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Depressed fertility among descendants of immigrants in Sweden

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Depressed fertility among descendants of immigrants in Sweden

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Abstract

BACKGROUND

Previous research shows evidence of an interrelation between family formation and the migration of immigrants in Europe. Less research has been conducted on the fertility and family behavior of the descendants of immigrants.

OBJECTIVES

Our study provides analyses of the childbearing behavior of daughters of immigrants in Sweden. The context is that of a country with near-replacement-level fertility and social policies oriented towards social equality.

METHODS

The study is based on register data covering 1998–2012, which allows for highly detailed analyses of the childbearing behavior of 20 country origin groups of second-generation women. By means of event history techniques, we analyze the transition to any first, second, and third births.

RESULTS

Our analyses show that most groups of descendants of immigrants have lower fertility than those with a full Swedish background. The risk of having a first child is particularly depressed, and the risk of having a second child is also lower for daughters of immigrants than for women with two Swedish-born parents. In contrast, many groups of immigrant-descendant two-child mothers display elevated third-birth risks.

CONCLUSIONS

Our findings demonstrate the necessity to account for parity-specific differences in fertility when studying the fertility of descendants of migrants.

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CONTRIBUTION

Our study is based on data large enough to allow for a disaggregated analysis by birth order and parental country background. It shows that, on average, the fertility of women in the so-called second generation in Sweden is lower than that of women with a full Swedish background.

1. Introduction

In recent years, immigrant fertility has emerged as an increasingly prominent topic in demographic research with a focus on developed countries that receive immigrants (e.g., Abbasi-Shavazi and McDonald 2000; Milewski 2010a; Parrado 2011; see also Sobotka 2008). This also holds true for Sweden (e.g., Andersson and Scott 2005, 2007; Persson and Hoem 2014). The focus is often on immigrants from high-fertility countries to those with lower fertility, with research focusing on the interdependencies of migration and childbearing trajectories (Kulu and Milewski 2007) and the fertility adaptation of migrants in different settings in Europe and North America (e.g., Kahn 1988; Ford 1990; Andersson 2004; Kulu 2005). There is much less research on the childbearing of the descendants of immigrants in developed countries. This field has long been dominated by research on second-generation Mexicans and Hispanics in the United States (e.g., Stephen and Bean 1992; Parrado and Morgan 2008). Immigration to many countries in Europe is a more recent phenomenon than that of migration to the United States; it is only in recent years that there have been enough women of childbearing age with parents born abroad to allow for any in-depth research on their childbearing patterns. Consequently, in Europe this field of research is still relatively young (cf. de Valk and Milewski 2011). In this line of research, the descendants of immigrants are typically treated as distinct population subgroups. The focus is often to find evidence of sociodemographic integration with the majority population of the country where they live and where they were born. In terms of data and demographic analysis, the processes involved may be somewhat less complex than in research on first-generation immigrants. Because the descendants of migrants are not migrants themselves, there are no temporal interdependencies between a person's own migration and his or her other life course histories to account for.

The present study provides evidence of childbearing patterns of daughters of immigrants in Sweden, a country with relatively high levels of immigration (Statistics Sweden 2004, 2016) and increasing groups of people with a foreign background (Statistics Sweden 2010a). It is also a country with relatively high fertility. This study expands on previous research on the first-birth fertility of descendants of immigrants in

Sweden by Scott and Stanfors (2010, 2011). In our study, we compare the childbearing patterns of women who were born in Sweden and have one or two foreign-born parents to those of Swedish-born women with two Swedish-born parents. We refer to the latter as women with a full Swedish background. The purpose is to study the extent to which migration to Sweden contributes to any long-lasting high- or low-fertility behavior among the many new population subgroups in the country, and how women with different parental backgrounds may differ from or resemble the 'native' population in their fertility behavior. Our study is based on analyses of longitudinal register data that covers the entire resident population of Sweden during 1998–2012, which allows us to carry out a highly detailed analysis of the childbearing behavior of widely different groups of descendants of immigrants. This allows us to provide accurate evidence of any new diversity in childbearing patterns in Sweden in the wake of international migration. We present parity-specific analyses of the transition to a first, second, and third childbirth in Sweden. The purpose is to study the extent to which differences and similarities in behavior are produced and maintained across the fertility careers of women in Sweden. We also demonstrate how childbearing patterns and any differences in parity-specific fertility are modified by the influence of women's socioeconomic characteristics.

2. Fertility in Sweden

Sweden is renowned for its roller coaster fertility (Hoem and Hoem 1996; Andersson and Kolk 2015). At least since the 1930s, periods with low levels of childbearing have alternated with periods of high fertility. In contrast, the cohort fertility of women born in Sweden has remained constant, at a level just below two children per woman on average (e.g., Jalovaara et al. 2017). The relatively high fertility in Sweden is often ascribed to the country's ambitious social policies directed at working parents (e.g., Bernhardt 1993) and, more recently, its ambitions in terms of gender change and gender equality (e.g., Goldscheider, Bernhardt, and Lappegård 2015). In the short-term perspective there is a clear positive relationship between the business cycle and fertility. Economic compensation during parental leave is tied to previous income from work, which fuels the positive relationship at the individual level (Andersson 2000). Incentives in the parental-leave system also support a more compressed spacing of childbirths (Hoem 1993; Andersson 1999). Previous research has shown that women and men who are not established in the labor force have a much lower propensity to become parents than do those who are employed (Andersson 2000; Hoem 2000; Duvander and Olsson 2001). This holds for immigrant and Swedish-born women and men alike (Andersson and Scott 2005; Scott and Stanfors 2011; Lundström and

Andersson 2012). During our study period, Sweden witnessed an improved economy and increasing fertility overall. At the onset in 1998–1999 it had the lowest fertility ever recorded in the country, with a total fertility rate (TFR) of only 1.5 children per woman. Subsequently, the TFR increased continuously until 2010, when it reached 1.98 children per woman. This peak was followed by another moderate decline.

Previous research on period trends in the childbearing behavior of foreign-born women in Sweden shows that developments over time have been remarkably similar for Swedish- and foreign-born people, but that there are sometimes differences in levels of childbearing intensities between women from different countries of origin (Andersson 2004). First-birth rates of immigrants tend to be elevated: the differences in crude rates are often spurious and related to the fact that migration and childbearing are often interrelated events, and that childbearing more likely follows migration than the other way around (Andersson 2004; Toulemon and Mazuy 2004). However, second-birth rates of immigrants in Sweden are generally lower than those of the Swedish-born (Andersson 2004). To a large extent, this stems from the fact that immigrants did not react particularly strongly to the ‘speed-premium’ incentives that were introduced in the Swedish parental-leave system during the 1980s and that caused much shorter birth intervals for Swedish-born mothers (Andersson, Hoem, and Duvander 2006). Research further reveals that the socioeconomic characteristics of immigrants and native Swedes relate to their fertility in a strikingly similar manner (Andersson and Scott 2005, 2007; Lundström and Andersson 2012). In particular, women and men who are not established in the labor market with regular employment display very low first-birth rates. In the next sections, we turn to research on the descendants of immigrants and their childbearing behavior.

3. Descendants of immigrants in Sweden

Like many other countries in Europe, Sweden has gone from being a country of emigration to a destination for immigration. Since 1945, immigration has significantly contributed to the Swedish population (Statistics Sweden 2004). Until the early 1970s immigration was mainly dominated by labor migrants, mostly from other countries in Europe, while since the 1980s the geographical origin of migrants to Sweden has been much more diverse. In 2013, 16% of the population was foreign-born (www.scb.se). Previous migration has also contributed to a steady increase in the stock of descendants of immigrants, sometimes referred to as the second generation of immigrants. In 1970, only 4% of the population had been born in Sweden and had one or two foreign-born parents (Statistics Sweden 2010a). The corresponding figure for 2013 was 12%: 5%

with two foreign-born parents and 7% with one foreign-born and one Swedish-born parent (www.scb.se).

In our study, we present analyses of the childbearing behavior of 20 groups of female descendants of immigrants in Sweden. Our definition of a descendant is a person born in Sweden with one or both parents born abroad – we present combined analyses for descendants of either one or two foreign-born parents. Descendants are classified by their parents' country of birth: If a person has only one foreign-born parent, she is classified according to that parent's country of birth. If she has two foreign-born parents from two different countries, she is assigned to her mother's country of origin.

The overall distribution of descendants across groups reflects migration patterns as they appeared a few decades ago. Descendants of immigrants with a background in Finland are by far the largest group in our study – more than a third of the descendants have one or both parents from Finland (Table 1). Finland is the classical immigration country for Sweden. Migration from Finland was very high during the 1950s and 1960s, when Sweden had a much stronger economy than its neighboring country. The movement was facilitated by the existence of a free Nordic labor market. The same holds for the second largest group, other Nordic countries, comprising descendants of parents born in Denmark, Norway, and less often, Iceland.

The third largest group contains those with at least one parent born in Western Europe, with Germany as the most common country. This group is followed by the descendants of migrants from the former Yugoslavia, many of whom arrived during the 1960s as labor migrants (later arrivals of refugee migrants have not yet produced much childbearing offspring). Descendants of immigrants from Southern Europe mainly have parents from Greece or Italy, which are two other countries that contributed labor migrants to Sweden during the 1960s. Descendants of immigrants from Poland are also well represented. Some of their parents arrived as refugees from the old communist regime; others came as tied movers, in many cases as spouses to Swedish men. Other descendants of immigrants from Eastern Europe include those whose parents left the region during the communist era, most of them from Hungary. Those with parents from the Baltic countries mainly have one or both parents from Estonia. The 'post-Soviet states' category mostly comprises people with parents born in the Soviet Union.

Many of those with parents born in Central and South America have parents who came to Sweden as refugees from Chile during the 1970s. Those with one or both parents born in the United States, Canada, Australia, or New Zealand constitute a group of their own ('US/Aus/NZ/Can'), the majority having links to the United States. Descendants of immigrants from Africa are divided into those with links to North Africa, sub-Saharan Africa, and the Horn of Africa. The last group is still small when it comes to immigrants having produced young adult offspring in Sweden. The most common country backgrounds in these three African groups are Morocco, Gambia, and

Ethiopia, respectively. The descendants of parents born in the Arab Middle East often have a background in Lebanon or Syria. Descendants of immigrants from Iran mostly have parents who came to Sweden as refugees during the 1980s, while the descendants of migrants from Turkey mainly have parents who arrived as labor migrants during the 1960s. Our last categories comprise women with parents born in East Asia, such as the descendants of immigrants from Japan or China; women with parents born in Southeast Asia, who mainly have links to Thailand or the Philippines; and those with one or both parents born in South Asia, mainly India or Pakistan.

Table 1: Descendants of immigrants in Sweden, by country background, women aged 17–45 in 1998, 2003, 2008, and 2012. Percentage distribution

	1998	2003	2008	2012
Finland	41	40	37	32
Other Nordic	16	14	12	10
Former Yugoslavia	5	6	7	8
Poland	2	3	4	4
Western Europe	15	13	11	9
Southern Europe	4	5	5	4
Baltic	3	2	1	1
Eastern Europe	4	4	3	3
US/Aus/NZ/Can	2	2	2	2
Central/South America	1	2	3	4
Horn of Africa	0	0	1	1
Sub-Saharan Africa	1	1	1	1
North Africa	1	1	2	2
Arab Middle East	1	1	3	5
Iran	0	1	1	2
Turkey	2	3	4	4
East Asia	0	1	1	1
Southeast Asia	0	1	1	2
South Asia	0	1	1	1
Post-Soviet States	1	1	1	1
Total	100	100	100	100

Source: Swedish register data, authors' own calculations

As a consequence of changing migration patterns, the group of descendants of immigrants has changed its composition as well. Table 1 presents statistics on the distribution of descendant women of childbearing age in Sweden in 1998, 2003, 2008,

and 2012, respectively, by the country-background categories we apply in our study. To facilitate comparison, the countries are sorted in the same order as in a related study on marriage and divorce of immigrants and the descendants of immigrants in Sweden (Andersson, Obućina, and Scott 2015). In 1998, 57% of descendant women of childbearing age had one or both parents born in Finland or another Nordic country. Another 15% had at least one parent born in another Western European country, and relatively few, only 9%, had at least one parent born outside Europe. In 2012, the share with a Nordic background (Finland or another Nordic country) had decreased to 42%, the share of women with links to Western Europe had decreased to 9%, and the share of descendants of immigrants from countries outside Europe had increased to 28%. Clearly, the descendants of immigrants are still dominated by those with links to Sweden's neighboring countries, but the changes in composition over time motivate a relatively disaggregated approach to the study of these descendants.

4. Childbearing of descendants of immigrants: Theory and evidence

Differences in fertility between immigrants, natives, and persons of foreign background are driven by a wide range of mechanisms (e.g., Sobotka 2008). Arguably, the interplay of these mechanisms is somewhat more complex among foreign-born migrants than among their children who are born in the country of migration destination. For instance, the very event of migration can affect the occurrence and timing of childbearing (Andersson 2004). Preparing to migrate and settling down in a new country can take years, which can result in the postponement of childbearing plans. Many methodological issues arise when studying demographic processes that take place across different geographical contexts when available data is measured in only one context (see Hoem and Nedoluzhko 2016; Andersson and Drefahl 2016). In contrast, second-generation individuals do not have the experience of international migration themselves, and their childbearing behavior should not be directly affected by the migration event. Their demographic behavior is measured in one context only.

Yet a number of other factors responsible for native-immigrant fertility differentials may also affect the fertility patterns of the children of immigrants. Due to the nature of these factors, it can be expected that the childbearing behavior in at least some groups of children of immigrants will differ from that of natives, even after socioeconomic outcomes are controlled for. The socialization hypothesis (Kulu 2005; Milewski 2010b; Adserà and Ferrer 2014; Kulu and González-Ferrer 2014) posits that individual family-related attitudes are influenced by family-related norms and attitudes acquired during childhood and early youth. If these norms and attitudes differ from those in the mainstream society, considerable differences in fertility behavior may arise

between natives and children of immigrants, especially those living in ethnically segregated neighborhoods. Although the childbearing behavior of children of immigrants should not be directly affected by the migration event, cross-group differences in fertility may be shaped by the nature of the migration process in the parental generation. In particular, any selection processes into migration in the parental generation may determine the extent to which child socialization characteristics will resemble those in the country of origin and the country of destination. Further, it is plausible that the minority status hypothesis may help explain the childbearing behavior of the descendants of immigrants. Similar to their parents, children of immigrants may sometimes perceive themselves as disadvantaged in society and therefore limit their fertility in order to achieve upward social mobility (Halli 1989; Forste and Tienda 1996). Finally, as the vast majority of children are born to couples, the characteristics of marriage and partnering markets also have a role to play in shaping differences in fertility between natives and women with a foreign background, usually in such a way that fertility may be depressed in the latter group. To illustrate, due to limited opportunity structures, second-generation women with a strong preference for endogamy and originating from a small immigrant group may have difficulty finding a suitable partner in the process of family formation (Kalmijn 1998). At the same time, second-generation women from some immigrant groups may have limited access to the native marriage market (Wiik and Holland 2016; see also Dribe and Lundh 2008, 2011).

Although the discussion so far has mainly focused on the factors responsible for the emergence of fertility differentials between natives on the one hand and immigrants and their children on the other, it should be noted that many social forces also contribute to the convergence of fertility levels across groups of individuals as defined by their ethnic or geographic origin. The adaptation hypothesis (Kulu and Gonzalez-Ferrer 2014) stresses the importance of exposure to norms as well as the institutional context in the host society, and argues that processes associated with adaptation make the fertility patterns of migrants and persons with a foreign background increasingly similar over time to those of natives. Considering that exposure to the host society is more persuasive among children of immigrants than among their parents, one should expect that adaptation and related socialization processes would make fertility levels of the second generation position themselves somewhere between those of natives and immigrants (Kulu et al. 2017).

Evidently, patterns in fertility may differ by birth order, and any serious study on differentials in fertility between descendants of immigrants and majority populations needs to address this factor (Kulu et al. 2017). For first births, any differentials in fertility may be seen as evidence of differences in the ability of descendants of immigrants to establish themselves as young adults. Differences in first-birth timing

may stem from variation in the success of getting established in the Swedish labor market as well as in the marriage market. For second births, we may regard differentials in fertility rates as evidence of how different population subgroups adjust to the Swedish two-child norm, but also to the Swedish pattern of close spacing between the first and second births. The ‘speed premium’ of the Swedish parental-leave system matters more for those who are well established in the labor market; the subtleties of its regulations may be more efficiently communicated among some groups of mothers than others. For third births, we may detect true evidence of low- or high-fertility behavior. This is the first parity progression with real variation in the quantum of fertility; only about half of Swedish two-child mothers progress to have a third child (Statistics Sweden 2011).

5. Empirical evidence from previous research on the fertility of descendants of immigrants

To a large extent, research on the fertility of descendants of immigrants has been confined to classical immigration countries such as the United States, Canada, and Australia, which are countries that were built by migration. Most studies suggest that the fertility of the descendants of migrants from high- to low-fertility countries is lower than that of their parents; some studies suggest that it is even lower than that of the majority population in the countries where they live. For example, Bélanger and Gilbert (2003) find evidence of depressed fertility among descendants of immigrants in Canada. Compared to women with a Canadian background, the descendants of immigrants were less likely to have a child aged 0–4. Those with one foreign-born parent had 7% lower odds of having a young child, while those with two foreign-born parents had 17% lower odds. Similar results have been found for Australia (Khoo and McDonald 2003). Research on descendants of immigrants in the United States gives another picture (e.g., Stephen and Bean 1992; Blau et al. 2008; for a critical discussion see Parrado and Morgan 2008). On average, second-generation women in the United States have higher fertility rates than native US women. These patterns are mainly driven by the behavior of second-generation Hispanics in the United States. Frank and Heuveline (2005) highlight the role of elevated teenage fertility in producing high fertility among the descendants of Mexican immigrants in the United States. They ascribe these patterns to the segmented assimilation and racial stratification of second-generation Mexicans in the United States, rather than reflecting any Mexican pro-natalist values.

Related research on the childbearing and other family-demographic behavior of the descendants of immigrants in Europe is more recent (for an overview, see de Valk and Milewski 2011). For Germany, Milewski (2007) finds that in most cases the

descendants of immigrants have adapted their behavior to the low-fertility regime of that country. In another study, she analyzes the childbearing behavior of Turkish second-generation migrants in six countries in Western Europe (Milewski 2011). Also in this case, she finds evidence of fertility adaptation towards the different fertility regimes in the countries where the descendants live. Garssen and Nicolaas (2008) find that second-generation women in the Netherlands are much closer to native than to first-generation migrant women in terms of their fertility behavior. A recent study by Kulu et al. (2017) looks at the fertility patterns of descendants of immigrants in six European countries. The main conclusion of their study is that, in general, the childbearing behavior of the second generation in these countries falls somewhere between the fertility patterns of their migrant parents and those of natives. Yet Kulu and Hannemann (2016) highlight that some groups of ethnic-minority women in the United Kingdom maintain a pronounced high-fertility behavior in the second generation as well. Some previous evidence also exists for the country of our study. Scott and Stanfors (2010, 2011) analyze how the socioeconomic characteristics of descendants of immigrants in Sweden influence their first-birth fertility. They show that the positive relationship between a strong labor market attachment and entry into parenthood that has been observed for the majority population in Sweden also applies to the descendants of immigrants. A study by Statistics Sweden (2010a) shows that women and men who are descendants of immigrants from other Nordic countries have very similar fertility patterns to those observed for women and men with a full Swedish background. The study also reveals that the descendants of immigrants from other EU countries and from countries outside Europe with medium-level development (medium HDI) have lower fertility than native Swedes.

The contribution of our study to the literature on the childbearing behavior of descendants of immigrants is at least twofold. Firstly, this is the first Swedish study to adopt a full-fledged parity-specific approach and look beyond the first childbirth in the Swedish fertility regime. Secondly, acknowledging the fact that Sweden today is much more diverse than before, we include as many as 20 groups of descendants of immigrants. By doing this, we will seek to determine whether the increasingly multicultural character of Swedish society is also reflected in the fertility behavior of the children of immigrants.

6. Data and methods

Swedish population registers provide demographic information on all persons with legal residence in the country. The data for our analyses is retrieved from the Historical Population Register, a longitudinal database with information on the histories of all the

vital events of every *de jure* resident in Sweden (Statistics Sweden 2006). Data on individuals' parents and their country of birth is derived from the Multi-Generation Register (Statistics Sweden 2010b). Information on parents and their country of birth is available for almost all individuals born in Sweden since 1950. Almost 100% of these cohort members have information on their mother, and 98% have information on their father. We are also able to link data on various sociodemographic characteristics from different administrative registers, facilitated by Sweden's system of personal identification numbers. Our analyses are based on data for all individuals born in Sweden who lived in the country at any time during 1998–2012.

In our study, all Swedish-born women with one or two foreign-born parents are defined as descendants of immigrants. We leave it to future research to produce separate analyses for women (and men) with one and two foreign-born parents. As specified earlier, daughters of immigrants are classified into 20 groups depending on their parents' country of birth (Table 1). We present event-history analyses of their transition from being childless to having a first child; from having one child to having a second child; and from having two children to having a third child. We present relative risks of childbirth by country background and other control variables. These are estimated by means of Cox proportional hazard regressions in the PROC PHREG procedure of SAS. The main independent variable of interest is the country category of a woman's background, i.e., her parents' country of birth; the classification was presented in the section on the descendants of immigrants in Sweden. As mentioned, women born to one Swedish-born and one foreign-born parent are classified as a descendant of the immigrant parent. Women with foreign-born parents from two different countries are classified by their mother's country of birth. In our basic models we control for the role of a woman's age group and the time since any last previous birth. Age is categorized as follows: 24 years or younger; 25–29 years (reference category); 30–34 years; 35–39 years; 40–45 years. In the strongly fluctuating period fertility of Sweden, it is also essential to control for calendar year, with a dummy variable for each year included in our study. In our extended models we further control for a woman's socioeconomic status, i.e., her educational attainment and labor market status. Educational level is depicted in the following categories: compulsory education; secondary education; post-secondary education of less than three years; post-secondary education of at least three years (reference category); unknown education. Labor market status is categorized as follows: employed (reference category); student; unemployed; social allowance recipient; other. The socioeconomic status during a given calendar year is treated as a determinant of the conditional probability of having a(nother) child during the subsequent year.

Women enter the study at relevant parity at age 17 or in 1998, whichever comes last. They are censored at age 45 or at any emigration, death, or the end of 2012,

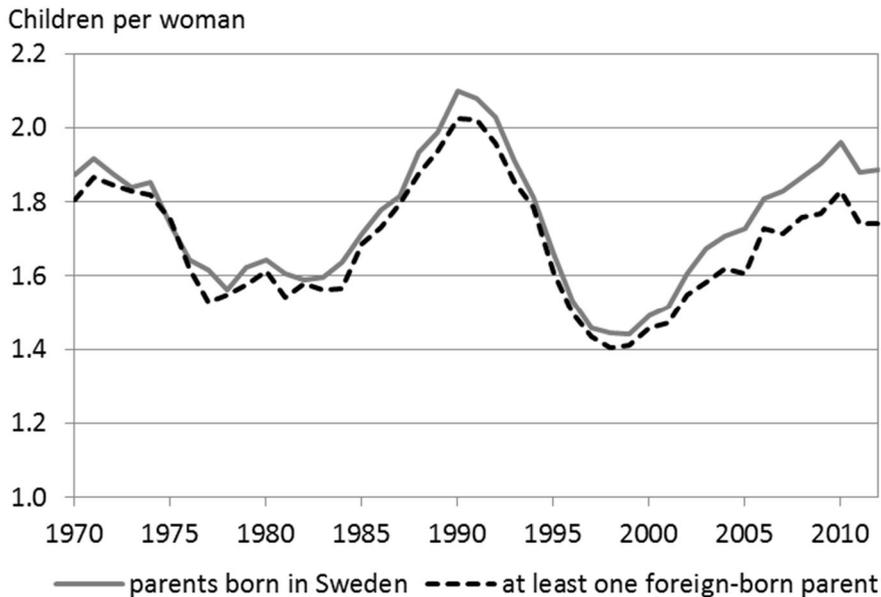
whichever comes first. Those who had twins in their first or second delivery are excluded from the analysis of the subsequent parity progression. Appendix Tables A-1 and A-2 provide an overview of the number of woman-years under observation (Table A1) and the number of children born at the different birth orders (Table A-2), by country group of origin. Appendix Tables A-3 through A-5 show the distribution of descendants of immigrants over age groups (Table A-3), categories of educational attainment (Table A-4), and labor market status (Table A-5).

7. Results

As an introduction to our analysis, we present period total fertility rates for each year during 1970–2012 for the aggregate populations of Swedish-born women with at least one foreign-born parent and Swedish-born women with two Swedish-born parents, respectively (Figure 1). These aggregate measures of fertility can be calculated for a more extended period than we cover in our subsequent analyses. The presentation is intriguing. It shows that during the entire period, total fertility was slightly lower for the descendants of immigrants in Sweden than for women with a full Swedish background. This speaks against the hypothesis that the fertility of the descendants of immigrants should fall somewhere between the somewhat elevated fertility of immigrants to Sweden (Statistics Sweden 2014) and that of the population with a full native-Swedish background. Instead, the descendants of immigrants seem to deviate with a clear low-fertility behavior.

Yet the period influences of various aspects of the institutional and social context of Sweden seem to be highly similar for women with a full Swedish and a foreign parental background. In spite of moderate differences in TFR levels, the two curves show strikingly similar trends over time. However, differentials in TFR levels appear to have widened in more recent years. This may be due to changes in the composition of descendants of immigrants during the 2000s, with larger proportions of descendants with links to other countries than the neighboring Nordic ones. This appears to happen despite the fact that many of these descendants' parents come from countries with relatively high fertility. Contrary to popular belief, the more recent groups of immigrants may not carry any long-lasting high-fertility behavior to their offspring in Sweden. In the next step of our study, we provide a more detailed analysis of the underlying parity-specific fertility of the descendants of immigrants.

Figure 1: Total fertility rate by background in Sweden, 1970–2012



Source: Swedish population registers, authors' own calculations

7.1 First-birth fertility

Table 2 provides an overview of the relative risks of becoming a mother, by country group of background and other control variables. Model A includes controls for age and calendar year and shows that the risk of having a first child is significantly lower for 17 of the 20 groups of women with a foreign background. The relative risks are particularly depressed for women with parents born in Iran, the Horn of Africa, or East and South Asia. The relative risks are also very low for women with one or both parents from Poland, the post-Soviet states, United States/Australia/New Zealand/Canada, Southeast Asia, and sub-Saharan Africa. Only two groups, women with one or more parents born in Turkey or another Nordic country than Finland – i.e., Denmark, Norway, or Iceland – have slightly higher first-birth risks than those with both parents born in Sweden. The largest group, women with a parental background in Finland, have a 3% lower risk of having a first child than do those with a full Swedish background.

In the next step we extend our model in order to discern how much of the difference in first-birth risks can be explained by differences across country groups in socioeconomic characteristics (Model B). Table A-4 of the appendix shows that most groups of descendants of immigrants have lower educational attainment than those with a full Swedish background. Table A-5 shows that they are also employed to a lower extent than women with two Swedish-born parents (see also Statistics Sweden 2010a). There are exceptions to this, though: Daughters of parents born in the Baltic states stand out with high educational attainment and high levels of employment. Women with parents from Western Europe, Eastern Europe, or East Asia also have relatively high educational attainment. On the other end, women with a parental background in the Horn of Africa, the Arab Middle East, Iran, or Southeast Asia have much lower levels of education than women with a full Swedish background (Table A-4). Many women in these groups are still students (Table A-5). To a large extent, this is related to the fact that the descendants of the most recent groups of immigrants are still relatively young (Table A-3). In our multivariate analyses, we control for such differences in age composition.

Our Model B shows that socioeconomic differences have some role to play in explaining differences in levels of first-birth fertility. Women with secondary education demonstrate lower first-birth risks than women with university or only compulsory education. Employed women and those receiving social assistance are the most likely to become a mother. However, most of the variation in first-birth fertility across groups of individuals as defined by their parental background remains intact when educational attainment and labor market attachment are controlled for. For all groups of descendants, the relative risks of first-birth fertility increase somewhat when we add controls for socioeconomic characteristics, but we still find 17 country groups with significantly lower first-birth fertility than that of women with a full Swedish background. Thus, the depressed first-birth fertility of daughters of immigrants in Sweden cannot be explained by their relatively weak labor market status.

Table 2: Relative risk of having a first child in Sweden, childless women aged 17–45, 1998–2012. Swedish-born women by their parents' country of birth

Variable	Relative risks	
	Model A	Model B
Background		
Sweden	1	1
Finland	0.97***	0.99**
Other Nordic	1.02**	1.04***
Former Yugoslavia	0.91***	0.94***
Poland	0.69***	0.75***
Western Europe	0.84***	0.88***
Southern Europe	0.78***	0.84***
Baltic	0.88***	0.89***
Eastern Europe	0.80***	0.84***
US/Aus/NZ/Can	0.70***	0.78***
Central/South America	0.85***	0.92***
Horn of Africa	0.43***	0.49***
Sub-Saharan Africa	0.73***	0.79***
North Africa	0.77***	0.82***
Middle East	0.96	1.02
Iran	0.43***	0.48***
Turkey	1.06***	1.10***
East Asia	0.58***	0.63***
Southeast Asia	0.71***	0.76***
South Asia	0.60***	0.66***
Post-Soviet States	0.65***	0.70***
Age group		
≤19 years	0.07***	0.12***
20–24 years	0.35***	0.40***
25–29 years	1	1
30–34 years	1.65***	1.52***
35–39 years	0.98***	0.92***
40–45 years	0.19***	0.19***

Table 2: (Continued)

Variable	Relative risks	
	Model A	Model B
<i>Calendar year</i>		
1998	0.88***	0.92***
1999	0.88***	0.90***
2000	0.92***	0.94***
2001	0.93***	0.94***
2002	0.99	0.98**
2003	1.01	1.01
2004	1.01	1.01
2005	1	1
2006	1.04***	1.04***
2007	1.05***	1.03***
2008	1.08***	1.04***
2009	1.09***	1.06***
2010	1.10***	1.09***
2011	1.04***	1.01*
2012	1.03***	1.01
<i>Educational level</i>		
Compulsory		1.00
Secondary		0.83***
Post-secondary <3 years		0.71***
Post-secondary ≥3 years		1
Unknown		0.78***
<i>Employment status</i>		
Employed		1
Student		0.34***
Unemployed		0.74***
Social allowance		1.00
Other		0.33***

Source: Swedish register data, authors' own calculations

*** = significant at the 1% level, ** = 5% level, * = 10% level.

7.2 Second-birth fertility

The relative risks of one-child mothers having a second child are presented in Table 3. These results show that practically all groups of descendants of immigrants also have lower second-birth fertility than women with a full Swedish background. The only exceptions are women of East Asian origin, for whom the second-birth risk is equal to that of native Swedes, and women of Baltic and Arab Middle East parental origin, who are slightly more likely to have a second child than women with a full Swedish background – although this difference is statistically significant only for the latter group. As for women of (non-Baltic) European origin, second-birth fertility is depressed by 4% to 14%, with even lower levels observed for women with a parental background from the former Soviet Union. Turning to daughters of immigrants from non-European countries, the depressed relative risks of second birth are most pronounced among women with parents from the Horn of Africa and South Asia, with risks comparable to those of women with parents from the former non-Baltic Soviet republics. Still, we note that the second-birth risks of most categories of descendants of immigrants (Table 3) appear somewhat less depressed than their corresponding first-birth fertility (Table 2). For example, for women with East Asian and Iranian parental background, we observe substantially depressed risks of becoming a mother while there is no statistically significant difference between them and native women in their second-birth fertility.

As with first-birth fertility, socioeconomic characteristics are important determinants of second childbearing. The patterns are somewhat more straightforward than for first-birth fertility, with clearly positive gradients in terms of the association of mothers' educational attainment and labor force attachment with second-birth fertility. Yet socioeconomic outcomes explain only a minor part of the differences in second-birth fertility (Model D). In most cases, the relative risks for the descendants of immigrants versus women with a full Swedish background increase somewhat when socioeconomic controls are added, but only modestly so. The difference between women with two Swedish-born parents and women of Turkish origin is no longer significant, whereas women of Arab Middle East parental origin have 15% higher risk of second childbirth. The latter measure is the only one that is significantly higher than that of the native Swedish population.

Table 3: Relative risk of having a second child for one-child mothers aged 17–45, 1998–2012. Swedish-born women by their parents' country of birth

Variable	Relative risks	
	Model C	Model D
Background		
Sweden	1	1
Finland	0.88***	0.93***
Other Nordic	0.89***	0.94***
Former Yugoslavia	0.88***	0.93***
Poland	0.88***	0.91***
Western Europe	0.96***	0.96***
Southern Europe	0.86***	0.90***
Baltic	1.05	1.02
Eastern Europe	0.93***	0.94***
US/Aus/NZ/Can	0.94	0.94
Central/South America	0.82***	0.88***
Horn of Africa	0.73***	0.74**
Sub-Saharan Africa	0.83***	0.87***
North Africa	0.83***	0.89***
Middle East	1.08**	1.15***
Iran	0.92	0.93
Turkey	0.94**	1.02
East Asia	1.00	0.97
Southeast Asia	0.84***	0.90*
South Asia	0.75***	0.75***
Post-Soviet States	0.76***	0.78***
Age group		
≤19 years	0.21***	0.32***
20–24 years	0.67***	0.81***
25–29 years	1	1
30–34 years	1.15***	1.06***
35–39 years	0.73***	0.70***
40–45 years	0.12***	0.12***
Calendar year		
1998	0.88***	0.95***
1999	0.88***	0.94***
2000	0.87***	0.92***
2001	0.87***	0.91***
2002	0.92***	0.94***
2003	0.95***	0.96***
2004	0.98**	0.99
2005	1	1
2006	1.04***	1.03***
2007	1.03***	1.01*
2008	1.03***	1.00
2009	1.06***	1.02**
2010	1.10***	1.06***
2011	1.06***	1.02**
2012	1.07***	1.03***

Table 3: (Continued)

Variable	Relative risks	
	Model C	Model D
Educational level		
Compulsory		0.60***
Secondary		0.73***
Post-secondary <3 years		0.84***
Post-secondary ≥3 years		1
Unknown		0.69***
Employment status		
Employed		1
Student		0.74***
Unemployed		0.88***
Social allowance		0.62***
Other		0.86***

Source: Swedish register data, authors' own calculations

*** = significant at the 1% level, ** = 5% level, * = 10% level.

7.3 Third-birth fertility

Evidently, most groups of descendants of immigrants in Sweden have depressed first- and second-birth fertility. To some extent, this reflects postponed rather than foregone childbearing. In contrast, when we turn to differences in third-birth fertility we may observe patterns that relate more strongly to differences in the ultimate number of children born. Model E in Table 4 shows that daughters of immigrants who already have two children no longer display any low-fertility behavior. Quite the contrary, the majority of country-background categories display higher third-birth rates than for women with a full Swedish background. Two-child mothers with a parental background in one of the other Nordic countries have 5–6% higher third-birth fertility than two-child mothers with a full Swedish background; women of Western European descent have 9% higher third-birth fertility. The difference is substantially more pronounced when we turn to women with at least one parent from the Arab Middle East, North Africa, Turkey, South Asia, sub-Saharan Africa, or the Anglo-Saxon New World countries. Women of Arab Middle East or South Asian parental background have an approximately 50% higher risk of third birth than women of the majority population in Sweden. Again we note that depressed fertility at the lower birth orders is not necessarily translated into lower fertility at higher parity progressions. For example, women of South Asian origin stand out as a category with very low first-birth risk and strongly elevated third-birth risk. On the other end of the scale we note that several categories of women also show depressed third-birth fertility, but the only difference

vis-à-vis women with a full Swedish background that is statistically significant is for women of Yugoslav parental origin.

The particularity of third-birth behavior also manifests itself in the association of labor market characteristics with third-birth fertility. Whereas tertiary education is associated with elevated third-birth fertility, we note that employed women are less likely to have a third child as compared to those who are unemployed, inactive, or receiving social allowance. Yet the group-specific patterns of third-birth risk remain very little affected by the inclusion of socioeconomic characteristics in our model.

Table 4: Relative risk of having a third child for two-child mothers aged 17–45, 1998–2012. Swedish-born women by their parents' country of birth

Variable	Relative risks	
	Model E	Model F
Background		
Sweden	1	1
Finland	1.05***	1.06***
Other Nordic	1.06***	1.07***
Former Yugoslavia	0.87***	0.88***
Poland	1.05	1.00
Western Europe	1.09***	1.07***
Southern Europe	0.96	0.94
Baltic	1.02	0.99
Eastern Europe	1.06	1.04
US/Aus/NZ/Can	1.30***	1.24***
Central/South America	0.98	0.95
Horn of Africa	0.94	0.87
Sub-Saharan Africa	1.24**	1.17
North Africa	1.39***	1.35***
Middle East	1.56***	1.52***
Iran	1.13	1.05
Turkey	1.26***	1.26***
East Asia	1.14	1.08
Southeast Asia	1.21	1.16
South Asia	1.47***	1.40***
Post-Soviet States	0.89	0.87
Age group		
≤24 years	0.93***	0.85***
25–29 years	1	1
30–34 years	0.82***	0.80***
35–39 years	0.49***	0.48***
40–45 years	0.08***	0.08***

Table 4: (Continued)

Variable	Relative risks	
	Model E	Model F
Calendar year		
1998	0.85***	0.87***
1999	0.87***	0.90***
2000	0.91***	0.93***
2001	0.91***	0.93***
2002	0.93***	0.95***
2003	0.99	1.01
2004	1.00	1.00
2005	1	1
2006	1.08***	1.06***
2007	1.11***	1.09***
2008	1.11***	1.08***
2009	1.11***	1.07***
2010	1.17***	1.11***
2011	1.11***	1.06***
2012	1.12***	1.06***
Educational level		
Compulsory		0.82***
Secondary		0.66***
Post-secondary <3 years		0.74***
Post-secondary ≥3 years		1
Unknown		1.05
Employment status		
Employed		1
Student		0.95***
Unemployed		1.25***
Social allowance		1.39***
Other		1.23***

Source: Swedish register data, authors' own calculations

*** = significant at the 1% level, ** = 5% level, * = 10% level.

8. Discussion and conclusions

Our initial descriptive findings in terms of total fertility rates for Swedish-born women with two Swedish-born parents and those with at least one foreign-born parent (Figure 1) reveal that the differences in aggregate fertility are not very large. In addition, trends in fertility levels have been highly similar for these two broad categories of women.

Intriguingly, total fertility appears somewhat lower for the so-called second generation than for women with a full Swedish background.

In our subsequent analyses, we proceeded to break down this data into fertility measures that are specific to each parity progression, and into relative risks that represent the huge diversity in parental backgrounds among the descendants of immigrants in Sweden. This serves to demonstrate that once we break down the second generation population, parental geographic origin appears to be an important predictor of childbearing risks. Our analysis thus demonstrates that the new heterogeneity in Swedish society following international migration also manifests itself in terms of considerable diversity in the underlying patterns of fertility behavior among women born in Sweden. Our study shows that many groups of second-generation women in Sweden indeed have lower fertility than women with full Swedish background: the first- and second-birth risks are depressed for almost all country groups of daughters of immigrants. For many groups, the birth risks are depressed to a very large extent. Socioeconomic characteristics such as educational attainment and labor market attachment explain only a small fraction of the observed differences in fertility. Our analyses show that differences between women of Swedish and immigrant parental backgrounds are somewhat more pronounced for first-birth fertility than for second-birth risks. Moreover, many groups of descendants of immigrants have higher third-birth risks than native women. This suggests that different factors come into play at different parity progressions; it demonstrates that a parity-specific approach is essential for a proper understanding of processes related to the fertility behavior of immigrants and their children.

We note that the descendants of immigrants from Turkey and the Arab Middle East may be the only second-generation groups in Sweden that do not show depressed fertility at any of the three parity progressions we study: they display first- and second-birth rates that are similar to or slightly higher than those of native Swedes, as well as elevated third-birth rates. Bernhard et al. (2007) show that the descendants of immigrants from Turkey often consider partnering with someone of their own country background, and that they are more likely than other young Swedes to live with their parents. Continuous ties to the parental home might reinforce commitments to the values of relatively high fertility. As regards the magnitude of relative risks across parities, we note that differences to women with a full Swedish background appear smaller for women of European origin in general, and Nordic origin in particular, than for women with at least one non-European parent. This pattern may be in line with the culture-centered socialization hypothesis, or it may stem from differences in patterns of intermarriage. In particular, immigrants from Western countries are more likely than other immigrants to form a union with a native Swedish partner (Dribe and Lundh

2011), which implies that the share of second-generation women with one Swedish parent is higher in European second-generation groups.

The depressed first-birth fertility of descendants of immigrants suggests that their family formation and entry into adult life run slower than for women with two Swedish-born parents. There are reasons to believe that marriage and partnering market characteristics are responsible for at least part of the observed cross-group variation in first-birth risks. For most women, finding a partner is a condition *sine qua non* for the first childbirth. Therefore, the timing of the first childbirth may, to different extents, be associated with the timing of partnering. At the same time, children of immigrants from outside Europe may often have preferences for endogamous unions (Statistics Sweden 2010a), which may reduce the scope of partnering markets and delay family formation. The type of living arrangement may also matter for the entry into parenthood. In particular, the acceptance of cohabitation and non-marital childbearing is higher among natives than among persons of foreign background in Sweden (Dribe and Lundh 2012). Given that marriage is considered a more committed union that requires more resources than non-marital cohabitation (Wiik, Bernhardt, and Noack 2009; Thomson and Bernhardt 2010), we may find that children of immigrants from countries with a low prevalence of non-marital childbearing postpone childbearing until they can enter a formal marriage. In their recent study on marriage formation among immigrants and their children in Sweden, Andersson, Obućina, and Scott (2015) find that women with parents from Iran and the Horn of Africa, two groups with the lowest first-birth risks in our study, are also among the women with the lowest risk of marriage formation. This corroborates our view that partnering and marriage play an important role in shaping cross-group differences in first-birth behavior. Another explanation of our results is in line with the minority hypothesis: it is possible that the depressed first-birth risks may emerge because many children of immigrants need to invest more in a job and career than those with a full Swedish background do in order to achieve the same status and sense of security. In such a situation, family formation may be delayed. It could also be the case that with access to networks in more than one country, second-generation women simply have more opportunities to pursue many other activities than settling down early to form a family. Finally, it may be that some of the observed differences in first-birth rates stem from the bias created by unregistered emigration of descendants of immigrants. As a robustness check, we have re-estimated fertility rates based only on women with clear evidence of registered activity in Sweden. This procedure produces rates that are very similar to those presented here.

Our study also shows that most groups of daughters of immigrants have lower second-birth fertility than women with a full Swedish background; this holds especially for those with one or both parents from outside Europe. Sweden is a country with a strong two-child norm (Andersson 1999). However, it is not certain whether and to

what extent this norm is a source of difference in the childbearing behaviors of women with Swedish and foreign backgrounds. The two-child norm also prevails in many other countries of origin that are relevant for our study populations (Sobotka and Beaujouan 2014), whereas in some other countries of parental origin women typically have more than two children. Differentials in the risks of having a second child may rather be due to lower responsiveness to the ‘speed premium’ policy of the Swedish parental-leave system (Andersson, Hoem, and Duvander 2006). Evidently, the Swedish pattern of rapid progression to second childbearing is not universally shared by all subgroups in society. Yet we also note that the differences between second-generation women and those with a full Swedish background are generally less pronounced in second- than first-birth fertility. Evidently, differences in behavior that stem from the influence of factors related to partnering markets and family formation play a less prominent role for the second childbirth, at least among women who do not experience union dissolution.

In contrast to the first two parity progressions, we find at least some evidence of high-fertility behavior when it comes to the third-birth fertility of the descendants of immigrants. With the exception of Swedish-born women with a parental background in overseas Anglo-Saxon countries, the second-generation groups with substantially elevated third-birth risks all have family roots in regions with fertility rates that are higher than those in Sweden. Thus, many of these patterns likely stem from the transmission of high-fertility behavior from the parental generation to their children (Knudsen and Murphy 2002; Kolk 2014).

To conclude, our study shows that the aggregate fertility of the descendants of immigrants in Sweden is similar to yet lower than that of Swedish-born women with a full Swedish background. Evidently, the second generation does not come out somewhere between natives and first-generation immigrants in terms of fertility outcomes; our results provide no support for arguments of positive long-term impacts of international migration on aggregate fertility. Further, our parity-specific approach to fertility reveals that the similarity in aggregate fertility is not matched by much similarity in the underlying fertility behavior of different groups of daughters of immigrants in Sweden. It is only descendants of immigrants from other Nordic countries who differ very little in their childbearing behavior from women with a full Swedish background. For other groups we observe very strong differentials, with depressed first- and second-birth rates and elevated third-birth rates for many population subgroups. These opposing patterns at the different birth orders produce the similarity we observe at the aggregate level. It certainly serves to demonstrate that a parity-specific approach to fertility is indeed essential in order to attain necessary insight into the diverse family demographic behavior in multicultural societies like Sweden.

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Appendix

Table A-1: Woman years in Sweden, by country background, 1998–2012

Group	Woman years as:		
	Childless	Parity 1	Parity 2
Sweden	8,852,048	2,774,740	4,717,810
Finland	535,018	185,801	277,433
Other Nordic	171,429	64,718	106,844
Former Yugoslavia	112,206	29,127	35,114
Poland	70,383	10,886	10,479
Western Europe	169,730	56,702	92,023
Southern Europe	76,916	19,550	22,800
Baltic	18,555	9,647	20,210
Eastern Europe	53,679	14,771	21,662
US/Aus/NZ/Can	30,271	6,134	9,396
Central/South America	59,637	7,608	5,141
Horn of Africa	12,592	604	457
Sub-Saharan Africa	20,445	2,739	2,262
North Africa	28,440	4,465	3,516
Arab Middle East	53,868	5,302	3,751
Iran	25,730	1,108	752
Turkey	63,945	11,746	9,427
East Asia	14,041	1,748	1,793
Southeast Asia	27,213	2,396	1,514
South Asia	21,677	2,254	1,793
Post-Soviet States	8,738	2,580	4,181

Source: Swedish register data, authors' own calculations

Table A-2: Number of children born, by country background in Sweden, 1998–2012

Group	Number of children born, birth order		
	First	Second	Third
Sweden	454,609	371,756	128,087
Finland	27,458	22,308	8,429
Other Nordic	8,735	7,329	2,916
Former Yugoslavia	5,163	3,890	1,095
Poland	2,283	1,419	372
Western Europe	8,057	6,785	2,416
Southern Europe	3,322	2,430	691
Baltic	1,140	1,093	415
Eastern Europe	2,371	1,816	602
US/Aus/NZ/Can	970	721	265
Central/South America	1,848	923	200
Horn of Africa	151	72	16
Sub-Saharan Africa	617	353	99
North Africa	973	557	187
Arab Middle East	1,510	812	256
Iran	321	146	32
Turkey	2,634	1,706	561
East Asia	369	246	60
Southeast Asia	618	303	75
South Asia	521	269	87
Post-Soviet States	271	226	74

Source: Swedish register data, authors' own calculations

Table A-3: Woman years in Sweden, by country background and age, 1998–2012. Percentage distribution by age (time-varying)

Group	Woman years						Total
	≤19	20–24	25–29	30–34	35–39	40–45	
Sweden	11	18	19	19	16	17	100
Finland	11	19	19	19	17	16	100
Other Nordic	11	17	17	17	17	21	100
Former Yugoslavia	17	22	22	20	13	6	100
Poland	20	31	23	14	7	5	100
Western Europe	9	15	17	19	19	21	100
Southern Europe	12	22	23	20	14	9	100
Baltic	2	4	11	21	27	36	100
Eastern Europe	12	18	19	19	17	16	100
US/Aus/NZ/Can	18	23	16	13	12	17	100
Central/South America	31	36	19	9	4	2	100
Horn of Africa	45	33	12	5	3	1	100
Sub-Saharan Africa	27	31	20	12	6	3	100
North Africa	24	31	21	14	7	3	100
Arab Middle East	40	36	15	6	2	1	100
Iran	42	38	12	5	2	1	100
Turkey	25	36	24	11	3	1	100
East Asia	24	27	19	14	9	7	100
Southeast Asia	37	36	17	6	2	1	100
South Asia	28	34	20	10	5	3	100
Post-Soviet States	14	15	13	14	18	27	100

Source: Swedish register data, authors' own calculations

Table A-4: Woman years in Sweden, by country background and educational level, 1998–2012. Percentage distribution by educational level (time-varying)

Group	Woman years					Total
	Primary	Secondary	Post-sec <3 years	Post-sec ≥3 years	Unknown	
Sweden	18	46	16	20	1	100
Finland	21	49	14	15	1	100
Other Nordic	22	49	13	15	1	100
Former Yugoslavia	25	47	13	14	1	100
Poland	28	38	16	17	2	100
Western Europe	16	44	17	22	1	100
Southern Europe	22	45	14	17	2	100
Baltic	7	43	20	29	0	100
Eastern Europe	19	42	16	21	1	100
US/Aus/NZ/Can	24	38	17	19	2	100
Central/South America	40	36	12	10	3	100
Horn of Africa	49	29	10	9	3	100
Sub-Saharan Africa	35	35	13	15	2	100
North Africa	32	38	13	13	3	100
Arab Middle East	46	33	10	8	3	100
Iran	46	30	13	9	2	100
Turkey	36	43	10	9	2	100
East Asia	28	30	18	23	1	100
Southeast Asia	44	34	11	10	2	100
South Asia	32	33	16	16	2	100
Post-Soviet States	22	40	18	19	1	100

Source: Swedish register data, authors' own calculations

Note: Educational level refers to the highest educational level according to the Swedish Educational Nomenclature, SUN 2000.

Table A-5: Woman years in Sweden, by country background and labor market status, 1998–2012. Percentage distribution by labor market status (time-varying)

Group	Woman years					Total
	Employed	Student	Unemployed	Allowance	Other	
Sweden	70	19	4	1	6	100
Finland	67	19	5	3	7	100
Other Nordic	67	18	5	2	7	100
Former Yugoslavia	59	24	6	3	8	100
Poland	50	34	4	3	9	100
Western Europe	69	18	4	2	8	100
Southern Europe	60	22	5	2	12	100
Baltic	81	8	4	1	6	100
Eastern Europe	64	22	5	2	8	100
US/Aus/NZ/Can	57	28	4	2	10	100
Central/South America	43	41	4	4	9	100
Horn of Africa	29	57	3	3	9	100
Sub-Saharan Africa	45	38	4	3	9	100
North Africa	47	34	4	5	10	100
Arab Middle East	35	47	5	5	8	100
Iran	32	55	3	3	7	100
Turkey	47	33	7	3	9	100
East Asia	50	38	3	1	8	100
Southeast Asia	39	47	4	3	7	100
South Asia	42	44	3	2	8	100
Post-Soviet States	63	23	4	2	8	100

Source: Swedish register data, authors' own calculations

Notes: Employed: The data is originally derived from labor-force statistics from administrative sources. Based on a number of conditions, the person is defined as either working or not working. To be counted as employed, the person should have worked at least one hour a week in November of a given year.

Student: The data is originally derived from the Register of Education. To be counted as a student, the person has to be registered as a student in the fall semester of the current year.

Unemployed: If the person is counted as neither a student nor employed, and has been registered at the employment office more than 75 days in a calendar year, the person is classified as unemployed. Information on registration at the employment office is derived from the AMS register of the Swedish Employment Board.

Allowance: If the person has received income support for more than five months of the current year, the person is included in this category.

Other: Those who do not fit into any of the above-defined groups.