Between Here and There: Do Immigrants Follow Their Home Country's Fertility Norms?

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May, 2012

Abstract

This paper focuses on the role of home country's birth rates in shaping immigrants' fertility. We use the German Socio-Economic Panel (SOEP) to study completed fertility of first generation immigrants who arrived from different countries and at different times. We find that women from countries where the aggregate birth rate is high tend to have significantly more children than women from countries with low birth rates. This relationship is attenuated by selection operating towards destination country. In addition, the fertility rates of source countries explain a large proportion of fertility differentials between immigrants and German natives. The results favor the socialization hypothesis suggesting that home country's culture affects immigrants' long-run outcomes.

JEL classification: J13, J15, Z10, Z13

Keywords: migration, fertility, socialization, culture, Germany

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The author gratefully acknowledges suggestions provided by Regina T. Riphahn. I also thank Miriam Maeder, Martina Eschelbach, Christoph Wunder, Michael Zibrowius, and participants at various seminars for valuable feedback.

1 Introduction

The list of countries with below-replacement fertility has been getting longer in recent decades. Also, the aging of societies has become a political key issue because it affects labor markets and social insurance systems. Immigration has been recognized as a possible means to decelerate aging (see, e.g., Wu and Li, 2003; Alho, 2008). Since immigrants contribute remarkably to population dynamics in many contemporary societies (World Bank, 2009), immigrant fertility increasingly gains policy makers' attention. Understanding the relationship between migration and childbearing is important in order to draw conclusions about general demographic developments and about various socio-economic outcomes of immigrants in the destination countries.

However, the migration-childbearing relationship is complex: immigrants may share fertility norms of their home country yet act under new socio-economic conditions in the host country. The international literature discusses at least three hypotheses to explain immigrants' completed fertility: selection, socialization, and adaptation. Since each of the hypotheses has been supported and challenged, the exact mechanism of how migration and fertility are related remains unclear.

To shed more light on this issue we explore the childbearing behavior of immigrants living in Germany. Germany hosts the largest number of immigrants in Europe. Moreover, over recent decades large migration flows from high-fertility countries coincided with extremely low fertility of German women. As of 2009, foreign women who made up 8.4% of all women in Germany, contributed substantially to the total number of births with a share of roughly 17% (Federal Statistical Office, 2010, 2012).[1]

Despite its increasing relevance, very few empirical studies investigate immigrant fertility in Germany. Existing research mostly suggests that immigrants exhibit significantly higher fertility than natives even after controlling for various socio-demographic charac-

[1] German Federal Statistical Office's data usually only distinguish between German and non-German citizens rather than natives and immigrants. We refer to foreigners as to non-German citizens throughout this paper.

teristics. However, immigrant fertility tends to successively approach the fertility level of natives with increasing duration of stay at the new destination (see, e.g., Nauck, 1987; Mayer and Riphahn, 2000; Milewski, 2007, 2010). Several studies emphasize significant differences in fertility patterns across immigrants' origins (see, e.g., Mayer and Riphahn, 2000; Schmid and Kohls, 2010; Milewski, 2010), but they leave open important questions: why does it matter for fertility to be, for example, of Turkish versus of Italian origin? What drives the observed cross-countries heterogeneities? To what extent may different childbearing norms explain this variation across countries and immigrant excess fertility versus native fertility?

This study contributes to the literature in several dimensions. In particular, we test the hypothesis that immigrant fertility reflects childbearing norms dominant in the countries of origin at the time of migration (socialization hypothesis). We draw on the growing U.S. literature that investigates the quantitative importance of broadly defined culture for different socio-economic outcomes (see, e.g., Fernandez and Fogli, 2006, 2009; Blau et al., 2011). Following these studies we use country-specific total fertility rates (TFRs) as a measure of fertility norms. In contrast to most prior studies we use the German Socio-Economic Panel (SOEP) to study completed fertility of first generation immigrants and thus provide evidence for a non-U.S. setting. Unlike previous studies using German data, we examine the reproductive behavior of all immigrants, not only selected sub-groups.[2] Also, we define immigrants according to their place of birth rather than based on their citizenship.[3] We account for differences in socio-demographic characteristics related to childbearing choices: education, marriage behavior, number of siblings, and religion. Our fixed-effects approach exploits the variation in TFRs across countries and time.

[2]Nauck (1987) looked at the Turks, Mayer and Riphahn (2000), and Milewski (2007, 2010) at the traditional guest workers from Turkey, Italy, Spain, Greece, and former Yugoslavia, Schmid and Kohls (2010) at Turkish, Greek, Italian, Polish, and former Yugoslavian citizens.

[3]Distinguishing immigrants and natives by citizenship is inappropriate for German context. See Liebig (2007) for a debate on difficulties associated with using citizenship to define immigrants in Germany.

We find that women born in countries with high TFRs tend to have significantly more children than those born in countries with low TFRs. This result favors the socialization hypothesis. It is quantitatively important as a one-unit increase in home country's TFR is associated with an increase in completed fertility of 0.5 children, which refers to almost 20% of the mean completed fertility of immigrants. On average, different fertility norms in the countries of origin explain about two-thirds of gross immigrant excess fertility versus natives. Finally, our results suggest that this relationship between home country birth rates and individuals' own fertility may be even stronger if immigrants are self-selected with regard to fertility preferences towards destination country or if they eventually adjust their fertility to native levels or both.

This paper is organized as follows: the next section sets the stage with information on immigration to Germany. Section 3 briefly reviews previous findings and outlines our hypothesis. Section 4 describes our estimation strategy and section 5 the data. We present the estimation results and robustness tests in section 6. Finally, section 7 discusses the findings and concludes.

2 Immigration and fertility in Germany

As of 2010, foreigners represented roughly 9% of the total population in Germany, but almost 19% of the population had a migration background (Federal Statistical Office, 2011, 2012).[4] Since East Germany had no significant immigration before re-unification in 1990, the current stock of foreigners in Germany results nearly entirely from the long and intense migration to West Germany. Since World War II most immigrants arrived as ethnic Germans, traditional guest workers, or humanitarian migrants.[5] Ethnic German repatriates arrived in the aftermath of World War II, and after the dissolution

[4]Foreigners are non-German citizens regardless of place of birth. Those with migration background migrated to Germany after 1949, are non-German citizens born in Germany, or have at least one parent who is either an immigrant or a foreign citizen.

[5]For more information on the phases of immigration to Germany see, e.g., Kalter and Granato (2007).

of socialism after 1989. They emigrated from former German territories in Central and Eastern Europe, mainly from the former Soviet Union, as well as from Romania, Poland, and former Czechoslovakia. Since ethnic Germans obtain German citizenship at entry, they are counted as Germans in most official statistics. Traditional guest workers immigrated during the economic boom since the mid 1950s until the early 1970s. Through that time Germany pushed intensive manpower recruitment and signed bilateral treaties with several countries including Italy, Spain, Greece, Turkey, Portugal, and Yugoslavia. Although, initially, labor migrants' residence permit was restricted to one year, they tended to stay longer or even permanently and increasingly brought their family members. Most refugees and asylum seekers arrived in the 1990s from the territories under the Yugoslav wars: Bosnia and Herzegovina, Croatia, and Slovenia.

The composition of the foreign population currently living in Germany still reflects these major migration streams: the dominant national minorities are Turks, followed by people from former Yugoslavia, Italy, and Poland (Federal Statistical Office, 2012). Despite the various geographic roots, the majority of immigrants moved from a high to a low fertility context. Table 1 shows the fertility developments in Germany and selected sending countries over the last five decades.

[Table 1 about here]

The numbers reveal a general recent fertility decline. Since the late 1980s, total fertility rates (TFRs) in all countries save for Turkey were continuously below the replacement level of 2.1 and nearly converged. Figure 1 presents fertility developments within Germany since 1991, separately for German and foreign women.

[Figure 1 about here]

While the TFR of German women remained relatively stable at a level of 1.3, the TFR of non-German women fell successively. At the same time, foreign women substantially contributed to the total number of births. Between 1991 and 2009 the share of births to foreign mothers went up from 13.0 to 16.8% while the share of foreign women on the total female population increased from 6.5 to 8.4% (Federal Statistical Office, 2010, 2012).

3 Previous literature and hypotheses

Existing research suggests that a variety of factors may affect immigrants' reproductive behavior: self-selection into migration, pre-migratory experiences in the home country, socio-economic environment in the destination country, and circumstances accompanying the migration process as such.[6]

The literature focusing on the relationship between migration and completed fertility commonly discusses three hypotheses: selection, socialization, and adaptation.[7] These hypotheses are not necessarily mutually exclusive; they are partly complementary, partly contradictory, they may apply to specific lifetime periods and counteract or reinforce one another. We now consider each of them in turn and briefly present the relevant empirical findings.

The *selection* hypothesis holds that the process that selects people into migration is not random. Immigrants tend to differ from the overall population at their place of origin along many dimensions that are associated with fertility, e.g., age, education, employment, marital status (Hervitz, 1985). Consequently, immigrants' childbearing preferences may, even before the move, more closely resemble the patterns dominant in destination country than those of country of origin. Existing research on internal rural-urban migrants provides evidence for this mechanism (see, e.g., Macisco et al., 1970;

[6]For an overview of previous literature on the relationship between migration and fertility see, e.g., Kulu (2005).

[7]In addition, related literature derives two hypotheses - disruption and interrelation - to explain temporary drops or rises in fertility around the migration event (see, e.g., Stephen and Bean, 1992; Mulder and Wagner, 1993; Andersson, 2004; Kulu, 2005). They are not of major importance for this study because they refer to the timing of childbearing, rather than to completed fertility.

Goldstein and Goldstein, 1981; Lee and Pol, 1993; Chattopadhyay et al., 2006). Studies on international migrants broadly discuss the selection hypothesis, but rarely test it due to lack of bi-national data allowing for comparisons between migrants and their home country's counterparts.[8]

The *socialization* hypothesis emphasizes the critical role of the home country in shaping immigrants' reproductive behavior. According to this hypothesis immigrants acquire norms and behavioral patterns regarding childbearing in their home country, and continue to follow them over the life course. However, it is unclear when (if ever) the socialization of an individual ends. Social scientists define socialization as a life-long process, but divided into two stages: primary and secondary socialization (Mortimer and Simmons, 1978). Primary socialization takes place and is finalized during childhood and adolescence. Bisin and Verdier (2001) distinguish two channels that play a role in the formation of preferences at this early stage: socialization to the parents' trait and socialization to the dominant trait in the population. By contrast, secondary socialization may occur also later in life, each time a person encounters a new environment with changed conditions. The migration literature traditionally discusses the mechanism of secondary socialization in the context of the post-migratory adaptation. Only few studies on immigrant fertility deal with the socialization hypothesis directly (see, e.g., Hervitz, 1985; Milewski, 2010). A common approach is to interpret heterogeneities in fertility across immigrants' origins as supportive for socialization, but such evidence does not specify to what extent home country's fertility norms matter. Several papers on the immigrants to U.S. or their descendants invoke the relationship between the source country's birth rates and women's preferences for children (see, e.g., Kahn, 1988; Blau, 1992; Fernandez and Fogli, 2006, 2009).

The *adaptation* hypothesis assumes that what matters most in shaping immigrants'

[8]see, e.g., Bustamante et al. (1998); Blau, F.D. and Kahn, L.M. (2007) for a discussion on selected characteristics of the average Mexican population and Mexican immigrants to the U.S. based on data sources from both countries.

fertility is the current socio-economic environment in the receiving country. Numerous contributions use the terms adaptation and assimilation interchangeably, because of the similar outcome: sooner or later, immigrant fertility comes to resemble that of natives. However, the mechanisms behind adaptation and assimilation differ (Hill and Johnson, 2004). The assimilation hypothesis holds that immigrants successively take up the host country's cultural norms regarding family size. Because cultural assimilation takes a long time, it is expected to be more apparent over subsequent generations than within a first generation (Stephen and Bean, 1992; Blau, F.D. and Kahn, L.M., 2007; Parrado and Morgan, 2008). First generation immigrants may instead be subject to adaptation starting shortly after migration. Adaptation occurs if immigrants revise their childbearing preferences as a result of changed conditions regarding wages, prices, employment, and educational opportunities. The convergence to native fertility may be achieved after some years of stay (see, e.g., Kahn, 1988; Andersson, 2004) or more precisely with an increasing number of fertile years spent in the host country (Mayer and Riphahn, 2000). Clearly, the duration of exposure to native fertility patterns in the destination country is a function of age at migration. Consequently, previous research interprets the positive relationship between age at migration and fertility as a successive adaptation (see, e.g., Mayer and Riphahn, 2000; Bleakley and Chin, 2010). However, age at migration outlines also the duration of the socialization process in the country of origin and may positively correlate with fertility for this reason, instead. Moreover, age at migration is not random, but is rather an outcome of a decision process and may therefore also reflect self-selection. Thus, the exact mechanism behind the pure effect of age at migration on fertility is ambiguous.

This study tests the socialization hypothesis on first generation immigrants in Germany. We do not focus on potential effects of duration of exposure to different fertility norms because a year spent in the home country is indistinguishable from a year spent in the host country. Instead, we clearly distinguish socialization from adaptation by asking the question to what extent home country's birth rates explain individuals' own completed fertility. We draw on U.S. studies that use the country-specific total fertility rates (TFRs) to investigate the quantitative importance of culture for different socio-economic outcomes (see, e.g., Blau, 1992; Fernandez and Fogli, 2006, 2009; Blau et al., 2011). We contribute to the literature by studying immigrants in a large European country and thus provide empirical evidence for an institutional, and cultural framework different from that in the United States. In addition, we discuss the consequences of potential self-selection and adaptation for the results.

Previous papers on German data show that socio-demographic characteristics play a crucial role in explaining fertility differentials between immigrants and natives, but a significant immigrant-native fertility gap still remains unexplained (Mayer and Riphahn, 2000; Milewski, 2010). Also, nearly all papers on fertility of German immigrants emphasize heterogeneity across countries of origin (Mayer and Riphahn, 2000; Milewski, 2010; Schmid and Kohls, 2010). However, we are not aware of past studies measuring the extent to which home country's fertility matters for individual fertility outcomes. We contribute to this literature by exploiting the variation in TFRs across countries and time and test whether immigrants' completed fertility reflects fertility norms dominant in their home countries (socialization hypothesis).

4 Estimation strategy

Our analysis of the impact of source country's fertility norms on immigrants' own fertility compares immigrants to natives given observable characteristics. Thus, socialization here refers to the extent to which immigrant excess fertility is related to the childbearing norms that immigrants experience prior to migration. We estimate the following equation:

$$y_{ijt} = \alpha' X_i + \beta Z_{jt} + \gamma_j + \delta_t + \varepsilon_{ijt}, \tag{1}$$

where y_{ijt} is completed fertility of woman i from country j who arrived in year t, X_i includes a vector of controls, γ_j refers to country-of-origin fixed effects, and δ_t to year-of-migration fixed effects.

Our variable of interest Z_{jt} should measure the difference in childbearing norms between immigrant source country and Germany. Positive β would therefore indicate a socialization mechanism. Central for our analysis is the use of a quantitative proxy for childbearing norms. Ideally, we would like to relate individual's completed fertility to the average completed fertility of her birth cohort in her home country. However, since comprehensive international data on cohort fertility is not easily available, we use total fertility rate (TFR) instead.[9] Specifically, we calculate the difference between the country-specific TFR in immigrant's home country and in Germany as of the migration year. We argue that this variable is a good proxy for the discrepancy in childbearing norms that an immigrant leaves behind in the home country and experiences at entry in Germany.[10]

Since our key variable only varies by country of origin and year of arrival, we cluster the standard errors at the year of migration-country level. Note that we treat Germany as a home country for natives, so the main variable of interest is set to zero for natives and is in fact an interaction with an immigrant dummy. However, because a full set of any of the migrant-specific dummies, i.e., country-of-origin and year-of-migration fixed effects would be identical to an immigrant indicator, the latest is not separately included in our main model specification.

We attempt to identify the effect of different fertility norms, not country-of-origin differences in general. Fernandez and Fogli (2006, 2009) emphasize that TFR may beyond

[9] According to United Nations Population Division (2009) TFR is a basic indicator of the level of fertility, calculated by summing age-specific birth rates over all reproductive ages. Thus, TFR is an estimate of completed fertility of a hypothetical cohort of women assuming the given age-specific birth rates of a reference period and no female mortality at reproductive ages.

[10] Note that using the home country's TFR directly would produce identical results, because changes in the German TFR would be picked up by the year-of-migration fixed effects. Moreover, the correlation between our key variable and the source country's TFR in our immigrant sample is 0.95.

a cultural component capture also country-specific economic and institutional conditions.[11] We include country-of-origin fixed effects to increase the likelihood that our model estimates the effect of source country's fertility norms rather than the impact of any other country-specific factors.[12] This approach should control for any time-invariant differences between the source country and Germany including omitted institutional, economic or cultural factors that could be related to both fertility norms and the individuals' own fertility.

Still, any study on first generation immigrants has to face the difficult issue of selection into immigration. As the factors that motivate selected individuals to migrate to a particular host country at a particular time may be of non-observable nature, we cannot fully control for self-selection directly. However, we include a full set of year-of-migration dummies to capture any effects associated with different time of migration including unobservable compositional changes of the immigrant body. The year-of-migration fixed effects account for selection to the extent to which the migration decision was motivated by time-variant incentives such like changes in wealth, labor market opportunities, or migration policies in Germany.

The individual background variables in X_i control for observable socio-demographic differences across women of different origins. The economic theory of fertility (Becker, 1991) and previous empirical research guide our selection of covariates related to child-bearing choices. We include a full set of year-of-birth dummies to account for birth cohort effects in the most flexible form. We proxy women's opportunity costs of an additional child by educational attainment, measured as the highest completed degree.[13] We

[11]Fernandez and Fogli (2006, 2009) argue that they isolate the effect of culture by examining second-generation immigrants because the economic and institutional conditions of the country of ancestry should no longer be relevant for this group.
[12]Blau et al. (2011) follow a similar strategy to study the impact of different home country's characteristics on immigrants' labor supply.
[13]Following Mayer and Riphahn (2000) we argue that potential endogeneity of education is limited because we observe the completed fertility at age 45 and later while typical educational decisions are taken prior to age 20. In addition, we refer to the results of Monstad et al. (2008) who do not find a causal relationship between education and completed family size.

distinguish six educational thresholds defined according to the International Standard Classification of Education (ISCED-1997). To capture a woman's family orientation, i.e., attitudes towards traditional family structures and desired family size, we include an indicator of whether she was ever married, her age at first marriage, and the number of her siblings. Recent literature on the intergenerational transmission of fertility patterns suggests that individuals raised in larger families tend to establish large families themselves (see, e.g., Murphy and Knudsen, 2001; Booth and Kee, 2009). Because previous research also strongly emphasizes the role of religious denomination in determining preferences towards birth control and family size we include dummies for being Catholic, Protestant, or Muslim as opposite to being non-religious.

Earlier research documents considerable fertility differentials between immigrants arriving at different stages in life using duration variables such like years since migration or number of fertile years spent in a country (see, e.g., Mayer and Riphahn, 2000). These variables are basically a function of age at migration. We would expect the socialization by fertility norms to be more pronounced, the more years an immigrant spent in her home country. Clearly, we cannot test this hypothesis because age at migration simultaneously also determines the duration of potential adaptation process at the new destination. Moreover, age at migration is not random, but is rather an outcome of a decision process. Thus, age at migration suffers from severe endogeneity problems and the exact mechanism behind it remains unclear. However, in a separate model specification we additionally include age at migration. The rationale for doing this is that women who migrate at a particular age are likely to share some unmeasured characteristics driving the decision to migrate itself or the willingness to adapt afterwards. Thus, we expect that the estimate of the effect of home country's fertility norms is less biased by the mechanisms of selectivity and adaptation if we control for age-at-migration, even if it's coefficient is not directly interpretable.

It is possible that our model does not capture non-observable self-selection into migration related to country-specific fertility norms and individuals' own fertility. However, if we believe that immigrants tend to be selected for fertility preferences then we expect positive selection towards destination country, i.e., compared to women who stay behind migrants' fertility preferences are, even before the move, closer to preferences of German natives. A similar logic applies to potential adaptation after migration, i.e., if immigrants are subject to fertility adaptation then they eventually follow fertility norms of natives instead those of home country's counterparts left behind. Consequently, both, selection into migration and adaptation would bias our results towards not finding any relationship between home country's birth rates and fertility. We show some evidence in favor of such attenuation bias in section 6.2.

5 Data

We use individual-level data from the German Socio-Economic Panel (SOEP). The SOEP is a representative longitudinal study of private households, conducted annually since 1984, and a large dataset providing retrospective information on births, migration, and background characteristics.[14] Since we focus on completed fertility, we restrict attention to females aged 45 and above, and code their past births as our dependent variable. Data from a single survey year would allow us to test our research hypotheses. However, to increase both sample size and the spread of analyzed birth cohorts we pool cross-sectional observations taken from three SOEP waves.

We chose the survey years 1991, 1999, and 2007 for several reasons.[15] We start with the wave 1991, the first year after German reunification, and cut the window of analysis in 2007 to minimize the number of observations with missing values on respondents' religious affiliation and number of siblings, which are important control variables.[16] Further, using only three instead of all survey years in-between reduces the number

[14]For a description of the content and sampling of the SOEP see, e.g., Haisken-DeNew and Frick (2005).
[15]Pooled waves 1990, 2000, and 2010, or alternatively 1991, 1997, and 2003 yield similar results.
[16]These variables are available only in several SOEP waves. See the appendix for further details.

of respondents entering our sample more than once. We include the survey year 1999 because the sample was refreshed in 1998. An eight-year interval between the selected waves should provide enough variation in birth cohorts and a sizeable sample for our analysis. We observe 46% of women in our final sample once, 27% twice and 27% three times. We keep the repeated records because their elimination could lead to a biased sample, but robustness check in section 6.3 show that the estimation results do not change qualitatively when we drop repeated records.

Based on the respondents' migration background we construct two mutually exclusive sub-samples, natives and first generation immigrants.[17] To obtain a homogeneous native sample we consider German citizens without migration background and include only West German households.[18] The immigrant sample comprises foreign-born respondents with direct migration experience regardless of their current citizenship. In contrast to the common distinction along citizenship lines, this approach includes ethnic Germans and naturalized foreigners. Despite their current citizen status they personally experienced migration and we expect them to follow similar fertility patterns as immigrants with foreign citizenship.[19] We conclude our selection by eliminating immigrants who were 45 years old and older at arrival, because they completed their reproductive phase before migration.[20]

Finally, we purge records with missing information on explanatory variables (less than 4% of the sample). Our final dataset consists of 7,085 native and 1,123 immigrant observations. The immigrants arrived between 1949 and 2004 from 50 different countries, but

[17]We exclude second generation immigrants, i.e., German-born respondents, who have at least one parent with migration background. Also, we exclude the so called "generation 1.5", i.e., women who migrated before age 15. This group accounts for only 4% of the immigrant sample and we show in section 6.3 that its inclusion does not affect the results.

[18]Fertility and socio-demographic composition of the East and West German population differ significantly. Moreover, according to official statistics 90% of current foreigners live in the western part of the country.

[19]Data limitations do not allow us to further distinguish between ethnic Germans and naturalized foreigners among immigrants with German citizenship. However, nearly 70% of them are from Eastern European countries, 9% from former Yugoslavian territories, 8% from guest worker countries: Turkey, Italy, Spain, Greece and Portugal, and 13% from other countries.

[20]However, their inclusion does not affect the results. See section 6.3 for further details.

most of them originate from countries of traditional guest worker recruitment: women of Turkish origin alone account for 22% of the immigrant sub-sample, women from Italy, Spain, and Greece jointly for 27%. Notable numbers arrived from former Yugoslavian territories, and from different Eastern European countries. Table 2 lists main countries of origin represented in our immigrant sample and shows the average fertility of immigrants by country. We observe large fertility dispersion across women of different origins, from 3.88 children for Turkish women to 1.29 for Czech women.

[Table 2 about here]

Table A.1 in the appendix shows summary statistics for the main estimation sample. Immigrants and natives differ with respect to fertility and socio-demographic characteristics. On average, individuals' completed fertility in the immigrant sample is 2.66, in the native sample 1.90. Immigrants are on average younger and less educated than natives. While the differences in marriage behavior are moderate, immigrants have on average more siblings. The religious affiliations of our sub-samples differ substantially: most notably, while jointly almost 89 % of natives are Christians, 23% of immigrants are Muslims. More than one fourth of immigrants have German citizenship. An average immigrant in our sample arrived at age 29 in the early 1970s. At the time of arrival the TFR in the home country was on average by 1.19 births higher than the German one.

Our key variable - "difference in TFRs" - is based on country-specific total fertility rates (TFRs) obtained from The World Bank (2009) and The United Nations Population Division (2009). We match each immigrant in our SOEP sample with the TFRs in both her country of origin and Germany as of her arrival year and finally calculate the difference between the two TFRs.[21] The "difference in TFRs" is significantly correlated with the number of children that immigrants eventually bear. Table 3 shows the average completed fertility for different thresholds of the variable of interest. The positive

[21]See the appendix for further details on how we constructed the key variable.

relationship is apparent: the greater the difference in TFRs between the home and host country at arrival, the higher immigrants' completed fertility.

[Table 3 about here]

6 Results

6.1 Main estimation results

Table 4 presents selected regression coefficients and standard errors obtained from estimations of different specifications of equation 1.

[Table 4 about here]

Since our research design aims to measure the impact of different fertility norms on own fertility of immigrants compared to natives, we begin with a simple model that estimates gross immigrant excess fertility adjusted for birth cohort only (column 1). As expected, the coefficient of the immigrant indicator is positive and significantly different from zero (at the 1% level) and indicates that immigrants bear roughly 0.776 children more than natives in the same birth cohort.

These gross fertility differentials between immigrants and natives diminish after we include our main variable of interest - the proxy for the difference in childbearing norms between the home and host country (column 2). The variable "difference in TFRs" explains a large proportion of the gross immigrant excess fertility versus natives and, as stated in the socialization hypothesis, is positively and significantly related to individuals' own fertility. Assuming a constant TFR in Germany, an increase in home country's TFR of one birth per woman is related to a ceteris paribus growth in own completed fertility of 0.45 children. We could reject the hypothesis that higher order polynomials of the key variable improve the goodness of fit at high levels of significance.

However, there may be many reasons for the positive partial correlation that have little to do with the difference in fertility norms between the home and host country. In particular, our key variable may just be picking up different factors that vary systematically across countries or time and affect fertility behavior such as women's human capital, country-specific economic and institutional conditions, incentives for migration, other cultural factors such as religious affiliation and attitudes towards traditional gender roles. To increase the likelihood that we estimate the effect of fertility norms rather than other omitted factors we next include a wide range of individual socio-demographic characteristics, country-of-origin fixed effects, and year-of-migration fixed effects (column 3). Note that for each observation the sum of all country-of-origin dummies or year-of-migration dummies is identical to an immigrant indicator; therefore, the later is not separately included in the model. The point estimate of the variable "difference in TFRs" remains nearly unchanged and significant at the 5% level.

We report the coefficients of individual socio-demographic controls in table A.2 in the appendix. Almost all of these characteristics are important predictors of fertility outcomes, and they correlate with fertility in the expected directions. The estimated coefficients of the control variables do not change notably in alternative model specifications.

To assess the quantitative importance of home country's TFR for immigrant fertility, note that the mean completed fertility of immigrants is 2.66. Thus, a one-unit increase in TFR is related to an increase in the number of children of 19%.[22] As a standard deviation in fertility among immigrants is 1.74, and across countries 0.76, a one-unit difference in TFR accounts for 28% of the variation in the number of children among immigrants, and for 65% of the cross country-variation.[23]

[22] The proportion is given by $0.495/2.66 \cdot 100\%$.

[23] The proportions are given by $0.495/1.74 \cdot 100\%$ and $0.495/0.76 \cdot 100\%$ respectively.

6.2 Socialization versus self-selection and adaptation

Because we study completed fertility of first generation immigrants the main challenge is to disentangle the effect of fertility norms from the mechanisms of selection into migration and adaptation. Note that these two mechanisms are not mutually exclusive and strong pre-selection towards destination country may accelerate post-migration adaptation. Importantly, both selection into migration and adaptation would bias our results towards zero.

We address the potential attenuation bias in two ways. First, we include additional control variables to capture potential channels through which the mechanisms of self-selection and adaptation may operate. Second, because we expect that immigrants of non-German citizenship are less affected by selectivity than immigrants having German citizenship, we estimate the main model separately for these two sub-groups. Table 5 summarizes these alternative estimation results.

[Table 5 about here]

Consider additional control variables first. Of special note is the inclusion of age at migration. If we believe that women who migrate at a particular age are likely to share some unmeasured motivation for migration then age at migration should absorb some potential selectivity bias. In addition, age at migration may also capture other effects associated with the time that an immigrant spent initially in the source country and later on at the new destination including potential adaptation effects. We include dummies for immigrants' age at migration to capture these simultaneous effects that could bias our main results in the most flexible way (column 1). Since, the point estimate and significance of our key variable - "difference in TFRs" - remains basically unaffected, this model specification confirms our basic results presented in table 4.

Also, our main results are robust to inclusion of further individual characteristics such as German language proficiency and migration background of the spouse. On the one hand, these variables may be considered as endogenous to fertility. On the other hand, they are examples of potential channels through which positive selection towards destination country and adaptation may operate. The point estimate of our key variable increases to 0.584 if we control for women's subjective opinion of her spoken German and include an indicator of whether she ever had an immigrant spouse (column 2).[24] The estimated coefficients of additional control variables indicate that cohabitation with an immigrant and worse language proficiency are associated with higher fertility outcomes.

Finally, we compare immigrants with and without German citizenship to get a sense of how a selectivity mechanism may affect our results. Immigrants of German citizenship account for nearly 28% of our immigrant sample. These are either ethnic Germans or naturalized immigrants and they are presumably more similar to German natives and less representative for the overall population of their home country than immigrants of non-German citizenship. Summary statistics in table A.3 in the appendix reveal that with respect to fertility and socio-demographic composition immigrants of German citizenship are more selected towards destination country than the remaining immigrants. Most notably, immigrants with German citizenship have on average fewer children, are better educated, and arrive from lower fertility contexts. Thus, we may expect that immigrants of German citizenship are also more likely to be more selected on unobservable characteristics than immigrants of non-German citizenship. We next estimate our main model separately for the two immigrant sub-groups. Columns 3 and 4 of table 5 present the relevant results. The point estimate for the variable "difference in TFRs" obtained for the more selected group - immigrants with German citizenship - is smaller in magnitude than in the full sample, but qualitatively confirms the general pattern (column 3). Given the small sample size, it is not surprising that the precision of the estimation falls. The key coefficient for immigrants with non-German citizenship is larger than before (column 4). Comparing the results obtained for the two immigrant groups we find

[24] See the appendix for further details on the additionally includes variables.

that home country's norms affect immigrants' fertility less if selection is stronger. This finding shows that our basic result presented in table 4 may be attenuated by potential selection-problem.

6.3 Further robustness checks

Our main results are also robust to an alternative definition of the proxy for childbearing norms, to changes in various sample criteria and to alternative estimation methods. For detailed results see table A.4 in the appendix.

Consider the proxy variable "difference in TFRs" first. Out attempts to identify the effect of home country's fertility norms on immigrants' own fertility would fail if our key variable - "difference in TFRs" - was endogenous to fertility choices for some other reasons than omitted factors related to immigrants' self-selection or adaptation. One may object that our key variable reflects other time-variant unobserved characteristics of one's home country that may affect fertility decisions and are not captured by country-of-origin fixed effects or year-of-migration fixed effects. To mitigate these concerns we use an alternative definition of the proxy for fertility norms to estimate equation 1. Specifically, we calculate the variable "difference in TFRs" by using TFRs as of the year of women's 15th birthday.[25] Note that this approach assumes that socialization is finalized in adolescence. The coefficient of interest falls to 0.366, but remains significant at the 10% level (column 1).[26] Our findings are robust to this alternative assumption about the timing of when woman's home country's fertility norms constitute her attitudes towards childbearing. This is not surprising because the correlation between the new proxy variable and the original one is around 0.94. Importantly, this approach accounts for undesirable effects of non-observable country-specific factors in a particular year of migration. In addition, this alternative definition of the key variable addresses

[25] We lose 30% of all observations who were born prior to 1935, because they are at age 15 before 1950 and The World Bank does not report country-specific TFRs prior to 1950.

[26] We obtain a coefficient of 0.54, significant at the 5% level if we use the home TFR as of the year of 15th birthday directly, instead of the difference to the German TFR in this year.

also another concern; the country-specific TFR as of the migration year may to some degree reveal own fertility of the emigrating population, because they may have started childbearing before migration.[27] On the other hand, we rather expect that the group that migrates to Germany is relatively small and should not have a large impact on aggregate fertility in home country.

Consider now alternative sample selection criteria. Recall that we impose restrictions on immigrants' age at migration in our main analysis to obtain a homogeneous sample of first generation immigrants. Specifically, we follow the relevant literature that usually uses age 15 as a cut-off point for distinguishing between immigrant generations. We excluded women who migrated as children below age 15 because it is ambiguous where their socialization potentially took place. We also eliminated immigrants who were 45 and older at arrival, because they completed their reproductive phase before migration. It is therefore not clear if the TFR as of the migration year would reflect the fertility norms they were exposed to during their fertile years. We argue therefore that these two excluded immigrant groups do not help us to identify the effect of socialization by home country's fertility norms and their sizes are too small to affect our main results. However, they could serve as a useful control. Specifically, under the socialization hypothesis we expect the fertility of women who arrived as children to be less affected by home country's birth rates than fertility of those who arrived as adults. Not surprisingly, the coefficient of the variable "difference in TFRs" falls slightly to 0.462 if we include the group who migrated before age 15 into analysis (column 2). By the same logic, we expect women who arrived at age 45 and later to be more affected by home country's birth rates than women who migrated earlier in life. The point estimate of the relevant coefficient increases to 0.552 if we additionally include these women who arrived after age 45 into analysis. The precision of the estimation increases too and the coefficient is significant at the 1% level (column 3).

[27] Actually 57% of immigrants in our sample gave their first birth prior to migration year, 2% in the migration year, 33% later, and 8% of immigrants remain childless.

Second, recall that we pool three SOEP cross-sections and therefore some respondents enter our sample more than once. We argue that elimination of the repeated records could lead to a biased sample and we keep them in our main analysis. However, to test if this decision affects our main results we repeat the analysis after a drop of the duplicate observations. These estimates generally indicate qualitatively similar findings, although the magnitude of the point estimate for "difference in TFRs" falls to 0.37 (column 4). Not surprisingly, the standard errors rise, but the coefficient remains statistically significant at the 10% level and the main findings do not change qualitatively. Also, we obtain nearly identical results if we rerun the regression using cross-sectional weights. We weight the sample to address the fact that the SOEP overrepresents the traditional guest-worker population in Germany, which consists of immigrants of Turkish, Spanish, Greek, Italian, and Yugoslavian origin. The estimated coefficient from this regression is nearly 0.4, significant at the 10% level (column 5).

Next, we test whether our main results are driven by certain countries with high TFR or large numbers of observations. Specifically, we omit immigrants of Turkish origin. This restriction yields an increase in the coefficient of interest from 0.495 to 0.588 (column 6). Similarly, we obtain an even larger and more precisely estimated coefficient of 0.704 (significant at the 1% level) if we exclude the 10% of immigrant observations with the highest values on the variable "difference in TFR" (column 7).

Furthermore, because the decision to remain childless may be driven by different mechanisms we repeat the analysis only for the 86% of women in our main sample who gave at least one birth. The coefficient of interest obtained from this regression is 0.444 and confirms our main results (column 8).

Finally, consider the functional form. We present results from linear regression models throughout. However, our dependent variable - completed fertility - is a non-negative integer and therefore a Poisson regression could be more appropriate.[28] We estimate

[28]Note that the standard Poisson model assumes that the conditional mean and the conditional variance are equal. In practice, this strong equidispersion assumption is usually violated in case of fertility counts

equation 1 using a Poisson approach and obtain identical signs and significance of the coefficient of interest. The point estimate for "difference in TFRs" is of 0.212 and is significant at the 5% level (column 9). The coefficient approximates a semi-elasticity; a one-unit increase in TFR of home country is related to a growth in immigrants' own fertility of almost 24%, which gives on average 0.63 more children (2.66 versus 3.29).[29]

Overall, each of the different sensitivity tests presented in previous sections shows that our main results remain robust to different model specifications, alternative definitions of the proxy for the key variable, various sample criteria, and to alternative estimation methods.

7 Conclusion

This paper focuses on the extent to which home country's birth rates play a role in shaping immigrants' childbearing behavior. In particular, we test the socialization hypothesis suggesting that immigrants follow fertility norms acquired in the country of origin. We build on several studies examining the impact of broadly defined culture on various socio-economic outcomes of immigrants and their descendants in the U.S. (see, e.g., Fernandez and Fogli, 2006, 2009; Blau et al., 2011). We contribute to this literature by providing empirical evidence for an institutional and cultural framework different from that in the United States. Specifically, we study completed fertility of first generation immigrants in Germany. In contrast to previous studies on German data (see, e.g., Nauck, 1987; Mayer and Riphahn, 2000; Milewski, 2007; Schmid and Kohls, 2010; Milewski, 2010), we test the socialization hypothesis by using country-specific total fertility rate (TFR) as a quantitative measure of fertility norms. Our fixed-effects approach takes advantage of the variation in TFRs across countries and time.

Our empirical results reveal remarkable patterns in favor of the socialization hypoth-

(see, e.g., Winkelmann and Zimmermann, 1994; Wang and Famoye, 1997; Mayer and Riphahn, 2000).

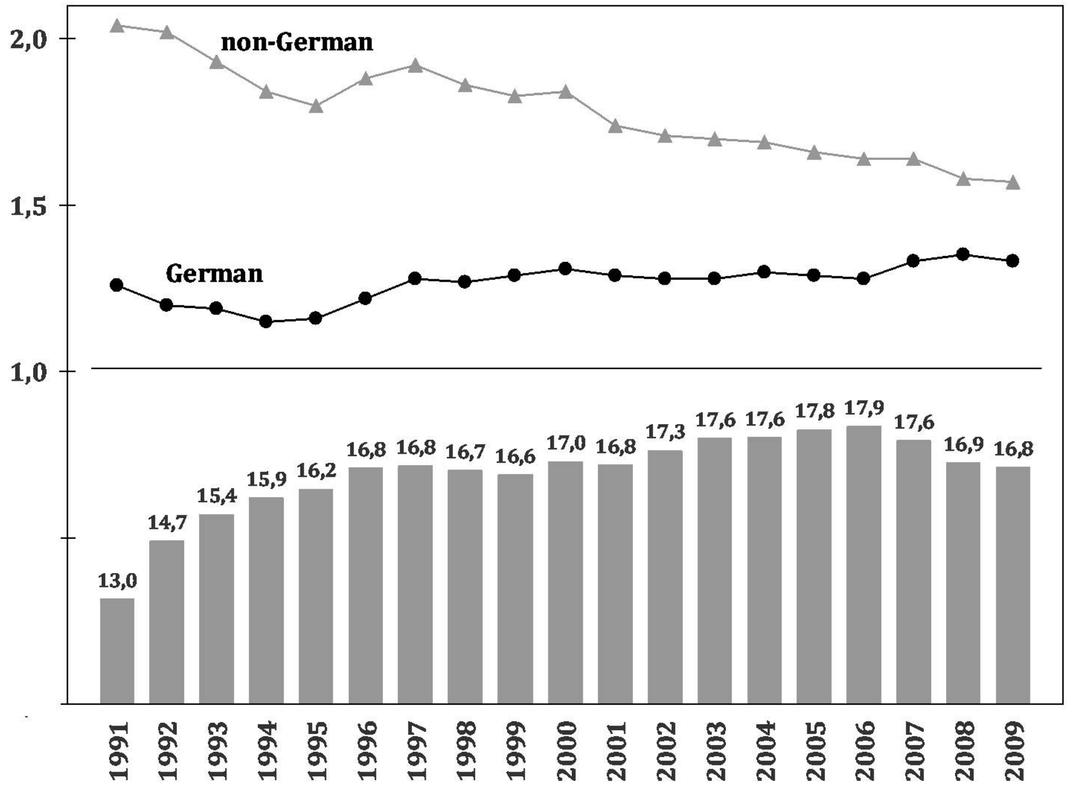
[29]The computation for a one-unit change in "difference in TFRs" is $\exp(0.212) - 1) \cdot 100\%$.

esis: immigrants from countries where the TFR is high tend to have significantly more children themselves. A one-unit increase in home country's birth rate is associated with an increase in completed fertility abroad of 0.5 children, which accounts for a large proportion of the observed fertility variation among immigrants and across countries. Furthermore, we show that home country's birth rates play a crucial role in explaining substantial fertility differentials between immigrants and natives reported in earlier research (Mayer and Riphahn, 2000; Milewski, 2010).

Finally, because we study first generation immigrants, we face the challenge of separating the effect of fertility norms from the mechanisms of self-selection and adaptation that may affect immigrant fertility, as well. We discuss the interdependencies between these different mechanisms. Our evidence suggests that both selection into migration and adaptation would bias our results towards not finding any relationship between TFR of home country and individuals' own fertility. These results imply that the behavior of a randomly moved individual would be even more affected by home country's culture. However, we leave for future research examination of related questions such as whether different duration of exposure may affect the strength of cultural effects and whether such effects persist in subsequent generations. In addition, it could be of interest to investigate the role of channels such as family members left behind, neighborhoods, or ethnic networks in cultural transmission.

We conclude that childbearing behavior of first generation immigrants is affected by birth rates prevailing in their countries of origin. Since the birth rates in the major source countries have been declining continuously for decades (World Bank, 2009), we may expect that completed fertility of recent immigrant cohorts will successively approach the low native levels. In addition, our evidence suggests that beside policy interventions, institutions and technology culture affects individuals' behavior as well. This finding is qualitatively important not only for fertility, but has also implications for other economic outcomes.

Figure 1: Fertility in Germany by woman's citizenship



Note: Upper part: TFR by woman's citizenship, TFR of 2.1 is considered to be replacement level. Bottom part: share of births to non-German mothers on the total number of births.
Source: Federal Statistical Office (2010).

Table 1: International total fertility rates

Years	Germany	Turkey	Former Yugoslavia	Italy	Poland
1960-1964	2.49	6.05	2.89	2.47	2.65
1965-1970	2.32	5.67	2.64	2.52	2.27
1970-1974	1.64	5.46	2.39	2.35	2.25
1975-1979	1.52	4.72	2.29	1.94	2.26
1980-1984	1.46	3.98	2.11	1.54	2.33
1985-1989	1.43	3.28	1.96	1.34	2.15
1990-1994	1.31	2.90	1.71	1.28	1.89
1995-1999	1.34	2.57	1.62	1.22	1.48
2000-2004	1.35	2.23	1.49	1.26	1.25
2005-2010	1.32	2.13	1.45	1.38	1.27

Note: Total fertility rate (TFR): basic indicator of the level of fertility, calculated by summing age-specific birth rates over all reproductive ages. Former Yugoslavian TFR refers to averaged TFRs of Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia, and TFYR Macedonia.
Source: Five-year average TFRs from United Nations Population Division (2009).

Table 2: Completed fertility of immigrants by country of origin

Country of origin	Number of observations	Average completed fertility	Standard deviation
Turkey	251	3.88	1.97
Former Yugoslavia	212	2.21	1.71
Italy	128	2.75	1.62
Greece	120	2.34	0.88
Poland	58	2.09	1.27
Spain	58	2.47	1.83
Eastern Europe	46	1.67	1.51
Russia	43	2.56	1.78
Romania	27	2.41	1.15
Kazakhstan	24	2.33	1.13
Austria	24	1.63	1.28
Czech Republik	14	1.29	0.61
Philippines	10	2.50	1.51
Other	108	2.32	0.89
Immigrants total	1,123	2.66	1.74
Cross-country statistics	50	2.66	0.76

Note: Total number of immigrant observations is 1,123. Total number of countries is 50. Other refers to weighted average of countries with fewer than 10 observations.
Source: Own calculations based on SOEP, pooled waves: 1991, 1999, and 2007.

Table 3: Immigrants' completed fertility by difference in TFRs between home and host country

Difference in TFRs between home and host country	Share of immigrant sample	Average completed fertility	Standard deviation
-0.54 - 0.24	0.26	2.10	0.06
0.24 - 0.59	0.23	2.31	0.10
0.59 - 1.85	0.24	2.47	0.11
1.85 - 5.99	0.28	3.60	0.11

Note: Number of immigrant observations is 1,123.
Source: Own calculations based on SOEP, pooled waves: 1991, 1999, and 2007.

Table 4: Main estimation results - selected variables

	(1)	(2)	(3)
Immigrant indicator	0.776***	0.244***	-
	(0.104)	(0.086)	
Difference in TFRs	-	0.450***	0.495**
		(0.058)	(0.226)
Year-of-birth dummies	✓	✓	✓
Socio-demographic variables			✓
Country-of-origin dummies			✓
Year-of-migration dummies			✓
Number of observations		8,208	

Note: Coefficients estimated using OLS regressions. Each column is a separate regression. Dependent variable is completed fertility. Robust standard errors in parentheses account for clustering at year of migration-country level (301 clusters). Coefficients and standard errors for control variables not shown to save space. All specifications include a constant. ***/**/* indicate significant coefficients at the 1%, 5%, 10% levels, respectively.
Source: Own calculations based on SOEP, pooled waves: 1991, 1999, and 2007.

Table 5: Estimation results using alternative specifications - selected variables

	(1)	(2)	(3)	(4)
Difference in TFRs	0.488**	0.584**	0.378	0.631**
	(0.214)	(0.240)	(0.278)	(0.299)
Immigrant-spouse indicator	-	0.135*	-	-
		(0.080)		
Spoken German proficiency				
Very good	-	Ref.	-	-
Good	-	0.109	-	-
		(0.148)		
Fairly	-	0.307*	-	-
		(0.161)		
Poorly	-	0.722***	-	-
		(0.238)		
Not at all	-	1.133**	-	-
		(0.516)		
Missing	-	0.299	-	-
		(0.191)		
Year-of-birth dummies	✓	✓	✓	✓
Socio-demographic variables	✓	✓	✓	✓
Country-of-origin dummies	✓	✓	✓	✓
Year-of-migration dummies	✓	✓	✓	✓
Age-at-migration dummies	✓			
Number of observations	8,208	8,208	7396	7897
Number of clusters	301	301	147	185

Note: Coefficients estimated using OLS regressions. Each column is a separate regression. Dependent variable is completed fertility. Robust standard errors in parentheses account for clustering at year of migration-country level. Coefficients and standard errors for remaining control variables not shown to save space. All specifications include a constant. ***/**/* indicate significant coefficients at the 1%, 5%, 10% levels, respectively.
Source: Own calculations based on SOEP, pooled waves: 1991, 1999, and 2007.

Appendix

Country-specific total fertility rates (TFRs)

We primarily use the annual country-specific TFRs collected for the period 1960-2009 by The World Bank (2009). To conform to the country classification used in the SOEP in some cases we need to group countries. For example, for immigrants from "Ex-Yugoslavia" we average TFRs of Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia, and TFYR Macedonia. Other generated countries are "Eastern Europe" (Belarus, Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, and Ukraine), "Kosovo-Albania" (Albania and Kosovo), "Benelux" (Belgium, Netherlands, and Luxembourg), "Kurdistan" (Turkey, Iraq, Iran, and Syrian Arab Republic), "Free State of Gdansk" (Poland), and "Korea" (Republic of Korea and Dem. People's Republic of Korea). For some source countries the TFR for single years is missing. Although our results are robust to exclusion of these observations, we impute the TFR for the intervening periods using a linear interpolation between the most recent and next future available values. For few immigrants who arrived prior to 1960 we use the data reported by The United Nations Population Division (2009). These TFRs are estimates of five-year average TFRs for every country in the world from 1950-1955 onwards. We use the constant-fertility scenario. Finally, for 3 observations from "Eastern Europe" who arrived 1949 we use the respective 1950-1955 value.

Number of siblings

The questions on respondent's number of brothers and sisters are available in SOEP waves 1991, 1996, 2001, 2003, and 2006. We add up the number of brothers and sisters and eventually use the largest number of siblings a woman ever reported to the SOEP. If this procedure generates a missing value, we use the number of children born to her mother. Our main results are robust to alternative definitions of this variable including indicators for originally missing values.

Religious affiliation

Religious affiliation is available in the waves 1990, 1997, 2003, and 2007. We use the first religious affiliation a woman ever reported to the SOEP. If this procedure generates a missing value, we impute missing information using either her mother's or her father's religious affiliation. Our main results are robust to alternative definitions of this variable including indicators for originally missing values.

Own opinion of spoken German

The SOEP question on German language proficiency distinguishes five proficiency levels: very well, good, fairly, poorly, and not at all. Each tenth immigrant in our sample reports to speak German very good, 23% good, 27% fairly, 19% poorly, and 3% not at all. For nearly 19% immigrants the value is missing. We include five dummies for language proficiency, while the reference category is very good spoken German. This variable is set to zero for natives. Our main results are robust to alternative definitions of this variable including indicators for the highest or lowest level of spoken German a woman ever reported to the SOEP.

Migration background of spouse

We use the information on household composition and determine whether a woman ever reported to live with a spouse having migration background. With respect to the spouse we do not distinguish between immigrant generations. This dummy variable indicates therefore if one ever cohabited with an immigrant of either first-generation or second-generation. This refers to 4.5% of natives and 11% of immigrants in our sample.

Table A.1: Summary statistics

Variable	Natives Mean	Natives St. Dev.	Immigrants Mean	Immigrants St. Dev.
Completed fertility	1.90	1.33	2.66	1.74
Socio-demographic variables				
Year of birth	1939.81	12.78	1944.36	9.03
Highest completed degree				
ISCED-1	0.00	0.06	0.23	0.42
ISCED-2	0.26	0.44	0.35	0.48
ISCED-3	0.51	0.50	0.21	0.41
ISCED-4	0.03	0.17	0.08	0.26
ISCED-5	0.07	0.26	0.04	0.19
ISCED-6	0.12	0.32	0.09	0.29
Number of siblings	2.20	1.96	3.79	2.58
Indicator if ever married	0.95	0.21	0.98	0.13
Age at first marriage	23.30	7.77	22.36	6.31
Catholic	0.40	0.49	0.41	0.49
Protestant	0.49	0.50	0.10	0.30
Muslim	0.00	0.02	0.23	0.42
Other religion	0.01	0.11	0.21	0.41
No religion	0.10	0.30	0.06	0.24
Migrant-specific variables				
German citizensihp	-	-	0.28	0.45
Age at migration	-	-	28.89	7.50
Year of migration	-	-	1973.26	9.62
Country-specific TFR at the time of migration				
TFR in home country	-	-	3.07	1.33
TFR in Germany	-	-	1.88	0.45
Difference in TFRs	-	-	1.19	1.39
Number of observations	7,085		1,123	

Note: Presented numbers refer to the unweighted sample. All migrant-specific variables are coded 0 for the native sample.
Source: Own calculations based on SOEP, pooled waves: 1991, 1999, and 2007.

Table A.2: Main estimation results

	(1)	(2)	(3)
Immigrant indicator	0.776***	0.244***	-
	(0.104)	(0.086)	
Difference in TFRs	-	0.450***	0.495**
		(0.058)	(0.226)
Constant	1.854***	1.866***	-0.027
	(0.047)	(0.030)	(0.112)
Highest completed degree			
ISCED-1	-	-	0.484**
			(0.219)
ISCED-2	-	-	Ref.
ISCED-3	-	-	-0.428***
			(0.023)
ISCED-4	-	-	-0.322***
			(0.062)
ISCED-5	-	-	-0.180***
			(0.023)
ISCED-6	-	-	-0.255***
			(0.023)
Number of siblings	-	-	0.049***
			(0.005)
Ever married	-	-	3.162***
			(0.050)
Age at first marriage	-	-	-0.059***
			(0.002)
Non-religious	-	-	Ref.
Catholic	-	-	0.450***
			(0.023)
Protestant	-	-	0.455***
			(0.016)
Muslim	-	-	0.957***
			(0.359)
Other religion	-	-	0.458***
			(0.152)
Year-of-birth dummies	✓	✓	✓
Country-of-origin dummies			✓
Year-of-migration dummies			✓
Number of observations		8,208	
Number of clusters		301	

Note: Coefficients estimated using OLS regressions. Each column is a separate regression. Dependent variable is completed fertility. Robust standard errors in parentheses account for clustering at year of migration-country level. ***/**/* indicate significant coefficients at the 1%, 5%, 10% levels, respectively.
Source: Own calculations based on SOEP, pooled waves: 1991, 1999, and 2007.

Table A.3: Summary statistics by immigrants' citizenship

	Immigrants			
	German citizenship		non-German citizenship	
Variable	Mean	St. Dev.	Mean	St. Dev.
Completed fertility	2.17	1.43	2.84	1.81
Socio-demographic variables				
Year of birth	1946.82	10.73	1943.42	8.10
Highest completed degree				
ISCED-1	0.03	0.17	0.31	0.46
ISCED-2	0.23	0.42	0.40	0.49
ISCED-3	0.31	0.46	0.18	0.38
ISCED-4	0.14	0.35	0.05	0.22
ISCED-5	0.11	0.31	0.01	0.12
ISCED-6	0.20	0.40	0.05	0.22
Number of siblings	3.13	2.49	4.05	2.57
Indicator if ever married	0.97	0.17	0.99	0.12
Age at first marriage	22.97	6.98	22.13	6.03
Catholic	0.45	0.50	0.39	0.49
Protestant	0.30	0.46	0.02	0.14
Muslim	0.07	0.26	0.29	0.45
Other religion	0.08	0.28	0.25	0.44
Non-religious	0.09	0.29	0.05	0.21
Age at migration	31.26	7.67	27.98	7.23
Year of migration	1978.08	12.97	1971.41	7.17
Country-specific TFR at the time of migration				
TFR in home country	2.67	1.13	3.23	1.37
TFR in Germany	1.70	0.43	1.95	0.44
Difference in TFRs	0.96	1.13	1.28	1.46
Number of observations	311		812	

Note: Presented numbers refer to the unweighted sample.
Source: Own calculations based on SOEP, pooled waves: 1991, 1999, and 2007.

Table A.4: Estimation results using alternative samples and methods - selected variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Difference in TFRs	0.366*	0.462**	0.552***	0.370*	0.395*	0.588*	0.704***	0.444**	0.212**
	(0.214)	(0.214)	(0.189)	(0.213)	(0.227)	(0.327)	(0.267)	(0.219)	(0.086)
Year-of-birth dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓
Socio-demographic variables	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-of-origin dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year-of-migration dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of observations	5,732	8,262	8,438	5,647	42,318,440	7,957	8,062	7,099	8,208
Number of clusters	271	318	362	301	290	277	285	285	301

Note: Coefficient in column 9 estimated using Poisson regression. Remaining coefficients estimated using OLS regressions. Each column is a separate regression. Dependent variable is completed fertility. Robust standard errors in parentheses account for clustering at year of migration-country level. Coefficients and standard errors for remaining control variables not shown to save space. All specifications include a constant. ***/**/* indicate significant coefficients at the 1%, 5%, 10% levels, respectively.

Source: Own calculations based on SOEP, pooled waves: 1991, 1999, and 2007.

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