Labour Market Status and Migration Dynamics

Govert E. Bijwaard*

Econometric Institute
Erasmus University Rotterdam
Tinbergen Institute and IZA

VERY PRELIMINARY, PLEASE DO NOT QUOTE

*Erasmus University Econometric Institute, P.O. Box 1738, 3000 DR Rotterdam, The Netherlands; Phone: (+31) 10 40 81424; Fax: (+31) 10 40 89162; E-mail: bijwaard@few.eur.nl This research is based on a collaboration with Statistics Netherlands and financially supported by the Netherlands Organization for Scientific Research (NWO) nr. 451-04-011. I thank Ruben van Gaalen and Steffen Reinhold for valuable comments. I also benefited from a seminar at Mannheim University.

Labour Market Status and Migration Dynamics

Abstract

The migration literature has focused primarily on earnings, with little attention on the issue of labour market status. Yet one of the main concerns of immigrant receiving countries is the size of public transfers to immigrants. The importance of repeat and circular migration is also largely overlooked. In this empirical paper we assess how labour market transitions and out- and repeat migration of immigrants are interrelated. We estimate a multi-state multiple spell competing risks model and identify four states: employed, unemployed receiving benefits, out-of-the-labour market (no benefits) and abroad. The first three states indicate the labour market status of the immigrant in the host country.

For the analysis we use data on recent immigrants to The Netherlands. A unique feature of this data is that we can distinguish the immigrants by migration motive. We choose to focus on labour migrants which implies that all migrants are (self)-employed at the time of arrival. The data further contain information on the timing of migration moves, timing of labour status, income change and industry. We also have demographic information, such as the country of origin and marital status. We show that both low and high income migrants leave employment on the Dutch labour market faster. We also shed light on the percentage of immigrants that are trapped in unemployment and therefore present a financial burden to the country.

JEL classification: F22, J61, C41.
Key words: migration dynamics; competing risks; labour market transitions; immigrant assimilation;

1 Introduction

Many European countries see immigration as a potential solution to the social security crisis induced by an aging population, rising health costs and low fertility rates. Immigration of young workers slows down the aging of the population. However, immigrants can become a financial burden on the host country if they get unemployed fast and draw on the social insurance systems. Whether immigrants become a burden depends on their labour market dynamics. In principle, only working immigrants contribute financially to the host country. Unemployed migrants draw on the social security system of the host country. However, many migrants have not gained any right on social security benefits and these non-participating migrants therefore neither contribute nor draw on the host country economy.

Whether immigrants become a burden also depends on their migration dynamics in relation to their labour market status. If out-migration is selective on the most economically successful immigrants, the host country looses potential contributors. But, if out-migration is selective on unemployed or out-of-the labour market immigrants, the host country gains from such migration. The story does not end with out-migration as a small, but significant, percentage of the out-migrated immigrants returns to the host (6% within five years in The Netherlands, see Bijwaard (2007)). Some return-out-migrants still have the right to receive social security benefits. From a host country perspective it is preferred that the employed migrants, or at least those who do not place a financial burden on the national social security system, return to the host and the others remain abroad. The lead to a perpetual tale of intercorrelated labour market behaviour and migration dynamics. The main goal of this paper is to gain insight in the relation between labour market success in the host country and out- and repeat migration.

(Dustmann and Weiss 2007),

Models for duration data were initially developed in the medical sciences and reliability theory. Duration models or event history models have also been used extensively for demographic analysis, for example in modelling time till birth of first child, time till marriage or time till death. However, the number of analyses of migration decisions based on a duration model is rather limited and duration analysis of return migration is even more scarce. A few exceptions are Detang-Dessendre and Molho (1999), Longva (2001) and Constant and Zimmermann (2003). Most migration data lack information on the exact timing of the migration moves and only reveal whether the migrant is still in the country at the interview date. Therefore, a more common approach is to estimate a probit or logit model for the probability to return (see a.o., Reagan and Olsen (2000) and Constant and Massey (2003)).

In a probit model part of the migration dynamics is discarded because only the whereabouts of the migrants at fixed points in time are considered. However, the choice of these fixed points has a big impact on the estimation results. It is also not straightforward to include time varying covariates into a probit model.

Bijwaard (2007) recently estimated a mover-stayer duration model, which allows for both permanent and temporary immigrants, based on demographic data of immigrants to the Netherlands. He showed that the migration dynamics of these immigrants is substantial and that these dynamics heavily depend on the migration motive and the country of origin. In this article we focus only on labour migrants and, because we have now data on social-economic variables available, include labour market dynamics.

Competing risks models . Alternating states...

The countries of Western Europe, including The Netherlands, have experienced considerable immigration flows over the past decades and have changed from emigration to immigration countries. Most probably the migration motive is related to the migration dynamics. A unique feature of the data from Statistics Netherlands used in this article is that information on the motive to migrate is available for recent (1999-2003) non-Dutch, non-national, migrants. We choose to focus on labour migrants, immigrants who are reported labour migrants and who are (self-)employed at their first entry. The data further contains information on the timing of migration moves. On a monthly basis we know the labour market status and income of the migrants. The timing of both labour market status changes and migration status changes allows us to construct the labour market behaviour of the migrants together with their migration history. This forms the basis of our analysis. We also take some basic demographics characteristics of the migrants, such as marital status, country of origin, age and gender, into account to gain insight in their influence on the dynamics. The data used for this article is a both a subsample and an extension of the data used by Bijwaard (2007). We only focus on labour migrants, but have two more observation years and add the social-economic data.

The outline of the paper is as follows. In the next section we present the data and discuss the recent migration pattern to and from The Netherlands. In Section 3 we discuss estimation and inference in a multi-state multiple spell competing risks model. In Section 4 we present the data and discuss the recent migrant history to the Netherlands. Section 5 gives the empirical results and Section 6 summarizes the results and states our conclusion.

2 Theory and hypotheses

This section is very preliminary. reference to literature?

The migration literature has focused primarily on earnings, with little attention on the issue of labour market status. Yet one of the major policy concerns of immigrant receiving countries is the employment and unemployment of immigrants. The higher the employment ratio and the lower the unemployment among immigrants, the smaller their use of public income transfers.

It is often overlooked that a large proportion of the immigrants leave the country again, and may return later. If out-migration is selective on the most economically successful immigrants, the host country looses potential contributors. But, if out-migration is selective on the least economically successful, the host country gains from such migration. For the host country it is therefore imperative to understand the in- and outflow of the immigrants and their labour market status.

In this article we focus on labour migrants, migrants who report to enter the country for work and who have a job at arrival. Our main goal is to present a picture of the labour market behaviour of labour migrants and to determine the factors that influence this behaviour. If a migrant become unemployed before he leaves the country. An important issue is to be explored is the relation between the height of the income and the time path of the employment situation. It is expected that the sector the immigrant is working in also influences his labour- and migration behaviour.

Most labour migrants work for a company, while some migrants start their own business. These self-employed migrants need to invest more in the new country to be successful. This may lead to a higher attachment to the new labour market. It is therefore important to distinguish between self-employed and company-employed migrants.

Different sectors of the economy attract different types of migrants. We expect that migrants working in a sector in which temporary contracts are very common have less attachment to the new labour market. Those migrants may leave fast. The labour market in each sector may also differ.

Another important issue is whether the timing of arrival has a permanent effect on the labour market status of immigrants. Does arriving in the host country in a period of high unemployment, in which prospects for good jobs for new immigrants are scarce, place the immigrant in an unfavourable long-term employment situation? A related question is whether the selectivity of labour immigrants, controlling for personal and job characteristics and country of origin, varies over the business cycle. Are immigrants who arrive in a recession more favourably selected, perhaps because only the most

able migrate when jobs are scarce? The scarring effect can be measured by including the analysis a variable for the unemployment rate in the economy the moment the immigrant arrives in the the host country.

The labour market and migration history also influences the future behaviour. Migrants who have been in the host before are more familiar with the country and its customs. Thus, their labour market prospects are usually better. On the other side, migrants with unemployment experience in the host have worse prospects.

3 A competing risks model

We view the migrant behaviour as a semi-Markov process with individuals moving between four states. The four states identified in this paper are:

1. Employed in the host country;
2. Unemployed and receiving benefits in the host country;
3. Out of the labour market (and not receiving benefits= non-participating) in the host country;
4. Living abroad.

These states are mutually exclusive and exhaust all possible destinations. A migrant may leave a state $j = 1, \ldots, 4$ for any of the other destination states, i.e. for $j = 1$ the destination states are $k = 2, 3, 4$, for $j = 2$ $k = 1, 3, 4$ etc.

For simplicity we assume that all spells are independent of each other. We use a competing risks model hazard model (see Lancaster (1990) for more discussion on hazard models) for each origin-destination pair. Define the random variables T_{jk} that describe the duration for a transition from j to k. We assume a mixed proportional hazard model for which the intensity for the transition from j to k is:

$$\lambda_{jk}(t|\overline{X}_{jk}(t), V_{jk}) = \lambda_{0jk}(t) \exp\left(\beta'_{jk} X_{jk}(t) + V_{jk}\right) \tag{1}$$

where $\overline{X}_{jk}(t) = \{X_{jk}(s)|0 \leq s \leq t\}$ is the sample path of the observed characteristics up to time t, which is, without loss of generality, assumed to be left continuous. The unobserved heterogeneity V_{jk} also enters the intensity multiplicatively. We assume that the path of the observed characteristics is independent of the unobserved heterogeneity. The positive function $\lambda_{0jk}(t)$ is the baseline intensity which is specified up to a vector of parameters α_{jk}.

For each origin state only the smallest of T_{jk} durations $\tilde{T}_j = \min_k T_{jk}$ and the corresponding actual transition destination are observed. The other durations are censored, in the sense that all is known that their realisations exceed $\tilde{T}_j$. Suppose for individual i we observe M_{ijk} j to k transition spells, at sojourn times $t_1, \ldots, t_M$, then the likelihood for these M_{ijk} transitions is:

$$L_{jk} = \int \prod_m \lambda_{jk}(t_m|\overline{X}_{jk}(t_m), V_{jk})^{\delta_{mjk}} \exp\Big(-\sum_g \Lambda_{jg}(t_m|\overline{X}_{jg}(t_m), V_{jg})\Big)\, dH_{jk}(V_{jk}) \tag{2}$$

where $\delta_{mjk} = 1$ for a j to k transition and 0 otherwise, $\Lambda_{jk}(t_m|\overline{X}_{jk}(t_m), V_{jk}) = \int_0^{t_m} \lambda_{jk}(s|\overline{X}_{jk}(s), V_{jk})\, ds$, the integrated intensity. $H_{jk}(V_{jk})$ is the distribution function of the unobserved heterogeneity, which we assume to be a discrete distribution with two points of support, (v_{1jk}, v_{2jk}) and $\Pr(V_{jk} = v_{1jk}) = p_{jk}$.[1]

For each origin destination pair the parameters are estimated separately. In other words, we assume that the transition intensities for each competing risk are mutually independent. This implies that the spell specific unobserved heterogeneity (V_{jk}) are uncorrelated across the origin-destination pairs.

3.1 Inference in competing risks models

The interpretation of the coefficients in a competing risks model requires caution.[2] A particular covariate, say x_l, can appear in several intensities. In such a case the vectors β_{ljk} convey little information about the effect of the covariate on the probability to exit from origin j to destination k. The reason is that the exit probability not only depends on the intensity of making a transition to k but also on the transition intensities to all other states.

We choose to examine the marginal effect of the covariate x_l on the *total survival* and the *cumulative incidence function* instead. Together they provide the distribution over the states at a particular sojourn time from each origin state. The total survival function from origin j is

$$S_j(t|\overline{X}_{jk}(t)) = \Pr(\tilde{T}_j \geq t) = \prod_{l \neq j} \int \exp\Big(-\Lambda_{jl}(t|\overline{X}_{jl}(t), V_{jk}\Big)\, dH_{jl}(V_{jl}) \tag{3}$$

The total survival gives the probability of starting in origin j and stay there till for at least a duration t. For instance, the total survival for an employed migrant gives the probability to remain employed up to a given time. The cumulative incidence function is the probability of making a transition from

[1] We estimate (e^v_{1jk}, e^v_{2jk}) and q_{jk} with $p_{jk} = e^{q_{jk}}/(1 + e^{q_{jk}})$ and leave out the constant in the baseline intensity.

[2] Note that in a standard mixed proportional hazard (MPH) model the interpretation of the coefficients is also not so clear. In a MPH model the regression coefficient of covariate x_l is only defined conditional on the unobserved heterogeneity.

j to k before duration t

$$F_{jk}(t|\overline{X}_{jk}(t)) = \Pr\big(\tilde{T}_j \leq t, \text{destination } k\big) = \int_0^t \lambda_{jk}(s|\overline{X}_{jk}(s))\overline{v}_{jk}(s)S_j(s|\overline{X}_{jk}(s))\,ds \tag{4}$$

with $\overline{v}_{jk}(t) = \mathrm{E}[V_{jk}|T_{jk} \geq t]$, the expected value of the unobserved heterogeneity over the survivors at t. Thus, the cumulative incidence function from employment gives the probability to leave employment either to unemployment, to non-participation or to abroad before a given time spent in employment. The cumulative incidence is also known under the name 'subdistribution function'. This name reflects that the cumulative probability to make the j–k transition remain below one, as $F^V_{jk}(\infty|\cdot)$ is the probability to make a transition from j to k,hence it is not a proper probability function. Note that $\sum_{k\neq j} F_{jk}(t|\cdot) = 1 - S_j(t|\cdot)$.

In principle many marginal effects can be defined for the change in $S_j(t|\cdot)$ or $F_{jk}(t|\cdot)$, depending on the values of the covariates (or path for time-varying covariates). We choose to define the marginal effects w.r.t. the reference individual, that is for $X = 0$. In our analysis most of the covariates are binary and we therefore consider the discrete version of the marginal effect of a covariate, $\Delta S_j(t|x_l) = S_j(t|x_l = 1) - S_j(t|0)$ and $\Delta F_{jk}(t|x_l) = F_{jk}(t|x_l) - F_{jk}(t|0)$. Then, similar to the result from Thomas (1996), we have that if $\beta_{ljg} > \beta_{ljk}$, $\forall g \neq k$, then $\mathrm{sign}\Big(\Delta S_j(t|x_l)\Big) > 0$ and $\mathrm{sign}\Big(\Delta F_{jk}(t|x_l)\Big) > 0$ (see the appendix).

3.2 Transition probabilities

The total survival and cumulative incidence function only give an incomplete picture of the dynamics, as they just look one event ahead. In order to look further ahead, we need to take all the transitions into account. An employed migrant may, as we observe in our data, first become non-participating before he leaves the country. Another possible route for employed migrants to leave the country is through unemployment and non-participation, in either way. It is even possible that the migrant after a period of unemployment returns to work and then leaves the country. The transition probability takes all the possible transitions into account. Dabrowska et al. (1994) describe how we can derive these transition probabilities for the semi-Markov model we use.

The transition probability from state j to state k after a duration t (time since the migrant entered the host for the first time) is formed by adding all possible transitions that start in j and end in k at time t. First consider the migrants who do not make a transition, thus $j = k$. Those individuals remain in j till t, say the employed migrants who remain working. The probability that the employed remain working is equal to the total survival of the employed, $S_j(t)$. Next we have the migrants who make one transition within a period t since the entered the country, say from employment to

non-participation, and then remain in this state before the end of the period. The probability that a transition from j to k before t occurs and the migrants then remain in k is equal to

$$\int_0^t f_{jk}(u|\cdot) \cdot S_k(t-u)\, du$$

with $f_{jk}(t) = \partial F_{jk}(t)/\partial t$, the 'subdistribution density'. Some migrants may end abroad after first first making a transition from employment to non-participation and then leave the country. The probability to make a transition from j to k within a period t but after an initial transition from j to m is

$$F_{jk}^{(2)}(t|\cdot) = \int_0^t \sum_{m=1}^{4} F_{jm}(u|\cdot) \cdot f_{mk}(t-u|\cdot)\, du$$

with the cumulative incidence from j to j, $F_{jj}(t|\cdot) = 0$. Then, the probability that a migrant who made these two transitions and remain in state k till t is

$$\int_0^t f_{jk}^{(2)}(u|\cdot) S_k(t-u)\, du$$

This reasoning is repeated for any number of intertemporal transitions from state j to state k Thus, the transition probability, that is the probability to be in k starting in j after a duration t is

$$P_{jk}(t|\cdot) = S_j(t|\cdot) \cdot I(j=k) + \sum_{p\geq 1} \int_0^t f_{jk}^{(p)}(u|\cdot) S_k(t-u)\, du \tag{5}$$

where $f_{jk}^{(p)}(t) = \partial F_{jk}^{(p)}(t)/\partial t$ and

$$F_{jk}^{(p)}(t|\cdot) = \int_0^t \sum_{m=1}^{4} F_{jm}^{(p-1)}(u|\cdot) \cdot f_{mk}(t-u|\cdot)\, du$$

In our data we follow immigrants who enter The Netherlands and who have work at the moment they enter. We follow the labour market and migration dynamics of these labour migrants. Thus, we are only interested in the transition probability from employment, $P_{1k}(t|\cdot)$. After estimating all the competing risks models for all the possible transitions we will derive the path of these transition probabilities for the reference individual.

Again no direct relation between the coefficients of the competing risks models and the effect of the covariates on the transition probability exists. To show the impact of the covariates we therefore calculate the (discrete) marginal effects of the migrant characteristics on these transition probabilities. Again we calculate these marginal effects for the reference migrant.

4 Data on immigrants to The Netherlands

In the early 1960s The Netherlands changed from an emigrant to an immigrant country. Immigration follows a European sequence of post World War II and post-colonial immigration, unskilled manpower

recruitment and the arrival of refugees. The first period is characterized by the de-colonization of Indonesia in 1949, as a consequence many Indonesian people came to The Netherlands. In the second period, starting in the beginning of the 1960s, a large flow of 'guestworkers', mainly Turks and Moroccans arrived. The Dutch government regulated the recruitment practices by bilateral agreements with the main countries. The total inflow of immigrants reached 235,000 in 1970s. The recruitment policy stopped during the first oil crisis. However, the immigration from the recruitment countries continued as a follow-up migration, first in the form of family reunification and later also family formation. In this period the independence of Surinam also caused large immigration. Starting in the 1980s, immigration is characterized by the family reunification/formation of 'guestworkers'. Additionally, the flow of political refugees, asylum seekers has increased dramatically. In the political discourse it is often forgotten that the number of labour immigrants from neighbouring countries and other EU countries has always been substantial. In the last twenty years the majority of labour immigrants come from these countries or from other western countries.[3]

We have data on recent immigration and emigration to and from The Netherlands. All immigration by non-Dutch citizens, immigrants who do not hold the Dutch nationality, who legally entered The Netherlands is registered in the Central Register Foreigners (Centraal Register Vreemdelingen, CRV), using information from the Immigration Police (Vreemdelingen Politie) and the Immigration and Naturalization Service (Immigratie- en Naturalisatie Dienst, IND).[4] For all these immigrants without the Dutch nationality we know when their migration move(s) took place and what their migration motive was to enter the Netherlands. The people with a nationality that implies a visa to enter The Netherlands, fill in their migration motive when they apply for the visa. There are different requirements for different visas. People with other, Western nationalities, fill in their migration motive at their mandatory registration. With these data we can identify important groups of immigrants to the Netherlands. Statistics Netherlands make the distinction between labour-migrants, family reunification migrants, family-formation migrants, student immigrants, asylum seekers (and refugees), and immigrants for other reasons (including a.o. joining with labor migrant, medical treatment and Au Pair).

The CBS, Statistics Netherlands, has linked these data to the Municipal Register of Population (Gemeentelijke Basisadministratie, GBA) and to their Social Statistical database (SSB). The GBA

[3]See Zorlu and Hartog (2001) and Van Ours and Veenman (2005) for a more detailed discussion on the immigration to The Netherlands.

[4]The criterion for registration as an immigrant in the Netherlands is a four months time criterion. To be more precise: every person intending to stay in the Netherlands for at least two thirds of the forthcoming six months, should notify the local population register immediately after the arrival in the Netherlands.

data contain basic demographic characteristics of the migrants, such as age, gender, marital status and country of origin. From the SSB we have information (on a monthly basis) on the labour market position, income, industry sector and household situation. The most important income source determines the labour market position. Based on the income source CBS distinguishes nine labour market categories: employed, self-employed, unemployment benefits, disability benefits, social security benefits, other benefits, pensions, students and non-participating (no income). We combine the first two categories to an employed status. All the other categories except for the last are combined to the unemployment receiving benefits category. Because we are interested in the labour market behaviour of migrants we restrict our analysis to the (non-Dutch) labour migrants immigrants. We further restrict our sample to the immigrants between 18 and 64 years of age. About 23% of all non-Dutch immigrants in these age brackets are labour migrants.

In Table 1 we present some descriptive statistics for the data and compare the averages with the averages for the Dutch workforce. Labour migrants are mostly men, even more than the Dutch workforce. They are more often single and less often married or have children at home. The immigrants are relatively young. They work more often in services and as temporary workers. The migrants also work relatively often in education. The table also shows the distribution of the migrants over a selected group of countries/regions of origin.[5] The majority of labour migrants originates from a country in the European Union, in particular from the neighbouring countries UK, Germany, France and Belgium.

The migrants in our sample show a substantial dynamic behaviour. Of all the migrants that enter, including those that arrive in December 2003, 48% leaves the country at least once, 24% has more than one employment spell, 11% has at least one unemployment spell and 40% has at least one non-participation spell. Table 2 report the observed transitions among the four different states. The majority of employment spells end in non-participation, while the majority of non-participation spells end abroad. The majority of the spells abroad are censored, the migrants are still abroad at the end of the observation period. Close to half of the relatively small number of unemployment spells end in employment. But a third of the unemployed leave the labour market. Very few migrants leave the country from unemployment.

By definition any labour migrant starts in the employed state at entry. Soon after arrival some migrants move to the other states. Some may return and some may move on to another state. But the

[5]EU15/EFTA are countries in the European Union, except for the 2002 new members and except for Belgium, Germany, UK and France plus the member countries of EFTA: Switzerland, Norway, Iceland. Former Yugoslavia are Croatia, Serbia & Montenegro, Macedonia and Bosnia. New EU members are the countries that joined the European Union in 2004: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and, Slovakia.

migrant is always in one of the four states. In Figure 1 we depict the development of the distribution over the four states for the 1999-entry cohort. The most prominent feature of this development is that only a few migrants get unemployment benefits. Thus, the financial burden on the Dutch economy of these migrants is small. Instead, a substantial proportion of the migrants become non-participating (without receiving benefits), possibly because they do not have gained any benefit rights in the Netherlands. The proportion of migrants abroad continuously increases. Six years after arrival more than 50% of the labour migrants have left the country. When we combine this result with the numbers in Table 2 it seems that non-participation is a temporary status before the migrant leaves the country.

Put Figure 1 about here

5 Empirical Findings

For each of the four labour market status separately, employed, unemployed, non-participation and abroad, we estimate competing risks models to the other destination states. We assume a piecewise constant baseline intensity on eleven intervals (every six months and beyond five years) and a two-point discrete unobserved heterogeneity. The covariates included in the model refer to demographic (gender, age, martial status and age of children), country of origin, and individual labour market characteristics (monthly income, industry sector). Labour market history and migration history is also included. For transitions from employment we include a dummy for previous employment experience. For transitions from unemployment and from non-participation we include a dummy for previous unemployment and for non-participation experience. For all transitions from the Dutch labour market we include a dummy for repeated immigration to the Netherlands. For transitions back to the Netherlands we include the labour market status at departure and a dummy for repeated emigration.

We control for business cycle conditions by including the national unemployment rate, both at the moment of first entry to the country and the time-varying monthly rate. The unemployment rate at entry captures the 'scarring effect' of migrants, while the running unemployment rate captures the impact of the business cycle on the transition intensities.

For transition from employment the reference individual is a 30-35 year old single male without children from a EU/EFTA-country (except the neighboring countries UK, Belgium, France or Germany) employed in the trade sector and with a monthly income of €2000-€3000. For both the unemployed and the non-participating the industry sector is dropped, from the analysis. A non-participating migrant has, by definition, no income. Thus income is not included in the transition intensities from

non-participation. The reference national unemployment rate is the average registered unemployment rate in the Netherlands for the period 1999-2005 which was 3.1%.

5.1 Total survival and cumulative incidence

We used maximum likelihood estimation to obtain the estimated parameters for all transition intensities. For the estimation we use the likelihood in (2) with a two-point discrete unobserved heterogeneity distribution. From the estimated coefficients we first derive the total survival and cumulative incidence rates for the reference migrant from each state.[6] For the transition from employment, unemployment and non-participation the total survival and cumulative incidence functions are depicted in Figure 2 to Figure 4.[7] From employment the majority of transitions is to non-participation. After five years about 40% of the employed labour migrants has left the labour market and 6% has left the country. The departure from unemployment, depicted in Figure 3, is very fast. Within two years most unemployed individuals have left unemployment. A large majority of the unemployed become employed again (70%). However, a substantial proportion, 20%, leaves the labour market and becomes non-participating. A large proportion of the non-particpants leave the country. Five years after becoming a non-participant about 40% of the migrants has left the country. But, we also find that 45% of them return to work within five years. Combining Figure 2 and Figure 4 we see that departure of labour migrants from the Netherlands is driven by migrants that first become non-participants and then leave the country.

Put Figures 2-5 about here

As discussed in Section 3.1 the interpretation of the coefficients in a competing risks model is not straightforward. Instead of the coefficients, we therefore report the (discrete) marginal effects on the total survival and cumulative incidence rates. Table 3 shows these marginal effects of selected covariates. It reports the marginal effects five year after the last transition.

Female migrants are more likely to stay employed, unemployed and non-participating. But when unemployed they are less likely to become employed again. Married migrants are more likely to stay employed. They have a 10% higher probability to remain employed for more than five years. Divorced migrants also have a higher chance to remain employed and when they become non-participating they have a higher probability to become employed and a lower probability to move abroad. The age of the

[6] A full list estimates is available from the author upon request.

[7] The total survival and cumulative incidence rates for transition back to the Netherlands from abroad are not shown as only 3% of the reference migrants return within five years.

migrant plays an important role in the transition from unemployment and non-participation to work. Not surprisingly, older migrants have a higher chance to remain unemployed and a lower chance to return to work.

We only find a minor business cycle selection effect on the migrants that enter the country. The migrants that arrive in a recession seem favourably selected as they have a higher chance to stay employed and to return to employment from unemployment. But, if such a migrant becomes non-participating he has a higher chance to remain non-participating and a lower chance to leave the country. This is an indication that from the positively selected migrants that arrive during a recession a negatively selected group leaves the labour market. Those migrants then leave the country slower. This seems in contradiction with Borjas and Bratsberg (1996).

The labour market behaviour of the migrants also depends on the country of origin. We would expect that migrants from Western countries have stronger ties to the labour market, especially those from neighbouring countries. From our estimation results we deduce that migrants from neighboring Belgium, Germany and the UK are more likely to remain employed and less likely to become non-participating. Non-participating migrants from the UK leave the country faster. Migrants from Japan have very strong ties to work. When these migrants end their work they leave the country. The few that become non-participating hardly return to work but leave the country. The latter is also true for migrants from North-America. However they are less likely to stay employed. For migrants from the countries that recently joined the EU return to the Netherlands is more common. They also become employed from non-participation more easily. The migrants from the old guest-worker countries, Morocco and Turkey, have less chance to get employed again. Turkish migrants have low attachment to the labour market. Note that nowadays only a small number of labour migrants arrive from these countries.

Migration experience is a very important factor for the labour market behaviour of migrants. Employed migrants who have been in the country before are very likely to remain employed for at least five years (50%+27%=77%). However, if they become unemployed or non-participating they stay unemployed/non-participating longer. They are also more likely to leave the country. Thus, although these migrants seems to know the Dutch labour market relatively well, the moment they moment they leave their job they leave the country. They also seem to know their way in the Dutch social security system.

In the last part of Table 3 we report the marginal effects of employment characteristics. Self-employed migrants stay employed longer and hardly become non-participating. Income has a U-

shaped effect on the probability to remain employed, both low- and high income groups are more prone to leave employment. However, the effect is larger for the low-income group. Another difference between the low and high income groups is that the low-income group leave for non-participation while the high income group leaves the country. A disrupted employment spell increases the chance to leave employment again. We also observe big differences in labour market dynamics of migrants working in different industries. Not surprisingly is that workers in the temporary work sector are less likely to remain employed. The migrants working in catering, transportation and services also leave employment faster. In those sectors employers have more often a temporary contract. To work in the education sector requires a high education level, which is not observed in our data. The higher chances for migrants from this sector to remain employed seem to confirm this.

The final part of Table 3 presents the effect of variables that refer to the labour market and migration history. Unemployed migrants who have been unemployed before move to work much faster. It seems that their work experience helps them to find a new job fast. However, if an unemployed migrant has been non-participating in the past, he hardly returns to work and has a high chance to become non-participating again. For a non-participating migrant we have a similar effect, but now that a previous unemployment spell decreases the chance to become employed and increases the chance to become unemployed again. These migrants seem to exploit the Dutch social security system as they hardly leave the country. A more dynamic migrant (with repeated departure) returns to a job in the Netherlands more often. His previous experience seems to help him. If the migrant left the country while unemployed he returns more frequently, but not to work.

5.2 Transition probabilities

The total survival and cumulative incidence function only look one event ahead. To get the complete picture of the labour market dynamics we calculate, using the approach mentioned in Section 3.2, the transition probability. The transition probability takes all possible transitions among the four states into account. Since all migrants are employed at arrival to the country, we only calculate the transition probability from employment. The transition probability takes the whole labour and migration history into account. The transition probability then provides the distribution of the migrants over the four states as a function of the time since their first arrival to the Netherlands. Figure 6 depicts this distribution for the reference migrant up to ten years after the first arrival.

Put Figure 6 about here

The estimated transition probability very nicely mimics the observed development over the four states for the 1999-cohort depicted in Figure 1. The empirical distribution is confined to six years, which is the maximum observed duration for a migrant arriving in late December 1999 up to December 2005. For migrants a period of six years is relatively short. We therefore extend the estimated distribution to ten years. For the longer horizon less migrants are non-participating and more migrants have left the country. This is caused by the relatively high departure from the country for migrants who are non-participating, see Figure 4. We also note that unemployment among the labour migrants is very low. They either return to work or become non-participating, see Figure 3. Thus, the financial burden of the labour migrants on the Dutch economy is very low.

Again no direct relation between the coefficients of the competing risks models and the effect on the transition probability exists. We therefore calculate the (discrete) marginal effects on the transition probability. Table 4 reports these marginal effects of selected covariates on the transition probability five years after the first arrival to the Netherlands. For the reference migrant five years after arrival 74% is still employed, 10% is non-participating, 14% is abroad and only 1% is unemployed. Note that the distribution using the transition probability differs substantially from the distribution using the (one step ahead) total survival and cumulative incidence function (seee Table 3). Due to non-participating migrants who return to work, the employment rate is higher. But the proportion of migrants abroad, also through the status of non-participation, is also higher.

First we focus on the employment-characteristics of the migrant. Self-employed migrants have a higher probability to stay in the country and to remain employed. Self-employment implies a risky investment which increases the ties to the country. It seems that those migrants are rather good in setting up a new business. The impact of income on the employment probability is U-shaped. Both low and high income migrants have a lower probability to remain employed. For low income migrants only 48% is still employed in the Netherlands five years after arrival and about 20% has left the country. These migrants also become unemployed and non-participating relatively often. High income migrants leave the country even faster. However, they do not enter non-participation more often. A comparison between the marginal effects in Table 3 and Table 4 shows that taking the full dynamics into account shifts the non-participating migrants abroad. Thus the reason for low income migrants to have a low employment probability is mainly because they have low job security. Some of them leave the country to try their luck elsewhere. For high income migrants a competitive international labour market exists. So, they leave for another country if they can earn more there.

The sector the (employed) migrant is working in has a large impact on the dynamics. Many migrants work in the temporary work sector. They have a limited contract length and therefore they leave the country fast. Again the route out of the country is very often via non-participation. This might also be the reason that migrants working in the catering industry leave the country faster. The better labour market prospects of the highly educated migrants working in the education sector is reflected in a lower non-participation rate.

The business cycle at the moment of arrival has no effect on the employment rate. However, we find a minor business cycle selection effect on the departure rate. Migrants arriving during a recession leave the country less often. We already concluded in the previous section that this is an indication that a negatively selected group of these migrants leaves the labour market and then remain non-participating.

The personal characteristics of the migrants also play an important role in explaining the labour market dynamics. However the gender of the migrants seems irrelevant. Both married and divorced migrants have a higher probability to remain employed (compared to the single, never married, migrant). Older migrants, just as older natives, have a lower chance to remain employed. They become more often unemployed.

We finally mention the difference in labour market dynamics induced by the country of origin. Migrants from neighboring Belgium and Germany remain employed and in the country and hardly become non-participating. Migrants from the other neighbor country, the UK, seems different. They do not have better labour market prospects. A possible explanation is that people from Belgium share the Dutch language and German is also closer to Dutch than English. Migrants from Japan and North-America leave faster. However Americans seem to do worse on the Dutch labour market. Migrants from the new EU-countries have good prospects on the Dutch labour market. We showed already that those migrants have higher migration dynamics.

5.3 Time spent in a state

The transition probabilities give the probability that a labour migrant is in any of the states after a given time since the he entered the country. It takes the full dynamics into account. However, we loose the information on how an individual reached a certain state. From the total survival and cumulative incidence functions we can predict the (average) time the migrant has spent in the intermediate states until he reaches the final state. The prediction is based on simulation of a hypothetical cohort of labour migrants using the estimated coefficients. On a monthly basis we simulate the transitions for

each of these migrants. If the simulated migrant becomes unemployed we use the transition hazard from unemployment, and similar for a non-participating migrant and a migrant abroad. We save the whole migrant history to simulate later transitions. The hypothetical cohort consists of 5000 migrants and we repeat the simulations 100 times. We report the average of these simulations. A number of interesting predictions can be derived from these simulations.

Consider a migrant who is employed five years after arrival. This migrant may have been employed the whole time or could have been unemployed, non-participating or out of the country for a while. From the simulations we can predict the average time such a migrant has spend in any of the states conditional he is employed after five years (and similar for the other states). The predicted times spent in each state five years and ten years after arrival are reported in Table 5 (for the reference migrant).

An employed migrant, five years after arrival, has (on average) spent half a month unemployed, three and a half month non-participating and half a month abroad. For a migrant who is employed ten years after arrival the relative importance of the non-working states increases slightly. Thus most migrants remained employed for five years. An unemployed migrant has usually only been unemployed for a short time. This also holds for a non-participating migrant. A migrant observed abroad, however, has spent almost half of his time abroad. When we look at the migrant ten years after arrival the relative importance of intermediate states increases.

6 Conclusion

Most previous studies have focused primarily on earnings, with little attention on the issue of labour market status. The importance of repeat and circular migration is also largely overlooked. In this paper a coherent modeling approach is developed to model the interrelation of labour market transitions and out- and repeat migration of immigrants. To this end we estimate a multi-state multiple spell competing risks model and identify four states: employed, unemployed receiving benefits, non-participating (out-of-the-labour market, and no benefits) and abroad. The first three states indicate the labour market status of the immigrant in the host country.

For the analysis we use data on recent labour immigrants to The Netherlands, which implies that all migrants are (self)-employed at the time of arrival. The data further contain information on the timing of migration moves, timing of labour status, income change and industry. We also have demographic information, such as the country of origin and marital status. We show that migrants who leave the country very often first become non-participating. An important conclusion is that only a very limited number of the labour migrants draw on the Dutch social security system.

We find no business cycle effect on the selection of arriving migrants. We show that personal characteristics (gender and marital status), employment characteristics (self-employment, income and sector) and country of origin play an important role in explaining the labour market dynamics of the migrants. A migrant who has gained knowledge about the Dutch labour market through multiple entry has a higher probability to remain employed.

Both low and high income migrants have a lower probability to remain employed. The low income migrants also become non-participating relatively often. High income migrants also leave the country fast. However, they do not enter non-participation more often.

The analysis has also important policy implications. It can facilitate the debate on migrant selection. For example, recently the Dutch government changed the entering rules for labour migrants: Those who earn more than €45,000 per annum can enter more easily. From our analysis we can assess that such immigrants leave the country relatively fast. Thus, if the government aims at a long term impact it should also consider policies to keep these migrants in the country. With a simple simulation we can predict the behaviour of the migrants. We show how we can predict the average time a migrant spend in intermediate states. From this we could calculate the expected social security costs of a particular migrant.

References

Bijwaard, G. E. (2007). Modeling migration dynamics of immigrants: The case of the netherlands. Discussion Paper No. 2891, IZA.

Borjas, G. J. and B. Bratsberg (1996). Who leaves? the outmigration of the foreignborn. *The Review of Economics and Statistics 78*, 165–176.

Constant, A. and D. S. Massey (2003). Self-selection, earnings and out-migration: A longitudinal study of immigrants to Germany. *Journal of Population Economics 16*, 631–653.

Constant, A. and K. F. Zimmermann (2003). Circular movements and time away from the host country. Discussion Paper 960, IZA, Bonn.

Dabrowska, D. M., G. Wen, and M. M. Horowitz (1994). Cox regression in a Markov Renewal model: An applocation to the analysis of bone marrow transplant data. *Journal of the American Statistical Association 89*, 867–877.

Detang-Dessendre, C. and I. Molho (1999). Migration and changing employment status: A hazard function analysis. *Journal of Regional Science 39*, 103–123.

Dustmann, C. and Y. Weiss (2007). Return migration: Theory and empirical evidence. Discussion Paper CDP No 02/07, CReAM, London.

Hougaard, P. (2000). *Analysis of Multivariate Survival Data*. Springer–Verlag.

Lancaster, T. (1990). *The Econometric Analysis of Transition Data*. Cambridge University Press.

Longva, P. (2001). Out–migration of immigrants: Implications for assimilation analysis. Memorandum 04/2001, University of Oslo.

Reagan, P. B. and R. J. Olsen (2000). You can go home again: Evidence from longitudinal data. *Demography 37*, 339–350.

Thomas, J. M. (1996). On the interpretation of covariate estimates in independent competing risks models. *Bulletin of Economic Research 48*, 27–39.

Van Ours, J. and J. Veenman (2005). The netherlands; old emigrants - young immigrant country. In K. Zimmermann (Ed.), *European Migration: What do we know?*, pp. 173–196. Oxford UP.

Zorlu, A. and J. Hartog (2001). Migration and immigrants: The case of The Netherlands. Discussion paper 2001-042, Tinbergen Institute.

A Derivation of formulas for inference in Competing risks models

The total survival function is

$$S_j(t|\overline{X}_{lj}(t), V) = \prod_{l \neq j} \int \exp\Big(-\Lambda_{jl}(t|\overline{X}_{jl}(t), V_{jk}\Big)\, dH_{jl}(V_{jl}) \tag{A.1}$$

If we assume a discrete unobserved heterogeneity distribution with 2 points of support we have

$$S_j(t|\overline{X}_{lj}(t), V) = \prod_{l \neq j} \Big[p_{jl} \exp\big(-v_{jl1}\Lambda_{jl}(t|\overline{X}_{jl}(t)\big) + (1-p_{jl}) \exp\big(-v_{jl2}\Lambda_{jl}(t|\overline{X}_{jl}(t))\big)\Big] \tag{A.2}$$

then

$$\begin{aligned} \Delta S_j(t|x_l) &= S_j(t|x_l = 1) - S_j(t|0) && \text{(A.3)} \\ &= \ldots && \text{(A.4)} \end{aligned}$$

Thus....

The cumulative incidence function is

$$F_{jk}(t|\overline{X}_{jk}(t)) = \int_0^t \lambda_{jk}(s|\overline{X}_{jk}(s))\overline{v}_{jk}(s) S_j(s|\overline{X}_{jk}(s))\, ds \tag{A.5}$$

with $\overline{v}_{jk}(t) = \mathrm{E}[V_{jk}|T_{jk} \geq t]$, with $\overline{v}_{jk}(t) = \mathrm{E}[V_{jk}|T_{jk} \geq t]$. If we assume a discrete unobserved heterogeneity distribution with 2 points of support we have

$$\overline{v}_{jk}(t) = \frac{v_{1jk} p_{jk} \exp\big(-v_{1jk}\Lambda_{0jk}(t)\big) + v_{2jk}(1-p_{jk}) \exp\big(-v_{2jk}\Lambda_{0jk}(t)\big)}{p_{jk} \exp\big(-v_{1jk}\Lambda_{0jk}(t)\big) + (1-p_{jk}) \exp\big(-v_{2jk}\Lambda_{0jk}(t)\big)}$$

and

$$F_{jk}(t|\overline{X}_{jk}(t)) = \tag{A.6}$$

and

$$\begin{aligned} \Delta F_{jk}(t|x_l) &= F_{jk}(t|x_l = 1) - F_{jk}(t|0) && \text{(A.7)} \\ &= && \text{(A.8)} \end{aligned}$$

B Tables and Figures

Table 1: Descriptive statistics (sample mean at arrival)

	immigrants	total workforce (2000)
average age	32	38
aged 18-25	18%	
aged 50-55	3%	
aged 55-60	1%	
female	29%	41%
married	24%	60%
Divorced	2%	8%
single, no kids	47%	20%
Children at home	15%	49%
Social Economic variables		
Av. monthly income	€3144	
Income < 1000	19%	
Income 1000 - 2000	32%	
Income 2000 - 3000	20%	
Income 3000 - 4000	8%	
Income 4000 - 5000	5%	
Income > 5000	15%	
Working in industry	11%	14%
Working in trade	14%	17%
Working for temporary offices	12%	3%
Working in services	25%	16%
Working in education	8%	6%
Working in catering	5%	4%
Working in transportation	6%	7%
Country of origin		
Belgium	5%	-
Germany	10%	-
UK	18%	-
France	6%	-
rest EU15/EFTA	23%	-
new EU	5%	-
North-America	6%	-
Japan	4%	-
Australasia/Asia	13%	-
Africa	6%	-
Turkey	2%	-
Morocco	1%	-
# observations	45987	7,2 mln

Source: Statistics Netherlands, based on own calculations.

Table 2: Spell dynamics of the labour migrants (# 45,987)

	# of spells	Percentage ending in employed	UI	NP	Abroad
Employed	61223	45%	6%	37%	12%
Unemployed (UI)	6840	45%	22%	28%	5%
Non-participation (NP)	25545	42%	12%	20%	26%
Abroad	24213	9%	1%	3%	87%

Source: Statistics Netherlands, based on own calculations.

Table 3: Marginal effect on survival rate and cumulative incidence at five year since last transition

		Employed	unemployed	NP	abroad
baseline probability					
	Employed	0.500	0.030	0.412	0.057
	Unemployed	0.713	0.029	0.226	0.031
	NP	0.458	0.102	0.062	0.377
	Abroad	0.112	0.012	0.041	0.836
			Marginal effect		
female	employed	0.0139	0.0110	-0.0169	-0.0079
	unemployed	-0.0387	0.0058	0.0294	0.0035
	NP	-0.0103	0.0247	0.0188	-0.0332
	abroad	-0.0279	0.0003	0.0073	0.0203
married	employed	0.1028	0.0065	-0.0908	-0.0184
	unemployed	0.0199	0.0029	-0.0017	-0.0210
	NP	0.0255	0.0151	-0.0036	-0.0369
	abroad	-0.0494	-0.0042	-0.0012	0.0548
Divorced	employed	0.0706	0.0135	-0.0538	-0.0303
	unemployed	0.0384	0.0043	-0.0248	-0.0179
	NP	0.0856	0.0517	0.0059	-0.1433
	abroad	-0.0428	-0.0001	0.0577	-0.0149
Youngest child < 4	employed	0.0569	0.0031	-0.0676	0.0076
	unemployed	-0.0417	0.0099	0.0395	-0.0077
	NP	-0.0041	-0.0021	-0.0176	0.0239
	abroad	0.0048	0.0004	0.0008	-0.0060
Aged 18-25	employed	-0.0164	-0.0036	0.0198	0.0003
	unemployed	0.0445	-0.0087	-0.0382	0.0024
	NP	0.0642	-0.0259	0.0094	-0.0477
	abroad	0.0124	0.0037	0.0043	-0.0204
Aged 50-55	employed	0.0125	0.0093	-0.0209	-0.0009
	unemployed	-0.1055	0.0636	0.0271	0.0148
	NP	-0.0716	0.0105	0.0034	0.0578
	abroad	0.0094	0.0180	0.0088	-0.0362
Aged 55-60	employed	-0.0399	0.0323	0.0063	0.0013
	unemployed	-0.2460	0.1904	0.0582	-0.0025
	NP	-0.1169	0.0657	-0.0059	0.0572
	abroad	-0.0252	0.0186	0.0103	-0.0036
Boom at entry	employed	-0.0181	0.0012	0.0221	-0.0052
(unemployment rate 2%)	unemployed	-0.0133	0.0019	0.0199	-0.0086
	NP	-0.0055	-0.0003	-0.0225	0.0283
	abroad	-0.0111	0.0043	-0.0033	0.0101
Recession at entry	employed	0.0426	-0.0031	-0.0552	0.0157
(unemployment rate 6%)	unemployed	0.0188	-0.0072	-0.0511	0.0396
	NP	0.0078	-0.0003	0.0795	-0.0871
	abroad	0.0344	-0.0066	0.0097	-0.0374

Source: Statistics Netherlands, based on own calculations.

Table 3: (continued)

		Marginal effect			
Belgium	employed	0.1047	0.0176	-0.1104	-0.0119
	unemployed	0.0210	0.0089	-0.0252	-0.0047
	NP	0.0100	0.0155	-0.0214	-0.0041
	abroad	0.0005	0.0122	-0.0011	-0.0116
Germany	employed	0.0488	0.0077	-0.0507	-0.0058
	unemployed	0.0311	-0.0022	-0.0307	0.0019
	NP	-0.0045	0.0127	-0.0074	-0.0008
	abroad	0.0168	0.0071	-0.0048	-0.0192
UK	employed	0.0121	-0.0020	0.0039	-0.0140
	unemployed	-0.0176	0.0092	-0.0029	0.0114
	NP	-0.0674	-0.0094	0.0209	0.0559
	abroad	-0.0029	-0.0018	-0.0041	0.0087
Japan	employed	0.1895	-0.0244	-0.2724	0.1074
	unemployed	-0.0592	-0.0199	0.0128	0.0663
	NP	-0.2410	-0.0938	-0.0226	0.3574
	abroad	-0.0765	0.0006	-0.0225	0.0985
North-America	employed	-0.0280	-0.0144	0.0328	0.0095
	unemployed	-0.0631	0.0144	0.0228	0.0259
	NP	-0.2370	-0.0536	0.0548	0.2358
	abroad	-0.0321	-0.0040	-0.0232	0.0594
New EU	employed	0.0576	-0.0146	-0.0716	0.0286
	unemployed	0.0337	-0.0163	-0.0173	-0.0001
	NP	0.1068	-0.0349	-0.0072	-0.0647
	abroad	0.2570	-0.0042	0.0060	-0.2587
Africa	employed	0.0511	0.0023	-0.0361	-0.0173
	unemployed	0.0216	-0.0011	-0.0253	0.0047
	NP	0.0282	-0.0030	0.0047	-0.0299
	abroad	-0.0107	0.0051	0.0088	-0.0032
Morocco	employed	0.0136	0.0327	-0.0268	-0.0195
	unemployed	-0.1067	0.0315	0.0963	-0.0211
	NP	-0.0250	0.0375	-0.0003	-0.0122
	abroad	-0.0696	0.0291	0.0653	-0.0248
Turkey	employed	-0.1078	-0.0050	0.1209	-0.0081
	unemployed	-0.0355	0.0358	0.0175	-0.0178
	NP	-0.0637	-0.0197	-0.0173	0.1008
	abroad	-0.0491	0.0004	-0.0147	0.0634
Repeated entry	employed	0.2729	-0.0277	-0.3833	0.1381
	unemployed	-0.3949	0.4114	-0.1263	0.1098
	NP	-0.1068	-0.0414	0.0339	0.1143

Source: Statistics Netherlands, based on own calculations.

Table 3: (continued)

	Employed	unemployed	NP	abroad
	Only from Employment			
Self-employed	0.2522	-0.0096	-0.2067	-0.0359
Income < 1000	-0.3342	0.0465	0.3232	-0.0355
Income 1000 - 2000	-0.1272	0.0233	0.1148	-0.0109
Income 3000 - 4000	-0.0232	-0.0074	-0.0015	0.0321
Income 4000 - 5000	-0.0541	-0.0117	0.0104	0.0553
Income > 5000	-0.1332	-0.0159	0.0464	0.1027
Previous work	-0.1882	0.0367	0.1071	0.0444
Industry code				
Temporary work	-0.3625	0.0337	0.2273	0.1015
Industry	-0.0423	0.0010	-0.0460	0.0873
Education	0.0571	0.0426	-0.1501	0.0505
Services	-0.1085	0.0087	0.0412	0.0587
Catering industry	-0.2014	0.0018	0.1169	0.0827
Transportation	-0.0855	0.0120	0.0304	0.0431
	From Unemployment			
Income < 1000	-0.0689	0.0515	-0.0011	0.0186
Income 1000 - 2000	-0.0245	0.0226	-0.0005	0.0024
Income 3000 - 4000	0.0138	-0.0280	-0.0071	0.0213
Previous unemployment	0.1074	0.0062	-0.1176	0.0039
Previous NP	-0.4507	-0.0293	0.5051	-0.0251
	From Non-participating			
Previous unemployment	-0.2871	0.5785	-0.0314	-0.2600
Previous NP	0.1807	-0.0386	-0.0197	-0.1224
	From abroad			
Repeated departure	0.2043	-0.0006	0.0217	-0.2254
Entry from unemployment	-0.0115	0.0964	0.0861	-0.1710
Entry from NP	-0.0259	0.0085	0.0107	0.0067

Source: Statistics Netherlands, based on own calculations.

Table 4: Marginal effect on transition probability from employment, 5 years since first entry

	employed	unemployed	non-participation	abroad
baseline	0.740	0.014	0.102	0.144
	Marginal effect			
Self-employed	0.153	-0.008	-0.056	-0.090
Income $<$ 1000	-0.259	0.060	0.125	0.074
Income 1000-2000	-0.072	0.017	0.041	0.014
Income 3000-4000	-0.037	-0.007	-0.004	0.048
Income 4000-5000	-0.076	-0.008	-0.001	0.085
Income $>$ 5000	-0.158	-0.008	0.006	0.159
Industry code				
Temporary work	-0.363	0.025	0.072	0.266
Industry	-0.077	0.000	-0.014	0.090
Education	0.008	0.006	-0.037	0.023
Services	-0.106	0.005	0.013	0.089
Catering industry	-0.193	0.007	0.034	0.152
Transportation	-0.080	0.005	0.009	0.065
Business cycle at entry				
Boom (2% Unemployment)	-0.010	0.001	-0.004	0.012
Recession (6% Unemployment)	0.018	-0.002	0.006	-0.022
Demographics				
female	0.003	0.008	0.002	-0.013
Married	0.073	0.000	-0.031	-0.042
Divorced	0.086	0.011	-0.030	-0.068
Children under 4	0.028	-0.001	-0.024	-0.003
Aged 18-25	0.013	-0.004	0.006	-0.015
Aged 50-55	-0.019	0.014	0.005	0.000
Aged 55-60	-0.096	0.060	0.004	0.032
Country of origin				
Belgium	0.072	0.005	-0.039	-0.037
Germany	0.035	0.003	-0.019	-0.019
UK	-0.013	0.000	0.020	-0.008
Japan	0.004	-0.012	-0.065	0.073
North-America	-0.121	-0.007	0.068	0.060
new EU	0.083	-0.009	-0.032	-0.042
Africa	0.048	0.000	-0.010	-0.038
Morocco	0.002	0.024	-0.002	-0.024
Turkey	-0.104	0.003	0.039	0.062

Source: Statistics Netherlands, based on own calculations.

Table 5: Time spent in the all states conditional on being in one of the states at 5 (10) years

after 5 years	*Time spent in state*			
	employed	unemployed	non-participation	abroad
Unconditional	4.09	0.05	0.51	0.36
Conditional				
employed	4.62	0.04	0.30	0.04
unemployed	3.30	0.62	0.87	0.26
Non-participating	3.23	0.06	1.66	0.05
abroad	2.05	0.03	0.71	2.21
After 10 years	*Time spent in state*			
	employed	unemployed	non-participation	abroad
Unconditional	7.44	0.14	1.07	1.35
Conditional				
employed	8.55	0.13	0.87	0.45
unemployed	6.53	0.99	1.50	0.98
Non-participating	7.60	0.15	1.98	0.26
abroad	4.64	0.08	1.13	4.15

Source: Statistics Netherlands, based on own calculations.

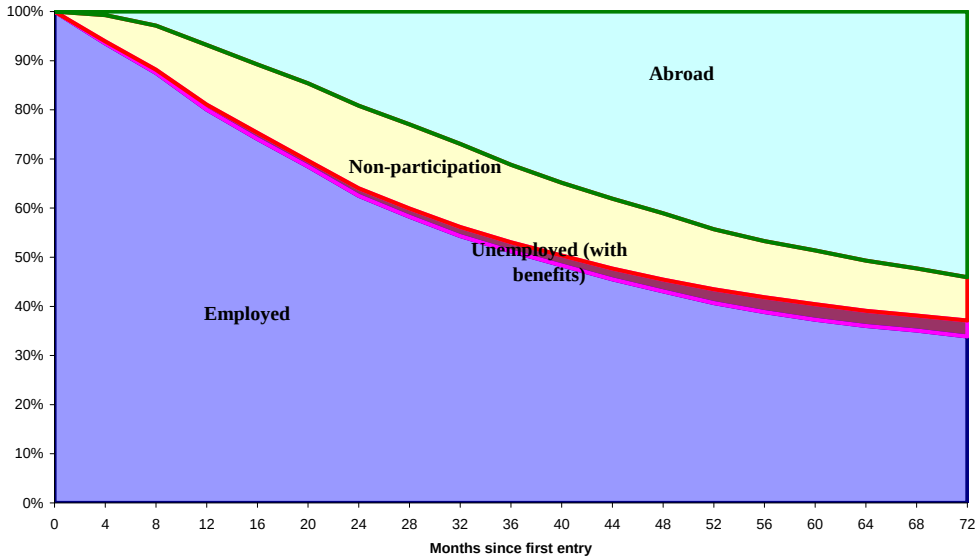

Figure 1: Development of SES of labour immigrants arriving in 1999

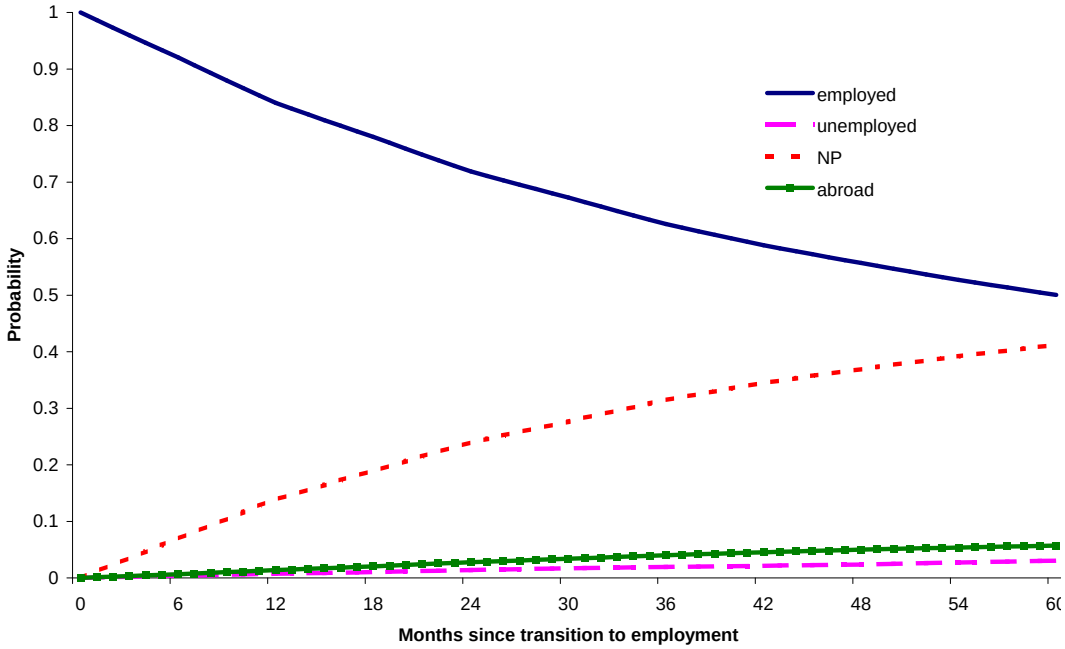

Figure 2: Survival rate and cumulative incidence from EMPLOYMENT

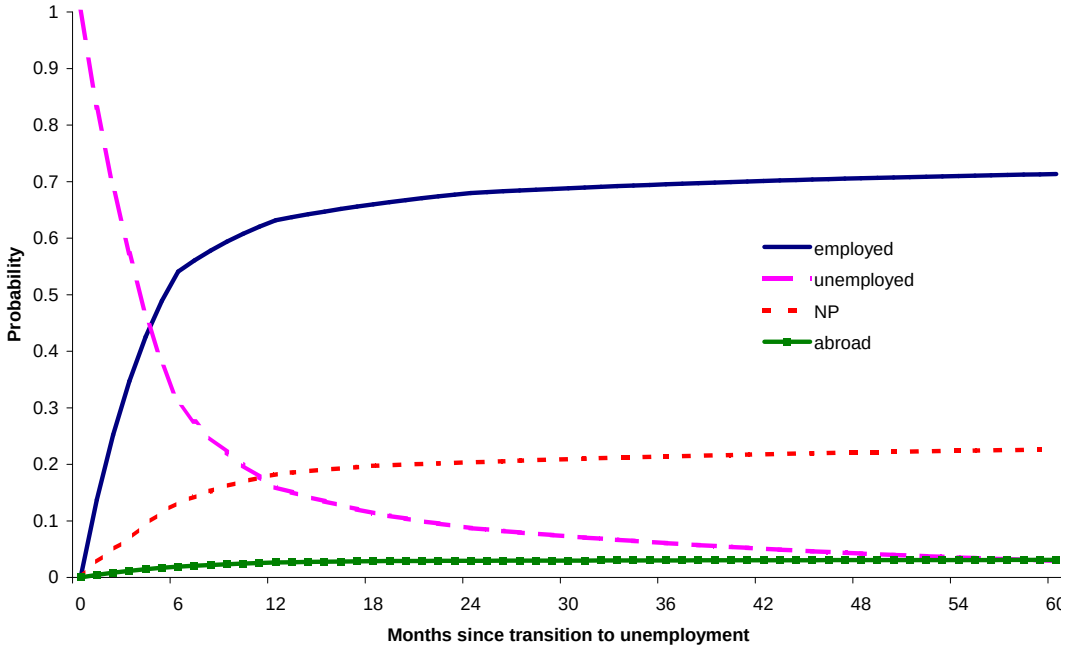

Figure 3: Survival rate and cumulative incidence from UNEMPLOYMENT

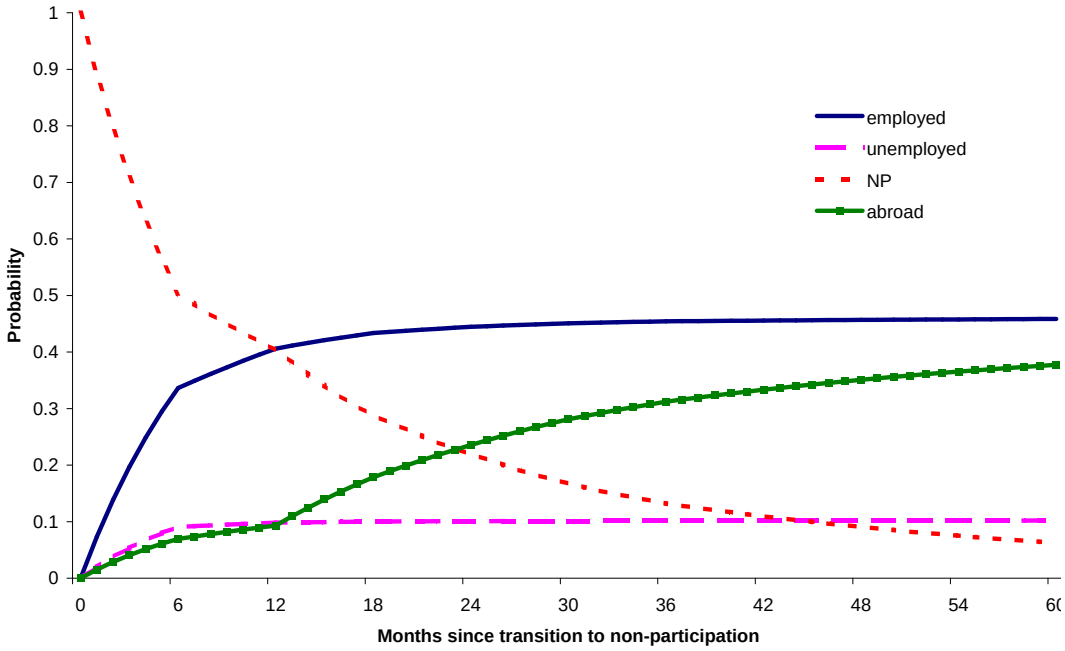

Figure 4: Survival rate and cumulative incidence from NON-PARTICIPATION

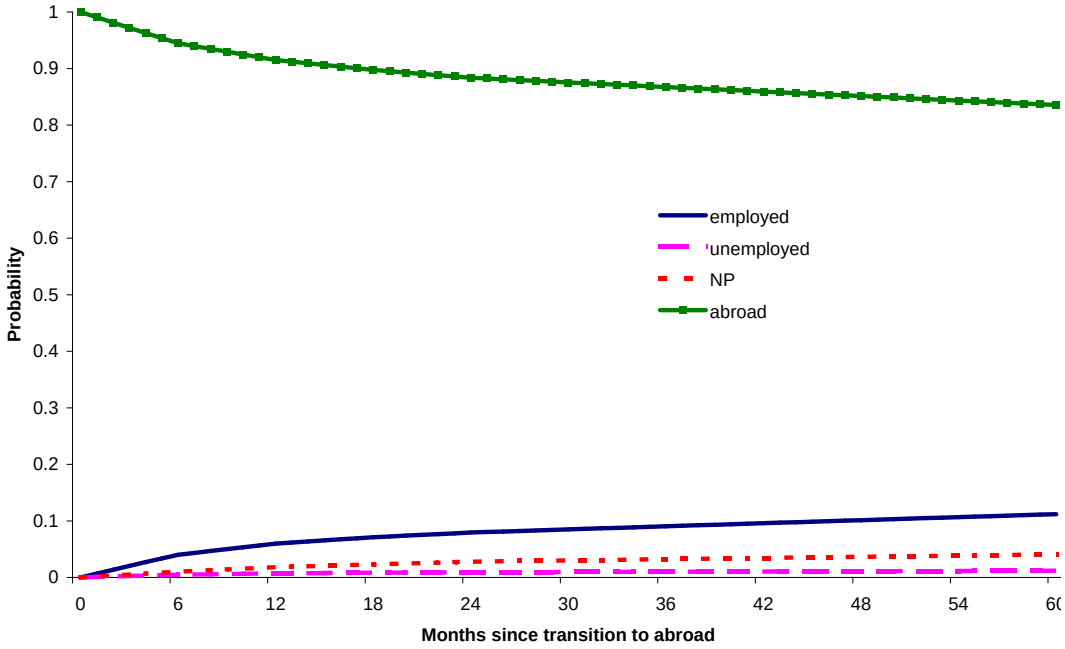

Figure 5: Survival rate and cumulative incidence from ABROAD

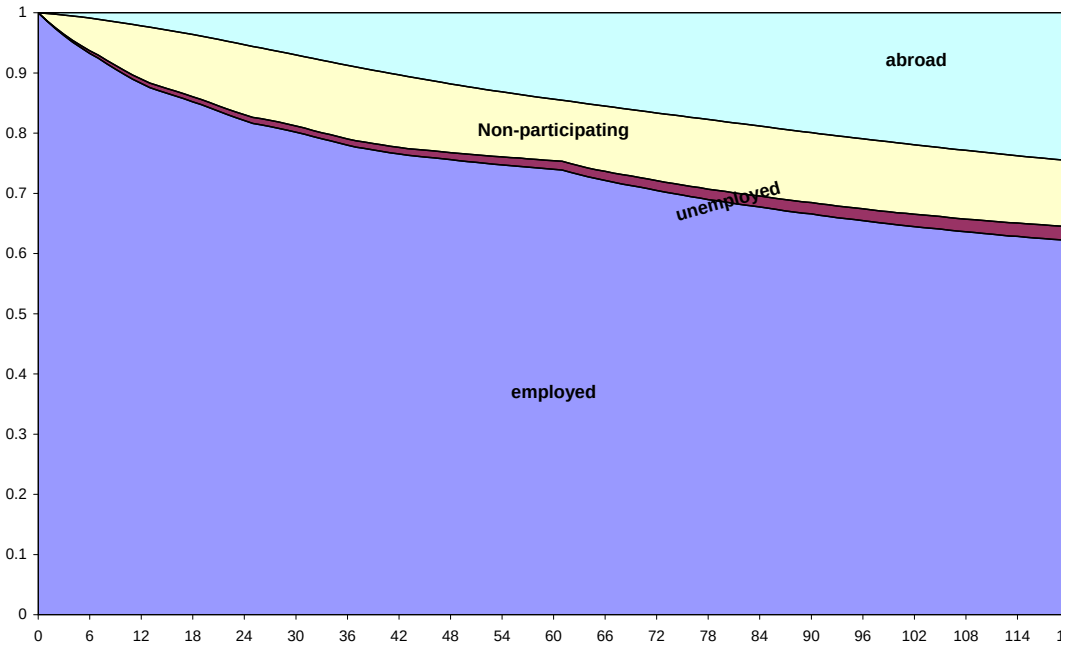

Figure 6: Development of transition probability of employed immigrants