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Abstract:

This analysis explores if the labour market attachment for immigrants of different residence types improves with length of stay compared to natives. Based on residence permit information and other administrative data, we follow all immigrants who have arrived to Denmark since 1997, and follow them until 2017. The labour market attachment is measured by: Employment rates, annual earnings and transfer payments, and gaps between natives and different ethnic groups are explained by: Demographic measures, educational levels and business cycle indicators. The results show that the initial gaps in employment and earnings generally decline with length of stay, but that refugees fare worse on the labour market and receive higher transfer income than all other immigrant groups. Annual earnings gaps are decreasing over time for both immigrant men and women, but in general without reaching the level of natives. Only refugees and early cohorts of family reunified to immigrants receive larger transfer income than natives. Instead a considerable proportion of the early cohort of refugees is permanently outside the labour market.

Keywords: Integration, employment, earnings, welfare dependency, refugees, out-migration.

JEL-codes: J15, J31, J61

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1. Introduction

Immigrants and their integration on the labour market has been a topic of major political attention for many years, but the debate has been highly intensified in the later years. Since 2015 more than 1 million asylum seekers have arrived in Europe and have clearly highlighted the need for understanding how immigrants fare on the labour market in the host country. However, it is important to note that people migrate for many reasons and that the integration patterns can be highly different depending on their residence type and personal characteristics.

This study focuses on how immigrants fare on the labour market depending on how long they have stayed in Denmark. More specifically, the study tracks immigrants who have arrived since 1997, as this is the first year for which it is possible to link information about the basis for permission being granted for residence in Denmark – i.e. whether a given immigrant was granted refugee status, admitted for family reunification, or admitted for work or study or being EU/EAA citizen – with information from the Danish Central Civil Registration system. This linkage to the administrative data makes it possible to track what happens to immigrants in the years after their arrival. Labour market appearance is measured by employment and annual earnings. The flipside of labour market integration is welfare dependency and the study will also focus on the income transfers that different immigrant groups receive and on how the situation changes with their duration of stay in Denmark. These income transfers represent costs for the welfare state and their actual levels and development with years of stay may therefore also be important.

The question of how immigrants assimilate or fare on the labour market compared to natives, and the extent to which immigrants' earnings converge with those of natives over the years in step with the increase in their length of stay in the host country is one of the most intensely discussed issues in international migration literature. The first empirical studies were conducted in the United States, where Chiswick (1978) reached the conclusion that the difference between immigrants' and natives' earnings eventually reached parity, and that immigrants' earnings actually overtook those of natives in time. These findings were subsequently corrected by Borjas (1985, 1995), who demonstrated that part of the wage difference between immigrants who had been resident in the host country for short and long periods (measured as a cross-section) was in fact attributable to cohort effects.

Since then, studies of the assimilation of immigrants into the labour market have been analysed in many countries.¹ The general conclusion is that most immigrants face an initial 'penalty' in terms of

¹ See Baker and Benjamin (1994), Bloom et al (1995) for Canada and Bevelander and Pendakur (2014) for Canada and Sweden, Husted et al. (2001), Schultz-Nielsen and Constant (2004) and Schultz-Nielsen (2017) for Denmark, Sarvimäki (2011, 2017) for Finland, Schmidt (1997) for Germany, de Vroome and van Tubergen (2010) and Bakker et al. (2017) for the Netherlands, Winkelmann and Winkelmann (1998) for New Zealand, Bratsberg et al. (2010, 2014, 2017) for Norway, Aguilar and Gustafsson (1991) for Sweden, Bell (1997) for the United Kingdom, Cortes (2004) for the United

lower employment and earnings. However, the size of the initial gap and extent to which the assimilation process leads to a closing of the initial gap depends to a large extent on the conditions in the receiving country, the characteristics of the immigrants themselves, their network and the comparability of the immigrants' skills in the receiving country.

Receiving countries matter for their labour market structure, language, institutional setting and how governments support newly arrived immigrants. In the Nordic countries, where the wage-dispersion is low the initial problem for immigrants may be to become employed, while this may be less of a problem in the US, where immigrants may find a job, but to a poor salary. A response to the lack of host country qualifications (including language skills) is an extensive introduction program lasting 2-3 years in the Nordic countries, which in the long run may improve immigrant's human capital, but in the short run can create lock-in effects of the program.

The time horizons and the purpose of the migration clearly matter. If the immigration is temporary then investments in host country human capital are less attractive than if the immigration is permanent (Dustmann, 1993; Duleep and Regets, 1999). Hence immigrants who stay temporarily are less likely to acquire host country specific skills and thereby increase their labour market performance in the long run (Zwysen, 2018). This may also explain why Cortes (2004) finds faster assimilation among refugees than other immigrants. However, immigrants obtaining residence through different admission classes not only differ by the expected length of stay. The criteria for entry and the services available upon arrival also vary (Bevelander and Pendakur, 2014). Obtaining a residence permit as a worker e.g. through green card arrangements, may in many cases imply that the immigrant has a job upon arrival, just like an immigrant student needs to have the skills required for attending college. Refugees on the other hand are received in the host country for humanitarian reasons regardless of whether their skills may be easily transferable to the host country or not. Hence a poorer health status due to traumatic experiences in the home country may result in poorer labour market outcomes, de Vroome and van Tubergen (2010). Furthermore, refugees may also be entitled to services and income transfers in the host country that other immigrant groups like workers or family reunified are not.

Studies regarding immigrants' assimilation pattern conducted in the Nordic countries include Bratsberg *et al.* (2014, 2017) for Norway, Sarvimäki (2011) for Finland, and Aguilar and Gustafsson (1991) for Sweden. Earlier studies for Denmark (see Husted *et al.*, 2001, Schultz-Nielsen and Constant, 2004 and Statistics Denmark, 2015) have shown that immigrants' employment and earnings rise with their length of stay in Denmark. They also reveal that non-Western immigrants fare worse on the Danish labour market than do Western immigrants, in terms both of employment rate and income. In contrast, immigrants from the new EU member states that joined the European Union subsequent to the eastward expansion of 2004 enjoy high rates of employment. It has also been shown that the rates of employment for refugees in Denmark are lower than for other immigrants from non-Western countries (see Husted *et al.*, 2001; Hansen *et al.*, 2015; Sletting 2015). One analysis

States. Cross-national comparisons based on the European Labour force survey include Dumont *et al.* (2016), Dustmann *et al.* (2016) and Zwysen (2018).

distinguishes between refugees and family reunified with refugees, to native Danes and to immigrants (Schultz-Nielsen, 2016), demonstrating that not only refugees, but also family reunified with refugees fare worse on the labour market than other immigrants. Schultz-Nielsen, 2017 predicts the gaps in different labour market outcomes between refugees, family reunified and natives, but without including educational information. Immigrants' educational information from country of origin is provided in (Schultz-Nielsen and Skaksen, 2017) and this information is used in the current study.

The empirical evidence regarding refugees' assimilation on the labour market is somewhat mixed. Some analyses suggest that the initial gap closes over time (Dumont et al., 2016; Dustmann et al., 2016, Bakker et al., 2017), while others conclude that the gap diminishes over time compared to family reunified (Bevelander, 2011), but never entirely closes compared to natives (Savimäki, 2017). However, in Norway the diminishing trend in refugees' labour market gap seems to stop after the first years and even start to increase again (Bratsberg et al., 2017). A somewhat similar pattern is found in Denmark for male refugees (Schultz-Nielsen, 2017). A recent study compares the employment levels of refugees in Norway, Sweden and Denmark up to 8 years after arrival (Hernes et al., 2019). The study shows that within the first years of stay employment levels are highest among refugees in Denmark, but the lead is thereafter overtaken by Sweden and Norway, where Norway stands out as obtaining the highest employment rates among refugee women.

Another important issue that will be discussed more in details later is that out-migration and the composition of immigrants leaving compared to those staying may also influence the observed assimilation rates (Borjas and Bratsberg, 1996; Edin et al., 2000; Dustmann and Görlach, 2015).

The rest of the paper is organized as follows: Section 2 provides an overview of the inflow of immigrants to Denmark by type of residence permit. The empirical model is described in Section 3, while Section 4 introduces the data and Section 5 the empirical strategy used in the study. Section 6 shows the results and conclusions are drawn in Section 7.

2. Immigrants arriving to Denmark 1997-2017

Migration streams are often affected by events taking place both at the national and international level and immigration to Denmark is no exception in this regard. Some of the major international events that affected the immigration to Denmark in the period 1997 to 2017 were inflow of refugees from countries like Kosovo, Afghanistan, Iraq, Somalia and Syria as a consequence of war and chaos. While the EU-enlargement in 2004 made free-movement of labour possible from 10 new EU-countries. Like many other EU-countries Denmark imposed a transitional period and the free mobility was fully implemented from 2009.

At the national level access to Danish residence is regulated through the Aliens Act. In general, the immigration of labour migrants is restricted to citizens of Nordic and EU countries, with an exception for specialists needed in certain occupations. Immigrants from outside EU and the Nordic countries

are therefore typically refugees or family reunified. This pattern is also visible in Figure 1 showing the annual numbers of immigrants arriving to Denmark since 1997. Among immigrants arriving in the late 1990's and early 2000s half of them are refugees and family reunified, while the other half mainly consists of students and EU/EAA citizens.

[Insert Figure 1. Newly arrived immigrants, categorised according to the basis for residence in Denmark, 1997-2018]

The Aliens Act is adjusted a considerable number of times in the period 1997-2017, but the probably most influential change happens in 2002, where rules for being accepted as a refugee or a family reunified is tightened, while it becomes easier to immigrate in order to study or work.² At the same time international refugee flows declined (Hatton, 2009). All in all, the result is a shift in the composition of immigrants to Denmark, where refugees and family reunified now constitute around 20 % of the newly arrived immigrants. A percentage that becomes even lower as the number of labour immigrants rises in the mid-2000s with the economic upturn and the EU-enlargement. The share of refugees and family reunified only exceeds 20% again with the inflow of refugees from Syria in 2015 and 2016. In total the number of immigrants arriving rises considerably from 21,300 immigrants in 1997 to 61,100 in 2017.

3. Empirical model

In this section we will present the model that will be used to estimate the predicted differences in labour market outcomes between natives and each of the different residence types. This model is based on the analytical framework described in Borjas (1999) that has been used in various studies including Nordic studies like Bratsberg et al. (2014, 2017), Savimäkki (2011, 2017) and Schultz-Nielsen (2017).

The dependent variables (Y_{it}) in the analysis are, in turn, employment (0/1), annual earnings (DKK) and annual transfer income. All outcomes are estimated using ordinary least squares.

The dependent variable is calculated for each person i at time t . It is thus possible for the same person to be included in the calculations several times as there is one observation for each year and standard errors will be clustered within individuals.

For immigrants the estimation equation is defined as:

$$1) \quad Y_{it} = \beta_0 + \beta_{1gr}gr_i + \beta_{2gr}ysm_{it} + \beta_{3gr}age_{it} + \beta_{4gr}X_{it} + \beta_{5res}U_{it} + \beta_6C_t + \varepsilon_{it}$$

² See Hvidtfeldt and Schultz-Nielsen (2018) for a comprehensive description of the changes in the Danish Aliens Act 1992-2016.

The six categories of basis for residence (1=refugees and family reunified with refugees, 2=family reunified with immigrants, 3=family reunified with natives, 4=students, 5=labour immigrants, 6=EU/EEA citizens) are here labelled ‘ $resi$ ’, and they can be divided into four cohorts ($cohi$) giving a total of 24 groups (gri). The independent variables also include duration of residence in Denmark (ysm_{it}) as third degree polynomials and age (age_{it}) as fourth degree polynomials. X_{it} is a vector of personal characteristics and includes six educational measures (depending on three educational levels and whether education is obtained in Denmark or not), having small children under the age of two (0=no,1=yes), having 1-2 children (0/1), having 3-5 (0/1) and having 6 children or more (0/1). The local unemployment rate U_{lt} in municipality l is also included, just like dummies for each calendar year C_t .

For natives the corresponding equation is:

$$2) \quad Y_{it} = \beta_0 + \beta_{30}age_{it} + \beta_{40}X_{it} + \beta_{50}U_{lt} + \beta_6C_t + \varepsilon_{it}$$

This specification allows the coefficients regarding age, education, years since migration, demographic characteristics and local unemployment rate to vary between the groups, while the calendar year effect is assumed to be fixed across groups (including natives) in order to disentangle the effect of age and years since migration (by cohort) from calendar year effects. For a formal discussion of the identification problem when measuring immigrant assimilation see Borjas (1999).

Based on the jointly estimated regressions of A1 and A2 the outcome gaps are predicted by comparing each residence permit type (based on own characteristics) with: natives (based on characteristics for the corresponding residence permit type). Hence, the outcome gap shows how each residence type fares compared to natives with corresponding characteristics. Separate regressions are run by gender.

4. Data

This section focuses on all adult immigrants who immigrated to Denmark for the first time in their lives during the period 1997–2016. They need to be present in Denmark 1st of January at least one year to ensure that they are included in the population register.³ Information about the basis for the granting of a residence permit to each immigrant was obtained from the Danish Immigration Service. In the case of a person who obtained more than one Danish residence permit on different occasions, or who immigrated to the country more than once, the first basis for granting residence was then used in the study.

In the following section, we examine trends in the patterns of integration over time. We have consequently decided to divide new immigrants into four cohorts, each cohort comprising the immigrants who arrived in one of the periods identified above. The first cohort consists of immigrants

³ This restriction mainly affects seasonal immigrants, but as our goal is to investigate the long-term assimilation rates of immigrants this group is of minor importance.

arriving 1997-2001 and thus before the major changes in immigration policy in 2002. The second cohort comprises immigrants arriving from 2002 to 2006, the third cohort those arriving from 2007-2011 and the fourth cohort consist of those arriving from 2012 to 2016. As data is available until 2017 it is possible to track the first cohort up to 20 years after their residence and the fourth cohort up to 4 years after residence.

The sample covers immigrants between the ages of 17 and 36 years on arrival in Denmark. This age restriction is imposed in order to track the immigration process for immigrants of a fairly similar age on arrival (see Bratsberg *et al.*, 2014; Sarvimäki, 2011). As the later calculations relate to labour market status, only immigrants aged 25 and older are included in the analyses. Because individuals have been tracked for up to 20 years, this means that none of the immigrants in the analyses are older than 56 (36+20) and they were all born between 1961 and 1991.

In order to compare immigrants' labour market association and use of social benefits with those of the rest of the population of Denmark, the study also includes a ten percent random sample of all 'natives' born between 1961 and 1991.

In all, the sample consists of 495,681 individuals including 202,676 'natives', 19,895 family reunified to natives, 39,600 refugees and family reunified to refugees, 18,473 family reunified to immigrants (that are not refugees), 41,996 immigrants with a residence permit to work, 59,170 immigrants with a residence permit to study and finally 119,944 immigrants from other EU-countries.^{4 5} Please note that citizens from other Nordic countries do not need a residence permit to settle in Denmark and they are not included in the study.

Individuals who immigrated to Denmark for the first time in the period 1997–2016 are tracked in the years following their arrival. Information concerning their age, gender and civil status has been obtained from Denmark's population register, while information concerning their labour market status, etc. has been retrieved from other records maintained by Statistics Denmark. Please note that immigrants need to be present in the population register by January 1st in order to be included in the study. This means that seasonally settled immigrants, e.g. immigrating to Denmark in May and emigrating in September, are not included in this analysis. The main characteristics of the immigrants at time of arrival to Denmark are presented in Table 1 below.

⁴ A 'native' is defined according to Statistics Denmark as a person, who has at least one parent, who is Danish citizen and born in Denmark (Statistics Denmark, 2018).

⁵ We have merged refugees and family reunified to refugees to a single group. The reason for this is that they share multiple features, including country of origin and to a large extent also labour market assimilation patterns, when taking into account differences in gender composition (cf. Schultz-Nielsen, 2016).

It is possible to retrieve information on all immigrants who were resident in Denmark on 1 January in a given year. The total number of years for which a given individual can be tracked is thus dependent on how early in the research period he or she arrived in Denmark, and how long he or she stayed in the country. This resulted in a dataset comprising 1,630,016 immigrant observations. By comparison the native sample consists of 3,047,469 observations.

[Insert Table 1. Characteristics of natives and immigrants depending on type of first residence permit]

Among natives around half the sample (51%) are men, but for family reunified to natives it is much lower (28%) reflecting that it is more common among native men than native women to find a spouse abroad. Among refugees and their family reunified 54% are men, when taken together. But among refugees alone most are men, while the opposite is the case among family reunified to refugees. This pattern reflects that men are either more likely to attract the unwelcome attention of the authorities in their home countries, or because families decide that men have the best chance of succeeding abroad, and they are therefore sent ‘in advance’.⁶ The share of men among family reunified to immigrants (who are not refugees) is 37%, while it is larger among immigrants with residence permits to study (46%), work (61%) or due to EU/EAA-regulation (58%).

The shifting types of immigration over the years that was shown in Figure 1 is also visible in Table 1. Immigrants arriving between 1997 and 2001 (labelled ‘Cohort 1’) constitute 38% of all family reunified to natives, 33% of refugees and their family reunified and no less than 47% of the family reunified to immigrants, which is most likely to due to both changes in the international refugee flows and tightening of the Danish rules for being granted residence as a refugee or family reunified immigrant in 2002. Only a minor share of the EU-immigrants (11%), students (12%) and workers (17%) arrived in this period. But the easier access to green card arrangements and possibilities to study in Denmark with the legislation changes in 2002 make way for more immigrants to arrive to work and study in the following periods. At the same time the economic upswing lasting up to 2008 increases the demand for immigrant labour. Furthermore, the EU-enlargement in 2004 improves the accessibility for immigrant labour from the new member states, especially after 2009, where transitional arrangements are fully implemented. Hence, 37% of EU/EAA-immigrants arrived between 2007-2011 against 44% between 2012-2016.

⁶ Note that the family reunification category includes both the spouses of refugees who were married to them before they fled their countries (of origin) and new spouses found by refugees in their home countries after their arrival in Denmark.

Among family reunified to natives 82% are of non-Western origin.⁷ Nevertheless, some EU/EAA citizens may be family related to natives – it may just be easier to apply for a residence permit due to the EU-rules. Among family reunified to immigrants 94% are of non-Western origin, while this is the case for almost all refugees and their relatives. An overview of the most common nationalities represented in each of the residence permit categories in each period is presented in Appendix Table 1.

The median age of arrival is lowest among students and family reunified to immigrants, followed by EU/EAA-citizens (27) and finally age 28 for other permit types.

The vast majority of natives (98 %) live in Denmark for five years after they are first observed in the sample (at age 25). The share staying is also high for family reunified to natives (92 %) and immigrants (94 %) and just as high for refugees and their family reunified (95 %). Hence, for refugees and family reunified the settlement is of a permanent nature, which is profoundly different than for many EU-immigrants, students and workers, where only 51 – 64 % stay in Denmark for five years.

While the information reported so far has been stable for immigrants over time, this is obviously not the case when it comes to characteristics like age, years since migration or even completed educational attainment. Characteristics are reported in the second part of table 1 at observation level, meaning that each individual is included several times corresponding to the number of years observed in the analysis.

Educational attainment is reported in three levels: Short education (Up to high school), Medium education (Vocational training, short- and medium-term higher education) and Higher education (Long term higher education). Education obtained in Denmark and abroad is registered separately. For native observations all education is registered as Danish: short education (27%), medium (63%) and long (9%). Only very few (1%) have missing educational education. This is not the case for immigrants, where education obtained abroad is not always registered.⁸ Among immigrants'

⁷ Western countries comprise Andorra, Australia, Canada, Iceland, Liechtenstein, Monaco, New Zealand, Norway, San Marino, Switzerland, USA, the Vatican, Belgium, Cyprus, Denmark, Finland, France, Greece, Ireland, Luxembourg, Malta, the Netherlands, Portugal, Spain, the United Kingdom, Sweden, Germany, Austria, Estonia, Latvia, Lithuania, Slovakia, Slovenia, the Czech Republic, Hungary, Poland, Bulgaria and Romania. Non-Western countries comprise all other countries not included in the categories of Western countries.

⁸ Compared to earlier studies like Schultz-Nielsen (2017) the quality of the information of immigrants' qualifications has greatly improved and educational level is known for many more observations thanks to new surveys conducted by Statistics Denmark focusing on immigrants' education from abroad (Skaksen and Schultz-Nielsen, 2017). Hence the educational level from abroad is known for more observations today. Please note that educational values imputed by Statistics Denmark are registered as missing in this analysis. The lack of educational information from abroad is mainly an issue in the regression analysis and we take account of it by using weights in the regressions. These weights are

observations with educational information the educational level is lowest for refugees and their relatives plus family reunified to immigrants, where more than 50% of the observations include short education (from abroad). The educational level is generally somewhat higher among family reunified to natives, (38%) with short education, but highest for students, EU/EAA and workers, where less than 20 % of the observations have a short education and the educational level exceeds that of native observations.

The average employment rate over *all* years since migration is 64% for family reunified to natives and is thereby on the same level as for workers and EU/EAA-citizens (65%) despite the family reunified's longer stay. The employment rate is lower for students and family reunified to immigrants, but is particularly low among refugees and their relatives, where the average employment rate over all years is 33%. The average annual earnings are also lowest (77,569 DKK in 2017-prices) for refugees and their relatives, followed by family reunited with immigrants, students and family reunified to natives. The highest annual earnings are found for natives (295,020 DKK), followed by workers and EU/EAA-citizens. In contrast, the average annual transfer income is higher for refugees (112,149 DKK) than all other groups, and workers, students and EU/EAA-citizens receive the lowest transfer income. Student observations are generally younger (30 years) they are on average observed 6 years, while workers and EU/EAA-citizens are a bit older (31-32) and are observed for a shorter period (4-5 years), while family reunified are older (34-36) and observed more years (8-9). Family reunified have also more children in Denmark most likely due to their more permanent stay than other immigrants.

5. Assimilation patterns depending on residence type

The assimilation patterns of immigrants depending on residence type is analyzed in the following section. We follow four cohorts of each residence type and analyze how the integration of newly arrived immigrants has progressed over the years following their arrival in Denmark.

The assimilation rate compared to natives will be calculated for each residence type based on the empirical model presented in section 3. In practice we will examine to what extent employment, earnings and transfer income is comparable to Danes in the same age group in step with the increasing period of residence. For native Danes, we have therefore chosen to take as our starting point the same birth years (1961–1991) as for the immigrants, and to follow them in the period 1997–2017 – from the year in which they turn 26 – so as to compare the situation for refugees and family members reunified with immigrants with the situation for natives on the labour market. In the same way as in a number of previous studies (Borjas, 1995; Bratsberg *et al.*, 2014, 2017), the residence period for natives in this comparison has been approximated to their age minus 25 years.

constructed by a ranking weigh procedure based on information of gender, residence permit type, years since migration, children, and an indicator for Western country of origin.

The average employment rate for natives and each residence type of immigrants depending on duration of residence is presented in Figure 2 for men and women separately. For natives, the graph reflects their average employment from the time they turn 26, and then presents development for the next 20 years – i.e. until they reach the age of 46.⁹

The level of employment is calculated from register-based labour force statistics that also form the basis for the official calculation of the size of the Danish labour force. The point in time at which the situation is measured is the last week in November, when people are categorised in accordance with the normal international (ILO) criteria as being in employment, unemployed, or outside the labour force, with the application of a number of sub-categories (Statistics Denmark, 1999–2013).

Figure 2 shows that, as expected, employment for men is highest among natives, where employment for the entire period is higher than 80 %, but with a rising trend over the first years, probably because many young people completed their education there, after which employment remains at a level close to 90 %. Generally speaking, the level of employment thus remains stable at a high level. Among male workers and EU/EAA-citizens the employment rate is also quite high and increasing with years since migration. For family reunified to natives and immigrants, the employment increases substantially within the first couple of years and then remains fairly stable – and a bit below the level for workers and EU/EAA-citizens in the following years. However, among refugees and their family members the employment is very low. In the first years less than 20 % are employed. In the following years employment rises steadily, and after approximately 8 years, it reaches its highest level: around 56 % and thereafter it seems to decline. Therefore, even after 10–15 years of residence, there is still an appreciable gap for refugees up to the employment level of not just natives, but all other immigrant groups.

Among women in Figure 2 the employment levels are in general lower than for men, but native women have quite high employment rates. Hence, the employment gap between natives and immigrants is therefore larger for women than for men and even though the difference seems to decrease over time, immigrant women apparently do not close the employment gap to natives. But the employment rates seem to increase much more among workers, EU/EAA citizens, family reunified to natives and students than among family reunified to immigrants and refugees (including relatives).

[Insert Figure 2. Employment rate by origin and number of years of residence in Denmark, %.]

The calculations are based on all immigrants who arrived in Denmark between 1997 and 2016, and who were aged 17–36 on arrival. The employment curves presented may therefore also reflect

⁹ In the regressions used subsequently natives are included up to the age of 56, as this is an age limitation that corresponds to that of the immigrants.

variations in employment that may be attributable to conditions other than simply the change in duration of residence. For example, there may be compositional differences in age, education and country of origin, as well as differences in conditions at time of arrival and market conditions. In order to make allowance for these differences – to some extent at least – the employment frequency among men and women, respectively, is presented in Appendix Figures 1–6, divided into four cohorts by year of arrival, where cohort 1 constitutes immigrants arriving from 1997 to 2001, cohort 2 those arriving from 2002 to 2006, cohort 3 those arriving from 2007 to 2011 and finally cohort 4 including immigrants arriving 2012 to 2016. Given that our last year of observation is 2017 we only observe cohort 4 in year 1-5 since migration and for the latest arrivals (in 2016) we only include them one time (in 2017). Corresponding numbers for natives are found in Appendix Figure 7.

5.1 Employment gaps in the years after arrival in Denmark

To allow each residence permit type's employment assimilation pattern to be compared (as far as possible) with that of natives the model described in section 3 has been estimated.¹⁰ The predicted employment gap by years since migration is then calculated for each cohort between natives and: refugees and their relatives, family reunified to immigrants and natives, students, workers and EU/EAA-citizens native. The result is shown in Figure 3a for men and Figure 3b for women. A negative gap means that the employment is lower for immigrants than natives. In other words; the difference in employment is calculated between each residence permit type and 'corresponding' natives, taken to mean natives with the same demographic features (gender, age, children etc.), and, to the extent possible, market conditions at the time. In contrast to Schultz-Nielsen (2017) we also consider differences in educational background. The impact of individual characteristics like the number and age-distribution of children can differ in the estimations over residence permit groups and cohorts, while educational attainment and the correction for the business cycle (measured by local unemployment rate) differ over residence permit groups as described in section 3. Hence the main idea is to analyze how different immigrant groups integrate with years since migration compared to natives with corresponding characteristics.

[Insert Figure 3a. Predicted employment gaps for men by residence permit type and number of years of residence in Denmark, percentage points.]

¹⁰ These estimations show that having children (0-2 years) in general have a negative effect on women's labour market performance and the effect is more pronounced for most immigrant women than natives. Having (older) children is associated with better labour market performance for natives, but less so for immigrants in general, and especially those with more than 2 children have lower employment levels and earnings. Education above primary/lover secondary level also has a positive impact, especially further education medium or long, but the effect is smaller for immigrants than natives. In addition, the business cycle fluctuations seem to have a larger effect on the employment of both refugees and family reunified to immigrants compared to all natives. The estimation results are available upon request by the author.

The predicted employment differentials (including 95% confidence-intervals) between immigrant men of each of the six residence types of four cohorts and ‘corresponding’ natives is shown in Figure 3a. Recall that it is possible to follow the members of the first cohort for the longest time, and the predicted employment differential here is presented until 17 years since migration, where a majority of the cohort can be evaluated. Over this period, the employment gap for refugee men drops from around 60-70 percentage points (depending on cohort) in the first year to around 20 percentage points for the second cohort in the 7-8 year, after which it appears to rise somewhat again. For cohort 1 that is followed for the longest period the gap is still close to 30 percentage points compared to natives with ‘corresponding’ characteristics. There are several possible explanations for the poor outcome of refugees. Some refugees may become discouraged from job search, have health problems or be “forgotten” by the authorities after finishing the initial integration program. In addition, labour market conditions for refugees may have changed in recent years, due to increased competition in the job market for low-skilled labour after the EU-enlargement or due to the economic crisis that has left fewer job openings. However, the calculations have been corrected as much as possible for this by including controls for education, calendar-year and unemployment rate (by residence type), see section 3 for further details. In section 6.4 we look closer at to what extent refugees withdraw permanently from the labour market.

For no other residence permit type do we see such a great employment difference as for refugees. Later cohorts of men of family reunified to immigrants and natives almost seems to catch up with ‘corresponding’ natives, which does not mean that their employment level is the same as natives – but given their characteristics – including lower education level – they actually do rather well. The gap for workers is also quite narrow as it would be expected to be, given that the reason for their immigration was a job. But the gap never closes completely perhaps due to the temporary nature of many workers’ stay in Denmark, see Appendix Figure 5, where only a minor fraction stays for more than five years. Almost as close gaps are found for students and EU/EAA-citizens versus ‘corresponding’ natives. In section 6.3 we will return to the possible connection between immigrants’ length of stay and its possible importance for the assimilation patterns.

[Insert Figure 3b. Predicted employment gaps for women by residence permit type and number of years of residence in Denmark, percentage points.]

For women the predicted employment gaps with years since migration are shown in Figure 3b. Compared to the men employment gaps are larger as would be expected based on Figure 2. Again, the initial employment gap is largest for refugees and the gap never closes to less than 30 percentage points compared to ‘corresponding’ natives. For family reunified to immigrants the gap is smaller, but does not close over years since migration. That seems to happen at least for the second and third cohort of family reunified to natives. For female students, workers and EU/EAA-citizens we do see a decrease in the initial employment gap, but it never closes.

5.2 Annual earnings gaps in the years after arrival in Denmark

The annual earnings by years since migration for each residence permit type and cohort is shown in Appendix Figure 1-6. The amounts are expressed in 2017 prices. We follow Sarvimäki (2011) and Schultz-Nielsen (2017) and use the annual earnings (including the zeros) in order to be able to include all. The only group excluded here is the self-employed, as their labour market income is not fully captured by the earnings-measure. Information on earnings is retrieved from the income register, and this refers to the earnings for a given year, regardless of whether they derive from full-time or part-time work, and whether they are employed for the whole year or only a part of it.

The Appendix Figures 1-6 show that the annual earnings by gender and as expected annual earnings are lower for women than men for all types of residence permits. Earnings levels are highest among workers and EU/EAA-citizens and lowest for refugees and their relatives. The gap in annual earnings has likewise been calculated, with the results for men presented in Figure 4a and for women in Figure 4b. Once again, immigrants of different residence permit types are compared with ‘corresponding’ natives.

[Insert Figure 4a. Predicted earnings gaps for men by residence permit type and number of years of residence in Denmark.]

Earnings gaps for refugee men are generally declining the first 4-8 years since migration, but increase again after around the 10th year – which is in accordance with the findings in Schultz-Nielsen (2017). Earnings gaps also decrease in the first years for family reunified to natives, but then seem to stagnate. The same pattern is found for family reunified to natives although the gap to ‘corresponding’ natives here a bit narrower. Students also seem to improve the earnings gap the first years without larger improvements later on, which also seems to be the pattern for workers and EU/EAA that have a smaller gap, but never close the gap to natives entirely, when comparing to ‘corresponding’ natives. The exception is workers arriving 1997-2001, who more than close the gap. One reason for the general finding of a decreasing, but never closed gap is that especially native men have a considerable improvement of their earnings the first years of their career, making it difficult for immigrants to catch up, even though their earnings improve as can be seen in Appendix Figure 1-7.

The predicted earnings gaps by year since migration are shown for women in Figure 4b. For refugee women the earnings gap does not seem to decrease over time compared to ‘corresponding’ natives. For family reunified to immigrants there is a slight decrease of the gap the first 4-6 years, but the effect is moderate, while for family reunified to natives, students, workers and EU/EAA-citizens the earnings gap is decreasing quite fast the first years, but only workers and EU/EAA-citizens seems to close the gap in the end.

[Insert Figure 4b. Predicted earnings gaps for women by residence permit type and number of years of residence in Denmark.]

In general, the immigrant-native earnings gaps are somewhat smaller for women than for men. The main reason is that native men in general earn substantially more than native women and therefore are more difficult for immigrants to match when it comes earnings. Recall that this was not the case when studying employment, where the immigrant-native employment gaps were generally larger for women than for men.

5.3 Gaps in annual transfer income in the years after arrival in Denmark

The amount of annual transfer income (in 2017 prices) from the Danish Welfare State to newly arrived immigrants is also shown in Appendix Figures 1-6. The information concerning transfer incomes has been retrieved from both income and social assistance registers, and covers all types of social assistance, job support, rehabilitation benefit, unemployment pay, student maintenance grants, housing benefit, child allowances and disability pension. Transfers are calculated on an annual basis for all new immigrants, regardless of employment status, and include both taxable and tax-free payments. The Appendix figures document that transfer income is higher for women than men for all residence permit types.

[Insert Figure 5a. Predicted transfer income gaps for men by residence permit type and number of years of residence in Denmark.]

The predicted gaps in transfer income are presented in Figure 5a for men and 5b for women. Due to refugees' poorer labour market outcomes (employment and earnings) refugees are expected to receive more transfer income. Figure 5a shows that this is also the case as refugees are also the only immigrant group of men that receive higher transfer income for all cohorts than 'corresponding' natives. The first cohort (1997-2001) of family reunified to immigrants and natives also seems to receive more (especially after some years), but later cohorts do not. Students, workers and EU/EAA receive less transfer income than native and it seems to be rather stable over years since migration. For women the transfer income gap is somewhat lower compared to 'corresponding' natives, but still with refugees as the most receiving group together with the first cohort of family reunified to immigrants. For the other immigrant groups the transfer income gap decreases over time and after 6-8 years it is closing for family reunified to natives and continues in smaller scale for students, workers and EU/EAA-citizens.

[Insert Figure 5b. Predicted transfer income gaps for women by residence permit type and number of years of residence in Denmark.]

The reasons for these patterns in transfer income gap can be manifold. Apart from differences in employment and earnings the rules for receiving different types of transfers may vary by type of residence permit and length of stay. E.g. family reunified (with others than refugees) are entitled to fewer social benefits, especially during the first few years, because their residence permit is fundamentally conditional upon the capacity of their spouse to support them. Just like special

conditions apply for EU/EAA-citizens' access to transfer income in Denmark. Furthermore, especially the rules regarding social assistance have changed considerable over the period 1997-2017. Hence, in the years: 1999, 2002-2011 social assistance is at a substantially lower level (called 'start help') for *newly arrived* non-EU/EAA immigrants the first 7 years since migration to Denmark. In 2012-2015 immigrants can receive ordinary social assistance, but the latest years social assistance is lowered substantially again this time the first 9 years since migration for *all* (non-EU/EAA) immigrants.

5.4 How important is out-migration for the assimilation patterns?

Until now the assimilation patterns have been treated as if out-migration is either random or non-existent. Randomness in out-migration will assure that those immigrants that left the country after 10-15 years are represented equally well by those immigrants remaining. However, empirical evidence suggests that out-migration is not random and that immigrants succeeding on the labour market are less likely to out-migrate later, and this may lead to bias in the estimated assimilations rates (Edin et al., 2000). The larger the out-migration rates the more severe may the estimation-bias become.

Out-migration rates are also likely to differ substantially depending on the purpose of the initial immigration and thereby by residence type. This conclusion is confirmed in Table 1 showing that the share staying in Denmark five years after the initial immigration range from 92-95 % for refugees and family reunified with immigrants and natives to 51-64 % for workers, students and EU/EAA-citizens. A more detailed picture of the share of immigrants staying in Denmark by years since migration can be found in Appendix Figure 1-6.

A formal discussion of the possible influences of out-migration on assimilation patterns is found in Dustmann and Görlach (2015). They discuss earnings profiles, but the same considerations apply for other outcomes like employment and transfer income. They distinguish between three kinds of key questions related to immigrants' assimilation patterns.

1: "What is the growth in mean earnings of the populations of immigrants who arrived in the host country in a particular year and who are observed there in subsequent years?"

2: "What would the growth in mean earnings of the populations of immigrants who arrived in a particular year be if there was no subsequent out-migration?"

3: "What is the growth in mean earnings of the populations of immigrants who arrived in the host country in a particular year and who all stayed there until at least T year after arrival?"

Question 1 is related to mean outcome among immigrants arriving in the host country in a particular year and who are observed there in subsequent years. Such an analysis requires panel data and is the

kind of analysis presented in this paper. Question 2 has a more hypothetical character given that there should be no subsequent out-migration. However, if out-migration rates are in fact very low then in answering the first question one may be close to answering the second question as well. Question 3 focus on the ‘stayers’ and what their assimilation pattern is. The fraction of immigrants that are defined as ‘stayers’ depend on how many years T includes. The longer a period T includes the smaller a fraction of the population arriving in a particular year will be included. Again, if out-migration rates are very low the answer to question 3 will be close to answering question 1.

In order to better understand the importance of out-migration for the assimilation patterns presented in the previous sections, we will restrict the sample to ‘stayers’ in accordance with question 3 and compare their assimilation pattern with our results so far. Stayers are here restricted to immigrants, who are observed every year since their initial immigration. So, if they immigrated 10 (20) years ago, they should be present in the administrative registers all 10 (20) years. We will concentrate on the employment outcome since it is a central measure that also influences both earnings and income transfers.

In Figure 6 is presented the average employment levels each year since migration depending on immigrants’ type of residence and cohort. The solid lines show the average employment for all immigrants present and is identical to the employment rates presented in Appendix Figure 1-6. The dotted lines show the same output for the restricted sample (the ‘stayers’). Hence, in order to answer question 1 mentioned above, we should pay interest to the solid lines and in order to answer the question 3, we should focus on the dotted lines.

[Insert Figure 6. Employment rates by residence permit type and number of years of residence in Denmark, %]

As can be seen from Figure 6 the solid and dotted lines for each cohort are very close to each other for refugees and their relatives and for family reunified to immigrants and to natives. As illustrated in Appendix Figure 1-3 these immigrants are also those most likely to remain in Denmark – up to 80 % stay in 20 years. Hence, even though out-migration may not be completely random (Schultz-Nielsen, 2016), the share leaving seems to be so low that it only has a minor effect on the calculation. In other words, answering question 1 is close to answering question 2 and 3 as well.

For students, workers and EU/EAA-citizens there are larger differences between the solid and dotted lines. The dotted lines generally show a steeper increase in employment the first years after migration and then a rather stable employment rate thereafter. This means that those immigrants who out-migrate within the first years after their arrival had a lower employment rate than those who continue to stay. The share of immigrants remaining is low from these migration groups. According to Appendix Figure 4-6 it is less than 30 % that stay up to 20 years. Therefore, the answer to question 3 includes a stronger assimilation pattern than what the answer to question 1 predicts.

5.5 What happens to refugees' labour market attachment after a decade in Denmark?

As has been shown in the former sections refugees' labour market attachment is poorer than for any other immigrant group and for males the employment declines after the first decade in Denmark.

In order to better understand why refugees' employment may even decline over time a more precise description of the non-employed has been developed. Non-employed is here divided into three groups: Unemployed, Temporary out of labour force and Permanent out of labour force. Pension schemes are considered 'permanent' out of labour force, while people receiving introduction allowance, sickness benefit, social benefit (without currently being ready for work) and students (not working) are considered 'temporary' out of labour force.

Figure 7 shows the labour force participation for male and female refugees from the first cohort (arriving 1997-2001) that can be followed for the longest period. The employment levels are identical to those presented in Figure 2. Focusing on those non-employed we see that the vast majority of the refugees are temporarily out of the labour force in the first year. The share rapidly declines – especially for men – either because they become employed or at least come close enough to the labour market to be registered as unemployed. However, after 7-10 years the employment rate no longer rises and neither does the share of unemployed, instead a growing share becomes permanent 'out of the labour force' and after 20 years they constitute around ¼ of the refugees. Somewhat more for men than for women, where many are still 'temporary' out of the labour force.

[Insert Figure 7 Refugees' labour market status by number of years of residence in Denmark, %]

Considering how young the refugees are (the eldest being 56 years old and the average age of all refugee observations is 35) the proportion being permanently out of the labour force is large. A further investigation shows that nearly all of these people are on early retirement pension. For obvious reasons we do not know how large a share of the later refugee cohorts that will end up as permanently out of the labour force. The stricter access to early retirement pension after the 2013-reform may suggest that the share will be lower. However, whether this implies a larger share of refugees being employed, unemployed or temporarily out of the labour force is less certain.

6. Conclusion

Immigrants' assimilation patterns on the labour market in Denmark are in this study examined from the end of the 1990s to the present day. Three types of outcomes are evaluated: Employment status in November, annual earnings and annual transfer income. The main focus is on the following six different residence types: Refugees and family reunited to refugees, family reunified to immigrants, family reunified to natives, students, workers and EU/EAA citizens. This study traces everyone who arrived in Denmark in the period 1997 to 2016, where we have exact information on residence permit

type. The conditions for immigrants of each residence permit type are compared to natives and analyses are performed separately for men and women.

The results show that all immigrant groups decrease the employment gap compared to 'corresponding' natives within the first years of their stay, but whereas for men family reunified to immigrants, and natives, workers and EU/EAA narrow the gap and in some cases close it, this is not the case for male refugees who never catch up and after a decade seem to fall behind. For immigrant women the employment gap compared to 'corresponding' natives continues to exist for all immigrant groups, except for later cohorts of family reunified to natives. But as for the men the gap is larger for refugees than for other groups.

The earnings gap between different immigrant groups and 'corresponding' natives are generally larger for men than for women, due to the larger annual earnings of native men than women. Annual earnings gaps are in general decreasing over time for both immigrant women and men, but in general without reaching the level of natives, except for some cohorts of workers and EU/EAA-citizens. The only groups maintaining a very stable earnings gap compared to 'corresponding' natives are female refugees and family reunified to immigrants.

Refugees receive larger transfer incomes than 'corresponding' natives, while most other immigrant groups receive lower transfers. Especially students, workers and EU/EAA-citizens receive lower transfers than natives albeit the transfer gap becomes smaller for women over time. Compared to natives the transfer incomes are generally lower for immigrant women than men.

In order to further explore the results two additional analyses are conducted. The first one regards the possible influence of out-migration on the results presented so far. The analysis suggests that out-migration does not affect the results for refugees and family reunified as only few from these groups leave Denmark. The immigration of workers, students and EU/EAA-citizens is of a more temporary nature and the analysis shows that when taking account of this, the assimilation happens somewhat faster for those who stay for many years. The second analysis focuses on refugees and the declining employment trend after a decade in Denmark. The analysis reveals that the share of refugees that remain permanently out of the labour force increases considerably after the first decade and around 1/4 of the refugees that arrived between 1997-2001 are now permanently out of the labour force after two decades. This could be due to health problems but can also be related to long periods of unemployment.

References

- Aguilar, R., and B. Gustafsson. (1991). The Earnings Assimilation of Immigrants. *Labour* 5 (2), 37-58.
- Andersen, L. H., H. Hansen, M. L. Schultz-Nielsen and T. Tranæs. (2012). Starthjælpens betydning for flygtninges levevilkår og beskæftigelse. ROCKWOOL Foundation Research Unit, Study paper no. 25.
- Åslund, O. and Rooth, D.O. (2007). Do when and where matter? Initial labour market conditions and immigrants earnings. *Economic Journal*, 117 (518), 422-48.
- Baker, M. and D. Benjamin. (1994). The Performance of Immigrants in the Canadian Labor Market. *Journal of Labor Economics*, 12 (3), 369-405.
- Bakker, L., J. Dagevos and G. Engbersen. (2017). Explaining the refugee gap: a longitudinal study on labour market participation of refugees in the Netherlands. *Journal of Ethnic and Migration Studies*, 43 (11), 1775-1791.
- Bell, B.D. (1997). The Performance of Immigrants in the United Kingdom: Evidence from GHS. *The Economic Journal*. 107 (March), 333-344.
- Bevelander, P. and R. Pendakur. (2014). The labour market integration of refugee and family reunion immigrants: a comparison of outcomes in Canada and Sweden. *Journal of Ethnic and Migration Studies* 40 (5), 689-709.
- Bloom, D.E., G. Grenier and M. Gunderson. (1995). The changing labour market position of Canadian immigrants. *Canadian Journal of Economics*. 28 (4b), 987-1005.
- Borjas, G. J. (1985). Assimilation, Changes in Cohort Quality and the earnings of immigrants. *Journal of Labor Economics* 3 (4), 463-489.
- Borjas, G. J. (1995). Assimilation, Changes in Cohort Quality revisited: what happened to earnings in the 1980s? *Journal of Labor Economics* 13 (2), 201-245.
- Borjas, G. J. (1999). The Economic Analysis of Immigration. Chapter 28 in Ashenfelter and Card (eds.), *Handbook of Labor Economics*. Elsevier Science, 1698-1760.
- Borjas, G.J. and B. Bratsberg. (1996). Who leaves? The Outmigration of the Foreign-born. *Review of Economics and Statistics*, 78, 165-176.

- Bratsberg, B., O. Raaum and K. Røed. (2010). When Minority Labor Migrants Meet the Welfare State. 2010. *Journal of Labor Economics*, 28 (3), 633-676.
- Bratsberg, B., O. Raaum and K. Røed. (2014). Immigrants, Labour Market Performance and Social Insurance. *The Economic Journal* 124, 644-683.
- Bratsberg, B., O. Raaum and K. Røed. (2017). Immigrant labour market integration across admission classes. *Nordic Economic Policy Review*. Temanord 2017:520, 15-44.
- Chiswick, B.R. (1978). The Effect of Americanization on the Earnings of Foreign-born Men. *Journal of Political Economy*, 86(5), 897-921.
- Cortes, K.E. (2004). Are refugees different from economic immigrants? Some empirical evidence on the heterogeneity of immigrant groups in the United State. *Rev. Econ. Stat.* 86 (2), 465-480.
- Duleep H.O. and M.C. Regets. (1999). Immigrants and Human-Capital Investment. *American Economic Review*, 89 (2), 186-191.
- Dumont, J.C., T. Liebig, J. Peschner, F. Tanay and T. Xenogiani. (2016). How are refugees faring on the labour market in Europe? OECD, working paper 1/2016.
- Dustmann, C. (1993). Earnings Adjustment of Temporary Migrants. *Journal of Population Economics*, 6 (2), 153-168.
- Dustmann, C., F. Fasani, T. Frattini, L. Minale and U. Schönberg. (2016). On the Economics and Politics of Refugee Migration, CReAM, University College London, Discussion Paper 16/2016.
- Dustmann, C. and J.S. Görlach. (2015). Selective Out-Migration and the Estimation of Immigrants' Earnings Profiles. Chapter 10 in *Handbook of the Economics of International Migration*, vol. 1A. Elsevier.
- De Vroome, T. and F. Van Tubergen. (2010). The Employment Experience of Refugees in the Netherlands. *International Migration Review*, 44 (2), 376-403.
- Edin, P.A., R.J. LaLonde and O. Åslund. (2000). Emigration of immigrants and measures of immigrants assimilation: Evidence from Sweden. *Swedish Economic Policy Review*, 7, 163-204.
- Hansen, M. F., M. L. Schultz-Nielsen and T. Tranæs. (2015). The Impact of Immigrants on Public Finances: A Forecast Analysis for Denmark. ROCKWOOL Foundation Research Unit, Study Paper no. 90.

- Hatton, T. J. (2009). The Rise and Fall of Asylum: What happened and why? *The Economic Journal*, 119, 183-213.
- Hernes, V., J. Nielsen Arendt, P. A. Joona and K. R. Tronstad. 2019. *Nordic integration and settlement policies for refugees*. Temanord 2019:529.
- Husted, L., H. S. Nielsen, M. Rosholm and N. Smith. (2001). Employment and Wage Assimilation of Male First-Generation Immigrants in Denmark. *International Journal of Manpower*, 22, 39-68.
- Hvidtfeldt, C. and M.L. Schultz-Nielsen. (2018). Refugees and asylum seekers in Denmark 1992-2016. ROCKWOOL Foundation Research Unit, Study Paper no. 133.
- Sarvimäki, M. (2011). Assimilation to a Welfare State: Labor Market Performance and Use of Social Benefits by Immigrants to Finland. *Scandinavian Journal of Economics* 113 (3), 665-688.
- Sarvimäki, M. (2017). Labor market integration of refugees in Finland. Nordic Economic Policy Review. Temanord 2017:520, 73-94.
- Schmidt, C.M. (1997). Immigrant Performance in Germany: Labor Earnings of Ethnic German Migrants and Foreign Guest-Workers. *The Quarterly Review of Economics and Finance*, 37, 379-397.
- Schultz-Nielsen, M.L. and A. Constant (2004). *Migrants, work, and the Welfare State*. Chapter 4 in T. Tranæs and K.F. Zimmermann (eds), *Employment Trends for Immigrants and Natives*. ROCKWOOL Foundation Research Unit. The University Press of Southern Denmark, Odense.
- Schultz-Nielsen, M.L. and T. Tranæs. (2009). Ægteskabsmønsteret for unge med indvandrerbaggrund: Konsekvenser af ændringer i udlændingeloven i 2000 og 2002. ROCKWOOL Foundation Research Unit, Study paper no. 22.
- Schultz-Nielsen, M.L. (2016). Arbejdsmarkedstilknytningen for flygtninge og indvandrere. ROCKWOOL Foundation Research Unit. The University Press of Southern Denmark, Odense.
- Schultz-Nielsen, M.L. (2017). Labour market integration of refugees in Denmark. Nordic Economic Policy Review. Temanord 2017:520, 45-72.
- Schultz-Nielsen, M.L. and J. R. Skaksen with contributions from J.K. Clausen and T.M. Glæsner. (2017). Indvandreres uddannelse. ROCKWOOL Foundation Research Unit, Study paper no. 48.
- Sletting, L. J. (2015). Her fjerde flygtning er i job efter 10 år. Agenda, 7 March 2015.

- Skaksen, J. R. and B. Jensen. (2016). Hvad ved vi om indvandring og integration?
ROCKWOOL Foundation Research Unit and Gyldendal, Copenhagen.
- Statistics Denmark. (1999-2013). Registerbaseret arbejdsstyrkestatistik 1. januar. Statistiske Efterretninger, Arbejdsmarked. Copenhagen.
- Statistics Denmark. (2000). Indvandernes uddannelse. Copenhagen.
- Statistics Denmark. (2018). Indvandrere i Danmark 2018. Copenhagen.
- Udlændinge-, Integrations- og Boligministeriet. (2016). Tal på udlændingeområdet pr. 31.12.2015. Copenhagen.
- Winkelmann, L. and R. Winkelmann. (1998). Immigrants in the New Zealand Labour Market: a Cohort Analysis using 1981, 1986 and 1996 Census Data. *Labour Market Bulletin*. 1998:1&2, 34-70.
- Zwysen, W. (2018). Different Patterns of Labor Market Integration by Migration Motivation in Europe: The Role of Host Country Human Capital. *International Migration Review*. April 2018. DOI: 10.1177/0197918318767929

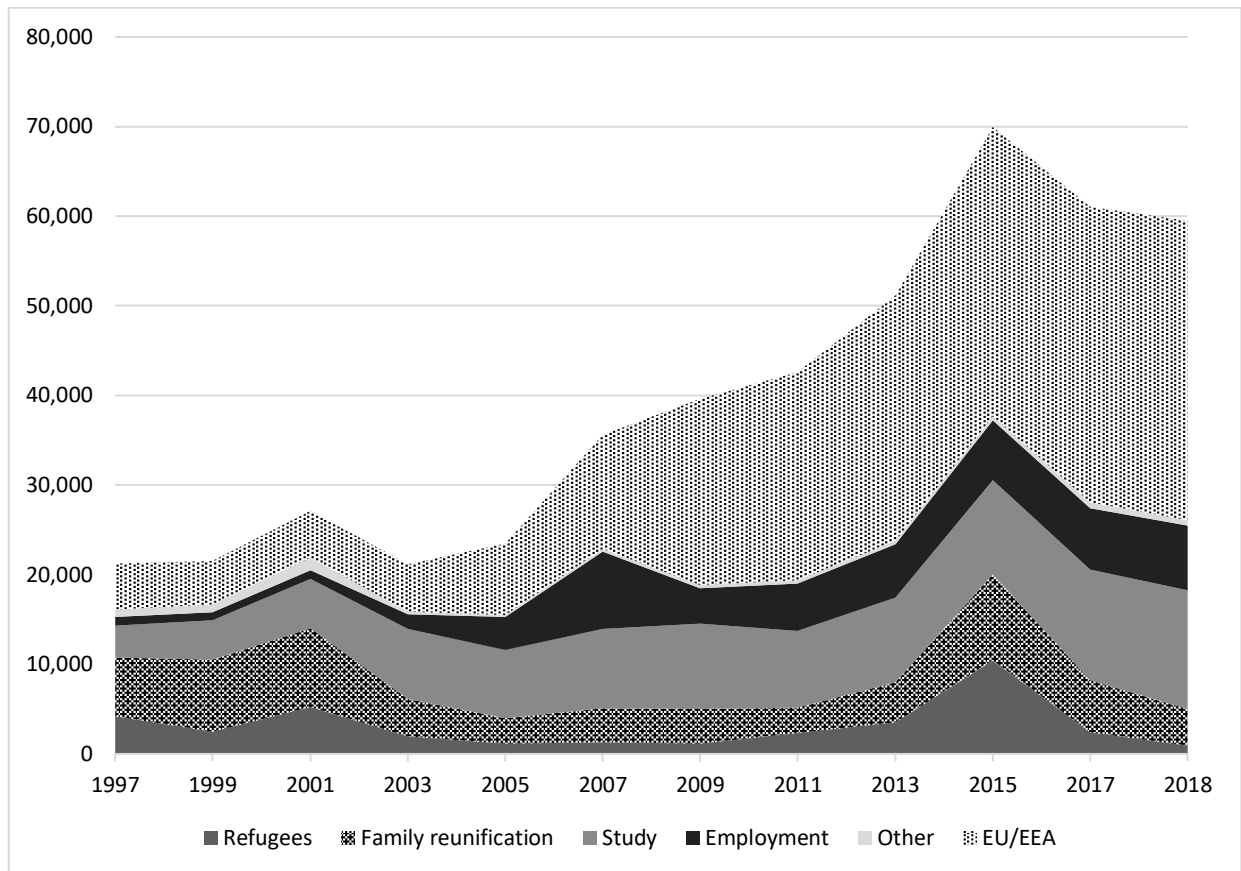
Table 1. Characteristics¹ of natives and immigrants depending on type of first residence permit

	Natives	Family reunified to natives	Refugees and their family reunified	Family reunified to immigrants	Work	Students	EU/EAA
Men	0.51 (0.50)	0.28 (0.45)	0.54 (0.50)	0.37 (0.48)	0.61 (0.49)	0.46 (0.50)	0.58 (0.49)
(1997-2001)	0.59 (0.49)	0.38 (0.49)	0.33 (0.47)	0.47 (0.50)	0.05 (0.23)	0.12 (0.32)	0.08 (0.27)
(2002-2006)	0.55 (0.50)	0.21 (0.41)	0.14 (0.35)	0.17 (0.38)	0.17 (0.38)	0.26 (0.44)	0.11 (0.31)
(2007-2011)	0.49 (0.50)	0.23 (0.42)	0.13 (0.34)	0.20 (0.40)	0.38 (0.49)	0.35 (0.48)	0.37 (0.48)
(2012-2016)	0.45 (0.50)	0.18 (0.38)	0.40 (0.49)	0.16 (0.37)	0.39 (0.49)	0.28 (0.45)	0.44 (0.50)
Non-western	0.00 (0.00)	0.82 (0.38)	1.00 (0.06)	0.94 (0.23)	0.70 (0.46)	0.80 (0.40)	0.06 (0.23)
Median age at immigration	- (-)	28 (4)	28 (5)	25 (5)	28 (4)	25 (4)	27 (4)
In DK at least 5 years	0.98 (0.12)	0.92 (0.27)	0.95 (0.21)	0.94 (0.24)	0.54 (0.50)	0.51 (0.50)	0.64 (0.48)
No. of individuals	202,676	19,895	39,600	18,473	41,996	59,170	119,944
Short foreign education	0.00 (0.00)	0.38 (0.48)	0.59 (0.49)	0.55 (0.50)	0.15 (0.35)	0.19 (0.39)	0.18 (0.38)
Medium foreign education	0.00 (0.00)	0.37 (0.48)	0.27 (0.44)	0.31 (0.46)	0.39 (0.49)	0.36 (0.48)	0.45 (0.50)
High foreign education	0.00 (0.00)	0.09 (0.28)	0.05 (0.21)	0.04 (0.20)	0.38 (0.49)	0.13 (0.34)	0.24 (0.42)
Short Danish education	0.27 (0.45)	0.01 (0.09)	0.02 (0.13)	0.01 (0.11)	0.00 (0.05)	0.02 (0.12)	0.00 (0.05)
Medium Danish education	0.63 (0.48)	0.14 (0.34)	0.07 (0.25)	0.08 (0.26)	0.02 (0.14)	0.15 (0.35)	0.06 (0.23)
High Danish education	0.09 (0.29)	0.02 (0.15)	0.01 (0.08)	0.01 (0.08)	0.06 (0.24)	0.15 (0.36)	0.08 (0.27)
Education unknown	0.01 (0.09)	0.11 (0.31)	0.08 (0.28)	0.07 (0.26)	0.26 (0.44)	0.30 (0.46)	0.24 (0.43)
Employment Rate	0.84 (0.36)	0.64 (0.48)	0.33 (0.47)	0.53 (0.50)	0.65 (0.48)	0.54 (0.50)	0.65 (0.48)
Yearly earnings ³	295,020 (247,472)	157,135 (169,281)	77,569 (139,480)	121,047 (150,259)	235,473 (269,000)	133,667 (167,795)	193,062 (235,121)
Transfer income ⁴	40,737 (62,690)	40,229 (57,990)	112,149 (83,086)	70,469 (77,950)	13,556 (35,557)	17,201 (41,142)	19,174 (41,968)
Age	36.8 (7.5)	35.6 (5.9)	35.2 (6.4)	33.8 (5.8)	32.5 (4.8)	30.4 (4.7)	31.8 (5.4)
YSM	- (-)	7.7 (4.9)	7.9 (5.1)	8.8 (5.1)	4.5 (3.5)	6.0 (4.3)	4.9 (3.8)
Child aged 0-2	0.19 (0.39)	0.22 (0.42)	0.29 (0.46)	0.34 (0.47)	0.19 (0.39)	0.15 (0.35)	0.17 (0.37)
No. of children	1.09 (1.07)	0.96 (0.97)	1.72 (1.56)	1.54 (1.18)	0.53 (0.81)	0.40 (0.75)	0.54 (0.89)
Observations	3,047,469	201,109	327,960	190,664	172,479	254,672	483,132

Notes: 1: The mean characteristics are reported based on individuals in upper part of table and on observations in lower part of the table. Standard errors are reported in parenthesis. 2: Natives are categorized in birth cohorts matching those of immigrants and that is why the total share (0.59+0.55+0.49+0.45) exceeds 1. 3 and 4: Yearly earnings and transfer income are calculated in DKK 2017-prices.

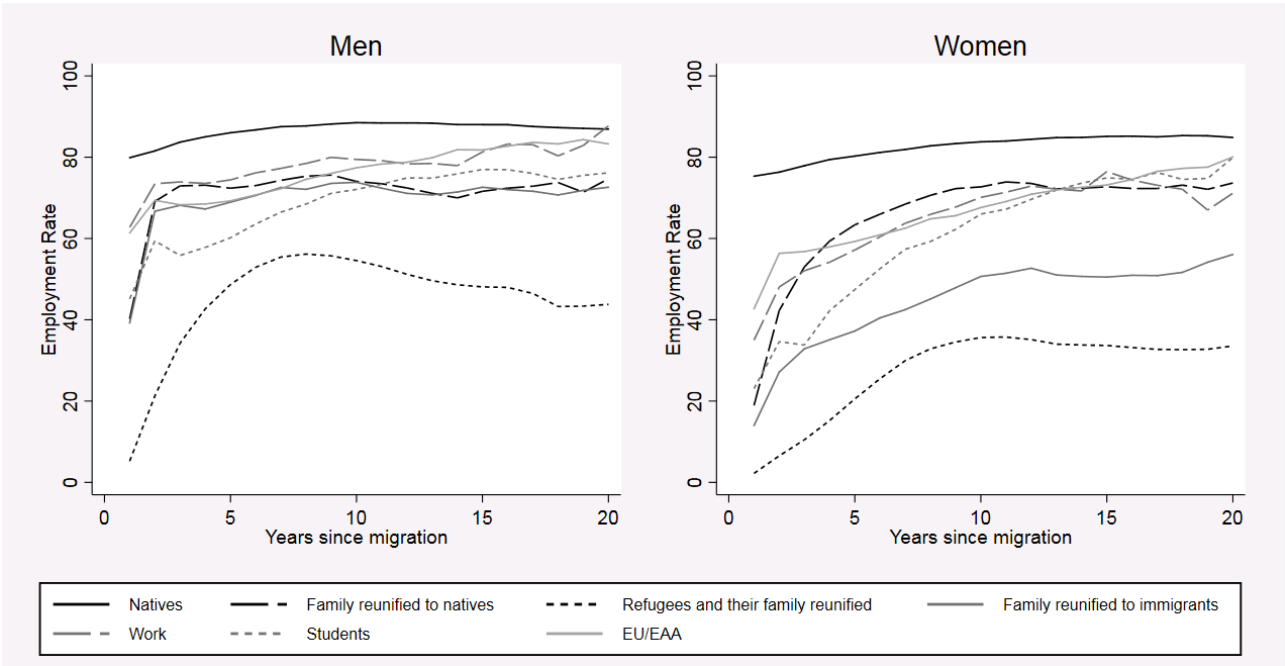
Source: Own calculations based on Statistics Denmark records.

Figure 1. Newly arrived immigrants categorised according to the basis for their residence in Denmark, 1997-2018



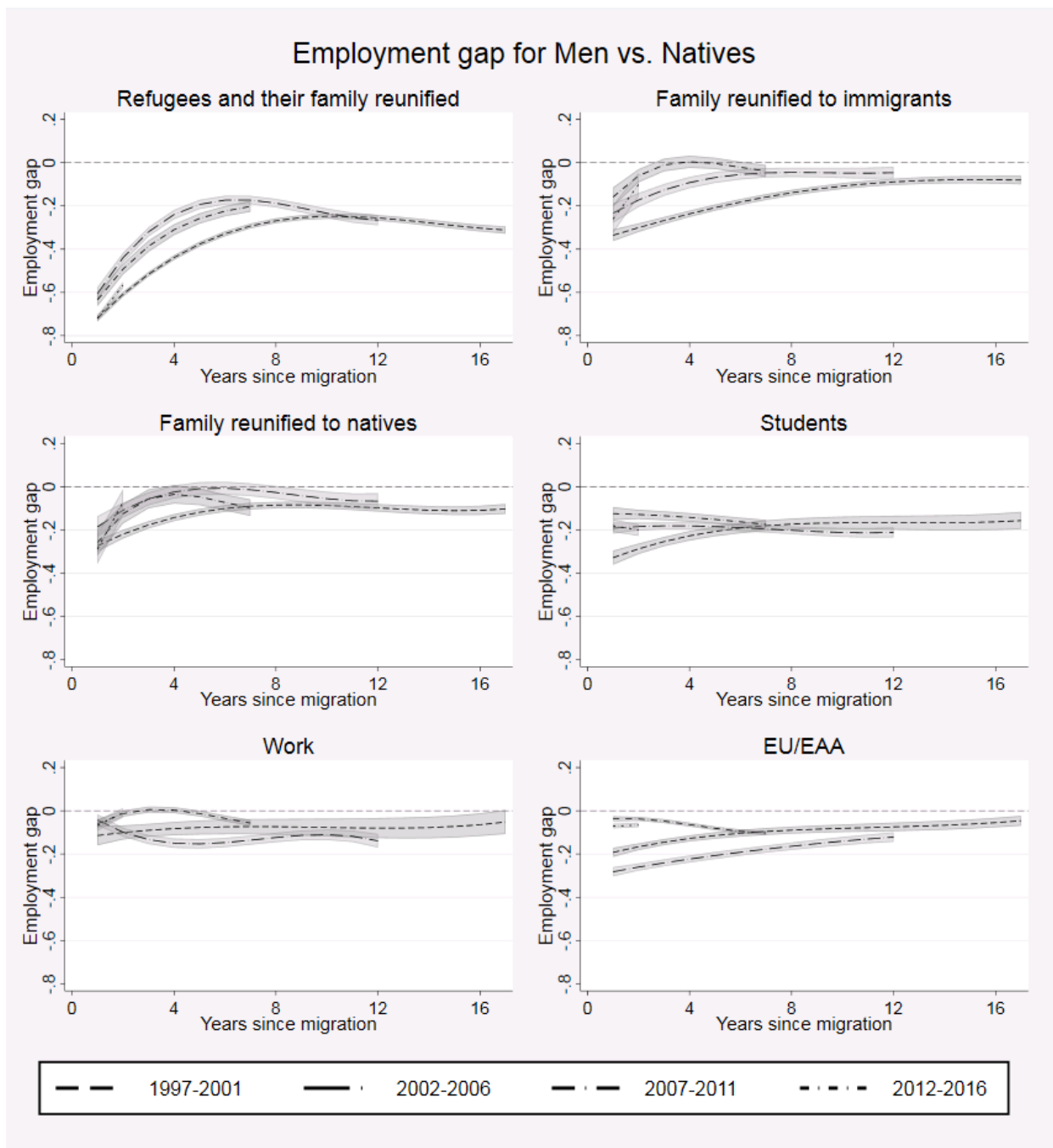
Source: Statistics Denmark, <http://www.statistikbanken.dk/VAN8A>

Figure 2. Employment rate by origin and number of years of residence in Denmark, %



Source: Own calculations based on Statistics Denmark records.

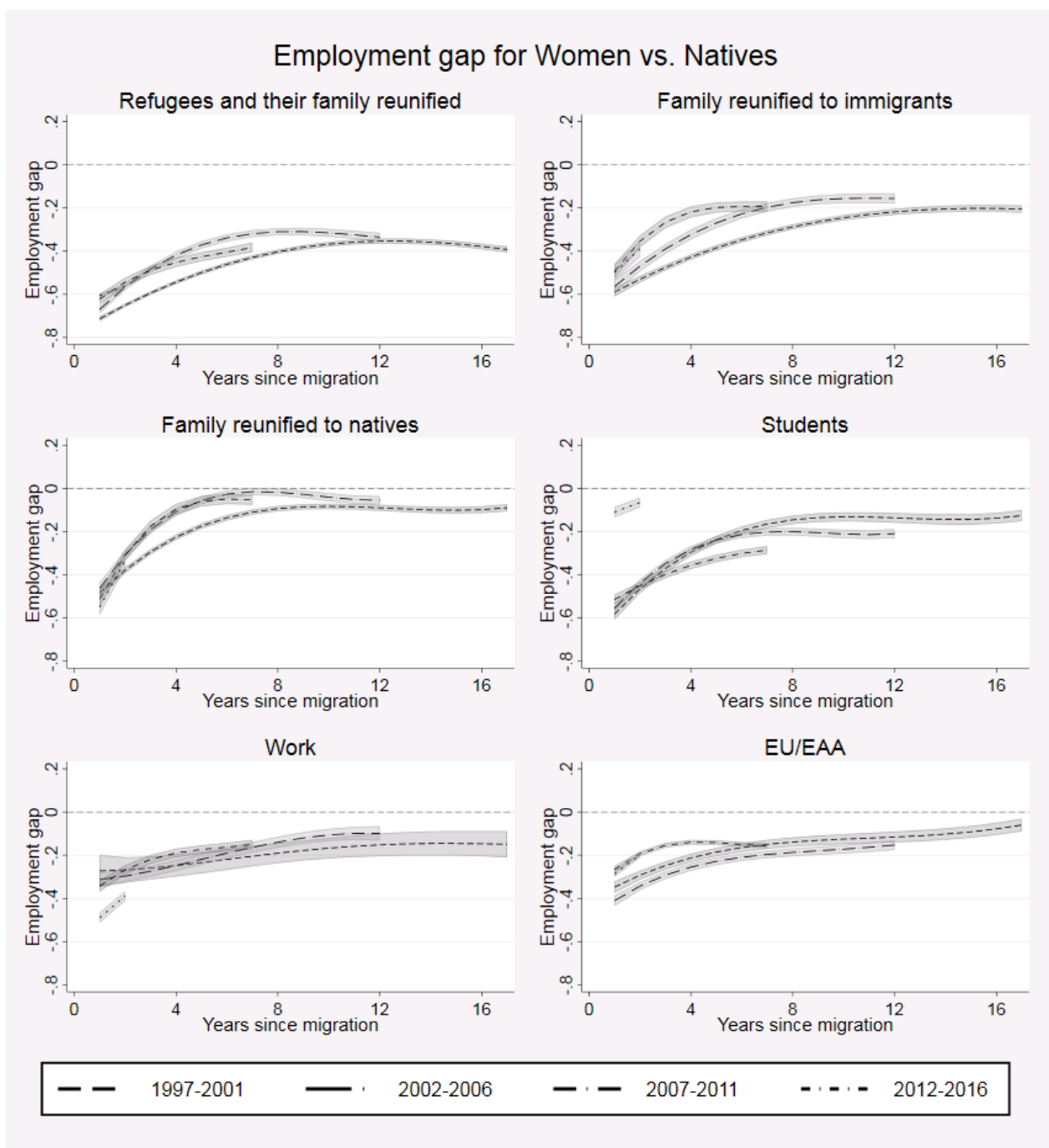
Figure 3a. Predicted employment gaps for men by residence permit type and number of years of residence in Denmark, percentage points



Note: The predicted employment gaps are based on the regression model described in section 3. Differentials are evaluated based on weighted average characteristics for each residence permit type. 95% confidence intervals are also included. Standard errors are clustered within individuals.

Source: Own calculations based on Statistics Denmark records.

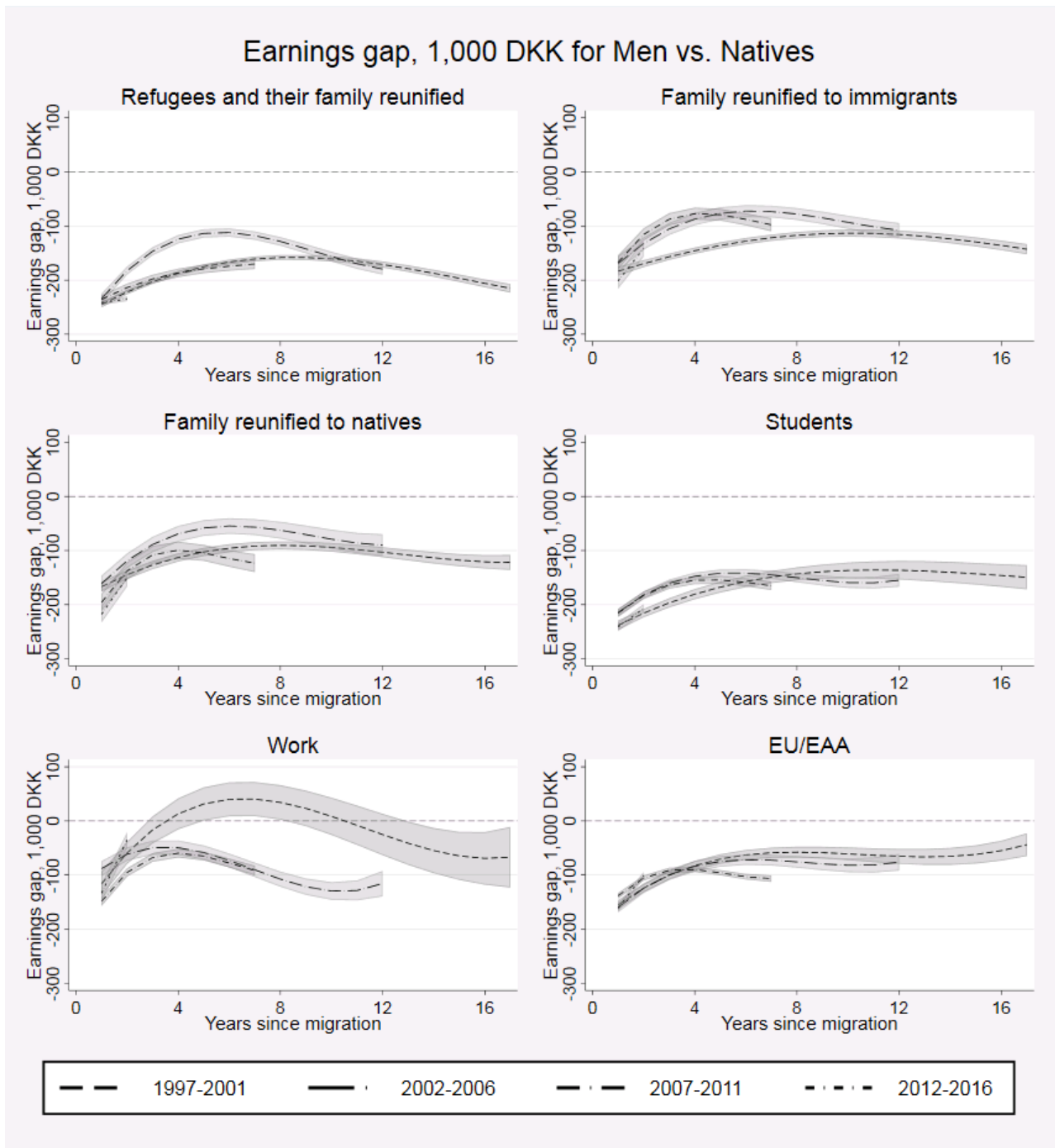
Figure 3b. Predicted employment gaps for women by residence permit type and number of years of residence in Denmark, percentage points



Note: The predicted employment gaps are based on the regression model described in section 3. Differentials are evaluated based on weighted average characteristics for each residence permit type. 95% confidence intervals are also included. Standard errors are clustered within individuals.

Source: Own calculations based on Statistics Denmark records.

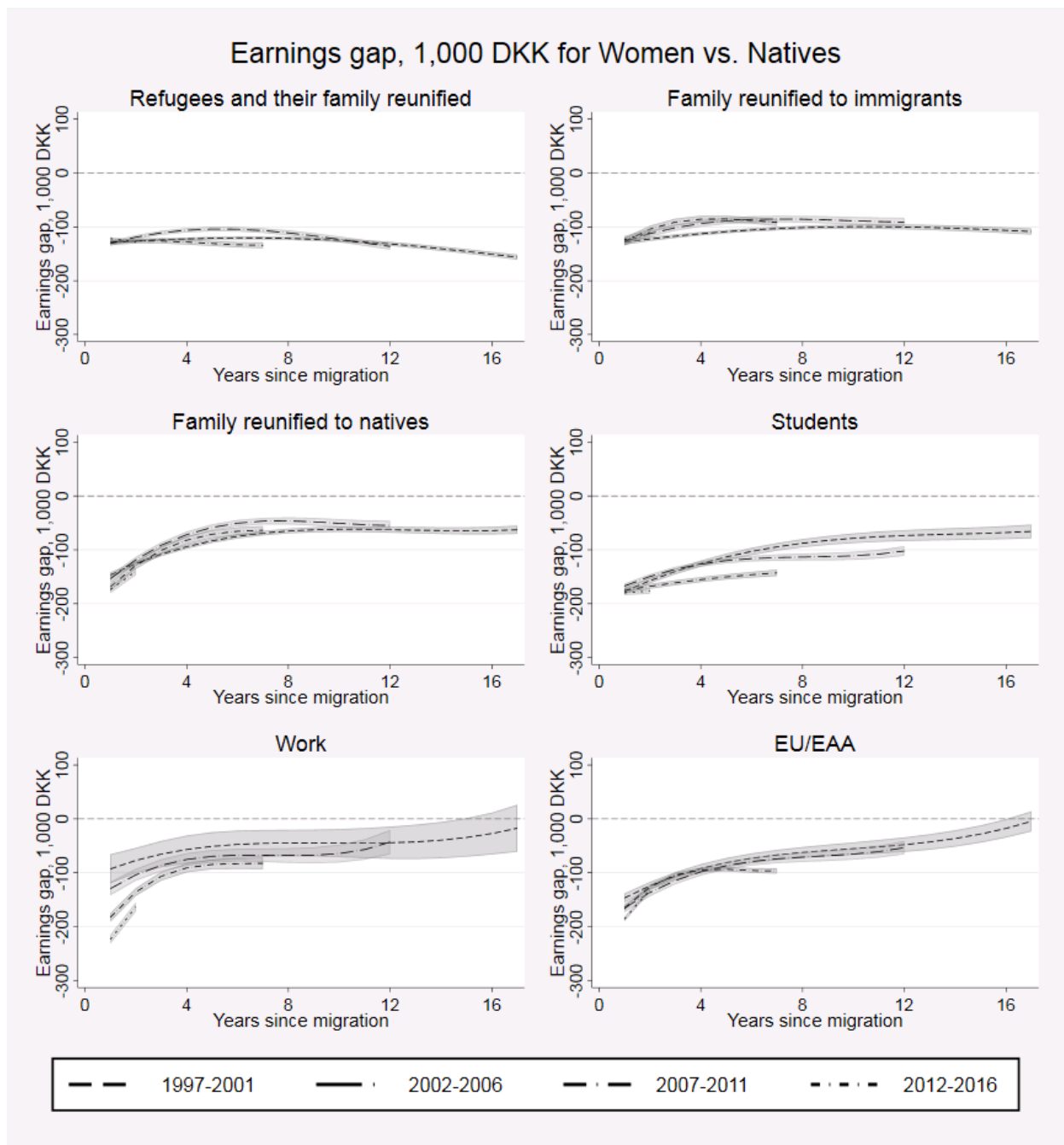
Figure 4a. Predicted earnings gaps for men by residence permit type and number of years of residence in Denmark



Note: The predicted earnings gaps are based on the regression model described in section 3. Differentials are evaluated based on weighted average characteristics for each residence permit type. 95% confidence intervals are also included. Standard errors are clustered within individuals.

Source: Own calculations based on Statistics Denmark records.

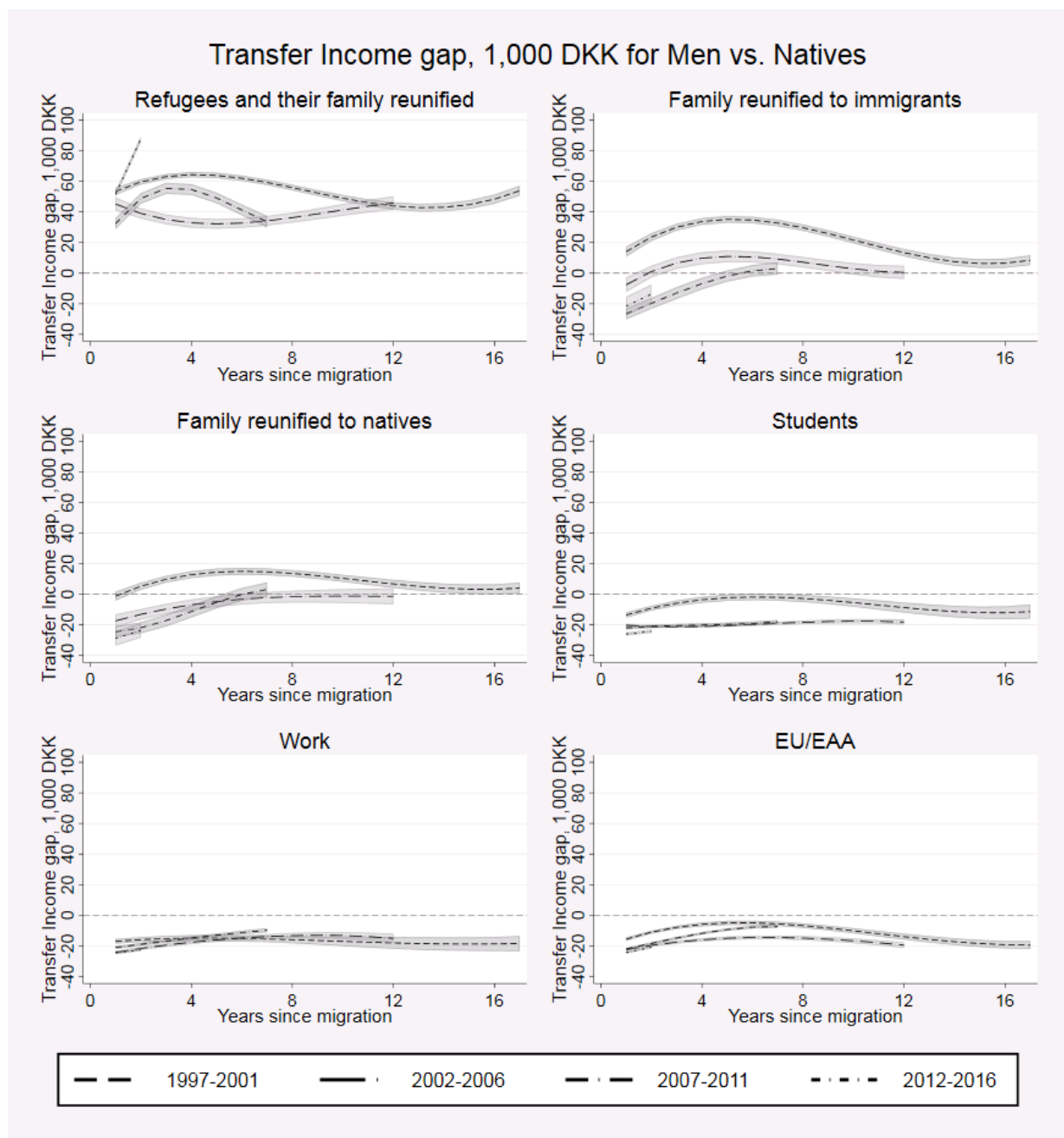
Figure 4b. Predicted earnings gaps for women by residence permit type and number of years of residence in Denmark



Note: The predicted earnings gaps are based on the regression model described in section 3. Differentials are evaluated based on weighted average characteristics for each residence permit type. 95% confidence intervals are also included. Standard errors are clustered within individuals.

Source: Own calculations based on Statistics Denmark records.

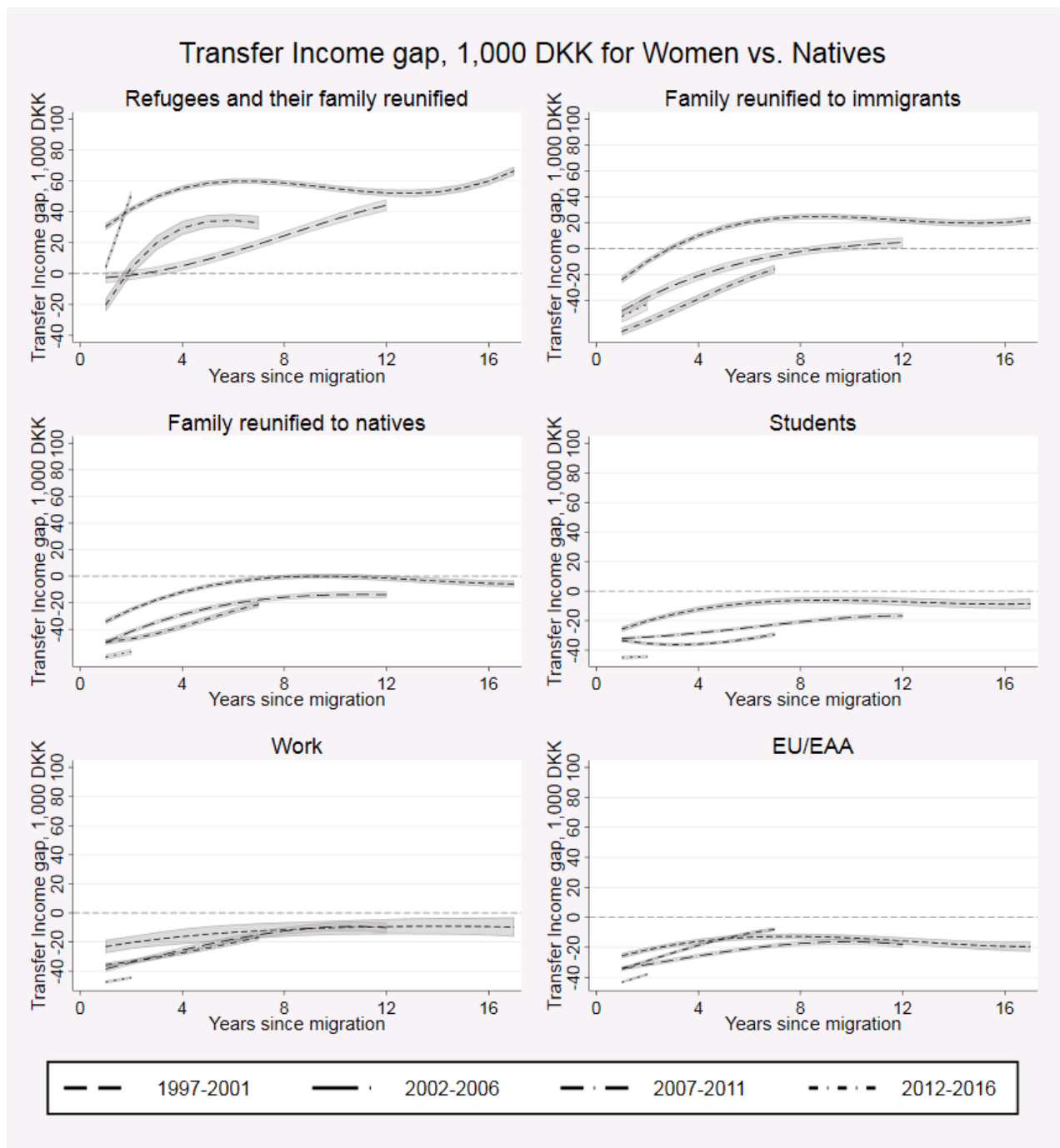
Figure 5a. Predicted transfer income gaps for men by residence permit type and number of years of residence in Denmark



Note: The transfer income gaps are based on the regression model described in section 3. Differentials are evaluated based on weighted average characteristics for each residence permit type. 95% confidence intervals are also included. Standard errors are clustered within individuals.

Source: Own calculations based on Statistics Denmark records.

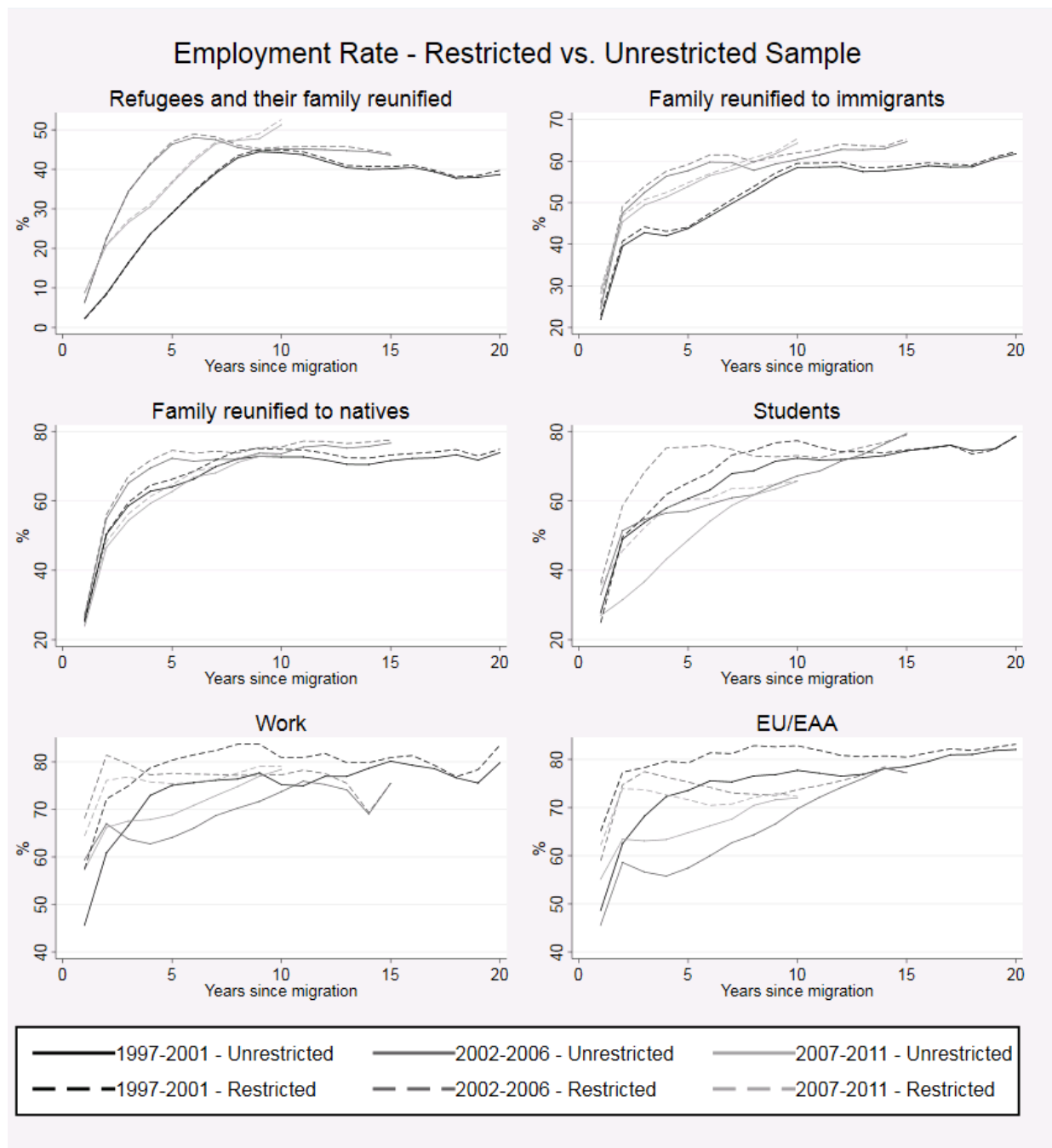
Figure 5b. Predicted transfer income gaps for women by residence permit type and number of years of residence in Denmark



Note: The transfer income gaps are based on the regression model described in section 3. Differentials are evaluated based on weighted average characteristics for each residence permit type. 95% confidence intervals are also included. Standard errors are clustered within individuals.

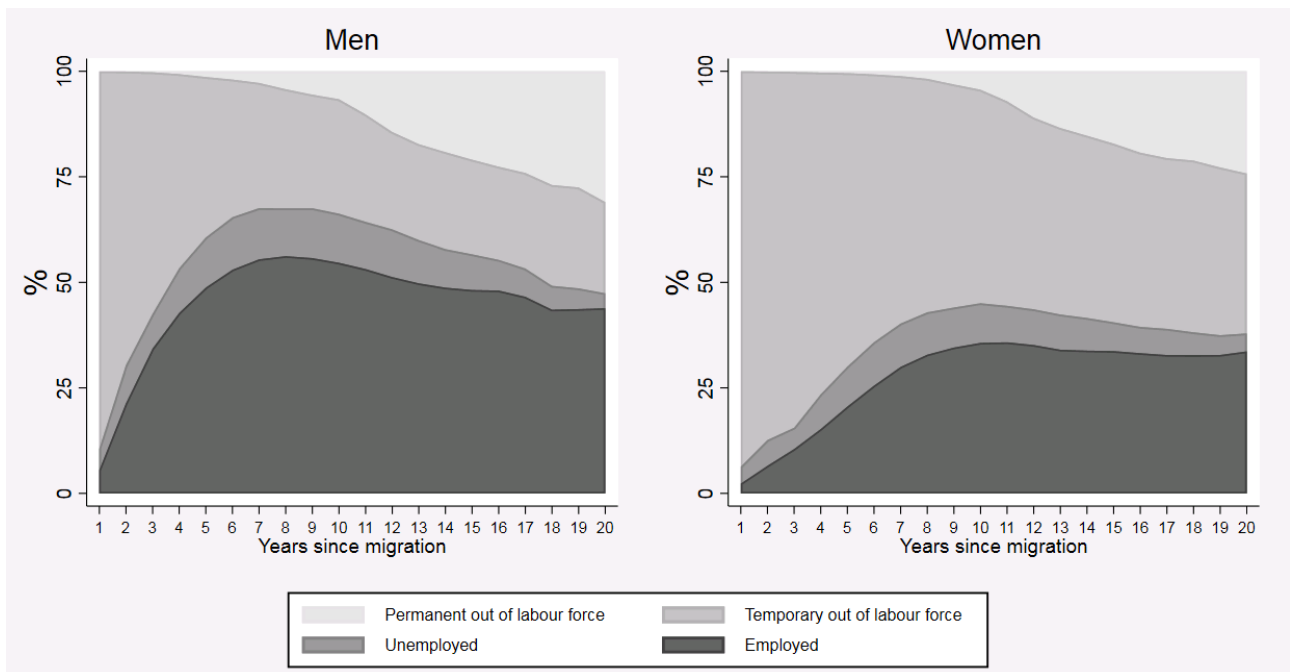
Source: Own calculations based on Statistics Denmark records.

Figure 6. Employment rate by residence permit type and number of years of residence in Denmark, %



Source: Own calculations based on Statistics Denmark records.

Figure 7. Labour Force status of refugees arriving 1997-2001, %



Source: Own calculations based on Statistics Denmark records.

Appendix

Appendix Table 1. The main (top 5) refugee countries by gender and cohort¹

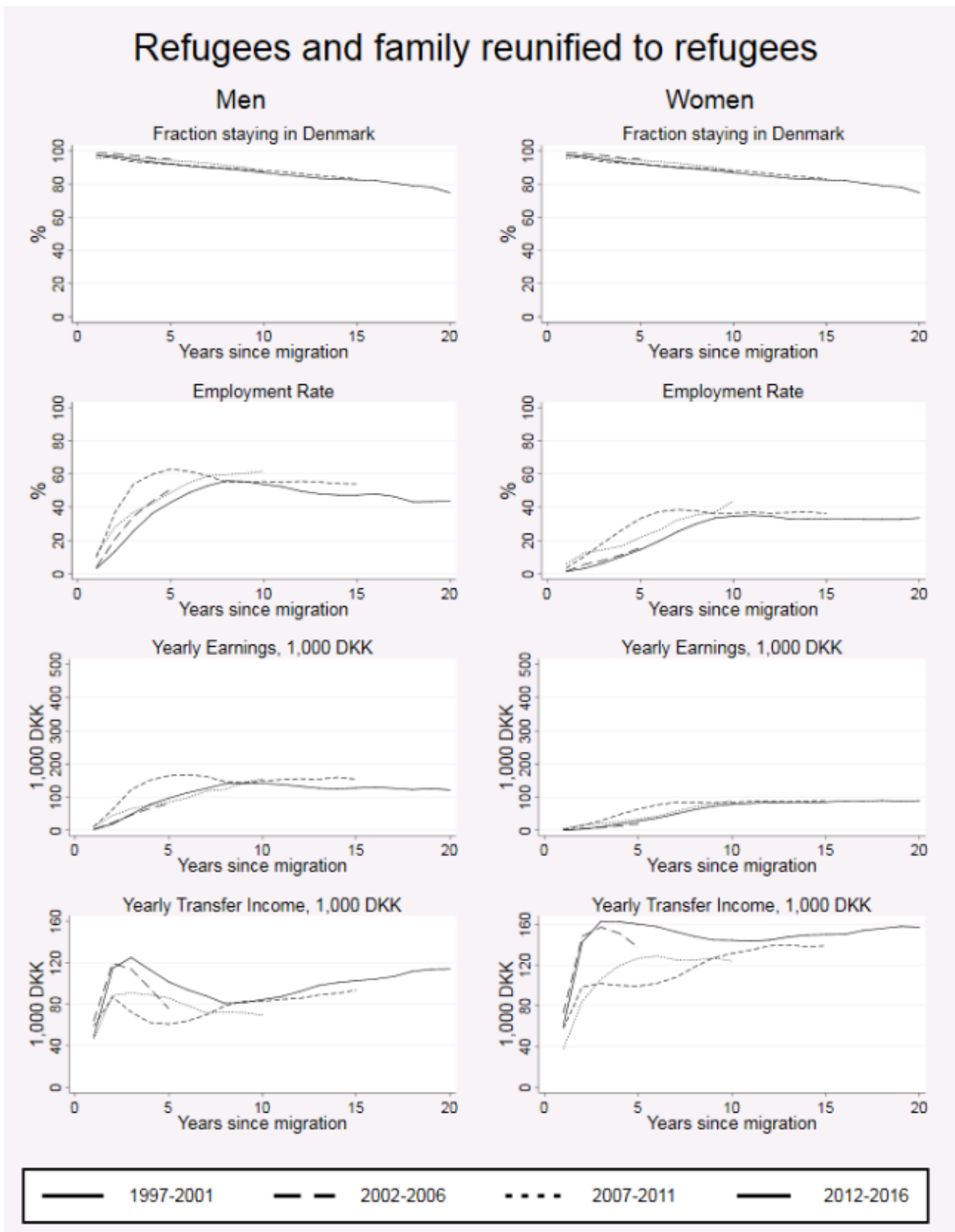
Residence type	Cohort 1	%	Cohort 2	%	Cohort 3	%	Cohort 4	%
Refugees and their family reunified								
	Iraq	34	Iraq	21	Afghanistan	15	Syria	57
	Somalia	18	Afghanistan	13	Syria	14	Eritrea	14
	Afghanistan	15	Somalia	10	Iraq	12	Iran	7
	Bosnia ²	6	Iran	7	Iran	12	Somalia	5
	Yugoslavia	3	Myanmar	7	Myanmar	8	Afghanistan	4
Family reunified with immigrants								
	Turkey	28	Turkey	25	Turkey	28	Turkey	17
	Pakistan	12	Pakistan	10	Pakistan	10	Syria	10
	Lebanon	6	Lebanon	5	Macedonia	5	Pakistan	9
	Morocco	5	Morocco	5	Morocco	4	Morocco	5
	Iran	5	Iran	4	Lebanon	4	Lebanon	4
Family reunified with natives								
	Thailand	15	Thailand	21	Thailand	26	Thailand	21
	Turkey	9	Russia	6	Philippines	8	Philippines	12
	USA	5	USA	6	Brazil	5	USA	6
	Philippines	5	Philippines	5	USA	5	Brazil	5
	Russia	4	Brazil	4	Turkey	4	China	4
Students								
	Lithuania	12	China	18	Philippines	27	Philippines	24
	China	10	Ukraine	14	Ukraine	17	Ukraine	14
	Poland	6	Philippines	9	China	9	Nepal	9
	Latvia	6	Poland	5	Nepal	5	China	8
	USA	4	Lithuania	5	USA	4	USA	4
Work								
	USA	15	Poland	27	India	23	India	29
	China	10	India	13	Poland	18	China	13
	Russia	6	Lithuania	10	Pakistan	7	Pakistan	8
	India	6	USA	7	China	7	Iran	8
	Japan	5	China	7	USA	5	USA	6
EU/EAA								
	Germany	23	Germany	22	Poland	22	Romania	20
	U.K.	20	U.K.	12	Germany	13	Poland	17
	France	11	Spain	10	Romania	12	Germany	9
	Netherlands	10	France	9	Lithuania	8	Lithuania	6
	Italy	8	Italy	8	Bulgaria	5	Italy	6

Note 1: Includes both refugees and family reunified to refugees.

Note 2: Bosnia and Herzegovina

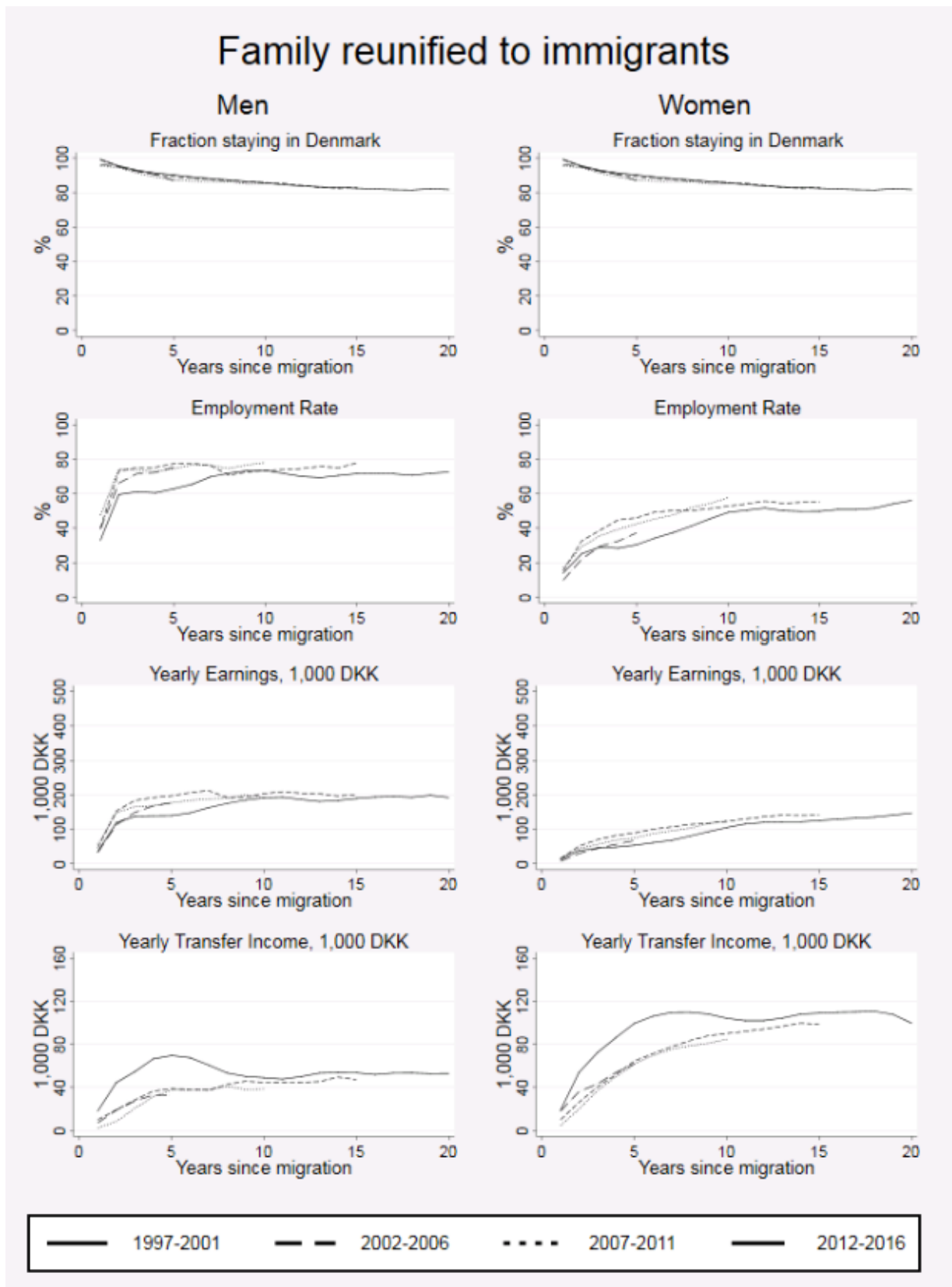
Source: Own calculations based on Statistics Denmark records.

Appendix Figure 1



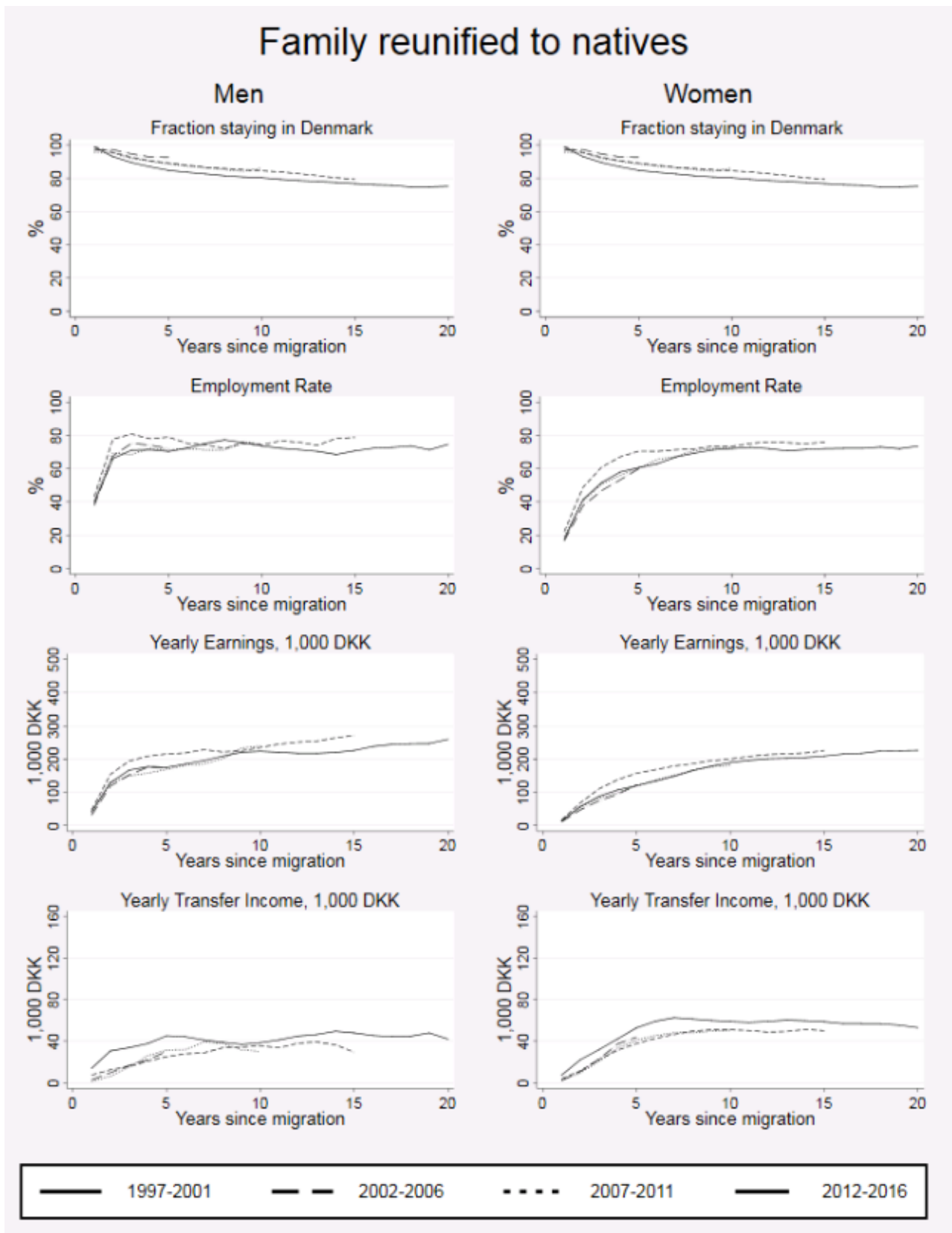
Source: Own calculations based on Statistics Denmark records.

Appendix Figure 2



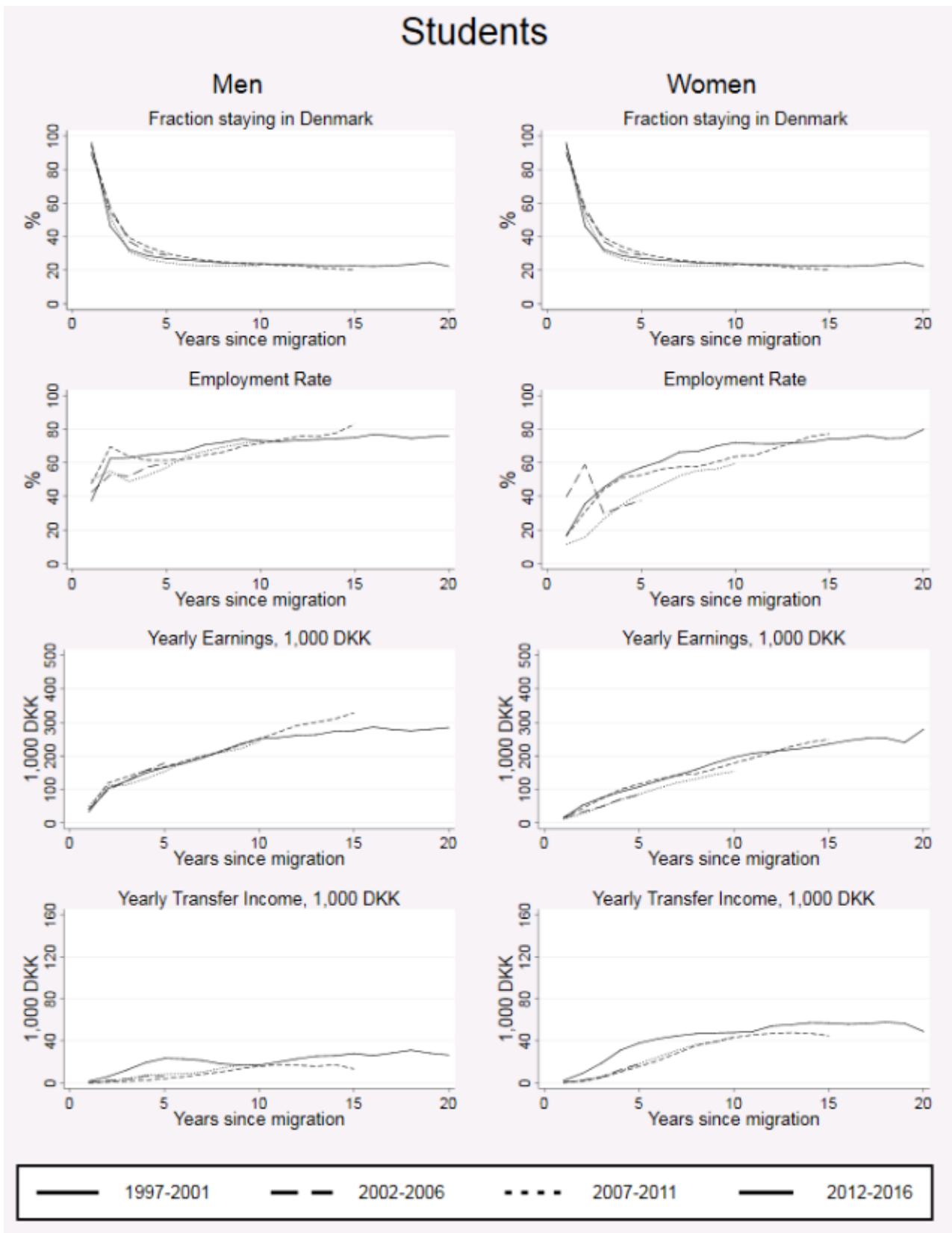
Source: Own calculations based on Statistics Denmark records.

Appendix Figure 3



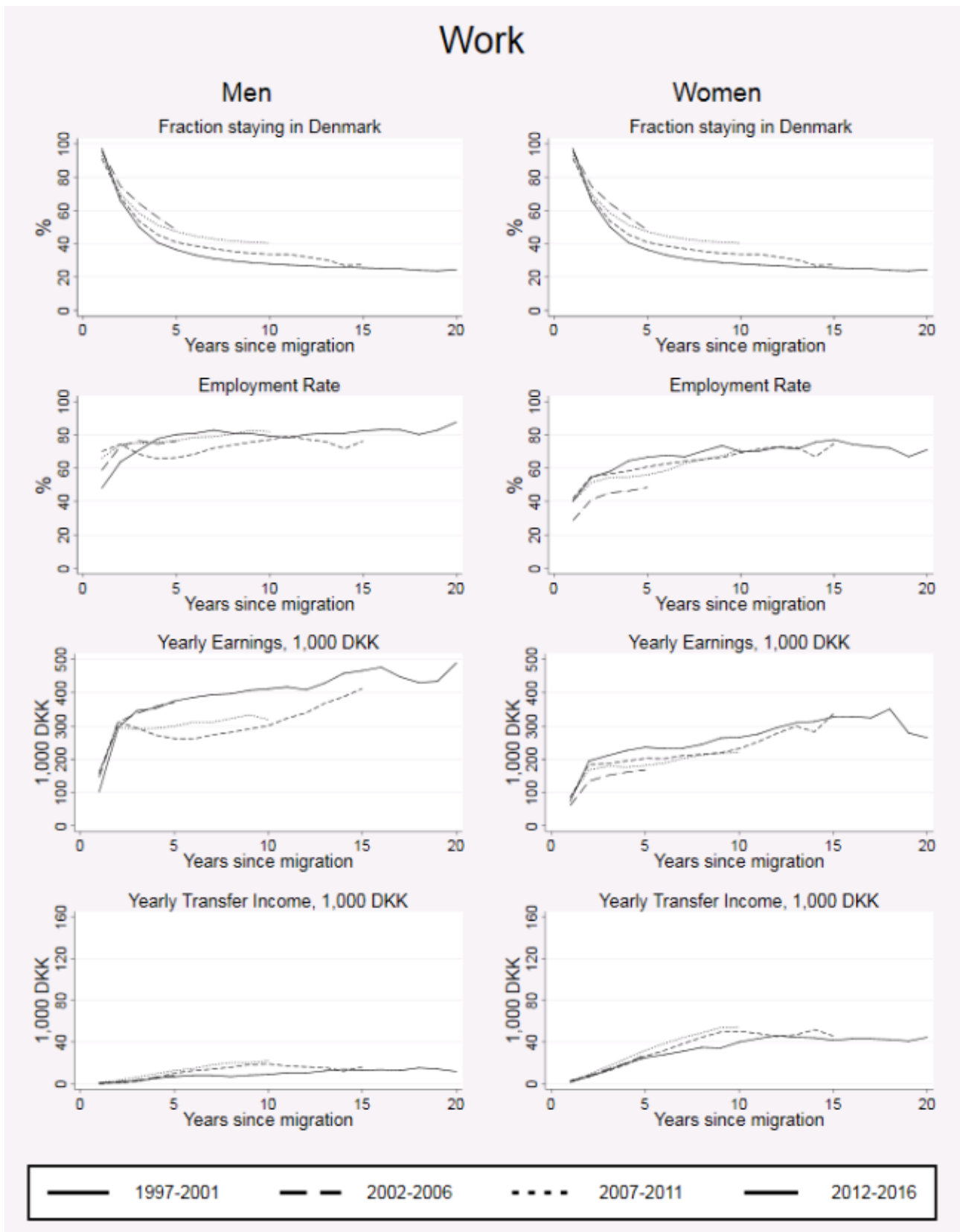
Source: Own calculations based on Statistics Denmark records.

Appendix Figure 4



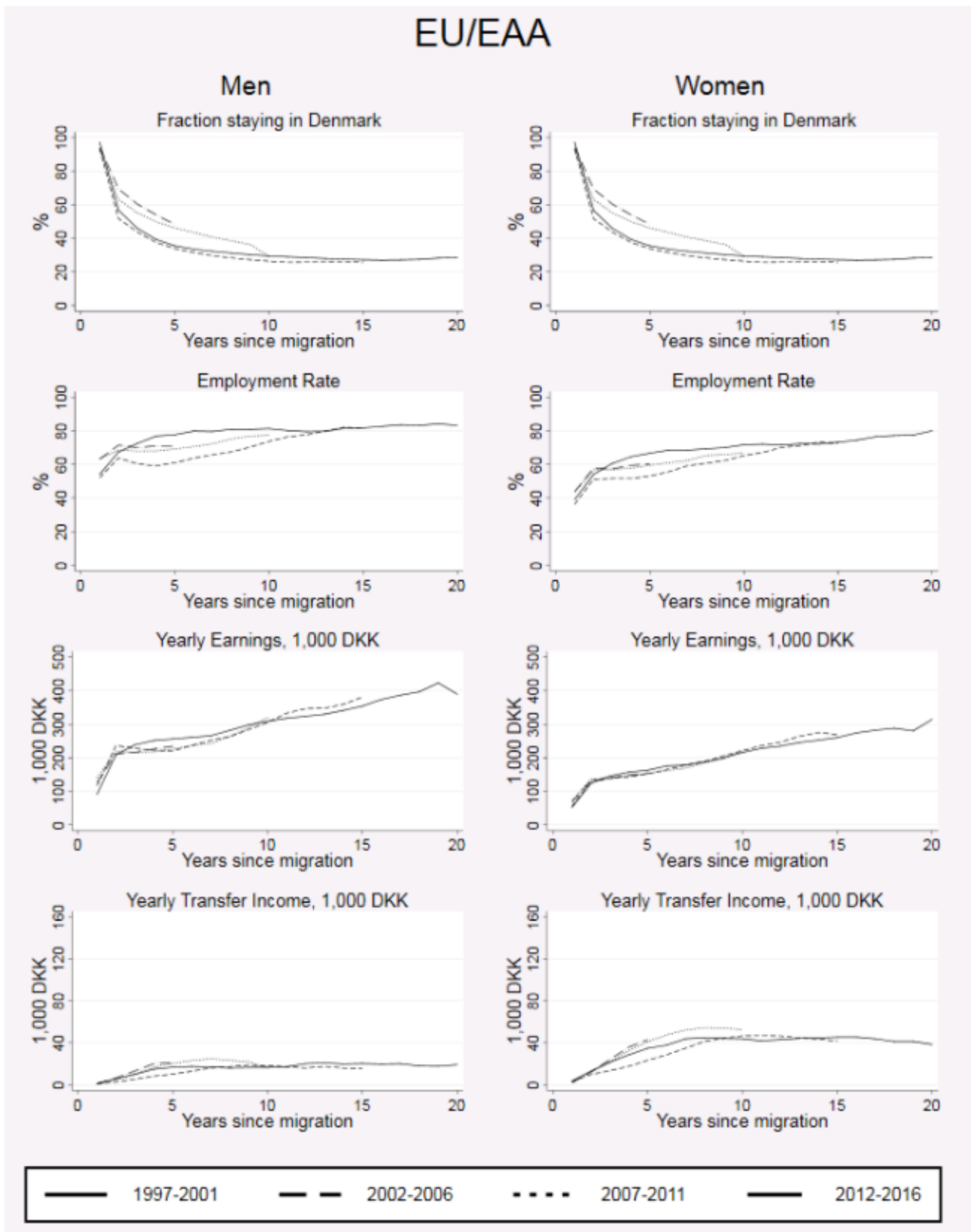
Source: Own calculations based on Statistics Denmark records.

Appendix Figure 5



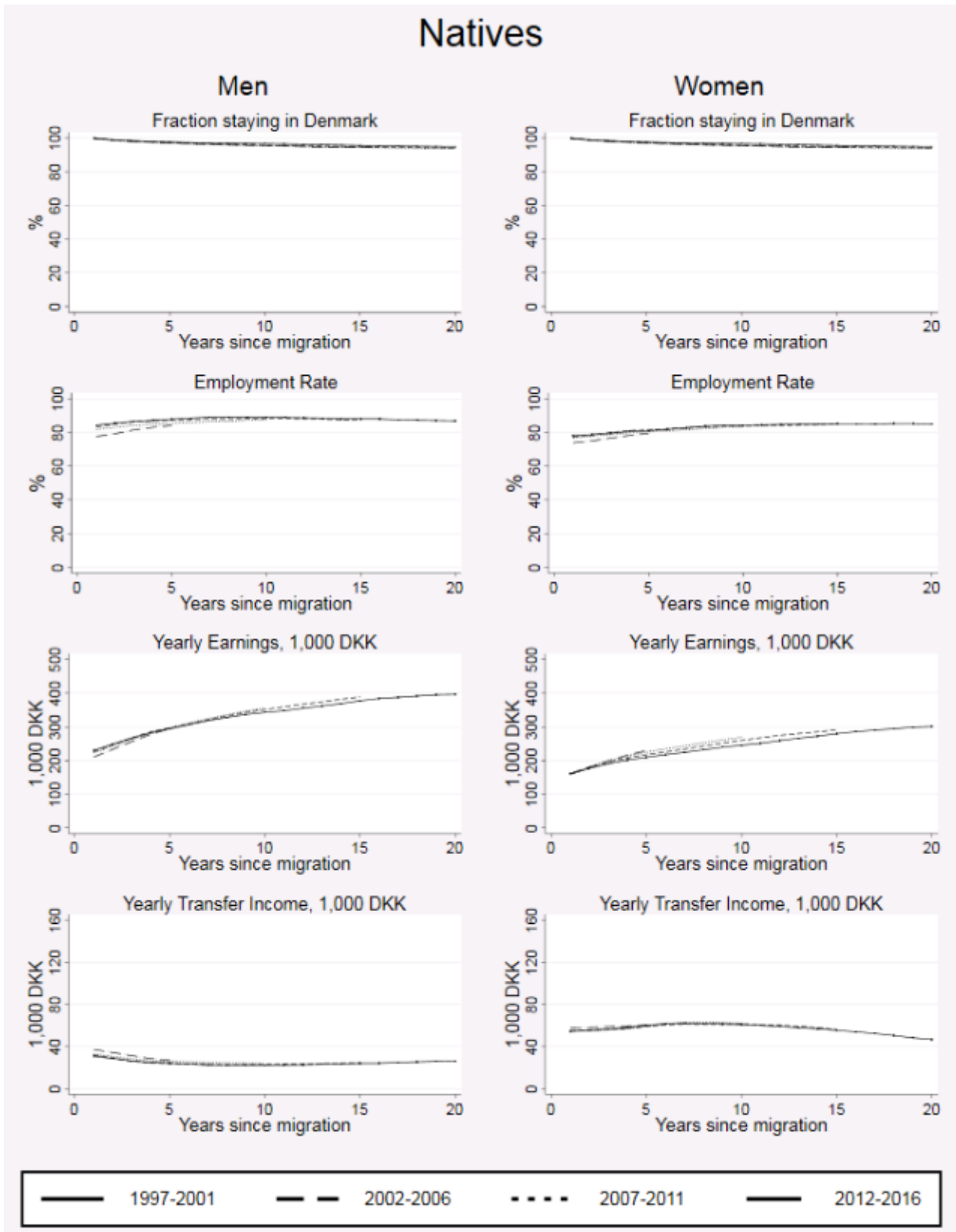
Source: Own calculations based on Statistics Denmark records.

Appendix Figure 6



Source: Own calculations based on Statistics Denmark records.

Appendix Figure 7



Source: Own calculations based on Statistics Denmark records.