

Statistics Norway,  
Research department,  
Lasse Sigbjørn Stambøl,  
30.06.2016

## **A cohort integration analysis of work and education participation among internal mobile and non-mobile immigrants by reason for immigration**

By  
**Lasse Sigbjørn Stambøl**

**Research Department, Statistics Norway, Box 8131 Dep, 0033 Oslo, Norway**

**Abstract:** The aim of the paper is to analyse immigrants' participation versus non-participation in the regional labour markets and/or in education. For comparison we have followed groups of immigrants by their reason for immigration, like refugees, labor-, family- and education-immigrants and Nordic immigrants with special focus on those who do not move domestically between labor market regions versus those who make such regional relocations.

We investigate whether migration contribute to change the labor market status of immigrants using a "cohort-analysis", where we follow selected arrival cohorts of immigrants through some years after they immigrated for the first time. The investigation is a "two-ways analysis", dependent on each immigrant's initial labor market status. For those who are not "active" in any job or education, we analyze their differences in probability of entering any activity statuses, and for those already in activity, we analyze their ability to maintain their activity status. Both dimensions are important for the immigrants' level of integration.

The analysis is based on micro panel data measured by means of a complete annual regional *vacancy account* for each of the years involved in the study. These data and methods allow us to specify each immigrant's annual labor market status, thus also each immigrant's annual change of labor market status.

The results indicate that domestic migration is partial beneficial for immigrants to obtain employment or to carry out an education. The effect of relocation as the ease of access varies, however, according to the immigrants' reason for immigration. Immigrants who remain outside of employment and/or education is mostly to be found among refugees, family-immigrants and immigrants with non-specified reason for immigration, while education- and labor-immigrants and Nordic immigrants show the strongest tendency to enter a job or start an education. The main trend is that immigrants who move between labor market regions show a stronger tendency to enter activity statuses than immigrants who do not provide such removals, and is most beneficial for immigrants initially settled at lower centralities. Among immigrants who are already in employment and/or education, the education- and labor-immigrants and Nordic immigrants show higher tendency to maintain such "activity" statuses than refugees, family-immigrants and immigrants with non-specified reason for immigration. The main trend is that immigrants who do not move between labor market regions show stronger tendency to remain in employment and/or education than immigrants who make such moves. Those who relocate are thus associated both with stronger tendency of finding a job or starting an education, but also more likely to quit their job or education.

G\_J Migrations, diasporas, and ageing in the regions JEL-code: J61

E-mail: Corresponding author: [lasse.sigbjorn.stambol@ssb.no](mailto:lasse.sigbjorn.stambol@ssb.no)

Presented at the 55th.Congress of the European Regional Science Association.

In Vienna, Austria, 23. - 26. August 2016

## 1. Background and challenges

The purpose of this paper is to present some analyses of immigrants' mobility, both geographically and in terms of transitions into and out of the labor markets and education, in order to uncover the extent to which the workings of local labor markets contribute to integration versus exclusion. The analyses are undertaken based on micro panel data featuring all immigrants from the two immigrant cohorts of 2004 and 2008, where each individual is followed through five year periods after they immigrated for the first time.

Particular attention is given to examining the mobility of immigrants relative to the *gross flows* in regional labour markets measured by means of a complete annual regional *vacancy account* for each of the years involved in the study. Stambøl (2005) describes in detail how these methods have been developed: (1) to measure, in a consistent way, vacancy appearances and filling in of vacancy chains within and across regional labour markets, sectors and firms based on entire populations; and (2) to facilitate for analyses of gross demand of labour, and thus gross opportunities of jobs, in regional labour markets (see e.g. also discussions and applications in Davis, Faberman and Haltiwanger, 2006, Stambøl, 2010 and Carlsen et.al. 2013).

High mobility in the labour markets may have positive effects with respect to social policy, as mobility gives rise to more vacancies through a process of vacancy-chains, which in turn may generate more opportunities for immigrants, i.e. new arrivals in the labor market, to gain a foothold in the labor market and match their skills to the needs of the (local and national) labor market. Labor search theory emphasizes e.g. the particular role of (rates of) job offers and vacancies as well as job turnover in determining differences in wages and unemployment across individuals in the economy (see e.g. Rogerson, Shimer and Wright, 2005, for an overview of theory, and Eckstein and van den Berg, 2007, for a survey of empirical applications). Differences in key features of the local labor market can thereby also create differences in immigrant residential choices and labor market outcomes across regions.

This paper contains in particular analyses of immigrants' migration and labor mobility seen in the light of moving or not relocating between regional labor markets. With the help of different methods we are mapping the immigrants' stability versus changes of labor market statuses whether they are not changing their local labor market regions or relocate across the regional labor markets, as well as how these processes vary between different groups of immigrants defined by their reason for immigration. A key objective is to investigate whether regional allocation and re-allocation processes, be it in terms of changes in employment levels and gross flows in and out of employment and education and through domestic in- and out-migration, for to examine to what extent immigrants change their status in relation to the labor market through domestic relocation or not.

Considering immigration the main emphasis for integration is constantly added to questions about how to get immigrants from non-active status groups outside employment and/or education and into "activity statuses" as employed and/or in education. Clearly less emphasis is placed on the question if immigrants also succeed to maintain their integration status by remaining within the "activity statuses" once they get there. There are, however, reasons to put forward questions while immigrants start an education and are flowing into jobs from various status groups there are also immigrants leaving employment and return to the same status groups that the new influx of immigrants were recruited. It is thus customary to define the participation in employment and participation in education as something positive from the point of an integration issue. In this paper, we have thus analyzed transitions to both

employment and/or education, but also vice versa if the immigrants leave a status of employment and/or in education to something else (for more comprehensive analyses, see Stambøl, 2016).

The regional level of analysis goes down to the municipal level, to build up relevant data on more aggregated regional levels given municipal centrality and more recognizable sections by 89 economic regions (labor market regions) as the focus for measuring regional migrations (see e.g. Hustoft et.al , 1999).

We use a complete panel data of immigrants, where we concentrate on those immigrants who have been registered to have a residence in Norway throughout the investigation periods, thus excluding those immigrants that emigrate or die during the investigation periods. Thus the immigrants included in the analysis are all registered as residents in Norway from the date of arrival and in all the consecutive five years we are looking at.

### **Implementation**

We investigate whether migration contribute to change the labor market status of immigrants using a “cohort-analysis”, where we follow selected arrival cohorts of immigrants from 2004 and 2008 through some years after they immigrated for the first time. The investigation is a “two-ways analysis”, dependent on each immigrant’s initial labor market status. For those who are not “active” in any job or education, we analyze their differences in probability of remaining outside or entering any activity statuses, and for those already in activity, we analyze their ability to leave or maintain their activity status. Both dimensions are important for the immigrants’ level of integration.

The analysis is conducted using different methods, where we first examine whether the relocations have helped to change the labor market status of immigrants by following selected cohorts of immigrants through some years after they immigrated for the first time. We show first descriptive analyzes of the proportions of two immigrant cohorts that remain outside activity, enters activity or are leaving a status as active in employment or education with a particular focus on the labor immigrants and refugees.

Second, we have undertaken estimations based on micro panel data for all immigrant groups by reason for immigration for to analyze the likelihood that different immigrant groups transit from in-active to active status groups, and the probability to remain in active statuses in either employment and/or in education. We have here put the concentration on the second immigrant cohort of 2008, where we have a significantly higher number of immigrants to bring into the analysis compared to the immigrant cohort of 2004 due to strong immigration to Norway during the period of 2004-2008.

## **2. Data and definitions of immigrant conceptions**

The current analyses are based on longitudinal data for population, migration, immigration, labor and education for the entire population of immigrants derived from individual-based registers at Statistics Norway. The linked registry data contain in addition a large number of personal characteristics, including comprehensive information on individuals' for calculating statuses in relation to the regional labor markets down to the municipal level. *Immigrants* are defined as persons born abroad by two foreign born parents and have four foreign born grandparents and have themselves immigrated to Norway. This means that persons born in Norway by one immigrant parent and one non-immigrant parent are not included in the population with immigrant background.

Furthermore, the immigrants are grouped by their registered reason for immigration, where the four main reasons are: immigration due to search of labour (labour-immigrants), immigration as refugees, immigration due to family unification/family formation (family-immigrants) or immigration due to education (education-immigrants). When statistics do not operate with any reason for immigration for immigrants from other Nordic countries, we handle immigrants born in other Nordic countries as a separate group of immigrants (Nordic immigrants). There is also a large group of immigrants with not specified reason for immigration. The concept of reason for immigration was introduced to the statistics in 1990, so all immigrants that immigrated to Norway before 1990 is still to be found in this group of immigrants.

### ***Immigrant cohorts and duration of residence:***

We operate with variable for immigrants depending on what year they arrived in Norway as immigrants and for immigrants' duration of residence. The arrival year is recognized by the variable "first year of immigration," which renders the year immigrants arrived in the destination country as an immigrant first time. All immigrants who arrived in the destination country that year constitute *the immigrant cohort* for this year. Immigrants retain their value for the "first year of immigration" as long as they are registered as immigrants in the country. The same applies to immigrants who have emigrated and then again later make a return immigration. These will therefore retain the value of their "first year of immigration" regardless of whether they have been migrated from the country for a period.

### ***An annual vacancy accounting:***

Traditional labour market statistics operate 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 labour market. 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 is then to establish a regional labour market indicator illustrating the annual gross-flows between the statuses. Figure 2.1 illustrates how this regional labour market indicator is measured in a so-called "annual vacancy account". With regard to the "vacancy accounting", we basically deal with the filled in vacancies in the regional labour markets, which means that the average stock of not filled in vacancies is not taken into consideration.

The vacancy account represents a consistent way of measuring vacancies in the regional labour markets. The total vacancy account is defined so that all transitions from jobs have to be replaced if the total entering stock and outgoing stock of employed is equal. If entering stock of employed (EN) is lower than the outgoing stock of employed (EX), not all employment exits will be replaced, and vice-versa, if (EX) is lower than (EN), the total employment recruitment will exceed the employment exits. The total employment recruitment in this case thus represents the filled in vacancies from year  $t$  to year  $t+1$ . A measure of structural change in the various local labour markets appears by breaking down the total figures by different sectors and segments. This is of great importance, because we expect that there will be differences in the leaving and recruitment processes due to unequal development by groups of persons in the local labour markets, and in this analysis with focus on immigrants. In the project we measure the mobility into, out of and between firms as the basic unity.

***Persons in education:*** is defined as anyone who is undergoing training per 1.October in the survey year, in addition to all who have taken an exam in the periods from 1.January to

30.September and/or 1.October to 31.December in the year of investigation, but that is not to be found among the individuals registered in education per 1.October. Persons undergoing training who are also employed during the same year are classified as employees who are also in education. Persons undergoing training who are also registered as unemployed during the year are classified as unemployed if the unemployment has lasted for seven months or longer during the same year.

Figure 2.1. A schematic overview for calculations of job and labor mobility using a consistent "vacancy-account" by individuals.

<b>(1) All employed in the firm (F) in the region (R) in year (t-1) by person characteristics</b>
<b>Total exits (EX): All employed in year (t-1) that in year (t) are no longer employed in the firm they were employed in year (t-1)</b>
<b>(a) Net outflow of number of jobs from year (t-1) to year (t) in firms that reduce the number of employed</b>
<b>(b) Net outflow of number of jobs from year (t-1) to year (t) due to closures of firms</b>
<b>(c) Gross departure of number of persons from each firm from year (t-1) to year (t) (Includes transition to education, to unemployment, out of labor force, out-migration, emigration, leaving working age and death (Includes in some context change of firms).</b>
<b>Total entries (EN): All employed in year (t) that in year (t-1) were not employed in the firm they are employed in year (t)</b>
<b>(d) Net additions in number of jobs from year (t-1) to year (t) in firms that increase the employment</b>
<b>(e) Net additions in number of jobs from year (t-1) to year (t) in new established firms</b>
<b>(f) Gross additions of number of persons in each firm from year (t-1) to year (t) (Includes access from education, from unemployment, from outside the labor force, in-migration, immigration and those entering working age (Includes in some context change of firms).</b>
<b>(2) All employed in the firm (F) in the region (R) in year (t) by person characteristics</b>

Net job mobility = (d + e) – (a + b). Gross and net labor mobility = (EN) – (EX) and (f) – (c)

### 3. The importance of migration for labor market and educational participation among immigrants by reason for immigration

In this section we present results of descriptive analysis of transitions from an “in-active” status to an “active” status and vice-versa from an “active” status to an “in-active” status mostly with focus on two immigrant cohorts of labour immigrants and refugees.

We investigate whether migrations have contributed to changing labor market status of immigrants where we follow selected cohorts of immigrants through some years after their immigration. To measure the effect migration has on change of labor market status, we have compared the status those who relocate achieves compared with corresponding groups that does not move.

As a definition of immigrants that have migrated, we consider those who have moved between 89 labor market regions during a period of five years as ”movers”, while all others are defined as "stayers". Immigrants in the last group may have moved, but then only locally within these 89 regions. Such moves would then mean that they not seek to other labor markets for to improve their status in the labor market.

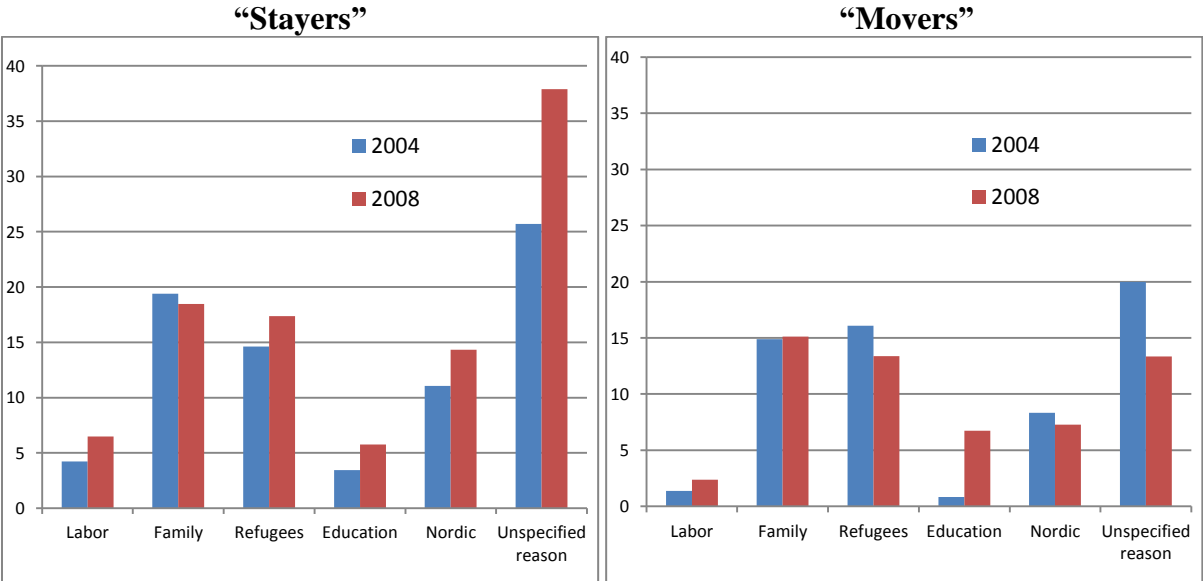
We have selected all immigrants from the immigrant cohorts of 2004 and 2008 and followed each of them through the five consecutive years after they became immigrants in Norway for the first time, which means the five-year periods of 2005-2009 and 2009-2013 respectively.

The analysis is undertaken as a "two-ways" analysis", depending on the labor market status of the immigrants in their year of arrival. The first main group is defined as all immigrants who were not in employment and/or in education during their first year as immigrants. Then we analyze how they either remain standing outside these "activity-statuses", or to which extent they enter these statuses depending on whether they continue to be settled in the region they were registered as residents in the first year, or whether they are making a domestic relocation during the investigation period. For those who are already in employment and/or in education in the first year the analysis shows how these manage to maintain their status the next five years among those who do not migrate in the investigation period compared with those who undertake such removals. This "two-ways analysis" thus provides a contribution to measure the immigrants' integration into and out of activity given the integration criterion of participating in employment and/or in education.

**3.1 Non-transition from “in-active” statuses:**

First, we investigate all new registered immigrants in 2004 that were not recorded as employed or in study in this year of arrival, but that neither go into employment or education in the following five years of 2005-2009. Considering Figure 3.1, the largest proportion of these is to be found among the new immigrants with non-specified reason for immigration followed by those with family and escape as reason for immigration, while education and labor immigrants are weakly represented in this group, mainly due to their immigration for education and employment. It is important to mention that immigrants who have immigrated as “au-pairs”, is defined among those with education as reason for immigration, but they are not detected in the regular education system.

Figure 3.1. New immigrants in 2004 and 2008 who were not registered as employed or in education in the year of arrival, and that do not change their status during the periods 2005-2009 and 2009-2013 respectively, measured as a proportion of those who do not move and those who relocate. By reason for immigration. Percent



When we compare the sedentary immigrants and those who have moved between labor market regions, the sedentary immigrants are clearly overrepresented with the exception of

refugees, where the proportion of resident and those who move are roughly equal. This indicates that for most immigrant groups it may have paid off to move to avoid being left outside both employment and education.

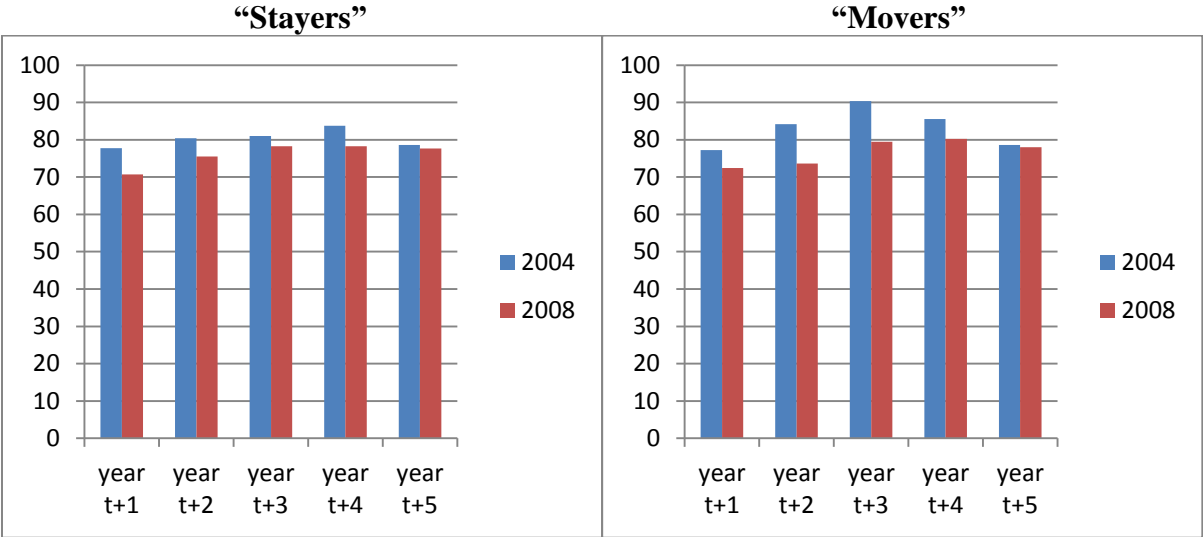
Figure 3.1 also shows the corresponding percentages for immigrants who arrived in the country for the first time in 2008. Much of the structure between the groups is similar as for the immigrant cohort of 2004, in that there are immigrants of non-specified reason for immigration that is overrepresented followed by immigrants with family and escape as reason for immigration, while labor and education immigrants show the lowest proportions that remain standing outside the "activity statuses" work and education. With a small exception for the education immigrants, it is those who do not perform internal migration that are overrepresented among those who neither are going into work or education.

**3.2 Transition frequencies from “in-active” to “active” statuses:**

In this section we have put together the transition from "in-active" to "active" status groups for those cohorts of immigrants we have investigated. We do here concentrate on the two immigrant groups of labor immigrants and refugees. Figure 3.2 shows assemblies for all labor immigrants who do not move and relocate during the five-year periods under consideration.

Among those who did not move it was the 2004 cohort that performed best, with a transition frequency to employment and/or in education of around 80 percent of the group most of the period. The labor immigrants from the 2008 cohort showed slightly weaker transition in the early years, which probably can be associated with the financial crisis, but is roughly in line with the 2004 cohort in the final year of their five-year period when the 2004 cohort also reached the financial crisis year of 2009.

Figure 3.2. Transition frequencies from “in-active” to “active” statuses by cohorts of labor immigrants who stay settled (stayers) or migrate (movers). Percent

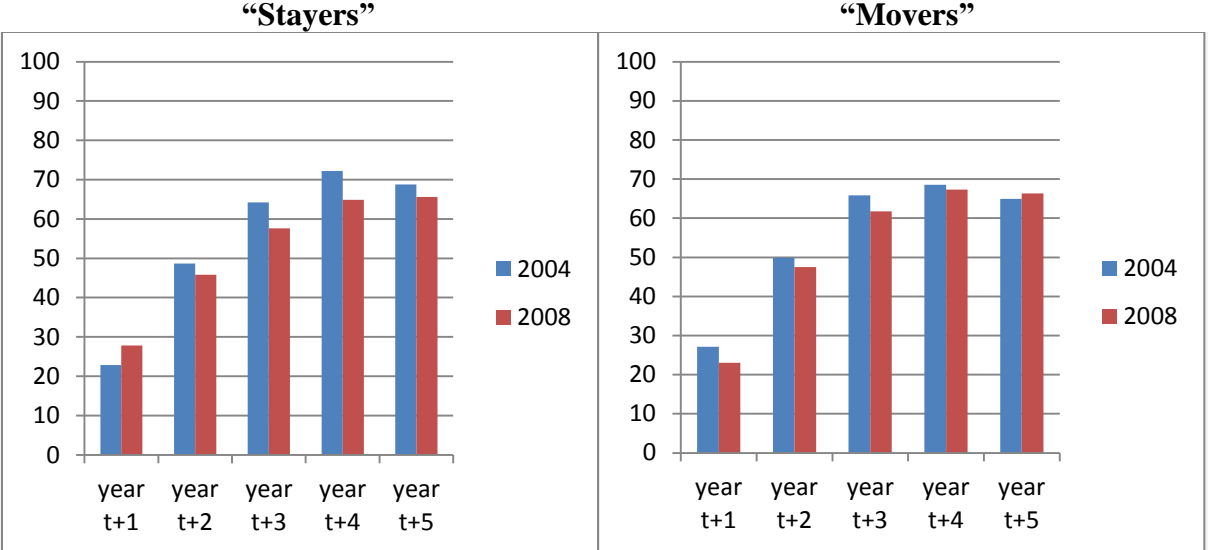


Labor immigrants who moved between labor market regions show much of the same structure between the cohort groups as among non-movers, but transition frequencies are generally somewhat higher among “movers” than among “stayers”. Again there are labor immigrants from the 2004 cohort who consistently achieved the strongest transition to employment and/or in education, though with almost coincidence with the 2008 cohort in the last year of each period.

We have compiled these results in a similar way for the same cohorts of refugees (see figure 3.3). Among the sedentary refugees there are much of the same differences between the cohort groups that we found among labor immigrants above. The transition frequencies are however considerably lower for refugees than among labor immigrants. Best off during the periods as a whole is also here the 2004 cohort, where refugees who arrived in the country in 2004 show higher transition to employment and/or in education than the 2008-cohort in all years, except for the first year. The 2004 cohort of refugees tend, however, to weaken their transition slightly from the fourth to the fifth year, which is coinciding with the financial crisis year of 2009.

Refugees who move between labor market regions show much of the same structure between cohort groups like the non-movers. Transition rates are with a slight predominance higher among movers than among the refugees that did not relocate once the periods are considered as a whole, except from the last year for the 2004-cohort. Best off generally is also here the 2004 cohort, which shows higher transition to employment and/or education than the 2008 cohort during the first four years, but slightly lower in the fifth year, which then coincide with financial crisis.

Figure 3.3. Transition frequencies from “in-active” to “active” statuses by cohorts of refugees who stay settled (stayers) or migrate (movers). Percent



**3.3 Non-transition from “active” statuses:**

In this section we investigate how immigrants succeed to maintain their activity statuses. We start with all new immigrants in 2004 and 2008 who were employed and/or in education already in their year of arrival, but that do not leave their activity statuses as employed and/or in education during the following five years of 2005-2009 and 2009-2013 respectively.

As shown in Figure 3.4 the largest proportion of these is to be find among new immigrants with education as reason for immigration followed by Nordic immigrants and those with labor as reason for immigration, while refugees is the immigrant group that were typically least able to maintain their "activity status" through the five year periods.

When the results are split up on those who do not move (residents) and those who move, there is a tendency of almost opposite results of what we found for immigrants who previously were outside "activity statuses". Here there is a clear tendency that there are immigrants who

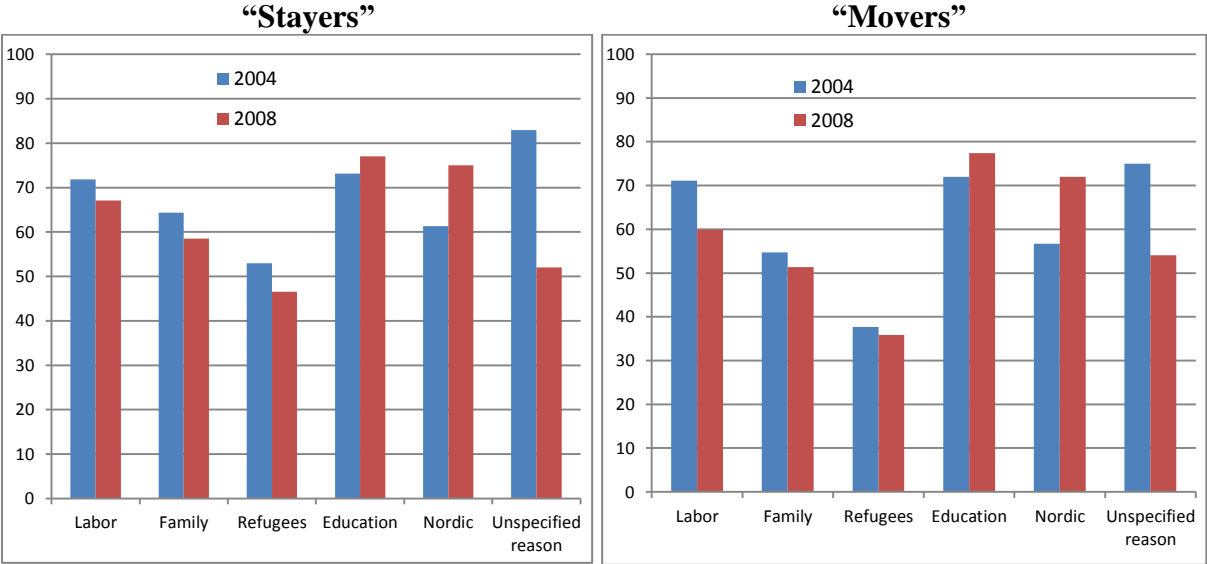


do not move that mostly manage to maintain their status as employed and/or in education, while those who move is somewhat more likely to abandon their initial "activity status" and turn to status groups outside of the workforce or the educational system. This tendency varies, however, clearly between immigrant groups given their reason for immigration. There are subtle differences between the tendency to maintain its "activity status" between those who not move and those moving among labor and education immigrants and Nordic immigrants, though slight more likely to remain active among those who did not move. Family immigrants and refugees show a significantly higher proportion that remain active if they do not move, and the strongest difference is to be found among refugees.

With the exception of education immigrants and Nordic immigrants there are immigrants from the 2004-cohort that show the highest tendency to retain their activity status through the five years periods.

Now one should still be careful to draw too strong conclusions here. There are also possible hidden selections in these results, in that we do not know why the immigrants leave their "activity status" as employed and/or education and into something else. Due to the difference between the "movers" and "stayers", it may well be that persons who are employed in a region, and manages to retain its position as employed in the same job, do not have as strong incentives to move as one person that for any reason losing its status as active, and therefore moves.

Figure 3.4. New immigrants in 2004 and 2008 who were registered as employed or in education in the year of arrival, and that do not change their status during the periods of 2005-2009 and 2009-2013 respectively, measured as a proportion of those who do not move and those who relocate. By reason for immigration. Percent



**3.4 Transition frequencies from "active" to "in-active" statuses:**

In this section, we do unlike in the previous one, look at the proportion of immigrants who fail to maintain their status as employed and/or education during the five years after they immigrated.

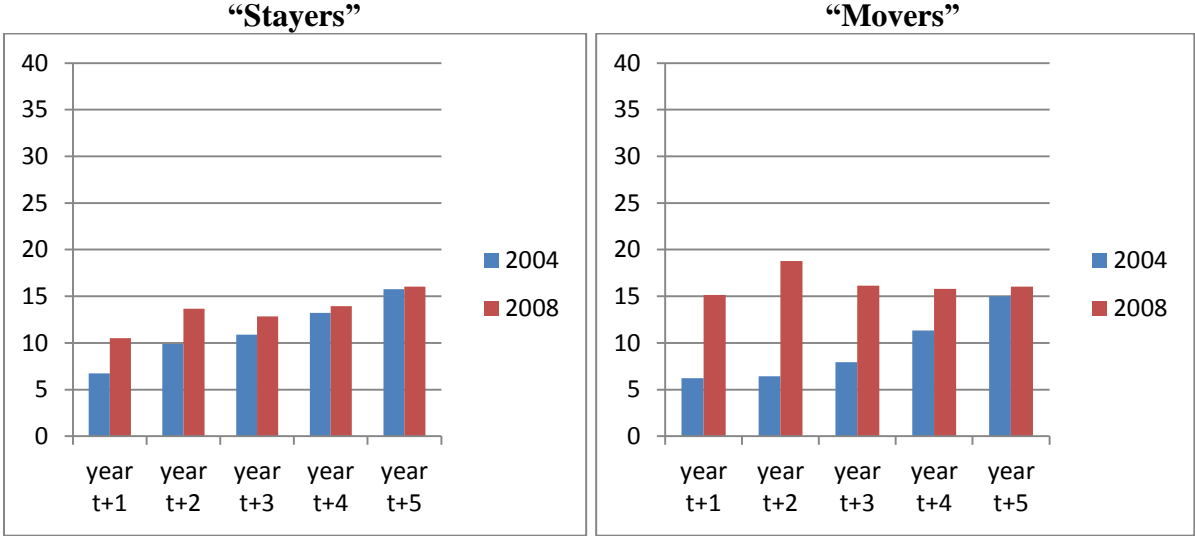
As in the section above, we look at the immigrant cohorts of 2004 and 2008. We rely on all immigrants who were in employment and/or in education during their year of arrival. Then we follow this part of the cohorts through each of the five subsequent years to see what

proportion that has left a status of employment and/or education. We distinguish as previously between those who did not move during the five years (residents), and those who have moved between labor market regions during the periods. The immigrants included in the analysis are all registered as residents in Norway from the date of the year and in all the subsequent five years we are looking at.

Figure 3.5 shows assemblies for all “active” labor immigrants who do not move or relocate during the five-year periods under consideration. Among labor immigrants who did not move the 2004 cohort showed a slightly lower transition from employment and/or education than the cohorts of 2008. That means that labor immigrants from the 2008 cohort had the highest shift from “activity” statuses in the period as a whole.

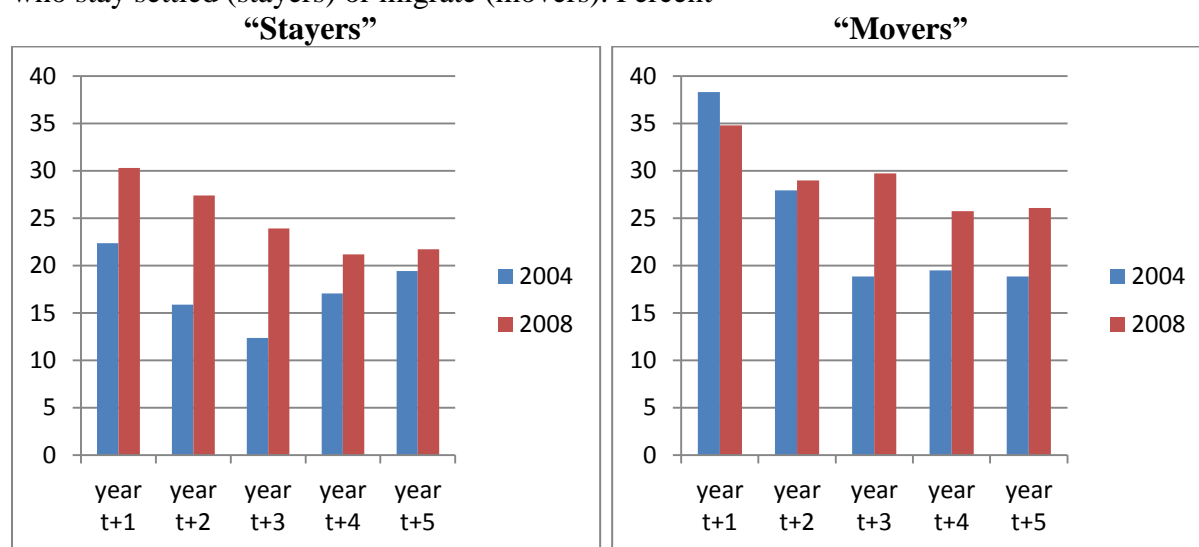
Labor immigrants who moved between labor market regions showed much of the same structure between the cohorts like the non-movers. Transition rates are, however, higher among “movers” than among “stayers”. Again there are labor immigrants from the 2004-cohort who achieves the lowest transition from employment and/or education, and especially then in the early years, when the 2008-cohort faced the financial crisis. There were movers among the 2008 cohort of labor immigrants who consistently showed the highest transition from employment and/or education in this period, while among the 2004-cohort there were the “stayers” who were facing the strongest leave from activity.

Figure 3.5. Transition frequencies from “active” to “in-active” statuses by cohorts of labor immigrants who stay settled (stayers) or migrate (movers). Percent



We have compiled the results in similar cohorts of refugees (see Figure 3.6). Among refugees in both the 2004-cohort and 2008-cohort there is a clear transition from employment and/or education during the first year of each period, and definitely highest for those who move between labor market regions. The transition frequencies are between 23-30 percent in the first year for those who do not move and between 35 and almost up to 40 percent for those who move in the 2004-cohort. Unlike labor immigrants the transition proportion of refugees clearly fall in the second year, both among those who do not move and among those who move, before partly leveling out or slightly increasing throughout the periods. With the exception of the first year among the refugees that move, there is a higher transition from “active” to “in-active” statuses among refugees from the 2008-cohort than from the 2004-cohort, where the deviation between the cohorts is especially strong among the “stayers” in the three four years and among the “movers” in the last three years of the periods.

Figure 3.6. Transition frequencies from “active” to “in-active” statuses by cohorts of refugees who stay settled (stayers) or migrate (movers). Percent



#### 4. Estimation results of transitions from “in-active” to “active” statuses and the probability of remaining in “active” status groups with the focus on one immigrant cohort of immigrants by reason for immigration.

In this section, we have conducted analyzes based on exactly the same micro panel data underlying the descriptive frequency analyses made in section 2 above, but made estimation analyzes of these microdata. We have, however, chosen to put the concentration on the second immigrant cohort of 2008, where we have a significantly higher number of immigrants to bring into the analysis compared to the immigrant cohort of 2004 due to strong increase of immigration to Norway. In the immigrant cohort of 2008, there were 46 163 immigrants that immigrated to Norway in 2008. Among these 29 596 immigrants were registered settled in one or another region each year during the period of 2009-2013. Our analysis is then concentrated on these 29 596 immigrants, which means that immigrants who emigrated or died during the investigation period are not taken into consideration. Among these 7 331 immigrants did relocate across labour market regions during these years, while the remaining 22 265 immigrants were all the time registered as residents in the same labour market region where they had originally immigrated in 2008.

All transitions in the labor markets and migration frequencies will vary depending on the composition of the immigrant groups by gender, age, educational level and duration of residence in the destination country. In all estimations we have thus controlled for gender, age-groups and educational level, while the duration of residence is implicitly defined by the period of analysis following each new immigrant during five subsequent years following their year of arrival. The estimations are based on individual micro data of differences in the probability of entering, leaving or remaining in an activity status. The estimations are made simultaneously for all groups of immigrants by reason for immigration, but were we use the immigrant group with non-specified reason for immigration as the reference group. That means that the interpretation of most parameter estimates is relatively to immigrants with non-specified reason for immigration.

More precisely, the estimations are made on an individual level as linear regressions with least squares method, and so that each person's probability of entering or remaining in activity

statuses as employed and/or in education is mostly estimated partially for those who do not move and those who move, but in the final parts also simultaneously. The estimates are provided as a set of dummy variables for each individual characteristics of each group by gender, age groups and educational levels. We have chosen the following reference groups where estimations are made in relation to female immigrants in terms of gender, in relation to persons aged 62-74 years with regard to immigrants' age, in relation to persons with non-specified education regarding the immigrants' educational level and finally in relation to immigrants with non-specified reason for immigration with regard to the immigrants reason for immigration. Each individual gets either the value 1 or 0 in each variable group outside of the reference groups. Are the value 0 within each variable group outside the reference group, the individual is to be found in the reference group. The results of the estimations are hereby a measure of the likelihood of immigrants in each of the variable groups with regard not to move and to move domestically in relation to each of the reference groups.

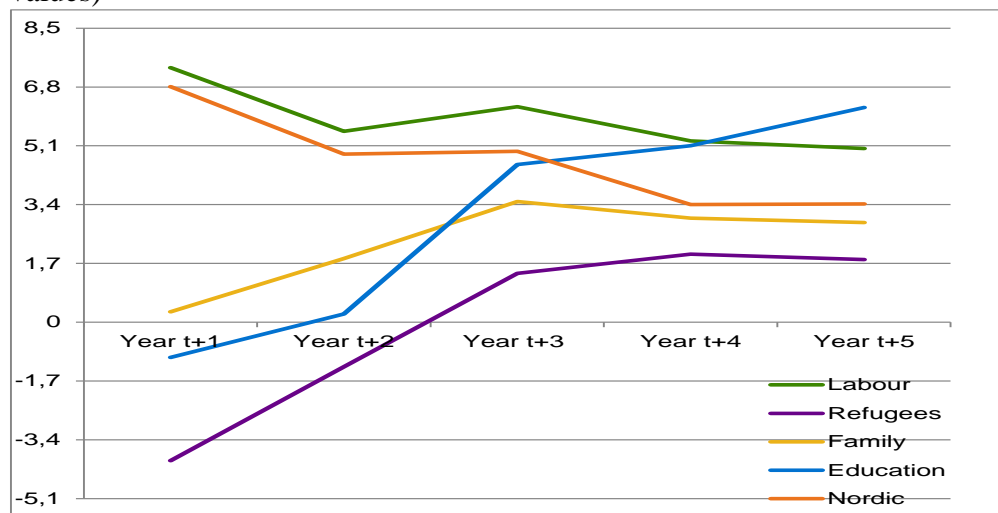
An important issue for the interpretation of the estimates is, however, to be found in different performance among those immigrants with non-specified reason for immigration that do not move and those who relocate. Immigrants with non-specified reason for immigration perform better among the migrants than among the non-migrants. We can then not compare the relative estimates and their t-values for stayers and movers. The relative estimates for migrants among the other immigrant groups will be relatively weaker than for stayers due to better performance of those in the reference group that migrate. The estimation method will then mainly show the differences between the immigrant groups partially among the “stayers” and partially among the “movers”. In the final part of the transition estimations, we have therefor measured the migrants’ probability of transition to or remaining in activity statuses relatively to those that do not move, thus also the ability to measure who becomes most integrated through activity statuses, the immigrant “movers” or the immigrants “stayers”?

#### **4.1. Estimation results: From “in-active” to “active” statuses**

First we estimate differences in probabilities of transition from “in-active” status groups outside of employment and/or education in the base year of 2008 to an activity group of employed and/or in education during the period 2009-2013 for all immigrants who immigrated in 2008 and were in an “in-active” status group in 2008. All estimates are checked for deviations in the immigrant groups' composition by gender, age and educational level and thus estimated relatively to the transition in the corresponding group of immigrants with non-specified reason for immigration. The results are given as the t-values of the estimates in order to better visualize the time dimension.

As Figure 4.1 shows, there are labor immigrants and Nordic immigrants showing the highest probability of transition to “active” status groups, though with a slightly declining trend throughout the period, while education immigrants clearly increases their probability of transition with highest probability of transition among all immigrant groups in the last year of the period. Refugees show the lowest probability of transition from “in-active” to “active” status groups among the immigrant groups that are presented in the figure, albeit with slightly increasing and significantly more likely to transit to activity than immigrants with non-specified reason for immigration in the last three years of the period. Family immigrants also show relatively low probability of transition, albeit with a clearly rising probability in the first three years of the period.

Figure 4.1. Estimated difference in probability of transition from “in-active” to “active” status groups 2009-2013. The immigrant cohort of 2008 by reason for immigration. Estimates measured relatively to immigrants with non-specified reason for immigration. (Estimates in t-values)



Similarly, estimates are made for immigrants who do not move between labor market regions during the investigation period, and the results are shown in Figure 4.2. We find much of the same differences between the immigrant groups as we did for all immigrants in figure 4.1. where there are labor immigrants and Nordic immigrants showing the highest probability of transition to “activity” statuses also among the settled immigrants, though with a slightly declining trend throughout the period, while education immigrants clearly increases their probability of transition throughout the period. Refugees shows the lowest probability of transition from “in-active” to “active” status groups among the immigrant groups that are shown in the figure, but with slightly increasing and also significantly more likely for transition to activity than immigrants with non-specified reason for immigration in the last two years of the period. Family immigrants also show relatively low probability of transition, albeit with a clearly rising tendency during the first three years of the period. Apart from the first two years of the period, there are then resident immigrants with non-specified reason for immigration showing lowest probability of transition from “in-active” to “active” status groups.

In figure 4.3 appear similar estimation results for immigrants who moved between labor market regions during the investigation period. The results show much of the same differences between immigrant groups like for all immigrants and for those who did not move. Again there are labor immigrants and Nordic immigrants that show the highest probability of transition to “activity” in the beginning of the period, while education immigrants show the highest probability of transition towards the end of the period. Refugees show weaker probability of transition to “activity” than all other groups, also among those who move. Immigrants with non-specified reason for immigration that move shows relatively higher probability of transition to “activity” than those in the same group that do not move, which is reflected in significantly higher probability of transition than among refugees, education and family immigrants in the early part of the period, and non-significantly lower probability of transition than many of the other groups throughout the investigation period.

Figure 4.2. Estimated difference in probability of transition from “in-active” to “active” status groups 2009-2013 among the immigrant cohort of 2008 that did not migrate between labour market regions. By reason for immigration. Estimates measured relatively to immigrants with non-specified reason for immigration. (Estimates in t-values)

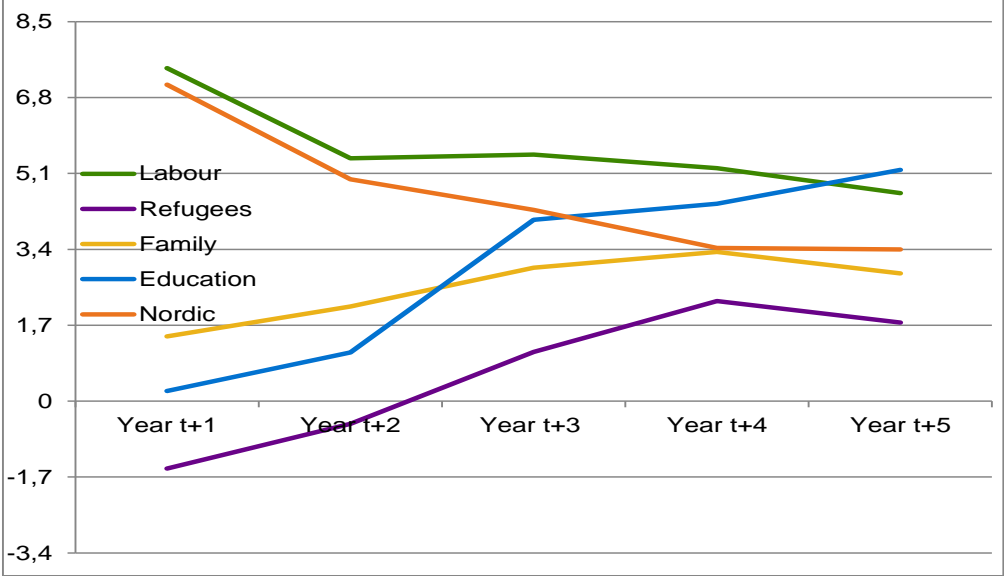
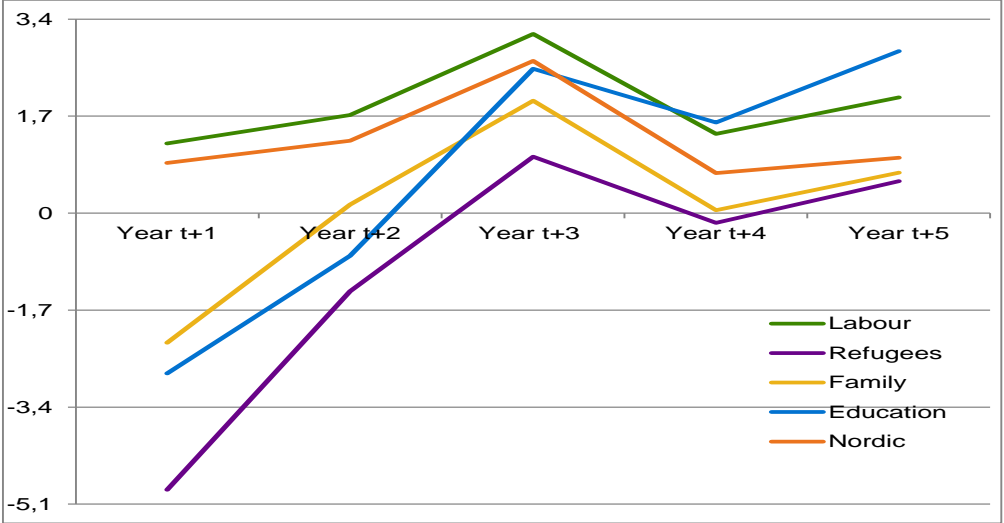
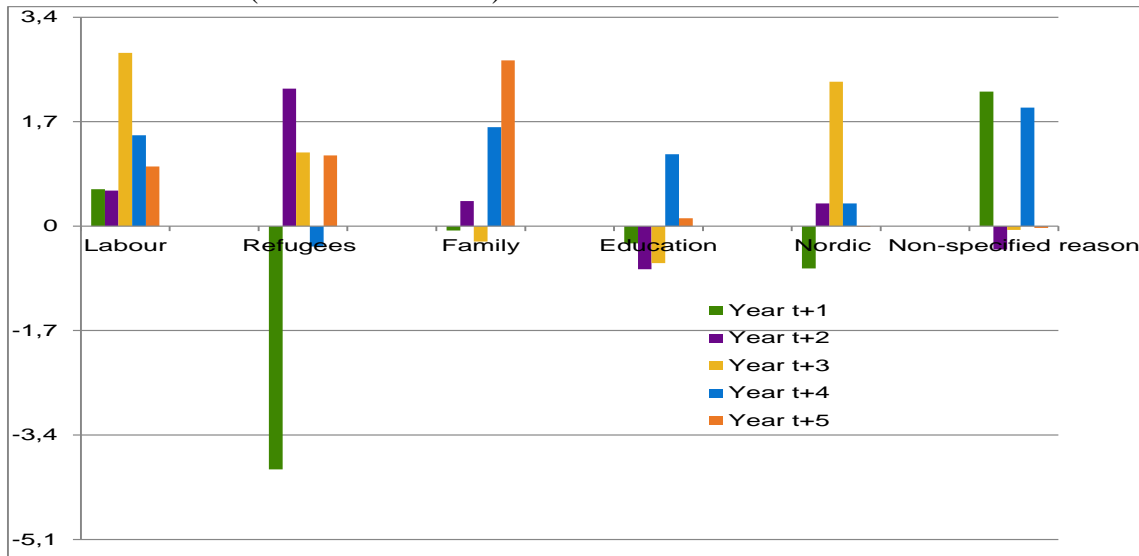


Figure 4.3. Estimated difference in probability of transition from “in-active” to “active” status groups 2009-2013 among the immigrant cohort of 2008 that migrate between labour market regions. By reason for immigration. Estimates measured relatively to immigrants with non-specified reason for immigration. (Estimates in t-values)



Further, we estimate the differences in probability of transition from “in-active” to “active” status groups for immigrants who move between labor market regions relative to those who did not move. As we can see from Figure 4.4, it is mainly higher probability of transition for those immigrants who relocated than for those who did not move with the majority of predicted values higher than zero. Although there are relatively few of the estimates that are significantly higher than zero, where both labor, family and education immigrants, refugees and Nordic immigrants who move shows only in one year of the period a significantly higher probability of transition than those who did not move. However, we see that immigrants with non-specified reason for immigration that move shows two years of significantly higher probability of transition than those who did not move.

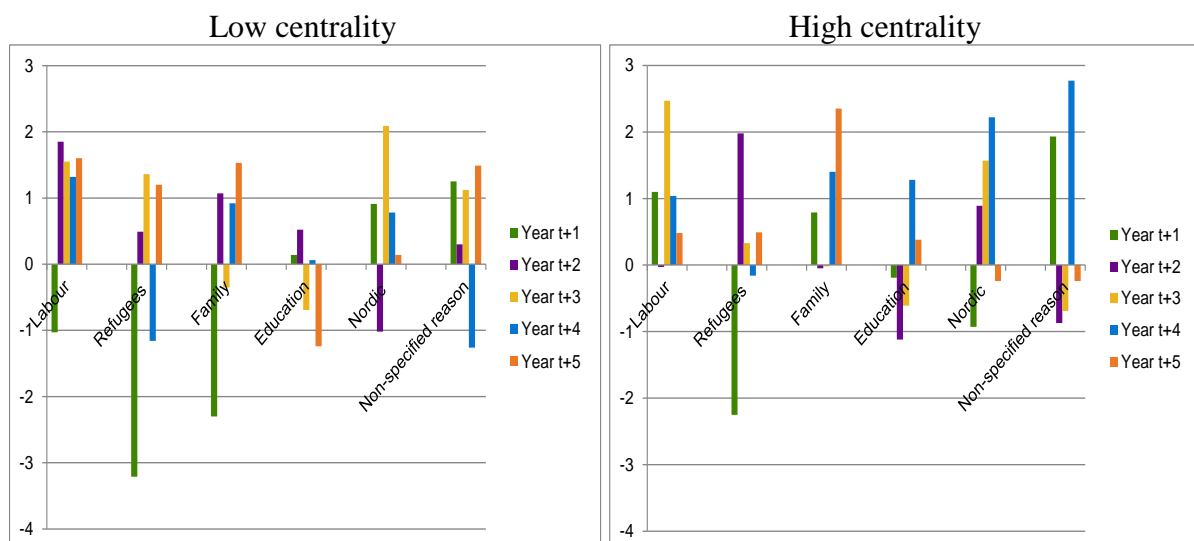
Figure 4.4. Estimated difference in probability of transition from “in-active” to “active” status groups 2009-2013 among the immigrant cohort of 2008. By reason for immigration. Estimates for immigrants that migrated across labor market regions relative to immigrants that did not move. (Estimates t-values)



**Match in activity in regions by centrality:**

Finally, we estimate the differences in the probability of transition from “in-active” to “active” status groups for immigrants who move in less central and central employment regions relative to those who do not move. As we see from Figure 4.5, it is mainly higher probability of transition for those immigrants who move than for those who do not move in both types of regions. There are relatively few of the estimates that are significantly higher than zero, but with a slight predominance in the more central regions than in the less central regions.

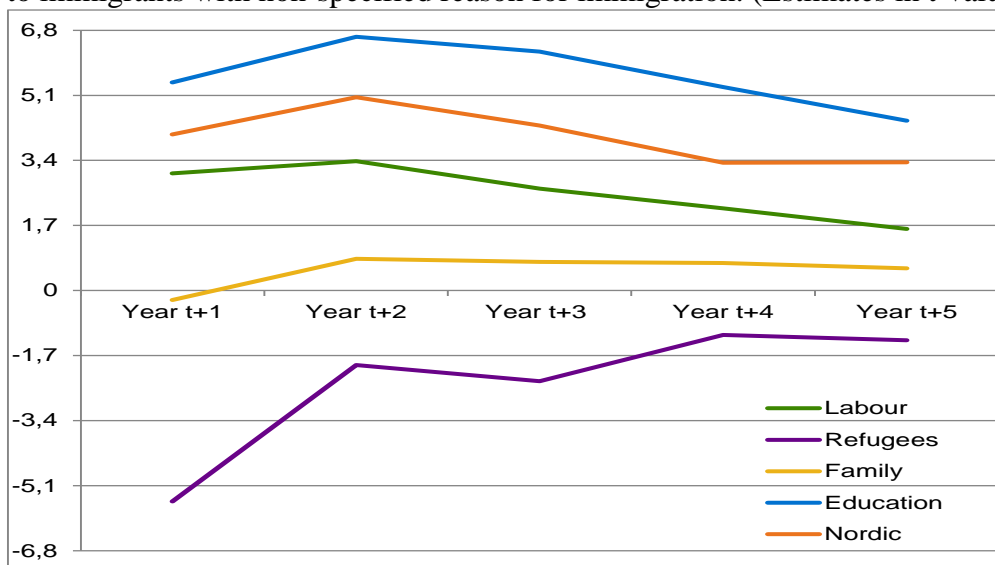
Figure 4.5. Estimated difference in probability of transition from “in-active” to “active” status groups 2009-2013 among the immigrant cohort of 2008. By reason for immigration. Estimates for immigrants that migrated across labor market regions relative to immigrants that did not move. By centrality (Estimates in t-values)



#### 4.2. Estimation results: The probability of remaining in “active” status groups

In the last part of the paper we have estimated differences in probabilities of survival in “active” status groups. We look first at differences in probability of remaining in employment and/or in education among all immigrants in the 2008-cohort who entered “active” status groups in their year of arrival. As illustrated in Figure 4.6 it is the education immigrants who show the highest retention in active statuses, followed by Nordic immigrants and labor immigrants. Weakest probability to remain “active” were to be found among the refugees, who consistently show the least maintenance of all immigrant groups, and weaker than immigrants with non-specified reason for immigration, who were used as a reference in the estimations.

Figure 4.6. Estimated difference in probability to remain in “active” status groups 2009-2013 for the immigrant cohort of 2008. By reason for immigration. Estimates measured relatively to immigrants with non-specified reason for immigration. (Estimates in t-values)



We have made similar estimations for immigrants from the 2008-cohort who did not move (see Figure 4.7) and for those who moved between labor market regions (see Figure 4.8). The differences between the immigrant groups are mainly the same among those who do not move and among those who move. Most likely to remain in “active” status groups show education immigrants followed by Nordic immigrants and labor immigrants, while refugees show the lowest probability to remain in “active” status groups, be it among those who do not move and among those who move.



Figure 4.7. Estimated difference in probability to remain in “active” status groups 2009-2013 among the immigrant cohort of 2008 that did not migrate across labour market regions. By reason for immigration. Estimates measured relatively to immigrants with non-specified reason for immigration. (Estimates in t-values)

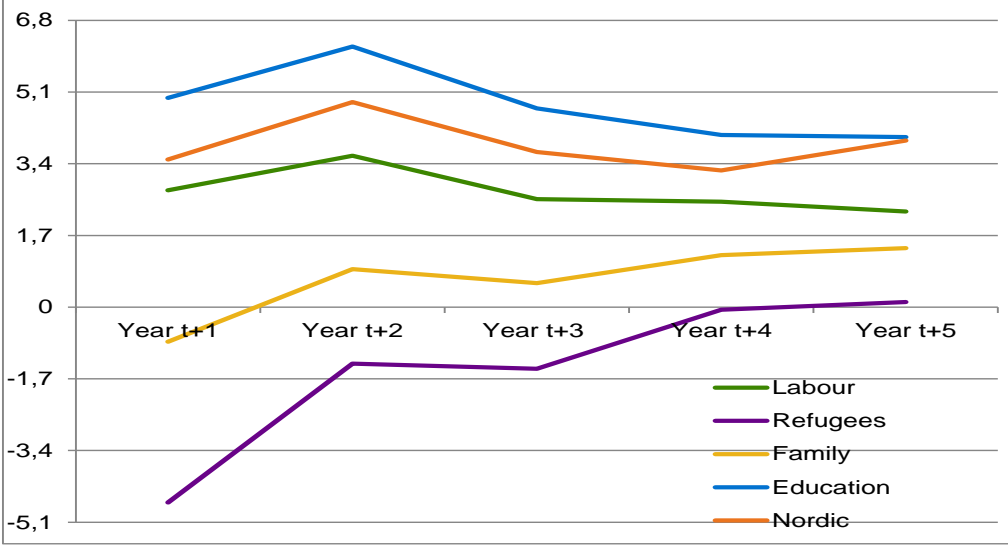
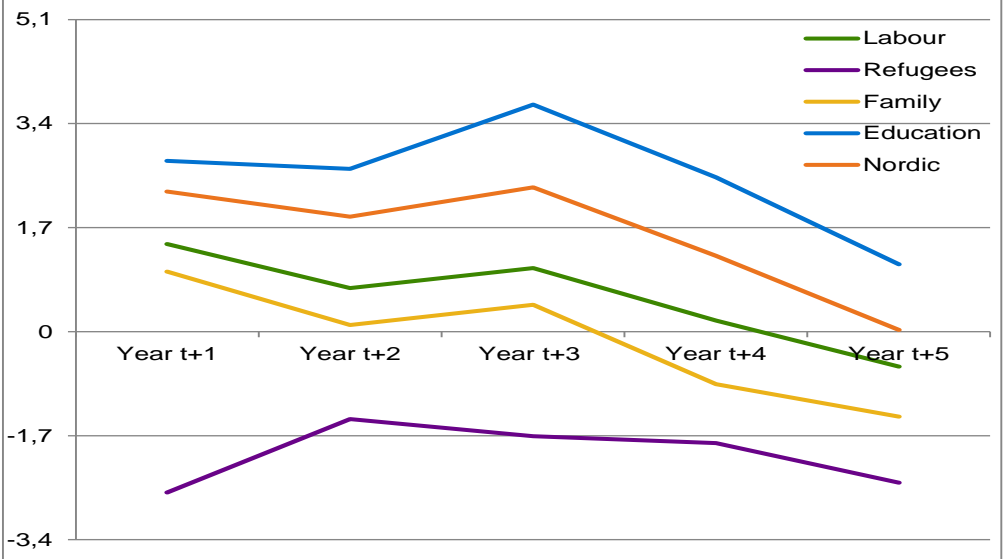
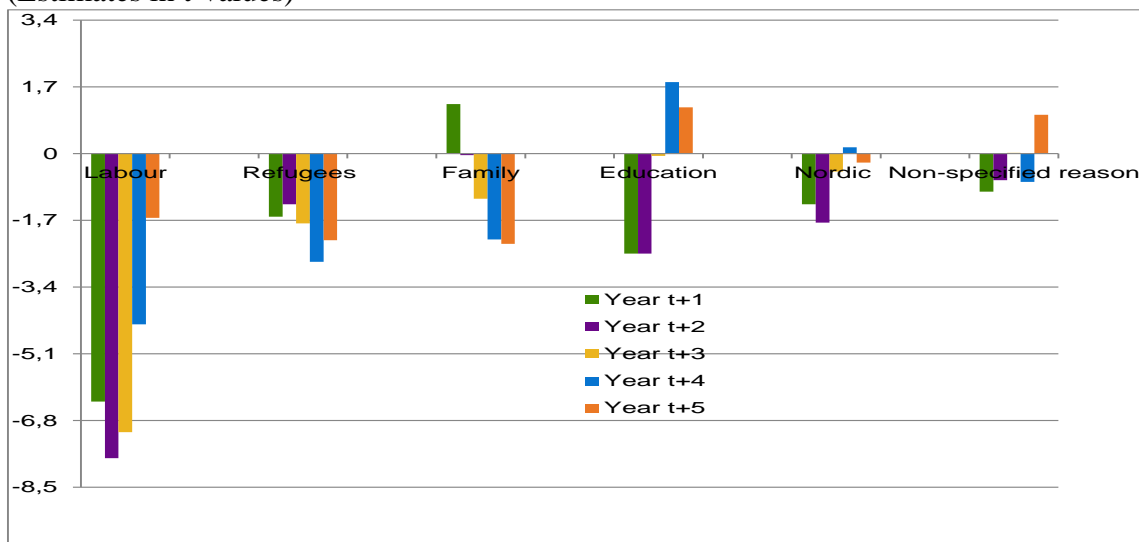


Figure 4.8. Estimated difference in probability to remain in “active” status groups 2009-2013 among the immigration cohort of 2008 that migrated across labour market regions. By reason for immigration. Estimates measured relatively to immigrants with non-specified reason for immigration. (Estimates in t-values)



To investigate who retain their “activity” statuses best among those who move and those who do not move, we have estimated differences likely to remain in “active” status groups for immigrants who moved between employment regions relative to those who did not move. As we can see from Figure 4.9, it is mainly less likely to remain in “active” status groups for those immigrants who move than for those who do not move, when the majority of predicted values are less than zero. Several estimates are also significantly below zero, especially among labor immigrants and refugees. Education immigrants differs somewhat from the other groups by turning from clear negative estimates the first two years of the period while those who move show the highest retention of “activity” in the last two years of the period.

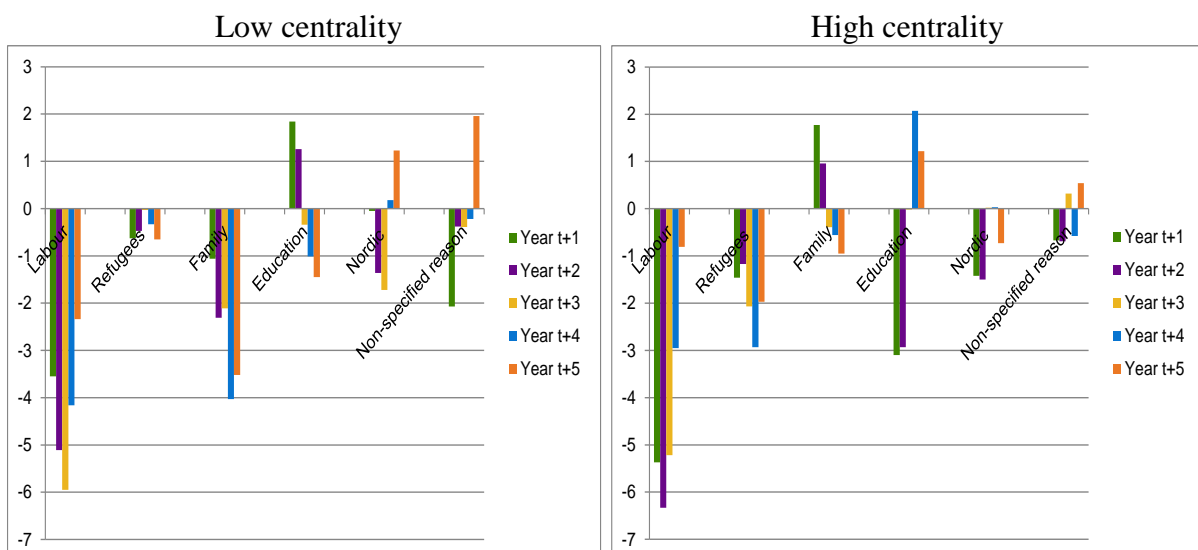
Figure 4.9. Estimated difference in probability to remain in “active” status groups 2009-2013 among the immigration-cohort of 2008. By reason for immigration. Estimates for immigrants that migrated between labor market regions relatively to immigrants that did not move. (Estimates in t-values)



**Remaining in active status groups in regions by centrality:**

Finally, we estimate the differences likely to continue in “active” status groups among immigrants who move between employment regions relative to those who do not move in less central and central regions respectively. As we notice from Figure 4.10, it is mainly less likely to remain in active status groups for immigrants who move than for those who do not move in both types of regions by centrality. Again, there are labor immigrants who move that are least likely to remain in “active” status groups compared to those who did not move. The same applies to family immigrants in less central regions and among refugees in the most central regions. The gradual improvement to remain in “active” statuses among education immigrants who move, are to be found in the transitions to positive estimates in the most central regions.

Figure 4.10. Estimated difference in probability to remain in “active” status groups 2009-2013 among the immigrant cohort of 2008. By reason for immigration. Estimates for immigrants that migrated across labor market regions relatively to immigrants that did not move. By centrality. (Estimates in t-values)



## 5. Summary

The purpose of the paper has been to analyse immigrants' participation versus non-participation in the regional labour markets and/or in education. We investigate whether domestic migration contribute to change the labor market status of immigrants using a "cohort-analysis", where we follow selected arrival cohorts of immigrants through some years after they immigrated for the first time. The investigation is a "two-ways analysis", dependent on each immigrant's initial labor market status. For those who are not "active" in any job or education, we analyze their differences in probability of entering any activity statuses, and for those already in activity, we analyze their ability to maintain their activity statuses or leave their activity statuses. Both dimensions are important for the immigrants' level of integration.

The analysis is conducted using different methods, where we first show descriptive analyzes of the proportions of two immigrant cohorts that remain outside activity, enters activity or leaving a status as active in employment or education. Then we do, by estimations of microdata, analyze the likelihood that different immigrant groups transit from in-active to active status groups, and the probability to remain in active statuses in either employment and/or in education.

The results indicate that domestic migration is partial beneficial for immigrants to obtain employment or to carry out an education. The effect of relocation as the ease of access varies, however, according to the immigrants' reason for immigration. Immigrants who remain outside of employment and/or education is mostly to be found among refugees, family-immigrants and immigrants with non-specified reason for immigration, while education- and labor-immigrants and Nordic immigrants show the strongest tendency to enter a job or start an education. The main trend is that immigrants who move between labor market regions show a somewhat stronger tendency to enter activity statuses than immigrants who do not provide such removals, and is most beneficial for immigrants initially settled at lower centralities. Among immigrants who are already in employment and/or education, the education- and labor-immigrants and Nordic immigrants show higher tendency to maintain such "activity" statuses than refugees, family-immigrants and immigrants with non-specified reason for immigration. The main trend is that immigrants who do not move between labor market regions show stronger tendency to remain in employment and/or education than immigrants who make such moves. Those who relocate are thus associated both with stronger tendency of finding a job or starting an education, but also more likely to quit their job or education.

## References

Carlsen, F., K. Johansen and L.S. Stambøl (2013): "Effects of regional labour markets on migration flows, by education level". In *Labour - Review of labour economics and industrial relations*. Vol 27, Issue 1, March 2013, pp 80-92. Wiley-Blackwell.

Davies, S.J, R.J.Faberman and J.Haltiwanger (2006): The Flow Approach to Labor Markets: New Data Sources and Micro-Macro Links. *Journal of Economic Perspectives*, 20 (3), 3-26

Eckstein, Z. and G. van den Berg (2007): Empirical labor search: A survey, *Journal of Econometrics*, 136, 521-564.

Hustoft, A.G, H. Hartvedt, E.Nymoene, M.Stålnacke and H. Utne (1999), Standard for økonomiske regioner (Standards for Economic Regions). Reports 1999/06. Statistics Norway.

Rogerson, R., R. Shimer and R. Wright (2005): Search-Theoretic Models of the Labor Market: A Survey. *Journal of Economic Literature*, 43, 959-988.

Stambøl, L.S. (2005): *Urban and regional labour market mobility in Norway*. Social and economic studies 110. Statistics Norway.

Stambøl, L.S. (2010): "Impacts of Regional Labour Market Changes on Migration Trends - Research Examples from Norway". In Huskey, L. and C. Southcott (red.): *Migration in the Circumpolar North*. Canadian Circumpolar Institute Press in cooperation with the University of the Arctic. pp. 93-116.

Stambøl, L.S. (2016): "Sysselsetting og flytting blant innvandrere belyst ved regional arbeidsmarkedsmobilitet» (Employment and migration among immigrants investigated by labor mobility), Reports 2016/06, Statistics Norway.