**LIFE PATHS OF MIGRANTS: A SEQUENCE ANALYSIS OF POLISH MIGRANTS'
FAMILY-LIFE TRAJECTORIES**

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After Poland's accession to the European Union in 2004, Polish migration within Europe has increased considerably. Still, little is known about this large and growing group of immigrants. Using unique panel data from the Dutch population registers, we first apply sequence analysis to explore and describe the variety of family life courses among young adult (aged 20-30 at migration) Polish migrants in the Netherlands. Each individual family life career is followed for a five year period on a monthly time base. Optimal matching analysis is applied to compute (dis)similarities between individuals, in order to cluster into predominant life paths. Second, a series of logistic regression analyses is carried out to determine the main factors of importance on the different family life paths. Findings showed a strong impact of the partner's origin on the type of union and likelihood of return migration. Unemployment was found to be another important trigger of return migration. With regard to gender differences, we found that men are more likely to remain single and to leave the Netherlands at some point, while women more often cohabit and tend to stay.

Keywords: Polish migrants, family events, return migration, sequence analysis, optimal matching.

INTRODUCTION

The family-life dynamics of international migrants have become a core topic in demographic studies over the past decades (Kulu & Gonzalez-Ferrer 2014). These studies have focused on different aspects of family-life behavior. For instance, previous research shows that international migration and partner selection are frequently interrelated (Milewski 2003), that moving over long distances influences the stability of a union (Frank & Wildsmith 2005, Boyle *et al.* 2008), and that migration may alter fertility behavior (Milewski 2007, Lindstrom & Giorguli Saucedo 2002). Many of these studies have focused on the impact of migration on a specific event in the life course. By focusing on events, however, one may miss a deeper insight into the life course, which is unfortunate as life-course theory emphasizes that different events in the life course are not separate experiences, but are linked to one another (Giele & Elder 1998).

The main research objective of this paper is to go beyond this event-oriented approach and to provide a more integral picture of the link between migration and family behavior. We develop an empirically grounded typology of partnership, fertility, and migration behavior by applying sequence analysis. This technique can be seen as complementing to the often applied techniques of event history analysis: whereas event history analysis concentrates primarily on causal effects for transitions from one state to another, sequence analysis is an approach aimed at exploring and describing actual life-course trajectories and has more descriptive value (Aisenbrey & Fasang 2010, Billari 2001). Although sequence analysis has increasingly been used in life course research over the past decade (*e.g.*, Aassve *et al.* 2007, Billari *et al.* 2006, Bras *et al.* 2010, Elzinga & Liefbroer 2007), the technique has been relatively little applied in the migration literature. The application of sequence analysis also in the field of migration studies is however a fruitful approach, as it offers a digestible overview of the complex interrelationship between migration and family dynamics.

Our study focuses on young adult Polish migrants who have recently arrived in the Netherlands. Polish migration to the Netherlands has increased sharply in the past decade and Polish nationals are the largest migrant group settling in the country nowadays (Statistics Netherlands 2014). The majority of recent Polish migrants in the Netherlands has migrated at the age of making the transition to adulthood (Statistics Netherlands 2014). Nevertheless, much research on the family dynamics of immigrants in the Netherlands still focuses on the traditional origin groups (Turks, Moroccans, Surinamese, and Antilleans), while knowledge on those of Polish origin in the country remains rather limited (see Dagevos 2011, Engbersen *et al.* 2013, Korf 2009 for exceptions). Although there are some recent quantitative studies on Polish migration to other European countries, such as the UK (White 2011, Drinkwater *et al.* 2009, see also the papers in Burrell 2009) and Germany (Nowicka 2013), these papers have mainly been focused on labor market integration whilst relatively few studies have focused on the private (family) domain of these migrants. The family context of Polish migrants in Europe has so far mainly been limited to qualitative research (*e.g.*, Levrau *et al.* 2014, Moskal 2011, Ryan *et al.* 2009, Ryan & Sales 2013).

Poland is part of the European Union (EU) since 2004 and Polish migrants are thus free to settle in other EU member states (with some initial barriers on the labor market after EU entry). In this regard, Polish migrants differ strongly from migrants from outside the EU for whom it is much more difficult to travel back and forth between the Netherlands and their country of origin due to compulsory visa requirements (Dagevos 2011). A crucial question of the relatively new intra-European migration flows is therefore whether these migrants will stay temporarily or whether they will settle permanently. Besides economic reasons for returning to the country of origin, the family context also plays a crucial role in the return decisions of immigrants (Dustmann 2003). We will pay specific attention to this and study the permanence of settlement in relation to family trajectories. The trajectory-based approach

applied in this study is particularly valuable in this regard, as it allows us to distinguish between short-term circular migration and more permanent return migration. The paper is guided by the following research questions: *First, what types of family-life trajectories can be distinguished among young adult Polish migrants in the Netherlands. Second, how do different trajectories relate to return/circular migration? Third, to what extent are the various life course subtypes related to individual background characteristics?*

To address our research questions, we use unique longitudinal population register data from the System of Social statistical Datasets (SSD) that cover the entire population of the Netherlands (Bakker *et al.* 2014). The SSD provides detailed information on the timing of migration and family events, allowing to reconstruct the life-course trajectory for each individual migrant. Our analyses focus on young adult (aged 20-30 at migration) Polish migrants who have recently arrived in the Netherlands. The life-course trajectories of these migrants are followed for a period of five years on a monthly time base. We thus cover a very dynamic period of the life course, in which many demographic life events may occur in a condensed period of time (Rindfuss 1991).

BACKGROUND

Polish migrants in the Netherlands

Various groups of immigrants have come to the Netherlands since the middle of the 20th century. These immigration flows were initially dominated by migrants from (former) colonies (*e.g.*, Surinam and the Netherlands Antilles) and labor migrants from Mediterranean countries (*e.g.*, Turkey and Morocco), followed by family reunification in the 1970s and 1980s. The number of asylum seekers increased significantly in the 1990s, but this group still constitutes a relative small proportion of immigrants and covers a wide variety of backgrounds. In the past decade, a large share of immigrants to the Netherlands came from

countries in Eastern Europe, in particular Poland (Statistics Netherlands 2014). Although Polish migration to the Netherlands is not solely a recent phenomenon, the influx of Polish migrants to the country has increased sharply since Poland joined the EU in May 2004 (Dagevos 2011). The EU membership entitled Poles to settle freely in other member state countries, but in the Netherlands an employment permit was still required for labor migrants until May 2007 (Korf 2009). In this study, we exclusively focus on Polish migrants who have come to the Netherlands after Poland's accession to the EU, but before the obligation of an employment permit was abolished.

Since 2004, Polish nationals constitute the largest group of immigrants arriving in the Netherlands. At the same time, a large share also returns to Poland: about 60% of those who arrived in the past decade has left the country within seven years (Nicolaas 2011, Statistics Netherlands 2014). The large majority (90%) returned to Poland, which implies that there is no substantial onward migration to other EU countries (Dagevos 2011). Despite the relative high levels of return migration, the net migration rate has been strongly positive since 2004 and has varied between 5,000 to 11,000 persons per year (Statistics Netherlands 2014). As a result, the number of Polish residents in the Netherlands has increased substantially over the past decade. As of 1 January 2014, 123,003 individuals with a Polish background were entered in the population registers of the Netherlands (on a total population of 16.7 million), compared to 35,542 in 2004 (Statistics Netherlands 2014). Some 25% of the Polish community in the country nowadays is born in the Netherlands, but has at least one parent who is born in Poland (second generation) (Statistics Netherlands 2014). The second generation is considerably smaller than that of the traditional migrant groups in the Netherlands, which is connected to the fact that a large share of first generation of Polish migrants only recently arrived in the Netherlands.

Nearly 70% of the registered Polish migrants in the Netherlands aged between 15 and 65 is in paid employment. This is comparable to the employment rate of the native Dutch population and more favorable than that of many non-Western origin groups in the country (Dagevos 2011). The completed level of education of Polish migrants is lower than that of the Dutch, but much higher than that of many non-Western and other Eastern European origin groups (Dagevos 2011). However, previous studies have shown that there is a clear mismatch between Polish migrants' qualifications and the jobs they carry out in the Netherlands (often over-qualified) (Schothorst 2009). Many Polish migrants are employed in low-skilled jobs in industry, construction and agriculture on temporary contracts and are thus susceptible to unemployment. The Dutch minimum wage is nevertheless usually higher than the salary they would earn in their own occupation in Poland (Korf 2009). Finally, the majority of Polish migrants has a rather poor command of the Dutch language, which is not surprising given their relative short time of residence in the Netherlands (Schothorst 2009, Dagevos 2011).

Family events in Poland

Starting in the 1960s, many countries in Northern and Western Europe underwent considerable changes in the transition to adulthood. Young adults postponed marriage and childbearing, while alternative living arrangements (living single, remaining childless, non-marital cohabitation and parenthood) became more common (Van de Kaa 1987, Corijn & Klijzing 2001, Billari & Liefbroer 2010). Until the early 1990s, Central and Eastern European (CEE) countries had maintained their traditional patterns of fertility and partnership behavior (Lesthaeghe & Surkyn 2002). With the collapse of the communist political system in 1989, however, CEE countries went from a state-controlled economy and society to a more democratic and capitalist economic society, resulting in more freedom of individual choice and lifestyle as well as new economic constraints (Sobotka 2002). These shifts have resulted in rapid changes in the pace and structure of the transition to adulthood in CEE as well.

One of the most striking demographic changes in Poland since 1990 has been the dramatic decrease in the number of births. The total fertility rate (TFR) dropped from 2.07 in 1989 to 1.22 in 2003. In addition, the highest level of age-specific fertility shifted from the 20-24 age group to the 25-29 age group, indicating that women have been delaying childbearing (Kotowska *et al.* 2008). Similarly, the propensity to marry has decreased and marriage has been postponed as well. Few marriages are nowadays contracted among those in the early twenties; both men and women are more likely to marry in the mid late twenties (Kotowska *et al.* 2008).

The literature is inconclusive about the incidence of unmarried cohabitation in Poland. Various authors with different sources of cross-sectional data have shown a low incidence of cohabitation of about 1 to 5% of all unions (Fihel 2005, Kotowska *et al.* 2008). Using retrospective data, however, Matysiak (2009) shows that the postponement of marriage since the 1990s has been accompanied by an upward trend in the incidence of cohabitation as a first union. In the 2004-2006 period, 33% of all first unions were non-marital cohabiting relations (Matysiak 2009). Nevertheless, these consensual unions are of short duration and mainly function as a prelude to marriage (Fihel 2005, Mynarska & Bernardi 2007). The majority of cohabiters in Poland are thus young adults (aged 20-29) and have never been married (Fihel 2005). Although the number of out-of-wedlock births has increased since 1990 (Kotowska *et al.* 2008), fertility in Poland is still strongly related to marriage (Matysiak 2009).

Despite these changes in the past decades, patterns of union and family formation in Poland are still relatively traditional compared to northwestern European countries (Sobotka 2008). For instance, in 2011, the mean age at first marriage in Poland was 28 years for men and 26 years among women (CSO 2012), compared to respectively 33 for men and 30 for women in the Netherlands (Statistics Netherlands 2014). Furthermore, cohabitation, out-of-wedlock births and divorces in Poland are still rare by European standards (Sobotka 2008).

MIGRATION AND FAMILY EVENTS: LITERATURE REVIEW

Migration as a predictor of family events

The ways in which migration may be related to the family life course has been subject of a host of studies. In particular the fertility behavior of migrants after an (international) migration move has been studied in great depth in both the United States (Ford 1990, Carter 2000, Lindstrom & Giorguli Saucedo 2002) and Europe (Milewski 2007, 2010, Kulu 2005). Other studies have considered the relationship between migration and partnership behavior (Boyle *et al.* 2008, Landale & Ogena 1995, Frank & Wildsmith 2005). The foundation of these studies is centered around theories of socialization, adaption, disruption, and selection. Many authors emphasize the importance of the migrant's socialization process. Socialization theory (Glass *et al.* 1986, Inglehart & Baker 2000) argues that preferences are shaped by transmission of dominant norms and values during childhood and it is often suggested that they remain rather stable over the life course. Following this line of reasoning, migrants would continue the union and fertility patterns of the country of origin where they were socialized, also when settling in a host society with different patterns. Several studies in Western Europe (Andersson & Scott 2005, Milewski 2010) and the U.S. (Massey 1981) find support for this hypothesis regarding fertility behavior. De Valk and Liefbroer (2007) also find socialization effects with regard to the preferred type of first union (cohabitation vs. marriage) among immigrants in the Netherlands.

In contrast, the adaption hypothesis emphasizes the importance of the destination after the migration move, rather than the environment during childhood. This hypothesis states that migrants adjust their family behavior according to the economic and cultural environment of the destination country. Frank and Wildsmith (2005) attribute elevated risks of union dissolution among Mexicans after moving to the U.S. partly to changes in normative values and lower levels of social control. Other evidence for the adaption hypothesis comes from

studies that show a convergence in fertility levels between the migrant and majority populations (Milewski 2007, Ram & George 1990, Mayer & Riphahn 2000). The theoretical foundation of the adaptation hypothesis is two-fold. First, migrants' demographic family behavior is expected to be influenced by the socio-economic position in the destination country (Becker 1981, Mulder 2006). Second, the resemblance of the migrants' family behavior to that of the majority populations may also be triggered by norms and values dominant in the destination country. The latter view stems from classical assimilation theory (Gordon 1964, Alba & Nee 1997). Since it is hard to separate the effect of cultural factors from that of socio-economic conditions, these two views are often combined and covered under the label of adaption or assimilation (*c.f.* Lindstrom & Giorguli Saucedo 2002).

Whereas the two previous theories emphasize the importance of the environment either at origin or destination, the disruption hypothesis focuses on the role of the migration process itself. Migration is a stressful life event and often involves psychological separation of spouses for extended periods of time (Frank & Wildsmith 2005). Migration may therefore lead to reduced fertility after the move (Lindstrom & Giorguli Saucedo 2002, Carter 2000), a postponement of marriage (Carlson 1985), and a higher risk of union dissolution (Boyle *et al.* 2008, Landale & Ogena 1995, Frank & Wildsmith 2005). At the same time, it has been argued that migration, marriage, and the start of childbearing are closely connected. In the case of marriage-related migration, one would therefore expect elevated rather than depressed fertility levels shortly after the move (shown by Lindstrom 2003, Milewski 2007, Andersson 2004). In addition, studies in the United States suggest that couples may be anxious to have a birth after migration in order to grant U.S. citizenship to the child, which opens the route of a legal migration status for the parents (Lindstrom & Giorguli Saucedo 2007). The latter is however less relevant for Polish migrants in the Netherlands, because freedom of movement is a fundamental right for EU citizens.

Finally, an important consideration when linking migration to subsequent family behavior is selectivity. The selectivity assumption suggests that migrants are a selective group in terms of their socio-demographic characteristics and intentions. Therefore, it is not the migration move itself that explains subsequent union or fertility behavior, but the migrants' individual background characteristics (Frank & Wildsmith 2005, Milewski 2007).

Migration as an outcome of family events

Migration, including return migration, has also been considered to be an outcome of family-life events. Studies have analyzed the effect of having a partner and/or children on migration behavior. These studies suggest differences between short and long distance (international) moves. It is put forward that the presence of a (married) partner (Sandefur & Scott 1981, Mulder & Wagner 1993) and children (White *et al.* 1995, Kulu 2007) reduces the wish and likelihood of moving over long distances. This decreased mobility is linked to higher economic and psychological costs of relocating a larger family, in particular when children are of school age (White *et al.* 1995).

The relationship between family events and return migration has hardly been explored, but similar mechanisms can be expected. With regard to union formation it is furthermore crucial where the partner is born: Those who find a partner in the host country are less likely to return to the country of origin (Bijwaard & Wang 2013, Zhao 2002). Spousal separation appears to be a dominant factor in causing a migrant to return (Zhao 2002). Finally, Bijwaard and van Doeselaar (2012) observe that divorce is an important trigger of return migration among immigrants in the Netherlands. For the effect of the presence of children on the likelihood of return migration mixed evidence is reported. A study by Lindstrom and Giorguli Saucedo (2007) shows that Mexicans in the U.S. are significantly more likely to return to Mexico briefly after the occurrence of the first birth. After the third birth, however, the risk of return migration drops considerably. The authors suggest that this may be due to the fact that

the oldest child may be of school age by that time (*c.f.* White *et al.* 1995). The analyses of Dustmann (2003) on the impact of children on return intentions and realizations among migrants in Germany, reveal a negative association between the presence of children and return migration regardless of the number of children.

DATA AND METHOD

Data

In this paper we make use of unique data derived from the Dutch population registers: the System of Social statistical Datasets (SSD). Population registers are widely recognized for their high quality data, in particular for longitudinal studies (Billari 2001). The SSD was constructed by Statistics Netherlands in the late 1990s, by linking several registers to the Municipal Personal Records Database (Dutch acronym: GBA). All immigrants who intend to stay in the Netherlands for more than 90 days are legally obliged to register themselves at the GBA within five days of arrival. The data thus contain information on the exact date of the migration move to the Netherlands. Note that immigrants who stay for a short period (< 3 months) in the Netherlands are less well represented in the data. According to the most recent estimates, the majority (77%) of Polish people living in the Netherlands are registered (Van der Heijden *et al.* 2013). The number of non-registered Poles most likely fluctuates over the course of the year, peaking in the summer due to seasonal influences (Dagevos 2011).

Those who leave the Netherlands are deregistered from the GBA if the expected stay abroad in the year following the departure is at least eight months. However, not all emigrants inform the authorities of their intention to leave the Netherlands. When authorities find out that a person is no longer living at the registered address or at another address in the Netherlands, they are deregistered as an “administrative removal”. The latter account for about 44% of all emigrations in our data. Since the exact date of departure is unknown in

these cases, we assume that these migrants have left the Netherlands on the day that they were administratively removed from the register. We conjecture that in general the time span between the actual date of emigration and the date of administrative removal is relatively short: because the eligibility of many state-provided benefits is based on information in the GBA, there are in case of doubt strict controls on the address of an individual, varying from administrative research to actual home visits. Nevertheless, the issue of non-registered emigrations remains a problem in all registry-based datasets and it is most pronounced among young men without a partner (Alders & Nicolaas 2003).

In addition to the date of entry and exit, the data provide information on the migrant's marital status and household composition on a daily basis. For sake of simplicity, we use a monthly time scale to construct a sequence-type representation of family life course and migration events. The representation is based on the migrant's union status, childbearing events and migration move(s). First of all, we treat cohabitation and marriage as different states. Individuals who are not in a cohabiting or married relationship are classified as single. Second, through the record linkage of parents and children, we can distinguish married/cohabiting persons with and without children living in the household. Finally, since migration may involve spousal separation (Lindstrom & Giorguli Saucedo 2002, 2007), we further distinguish between those who are married and living at the same address as their partner, and those who are married but living without their partner.

It is important to note that this information is only available for the time of residence in the Netherlands and the data do not provide information on the household composition prior to the migration move. This implies that, for example, those who are classified as living single in the Netherlands may have an unmarried partner and/or children living abroad. Similarly, changes in the family domain that occur after leaving the Netherlands are unrecorded. However, if a migrant comes back to live in the Netherlands after a while, re-

entry in the GBA is possible due to a unique personal registration number. This allows us to observe possible circular migration along with changes in the family domain in the period between leaving and re-entry into the Netherlands.

We focus on young adult Polish migrants who have arrived in the Netherlands after the expansion of the EU in May 2004. The analyses are restricted to those who were 20-30 years old when they entered the Netherlands for the *first* time. Those who migrated with their parents are excluded from the analyses, as we do not perceive this to be an independent move. We follow each individual life trajectory for a period of five years after the initial migration move, so that all sequences are of equal length. Because the data were available until January 2012, the latest cohort we can observe for five years are those who arrived in the Netherlands in January 2007. Hence, we focus on the migrants that have arrived in the Netherlands between May 2004 and January 2007. In total, our data include 11,492 Polish migrants (5,316 men and 6,176 women).

Method

We analyze the interplay between the Polish young adults' migration and family life careers by applying sequence analysis (Abbott & Tsay 2000). In sequence analysis, each individual life course trajectory is represented as a string of characters (states). We distinguish between seven possible states: single (S), cohabitating (C), cohabitating and child(ren) (CC), married, but living without partner (MS), married and living with partner (M), married and child(ren) (MC), and return migration (R). Although all immigrants who have left the Netherlands are coded as return migrants, they might in practice also have moved to other countries. Note, however, that the large majority (90%) of Polish migrants leaving the Netherlands moves back to Poland (Dagevos 2011).

In order to reduce complexity and given the fact that most migrants are relatively young, we do not distinguish between the number of children living in the household. Also,

the incidence of divorce was so low ($N = 177$, 1.5%) that it was not included as a category. Similarly, we do not treat singles with children and singles without children as different states, as the number of sequences including single parenthood is low ($N = 511$, 4.5%) and the spells are generally of short duration. Finally, among those who are single, we do not distinguish between individuals who are living independently and those who are sharing their residence with people other than partners and parents. Classifying the latter as single is justified since the commitment to these other household members is usually low (Korf 2009). Thus, “single” refers to not being in a cohabiting or married relationship, but may include other living arrangements than living alone. See Table 1 for an overview of the coding of family life states.

[Table 1 here]

Our observation window starts when the migrant arrives in the Netherlands for the first time and each individual is followed for a period of five years on a monthly time base. Thus, every trajectory is composed by a string of $(12) \times 5 = 60$ characters that represent the months since migration. The number of possible combinations between these 60 months and seven states is very large (7^{60}) and thus raises problems of complexity when comparing the trajectories. Therefore, we identify life course subtypes to reduce the large number of distinct sequences into groups that can be easily interpreted. In order to arrive at this typology of sequences, we first compute distances between all individual sequences. We opt for the optimal matching (OM) algorithm, which measures the dissimilarity of two sequences by considering how much effort must be performed to transform one sequence into the other (see Abbott & Tsay 2000, Needleman & Wunsch 1970). In this procedure, there are three basic operations available: insertion, deletion, and substitution. The more operations necessary in order to arrive at two equal sequences, the greater the dissimilarity between the sequences.

However, a substitution has a different meaning than an insertion/deletion operation does, and not all substitutions really “cost” the same (Abbott & Hrycak 1990). For example, being married and having children (MC) is more similar to being married (M) than to being single (S). There is no optimal solution for assigning the cost of these operations and the literature is inconclusive about the best approach (see Abbott & Tsay 2000, Wu 2000 for discussion). We follow the commonly applied solution of using unitary insertion/deletion costs and substitution costs based on transition rates in order to get data-driven costs and thus avoiding subjectivity (Aassve *et al.* 2007, Piccarreta & Billari 2007, Widmer & Ritschard 2009).

The output of the OM metric is a symmetric distance matrix that contains the minimal costs for transforming the sequences into each other. Based on this matrix, we identify more-or-less homogeneous groups of trajectories by applying the PAM (Partitioning Around Medoids) algorithm (Kaufman & Rousseeuw 1990). In this clustering method, it is necessary to specify the number of clusters in advance. Therefore, we test several cluster solutions and use the ASW (Average Silhouette Width) criterion to determine the clustering validity and to select the “optimal” number of clusters (Rousseeuw 1987). In addition, we did the cluster analyses for men and women separately and obtained similar results. The gender-specific clusters and the clusters derived from the total sample overlap for 97%. All calculations were made using the “*TraMineR*” and “*WeightedCluster*” packages in R (Gabadinho *et al.* 2011, Studer 2013).

Finally, to analyze how the clusters are related to the migrants’ background characteristics, we run a series of binary logistic regression analyses. This replicates the approach followed in previous studies (*e.g.*, Bras *et al.* 2010, Schumacher *et al.* 2013). The background characteristics are measured as follows. *Partner’s origin* is based on the country of birth of the partner distinguishing Poland, the Netherlands, other country, and those

without a partner. Since the number of migrants with a second-generation partner is low ($N = 99$), we do not distinguish between second-generation partners and native-born, Dutch partners. In the case of multiple partners during the five year observation window, we used the longest lasting relationship to define the partner's origin. *Labor force participation* is measured as the number of months that the migrant was employed divided over the number of months he/she lived in the Netherlands. The index is subsequently divided into three categories using the 33rd and 67th percentiles: low, medium, and high labor force participation. We used this categorical division because the scores were skewed towards high values. *Migration motive* is based on the immigrants' reported motive upon registration in the population register. We distinguish between migrants who came to the Netherlands for family reasons, work, study, or other reasons (covering a wide variety of motives including medical treatment, au pair, traineeship, etc.). Imputations for missing motives were carried out by Statistics Netherlands on the basis of the migrant's year of most recent arrival, country of birth, age, gender, and marital status (Nicolaas & Sprangers 2001). However, migrants who leave the Netherlands in the same calendar year that they entered the country are not imputed and are coded separately as "missing". *Age at migration* ranges from 20 to 30 years. A separate dummy variable is included for each age at migration. *Year of migration* is measured with a dummy variable for each year of migration to account for the different years of arrival in the Netherlands. Since the relation between the clusters and some of the background variables (*e.g.*, age-patterns, labor force participation) is different for men and women, we run the regression analyses for men and women separately. Table 2 presents an overview of the independent variables in our analyses.

[Table 2 here]

RESULTS

State distribution

First, we will focus on gender differences in family and migration behavior (see Figure 1). It is important to note that Figure 1 does not illustrate individual trajectories longitudinally, but shows the aggregated state distribution at each time point (month). As can be seen in the figure, almost 60% of the Polish men is single when they migrate to the Netherlands, compared to about 40% of their female counterparts. In addition, one quarter of the married men arrives in the Netherlands without their partner, while this is very uncommon for women. Women are thus more likely to migrate with their partner than men. The difference is in particular large for non-marital cohabitating unions: The proportions for women are almost twice as large as those for men, while the gender difference with regard to marriage is relatively small. Furthermore, we find that the majority of both Polish men and women does not have children upon arrival in the Netherlands. At the end of our observation window, however, almost 60% of married Poles has children living in the household. Children are less common in non-marital unions. In line with previous studies (Nicolaas 2011), we find that a large share of Polish migrants lives only temporarily in the Netherlands. Men are more likely to return to Poland than women are: about 50% of men has left the country at the end of our observation window, compared to about 35% among women.

[Figure 1 here]

Typology of trajectories

Since the number of possible combinations of sequences is extremely large, we used PAM cluster analysis to reduce complexity. Several cluster solutions were tested, of which the 6-cluster solution showed the highest average silhouette width ($ASW = .44$). We therefore specify six groups of trajectories. The state distribution within each of these six clusters is shown in Figure 2. The figure furthermore provides information on the number and

percentage of migrants who are classified within the clusters along with the ‘medoid sequence’ for each cluster. The medoid sequence is the individual sequence with the minimum average pairwise distance to all other individual sequences in the cluster (see Aassve *et al.* 2007).

Cluster 1 accounts for 19% of the sample and has the medoid sequence S/60, which stands for a trajectory in which a person lives in the Netherlands without a partner during the complete observation window of five years. Some Poles in this group live together with an unmarried partner for a while, but generally for only a very short period. Furthermore, some of the sequences in this cluster include return migration. These return migrants either leave the Netherlands towards the end of our observation window, or only for a short period (circular migration). The sequences in this cluster are thus all characterized by living single in the Netherlands for a relative long time.

Cluster 2, which compromises the largest group of the sample (33%), differs from the first in that these migrants all leave the Netherlands early within our five year observation window. This is reflected in the medoid sequence of S/12–R/48. A person in this type of trajectory lived for a year without a partner in the Netherlands, has then left the country and did not return to the Netherlands for the remaining four years of observation. The majority of the migrants in this cluster does not have a partner during the time of residence in the Netherlands (see Figure 2). Those with a partner are about equally divided between married and cohabiting individuals. It is interesting to see that hardly any of the migrants in this cluster have children living in the household.

The trajectories in cluster 3, reflecting 15% of the sample, are characterized by the medoid sequence S/14–C/46. This means that the migrant is single upon arrival in the Netherlands and starts cohabiting with an unmarried partner after 14 months until the end of our observation window. Although some individuals in cluster 3 become married and/or have

children living in the household towards the end of the five years of observation (see Figure 2), all of these trajectories include a long period of non-marital cohabitation. Also cluster 4 is characterized by a long period of non-marital cohabitation, but this is combined with children living in the household. This group is characterized by the medoid C/4–CC/56, which stands for a trajectory of cohabiting for four months after migration, followed by non-marital parenthood. This cluster is the smallest cluster of the sample (7%).

The sequences in cluster 5 are characterized by a relative long period of living with a married partner in the Netherlands. The medoid sequence of this group is M/52–R/8, which means that the migrant lives with a married partner for 52 months and then leaves the Netherlands until the end of our observation. Cluster 5 (marriage) and cluster 3 (cohabitation) are about equal in size (15%), but there are two interesting differences between the two partnership types. First, the vast majority of the married Poles migrates with their partner to the Netherlands, while the cohabiting Poles often arrive single in the Netherlands. Second, a large share of the married cluster leaves the Netherlands within five years, whilst return migration is uncommon in the cohabiting cluster (see also Table 3).

The last cluster (6) contains trajectories that are characterized by the medoid sequence M/4–MC/56, which means that the migrant has lived with a married partner for four months and then becomes a parent and remains in the Netherlands for another 56 months. This cluster thus represents sequences that are marked by a long period of living with a married partner and children in the household. The cluster comprises around 11% of the sample and is therewith larger than cluster 4 (7%), which includes long periods of non-marital parenthood. However, clusters 6 and 4 are similar in the sense that return migration is uncommon in both, suggesting that the presence of children in the household decreases the propensity to leave the Netherlands (*cf.* Dustmann 2003) .

[Figure 2 here]

Background characteristics

In the last step of the analyses we test how and to what extent different factors (individual and partner characteristics) are related to different paths as reflected in the identified clusters by a series of logistic regression analyses (Table 3). It is important to note that these analyses do not imply causation. For instance, the relationship between women's labor force participation and their family life trajectories is complex, multi-faceted and multi-directional (Andersson & Scott 2005). The goal here is therefore only to identify patterns and associations between the migrants' background characteristics and their family life trajectories. Analyses were carried out for men and women separately.

As can be seen in Table 3, we compare those with a Polish partner to those with a Dutch partner, other partner, and individuals without a partner. The dummy variable for not having a partner is omitted in the analyses of clusters 3-6, since all trajectories in these clusters include a period of living with a partner. Having no partner obviously increases the likelihood of being in cluster 1 (solo), but also the likelihood of return migration (cluster 2) among both men and women (see Table 3). With regard to the partner's origin, Table 3 shows that having a Dutch partner decreases the likelihood of return migration (cluster 2), but this effect is only significant for women. Furthermore, Polish migrants with a Polish partner are less likely to cohabit (clusters 3 and 4) and more likely to be married than those with a Dutch or partner from another migrant origin. An exception here is that women who are married and have children (cluster 6) more often have a Dutch partner than a Polish partner. Finally, Table 3 shows that having a Dutch or other migrant origin partner increases the likelihood of being in cluster 1 (solo), as a result of the fact that this cluster contains short periods of cohabitation (see Figure 2).

With regard to labor force participation, our findings show marked differences between men and women. Unemployment is related to a higher likelihood of return migration

(cluster 2) among both men and women, but the relationship is much stronger for men. Additional analyses (not in Table) show that this difference in effect size is significant. Furthermore, it can be seen that a high labor force participation is strongly positively related to clusters 4 (non-marital parenthood) and 6 (marital parenthood) among men, whereas this relationship is obviously reversed among women: mothers are less often employed.

Furthermore, the migration motive is strongly related to the found family life path for both men and women. Those who come to the Netherlands for work or study reasons are more likely to remain single (cluster 1) and less likely to be in clusters 5 (marriage) and 6 (marital births) than those who have migrated for family reasons. In addition, labor and student migrants more often leave the Netherlands (cluster 2) and cohabit (clusters 3 and 4) than family migrants, although differences are smaller and often not significant. Those who migrate for ‘other’ reasons to the Netherlands constitute a very heterogeneous group of people that came for many different reasons. Nevertheless, their overall behavior tends to be rather similar to labor and student migrants: they are more likely to remain single and to cohabit than to be married. The estimates for those who have an unknown migration motive are omitted from Table 3, as they all leave the country shortly after arrival (see method section).

Age at immigration marks migrants’ life stages at the time of entry into the Netherlands and the period of observation. As can be seen in Table 3, among men, we do not find a strong association between the age of observation for the majority of the clusters. Although in cluster 2 (return migration) all ages of observation differ significantly from the reference category (20-25), we see no further age-pattern. The only age-pattern among men we find is that older men are more likely to live with a married partner and children (cluster 6). Among women, it can be seen that those who are older when they migrate are less likely to leave the Netherlands (cluster 2) and to be married without children (cluster 5). Older women are more likely to have children in both non-marital (cluster 4) and marital unions (cluster 6).

In line with previous studies, we see that non-marital parenthood is most common in the 30-35 age group (Szukalski 2001) In addition, women who were observed from age 28-33 seem to be a specific group. Only this category is significantly less likely be single (cluster 1) or cohabiting without a child (cluster 3). This seems to be related to the fact that this group has the highest likelihood to be a married mother (cluster 6).

Finally, we control for the migrant's year of arrival in the Netherlands. Most of these estimates do not show a clear pattern and are therefore hard to interpret. An interesting finding, however, is that men who arrived more recently, in particular in 2007, are more likely to leave the Netherlands (cluster 2). This could be related to the fact that a work permission for Polish labor migrants was no longer required after May 2007, and hence, making it easier for Polish migrants to travel back and forth between Poland and the Netherlands for work. Among women, however, we do not observe this pattern. We suspect that this may be due to the fact that migrating for work purposes is less common among women (see Table 2).

[Table 3 here]

CONCLUSION AND DISCUSSION

After Poland became a member of the EU in May 2004, Polish migration within Europe has increased substantially to among others the UK and Germany but also the Netherlands. Despite a growing body of literature on recent Polish migrants in Western Europe, quantitative studies have largely overlooked the family dynamics of this relatively new group of immigrants. It is, however, essential to know more about family life decisions in relation to patterns of settlement and return in order to gain a better understanding of the drivers of the growing intra-European migration faced by most EU countries. In this paper we applied sequence analysis in order to empirically construct a typology of life-course trajectories in which we simultaneously considered partnership, fertility, and migration behavior on the basis

of rich panel data from the Dutch population registers. The analyses revealed a wide variety of ways in which migration and family choices are connected for Polish migrants in the Netherlands. We found six clusters of “ideal-type” sequences. In different ideal types return migration played an important role and the cluster determined by return migration was even the most common as it applied to almost one-third of the sample.

Return migration is thus an important feature of Polish migration, which is in sharp contrast with the very low levels of overall return migration among many other immigrant groups in the Netherlands (*e.g.* Turks and Moroccans). The high levels of return migration are at least partly attributable to the free movement of persons across the EU (*cf.* Nicolaas 2008). The finding that return migration occurs more often among Polish migrants who entered the Netherlands more recently, suggests that the abolishment of a labor permit for Polish nationals in 2007 may also have influenced return decisions. This finding is in line with recent debates about the fact that migration controls may actually have a counterfactual effect: by having strong regulations, return migration is prohibited since the risks of losing residence and permit are at stake, whereas a situation of few migration rules facilitates return migration.

Return migration thus occurs more frequently in a context with few institutional migration barriers, which makes the family domain an even more important factor in migration decision-making. Our analyses showed that the majority of Polish migrants that left the Netherlands were single and hardly any of these individuals had children living in the household. Similarly, return migration was found to be very unlikely among those who were in the cluster ‘(non)marital birth’ (meaning that they had a child either in a unmarried or married union in the Netherlands). These results are in line with previous studies showing that those who have more family obligations are the least mobile (White *et al.* 1995). On the one hand this implies that those who have children in Poland already are less likely to migrate. On the other hand, those who migrated and had children in the destination country are less likely

to return (cf. Dustmann 2003, Lindstrom & Giorguli Saucedo 2007). Qualitative research among Polish migrants showed that concerns about the children's education is the most important factor in this (Levrau et al. 2014). It is therefore important to provide sufficient attention to and create opportunities for children of these migrants in the educational system. So far, debates have potentially overlooked the more permanent character of these children and their parents in society. Since integration policies, that apply for 'third country' nationals (i.e. those who arrive from outside the EU to the Union), are not in place for European migrants, it is important to facilitate the process of integration for those European migrants who do stay more permanently (Vogels *et al.* 2014).

Finally, contrary to the more traditional patterns of family formation among Polish nonmigrants from similar birth cohorts (Matysiak 2009), we found an equal share of Polish migrants in the cluster typified as 'cohabiting' versus the 'marriage cluster' (both cover around 15% of the sample each). The relatively high incidence of cohabitation among Polish immigrants in the Netherlands may be the result of different underlying mechanisms. First, it could be that processes of adaption or assimilation (to Dutch society where unmarried cohabitation is much more common) have occurred within a relative short time span. This conjecture is strengthened by the finding that Poles who cohabited mainly stayed in the Netherlands, whereas the prevalence of return migration was found to be relatively high among those in the marriage trajectories. Also for other demographic behavior like fertility (Mayer & Riphahn 2000, Milewski 2007) and union dissolution (Frank & Wildsmith 2005), a rather rapid adaptation has been shown for different migrant groups in previous work. Second, an international migration may also have short-term disruption effects on family formation in which marriage is postponed and a period of unmarried cohabitation is more common and for a longer period of time (cf. Carlson 1985). We should however realize that in our analyses we only observed the short-term relation between migration and family behaviour, as we observe

individuals for a maximum of five years only. It is therefore difficult to assess whether it is a disruption or assimilation process that is taking place. Although currently still impossible with the data and for our study group, following individuals over a longer period of time could shed more light on the long-term impact of migration on family life trajectories and perhaps observe more diverse life paths. Finally, differences between migrants and nonmigrants may also be the result of selection effects, in which Polish who are more open minded also in terms of union formation are more likely to migrate (cf. Frank & Wildsmith 2005). Unmarried cohabitation may thus have very different meanings for individuals as is also shown for the majority population (Hiekel *et al.* 2014). However, our data is limited in the sense that we have no information on nonmigrants and, thus, the impact of migration cannot be directly assessed. Previous data collection efforts in Europe (*e.g.*, the recent MAFE project) have acknowledged the quest for including also nonmigrants. To our knowledge, however, no similar data collections have been carried out among EU migrants even though these are needed to understand the complexities underlying their behavior.

With regard to gender differences, our findings show that men more often remain single and leave the Netherlands, whereas the incidence of unmarried cohabitation was found to be much higher among women. Polish women seem thus to be more likely to shift their orientation towards the Netherlands, while the migration of Polish men is more often temporary and economically driven. The fact that Polish women are more often in a unmarried union than their male counterparts seems to be related to the fact that women more often find a partner in the Netherlands: roughly a quarter of Polish women has a Dutch partner, compared to about six percent for men. Indeed, our findings indicate that individuals with a partner outside one's own origin group were more likely to opt for cohabitation. Having a Dutch partner was also found to decrease the likelihood of return migration, but only among women (cf. Bijwaard & Wang 2013). The latter finding concurs with previous

studies showing substantial differences in migration experience between men and women (Dhar 2010).

The data we used for our analyses are derived from unique population register data that, contrary to many surveys, do not suffer from important problems like recall error and small numbers. Nevertheless, our data also entail several disadvantages that should be noted. Residence and stay in the Netherlands have to be reported by the persons themselves making migration data always prone to underreporting. In contrast to the classical immigration waves, recent intra-EU migrants tend to be highly mobile which makes their behavior more difficult to capture in population registers. First, registration in the population registers is obligatory only for those who intend to stay in the Netherlands for more than three months. Not every Polish migrant will thus be recorded in the population registers, implying that we underestimate the number of short-term Polish immigrants who may potentially show high levels of circular migration. Furthermore, in particular deregistration from the population registers when leaving the Netherlands is prone to underreporting, because there are no clear advantages of reporting the move. The registered time in the population data of the Netherlands is thus for some individuals larger than the true duration of stay in the country. Similarly, because EU migrants do not face any visa restrictions, the migration motive of EU migrants is based on self-reported information, leading to more missing information than is the case for non-EU migrants. Other research on Polish immigrants in the Netherlands has applied strategies of snowball sampling to also include non-registered Polish migrants in their survey (*e.g.*, Engbersen *et al.* 2013). The limitations of the different types of data clearly show that various complementary data collection strategies are needed to better capture the highly mobile EU migration flows.

Despite the limitations, this paper contributes to our knowledge on Polish migrants residing in North-Western Europe. Our results show the importance of focusing on the family

behavior of these migrants also in order to understand their migration behavior. The application of sequence analysis to construct an empirical typology of family and migration events is an interesting avenue to capture the large diversity among migrants also from other origins. The link between family and migration decisions may be particularly important for EU migrants as there are few to no institutional restrictions on mobility between EU member states. Our study indicated that the relation between both domains may also be very different for men and women. In light of increasing intra-EU migration and the effects this might have on the individual, the family and societies at origin and destination, more work is needed on how different life domains and decisions are interrelated. Only in this way we can truly capture the individual life course and pinpoint relevant policies.

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Figure 1. *Transversal Distribution of Family States and Return Migration, by Gender*

Figure 2. *Transversal Distribution of Family States and Return Migration, Six Life Course Clusters*

Table 1. *Coding Scheme of Sequence States*

	Sequence state	Acronym	Partner	Married	Child(ren)
1	Single	S	✗	✗	(✗)
2	Cohabiting	C	✓	✗	✗
3	Cohabiting + child(ren)	CC	✓	✗	✓
4	Married, separate	MS	✗	✓	(✗)
5	Married	M	✓	✓	✗
6	Married + child(ren)	MC	✓	✓	✓
7	Return migration	R	N/A	N/A	N/A

Note: The given criterion ✓ does apply, ✗ does not apply, or (✗) rarely applies to the migrant

Table 2. *Distribution Among Categories of the Independent Variables (N=11,492)*

	Male (N=5,316)		Female (N=6,176)	
	N	Percent	N	Percent
Partner's origin				
Polish	2,986	56.2	2,606	42.2
Dutch	318	6.0	1,557	25.2
Other	355	6.7	889	14.4
Single	1,657	31.2	1,124	18.2
Labor force participation				
Low	1,398	26.3	2,402	38.9
Medium	1,651	31.1	2,317	37.5
High	2,267	42.6	1,457	23.6
Migration motive				
Family	607	11.4	1,696	27.5
Work	3,389	63.8	1,966	31.8
Study	310	5.8	702	11.4
Other	258	4.9	1,159	18.8
Missing	752	14.1	653	10.6
Age of observation				
20-25	189	3.6	451	7.3
21-26	323	6.1	632	10.2
22-27	478	9.0	783	12.7
23-28	514	9.7	816	13.2
24-29	562	10.6	773	12.5
25-30	600	11.3	652	10.6
26-31	610	11.5	609	9.9
27-32	585	11.0	482	7.8
28-33	546	10.3	409	6.6
29-34	459	8.6	309	5.0
30-35	450	8.5	260	4.2
Year of migration				
2004	947	17.8	1,625	26.3
2005	1,741	32.8	1,996	32.3
2006	2,245	42.2	2,191	35.5
2007	383	7.2	364	5.9

Note: Percentages may not total 100 due to rounding

Source: System of Social statistical Datasets (SSD)

Table 3. *Logistic Regression Analyses of the Life Course Typology: Odds Ratios*

	Cluster 1: Solo		Cluster 2: Return		Cluster 3: Cohabiting		Cluster 4: Non-Marital Birth		Cluster 5: Marriage		Cluster 6: Marital Birth	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Partner's origin												
Polish (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dutch	1.96***	1.17	0.93	0.48***	2.74***	4.07***	2.08**	2.70***	0.40***	0.47***	0.57*	1.04
Other	2.76***	2.05***	1.08	1.41**	2.26***	2.55***	0.93	3.01***	0.35***	0.30***	0.51*	0.53***
Single	3.56***	5.64***	3.66***	5.29***	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Labor force participation												
Low (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Medium	1.95***	1.49***	0.33***	0.39***	3.10***	2.49***	5.97***	1.14	2.25***	1.47***	6.65***	0.92
High	1.65***	1.74***	0.19***	0.36***	3.82***	3.66***	7.70***	0.48***	3.83***	2.31***	10.96***	0.48***
Migration motive ^a												
Family (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Labor	2.52***	2.91***	1.01	1.52***	1.67**	1.15	1.18	1.43**	0.24***	0.43***	0.75*	0.37***
Study	3.21***	4.26***	1.05	1.44**	1.41	1.54***	1.25	0.90	0.04***	0.09***	0.21**	0.09***
Other	2.43***	2.62***	0.96	0.99	1.95**	1.36***	2.65**	1.65***	0.14***	0.33***	0.86	0.49***
Age of observation												
20-25 (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
21-26	1.63	0.87	0.54*	1.11	0.74	1.16	0.52	0.78	1.64	0.84	1.32	1.12
22-27	1.35	1.08	0.64*	1.04	1.40	0.82	0.43	0.67	1.78	0.81	1.09	1.47
23-28	1.35	0.95	0.53**	1.07	1.13	0.97	1.07	0.79	1.54	0.91	2.76	1.50
24-29	1.32	0.80	0.58*	0.94	1.13	1.01	0.70	1.17	1.90*	0.84	2.76	2.08**
25-30	1.31	0.74	0.60**	0.79	1.06	1.03	0.75	1.45	1.57	0.93	3.56*	1.91**
26-31	1.14	0.82	0.51**	0.67*	0.97	1.15	1.16	1.40	1.64	0.55**	4.72**	3.27***
27-32	1.19	0.73	0.49**	0.77	1.28	0.72	0.96	1.64*	1.48	0.89	4.64**	3.33***
28-33	1.15	0.53**	0.61*	0.76	0.74	0.52**	1.09	1.76*	1.12	0.65	6.27***	5.76***
29-34	0.87	0.65	0.55**	0.76	1.22	0.99	0.91	1.67	1.36	0.56**	6.74***	4.40***
30-35	1.00	0.73	0.65*	0.59*	0.71	0.79	1.02	3.14***	1.44	0.27***	6.11**	4.54***
Year of migration												
2004 (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2005	0.75**	0.84	1.79***	1.19	0.73*	0.86	0.43***	0.99	1.25	1.34**	0.95	0.91
2006	0.88	1.05	1.59***	0.70*	0.75**	1.08	0.88	1.13	1.53**	1.46**	0.94	1.08
2007	0.92	1.03	2.14***	1.11	0.89	1.05	0.50	1.27	0.58*	0.64*	1.06	1.17
No. of observations	1,263	931	2,054	1,727	566	1,131	207	606	739	956	487	825
Nagelkerke R ²	0.15	0.13	0.51	0.37	0.14	0.22	0.12	0.14	0.23	0.18	0.19	0.21

Note: ^aCoefficients for missing motives not reported. * $p < .05$; ** $p < .01$; *** $p < .001$

Source: System of Social statistical Datasets (SSD)