

Inter-regional migration in labour market change: a vacancy accounting approach applied to three Nordic countries

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This article discusses and compares the extent of regional labour mobility in Finland, Norway and Sweden. A regional labour market indicator, a concise regional “vacancy-account”, is introduced as a tool for analysing the relationship between the level of intra- and interregional labour market mobility across regions, sectors and segments. The use of turnover rates in regional labour markets, expressed as formation and filling in of vacancies in different sectors and segments, are expected to rise information how the regional labour mobility functions and especially how different sectional job possibilities give rise to different geographical mobility. The current study analyses regional labour mobility by using gross-stream-data broken down by the persons’ labour market statuses, sectors and segments. Two periods of investigation are chosen to cover the regional labour mobility under rising and downward tendencies in the national business cycles. The analysis shows that the labour migration was visibly higher in Norway than in Finland and Sweden. There were distinct variations between economic sectors, both with respect to exits from and entries to employment as well as through geographical mobility in and out of the sectors. There were in some contexts good correspondence between the level of labour migration and the level of total turnover both between economic sectors and regions, though somewhat better in Norway and Sweden than in Finland. The labour migration process did, however, contribute to a certain displacement of labour between the regions, but it was only in Norway that labour migration contributed to growth in the national employment during the period of economic upswing.

Introduction*

One main target of this analysis has been to establish suitable mechanisms for measuring regional labour market change. The analysis goes beyond traditional means of measuring net employment change by using gross-stream data covering the entire population of working age. Putting these measures together should give some information about how supply-and-demand mechanisms are functioning in the regional labour markets generally, and how job possibilities give rise to different geographical mobility patterns specifically.

This analysis thus uses gross-stream data, following the individuals included through different periods. This has enabled the investigation of gross streams in and out of different sectors and segments, and to what extent vacancies are opened up and filled in the regional labour markets, in a concise regional “vacancy-account”. The use of gross-stream data and analysis is, however, not a new phenomenon in the migration and labour market mobility research (see e.g. Hägerstrand, 1970, Greenwood, 1985, Molho, 1986, Greenwood et al., 1991, and more recent studies such as e.g. Burda and Wyplosz, 1994, Burgess, Lane and Stevens, 1994, Davis and Haltiwanger, 1998). The richness, extent and quality of the data sources being used in this analysis, and the organisation of data in concise regional “vacancy-accounts” made operative for comparable investigations within and across regions and nations should, however, give some contributions to the literature on this field.

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* An initial stage of this Nordic research project included descriptive analyses of employed and unemployed migrants and their employment adjustments (supply-side adjustments) in the regional labour markets (see Johansson et al. 1997, Stambøl et al., 1996, 1997, Stambøl, 1999, Heikkilä and Stambøl, 1999). Recent studies includes as well gross-stream analyses of geographical mobility and labour market mobility connected to the demand side in the regional labour markets, expressed as employment changes, leaving of previous employment and employment recruitment in different sectors and segments (see e.g. Heikkilä et al., 1999, Johansson and Persson, 1999, Stambøl et al., 1999, Persson ed., 2001, Edvardsson et al. 2002, Stambøl, 2000, 2002, 2003).

Many projects analysing labour migration processes and regional labour market transitions are, however, carried out separately, where the results are grounded on unequal criteria. Different approaches, different definitions and use of variables, different data sources, different methods and different classifications of regions represent some examples. This makes it often difficult to carry out exact comparisons between the results of regional migration processes and local labour market transitions both within and across countries due to differences between the projects. One important aim of this current international project is thus to establish more homogeneous criteria concerning approaches, data, concepts, regional and sector classifications, socio-economic divisions and the periods of the empirical investigations.

The international literature on job-mobility and labour force mobility (as exemplified above) includes a series of different ways of using the mobility concepts. It is thus of immense importance to harmonise the different mobility concepts used in the project for both national and especially international comparisons. In this respect the project basically deals with intra- and inter-regional labour mobility, which means how each person move between jobs and between jobs and different labour market statuses both within and across regions. The analysis do to a certain extent also handle approaches dealing with job mobility, but then simply reduced to the net effects of the total gross labour mobility.

Against this background the purpose of this article is as well to explore and compare the extent and structure of gross labour mobility. For example its composition in terms of local labour market mobility and inter-regional migration, its functioning in different phases of the business cycle, its relation to the structure of the regional economies and its variation between segments of the labour force. On behalf of statements in the regional and labour market policy, this investigation illuminates approaches as follows: (1) How extensive is the intra- and interregional labour market mobility? (2) Are there any differences in the sector specific labour mobility? (3) Does inter-regional migration reveal differences in the sector specific labour mobility? (4) To what extent does regional labour migration contribute to growth in the overall and sector specific employment? and (5) Does the relative level of gross migration to and from employment reflects the relative total labour mobility in the regions?

Emphasis is placed on comparative approaches discussing the results generated by investigations carried out by researchers in each country. Finland, Norway and Sweden have experienced different economic development during the recent decade. National budget crises forced the Finnish and Swedish governments to cut back in their welfare systems during the

1990s. Structural changes introduced high levels of unemployment in most regions. In Norway, a boom in the economy in the middle of 1980s was replaced by downward tendencies in the national economy lasting until the first years of the 1990s. Later, slower wage increases; low inflation and an expanding oil industry have formed the basis for a new growth in the economy. Currently, unemployment rates in Norway are among the lowest in Europe. Against this background, we have made comparisons of labour migration and regional labour mobility between the Nordic countries.

Section two presents a short description of the various definitions and the use of data and methods in this study. In the third section the results are in part presented and compared at a general regional level, with most regional figures aggregated to represent national averages. Two periods of investigation were chosen in each country to cover the labour mobility under up-swings and recession in the national economic cycle. The final section outlines some main findings.

Data and definitions

The project basically deals with intra- and inter-regional labour mobility, which means how each person move between jobs and between jobs and different labour market statuses both within and across regions. The project do to a certain extent also handle approaches dealing with job mobility, but then simply reduced to the annual net reallocation effects of job changes.

A particular aspect of this analysis is the classification of individuals according to their labour market status. In earlier migration analyses, we have used such divisions on cross-sectional data (see Stambøl, 1995), and on gross-flow data analysing supply-side adjustments (Johansson et al. 1997, Stambøl et al., 1997, Heikkilä and Stambøl, 1999 and Stambøl, 1999). In this article the aim is primarily to analyse the change of labour market status, sector and segment connected to the migrants and the mobile persons within local labour markets. An important aspect of the analysis is thus to compare the changes of labour market status and sector among migrants with corresponding changes among the non-migrants. Necessary data covering the entire population of working age are therefore established. The data are collected from register-based data sources at Statistics Finland, Statistics Norway and Statistics Sweden. These registers are acknowledged as very good data sources for research with possibilities to link different kinds of information, and are thus among the best covering registers on this field in Europe.

Traditional labour market statistics operates with the number of employed, unemployed and individuals outside the labour force, where the annual differences express the net change of all gross-streams at the la-

Figure 1. A “vacancy-account” for gross labour flows in regional labour markets

E (t). Starting stock: The stock of employed persons in sector s in region r at a certain point of time in year t

EX. Employment exits:

- To other employment (job-to-job mobility)
- To unemployment (1) Out-migrated from the region (geographical mobile)
- Out of the labour force (2) Not migrated from the region (local mobile)
 - (Further education)
 - (Retirement - Age)
 - (Pre retirement insurances)
 - (Emigration)
 - (Dead)

= Total employment exits

EN. Employment entries:

- From other employment (job-to-job mobility) (1) In-migrated to the region (geographical mobile)
- From unemployment (2) Living in the region (local mobile)
- From education
- From others outside the labour force

= Total employment entries (represents in this analysis the filled vacancies from year t to year t+1)

E (t+1). Ending stock: The stock of employed persons in sector s in region r at a certain point of time in year t+1

bour market. Consequently full knowledge of the gross-streams will also give full knowledge of the net change, while the opposite is obviously not the case. One basic aspect of this analysis has then been to establish a regional labour market indicator illuminating the annually gross-flows to, from and between the status of employment. Figure 1 illustrates how this regional labour market indicator is measured in a concise regional “vacancy account” from year t to year t+1.

The vacancy accounting

The vacancy account is basically established as an ordinary account, showing individuals who have left and entered a job between two periods of time. When we have full knowledge of the number of employed and the status of each individual person in each region both at a certain point of time in year t and a corresponding point of time in year t+1, we can measure each individual movement at the labour market between these two periods of time. The number of entries (filled vacancies) (EN) in each region, sector and segment appear as follows:

$$EN = E(t+1) - E(t) + EX$$

Where

E(t+1): is the number of employed persons at a certain point of time in year t+1,

E(t): is the number of employed persons at a certain point of time in year t and

EX: is the number of employed persons at a certain point of time in year t that left a job before the corresponding point of time in year t+1.

In upswing periods $E(t+1) > E(t)$, and the number of vacancies that has to be filled in appears from the

total number of those who left a job (EX) plus the net increase of employed persons from E(t) to E(t+1). In recession periods E(t+1) might be lower than E(t), and the number of vacancies that has to be filled in is thus less than EX. The number of vacancies accounted in this way is definitely much more comprehensive than the average number of not filled in vacancies which is often used to represent the concept of vacancies in regional labour market studies. Concerning the “vacancy accounting”, we thus deal with the filled in vacancies in the regional labour markets, which means that the average stock of not filled in vacancies is not directly taken into consideration in this stage of the project.

The exit (EX) from job is measured as follows: a) Employed persons changing their sectors within the local labour markets. b) Employed persons changing to another status group within the region; unemployed, under education or other statuses outside the labour force. c) Employed persons migrating to another region and finally d) Employed in year t who are not observable in the data register in year t+1. The majority of persons in this group consist of employed that have emigrated, but cover as well some employed who died or left the working age.

Correspondingly the entry to job (filled vacancies) (EN) is measured as follows: a) Employed persons changing their sector in the local labour market. b) Employed recruited from another status group within the region; unemployed, under education or other statuses outside the labour force. c) Employed in-migrated from another region. d) Employed in year t+1 who are not observable in the data register in year t. The majority of persons in this group consist of employed that have immigrated, but cover as well

some young persons that enter the employment age in year $t+1$ as employed.

In this analysis we then only deal with local mobility and migration that is associated with employment. Thus we exclude mobility and migration of individuals that are not economically active in any of the two years studied, i. e. in education, permanently unemployed or depending on social benefits, and other persons outside the labour force.

Vacancies appear in different ways. Partly they are opened up through establishment of new jobs, either as a result of enlargements of already existing firms or by establishment of completely new firms. There are, however, reasons to expect that most vacancies appear when employed exit from a job and leave behind vacancies in the labour markets, e.g. the real vacancy chains. In this analysis we have, however, not included information that split vacancies descending from new establishments of jobs and those descending from vacancy chains. On the other hand not all exits from employment result in vacancies due to firm closures or employment reductions within companies. In the vacancy account the effect of such job mobility is not taken into consideration in the detailed gross streams, but due to an entire measure of labour flows to, from and between sectors, the net results of the labour flows shows the annual net reallocation of job mobility between sectors.

In spite of good register based data sources it is not a simple task, and not even possible, to establish a regional vacancy account that gives a complete measure of absolutely all mobility at the labour market. Due to a rather aggregated sector division (see below), this analysis excludes labour market mobility within each sector. Due to the fact that the vacancy accounting measures the annual gross flows between two certain point of time each year, some of the gross flows that occur in the labour market during the year are not taken into consideration.

Classifications and definitions

The regional classification follows the county level, which divides Finland and Norway into 19 regions and Sweden into 24 regions. In a European context this represent regions at the NUTS 3 level of regional classifications. In analysing geographical labour mobility it is of importance if we use an aggregated or disaggregated regional division. Many local migrations do not involve any job change or change of regional labour markets (e.g. Greenwood, 1985, Gordon, 1991). The aggregated county level is thus more suitable for this analysis than more disaggregated regional levels, for example the municipality level. Earlier investigations of geographical mobility have, however, also shown that the labour markets have a tendency to become increasingly important factors in explaining migration at a higher geographical level

compared with more disaggregated regional divisions (see e.g. Stambøl, 1991, and Stambøl et al., 1998).

Thus migrants are defined as individuals living in different counties in the first and second year of each period. Definitions of changes of labour market status and sectors follow similar patterns, where the data show the labour market status and the sector of each individual in the first and second year of each period. A definition of socio-economic and socio-demographic groups includes the variables gender, age and education. Individuals of working age are in Finland defined as persons 15-74 years, in Norway 16-74 years, and in Sweden 16-64 years. Education is divided into three categories; low (primary school), intermediate (secondary school) and higher education (post secondary school). The marginal status group of emigrants, dead persons and immigrants appear only in the Norwegian and Swedish data. As mentioned above these are individuals only obtainable the first or the second year in each investigation period.

The job-to-job mobility (cross-sector exchange) is defined as mobility among employed between nine economic sectors and one unspecified sector. A definition of only nine economic sectors does certainly underestimate the job-to-job mobility (see above). On the other hand, a more disaggregated division would, however, be more vulnerable regarding statistical replacements and even misplacements of employed between sectors.

Due to different economic development in the Nordic countries, the periods used in the analysis for each country differ. While the years 1988-89 represent a rising business cycle in Finland, this period represents a clear cyclical downturn in the Norwegian economy. On the other hand, the period 1991-92 represents an economic downturn in Finland and the years 1994-95 a period of economic upturn in Norway. In Sweden the period 1992-93 represents an economic recession, while 1994-95 was a time of initial economic growth. Essential for the comparison of the migration analyses, the results are based on changes during two two-year periods in each country, representing recession and economic upswing.

Labour mobility results

Total labour mobility

An introducing target of this analysis was to measure how much the employment transition gives rise to employment possibilities in the regional labour markets. There were put forward hypotheses expecting that a clear majority of vacancies in the regional labour markets is most frequently appearing as a result of the labour market mobility. Thus, the employment exits are expected to be of crucial importance for the vacancy potentiality (e.g. through vacancy chains). On the other hand, the analyses should give a meas-

Table 1. Employment exits and entries broken down by migrants and non-migrants in periods of economic boom and recession in Finland, Norway and Sweden. Per cent. Differences in per cent point

Period and country	Employment in year t	Employment exits			Employment entries			Net employment changes			Employment in year t+1
		Total employment exit rates	Changes due to migration rates	Local exit rates	Total employment entry rates	Changes due to migration rates	Local entry rates	Total net employment change	Changes due to migration	Local net change	
Boom											
Finland	100	21.0	2.1	18.9	21.6	2.1	19.5	0.6	0.0	0.6	100.6
Norway	100	18.6	2.8	15.8	20.7	3.0	17.7	2.1	0.2	1.9	102.1
Sweden	100	16.0	1.9	14.1	17.3	1.9	15.4	1.3	0.0	1.3	101.3
Recession											
Finland	100	21.1	1.5	19.6	13.9	1.4	12.5	-7.2	-0.1	-7.1	92.8
Norway	100	23.0	3.1	19.9	19.0	3.0	16.0	-4.0	-0.1	-3.9	96.0
Sweden	100	23.3	1.8	21.5	15.3	1.3	14.0	-8.0	-0.5	-7.5	92.0
Differences:											
Boom-recession											
Finland	-	-0.1	0.6	-0.7	7.7	0.7	7.0	7.8	0.1	7.7	7.8
Norway	-	-4.4	-0.3	-4.1	1.7	0.0	1.7	6.1	0.3	5.8	6.1
Sweden	-	-7.3	0.1	-7.4	2.0	0.6	1.4	9.3	0.5	8.8	9.3

ure of how much the geographical labour mobility (the labour migration process) contributes both to the formation and the filling in of vacancies. The overall labour market mobility is expected to increase in times of economic upswings, due to higher job-to-job mobility, higher migration propensities, and an increasing contingent of total number of job possibilities. From the same reasons, the labour market mobility is expected to decrease in periods of recession, although the transition rate from employment to non-employment is expected to increase. As mentioned in section two above there are, however, several factors that might have hampered the extent of labour mobility and especially labour migration in the Nordic countries

Taking as point of departure mobility from, between and into nine economic sectors and one unspecified sector, as well as between regions, in Norway and Sweden employment exits amounted to about 23 per cent of the stock of employed during the recession period, but somewhat lower in Finland (see table 1). During the economic upswing, employment exits was clearly reduced in Norway, and even more so in Sweden, while Finland somewhat surprisingly had about the same employment exits during the upswing period as during the recession. In spite of somewhat lower employment growth; the overall employment recruiting was rather stronger in Finland during the upswing period towards the end of the 1980s than under the corresponding upswing period in Norway and Sweden. An important reason for this can be found in the high employment exit that took place in Finland towards the end of the 1980s, which then made room for considerable new entries during a period with an increase in employment.

Not surprisingly all results reveal the fact that the total labour mobility was remarkable higher than the total net changes of employment. This was true even under the strong recession periods in Finland and Sweden both considering employment entries but mostly then for employment exits.

There were clear differences between the countries with respect to how large part of the employment exits and entries can be attributed to out-migration from and in-migration to employment and how much can be attributed to labour mobility within the local labour markets. The geographical labour mobility was visibly higher in Norway, both with respect to out-migration from employment and in-migration to employment during both investigation periods. Somewhat surprisingly Finland clearly had the lowest geographical mobility linked to out-migration from employment during the recession period, while Sweden had a somewhat lower geographical mobility linked to entries to employment. During the upswing period, Sweden had the lowest geographical mobility, both with respect to out-migration from and in-migration to employment. While both Finland and Sweden showed higher migration propensity in the economic upswing than in the recession, there were small differences between the time periods in Norway. An important factor in explaining the difference between the countries can be found in the varying strength of the economic cycles across the nations.

Labour mobility in and out of nine economic sectors

Obviously there are reasons to expect different labour mobility across economic sectors. This might be due to different compositions of the employment staff concerning gender, age and the educational level, but

Table 2. Relationships between relative gross out-migration rates from jobs and relative total employment exit rates by sector in the period of recession in Finland, Norway and Sweden. All regions. Index: Average rates for all sectors in each country=1

Sectors	Finland			Norway			Sweden		
	I Relative out- migration rates	II Relative employment exit rates	III*	I Relative out- migration rates	II Relative employment exit rates	III*	I Relative out- migration rates	II Relative employment exit rates	III*
Primary sectors	0.33	0.74	0.45	0.61	0.82	0.75	0.72	1.08	0.67
Manufacturing	0.67	0.89	0.75	0.74	0.84	0.88	0.89	0.85	1.04
Energy	0.53	0.60	0.88	0.55	0.47	1.16	0.61	0.85	1.07
Construction	0.67	1.67	0.40	0.77	1.04	0.74	0.67	1.18	0.57
Commerce	1.07	1.09	0.98	1.03	1.11	0.93	1.22	1.13	1.08
Transport	0.60	0.68	0.88	1.00	0.79	1.26	0.94	0.96	0.99
Finance	0.93	1.01	0.92	1.32	0.98	1.35	1.00	1.17	0.86
Public services	1.47	0.85	1.73	1.19	0.93	1.28	1.06	0.84	1.26
Other services	1.60	0.98	1.63	1.07	1.19	0.90	1.17	2.04	0.57
Index: Average rates for all sectors	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Average value deviation from 1	0.38	0.23	0.34	0.22	0.17	0.21	0.18	0.26	0.20

* The figures for each sector in column III is calculated by the index-values in column I divided by the index-values in column II.

Table 3. Relationships between relative gross out-migration rates from jobs and relative total employment exit rates by sector in the period of economic upswing in Finland, Norway and Sweden. All regions. Index: Average rates for all sectors in each country=1

Sectors	Finland			Norway			Sweden		
	I Relative out- migration rates	II Relative employment exit rates	III*	I Relative out- migration rates	II Relative employment exit rates	III*	I Relative out- migration rates	II Relative employment exit rates	III*
Primary sectors	0.29	0.67	0.43	0.61	1.18	0.52	0.63	1.19	0.53
Manufacturing	0.86	0.90	0.96	0.71	0.83	0.86	0.89	0.74	1.20
Energy	0.57	0.88	0.65	0.46	0.58	0.79	0.68	0.70	0.97
Construction	0.86	1.09	0.79	0.61	0.98	0.62	0.63	1.06	0.59
Commerce	1.10	1.01	1.09	1.04	1.18	0.88	1.26	1.28	0.98
Transport	0.62	0.82	0.76	0.93	0.98	0.95	0.95	0.90	1.06
Finance	1.14	1.01	1.13	1.29	1.14	1.13	1.11	1.21	0.92
Public services	1.29	0.98	1.32	1.14	0.76	1.50	1.00	0.91	1.10
Other services	1.43	1.10	1.30	1.00	1.33	0.75	1.26	1.34	0.94
Index: Average rates for all sectors	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Average value deviation from 1	0.31	0.11	0.25	0.24	0.19	0.25	0.21	0.20	0.16

* The figures for each sector in column III is calculated by the index-values in column I divided by the index-values in column II.

also different employment change and regional location patterns might have impact on the level of local and geographical labour mobility. In our investigations there has thus been essential to analyse the level of labour mobility in and out of employment in different sectors. To illuminate if the sectors have sufficient or insufficient geographical mobility, we chose to investigate to what extent the relative level of out-migration from and in-migration to employment corresponds to the relative total level of labour mobility in and out of each sector. Is the relative geographical labour mobility higher or lower than could be expected from the relative total gross-flows in each sector?

To analyse these topics and to make international comparisons, gross-flows in the regional labour

markets obtained from the regional vacancy account (see figure 1) in each country are collected for each sector and period as presented in the tables 2-5. First, the tables show the relative level of gross labour migration rates and the relative level of total labour mobility rates in each sector, expressed as proportions in relation to the average level of labour migration and total flows in all sectors in each country. The average level of both gross-migration rates and total labour mobility rates for all sectors is here given by an index set at 1 respectively. (Notice column (I) and column (II) for each country). The third column for each country shows the relationship between the relative level of gross migration rates and the relative level of total labour mobility rates in each sector, expressed as the index-values in column (I) divided by the index-values in column (II).

Table 4. Relationships between relative gross in-migration rates to jobs and relative total employment entry rates by sector in the period of recession in Finland, Norway and Sweden. All regions. Index: Average rates for all sectors in each country=1

Sectors	Finland			Norway			Sweden		
	I Relative in- migration rates	II Relative employment entry rates	III*	I Relative in- migration rates	II Relative employment entry rates	III*	I Relative in- migration rates	II Relative employment entry rates	III*
Primary sectors	0.36	0.65	0.55	0.40	0.91	0.44	0.69	1.12	0.62
Manufacturing	0.64	0.68	0.94	0.80	0.76	1.05	0.85	0.65	1.31
Energy	0.57	0.73	0.78	0.63	0.84	0.75	0.54	0.56	0.96
Construction	0.57	1.06	0.54	0.63	0.97	0.65	0.54	0.93	0.58
Commerce	1.07	0.96	1.11	1.20	1.26	0.95	1.38	1.36	1.01
Transport	0.57	0.58	0.98	0.93	0.76	1.22	0.85	0.65	1.31
Finance	0.93	0.99	0.94	1.23	0.96	1.28	1.31	1.95	0.67
Public services	1.57	1.13	1.39	1.33	1.07	1.24	1.00	0.69	1.45
Other services	1.64	1.31	1.25	1.20	1.44	0.83	1.15	1.52	0.76
Index: Average rates for all sectors	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Average value deviation from 1	0.40	0.21	0.22	0.26	0.17	0.24	0.26	0.39	0.28

* The figures for each sector in column III is calculated by the index-values in column I divided by the index-values in column II.

Table 5. Relationships between relative gross in-migration rates to jobs and relative total employment entry rates by sector in the period of economic upswing in Finland, Norway and Sweden. All regions. Index: Average rates for all sectors in each country=1

Sectors	Finland			Norway			Sweden		
	I Relative in- migration rates	II Relative employment entry rates	III*	I Relative in- migration rates	II Relative employment entry rates	III*	I Relative in- migration rates	II Relative employment entry rates	III*
Primary sectors	0.33	0.52	0.63	0.50	0.99	0.51	0.58	0.98	0.59
Manufacturing	0.86	0.76	1.13	0.87	0.86	1.01	0.95	0.94	1.01
Energy	0.57	0.76	0.75	0.50	0.51	0.98	0.58	0.49	1.18
Construction	0.90	1.32	0.68	0.63	1.12	0.56	0.53	1.01	0.52
Commerce	1.14	1.06	1.08	1.07	1.15	0.93	1.26	1.31	0.96
Transport	0.67	0.86	0.78	0.90	0.93	0.97	0.89	1.01	0.88
Finance	1.24	1.24	1.00	1.30	1.08	1.20	1.26	1.28	0.98
Public services	1.19	0.84	1.42	1.10	0.74	1.49	0.89	0.62	1.43
Other services	1.52	1.28	1.19	1.07	1.29	0.83	1.26	1.34	0.94
Index: Average rates for all sectors	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Average value deviation from 1	0.31	0.24	0.22	0.24	0.18	0.21	0.26	0.21	0.19

* The figures for each sector in column III is calculated by the index-values in column I divided by the index-values in column II.

While the columns (I) and (II) express the range of variations of migration and total labour mobility across the sectors, the column (III) gives an expression of the relationship between the relative level of gross migration and the relative level of total labour mobility in each sector. A calculated value at 1 in the third column reveals thus a good correspondence between the relative level of gross migration rates and the relative level of total labour mobility rates in each sector. Values above 1 indicate a higher migration level than the total labour mobility suggests, and vice-versa values below 1 indicate a lower than "expected" level of migration correspondingly.

The last row in each table expresses the average value deviation from 1 for all sectors in each of the col-

umns. In column (I) and (II) the average value deviation from 1 expresses the range of variations of labour migration and total labour mobility across all sectors within each country. In the third column, the average value deviation from 1 expresses the relationship between relative gross labour migration rates and relative total labour mobility rates across all sectors in each country. The average value deviation from 1 in the third column is thus essential for international comparisons showing the adjustment between the level of gross labour migration rates and the total level of gross labour mobility rates across all sectors within each country.

The results show distinct variations between economic sectors, both with respect to exits from and entries

Table 6. Net changes in employment broken down by migration and local changes by sector in the periods of recession in Finland, Norway and Sweden. All regions. Per cent

Sectors	Finland			Norway			Sweden		
	Net in-migration	Local net change	Total net change	Net in-migration	Local net change	Total net change	Net in-migration	Local net change	Total net change
Primary sectors	0.0	-6.7	-6.7	-0.8	-3.5	-4.3	-0.4	-7.7	-8.1
Manufacturing	-0.1	-9.2	-9.3	0.1	-5.9	-5.8	-0.5	-9.5	-10.0
Energy	0.0	-2.6	-2.6	0.2	2.6	2.8	-0.4	-4.4	-4.8
Construction	-0.3	-20.3	-20.5	-0.5	-7.3	-7.8	-0.5	-12.7	-13.2
Commerce	-0.1	-9.5	-9.6	0.4	-2.1	-1.7	-0.4	-5.2	-5.6
Transport	-0.1	-6.3	-6.4	-0.3	-5.5	-5.8	-0.6	-11.8	-12.4
Finance	-0.1	-7.6	-7.7	-0.4	-4.9	-5.3	-0.1	2.8	2.7
Public services	0.0	-2.4	-2.4	0.3	4.4	4.7	-0.6	-8.6	-9.2
Other services	-0.1	-7.6	-7.7	0.3	-5.3	-5.0	-0.6	-23.7	-24.3
Total	-0.1	-7.1	-7.2	-0.1	-3.8	-3.9	-0.5	-7.5	-8.0

Table 7. Net changes in employment broken down by migration and local changes by sector in the periods of economic upswing in Finland, Norway and Sweden. All regions. Per cent

Sectors	Finland			Norway			Sweden		
	Net in-migration	Local net change	Total net change	Net in-migration	Local net change	Total net change	Net in-migration	Local net change	Total net change
Primary sectors	0.1	-2.9	-2.8	-0.3	-1.2	-1.5	-0.1	-2.1	-2.2
Manufacturing	0.0	-2.2	-2.2	0.6	1.6	2.2	0.1	4.3	4.4
Energy	0.0	-2.1	-2.1	0.1	-0.3	-0.2	-0.2	-2.4	-2.6
Construction	0.1	5.7	5.8	0.2	4.8	5.0	-0.2	0.7	0.5
Commerce	0.1	1.5	1.6	0.2	1.8	2.0	0.0	2.2	2.2
Transport	0.0	1.2	1.2	0.1	0.8	0.9	-0.1	2.9	2.8
Finance	0.2	5.3	5.5	0.3	1.0	1.3	0.3	2.3	2.6
Public services	-0.2	-2.3	-2.5	0.1	1.0	1.1	-0.2	-3.6	-3.8
Other services	0.2	4.3	4.5	0.4	1.7	2.1	0.0	1.5	1.5
Total	0.0	0.6	0.6	0.2	1.8	2.0	0.0	1.2	1.2

to employment. Some of these differences were connected with different employment change, but as noticed in the section above, the total net-change in employment comprises, however, a small number when compared with the total gross streams in and out of the sectors. In all countries the building and construction sector, commerce, finance, and other services showed considerable employment exits during both the recession and upswing periods (see tables 2 and 3). These sectors were, however, also characterised by considerable employment entries, especially during the upswing period (see tables 4 and 5).

In all countries public services were characterised by a lower than average employment exit (tables 2 and 3), while employment entry was relatively stronger during the recession period than during the upswing period (tables 4 and 5). This illuminates a tendency to make use of the employment in public sector in counter-cyclical policy response to recession periods to reduce the decrease in employment and serve as a buffer against increasing unemployment. Opportunities for carrying out such policy appear, however, to have been considerably better in Norway than in Finland and Sweden in these periods.

The results indicate that it was a fairly good correspondence between the relative level of total gross streams in the labour market and the relative level of out-migration from and in-migration to employment in most of the economic sectors. The correspondence appears, however, to have been somewhat better in Norway and Sweden than in Finland. Some sectors showed, however, considerable deviation from this pattern. The greatest discrepancy was found in primary industries, building and construction activities and public services, with the two former showing clearly lower geographical mobility than would be expected based on the total employment exit and entry, while the situation was clearly opposite in public services. In the primary industry this might partly reveal the ageing processes where the employment exit to a minor degree ends up in out-migration, and the recruitment is normally locally based. As the building and construction sector is heavily vulnerable to cyclical changes, low geographical mobility might increase the local unemployment in periods of recession as well as hamper the necessary recruitment in periods of economic upswings. Low migration propensity in this sector might, however, be compensated by special arrangements of long distance commuting. In public services

higher than average migration is mainly due to high percentage of employed with higher education and a decentralised location pattern. More detailed results obtained from the Norwegian analyses showed, however, that a large part of the total labour mobility and a major part of the geographical mobility in public services were due to job-to-job mobility within this sector (see Stambøl et al., 1999). An observed tendency to increased job-to-job mobility between the regions also within manufacturing industries and private services might indicate an increased tendency to use migration as a tool in career-mobility within multi-regional localised companies.

Net effects of the labour mobility

Due to the introduction of a concise regional vacancy account (see figure 1), we are in a simple way able to measure if the migration process contributes to net growth or decline in the overall and sector specific employment level.

Based on these relatively broad economic sectors, it was a fairly good correspondence between the net effect of labour migration and the direction of changes in employment, with some exceptions, though. The labour migration processes contributed less to employment entries than to employment exits during the recession period in all the countries (table 6). Finland was distinguished, however, by a relatively low net out-migration from employment seen in light of the considerable drop in employment, which was observed during this period. In relation to Sweden, which had a similarly strong drop in employment during the recession period, it was primarily lower out-migration from employment that contributed to the relatively lower net effects of the labour migration processes.

It was only in Norway that the migration processes contributed to employment growth during the economic upswing (table 7). In Finland and Sweden out-migration from employment contributed just as much as in-migration to employment, with the result that the migration processes as a whole contributed to zero growth in employment.

The net results in Norway clearly reveals the tendency to make use of the employment in public services in counter-cyclical policy response to recession periods, showing considerable employment growth in the public services during the recession period (table 6). This is partly due to employment growth in the energy sector, which includes oil production, and increases the opportunities for carrying out such policy in Norway compared with Finland and Sweden. The positive net migration figures also reveal the employment growth in energy and public services in Norway during the recession period, while the situation was the opposite in Sweden. In Finland the net labour migra-

tion in the public services was in balance during the recession in spite of employment decrease.

Labour mobility among different demographic groups

During the upswing periods there were clear variations in labour migration in relation to total mobility between different person groups (see table 8). The column (I) and (II) are here calculated in the same way as the column (III) in the tables 2-5, and show high (excess) or low (deficit) relative labour migration rates in relation to the relative level of total labour mobility rates for each person group. The third column shows the differences between the first and second columns, and indicates if the migration process has contributed to growth or decline in employment.

In average it was a marked excess of migration among men and women with higher education in all countries as compared with the total gross streams in the labour market, while there was a clear deficit of migration among persons with lower education. The middle educational group had a slight excess of migration in Finland, while this educational group showed a deficit of migration both with respect to in-migration to and out-migration from employment in Norway and Sweden. With respect to the labour market balances (third columns), it was in average good connection between in- and out-migration for lower educated persons in Finland, while it was a remarkable excess of in-migration to employment for this group in Norway and Sweden. In the middle educational group, it was in average excess of out-migration from employment with an exception for females in Finland. Among higher educated persons, there was in average an excess of in-migration to employment in Finland and Sweden, but a slight deficit in Norway correspondingly. Considering the age groups, the excess of migration was mostly in reverse ratio to the level of age. The average value deviation from 1 (the last row) is considerably higher in Finland compared with Norway and Sweden, indicating a stronger connection between the relative level of migration and the relative level of total labour mobility in the person groups in Norway and Sweden.

Labour mobility within and between regions

In this final section, we have compared the level of gross migration rates to and from employment in the regional labour markets and the corresponding total labour mobility rates in the regions. The comparisons are made for total labour market flows without any further division by sector or segment. Considering regional labour market policy, labour migration revealing the level of total employment exits and entries in each region should obtain the most "ideal" correspondence. Regions with higher than average total labour mobility in each country are thus expected to show higher than average labour migration, while all

Table 8. Relationships between relative in-migration rates to jobs and total employment entry rates and relative out-migration rates from jobs and total employment exit rates by gender, age and education in periods of economic upswing in Finland, Norway and Sweden. All regions

Sectors	Finland			Norway			Sweden			
	I Relative in- migration rates/ total entry rates	II Relative out- migration rates/ total exit rates	Differ- ences I-II	I Relative in- migration rates/ total entry rates	II Relative out- migration rates/ total exit rates	Differ- ences I-II	I Relative in- migration rates/ total entry rates	II Relative out- migration rates/ total exit rates	Differ- ences I-II	
Men										
A1	L	0.32	0.47	-0.15	1.38	0.35	1.03	1.20	0.74	0.46
	M	0.90	1.05	-0.15	0.53	0.64	-0.11	0.80	0.86	-0.06
	H	3.33	5.19	-1.86	1.33	1.50	-0.17	1.78	1.45	0.33
A2	L	0.70	0.70	0.00	0.61	0.71	-0.10	1.15	0.73	0.42
	M	1.28	1.26	0.02	0.93	1.02	-0.09	0.82	0.91	-0.09
	H	2.64	2.67	-0.03	2.07	2.25	-0.18	2.23	1.99	0.24
A3	L	0.26	0.16	0.10	0.25	0.61	-0.36	0.39	0.63	-0.24
	M	0.46	0.39	0.07	0.44	0.69	-0.25	0.39	0.78	-0.39
	H	0.92	0.72	0.20	0.91	1.14	-0.23	0.79	1.30	-0.51
Women										
A1	L	0.39	0.55	-0.16	1.05	0.45	0.60	1.21	0.78	0.43
	M	1.41	1.50	-0.09	0.91	0.99	-0.08	1.16	1.15	0.01
	H	4.11	5.00	-0.89	1.41	1.43	-0.02	2.27	1.67	0.60
A2	L	0.57	0.52	0.05	0.40	0.51	-0.11	0.87	0.58	0.29
	M	1.10	1.14	-0.04	0.87	0.98	-0.11	0.78	0.75	0.03
	H	2.28	2.21	0.07	1.99	2.09	-0.10	1.91	1.52	0.39
A3	L	0.32	0.17	0.15	0.26	0.46	-0.20	0.29	0.49	-0.20
	M	0.55	0.36	0.19	0.45	0.61	-0.16	0.31	0.65	-0.34
	H	0.69	0.57	0.12	1.16	1.17	-0.01	0.65	1.34	-0.69
Average value deviation from 1		0.78	0.97	-	0.45	0.42	-	0.49	0.36	-

Age: A1 = 16-24 years (In Finland 15-24 years), A2 = 25-44 years, A3 = 45-74 years (In Sweden 45-64 years)

Education: L = Lower education, M = Middle education, H = Higher education

regions with lower than average total labour mobility are expected to show lower than average labour migration correspondingly. The results are presented in the figures 2 and 3. The figures are formed as x- and y-diagrams, where the x-axis represents the relative level of total labour mobility rates to and from employment in the regions and the y-axis represents the relative level of gross labour migration rates correspondingly.

In the recession period counties in Finland and Norway showed far better correlation between out-migration from jobs and total exit from jobs compared with the Swedish regions (see figure 2). Only three out of nineteen counties in Norway and four out of nineteen counties in Finland had negative correlation between the relative level of out-migration rates from jobs and relative total exit rates from jobs in this period, while the corresponding number in Sweden was nine out of twenty-four counties.

During the period of economic upswing the correlation between out-migration rates from jobs and total exit rates from jobs was rather weak in the counties of Finland and Sweden, while this correlation was very

strong and positive for Norwegian regions. In Norway only one out of nineteen counties showed a negative correlation with a lower level of out-migration from jobs than the total employment exits would suggest. In Finland the majority of counties with lower than average total employment exits showed higher than average out-migration from jobs.

Finland and Norway did, however, clearly distinguish from Sweden, with a larger range of variation between the regions with respect to the relative level of out-migration rates from jobs. This was true both during the periods of recession and economic upswing.

Even more important is a good functioning labour migration with respect to the level of necessary employment recruitment. Regions with higher than average total employment entries are expected to be dependent on a higher than average in-migration to jobs. Figure 3 shows thus the correlation between the relative level of in-migration rates to jobs and the relative level of total employment entry rates. This correlation was rather weak in the regional labour markets of Finland both during the period of recession and economic upswing. About half of the Finnish

Figure 2. Relationships between the relative level of gross out-migration rates from jobs and the relative level of total employment exit rates in counties in Finland, Norway and Sweden. In periods of recession and economic upswing. Percentage deviation from the country specific average is set at zero

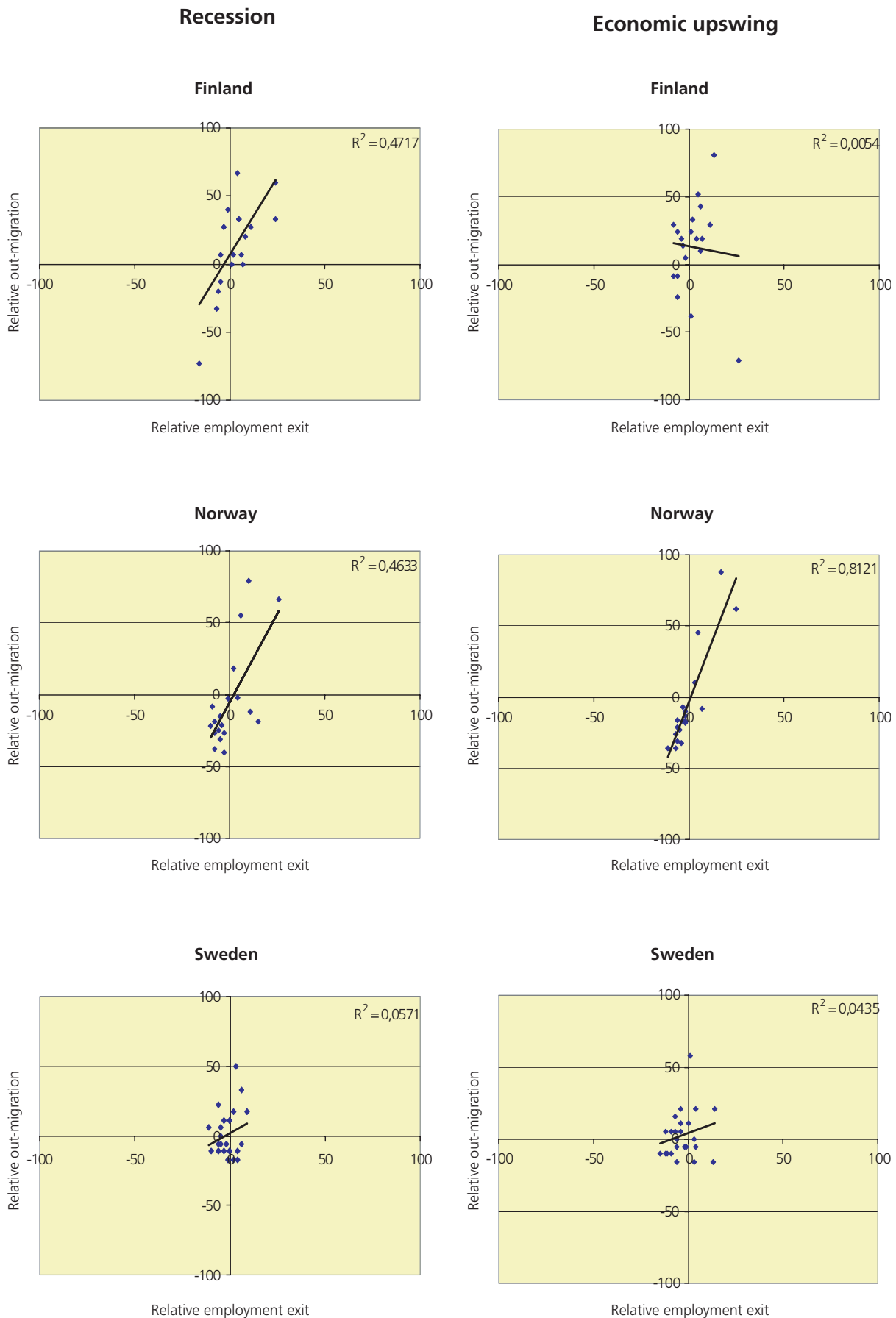
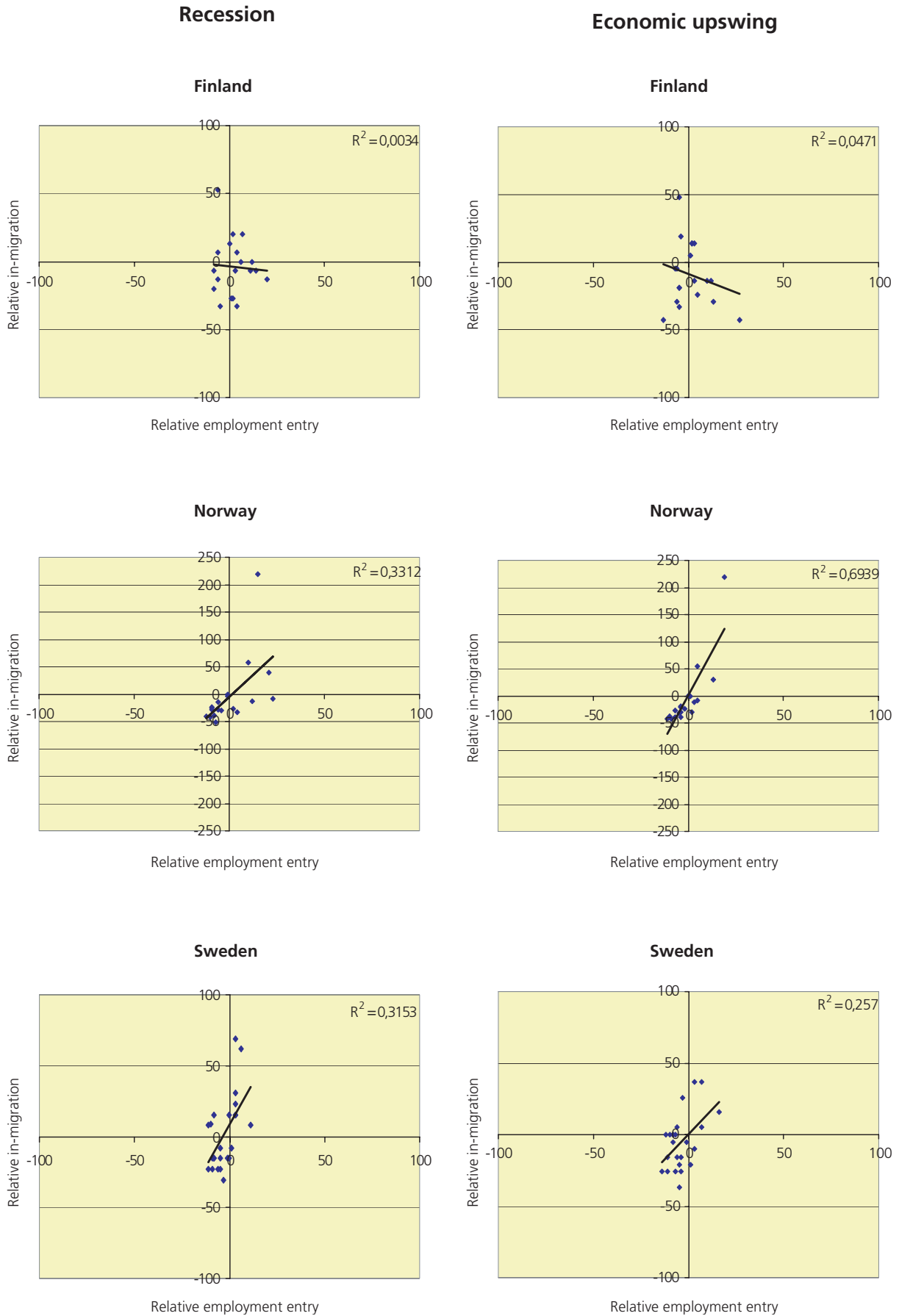


Figure 3. Relationships between the relative level of gross in-migration rates to jobs and the relative level of total employment entry rates in counties in Finland, Norway and Sweden. In periods of recession and economic upswing. Percentage deviation from the country specific average is set at zero



regions showed negative correlation in both periods. In Sweden the correlation between the level of in-migration rates to jobs and the level of total employment entry rates was, however, far better than the corresponding correlation between out-migration rates from jobs and total employment exit rates. In Norway it was a fairly good connection between the level of in-migration rates to jobs and the level of total employment entry rates. This connection was even better during the period of economic upswing than during the period of recession, indicating that the labour migration to a certain extent eased the employers' recruitment demand. In the period of economic upswing only three out of nineteen counties in Norway showed negative correlation between the level of in-migration rates to jobs and the level of total entry rates to jobs.

With respect to the balance of migration between regions, there were clear differences in the contribution from employment entries through in-migration compared with employment exits through out-migration. During the upswing period in Finland, migration contributed to more than the total employment growth in some central counties in Southern Finland. During the strong recession period migration still contributed to employment growth in these counties, and thus contributed to increasing local unemployment in a period with significant decrease in employment.

Some central regions in Southern Norway showed clearly higher recruitment through in-migration than exits through out-migration during the recession period towards the end of the 1980s, which contributed to increase the local unemployment in these regions in a period when all counties experienced a decrease in employment. During the upswing period it was the Oslo region, which had the largest growth of employment through the migration process, and the net effect of labour migration accounted for about 50 per cent of the total employment growth in this region. At the other end of the scale were the counties of Northern Norway, where the migration process alone accounted for 15-25 per cent of the total decrease in employment during the recession period, thus reducing the local employment turnover with a buffering effect on the increase in local unemployment.

In Sweden, out-migration from employment contributed somewhat more than in-migration to employment in 23 out of 24 counties during the recession period. During the upswing period, a number of counties experienced higher employment recruitment through migration than they lost through out-migration from employment. The migration process had strongest positive effect in the Stockholm region, where the net effect of geographical labour mobility contributed to about half of the entire employment growth.

Main findings

Taking as point of departure mobility from, between and into economic sectors as well as between regions, the results reveal the fact that total gross labour mobility is of immense importance for the formation of vacancies.

In Norway and especially in Sweden, it was a remarkable change in the level of employment exit between the economic upswing and recession, while the employment entries represented the main variable in the gross labour mobility change between these periods in Finland.

There were visible differences across the countries with respect to how large part of the employment exit and employment entry that is due to out-migration from and in-migration to jobs and how much that is connected to labour mobility within the local labour markets. The labour migration was visibly higher in Norway than in Finland and Sweden, and accounted for about 15 per cent of the total gross labour mobility.

There were distinct variations between economic sectors, both with respect to exits from and entries to employment as well as through geographical mobility in and out of the sectors.

There were in some contexts good correspondence between the relative level of geographical labour mobility and the relative level of total turnover in the economic sectors. This correspondence appears, however, to have been somewhat better in Norway and especially in Sweden than in Finland.

In Norway it was a fairly positive relationship between the level of labour migration and the level of total gross-streams in the regional labour markets, while in Sweden and especially in Finland there were some deviations from this pattern.

The labour migration process did, however, contribute to a certain displacement of labour between the regions. While the migration processes contributed to employment decrease in all countries during the recession period, it was only in Norway that labour migration contributed to growth in the national employment during the period of economic upswing.

The correspondence between the level of geographical labour mobility and total gross streams in the labour market appears to have been better when the regional labour markets were evaluated as a whole and divided by aggregated economic sectors than when the labour market was broken down by different person groups.

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