PATTERNS OF INTEGRATION:
A Longitudinal View of the Labour Market Attachment of Immigrants in Finland

Abstract
The labour market integration of immigrants is often time-consuming and a socially selective process that depends on macroeconomic, institutional and individual characteristics. In this paper, we studied the labour market integration of immigrants as a longitudinal process through different patterns of labour market attachment. Using information about individuals' main activity statuses based on the Finnish Longitudinal Employer-Employee Data (FLEED) and using sequence analysis, we followed the labour market transitions of immigrants during the years 2000–2010. The theory on transitional labour markets provides an analytical tool for analysing the heterogeneity of the individuals' labour market attachment. The results contribute to a more comprehensive understanding of the labour market integration of immigrants.

Oxana Krutova[1]*, Liudmila Lipiäinen[2], Pertti Koistinen[3]

[1]University of Tampere, Finland

[2]University of Tampere, Finland

[3]University of Tampere, Finland

1 Introduction

The integration of immigrants into a host country is a multi-dimensional phenomenon; it involves various processes, such as integration into economic, political, social and cultural spheres, as well as the acquisition of civil rights, the recognition of qualifications and opportunities to access new education and training. Labour market integration is thus an important aspect of an immigrants' integration into the host country's society. With increased global immigration, this issue is relevant for all the countries.

The labour market integration of immigrants and the efficiency of policy became a topical issue in Finland when Finland joined the European Union in 1995, and again when the European Union extended membership to Eastern European countries in 2004, gradually enabling the free mobility of citizens of the new member states (Alho 2013; Ristikari 2012). Finland had also previously experienced an influx of immigrants in the late 1980s, but at that time, policies were mainly concentrated on return migration – i.e. on the rights of people with Finnish ethnic backgrounds and those living in the Soviet Union who sought to return to Finland. However, a significant change in immigration policy took place following Finland's accession in 1995. These processes had had influence on Finland as it turned from a country of emigration into a country of new immigration (Borkert et al. 2007). Nevertheless, in comparison to other European countries, Finland's per capita share of immigrants is still quite low. By the end of 2013, there were 207,511 foreign nationals living in Finland (nearly 3.8% of the population; Statistics of Finland 2015).

Most studies on the integration of the immigrants are grounded on case studies, documentary analysis, surveys and cross-sectional data, yet there are few studies based on longitudinal and representative data, which are appropriate for individual measurements. Viewing the labour integration process as a long-term and dynamic process, our research question is: what are the typical trajectories of labour market attachment through which immigrants' labour market integration takes place? We offer the concept of the transitional labour market to point out the dynamics of 'transitions' on the one hand, and the differentiation of individuals' labour market attachment on the other.

In this article, we argue that a one-off transitions into employment cannot provide reliable evidence because the positions of immigrants in the labour market are rather unstable and in continuous flow. Thus, we focus on characterisation of the longitudinal characteristics of individual attachment patterns. In order to understand this phenomenon, we will identify the typical patterns of labour market attachment in the long term, classify the typology of transitions that lead to different main activity statuses and categorise explanatory factors for transitions (age, gender, education).

This paper is organised as follows: the next section describes the theoretical background. The third section discusses data collection, experimental and data analysis procedures. The following section presents consistent observations and the main research results. The subsequent section discusses the main research results. Finally, the last section offers research conclusions.

* E-mail: Oxana.Krutova@staff.uta.fi

2 Theoretical background

There are multiple preconditions for labour market integration in a host country. On the one hand, the work experience, occupation and labour market status that immigrants held in their country of origin have a significant effect on their integration into a new host country; immigrants who have already been employed in their native country have a higher probability of being employed in a new country. (Raijman & Semyonov 1995; Chiswick et al. 1997) On the other hand, the transferability of skills affects the ability of immigrants to secure adequate employment. The majority of highly skilled immigrants experience substantial downward mobility ('U-shaped mobility') and professional disqualification, which lands then in a job not corresponding to their level of education (Jasso & Rosenzweig 1995; Kogan 2007; Kogan 2004a; Kogan 2004b; Akresh 2008; Chiswick & Lee 2005; Powers & Seltzer 1998; Powers et al. 1998; Stier & Levanon 2003).

Considering the preconditions of integration, neither higher education obtained in the native country nor higher education obtained in the host country predetermine adequate employment for immigrants in the host country. Frequently, education is considered only as evidence of a period spent in apprenticeship, not necessarily as a promise for future employment. The lower the international transferability of skills and the higher the level of skill of the immigrant in their country of origin, the larger the disqualification and U-pattern effect are (Akresh 2006: 869, 872; Raijman & Semyonov 1995: 390–391). This situation exists due to the effects of a 'ceiling' and 'floor' as a scale of opportunities for labour mobility; highly skilled immigrants, in particular, have a limited opportunity for career development because their employment focuses on a specific job (Jasso & Rosenzweig 1995: 108–109; Phythian et al. 2009: 375). Only among certain categories of immigrants – for example, among long-term immigrant women, who have been in the country for 10 years or more – does education obtained in an immigrants' country of destination have an important effect on integration and a positive influence on finding a first job (Thapa & Gørgens 2006: 28–29; Wilkinson et al. 2006: 213).

Several studies provide evidence that after the first few years of living in a country, the differences in employment and unemployment between immigrants and the native population gradually decrease. According to Thapa and Gørgens (2006), the period for finding a first job is especially important during first few years of living in a country, and it is especially decisive because as time passes, the probability of job placement reduces for immigrants. Chiswick, Cohen and Zach (1997) and Phythian, Walters and Anisef (2009) argue that the employment status of immigrants is more sensitive to cyclical changes in economic activity than the employment of the native population. In general, during the first 10 years of living in a new country, differences in the employment rate gradually smooth out and disappear between the immigrants and the native population, and these differences wane even faster at the end of the first 1–3 years living in a country (Chiswick et al. 1997: 301-303).

In order to focus on instability and mobility of the labour market attachment, we utilise the concept of the transitional labour market. According to Schmid and Gazier (2002), the dynamics of labour markets can be understood as 'transitions' between labour market statuses subject to concrete periods and individual features of the workforce, which are, in fact, individual employment transitions. However, the ambivalence of 'transition' is obvious, because it implies not only career development – providing access to better work places – but also the 'transition' to unsatisfactory conditions of employment – downturns in careers, blocked statuses in the labour market and social exclusion. The concept of the transitional labour market offers a dynamic and behavioural view of the labour market; however, one of the most significant disadvantages of research on transitional labour markets is that it fixes on only one transition, denying at the same time the long-term character of the basic category of 'transition' (Koster & Fleischmann 2012; Gazier & Gautie 2011; Muffels, Wilthagen & van den Heuvel 2002; Ashton & Sung 1992; Schmid 1998; Bzhinsky-Fay 2007; Schmid & Schömann 2003; Brzinsky-Fay 2011; Räisänen & Schmid 2008; Berger, Steinmüller & Sopp 1993).

Transitions between statuses of immigrants are strongly conditioned by the complex nature of individual socio-economic and demographic characteristics, as well as societal and economic factors of a local area. The weak position of immigrants in the labour market, when it comes to education and professional qualification, becomes one of the strongest factors in explaining their withdrawal from employment. Besides occupational and educational disqualification, time is a decisive factor in the process of integration (Hansen & Lofstrom 2009; Bevelander 2001; Blume et al. 2009; Akresh 2008; Chiswick, Lee & Miller 2005; Raijman & Semyonov 1995; Powers & Seltzer 1998; Powers, Seltzer & Shi 1998; Stier & Levanon 2003; Pollock, Antcliff & Ralphs 2002; Fuller 2011).

3 Data and methods

In this study, we used the Finnish Longitudinal Employer-Employee Data (FLEED) created by Statistics Finland. Approximately 1,200,000 persons are included in the data annually. The data represents a randomly selected third of people aged 15–70 living in Finland between 1988 and 2010. FLEED includes data on individual basic characteristics, family, living, employment relationships, periods of unemployment, income and education over time for the entire observation period. Thus, FLEED contains information about labour relations and employment as periods of employment (in months), periods of unemployment (in months), the number of unemployment periods and their continuity, and the main activities in the labour force (education, employment, etc.).

From the FLEED data, we chose to analyse only the immigrants who had been registered after receiving their first residence permit in Finland in 2000, whose nationality is something other than 'a citizen of Finland', and whose native language is not Finnish or Swedish. We followed the immigrants' economic activity and the changes in their main situational statuses ('sequences') during the period of 2000–2010. For the items in the sequence analysis, we considered such statuses as 'apprenticeship', 'employment', 'unemployment', 'economic inactivity' and 'pension'. For the sequence characteristics, we considered 'paths' of transitions between statuses (employed-unemployed; employed-inactivity; unemployed-inactivity; employed, unemployed, inactivity-apprenticeship, etc.).

Based on the assumption that labour integration is a long-term dynamic process that includes transitions between various statuses in the labour market, the sequence analysis allows us to represent a time-ordered sequence of the socio-economic states (statuses). A 'sequence' is thus defined as an ordered list of elements in which every element can be a certain status (e.g. an employment status). The positions of the elements are fixed and ordered according to periods or to another more or less natural order (Brzinsky-Fay, Kohler & Luniak 2006). The information is generalised by means of 'sequence' comparison (the similarity measure). The optimal matching algorithm (OMA) is a frequently applied method for the comparison

Table 1. Transition rates for the sequence object

	[->employment]	[->unemployment]	[->pension]	[->apprenticeship]	[->outside the LM]
[employment ->]	0.84	0.07	0.00	0.04	0.05
[unemployment ->]	0.22	0.44	0.01	0.15	0.18
[pension ->]	0.01	0.01	0.89	0.03	0.06
[apprenticeship ->]	0.23	0.16	0.00	0.45	0.16
[outside the LM ->]	0.10	0.11	0.01	0.11	0.67

of sequences, and it defines the distance between two sequences as the number of operations it takes to transform one sequence into the other. More specifically, the technique is based on three main operations: 'substitution' (transitioning from one element into another one), 'insertion' (inserting an element at a specific position) or 'deletion' (deleting an element at a specific position) (Brzinsky-Fay 2011).

When the similarities and differences between sequences are fixed, the overall resulting distance matrix is created as an input for cluster analysis or multi-dimensional scaling. Clustering as an exploratory data analysis method aims at finding automatically homogeneous groups or 'clusters' in the data. This method has mainly been used in life-course research and in combination with optimal matching (OM) distances in order to identify distinct groups of sequences with similar patterns for the purpose of defining a typology of sequences (Abbott & Forrest 1986; Abbott 1995; Abbott & Tsay 2000; Aisenbrey & Fasang 2010; Fasang & Liao 2013; Gabadinho et al. 2011; Gauthier et al. 2010; King 2013; Pollock 2007; Halpin 2010; Martin, Schoon & Ross 2008; Biemann 2011; Wu 2000). The sequence analysis provides an avenue to detect the heterogeneity of labour market attachment of individuals in long run and to answer the research question.

4 Results

Descriptive statistics

Between 2000 and 2010, the share of employed immigrants in Finland increased from 26.5% in 2000 to 44.7% in 2010. At the same time, the share of unemployed immigrants decreased from 18% to 12%, while the share of immigrants who were outside the labour market reduced from 29.2% to 13.9%.

Overall, there were 2,596 people (49.7% men, 50.3% women) in the research database in 2000, while the overall number of immigrants at the end of the observation period reduced to 2,013 people (47.3% men, 52.7% women). The number of withdrawn (missing) immigrants steadily increased over the observation period and formed 22.5% of the overall number of immigrants who came to Finland in 2000 (Figure 1). Every year, the research database shortens owing to the natural diminution of the population (deaths), those reaching 70 years of age, and those who leave Finland to move to another country. Following the process of integration among all immigrants, it is especially important for us to define which main activity statuses lead to withdrawals from the labour market.

In order to explain the model, we used several descriptive indicators, such as transition rates and substitution-cost matrices.
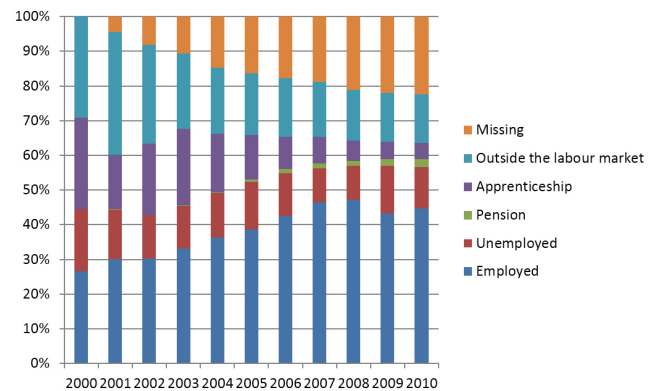

Figure 1. The main activity of immigrants in Finland in 2000-2010. FLEED. N=2596 (2000)

"Transition rates provide information about the most frequent state changes observed in the data together with, on the diagonal, an assessment of the stability of each state" (Gabadinho et al. 2011: 17). Since a relatively high instability of transitions exists (see meanings on the diagonal – 0.84, 0.44, 0.89, 0.45, 0.67), the statuses 'unemployment' and 'apprenticeship' are the most unstable, with a probability of 0.56 (1–0.44) (for 'unemployment') and 0.55 (1–0.45) (for 'apprenticeship') of leaving the state at each position t. The highest transition rates are between the statuses 'unemployment' (0.22) and 'employment', and between the states 'apprenticeship' (0.23) and 'employment' (Table 1).

The analysis of the transition rates as applied to each year in the observation period allowed us to observe certain tendencies as unique to the first years of labour integration. Already during the first year of integration, immigrants with a higher probability of leave statuses, such as 'unemployment' and 'apprenticeship', moved into the category 'outside the labour market'. Comparatively, during the second and third years of integration, immigrants carry out even more transitions from 'unemployment' to 'apprenticeship', or from 'apprenticeship' to 'employment'. Finally, during the fourth year (2003), immigrants realised more transitions to 'employment' from 'unemployment' and 'apprenticeship'. It is notable that the statuses 'employment', 'pension' and 'outside the labour market' are relatively 'stable' statuses; transition rates for these statuses are 0.84, 0.89, 0.67 (on the diagonal), respectively. This circumstance means that transitions between these and other statuses are less intensive in comparison to transitions between 'unemployment' and 'apprenticeship', for example.

Table 2. Substitution cost matrix

	employment->	unemployment->	pension->	apprenticeship->	outside the LM->	*->
employment->	0.000000	1.711718	1.987189	1.726209	1.850260	2
unemployment->	1.711718	0.000000	1.982414	1.692120	1.708694	2
pension->	1.987189	1.982414	0.000000	1.970543	1.935495	2
apprenticeship->	1.726209	1.692120	1.970543	0.000000	1.722828	2
outside the LM->	1.850260	1.708694	1.935495	1.722828	0.000000	2
*->	2.000000	2.000000	2.000000	2.000000	2.000000	0

In addition to the transition rates, we used the substitution–cost matrix when computing distances between sequences through the method of optimal matching. The function creates the substitution matrix by using a constant, or, alternatively, the transition rates are computed from the sequence data OM distances using substitution costs based on transition rates observed in the data. The minimum cost is zero for the substitution of each state by itself, and the maximum is less than two – i.e. the value that we would get for transitions not observed in the data (Gabadinho et al. 2011: 26). In accordance with what was observed in the transition rate matrix, the lowest costs exist for substituting 'unemployment' to 'apprenticeship' or 'outside the labour market', meaning that these substitutions occur more frequently than the other substitutions; in other words, these are the most frequent statuses. Unlike transition rates, the substitution costs are symmetric and thus the lowest cost exists for changing 'apprenticeship' and 'outside the labour market' to 'unemployment' (Table 2).

Patterns of labour market attachment and the typology of transitions

Sequence analysis allows the examination of data that are sorted by two ways – by the beginning of the period and by the end of the period. This issue is rather important in deciding what kind of sorting must be chosen for the analysis. Considering integration as a process during which an immigrant, having gone through a certain chain of transitions (changes of statuses), reaches the final status in the labour market, we chose the status at the end of the period to be the more important one. According to this assumption, we analysed the chains of sequences that were fixed at the end of the observation period. Nevertheless, we also compared sequences as sorted by the years 2000 and 2010 in order to compare which statuses have been more typical in a cluster group at the beginning and at the end of the integration process (Figure 2).

The results of the sequence analysis showed that during the 11-year period, three groups of immigrants obtained relatively stable employment: 'quick integration' (19.1%), 'delayed integration' (from unemployment and inactivity) (15.9%) and 'delayed integration' (from apprenticeship) (7%). The main types of sequences, their percentage share in the database and the description of typical sequences of statuses are presented in Table 1 in the Appendix. On the other hand, sequence analysis also revealed those groups of immigrants

for whom economic inactivity ('Entering' (7.6%) and 'Exclusion' (8%)) or unemployment ('Circulating' (13%)) were dominant statuses in the labour market. A significant share of immigrants rather frequently left the labour market or left the country ('Withdrawal' (12.4%) and 'Dropout' (11.1%)). Finally, for a certain groups of immigrants, the statuses 'pension' and 'apprenticeship' were dominant during the 11-year period ('Pension' (1.5%) and 'Apprenticeship' (4.3%)).

Transitions resulting in employment

One of the most typical transitional patterns discovered leads to employment. In this case, quick integration in the labour market and delayed integration are possible. As one of the main trajectories of behaviour (type 5 ''Quick integration'', 19.1%, mean age = 29.35, median = 28), this is typical for immigrants who have been integrated into the labour market quickly and have found employment immediately after moving to Finland. The mean time of arriving at the status of 'employment' is 10 years, with short periods in other statuses during the initial years.

Another group of immigrants found jobs after initial periods of apprenticeship in the country (type 3 'Delayed integration (from apprenticeship)', 7%, mean age = 19.76, median = 15) and the initial period of being in this status was 4–6 years. A distinctive feature of this group of immigrants is the transition to the category 'employment' immediately after a period of education. However, for many immigrants, such employment is not permanent: they come back to recurrent periods of education and then recurrently find work. Another category of immigrants has similar patterns of the labour market attachment; however, this group has short periods of economic inactivity or unemployment instead of employment.

Another pattern implies that immigrants find employment after a certain period of being in 'unemployment', 'outside the labour market' or in an 'apprenticeship' (type 8 'Delayed integration (from unemployment and inactivity)', 15.9%, mean age = 28.31, median = 27). The mean time of being in 'employment' is 6 years, whereas in a status of 'outside the labour market', 'unemployment' or 'apprenticeship', the time is approximately 2 years (equally for each status). This type of behaviour implies that immigrants have prolonged unemployment or economic inactivity. A significant proportion of immigrants have a short period of apprenticeship at the beginning of their labour careers, and the final transition to employment occurs only in the second half of the observed period.
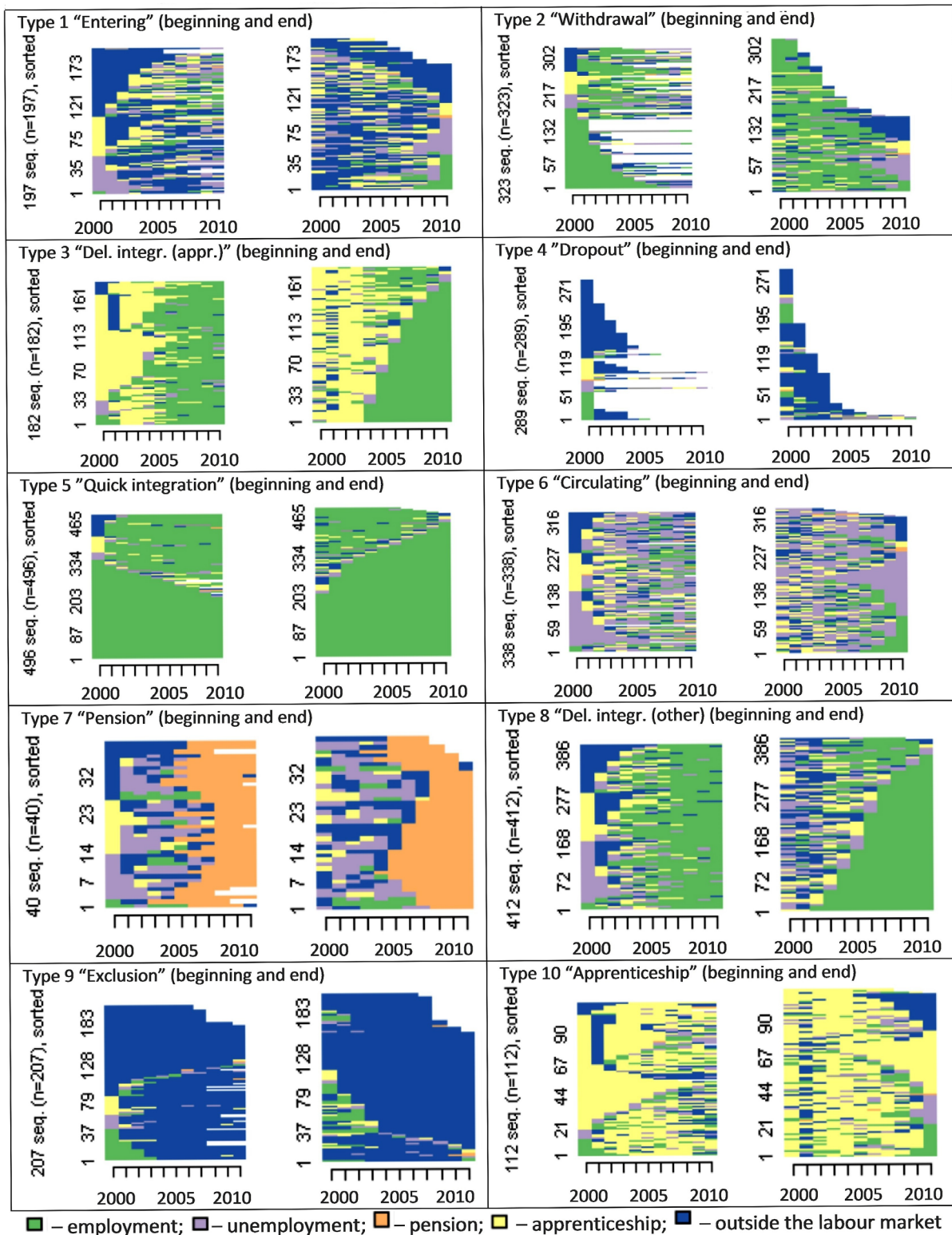
Figure 2. Types of sequences as sorted by fixed befinning (cases are sorted by the 2000 year) and fixed end (cases are sorted by the 2010 year) of the observation perdion

Transitions resulting in economic inactivity

One of the models of labour market attachment ends with unsuccessful labour integration. The adaptation behaviour of immigrants in the first group (type 1 'Entering', 7.6%, mean age = 28.94, median = 26) implies that, after a period of being outside the labour market, immigrants try to enter the labour market by means of official unemployment status, educational programmes or short-term job placements. Nevertheless, in many cases, immigrants come back to an initial status of inactivity or move to the category 'unemployment'. The most typical status was 'economically inactive population' and the majority of immigrants spend 5.5 years in this status.

The same tendencies are typical for those immigrants who have been outside the labour market for a long time (type 9 'Exclusion', 8%, mean age = 32.99, median = 29). At the end of the adaptation period, immigrants stay outside the labour force or move away from Finland. The mean time of immigrants being in the status 'outside the labour market' is 9 years; most immigrants are in other statuses for less than a year. In this case, transition to one of the categories occurs either directly from an initial status or by means of a short-term circulation of statuses. The typical models of behaviour for immigrants in this group are moving out from the country after initial periods of apprenticeship, unemployment or employment and subsequent economic inactivity for 6–7 years, or moving to the category 'economically inactive population' after initial periods of apprenticeship or employment.

Transitions resulting in unemployment

In this cluster, we find cases that imply a more active circulation between statuses in the labour market and outside it (type 6 'Circulating', 13%, mean age = 34.72, median = 34.50). On average, the mean time of being in 'unemployment' is found to be 5.5 years, whereas in other statuses ('employment', 'apprenticeship' or 'outside the labour market'), the average period is 2 years. This type of behaviour is the most dynamic. One of the most typical transitions observed is the transition from an initial status of 'unemployment' to the same status by means of circulation of statuses in the labour market and outside it. Sometimes immigrants move to the category of 'economically inactive population' as an intermediate stage in the chain of circulation. Another variant of behaviour implies a stage of education as an intermediate period. Nevertheless, immigrants again find themselves in the category of 'unemployment'.

Transitions resulting in 'dropping out'

One of the most typical labour market attachment patterns observed ends with withdrawal from the labour market, or dropping out of the database (moving to another country, death or reaching one's seventieth birthday). It implies that immigrants have an initial status of employment for 4 years (on average), then, more often than not, move to another category of 'economic inactivity' or 'unemployment', or drop out of the database (type 2 'Withdrawal', 12.4%, mean age = 29.34, median = 28). Overall, the period of dropping out occurs in the second half of the observation period. More often, immigrants, after an initial period of prolonged employment, circulate between statuses in the labour market and only after that move to a category 'outside the labour market' (the last 2–6 years) or leave the country. In comparison, another pattern of labour market attachment also implies dropping out (type 4 'Dropout', 11.1%, mean age = 33.42,

median = 30). In the main category, immigrants directly leave the country after an initial status of 'outside the labour market' (on average for 2 years), whereas in another category, immigrants go through a circulation of statuses and finally migrate to another country. The final period of dropping out occurs after 4–10 years.

Transitions resulting in other statuses

According to the results, one more model of behaviour leads to statuses that are not directly associated with employment such as, for example, 'pension' or 'apprenticeship'. In the least numerous group, immigrants end their period of adaptation and integration in a status of 'pension' (type 7 'Pension', 1.5%, mean age = 45.48, median = 50). The mean time in a status of 'pension' was 4.5 years, while the average was 2.5 years in a status of 'outside the labour market' or 'unemployment'. The two models of behaviour are peculiar for immigrants in this group. In one case, immigrants, after an initial period of economic inactivity, directly move to the category 'pension'. In another case, after initial periods of 'apprenticeship' or 'unemployment', immigrants leave the labour market for 1–5 years and only after that, move to the category 'pension' (the last 3–6 years of the observation period).

Another transitional model (type 10 'Apprenticeship', 4.3%, mean age = 19.38, median = 15) implies a long period in the status 'apprenticeship' (7 years), with stays in other statuses aggregating to 1–2 years. One of the most typical transitions is a permanent recurrence to the sphere of 'apprenticeship' as an intermediate stage in a chain of other statuses. This type of behaviour is different from others because immigrants initiate integration by studying in Finland. However, after this period, their trajectories disperse. In a more successful way, after a period of apprenticeship, immigrants move to one of the other statuses and find a job (the last 1–3 years of the observation period). In another case, immigrants move interchangeably between statuses of 'apprenticeship', 'unemployment' or 'economic inactivity'. The status of 'employment' or 'economic inactivity' is the final one in the chain of statuses (the last 1–3 years). In a final category, having started from 'apprenticeship', immigrants end their period of integration in the same status (apprenticeship). As a rule, the final period of apprenticeship in a sequence is much longer than an initial one.

Explanatory factors: age, gender and education

The multiplicity of labour market attachments is hypothetically dependent on the influences of explanatory factors, such as age, gender and the educational backgrounds of immigrants. As types of transitions contain typical chains of sequences leading to employment, unemployment, economic inactivity, apprenticeship or pension, the factor of age explains why groups of immigrants with different types of transitions are either homogeneous or heterogeneous between or within themselves.

The mean age of those coming to Finland as a foreigner was 29.74 years in 2000 (two age groups are significant: the 20–29-years-olds (35.8%) and the 30–45-year-olds (33.2%)) and the number of 15-year-old immigrants was rather high in the overall structure of sampling (16.2%). Two 'youngest' groups of immigrants, for whom 'apprenticeship' was a dominating status during the 11-year period of observation (the groups 'Delayed integration (from apprenticeship)' and 'Apprenticeship') have been classified separately (Figure 3).

Comparatively, the analysis of mean indicators on age shows that, as a rule, the mean age of immigrants dropping out from the database is higher than the mean age of immigrants who remain in the database. This circumstance potentially allows us to draw conclusions about two tendencies in the life-courses of immigrants. On the one hand, immigrants come to Finland at a young age; on the other hand, immigrants take decisions about recurring immigration at an older age (Figure 4).

We tested whether the age variable follows a normal distribution (taken on the 2000th year). Carrying out the Kolmogorov–Smirnov Test allowed to reject a hypothesis about normal distribution of age in the sequences' groups ($p \leq .05$). The non-parametric Kruskal–Wallis Test allowed to reject the null hypothesis meaning that the distribution of age is the same across the sequences' groups ($p = .000$).

In addition to the first explanatory factor, an analysis of initial positions among men and women at the beginning of the observation period showed that the status 'employment' is a more typical status for men than for women; the number of men who had been employed since the beginning was approximately twice as high as the number of employed women. At the same time, the number of men who were outside the labour force (economically inactive) was less than half the number of economically inactive women (Figure 5).

Overall, during the observation period, the number of men in the database decreased by 13%, whereas the number of women decreased by 9.5% (in comparison to number in 2000). However, at the end of the observation period (2010), similar shares of men and women had had employment. The number of those economically inactive or unemployed was a little smaller among men in compared to the number of women (Figure 6).

Overall analysis of the gender structure of the cluster groups shows that in such cluster groups as 'Entering', 'Exclusion' and 'Apprenticeship', the prevalence of women was more obvious, whereas in 'Withdrawal' and 'Quick integration', the dominant number of men is evident (see Table 1 in Appendix). We tested whether the groups of sequences are different on gender by means of the chi-square test with Bonferroni corrections of the P values. Since the P-value (0.000) is less than the significance level (0.05), we cannot accept the null hypothesis that the groups of sequences are similar on gender. Thus, we conclude that there is a relationship between gender and the sequences' groups (X^2 (9, N = 2596) = 186.17, $p = .000$).

Finally, the factor of educational background potentially predetermines paths of labour market attachment and transitions in one of the labour market statuses. The majority of immigrants had rather low levels of education when coming to Finland in 2000; in the beginning of the observation period, 89% of immigrants did not have professional education. It is notable that the mean age of immigrants without any professional education was lower (29.07 in 2000) in comparison to immigrants with specialised secondary education (33.73 years in 2000) or those immigrants with higher education (the mean age of immigrants with a bachelor's degree was 36.21 years and the mean age of immigrants who had master's degree was 35.80 years) (Figure 7).

However, a general tendency towards increasing educational levels was common to all the cluster groups. Toward the end of the observation period (2010), immigrants who mostly followed transitional models resulting in employment or apprenticeship had potentially obtained a new educational degree; for these individuals, an educational code appeared and changed ('Delayed integration (from apprenticeship)' and 'Apprenticeship'). On the other hand, a smaller proportion of immigrants who obtained a new educational
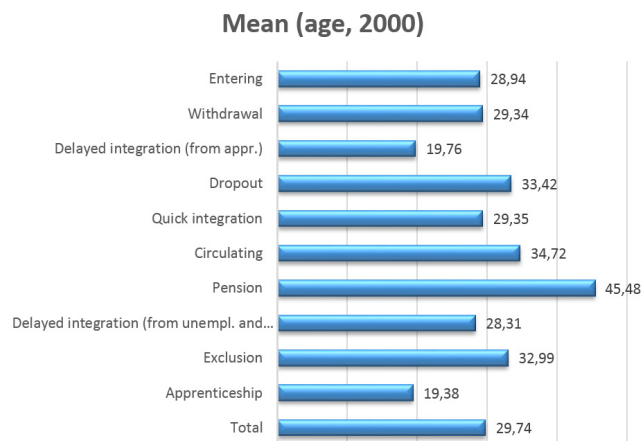

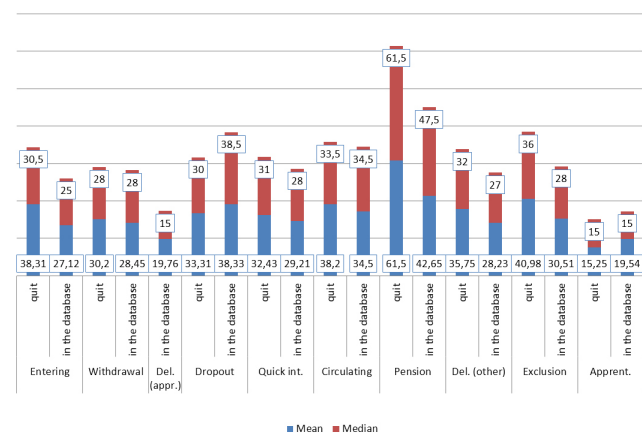*Figure 3. Mean age of immigrants in the cluster groups (2000)*

Figure 4. Age (mean and median, valid cases and missing cases in the database), calculated on the basis of 2000 year

degree during the 11-year period and increased professional status belonged to such groups as 'Circulating' and 'Exclusion'.

5 Discussion

According to our hypothesis, immigrants' labour market integration should be understood as process that includes various transitions. A one-off measurement of a subject's employment circumstances cannot provide reliable evidence because the positions of immigrants in the labour market are rather unstable and in continuous process of change. Given this, we argue that immigrants go through typical trajectories of labour market attachment, which includes various transitions between statuses in the labour market. As our results show, there are immigrants who integrate quickly and successfully and with few transitions to employment; on the contrary, there are also those who proceed through several transitions that require a significant period of time, and delayed entry decreases the probability of being sustainably employed. In general, the first and longer second statuses improve the likelihood of future employability. The
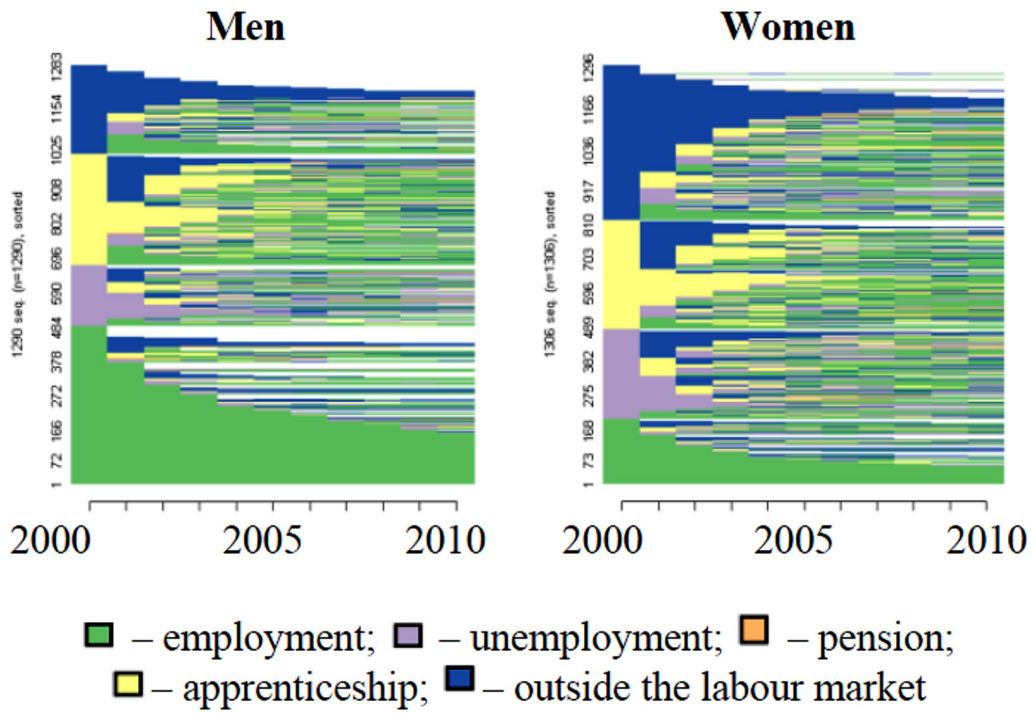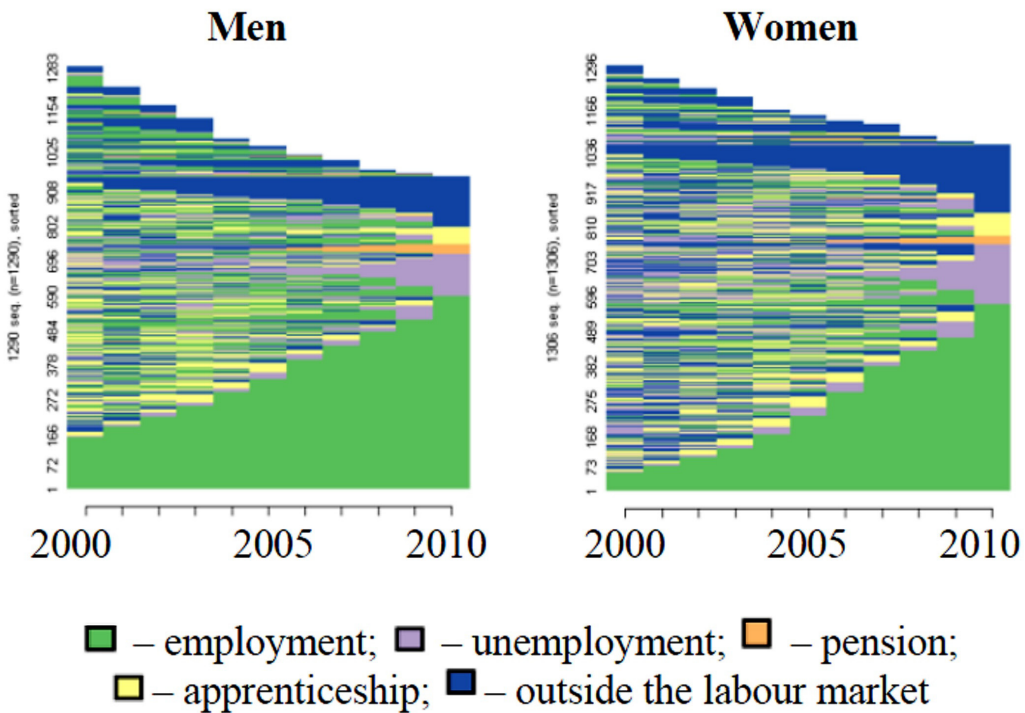
Figure 5. The beginning is fixed
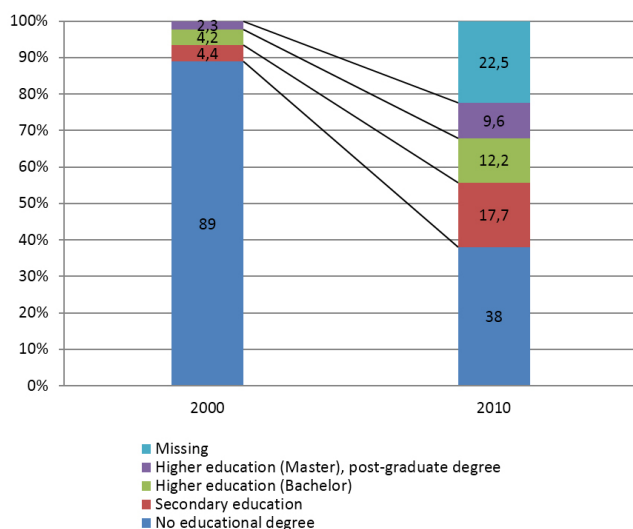

Figure 6. The end is fixed

Figure 7. Educational degree (2000 ja 2010, N=2596)

circulation of statuses ('spin') signifies active adaptation to conditions, labour market attachment and aspiration for any employment. The next stage of labour market attachment becomes decisive as it leads to final employment, movement outside the labour market or subsequent resettlement.

The importance of welfare state institutions and policy measures targeted at immigrants is obvious, as for most immigrants, the options of apprenticeship, supported employment, labour market training and re-training are of great importance and affect the patterns of their labour market integration. The intensity and forms of labour market attachment varies according to the life course, social position and resources of the individual. In the case of immigrants, labour market integration is often a more time-consuming process because of the lack of adequate policies that support the immigrant's labour market integration over their life course. A longer period outside the labour market aggravates the rigidity of behaviour among individuals and the rigidity of the labour market towards less flexible regulation of unemployment risks and economic inactivity.

As a methodological choice, the sequence analysis method had certain advantages as well as disadvantages in application. One of the strengths of the method is that it allows for the representation of the time-ordered sequence of socio-economic states (statuses) that immigrants have experienced. One of the disadvantages of this method is its one-dimensionality of categories and elements that aggregate the sequences. The analysis of parallel or multiple sequences (for example, employment careers) becomes a serious obstacle when using this method. For historians and social scientists, the most problematic disadvantage of the method is the ambivalence of the data used. Many sociological data are monadic – i.e. every case is defined by only one value for a given variable. At the same time, the distance data, which can be used for the optimal matching techniques, are dyadic, because values are defined for a pair of cases (Abbott & Forrest 1986: 489). Thus, optimal matching offers an effective way of finding a veritable typology of sequences and revealing reasons why various countries differ on the same typology.

In combination with the sequence analysis, the cluster analysis allows for the synthesis of an enormous volume of information consisting of various sequences of statuses into relatively

homogeneous groups. However, like sequence analysis, cluster analysis also has limitations. It allows for a multiplicity of various solutions and sensible research results to appear for various cluster algorithms; thus, a choice for a final cluster solution depends on the subjective concepts of the researcher. A choice of a suitable number of clusters is always a challenge because the exact requirements or criteria for choosing a certain number of clusters do not exist. In our case, the analysis of the dendrogram on the sequence analysis and the analysis of the content of cluster groups predetermined our final choice in favour of the 10-cluster solution.

Our results also confirm that integration in the labour market is a multi-dimensional process. Considering the influence of individual characteristics such as age, level of education, professional experience and family structure, this phenomenon obtains new content and, consequently, produces new scientific arguments. As already emphasised, the factors of age, education and gender are decisive in the process of labour market attachment and integration. However, on the other hand, belonging to a certain birth-cohort and the time of 'entrance' into the labour market can also be considered decisive, especially for unemployed or economically inactive immigrants. The factor of 'entrance' into the labour market is also considered a macro-economic and institutional factor. Thus, multiplicity of scientific directions for analysis of the labour market integration correlates with the policy supporting immigrants from the view of labour carriers and 'the life-course' approach.

The employment situation of immigrants in Finland improved after the end of the recession of 1990s, largely thanks to the economic upturn but also due to training and special labour market integration measures (Timonen 2004). Until the late 1990s, the predominant ideology underlying Finnish integration policy was assimilationist, with the expectation that members of ethnic minority groups should become culturally absorbed and indistinguishable from the mainstream of Finnish social and cultural life. Today the principles of Finnish integration policy are based on multi-cultural and pluralistic ideas (Harinen et al. 2007). The current labour market not only needs necessary professional skills but also better intercultural interaction and communication skills. In practice, the increase in interaction and collaboration of people with different ethnic and cultural backgrounds is creating the need to redefine both human resources management practices and personnel training.

The general aim of Finland's settlement policy rests on the assumption that immigrants are entitled to the same rights and treatment as the rest of the population. At the same time, Finland has also adopted the principle of reciprocity – that immigrants should be expected to contribute willingly to their successful integration into the Finnish society. In practice, however, there are still many problematic issues, which are mainly caused by the high unemployment rate among immigrant groups. When immigrants find jobs, they often encounter many problems related to the transfer of their professional skills. Consequently, they are more likely to be placed in the lower ranks of the labour market hierarchy and paid less than other native employees.

6 Conclusions

According to our results, higher education acquired in the country of destination does not always predetermine adequate employment. Even for younger immigrants, a period of apprenticeship can be followed by either permanent job placement or unrealised integration in the labour market and the continued recurrence of apprenticeship.

In the context of international research, the factor of education has a multi-dimensional character: neither higher education obtained in the native country nor higher education obtained in the country of destination are a factor for predetermining adequate employment for immigrants. In many cases, education is only considered evidence of a period spent in apprenticeship, not necessarily as a basis for future employment (Akresh 2006; Raijman & Semyonov 1995; Jasso & Rosenzweig 1995; Phythian et al. 2009; Thapa & Gørgens 2006; Wilkinson et al. 2006).

On the other hand, our results show that after a number of years living in the country, the employment rate of immigrants increases for both men and women, whereas the unemployment rate objectively decreases. However, the heterogeneity of immigrant groups also implies the heterogeneity of forms and outcomes of integration. For example, several categories of immigrants have a direct transitional path to employment (immediate or delayed), while transitional patterns are more complicated, diverse and hazardous. An immigrant's age has a significant influence on the process of integration, because younger immigrants orient toward obtaining new educational degrees and subsequent job placement, whereas the frequency of transitions between statuses decreases proportionally with the age of immigrants.

Our results are also congruent with the results of international research, proving that during the first few years of living in a host country, the differences in employment and unemployment for immigrants gradually decreases when compared to the native population. The employment and unemployment of immigrants is more sensitive to cyclical changes in economic activity than the employment of the native population. In general, during the first 10 years of living in a new country, differences in the employment rate gradually smooth out and disappear between immigrants and the native population.

Lis, FM Oxana Krutova, is doctoral student of sociology at the University of Tampere. Her field of specialisation includes issues of economic sociology, labour market studies and employment, political regulation of labour markets.

FM Liudmila Lipiäinen is a researcher in biostatistics at the University of Tampere. Her specialty consists in applying various statistical methods for analysing register data in social sciences.
<BIO>**Dr. Pertti Koistinen** is professor of social policies and labour market studies at the University of Tampere. His field of specialisation is work and labour market studies in general and issues of employment and social risks in special.

Appendix Table 1. Typology of sequences according to age and gender (2000 and 2010 years)

Gender		Number		%		Mean (age)	Std. Deviation (age)	No professional education (%, in a group)	New educational degree (%, in a group)	Educational code changed and appeared in the Register (%, in a group)
		2000	2010	2000	2010	2000	2000	2000	2000-2010	2000-2010
Type 1 "Entering"	Men	51	36	25,9	21,8	28,06	15,211	94,1	21,6	25,5
	Women	146	129	74,1	78,2	29,25	13,19	90,4	15,1	26,7
	Total	197	165	100	100	28,94	13,711	91,4	16,8	26,4
Type 2 "Withdrawal"	Men	202	88	62,5	55,4	29,84	9,471	93,1	16,8	19,3
	Women	121	71	37,5	44,6	28,5	9,133	89,3	20,7	26,4
	Total	323	159	100	100	29,34	9,354	91,6	18,3	22
Type 3 "Delayed integration (from apprenticeship)"	Men	93	93	51,1	51,1	17,95	6,621	97,8	65,6	66,7
	Women	89	89	48,9	48,9	21,66	9,928	93,3	78,7	79,8
	Total	182	182	100	100	19,76	8,583	95,6	72	73,1
Type 4 "Dropout"	Men	160	1	55,4	-	33,37	13,968	96,9	1,9	0
	Women	129	5	44,6	-	33,47	15,322	93	1,6	3,1
	Total	289	6	100	100	33,42	14,562	95,2	1,7	1,4
Type 5 "Quick integration"	Men	339	323	68,3	68	29,24	7,821	92	20,1	26
	Women	157	152	31,7	32	29,59	8,16	87,9	27,4	36,9
	Total	496	475	100	100	29,35	7,923	90,7	22,4	29,4
Type 6 "Circulating"	Men	138	128	40,8	40,3	32,23	12,283	84,1	16,7	21
	Women	200	190	59,2	59,7	36,44	10,745	77	17	23,5
	Total	338	318	100	100	34,72	11,567	79,9	16,9	22,5

Continued *Appendix Table 1. Typology of sequences according to age and gender (2000 and 2010 years)*

	Gender	Number		%		Mean (age)	Std. Deviation (age)	No professional education (%, in a group)	New educational degree (%, in a group)	Educational code changed and appeared in the Register (%, in a group)
		2000	2010	2000	2010	2000	2000	2000	2000-2010	2000-2010
Type 7 "Pension"	Men	23	20	57,5	58,8	44,65	15,66	82,6	0	0
	Women	17	14	42,5	41,2	46,59	13,271	88,2	0	0
	Total	40	34	100	100	45,48	14,544	85	0	0
Type 8 "Delayed integration (other)"	Men	153	152	37,1	37,3	25,63	9,279	83,7	27,5	34
	Women	259	256	62,9	62,7	29,89	9,184	78	23,2	39,4
	Total	412	408	100	100	28,31	9,436	80,1	24,8	37,4
Type 9 "Exclusion"	Men	87	68	42	43,1	35,07	14,43	97,7	5,7	3,4
	Women	120	90	58	56,9	31,48	12,346	95	5	6,7
	Total	207	158	100	100	32,99	13,347	96,1	5,3	5,3
Type 10 "Apprenticeship"	Men	44	43	39,3	39,8	17,43	5,462	90,9	61,4	61,4
	Women	68	65	60,7	60,2	20,65	8,823	91,2	64,7	69,1
	Total	112	108	100	100	19,38	7,812	91,1	63,4	66,1
Total	Men	1290	952	49,7	47,3	29,14	11,691	91,6	21,2	24,4
	Women	1306	1061	50,3	52,7	30,33	11,823	86,4	23,4	31,3
	Total	2596	2013	100	100	29,74	11,77	89	22,3	27,9

References

Abbott, A 1995, 'Sequence Analysis: New Methods for Old Ideas', *Annual Review of Sociology*, vol. 21, pp. 93-113.

Abbott, A & Forrest, J 1986, 'Optimal Matching Methods for Historical Sequences', *The Journal of Interdisciplinary History*, vol. 16, no. 3, pp. 471-494.

Abbott, A & Tsay, A 2000, 'Sequence Analysis and Optimal Matching Methods in Sociology: Review and Prospect', *Sociological Methods & Research*, vol. 29, no. 1, pp. 3-33, DOI: 10.1177/0049124100029001001.

Aisenbrey, S & Fasang, AE 2010, 'New Life for Old Ideas: The "Second Wave" of Sequence Analysis. Bringing the "Course" Back Into the Life Course, *Sociological Methods & Research*, vol. 38, no. 3, pp. 420–462, DOI: 10.1177/0049124109357532.

Akresh, IR 2006, 'Occupational Mobility among Legal Immigrants to the United States', *International Migration Review*, vol. 40, no. 4, pp. 854-884, DOI: 10.1111/j.1747-7379.2006.00046.x.

Akresh, IR 2008, 'Occupational Trajectories of Legal US Immigrants: Downgrading and Recovery', *Population and Development Review*, vol. 34, no. 3, pp. 435-456, DOI: 10.1111/j.1728-4457.2008.00231.x.

Alho, R 2013, 'Trade Union Responses to Transnational Labour Mobility in the Finnish-Estonian Context', Nordic journal of working life studies, vol. 3, no. 3, pp. 133-153.

Ashton, DN & Sung, J 1992, 'The Determinants of Labour Market Transitions: An Exploration of Contrasting Approaches', *Work, Employment and Society*, vol. 6, no. 1, pp. 1-21, DOI: 10.1177/095001709261001.

Berger, PA, Steinmüller, P & Sopp, P 1993, 'Differentiation of Life-Courses? Changing Patterns of Labour-Market Sequences in West Germany', *European Sociological Review*, vol. 9, no. 1, pp. 43-65.

Bevelander, P 2001, 'Getting a Foothold: Male Immigrant Employment Integration and Structural Change in Sweden: 1970-1995', *Journal of International Migration and Integration*, vol. 2, no. 4, pp. 531-559, DOI: 10.1007/s12134-001-1011-2.

Biemann, T 2011, 'A Transition-oriented Approach to Optimal Matching', *Sociological Methodology*, vol. 41, no. 1, pp. 195–221, DOI: 10.1111/j.1467-9531.2011.01235.x.

Blume, K, Ejrnæs, M, Nielsen, HS & Würtz, A 2009, 'Labour market transitions of immigrants with emphasis on marginalization and self-employment', *Journal of Population Economics*, vol. 22, pp. 881-908, DOI: 10.1007/s00148-008-0191-x.

Borkert, M, Bosswick, W, Heckmann, F & Lüken-Klaßen, D 2007, '*Local integration policies for migrants in Europe*', European Forum for Migration Studies, Bamberg, Germany.

Brzinsky-Fay, C 2007, 'Lost in transition? Labour market entry sequences of school leavers in Europe', *European Sociological Review*, vol. 23, no. 4, pp. 409–422, DOI: 10.1093/esr/jcm011.

Brzinsky-Fay, C 2011, *School-to-Work Transitions in International Comparison*, Academic dissertation, University of Tampere, School of Social Sciences and Humanities, Finland.

Brzinsky-Fay, C, Kohler, U & Luniak, M 2006, 'Sequence analysis with Stata', *The Stata Journal*, vol. 6, no. 4, pp. 435–460.

Chiswick, BR, Cohen, Y & Zach, T 1997, 'The Labour Market Status of Immigrants: Effects of the Unemployment Rate at Arrival and Duration of Residence', *Industrial and Labour Relations Review*, vol. 50, no. 2, pp. 289-303, DOI: 10.2307/2525087.

Chiswick, BR, Lee, YL & Miller PW 2005, 'A Longitudinal Analysis of Immigrant Occupational Mobility: A Test of the Immigrant Assimilation Hypothesis', *International Migration Review*, vol. 39, no. 2, pp. 332-353, DOI: 10.1111/j.1747-7379.2005.tb00269.x.

Eichhorst, W, Frattini, T & Giulietti, C 2011, 'The Integration of Migrants and its Effects on the Labour Market', *IZA Research Report*, No. 40, pp. 1-133.

Fasang, AE & Liao TF 2013, 'Visualizing Sequences in the Social Sciences. Relative Frequency Sequence Plots', *Sociological Methods & Research*, vol. 14, pp. 1-34, DOI: 10.1177/0049124113506563.

Forsander, A 2002, 'Luottamuksen ehdot. Maahanmuuttajat 1990-luvun suomalaisilla työmarkkinoilla', *Vaestontutkimuslaitoksen julkaisusarja*, no. D 39/2002, Vaestontutkimuslaitos, Helsinki.

Fuller, S 2011, 'Immigrant Employment Trajectories and Outcomes in the First Settlement Years: A Sequence-Oriented Approach', *Working Paper Series*, Metropolis British Columbia, no. 11-07, pp. 1-73.

Gabadinho, A, Ritschard, G, Müller, NS & Studer, M 2011, 'Analysing and Visualizing State Sequences in R with TraMineR', *Journal of Statistical Software*, vol. 40, no. 4, pp. 1-37.

Gauthier, J-A, Widmer, ED, Bucher, P & Notredame, C 2010, 'Multichannel Sequence Analysis Applied to Social Science Data', *Sociological Methodology*, vol. 40, no. 1, pp. 1-38, DOI: 10.1111/j.1467-9531.2010.01227.x.

Gazier, B & Gautie, J 2011, 'The Transitional Labour Markets Approach: Theory, History and Future Research Agenda', *Journal of Economic and Social Policy*, vol. 14, no. 1, pp. 1-28.

Halpin, B 2010, 'Optimal Matching Analysis and Life-Course Data: The Importance of Duration', *Sociological Methods and Research*, no. 38, pp. 365–88, DOI: 10.1177/0049124110363590.

Halpin, B & Cban, TW 1998, 'Class Careers as Sequences: An Optimal Matching Analysis of Work-Life Histories', *European Sociological Review*, vol. 14, no. 2, pp. 111-130.

Hansen, J & Lofstrom, M 2009, 'The Dynamics of Immigrant Welfare and Labour Market Behaviour', *Journal of Population Economics*, vol. 22, no. 4, pp. 941-970, DOI: 10.1007/s00148-008-0195-6.

Harinen, P, Pitkanen, P, Sagne, S & Ronkainen, J 2007, 'Multiple Citizenship as a Challenge for Finnish Citizenship Policy Today' in *Multiple Citizenship as a Challenge to European Nation-States*, ed D Kalekin-Fishman and P Pitkanen, Sense Publishers, Rotterdam, The Netherlands pp. 121-145.

Heikkilä, E & Pikkarainen, M 2008, 'Employment of Immigrants in the Finnish Labour Markets' in *Migration, Mobility and Human Rights at the Eastern Border of the European Union*, ed G Silaşi and OL Simina, Space of Freedom and Security, Timişoara pp.121-139.

Jasso, G & Rosenzweig, MR 1995, 'Do Immigrants Screened for Skills do Better than Family Reunification Immigrants?, *International Migration Review*, vol. 29, no. 1, pp. 85-111, DOI: 10.2307/2546998.

King, T 2013, 'A framework for analysing social sequences', *Quality and Quantity*, no. 47, pp. 167–191, DOI: 10.1007/s11135-011-9510-5.

Kogan, I 2004a, 'Labour Market Careers of Immigrants in Germany and the United Kingdom', *Journal of International Migration and Integration*, vol. 5, no. 4, pp. 417-447, DOI: 10.1007/s12134-004-1022-x.

Kogan, I 2004b, 'Last Hired, First Fired? The Unemployment Dynamics of Male Immigrants in Germany', *European Sociological Review*, vol. 20, no. 5, pp. 445-461, DOI: 10.1093/esr/jch037.

Kogan, I 2007, 'A study of immigrants' employment careers in West Germany using the sequence analysis technique', *Social Science Research*, no. 36, pp. 491-511, DOI: 10.1016/j.ssresearch.2006.03.004.

Koster, F & Fleischmann, M 2012, 'Labour Market Transitions in Europe: A Multilevel Analysis of Age Cohorts and Institutions Across 13 Countries', *NEUJOBS Working Paper*, no. D 6.5, pp. 1-23.

Martin, P, Schoon, I & Ross, A 2008, 'Beyond Transitions: Applying Optimal Matching Analysis to Life Course Research', *International Journal of Social Research Methodology*, vol. 11, no. 3, pp. 179–199, DOI: 10.1080/13645570701622025.

Muffels, R, Wilthagen, T & van den Heuvel, N 2002, 'Labour market transitions and employment regimes: evidence on the flexibility-security nexus in transitional labour markets', *WZB Discussion paper*, no. FS I 02-204, pp. 1-38.

Phythian, K, Walters, D & Anisef, P 2009, 'Entry Class and the Early Employment Experience of Immigrants in Canada', *Canadian Studies in Population*, vol. 36, no. 3-4, pp. 363-382.

Pollock, G 2007, 'Holistic trajectories: a study of combined employment, housing and family careers by using multiple-sequence analysis', *Journal of Royal Statistical Society*, no. 170, part 1, pp. 167–183, DOI: 10.1111/j.1467-985X.2006.00450.x.

Pollock, G, Antcliff, V & Ralphs, R 2002, 'Work orders: analysing employment histories using sequence data', *International Journal of Social Research Methodology*, vol. 5, no. 2, pp. 91-105, DOI: 10.1080/13645570110062432.

Powers, MG & Seltzer, W 1998, 'Occupational Status and Mobility among Undocumented Immigrants by Gender', *International Migration Review*, vol. 32, no. 1, pp. 21-55, DOI: 10.2307/2547559.

Powers, MG, Seltzer, W & Shi, J 1998, 'Gender Differences in the Occupational Status of Undocumented Immigrants in the United States: Experience before and after Legalization', *International Migration Review*, vol. 32, no. 4, pp. 1015-1046, DOI: 10.2307/2547670.

Raijman, R & Semyonov, M 1995, 'Modes of Labour Market Incorporation and Occupational Cost among New Immigrants to Israel', *International Migration Review*, vol. 29, no. 2, pp. 375-394, DOI: 10.2307/2546786.

Ristikari, T 2012, 'Finnish trade unions and immigrant labour', Academic dissertation, Institute of Migration, 2012.

Räisänen, H & Schmid, G 2008, 'Transitional labour markets and flexicurity from the Finnish labour market point of view', *WZB Discussion paper*, no. SP I 2008-108, pp. 1-51.

Schmid, G 1998, 'Transitional labour markets: a new European employment strategy', *WZB Discussion paper*, no. FS I 98-206, pp. 1-57.

Schmid, G & Gazier, B 2002, '*The Dynamics of Full Employment. Social Integration through Transitional Labour Markets'*, Edward Elgar.

Schmid, G & Schömann, K (eds.) 2003, 'The Concept of Transitional Labour Markets and Some Policy Conclusions: The State of the Art', *TLM.NET Working Paper*, no. 2003-01, Berlin.

Stier, H & Levanon, V 2003, 'Finding an Adequate Job: Employment and Income of Recent Immigrants to Israel', *International Migration*, vol. 41, no. 2, pp. 81-107.

Thapa, PJ & Gørgens, T 2006, 'A Duration Analysis of the Time Taken to Find the First Job for Newly Arrived Migrants in Australia', *Discussion Paper*, no. 527, pp. 1-48.

Timonen, V 2004, 'New Risks – Are They Still New for the Nordic Welfare States' in *New Risks, New Welfare. The Transformation of the European Welfare State*, ed P Taylor-Gooby, Oxford pp. 83-111.

Wilkinson, L, Peter, T & Chaturvedi, R 2006, 'The Short-Term, Medium-Term, and Long-Term Economic Performance of Immigrant Women in Canada and the United States', *Journal of International Migration and Integration*, vol. 7, no. 2, pp. 195-217, DOI: 10.1007/s12134-006-1009-x.

Wu, L 2000, 'Some Comments on "Sequence Analysis and Optimal Matching Methods in Sociology: Review and Prospects', *Sociological Methods and Research*, Vol. 29, No.1: 41-64.