there is still some methodological uncertainty as to the measurement of the 'true' migrant income effects.

To address these issues, and our initial research questions, we estimate two fixed-effect panel models; one for disposable household income and another for disposable income adjusted for housing expenditure, where we simply subtract the municipality and area specific housing expenditure from the disposable income of all households. In both these models we hereby get estimates of income effects from measurable factors that change over time, e.g. the completion of education, changing jobs and moving in and out of unemployment and full-time studies, while at the same time controlling for factors that do not change, i.e. individual specific characteristics. A panel fixed effect approach, by means of demeaning the data or first-differencing, is also largely neutral as to the initial level of income and sector of the economy, so the estimated coefficients can therefore to a large extent be seen as reflecting general 'all-worker' effects. Apart from substituting the one dependent variable for the other, the two models are identical.[7]

[6] For a study showing the age structure of Swedish migrants, see Hansen & Niedomysl (2008)

[7] An alternative modeling approach would be to estimate individual change in income using random effects. However, random effect estimation is appropriate in cases where we can assume the unobserved heterogeneity as uncorrelated with our other independent variables, and estimates are otherwise biased (for a discussion, see e.g. Wooldrige, 2002, pp. 247-252). In our case, a fixed effect approach is chosen because we specifically want to allow for unobserved characteristics to be correlated with our independent variables (such as education, employment and the migrant decision in itself). Tables of random effects estimates are available from the authors but cannot be included here.

The models are tested for each of the three year intervals, 1993-2002, including dummies for migration up and down the urban hierarchy and also separately for interaction between these dummies and migration in and out of population growth regions, respectively.

A final note on the potential problem of self-selection in studies of migration: Much attention in migration literature within the field of economics has been focused on this issue, i.e. that migrants do not represent a random sample of the population and that therefore, causal interpretation of migrant outcomes are problematic (see for example Greenwood, 1985; Nakosteen and Zimmer, 1980). In the present paper, we address the issue by using panel data and the unobserved heterogeneity and possible selection bias that we can thereby control for. However, as to test the robustness of our results, in addition to this our basic approach estimates using a two-step self-selection model is provided in the appendix.

Models 1 and 2. Fixed effect model for (1) family disposable income, and (2) family disposable income adjusted for housing expenditure.

$$y_{it} = \alpha_{it} + \beta_1(\text{AGE18TO24}_{it}) + \beta_2(\text{AGE25TO34}_{it}) + \beta_3(\text{BUSSINESSINC}_{it}) + \beta_4(\text{CAPITALINC}_{it}) + \beta_5(\text{NEGCAPITALINC}_{it}) + \beta_6(\text{OTHERINC}_{it}) + \beta_7(\text{EDUC}_{it}) + \beta_8(\text{EDUC2}_{it}) + \beta_9(\text{JOBCHNGE}_{it}) + \beta_{10}(\text{JOBCHNGE2}_{it}) + \beta_{11}(\text{EMPLOYMENT}_{it}) + \beta_{12}(\text{EMPLOYMENT2}_{it}) + \beta_{13}(\text{UNEMPLOYMNT}_{it}) + \beta_{14}(\text{UNEMPLOYMNT2}_{it}) + \beta_{15}(\text{LOCALMGRNT}_{it}) + \beta_{16}(\text{URBANMGRNT}_{it}) + \beta_{17}(\text{COUNTERURBAN}_{it}) + a_i + \varepsilon_{it},$$

Where,

y_{it} = the log of summarized disposable household income (model 1), or log summarized disposable household income adjusted for housing costs (model 2)

AGE18TO24_{it} = Dummy if head of household is between ages 18 to 24, reference group age +34

AGE25TO34_{it} = Dummy if head of household is between ages 25 to 34, reference group age +34

BUSINESSINC_{it} = Log income from privately owned business

CAPITALINC_{it} = Log summarized income; stocks, other market related

$\text{NEGCAPITALINC}_{it}$ = Log summarized negative income (debt), market related

OTHERINC_{it} = Log summarized income measure; welfare and government financial housing support

$EDUC_{it}$ = Dummy, achievement of university (bachelor or equivalent) or PhD-level degree

$JOBCHNGE_{it}$ = Dummy, change of employer and place of work (main source of income)

$EMPLOYMENT_{it}$ = Change to employment from unemployment

$UNEMPLOYMNT_{it}$ = Change to unemployment from employment

$LOCALMGRNT_{it}$ = Change of residence within the local labour market

$EDUC2_{it}$, $JOBCHNGE2_{it}$, $EMPLOYMENT2_{it}$ and $UNEMPLOYMNT2_{it}$ are the equivalent dummy variables for spouses or any additional household member.

The migrant dummies tested are, in turn:

$URBANMGRNT_{it}$ = From smaller to larger local labour markets

$COUNTERURBAN_{it}$ = From larger to smaller local labour markets

$GROWTHREGION_{it}$ = Interaction dummy, moving from smaller to larger local labour markets, but also from a depopulating to a population growth regions

$DEPOPULATING_{it}$ = Interaction dummy, moving from larger to smaller local labour markets, and growth region to depopulating region

i = household (individual or two-person, with or without children)

t = 1, 2 (time period one and two)

α_{it} = intercept

a_i = Household fixed effect

ε_{it} = Error term

All dummy variables signify change over time, i.e. are equal 0 in t=1, and 1 in t=2.

As mentioned earlier, because of a leveling off of seniority's relationship with the rate of income growth, i.e., the older the worker the lower the percent increase in income (after some break point), dummy variables AGE18TO24 and AGE25TO34 are included to capture income effects associated with age. Since the majority of both domestic and international migrants are overwhelmingly below 35 years of age, this is something we need to take into account when estimating migrant income. Both are expected to be positively related to change in disposable income, the first with a possibly larger coefficient than the last.

Out of our income variables, in turn, we expect income from private business and capital (BUSINESSINC and CAPITALINC) to be positively related to disposable income, while expectations regarding negative capital income (NEGCAPITALINC) are indefinite, this because taking on debt can either go into some kind of investment, leading to higher income, and/or consumption lowering disposable income. Further, our variable summarizing different government welfare related support (OTHERINC) is expected to be positively related to disposable income.

Out of our remaining controls, all are dummy variables with intuitive expected effects. A positive sign is expected from acquirement of higher educational status (EDUC), change of job (JOBCHANGE) and entering the work force (EMPLOYMENT), while leaving the workforce for unemployment (UNEMPLOYMNT) is expected to be negatively related to disposable income. The equivalent signs are also expected for additional household members (EDUC2, JOBCHANGE2, EMPLOYMENT2 and UNEMPLOYMNT2). For the first of our migrant dummies, within labour market migration (LOCALMGRNT), we do not have any strong a priori expectations, but an assumption is that local moves are not associated with any negative income development, although this can be of course be the case, especially in the face of an economic downturn. As we mentioned earlier in the text, since we pool the different housing cost surveys, and housing costs therefore are fixed for each time period in our model, any change in individual housing costs can only stem from either local or regional resettlement. As we are not concerned with local movements, local migration is controlled for mainly as to get as exact as possible estimates on the changes in housing costs associated with regional migration. Concerning our two main variables of interest, urban- and counter urban migration (URBANMGRNT and COUNTERURBAN), both are expected to be positive with a larger coefficient for the first as opposed to the second.

Before turning to the model results a few caveats are in place. Firstly, as income and housing costs can also drive migration in itself, with our empirical approach we naturally have a potential source of endogeneity in our estimates. As our focus is to highlight differences in outcomes for households ex ante and ex post housing expenditure, and differences as regarding the direction of the move, these concerns do however not compromise our main findings. As always however, potential endogeneity suggests some measure of caution in causal interpretations of the findings. Second, as noted, our empirical approach does not take possible differences in quality of housing into account. For example, an argument can be

made that if migrants earning more also decide to spend more on buying a better home or renting a nicer apartment, our estimates would reflect an income housing price elasticity rather than migratory outcomes. As we cannot control for quality, this remains an issue worth exploring but is not likely a major concern for our purposes. This because the main driver behind regional housing cost disparities in Sweden during this time does not seem to be quality but rather differences in net migration and demographic patterns (see for example Turner, 2000).

6. Model results

6.1. Disposable income

Table 6.1 shows results of Model 1, with household disposable income as dependent variable, run with separate dummies for migrants moving up vs. down the urban hierarchy respectively. The fixed effects estimates indicate that the 'direction dependent' migrant income developments shown in table 4.2 also hold while both controlling for factors common in ordinary wage regressions and addressing the issue of unobserved individual heterogeneity. For all our studied time periods, introducing controls reduces both the effects of moving upwards and down in the urban hierarchy but by roughly the equal amount. Still, the differences we see in table 4.2 remain, with additional income effects ranging from around eight to ten percent for urban migrants (URBANMGRNT) and four to five percent for counter urban migrants (COUNTERURBAN).[8] All controls have the expected signs and are all highly significant, something however not surprising given the large number of individuals used in the regressions.

So, to conclude, after controlling for both initial level of income, individual fixed effects and standard labour market variables, migration movements into larger labour markets still seems very much associated with substantial income increases, and moves in the opposite direction, while still exerting positive effects on disposable income, are somewhat smaller in magnitude. This pattern is largely similar all throughout the studied periods.

With this in mind we turn to the question of changes in housing costs associated with these migrant decisions, and the effects of migration on disposable income adjusted for changes in cost of living.

[8] As a comparison, using a single 'direction neutral' dummy variable for regional migration, i.e. disregarding any urban hierarchy considerations, the estimated equivalent coefficients range from ~.6 to ~.8, for '93 to '95 and '00-'02 respectively (not shown).

Table 6.1. Household disposable income for urban and counter-urban migrants, with controls. 1993-2002.

VARIABLES	'93-95	'95-97	'97-99	'00-02
URBANMGRNT	**0.0773**	**0.0713**	**0.101**	**0.101**
	(0.00330)	(0.00358)	(0.00283)	(0.00355)
COUNTERURBAN	**0.0434**	**0.0451**	**0.0492**	**0.0492**
	(0.00406)	(0.00499)	(0.00348)	(0.00408)
Controls:				
AGE18TO24	0.186	0.215	0.246	0.224
	(0.00171)	(0.00170)	(0.00200)	(0.00207)
AGE25TO34	0.0571	0.0714	0.107	0.122
	(0.000667)	(0.000656)	(0.000759)	(0.000916)
BUSINESSINC	0.00224	0.00311	0.00605	0.00537
	(0.000384)	(0.000393)	(0.000410)	(0.000463)
CAPITALINC	0.0515	0.0569	0.0679	0.0748
	(0.000335)	(0.000296)	(0.000307)	(0.000341)
NEGCAPITALINC	0.0318	0.0285	0.0337	0.0444
	(0.000266)	(0.000242)	(0.000267)	(0.000298)
OTHERINC	0.0140	0.0130	0.0140	0.0114
	(0.000225)	(0.000166)	(0.000240)	(0.000247)
EDUC	0.212	0.218	0.235	0.0432
	(0.00540)	(0.00496)	(0.00477)	(0.00347)
EDUC2	0.0800	0.0763	0.112	0.101
	(0.00576)	(0.00521)	(0.00526)	(0.00403)
JOBCHNGE	0.0213	0.0363	0.0646	0.0697
	(0.000707)	(0.000715)	(0.000709)	(0.000735)
JOBCHNGE2	0.0438	0.0499	0.0882	0.101
	(0.000807)	(0.000814)	(0.000786)	(0.000823)
EMPLOYMENT	0.321	0.315	0.399	0.494
	(0.00380)	(0.00410)	(0.00372)	(0.00519)
EMPLOYMENT2	0.183	0.177	0.224	0.258
	(0.00254)	(0.00273)	(0.00226)	(0.00323)
UNEMPLOYMNT	-0.237	-0.246	-0.255	-0.346
	(0.00294)	(0.00305)	(0.00389)	(0.00509)
UNEMPLOYMNT2	-0.105	-0.109	-0.0811	-0.0905
	(0.00298)	(0.00303)	(0.00377)	(0.00415)
LOCALMGRNT	0.0359	0.0386	0.0609	0.0678
	(0.00121)	(0.00110)	(0.00110)	(0.00151)
Constant	7.225	7.250	7.261	7.362
	(0.00120)	(0.00102)	(0.00112)	(0.00124)
Observations	3554066	3863271	3639266	3349796
No. of households	1817610	1971590	1870840	1721446
R-squared	0.092	0.115	0.177	0.165

Robust standard errors in parentheses, all estimates significant at 99.9 percent level of confidence.

6.2. Disposable income adjusted for housing costs

As mentioned above, a central question in this study concerns investigating how regional housing cost disparities affect the 'real' – i.e. changes in disposable income adjusted for changes in housing costs – outcome of in-between labour market movements. In particular, we are interested in how the interaction between changing income and housing costs plays out for migrants moving upwards vs. downwards in the urban hierarchy; that is, moving to generally higher housing costs but also somewhat higher levels of income, vs. to lower housing costs and somewhat lower income levels. To test this, using the same large sample of households as in section 6.1, we first subtract median housing cost from household disposable income. Then, we run the same income fixed-effect regression model but with disposable income adjusted for housing costs as dependent variable. The results are shown in table 6.2.

Firstly, by now adding an area specific housing cost dimension to our data, variation between individual households increases significantly, something which generally raises both standard errors and our coefficient estimates as compared with the previous regressions. This is also reflected in a general drop in R-squares of around 3-6 percentage points as compared with using disposable income as dependent variable.

Secondly, interesting for our purposes is that the previous disparities between urban and counter-urban migrants seen in table 6.1 – with the former group making larger nominal gains than the latter – are now reversed; counter-urban migrants are now at the receiving end of the largest migrant income gains. Again, as in table 6.1, these results seem fairly stable over time. Noteworthy is also that the disparities between these two migrant groups are now larger. Whereas before these were in the range 2.5-5 percentage points they now vary between three (for '97-99) to ten and 18 points for the other periods. As for our other coefficient estimates, with one exception (for 1995-1997, business income is now negative, however at a lower in level of confidence), all are still highly significant and have the expected signs.

Table 6.2. Adjusted household disposable income, urban- and counter urban migrants, with controls. 1993-2002.

VARIABLES	'93-95	'95-97	'97-99	'00-02
URBANMGRNT	**0.129**	**0.0956**	**0.194**	**0.102**
	(0.0121)	(0.0103)	(0.00990)	(0.0118)
COUNTERURBAN	**0.234**	**0.202**	**0.217**	**0.279**
	(0.0142)	(0.0129)	(0.0124)	(0.0136)
Controls:				
AGE18TO24	0.729	0.722	0.883	0.778
	(0.00690)	(0.00685)	(0.00787)	(0.00800)
AGE25TO34	0.0915	0.124	0.198	0.226
	(0.00220)	(0.00205)	(0.00241)	(0.00282)
BUSINESSINC	0.00124	-0.00241**	0.0113	0.0104
	(0.00118)	(0.00112)	(0.00118)	(0.00128)
CAPITALINC	0.0973	0.0906	0.108	0.125
	(0.000951)	(0.000754)	(0.000780)	(0.000825)
NEGCAPITALINC	0.0673	0.0506	0.0615	0.0812
	(0.000835)	(0.000690)	(0.000771)	(0.000828)
OTHERINC	0.0306	0.0194	0.0367	0.0247
	(0.000746)	(0.000498)	(0.000764)	(0.000767)
EDUC	0.524	0.616	0.602	0.0584
	(0.0208)	(0.0184)	(0.0176)	(0.0128)
EDUC2	0.0827	0.0778	0.123	0.106
	(0.0119)	(0.0106)	(0.0119)	(0.00740)
JOBCHNGE	0.0200	0.0435	0.0786	0.0999
	(0.00224)	(0.00221)	(0.00213)	(0.00218)
JOBCHNGE2	0.0469	0.0567	0.0884	0.105
	(0.00164)	(0.00151)	(0.00142)	(0.00140)
EMPLOYMENT	1.020	0.835	1.183	1.581
	(0.0120)	(0.0121)	(0.0111)	(0.0146)
EMPLOYMENT2	0.338	0.308	0.349	0.413
	(0.00698)	(0.00685)	(0.00592)	(0.00827)
UNEMPLOYMNT	-0.652	-0.561	-0.790	-1.043
	(0.00865)	(0.00807)	(0.0109)	(0.0127)
UNEMPLOYMNT2	-0.234	-0.209	-0.192	-0.193
	(0.00808)	(0.00714)	(0.00867)	(0.00891)
LOCALMGRNT	0.0645	0.0636	0.0950	0.130
	(0.00433)	(0.00367)	(0.00352)	(0.00490)
Constant	6.380	6.536	6.465	6.514
	(0.00369)	(0.00285)	(0.00313)	(0.00334)
Observations	3577895	3863271	3666737	3381617
No. of households	1828623	1971590	1883809	1737023
R-squared	0.066	0.066	0.105	0.105

Robust standard errors in parentheses. All estimates significant at 99.9 percent level of confidence except **, significant at 95 percent.

How stable are the estimates? In modelling these outcomes, due to over-specification, we have chosen between including controls for specific labour market behaviour (for example, job changes and employment status) on the one hand, and all possible income variables on the other (e.g. wage income, student and unemployment benefits). An objection might be that as we thereby are not controlling specifically for student related migration and as these

constitute a sizeable share of domestic migration, results might be driven by this specific group receiving relatively low income. However, substituting these additional income variables for some of our labour market dummy variables gives very similar migrant estimates (not shown). Also, as already mentioned, the results are not very sensitive to whether or not we include households with very large income increases. Both these factors no doubt lend strength to the results.

A further possibility is that our chosen modelling strategy fails to sufficiently address possible self-selection bias in these migrant outcomes. To gauge this question we also deploy a two-step modelling strategy, first separately modelling the migration decision and then estimating migrant outcomes while controlling for the likelihood of migration (a Heckman type self-selection model, see (see Heckman, 1979). However, as to our knowledge no official command exists neither for fitting panel models for sample selection bias, nor, as necessary in our case, for fitting selection models with two selection equations (for migration up and down the urban hierarchy, respectively) we therefore explore an alternative approach. Firstly we calculate separate inverse Mill's ratios using biprobit estimation. Then, after first-differencing the data to address unobserved heterogeneity, we fit the final outcome equation using the two separate inverse Mill's ratios as additional regressors (for similar approaches, see e.g. Axelsson and Westerlund, 1998; Sorensen, 1989; Krishnan, 1990) This alternative modelling strategy does however not change our previous basic results (see Table A4 to A6 in the appendix).

Turning to our final question; is this all a growth region effect? As seen in table 4.1 earlier in the text, movements in and out of population growth regions make up around half of all domestic migration, and these movements are by and large directed in and out of the three major metropolitan areas. It could therefore be the case that these population growth regions dominate to the extent that what we hitherto have interpreted as a consequence of movements up and down the urban hierarchy is merely a major metropolitan or growth-region effect. This aspect is also relevant considering that in population growth regions both income and housing costs increases in general are the highest.

To gain some insight into this, in tables A1 and A2 in the appendix, we run our two models with separate dummies for movements in and out of population growth regions, i.e. between hierarchical movements from a region with net decreasing to a region with net positive

migration, and vice versa, (dummy variables GROWTHREGION and DEPOPULATING, respectively) and all other movements up and down the urban hierarchy (OTHERURBAN and OTHRCNTRURBN). For household disposable income (table A1), introducing these controls does not affect the previous estimates to any significant degree, the previous direction dependent differences remain and the conclusions drawn from the earlier analyses largely hold. However, introducing these controls into our second model modifies previous conclusions somewhat. All throughout the studied time period, and over the whole of the business cycle, the big differences are now instead between migrants moving in and out of the population growth regions, with those heading into these regions making substantially smaller gains than migrants moving in the opposite direction (between 8 to 18 percentage points less). At the same time, this measure reduces the differences between other movements up and down the urban hierarchy (i.e. between the variables OTHERURBAN and OTHRCNTRURBN), but except for the years 1997-1999 the counter urban migrants still have larger gains in disposable income adjusted for housing costs. Indeed, for the period 2000 to 2002 they are nearly equivalent of the original estimates in table 6.2.

So, the answer to our last question (is it a growth region effect?) is “yes, but not completely”; Movements in and out population growth regions do not dominate our results as regarding disposable income but they do to a considerable extent when it comes to income adjusted for housing expenditure. The differences between our original migrant dummies remain for most of the studied time period, albeit significantly reduced. The estimates bear witness to the strong pull effects of these relatively few population growth regions, and as will be discussed below, they are relevant from a regional- and economic growth perspective as they put focus on factors other than nominal economic gain, and/or the possible long-term economic gains, as a motive behind internal migration.

7. Concluding discussion

The three substantive findings in this research are as follows. Firstly, the urban hierarchy matters when estimating migrant outcomes, i.e., nominal migrant outcomes are to a substantial degree dependent on direction of these movements within the urban hierarchy. All else equal, migrants heading upwards into larger labour markets add approximately double the amount to their nominal income as compared to migrants heading in the opposite direction, i.e. moving from larger to smaller local labour markets. Further, as shown in table

A1, these direction dependent effects are not dominated by the major metropolitan areas or the population growth regions, but seem rather to be more of a city-system effect. The results therefore underline the urban hierarchy and local labour market context of migration in understanding and estimating the outcomes. This point is also strengthened by the fact that we are controlling for individual heterogeneity. To the extent that the controls are sufficient, if an outcome cannot be ascribed to individual characteristics, or only to some degree, this fact puts increased focus on the labour market context of these moves. After all, if non-observed individual characteristics were a major part of the story, this would render our migrant dummies insignificant.

Second, these conclusions also seem to hold regardless of when in the business cycle we study this migratory behaviour. Even though the beginning of our studied time period is rather exceptional (the first years of the 1990s marked the biggest economic downturn in Sweden since the Great Depression), this is a potentially important additional finding because it argues for the power of migratory behaviour as independent of the business cycle.

Finally, the third finding of the research underlines the importance for taking regional housing cost disparities into account when estimating economic outcomes of domestic migration. As seen above, adjusting for changing housing costs associated with these moves rather dramatically alters the results, and to some extent the conclusions as regarding outcome are hereby overturned. As compared with only looking at nominal disposable income, and for most of the studied time period, the by far largest gains are realized by households moving to relatively lower nominally increasing income. These outcomes are however only realized by a significantly smaller share of migrant households, so instead of migratory behaviour by and large fitting ordinary economic explanations, that is, the majority of migrants move to where nominal economic outcomes are optimal, we now see the opposite pattern.

Arguably, the interpretation of this is to some extent dependent on how we view housing and housing expenditure. If we regard housing as a ‘luxury good’, a good for which share of expenditure increases with income, the conclusion readily at hand is one where migrants moving up the urban hierarchy and into more expensive labour markets move for higher nominal income gains but simply choose more expensive urban dwelling as a type of luxury consumption. If instead we regard housing as necessity or ‘normal good’, this in turn puts focus on factors other than nominal income gains, for example availability of jobs, tastes for

diversity or different kinds of amenities, as key to explaining the bulk of migratory behaviour. As mentioned, this result clearly underscores the strong pull effects of larger cities and labour markets as destination for domestic migration, and also puts increased focus on the more long term economic outcomes of these migrant decisions.

8. Appendix.

Table A1. Model nr. 1 (Household disposable income), with separate dummies for migration in and out of population growth regions.

VARIABLES	'93-95	'95-97	'97-99	'00-02
GROWTHREGION	**0.0834**	**0.0743**	**0.110**	**0.0925**
	(0.00445)	(0.00365)	(0.00411)	(0.00541)
DEPOPULATING	**0.0406**	**0.0472**	**0.0521**	**0.0544**
	(0.00583)	(0.00520)	(0.00579)	(0.00708)
OTHERURBAN	**0.0703**	**0.0689**	**0.0897**	**0.107**
	(0.00481)	(0.00451)	(0.00465)	(0.00457)
OTHRCNTRURBN	**0.0459**	**0.0427**	**0.0486**	**0.0468**
	(0.00559)	(0.00512)	(0.00524)	(0.00495)
Controls:				
AGE18TO24	0.186	0.213	0.247	0.224
	(0.00171)	(0.00170)	(0.00221)	(0.00207)
AGE25TO34	0.0571	0.0700	0.108	0.122
	(0.000667)	(0.000657)	(0.000847)	(0.000916)
BUSINESSINC	0.00225	0.00313	0.00580	0.00537
	(0.000384)	(0.000393)	(0.000454)	(0.000463)
CAPITALINC	0.0515	0.0568	0.0679	0.0748
	(0.000335)	(0.000296)	(0.000343)	(0.000341)
NEGCAPITALINC	0.0318	0.0285	0.0337	0.0444
	(0.000266)	(0.000241)	(0.000298)	(0.000298)
OTHERINC	0.0140	0.0130	0.0140	0.0115
	(0.000225)	(0.000166)	(0.000267)	(0.000247)
EDUC	0.212	0.213	0.238	0.0432
	(0.00540)	(0.00496)	(0.00527)	(0.00347)
EDUC2	0.0801	0.0759	0.114	0.101
	(0.00576)	(0.00522)	(0.00599)	(0.00403)
JOBCHNGE	0.0213	0.0356	0.0651	0.0697
	(0.000707)	(0.000716)	(0.000793)	(0.000735)
JOBCHNGE2	0.0438	0.0497	0.0879	0.101
	(0.000807)	(0.000814)	(0.000877)	(0.000823)
EMPLOYMENT	0.321	0.314	0.396	0.494
	(0.00380)	(0.00409)	(0.00414)	(0.00519)
EMPLOYMENT2	0.183	0.177	0.222	0.258
	(0.00254)	(0.00273)	(0.00250)	(0.00323)
UNEMPLOYMNT	-0.237	-0.246	-0.255	-0.346
	(0.00294)	(0.00305)	(0.00431)	(0.00509)
UNEMPLOYMNT2	-0.105	-0.109	-0.0812	-0.0905
	(0.00298)	(0.00303)	(0.00418)	(0.00415)
LOCLMGRNT	0.0359	0.0398	0.0610	0.0678
	(0.00121)	(0.00110)	(0.00123)	(0.00151)
Constant	7.225	7.250	7.261	7.362
	(0.00120)	(0.00102)	(0.00125)	(0.00124)
Observations	3554066	3863271	2911075	3349796
No. of households	1817610	1971590	1496421	1721446
R-squared	0.092	0.116	0.178	0.165

Robust standard errors in parentheses

Table A2. Model nr. 2 (Adjusted household disposable income), with separate dummies for migration in and out of population growth regions.

VARIABLES	'93-95	'95-97	'97-99	'00-02
GROWTHREGION	**0.0918**	**0.0609**	**0.187**	**0.0747**
	(0.0163)	(0.0132)	(0.0145)	(0.0184)
DEPOPULATING	**0.266**	**0.248**	**0.265**	**0.299**
	(0.0204)	(0.0178)	(0.0205)	(0.0238)
OTHERURBAN	**0.173**	**0.146**	**0.208**	**0.118**
	(0.0178)	(0.0162)	(0.0166)	(0.0150)
OTHRCNTRURBN	**0.205**	**0.153**	**0.173**	**0.269**
	(0.0195)	(0.0185)	(0.0189)	(0.0164)
Controls:				
AGE18TO24	0.729	0.723	0.884	0.778
	(0.00690)	(0.00685)	(0.00880)	(0.00800)
AGE25TO34	0.0915	0.124	0.199	0.226
	(0.00220)	(0.00205)	(0.00270)	(0.00282)
BUSINESSINC	0.00123	-0.00241	0.0108	0.0104
	(0.00118)	(0.00112)	(0.00131)	(0.00128)
CAPITALINC	0.0973	0.0906	0.108	0.125
	(0.000951)	(0.000754)	(0.000871)	(0.000825)
NEGCAPITALINC	0.0673	0.0506	0.0613	0.0812
	(0.000835)	(0.000690)	(0.000863)	(0.000828)
OTHERINC	0.0307	0.0194	0.0367	0.0247
	(0.000746)	(0.000498)	(0.000853)	(0.000767)
EDUC	0.523	0.614	0.614	0.0585
	(0.0208)	(0.0184)	(0.0197)	(0.0128)
EDUC2	0.0822	0.0776	0.123	0.106
	(0.0120)	(0.0106)	(0.0134)	(0.00740)
JOBCHNGE	0.0200	0.0435	0.0810	0.0999
	(0.00224)	(0.00221)	(0.00239)	(0.00218)
JOBCHNGE2	0.0469	0.0566	0.0883	0.105
	(0.00164)	(0.00151)	(0.00160)	(0.00140)
EMPLOYMENT	1.020	0.835	1.173	1.581
	(0.0120)	(0.0121)	(0.0124)	(0.0146)
EMPLOYMENT2	0.338	0.308	0.347	0.413
	(0.00698)	(0.00685)	(0.00661)	(0.00827)
UNEMPLOYMNT	-0.652	-0.561	-0.792	-1.043
	(0.00865)	(0.00807)	(0.0122)	(0.0127)
UNEMPLOYMNT2	-0.234	-0.209	-0.190	-0.193
	(0.00808)	(0.00714)	(0.00962)	(0.00891)
LOCLMGRNT	0.0645	0.0636	0.0937	0.130
	(0.00433)	(0.00367)	(0.00394)	(0.00490)
Constant	6.380	6.536	6.466	6.514
	(0.00369)	(0.00285)	(0.00350)	(0.00334)
Observations	3577895	3863271	2933030	3381617
No. of households	1828623	1971590	1506817	1737023
R-squared	0.066	0.066	0.105	0.105

Robust standard errors in parentheses

Table A3. Migration flows by direction. Ages 18-64. 1993-2002, full population. (Percent of total in parenthesis)

Migrant direction	1993-1995	1995-1997	1997-1999	2000-2002
To larger labour markets	107 130 (58.7)	115 526 (60.2)	128 975 (59.1)	116 019 (55.8)
To smaller labour markets	75 382 (41.3)	76 250 (39.8)	89 663 (40.9)	91 939 (44.2)
Total nr. Migrants	182 512 (100)	191 776 (100)	218 117 (100)	207 949 (100)
Out of which:				
Decreasing to growth region	60 636 (33.2)	65 725 (34.3)	70 471 (32.3)	58 177 (28.0)
Growth to decreasing	36 938 (20.2)	36 874 (19.2)	43 279 (19.8)	41 200 (19.8)
Other	84 938 (49.6)	89 177 (46.5)	104 367 (47.9)	108 572 (47.8)

The coefficients in Tables A4-A6 below are the outcomes of our alternative robust test of the model for movement up and down the urban hierarchy. To reiterate, we first estimate the likelihood of moving in either direction using biprobit estimation (Table A4). Then, on the basis of these likehoods we separately calculate the inverse Mill's ratios (which is the basis of a Heckman estimation). These inverse Mill's ratios are then included as additional regressors in our final income equations (A5 and A6). To control for unobserved heterogeneity as in our original approach, variables in this final outcome equation are also first-differenced. The migration decision is modelled using age, unemployment, gender, education, marital status, no. of school age children and whether foreign born (variables defined below). All these variables are common in modelling migration behaviour and the estimated coefficients are as expected.

Table A4. Determinants of the migrant decision, urban or counter urban migrants (upwards vs. downwards in the urban hierarchy). Bivariate probit estimates. Robust standard errors in parenthesis All coefficients significant att 99.9 percent level of confidence, except * at 95 percent (estimates also robust to bootstraping – not shown).[9]

Urban migrant	'93-95	'95-97	'97-99	'00-02
AGE	-0.0353	-0.03722	-0.03849	-0.04035
	(0.00035)	(0.00032)	(0.00030)	(0.00035)
DAYSUNEMPLOYMENT	0.200319	0.215398	0.001238	0.001506
	(0.01033)	(0.00987)	(0.00010)	(0.00013)
FEMALE	0.041602	0.055832	0.079546	0.088088
	(0.00544)	(0.00492)	(0.0048)	(0.00544)
UPPERSECONDARY	-0.06086	-0.06573	-0.09424	-0.19293
	(0.0066)	(0.00610)	(0.006)	(0.0068)
UNIVERSITY	0.202324	0.190829	0.152513	0.103488
	(0.00934)	(0.00848)	(0.0081)	(0.00787)
MARRIED	-0.16725	-0.13911	-0.15352	-0.18089
	(0.0075)	(0.0068)	(0.00690)	(0.00876)
NR.CHILDREN	-0.12767	-0.1347	-0.13419	-0.17085
	(0.00667)	(0.00591)	(0.00618)	(0.00849)
FOREIGNBORN	0.182169	0.150072	0.143403	0.046183
	(0.00740)	(0.00683)	(0.00696)	(0.00828)
Constant	-0.91701	-0.78314	-0.61425	-0.60105
	(0.01319)	(0.01211)	(0.01140)	(0.01269)
Counter urban migrant	'93-95	'95-97	'97-99	'00-02
AGE	-0.02554	-0.02653	-0.02552	-0.02834
	(0.00035)	(0.00033)	(0.00010))	(0.00032)
DAYSUNEMPLOYMENT	0.156216	0.170148	0.00111	0.001368
	(0.01228)	(0.01176)	(0.00011)	(0.00014)
FEMALE	0.075201	0.077997	0.109572	0.106203
	(0.00609)	(0.00567)	(0.00542)	(0.00582)
UPPERSECONDARY	-0.07857	-0.10451	-0.08781	-0.05131
	(0.00747)	(0.00697)	(0.00678)	(0.00769)
UNIVERSITY	0.175822	0.136943	0.115281	0.162265

[9] Variable definitions are as follows (all variables corresponding to the head of households): AGE=Age, DAYSUNEMPLOYMENT=Number of days registered as unemployed devided by 365, FEMALE=gender dummy variable, UPPERSECONDARY and UNIVERSITY, educational dummy variables, coded as 1 if in possesion of an upper secondary and university level degree, respectively (basic education, at least nine years of schooling or upper-secondary drop-outs used as reference category). MARRIED, dummy variable coded as 1 if person is married and 0 otherwise, NR.CHILDREN=Number of school-age children, 7-17 years of age, FOREIGNBORN=Dummy variable coded as 1 if head of household is born outside of Sweden.

	(0.01014)	(0.00944)	(0.00897)	(0.00888)
MARRIED	-0.1235	-0.1194	-0.10638	-0.10071
	(0.00842)	(0.00789)	(0.00767)	(0.00884)
NR.CHILDREN	-0.19573	-0.17948	-0.1937	-0.19652
	(0.00810)	(0.00715)	(0.00747)	(0.00876)
FOREIGNBORN	0.056713	0.025259	0.017963*	-0.02955
	(0.0089)	(0.00838)	(0.00832)	(0.00916)
Constant	-1.35546	-1.26731	-1.21336	-1.1965
	(0.01425)	(0.01326)	(0.01224)	(0.01271)
/athrho	-1.47548	-1.25978	-1.59661	-1.22813
	(0.01183)	(0.0044)	(0.05231)	(0.10911)
Rho	-0.90062	-0.851	-0.92116	-0.84204
	(0.00224)	(0.00121)	(0.00792)	(0.03175)
Nr. Obs	1736456	1891681	1768426	1628351
Log. Pseudolikelihood	-208725	-249489	-271848	-217403
Wald chi(16)	29080.58	36472.56	41314.49	35506.2
Prob>chi2	0	0	0	0

Table A5. Disposable income, 1993-2002. Estimates including controls for self-selection among migrants (Heckman), i.e. separate inverse Mill's Ratios (IMR1 and IMR2), for migration up vs. down the urban hierarchy, respectively). All other variables defined as in model 1 and 2. Robust standard errors in parentheses.

VARIABLES	'93-95	'95-97	'97-99	'00-02
URBANMGRANT	**0.0670**	**0.0609**	**0.0789**	**0.0803**
	(-0.0033)	(-0.0029)	(-0.0028)	(-0.0035)
COUNTERURBAN	**0.0330**	**0.0322**	**0.0218**	**0.0228**
	(-0.0040)	(-0.0037)	(-0.00347)	(-0.0040)
AGE18TO24	0.138	0.151	0.126	0.0977
	(-0.0019)	(-0.0019)	(-0.0022)	(-0.0023)
AGE25TO34	0.0144	0.0174	0.00514	0.0108
	(-0.0009)	(-0.0009)	(-0.0010)	(-0.0012)
BUSINESSINC	0.00221	0.00286	0.00510	0.00480
	(-0.0004)	(-0.0004)	(-0.0004)	(-0.0005)
CAPITALINC	0.0520	0.0570	0.0682	0.0755
	(-0.0003)	(-0.0003)	(-0.0003)	(-0.0003)
NEGCAPITALINC	0.0328	0.0311	0.0363	0.0401
	(-0.0002)	(-0.0002)	(-0.0002)	(-0.0003)
OTHERINC	0.0135	0.0132	0.0140	0.00903
	(-0.0002)	(-0.0001)	(-0.0002)	(-0.0002)
EDUC	0.214	0.207	0.239	0.0183
	(-0.0054)	(-0.0051)	(-0.0048)	(-0.0035)
EDUC2	0.0629	0.0637	0.0689	0.0428
	(-0.0057)	(-0.0050)	(-0.0047)	(-0.004)
JOBCHANGE	0.00186**	0.0132	0.0197	0.0106
	(-0.0007)	(-0.0007)	(-0.0007)	(-0.0008)
JOBCHANGE2	0.0199	0.0217	0.0311	0.0249
	(-0.0008)	(-0.0008)	(-0.0008)	(-0.0009)
EMPLOYMENT	0.303	0.290	0.355	0.429
	(-0.0038)	(-0.0041)	(-0.0037)	(-0.0052)
EMPLOYMENT2	0.159	0.149	0.171	0.186
	(-0.0025)	(-0.0027)	(-0.0023)	(-0.0032)
UNEMPLOYMENT	-0.256	-0.270	-0.302	-0.412
	(-0.0030)	(-0.0030)	(-0.0039)	(-0.0051)
UNEMPLOYMENT2	-0.127	-0.134	-0.128	-0.158
	(-0.003)	(-0.0030)	(-0.0038)	(-0.0041)
LOCALMGRNT	0.0204	0.0203	0.0216	0.0297
	(-0.0012)	(-0.0011)	(-0.0011)	(-0.0015)
IMR1	-0.124	-0.0531	-0.0495	-0.125
	(-0.0050)	(-0.0045)	(-0.0049)	(-0.0059)
IMR2	0.143	0.0260	-0.0329	0.108
	(-0.0073)	(-0.0063)	(-0.0074)	(-0.0090)
Constant	-0.00118*	0.119	0.303	0.180
	(-0.0066)	(-0.0058)	(-0.0072)	(-0.0080)
Observations	1,736,456	1,891,681	1,768,426	1,628,351
R-squared	0.077	0.092	0.125	0.128

Table A6. Adjusted disposable income, 1993-2002. Estimates including controls for self-selection among migrants (Heckman), i.e. separate inverse Mill's Ratios (IMR1 and IMR2) for migration up vs. down the urban hierarchy, respectively). All other variables defined as in model 1 and 2.

VARIABLES	'93-95	'95-97	'97-99	'00-02
URBANMGRANT	**0.0628**	**0.0774**	**0.148**	**0.0515**
	(-0.0116)	(-0.0103)	(-0.0096)	(-0.0115)
COUNTERURBAN	**0.199**	**0.180**	**0.171**	**0.225**
	(-0.0138)	(-0.0129)	(-0.0120)	(-0.0132)
AGE18TO24	0.670	0.615	0.697	0.577
	(-0.0073)	(-0.007)	(-0.0081)	(-0.0083)
AGE25TO34	0.0408	0.0340	0.0414	0.0546
	(-0.0028)	(-0.0026)	(-0.0028)	(-0.0033)
BUSINESSINC	-0.0048	-0.00287**	0.00269**	0.00187
	(-0.0011)	(-0.0011)	(-0.0011)	(-0.0012)
CAPITALINC	0.0898	0.0910	0.102	0.117
	(-0.0009)	(-0.0007)	(-0.0007)	(-0.0008)
NEGCAPITALINC	0.0620	0.0551	0.0588	0.0671
	(-0.0008)	(-0.0007)	(-0.0007)	(-0.0008)
OTHERINC	0.0124	0.0199	0.0194	0.00491
	(-0.0007)	(-0.0005)	(-0.0007)	(-0.0007)
EDUC	0.540	0.583	0.622	0.0145
	(-0.0201)	(-0.0185)	(-0.0172)	(-0.0127)
EDUC2	0.0550	0.0639	0.0563	0.0151**
	(-0.0109)	(-0.0106)	(-0.0101)	(-0.0071)
JOBCHANGE	-0.0123	0.00560**	0.00535**	0.00204
	(-0.0023)	(-0.0023)	(-0.0022)	(-0.0023)
JOBCHANGE2	0.00801	0.00928	0.00271*	-0.0137
	(-0.0017)	(-0.0016)	(-0.0014)	(-0.0014)
EMPLOYMENT	0.836	0.796	0.939	1.153
	(-0.0114)	(-0.0122)	(-0.0106)	(-0.0137)
EMPLOYMENT2	0.276	0.262	0.265	0.277
	(-0.0066)	(-0.0069)	(-0.0057)	(-0.0076)
UNEMPLOYMENT	-0.552	-0.601	-0.614	-0.813
	(-0.0079)	(-0.0081)	(-0.0094)	(-0.0112)
UNEMPLOYMENT2	-0.245	-0.249	-0.232	-0.278
	(-0.0076)	(-0.0072)	(-0.0081)	(-0.0084)
LOCALMGRNT	0.0320	0.0303	0.0352	0.0639
	(-0.0042)	(-0.0037)	(-0.0034)	(-0.0047)
IMR1	-0.286	-0.0293**	0.0448	-0.215
	(-0.0152)	(-0.0137)	(-0.0146)	(-0.0173)
IMR2	0.388	-0.0480**	-0.274	0.167
	(-0.0224)	(-0.0197)	(-0.0223)	(-0.0269)
Constant	-0.183	0.283	0.725	0.342
	(-0.0202)	(-0.0179)	(-0.0214)	(-0.0235)
Observations	1,736,456	1,891,681	1,768,426	1,628,351

R-squared	0.053	0.054	0.076	0.072

All estimates significant att 99.9 percent level of confidence except ** 95 percent and * not significant

9. References

Axelsson, R. Westerlund, O. (1998), A panel study of migration, self selection and household real income. , *Journal of Population Economics,* 11**,** 113-126.

Berger, M. C. Blomquist, G. C. (1992), Mobility and destination in migration decisions: the roles of earnings, quality of life, and housing prices., *Journal of Housing Economics,* 2 37-59.

Borjas, G., Bronars, S. Trejo, S. (1992), Assimilation and the Earnings of Young Internal Migrants, *The Review of Economics and Statistics,* 74**,** 170-175.

Borjas, G. J. (1994), The Economics of Immigration, *Journal of Economic Litterature,* 32**,** 1667-1717.

Clark, W. A. V. Davies Withers, S. (2002), Disentangling the interaction of migration, mobility and labour force participation *Environment and Planning A* 34**,** 923-945.

Clark, W. A. V., Deruloo, M. Dieleman, F. (2006), Residential mobility and neighborhood outcomes, *Housing Studies* 21**,** 3232-342.

Clark, W. A. V. Dieleman, F. M. (1996) *Households and Housing: Choice and Outcomes in the Housing Market.* . Rutgers State University, Center for Urban Policy Research.

Darwent, D. (1969), Growth poles and growth centers in regional planning - a review, *Environment and Planning,* 1**,** 5-32.

Davies Withers, S. Clark, W. A. V. (2006), Housing costs and the geography of family migration outcomes, *Population, Space and Place,* 12**,** 273-289.

Dumond, J. M., Hirsch, B. Macpherson, D. (1999), Wage differentials across labour markets and work: does cost of living matter?, *Economic Inquiry,* 37**,** 577-598.

Eru (1970) *Urbaniseringen i Sverige : en geografisk samhällsanalys.* Stockholm,.

Fosu, A. (1999), Cost-of-living and labour force participation: married women in urban labour markets, *Journal of Labour Research,* 20**,** 221-232.

Fredriksson, P. (1999), The dynamics of regional labor markets and active labor market policy: Swedish evidence, *Oxford Economic Papers,* 51**,** 623-648.

Friedberg, R. Hunt, J. (1995), The Impact of Immigrants on Host Country Wages, Employment and Growth, *Journal of Economic Perspectives,* 9**,** 23-44.

Gabriel, S. A., Shack-Marquez, J. Wascher, W. L. (1992), Regional house-price dispersion and interregional migration, *Journal of Housing Economics,* 2**,** 235-256.

Galster, G. C. (2001), On the nature of neighborhood, *Urban Studies,* 38**,** 2111-2124.

Greenwood, M. (1985), Human migration: theories, models and empirical studies, *Journal of Regional Science,* 25**,** 521-44.

Håkansson, J. (2000) Changing Population Distribution in Sweden - Long Term Trends and Contemporary Tendencies. *Kulturgeografiska institutionen.* Umeå, University of Umeå.

Hansen, H. Niedomysl, T. (2008), Migration of the creative class: evidence from Sweden, *Journal of Economic Geography,* doi:10.1093/jeg/lbn046**,** 1-16.

Heckman, J. (1979), Sample selection bias as a specification error, *Econometrica,* 47.

Henrie, C. Plane, D. (2008), Exodus from the California Core: Using Demographic Effectiveness and Migration Impact Measures to Examine Population Redistribution Within the Western United States, *Population Research and Policy Review,* 27**,** 43-64.

Hirschman, A. O. (1958) *The strategy of economic development.* New Haven: Yale U.P.

Hunt, J. Kau, J. (1985), Migration and wage growth: A human capital approach, *Southern Economic Journal,* 51**,** 697-710.

Isserman, A., Taylor, C., Gerking, S. Schubert, U. (1986) *Regional Labour Market Analysis. Handbook of Regional and Urban Economics.* Elsevier Science Publishers.

Korpi, M. (2008), Does Size of Local Labour Markets Affect Wage Inequality? a Rank-Size Rule of Income Distribution, *Journal of Economic Geography,* 8**,** 211-237.

Korpi, M. (forthcoming) Regionala skillnader i boendekostnader, Sverige 1990-2002. Institutet för bostads- och urbanforskning (IBF).

Krishnan, P. (1990), The Economics of Moonlighting: A Double Self-Selection Model, *The Review of Economics and Statistics,* 72**,** 361-367.

Leclere, F. B. Mclaughlin, D. K. (1997), Family migration and changes in women's earnings: a decomposition analysis, *Population Research and Policy Review,* 16**,** 315-35.

Lindgren, U. (2003), Who is the Counter-Urban Mover? Evidence from the Swedish Urban System, *International Journal of Population Geography,* 9**,** 399-418.

Mapezzi, S., Chun, G. Green, R. (1998), New place to place housing price indexes for US metropolitan areas and their determinants, *Real Estate Economics,* 26**,** 235-278.

Myrdal, G. (1957) *Economic theory and under-developed regions.* London: Duckworth.

Nakosteen, R. A. Westerlund, O. (2004), The effects of regional migration on gross income of labour in Sweden, *Papers in Regional Science,* 83**,** 581-595.

Nakosteen, R. A. Zimmer, M. (1980), Migration and income: the question of self-selection, *Southern Economic Journal,* 46**,** 840-851.

Nakosteen, R. A. Zimmer, M. (1982), The effects on earnings in interregional and interindustry migration, *Journal of Regional Science,* 22**,** 325-341.

Newbold, K. B. (1996), Income, self-selection, and return and onward interprovincial migration in Canada, *Environment and Planning A,* 28**,** 1019-1034.

Pellegrini, P. A. Fotheringham, A. S. (1999), Intermetropolitan migration and hierarchical destination choice: a disaggregate analysis from the US Public Use Microdata Samples, *Environment and Planning A,* 31**,** 1093-1118.

Perroux, F. (1961) *L'économie du 20e siècle.* Paris: Presses universitaire de France.

Plane, D. A., Henrie, C. J. Perry, M. J. (2005), Spatial Demography Special Feature: Migration up and down the urban hierarchy and across the life course, *Proceedings of the National Academy of Sciences,* 102**,** 15313-15318.

Pred, A. R. (1966) *The spatial dynamics of US urban-industrial growth, 1800-1914 : interpretive and theoretical essays.* Cambridge, Mass.: M.I.T. Press.

Ravenstein, E. G. (1885), The Laws of Migration, *Journal of the Statistical Society of London,* 48**,** 167-227.

Roback, J. (1982), Wages, Rents and the Quality of Life, *Journal of Political Economy,* 90**,** 1257-1278.

Rodda, D. T. (2005) Recent House Price Trends and Homeownership Affordability. IN Development, U. S. D. O. H. A. U. (Ed.), Office of Policy Development and Research.

.

Sorensen, E. (1989), Measuring the pay disparity between typically female occupations and other jobs: a bivariate selectivity approach, *Industrial and Labor Relations Review,* 42**,** 624-639.

Statistics Sweden (2003) Regionala indelningar i Sverige. Statistics Sweden.

Strömquist, U. Johansson, B. (1998) Regioner, handel och tillväxt: marknadskunskap för Stockholmsregionen. *Rapport / Regionplane- och trafikkontoret, 1998:6.* Stockholm, Regionplane- och trafikkontoret.

Turner, B. (2000) Boendekostnader, bostadsefterfrågan och den framtida bostadsmarknaden. *In* Malmberg, B. Sommestad, L. (Eds.) *Bostadsrätten i ett nytt millenium.* Gävle: Institutet för bostadsforskning (Institute for Housing- and Urban Research).

Vanham, M. Feitgen, P. (2008), Who wants to leave the neighborhood? The effect on moving wishes of being different from the neighborhood population., *Environment and Planning A*, 39.

Wooldrige, J. M. (2002) *Econometric Analysis of Cross Section and Panel Data* Cambridge, Massachusetts: MIT Press.