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ABSTRACT

Culture and the Labor Supply of Female Immigrants*

This paper analyzes the impact of source-country culture on the labor supply of female immigrants in Europe. We find that the labor supply of immigrant women is positively associated with the female-to-male labor force participation ratio in their source country, which serves as a proxy for the country's preferences and beliefs regarding women's roles. This suggests that the culture and norms of their source country play an important role for immigrant women's labor supply. However, contradicting previous evidence for the U.S., we do not find evidence that the cultural effect persists through the second generation.

JEL Classification: J16, J22, J61

Keywords: female labor force participation, immigration, integration, cultural transmission, epidemiological approach

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1 Introduction

Although the labor market integration of immigrants is high on the political agenda of many European countries, immigrants still exhibit a significantly lower labor market attachment than the native population. This is especially relevant for immigrant women. In 2019, the labor force participation (LFP) rate of foreign-born women living in the EU-28 was eleven percentage points (pp.) lower than that of native-born women (71% vs. 82%). This difference is mainly driven by women originating from non-EU countries (67%), whereas the rate of women born in other EU countries (81%) hardly differs from that of native women (Eurostat, 2020).

Previous studies for immigrants in the U.S. suggest that heterogeneity in the labor market behavior of immigrant women can, at least partly, be explained by differences in female labor force participation (FLFP) rates across immigrants' source countries (e.g., Antecol, 2000; Fernández and Fogli, 2009; Blau *et al.*, 2011; Blau and Kahn, 2015; McManus and Apgar, 2019). The authors argue that disparities in FLFP rates across immigrants' source countries reflect variation in preferences and beliefs regarding women's role in family and society between countries, and that these cultural differences in turn affect the labor market behavior of immigrant women in their host country. The findings further suggest that cultural effects persist in the long run (Blau *et al.*, 2011) and influence the labor supply behavior of second- and higher-generation women (Antecol, 2000; Fernández and Fogli, 2009; McManus and Apgar, 2019).

Building on this literature, we analyze the role of source-country culture in the labor supply of first- and second-generation female immigrants in Europe.[1] While previous studies have mainly focused on the U.S., evidence on the effect of source-country culture on the labor supply of female immigrants in other countries is still scarce. Finseraas and Kotsadam (2017) for Norway and Neuman (2018) for Sweden find that cultural barriers

[1]The role of source-country variables has been examined in various contexts. For example, Borjas (1987) studies the native/immigrant wage differential, Blau (1992) analyzes the fertility behavior among first-generation immigrant women, Antecol (2001) studies the gender wage gap, Furtado *et al.* (2013) examine divorce rates, Chabé-Ferret (2019) studies women's fertility decisions, Blau *et al.* (2020b) examine the gender division of household tasks, and Fuchs-Schündeln *et al.* (2020) analyze households' saving behavior.

are smaller and have a less persistent effect on labor supply than previous findings for the U.S. suggest, which shows that the effect of culture on the labor supply of female immigrants might be sensitive to the respective context. By analyzing the labor market behavior of female immigrants in Europe, we are able to assess the sensitivity of the U.S. results to different labor markets and institutional settings. The comparison between the U.S. and Europe is of particular interest since the U.S. and Europe differ strongly with respect to their welfare systems and their labor market institutions.

In addition, we extend previous literature by examining whether the cultural effect varies across different groups of immigrant women (e.g., by age and skill level) and different host-country characteristics such as the size of the immigrant network. In particular, we explore heterogenous effects across the different European countries. Although the European countries share several institutional characteristics, they also show some heterogeneity with respect to their welfare states and labor market institutions. Examining these heterogeneities helps to gain a better understanding of the individual and host-country characteristics that attenuate or foster the effect of source-country culture on the labor market integration of female immigrants.

To undertake our analysis, we utilize the European Social Survey (ESS), a rich cross-country survey that covers immigrants in 26 European countries, as well as a large set of macroeconomic characteristics that can be used to more precisely isolate the effect of culture from that of other characteristics. Following, e.g., Blau *et al.* (2011) and Blau and Kahn (2015), the role of culture is identified by using variation in female-to-male LFP ratios among immigrants' source countries, which serve as proxies for the preferences and beliefs regarding women's role in family and society in these countries.

We find that women who migrated from countries with relatively high levels of female labor supply have a higher probability of participating in the labor force in their respective host country. This effect remains when controlling for the human capital of a woman's partner, the past labor supply of her parents, and a variety of source-country characteristics that might be correlated with LFP ratios. We further find some heterogeneities in the cultural effect across individuals and countries. Although the sub-group effects are not

statistically different from each other, the cultural effect seems to be strongest for low-skilled women and for women living in host countries with less generous welfare states, such as the Anglo-Saxon and the Central and Eastern European countries. We find, however, no evidence that source-country culture plays an important role in the labor supply decisions of second-generation immigrant women. Taken against the background of previous evidence for the U.S., our results thus reveal that the existence and the magnitude of the cultural effect on female immigrant labor supply depends on immigrants' skill composition as well as on the institutional setting in the host country.

The remainder of the paper is organized as follows. The next section provides a brief overview of the literature on the role of culture in economic behavior and presents the results of former studies analyzing the labor supply of female immigrants. In Section 3, we provide a description of the underlying data and explain the identification strategy of our empirical analysis. Section 4 presents and discusses our estimation results, while Section 5 concludes.

2 Background

The present study contributes to the evolving literature on the impact of culture on social and economic behavior. In this strand of literature, differences in culture are broadly interpreted as systematic variations in preferences and beliefs across time, space, or social groups (Fernández, 2011). The main difficulty in identifying the role of culture in economic behavior is to isolate it from those of the economic and institutional environment in which economic decisions are being made. A possible solution is the epidemiological approach (Fernández, 2007). The main idea of this approach is to identify the effect of culture through the variation in economic outcomes of individuals who share the same economic and institutional environment, but whose social beliefs are potentially different. One way to apply this approach is to focus on the economic behavior of immigrants. When individuals emigrate, they take some aspects of their culture with them and transmit them intergenerationally, while they live in the economic and formal institutional environment of

the host country. Studying the economic behavior of immigrants from different countries of origin in their host country is therefore a useful strategy to isolate culture from strictly economic and institutional effects.

In this paper, we study the effect of culture on the labor supply of first- and second-generation female immigrants in Europe. In doing so, our study extends previous research that has examined the effect of home-country characteristics on U.S. immigrant women's labor supply. An early attempt to identify the effect of culture on immigrant labor supply is the study by Reimers (1985), who uses ethnic dummy variables to examine whether cultural factors play a direct role in married women's LFP in the U.S.

While Reimers' dummy-variable approach does not allow for a quantification of these cultural effects, subsequent studies address this issue by using quantitative variables as proxies for culture. In particular, they use past values of the FLFP rate in the immigrant's country of origin as a cultural proxy. As Fernández and Fogli (2009) point out, the main idea for using this aggregate variable is that it reflects the market work decisions of women in the source country, which (in addition to each woman's individual characteristics) depend on the economic and institutional environment as well as the preferences and beliefs within the country. While the economic and (formal) institutional conditions of the country of origin should no longer be relevant for emigrated women, the preferences and beliefs embodied in this variable may still matter. Hence, if this aggregate variable has explanatory power for the variation in the labor market behavior of immigrant women, even after controlling for their individual economic attributes, only the cultural component of this variable can be responsible for this correlation.

The first study to analyze the effect of source-country FLFP rates on the work outcomes of female immigrants is the study by Antecol (2000), who finds the source-country FLFP rate to be positively correlated with the LFP of first-generation immigrant women in the U.S. These findings, though weaker, even hold for second- and higher-generation immigrants. However, as Fernández and Fogli (2009) point out, these results might be driven by unobserved heterogeneity, as the analysis does not control for important individual characteristics such as years of education or parental background.

In their study on the work and fertility behavior of U.S.-born daughters of immigrants to the U.S., Fernández and Fogli (2009) use various measures of average parental education and average education of the immigrant group to control for human capital factors. They find that the labor supply and fertility behavior of second-generation female immigrants is positively associated with both FLFP rates and fertility rates in their parents' country of origin. The authors also show that the husband's culture, as proxied by the FLFP rate in the country of ancestry of his parents, has a large impact on his wife's labor supply.

The effect of immigrant women's own labor supply prior to migrating and FLFP in the immigrants' source country is investigated by Blau and Kahn (2015) to provide evidence on the role of human capital and culture in affecting immigrants' labor supply and wages in the U.S. In contrast to previous work, the authors use female-to-male LFP ratios instead of female LFP rates as a cultural proxy, in order to assure that the cultural proxy reflects source-country gender roles net of any unobserved factors that may similarly affect the labor supply of both men and women. Their results provide further evidence that women from source countries with relatively high levels of FLFP have higher working hours in the U.S. Moreover, they reveal that most of this effect remains after controlling for the immigrant's own pre-migration labor supply, which itself strongly affects immigrants' labor supply in the U.S. In a related study, Blau *et al.* (2011) show that the female-to-male LFP ratio is also positively associated with immigrant women's labor supply assimilation profiles, with those coming from high female labor supply countries eventually assimilating fully to native labor supply levels.

While previous studies in this literature mainly focus on the U.S., the question has recently been revisited for a few other countries. Kessler and Milligan (2020) analyze the labor supply and fertility behavior of second-generation female immigrants in Canada. Their results confirm the findings for the U.S. of a positive association between women's labor supply and FLFP rates in their parents' country of origin. Moreover, they show that the cultural effect depends on immigrants' educational attainment, with lower-educated women exhibiting a stronger influence of cultural variables than higher-educated women.

Related to our study, Finseraas and Kotsadam (2017) and Neuman (2018) investigate

the effect of source-country culture on the labor supply of female immigrants in the European context. Specifically, Finseraas and Kotsadam (2017) examine the effect of source-country FLFP rates on the employment of second-generation female immigrants in Norway. To study the cultural effect, they apply an extended version of the epidemiological approach by comparing the employment of male-female sibling pairs in a sibling fixed effects model. They find a positive, but smaller and less persistent effect of ancestry culture on employment than comparable studies for the U.S. These weaker and less persistent cultural effects are confirmed in a study by Neuman (2018) that analyzes the effect of source-country culture on the labor market assimilation of first-generation immigrants in Sweden. The findings show that source-country FLFP rates are positively associated with immigrant women's labor force participation. Furthermore, the labor supply assimilation profiles depict that immigrant women assimilate towards, but do not reach parity with the participation rate of native women.

3 Data and Empirical Strategy

3.1 Data and Descriptive Statistics

Our individual level data comes from the European Social Survey (ESS), a representative cross-sectional survey conducted every second year across the European countries. The central aim of the ESS is to gather data regarding people's social values, cultural norms and behavioral patterns within Europe. The ESS contains information on the country of birth of both the respondent and the parents, which allows us to identify the source country of both first- and second-generation immigrants. We define first-generation immigrants as individuals born outside their resident country. Respondents are classified as second-generation immigrants if one or both parents are born outside the host country.

We use the first to the fifth ESS round (2002-2011), including a total of 31 countries and roughly 243,000 individuals. We exclude host countries not belonging to the European Union (except for Iceland, Norway and Switzerland)[2] as well as those for which the number

[2]In particular, we exclude Israel, Russia, Turkey, and the Ukraine. We keep, however, Iceland, Norway,

of surveyed female immigrants is particularly small (lower than 15 individuals). The latter restriction is also applied to the source countries, i.e., we eliminate source countries with fewer than 15 observations.[3] We restrict our sample to women aged 26 to 59 years in order to avoid variation in FLFP due to differences in education leaving ages and statutory retirement ages across countries. Our final sample consists of 8,189 immigrants in 26 countries, 63% of which are first-generation and 37% are second-generation immigrants.[4] These immigrants come from 58 different source countries (see Table A3 in the Appendix).[5]

Our outcome of interest is an individual's labor market status at the time of the interview. In particular, we create a binary indicator that takes on the value 1 if the respondent stated that her main activity within the past 7 days was either being employed or being unemployed while actively looking for a job, and 0 otherwise.

The ESS data contains detailed information on a respondent's socio-demographic characteristics as well as the household composition, which serve as controls in our regressions. For both first- and second-generation immigrants, we further include some immigration-specific variables. For instance, for first-generation immigrants, we include indicators for the immigrant's years since migration and for whether she immigrated after age 18. The inclusion of the latter variable allows us to control for whether a woman obtained her (primary and secondary) education in her host or in her source country, with the former presumably being less affected by home-country characteristics and more similar to natives when they reach adulthood than those migrating as adults.

Table 1 shows the descriptive statistics of the individual and household characteristics separately for the sample of first- and second-generation female immigrants (columns 1

and Switzerland in our sample, as these countries are members of the European Free Trade Association (EFTA). In restricting our sample to EU and EFTA member states, we assure that the countries in our sample exhibit a similar institutional setting (e.g., the right of free movement of its citizens within the member states), while still having differences in the welfare system and the design of immigration policies.

[3]Increasing the threshold to 20 or 25 individuals per host and source country, respectively, yields similar results.

[4]Since information on the parents' country of birth is only included from round 2 of the ESS onwards, the share of second-generation immigrants is comparatively low.

[5]Note that we had to aggregate some source countries in case political transformations led to a separation or unification of these countries over time. These aggregate countries are Czechoslovakia, the USSR, and Yugoslavia. The macroeconomic indicators for these countries are calculated as a population-weighted average of the single-country values.

and 2). For comparison, column 3 further shows the respective values for native women. With respect to our dependent variable, women's probability of participating in the labor market, distinct differences between the three samples appear. At the time of the interview, 69% of the native women, as compared to 65% of the first-generation and 71% of the second-generation immigrant women indicate to actively participate in the labor market. Hence, while the LFP of first-generation immigrant women is indeed considerably (and significantly) lower than that of native women, the LFP of second-generation immigrant women even exceeds the LFP of natives (though the difference is not statistically different). This result might be explained by the fact that recent waves of immigrants into Europe increasingly come from countries that are characterized by low FLFP rates, and therefore show a lower labor market attachment than former immigrant women. However, it is also necessary to take into account the changing reasons for migration. During the 1950s and 1960s, many European countries, such as Germany, Great Britain, and France, encouraged labor immigration in order to fill gaps in the national labor market, while in the later decades migration for family reunion and the seeking of political asylum became more important (European Commission, 2011). Table 1 further shows that first-generation immigrant women are slightly younger (41 years on average) than second-generation and native women (43 years on average) and have a higher number of children (0.73 as opposed to 0.62 for second-generation immigrants and 0.59 for native women).

Although the ESS is not designed as a household survey, it contains some information on the respondent's partner and both her parents. Table 1 reveals that the personal characteristics of the partners and fathers do not differ substantially across the three groups of women. However, we observe large differences regarding the employment status and the educational attainment of the mothers of these women. In particular, mothers of first-generation immigrant women are much less likely to have been employed when their daughter was 14 years old than mothers of second-generation and native women (48% as opposed to 58% and 55%), though being better educated than the latter. This observation highlights the importance of testing the robustness of our results to controlling for parental characteristics. If the latter are not controlled for, a positive association

between source-country FLFP and the labor supply of immigrant women might purely arise from the fact that the mothers of immigrants from high-LFP countries are more likely to have been employed than those from low-FLFP countries. In this case, it is rather the actual behavior of the mother than the preferences and beliefs held within the source country that ultimately determine the labor supply of immigrant women in Europe.

We augment our individual data with an extensive time-series, cross-country database of aggregate source-country and bilateral characteristics.[6] These characteristics are assigned to first-generation immigrants based on their country of birth and to second-generation immigrants based on the father's or mother's country of birth, depending on who was born in a foreign country. If the parents immigrated from different countries, characteristics are assigned based on mother's country of birth. The optimal point in time to take the source-country and bilateral indicators from is not obvious. One possibility is to measure the source-country variables for first- and second generation immigrants at the time the immigrants (and immigrants' parents, respectively) left the country. These values reflect the norms and values the immigrants (and immigrants' parents) grew up with and carry to their host country. A second possibility is to use the current values of the cultural proxy, which reflect the norms and values currently held by the immigrants' counterparts, i.e., the individuals living in the immigrants' country of birth at time of observation.

We assign both first- and second-generation immigrants the source-country characteristics based on the year of observation.[7] Following this approach has several advantages: First, we can make sure that the macroeconomic indicators are available for the majority of the source countries in our sample. Second, using current values of the macroeconomic indicators for both first- and second-generation immigrants has the advantage of treating first- and second-generation immigrants similarly, which makes a comparison of the behavior of the two groups more meaningful. Third, the use of current values of the source-country characteristics takes into account that cultural norms are not constant,

[6]For a detailed description of the macroeconomic data see Table A5 in the Appendix.

[7]In doing so, we follow Antecol (2000), Fernández and Fogli (2009), and Kok *et al.* (2011), while Blau *et al.* (2011) and Blau and Kahn (2015) use past values of the source-country characteristics for their analysis of the labor market behavior of first-generation immigrants.

but can change over time. However, using current values rests on the assumption that the emigrated women change their preferences and beliefs in the same way as those still living in the source country, even though they live in a different cultural and institutional environment. To check the sensitivity of the strategy used in our baseline analysis, we thus perform a sensitivity analysis in which we assign first-generation immigrants the source-country indicators based on their year of migration (see Section 4.2).

For the purpose of this study, we define culture as differences in preferences and beliefs regarding women's roles in family and society. To proxy for such cultural differences, we define the ratio of the female to the male labor force participation rate in the immigrant's source country as our main variable of interest. Hence, we follow Blau *et al.* (2011) and Blau and Kahn (2015) and use relative instead of absolute FLFP rates as our cultural proxy as this relative measure captures the gender division of labor explicitly and is less prone to unobserved heterogeneity. Labor force participation rates cover the rate of the economically active population in a given age group, ranging from "25 to 29" to "55 to 59". We use age-specific participation rates instead of a single measure over all age groups to avoid the LFP rates to vary with the age structure among the population, thereby blurring differences in women's economic activity between the countries.

We further collect a variety of additional economic and institutional indicators that might have an impact on individual labor supply decisions. For instance, we control in our model for the source-country's total fertility rate, its GDP per capita, and the average years of schooling of the source-country population in the immigrant's age group.[8] Including the years of schooling in the source country in our analysis can serve as a proxy for (parental) human capital and for the human capital embodied in the woman's ethnic network. On the country-pair level we collect information on the share of migrants from the women's source country among the host country's population and proxies for the migration costs (e.g., geographical distance). To capture potential restrictions immigrants might face in their access to the host country's labor market, we control in our model for whether the immigrants underlie the "right of free movement of workers" at the time of

[8]As for the LFP rates, the age groups range from "25 to 29" to "55 to 59" in 5-year-intervals.

observation. The right of free movement of workers gives citizens of EU member states, EEA member states (Norway, Iceland, Lichtenstein) and Switzerland the right to freely choose their place of work within the EU. They do not need a work permit and have the same access to employment in any other member state as nationals of that member state. Immigrants from non-EU and non-EEA countries, on the other hand, might face restrictions in their access to the host-country's labor market in the first months or years after arrival, especially if they arrive as asylum seekers.

Table 2 shows the descriptive statistics of the aggregated source-country and bilateral variables separately for the sample of first- and second-generation immigrants. The country characteristics in the top of Table 2 are measured at the time of observation, while the bottom of Table 2 shows the source-country variables for first-generation immigrants measured at the time these immigrants left the country.

With respect to our variable of main interest, $FLFPR$, Table 2 indicates that as compared to the European average ($\approx$ 77 percentage points), first- and second-generation immigrants come from source countries that have on average an about 13 percentage points lower FLFP rate at the time of the interview. These results support our hypothesis that the low labor market activity of (first-generation) immigrant women in Europe might be explained by the more traditional views about gender roles held in their source countries. However, the fact that second-generation immigrant women are even more likely to participate in the labor market than native women, although their parents come from high-traditional source countries as well, lends support to the argument that immigrant women might change their preferences and beliefs and assimilate to the labor market behavior of natives. Further differences between first- and second-generation immigrants appear with respect to the relationship between the immigrants' source and host country. Both the geographic, the genetic, and the linguistic distance between the source and the host country have increased considerably over migration cohorts, while the role of colonial ties in the immigrants' choice of destination country has decreased.

Lastly, a comparison of the source-country characteristics for the sample of first-generation immigrants calculated at different points of time, i.e., the year of observation

(2002 to 2011) and the year the immigrant left her country (1982 to 2011), reveals a large variation in the macroeconomic indicators over time. While FLFP rates and years of schooling have increased over time (by 6 percentage points and 1.5 years, respectively), fertility rates have decreased over the observation period (by 0.5 children per women). These findings highlight the importance of conducting a sensitivity analysis in which we assign first-generation immigrants the source-country characteristics based on the year of migration.

3.2 Empirical Strategy

Based on the data described in Section 3.1, we estimate the following probit model[9]:

$$lfp_{ijkt} = \Phi(\boldsymbol{x_i'}\boldsymbol{\beta} + \boldsymbol{s_{jt}'}\boldsymbol{\theta} + \gamma_k + \boldsymbol{p_{jkt}'}\boldsymbol{\lambda} + \vartheta_t + \epsilon_{ijkt}), \tag{1}$$

where lfp_{ijkt} is a binary indicator that takes on the value 1 if immigrant woman i from source country j in host country k participates in the labor market at the time of observation t, and 0 otherwise. In $\boldsymbol{x_i}$, we include a set of individual and household characteristics, including variables for women's age (6 dummies), highest level of education (2 dummies), marital status (1 dummy), number of children, children at the age of 0-2 and 3-5 years, respectively in the household (1 dummy each), population density (2 dummies), years since migration (3 dummies, only for first-generation immigrants), migrated after age 18 (1 dummy, only for first-generation immigrants), speaks the host country's language at home (1 dummy, only for first-generation immigrants), and both parents are migrants (1 dummy, only for second-generation immigrants). As a robustness check, $\boldsymbol{x_i}$ is further augmented by including characteristics of a woman's partner and her parents (see Section 4.2). $\boldsymbol{s_{jt}}$ is a vector of source-country characteristics, which includes our main variable of interest, the female-to-male LFP ratio $FLFPR/MLFPR$, as well as the fertility rate, GDP per capita, and the years of schooling in the immigrant's source country. γ_k represents fixed effects for the immigrant's host country. $\boldsymbol{p_{jkt}}$ is a vector of bilateral variables describing the economic

[9]Logit and linear probability models yield similar results.

and cultural relationship between an immigrant's source and host country at time t, which serves to control for a possible selection of immigrants from certain source countries into certain host countries. Specifically, the vector includes variables for the stock of migrants from the same source country, the geographic, genetic, and linguistic distance between the source and the host country and dummy variables for whether the source and host country have a colonial relationship and for whether individuals from source country j underlie the right of free movement in host country k.[10] ϑ_t are fixed effects for the year of observation and ϵ_{ijkt} is the model's error term. To address the problem of intra-class correlation in standard errors of immigrants within source-country groups, we cluster standard errors at the source-country level. We further use host-country population weights to ensure that each country is represented in proportion to its actual population size.

The epidemiological approach enables us to measure the effect of the source-country female-to-male LFP ratio on immigrant women's labor supply in their host country, while holding the host-country characteristics fixed. In doing so, we are able to test whether the positive effect between source-country FLFP and immigrant women's labor supply in the U.S. holds for immigrants in Europe. The identification of this cultural effect rests on the assumption that there are no unobserved factors that influence an immigrant woman's labor supply in her host country and are correlated with the female-to-male LFP ratio in her source country, conditionally on all control variables.

4 Results

4.1 Baseline Results

Table 3 shows the results of estimating Eq. (1) for first- (columns 1 and 2) and second-generation immigrants (columns 3 and 4).[11] For first-generation immigrants, the estimated marginal effect of our variable of main interest, FLFPR/MLFPR, shows a strong positive

[10] We cannot rule out that differences in the composition of immigrants in the host country affect the results. By incorporating a set of variables determining immigrants' location choice, we address this issue and control for selection on observables.

[11] For the ease of representation, Table 3 only shows the results of main interest. Full estimation results are shown in Table A1 in the Appendix.

and significant association between the female-to-male LFP ratio in immigrants women's source-country and their probability of participating in the host country's labor market. Without conditioning on any covariates, the marginal effect amounts to 0.003 (column 1), while it is reduced by about half when all control variables are added (column 2). The results in column 2 reveal that, on average, a 10-percentage-point (pp.) increase in the source-country's female-to-male LFP ratio is associated with a 1.6 pp. increase in the LFP probability of first-generation female immigrants. Benchmarked against the mean of the outcome variable (64.7%, see Table 1) this represents a 2.5% increase.[12] If our estimates capture a causal effect, this implies that the average source-country female-to-male LFP ratio (70.6%, see Table 2) would have to increase by about 25.6 pp. or 36.3% to increase the LFP of first-generation female immigrants to the level of native women (68.8%, see Table 1).

For second-generation immigrants, we find no effect of the source-country female-to-male LFP ratio on women's labor force participation (Table 3). Though the estimated marginal effect of the source-country LFP ratio is positive, it is close to zero, irrespective of whether covariates are excluded (column 3) or included in the model (column 4). In the latter specification, the estimated effect of the source-country's female-to-male labor force participation rate is 0.0002 with a standard error of 0.0013. While the point estimates of the cultural effects for first- and second-generation immigrants are not statistically different from each other, this zero effect for the second generation is confirmed in several robustness and heterogeneity analyses (see Sections 4.2 and 4.3). This finding contradicts previous evidence for immigrant women in the U.S. (Fernández and Fogli, 2009; McManus and Apgar, 2019) that suggests that the values and norms regarding women's role in society are transmitted from the parents to their children and eventually affect the labor supply behavior of the second generation in the host country. A possible explanation for the diverging results is that the cultural effect varies across institutional settings. Compared

[12]This effect is comparable to the estimates in Neuman (2018), who finds effects of 1.6% to 3.9% for female immigrants in Sweden. Our results are robust to including host-country x time fixed effects instead of single host-country and time fixed effects. The respective estimation results are shown in Table A2 in the Appendix.

to the U.S., the European countries are, on average, characterized by stronger welfare states and lower returns to market work, such that many (especially low-skilled) women might have limited incentives to participate in the labor market, even in the absence of traditional gender norms.

Regarding the other source-country characteristics, we find a positive and significant correlation between the average years of schooling of the source country's population and the probability that first-generation immigrant women participate in the host country's labor market. This suggests that although controlling for the immigrant's own education, the level of human capital in her source country matters for her labor market behavior. The fact that this correlation only holds for first-generation immigrants suggests that source-country education rather captures some unobservable human capital of the immigrant herself, such as the quality of education obtained or her labor market experience before migrating, than reflecting ethnic externalities in the human capital process.

Neither for first- nor for second-generation immigrants do we find significant differences in labor supply across (parents') source-country groups, suggesting that it is rather the culture of the source country than broad differences in institutional, political, and economic conditions between the country groups that matter for the labor supply of female immigrants in Europe.

The results for the variables describing the relationship between the immigrants' source and host country show that women who migrate from countries whose citizens underlie the right of free movement of workers in the host country have a significantly higher LFP probability than those who do not. For second-generation immigrants, we further find a strong negative correlation between the genetic distance between the immigrants' source- and host-country and their probability of participating in the host-country's labor market. While the geographic, the linguistic and the genetic distance are meant to capture the selection of the immigrants' parents, the latter might further have a direct impact on the labor market outcomes of the second generation. One can imagine that the higher the genetic distance between the host country's and the source-country's population, i.e., the higher the dissimilarities between the two populations with respect to their physical

appearance, their behavior, and their cultural habits, the higher the barriers for immigrants to integrate into the host country's society, an effect that might even continue through the second generation. The other bilateral variables, however, show hardly any explanatory power in immigrant women's labor supply decisions.

4.2 Sensitivity Analyses

In order to check the robustness of our results, we conduct a series of sensitivity analyses. The respective results are shown in Table 4.[13] In our baseline model, the aggregate source-country variables refer to the year of observation, thus reflecting the norms and values currently held by the immigrants' counterparts, i.e., the individuals living in the immigrants' country of origin at time of observation. We now check the robustness of our results by assigning first-generation immigrants source-country values based on the year the immigrants left their source country, as was done by Bisin *et al.* (2011), Blau *et al.* (2011), and Blau and Kahn (2015). These values reflect the attitudes and norms the immigrants grew up with and carry to their host country. Again, we find a positive correlation between the source-country FLFP ratio and immigrant women's probability of participating in the labor market (column (1) of Table 4). The magnitude of this effect is around 40% smaller than our baseline effect. While being only significant at the 10-percent level, the estimate using past values of the cultural proxy is, however, not statistically different from our baseline effect. Overall, the results thus confirm our finding of a positive association between source-country culture and the labor supply of female immigrants.

In a second-step, we check the robustness of our results by using an alternative, more expansive measure of source-country gender norms. Specifically, we follow some of the recent literature (e.g., Nollenberger *et al.*, 2016; Blau *et al.*, 2020a,b) and use the Global Gender Gap Index calculated by the World Economic Forum as a cultural proxy. The index takes on values between 0 (total inequality) and 1 (total equality) and is constructed as a weighted average of various indicators that capture gender equality in four main areas, namely economic participation and opportunity, educational attainment, health and

[13] For the ease of representation, Table 4 only shows the results of main interest.

survival, and political empowerment (for further details, see Hausmann *et al.*, 2006). While the Global Gender Gap Index represents a broader measure of source country culture, the main disadvantage of this measure is that it is only available from 2006 onward. Hence by using this measure, we loose individuals who where surveyed in the first two waves of the ESS (i.e., from 2002 to 2005) as well as those who come from countries that joined the Global Gender Gap Index after 2006.[14] As can be seen from column (2) of Table 4, the results are robust to using this alternative measure as a cultural proxy. There is a positive and statistically significant effect of the source-country Global Gender Gap Index on the labor force participation of first-generation immigrant women. A one standard deviation (i.e., 0.05) increase in the Global Gender Gap index increases immigrant women's probability of participating in the labor market by 4.7 pp. Compared to the baseline effect in Table 3, which reveals a 3.7 pp. increase in immigrant women's LFP due to a one standard deviation (i.e., 23.1) increase in the female-to-male LFP ratio, the size of the effect of this alternative cultural proxy is slightly larger, but still in a similar ballpark. For second generation, the estimated effect of the Global Gender Gap Index is negative, but not statistically significant. The robustness of the results to using this alternative cultural proxy is in line with the high correlation between the female-to-male LFP ratio and the Global Gender Gap index (0.67 for the sample of first-generation immigrants and 0.62 for the sample of second-generation immigrants).

Next, we re-estimate Eq. (1) by adding additional control variables. Column (3) shows the results for first- and second-generation immigrants when controlling for the working hours and education of a woman's partner. It turns out that the results are robust to controlling for partner characteristics. There is a positive and significant effect of source-country culture on the labor supply of first-generation immigrant women, but not of second-generation immigrant women.

In column (4), we additionally control for parents' characteristics. As outlined above,

[14]Due to these limitations, the sample is reduced to 59% of the original sample of first-generation immigrants and to 83% of the original sample of second-generation immigrants. The results are fairly similar, however, when imputing missing values by taking the value from the earliest year the Global Gender Gap Index is available.

evidence suggests that individual beliefs, preferences, and attitudes are transmitted from parents to children, and that this intergenerational transmission shapes the child's economic outcomes (see, e.g., Guiso *et al.*, 2006; Fernández *et al.*, 2004; Fernández and Fogli, 2009). In particular, Johnston *et al.* (2014) find a strong correlation between mothers' and children's gender role attitudes and that a mother's attitudes are strongly predictive of her daughter's labor supply. However, the authors also show that even when controlling for the mother's attitudes toward gender roles, the mother's employment status has additional explanatory power in her daughter's labor supply, suggesting that both parental attitudes and the parents' actual behavior predict their children's economic behavior.

Controlling for parental economic outcomes has the further advantage of disentangling the effect of source-country culture from that of the immigrants' own labor supply before migrating. For first-generation immigrants, work experience prior to their arrival in the host country might be positively correlated with the source country's FLFP ratio. If this is true, the estimated effect of the latter would not only reflect the role of source-country culture, but partly contain the effect of the level of job-related human capital accumulated before migration. Having information on the human capital and labor supply of the immigrant's parents can help to solve this problem, as parental economic behavior in the source country may serve as a proxy for the daughter's labor supply before migrating.[15]

Our results show that the estimated effects of the source-country characteristics are robust to the inclusion of the controls for parental education and employment. In particular, the effects of the source-country FLFP ratio for first-generation female immigrants remains positive and significant. This suggests that source-country culture plays an important role in the labor supply decisions of first-generation immigrants even if the intergenerational transmission of human capital is controlled for. For second-generation female immigrants, the estimated effect is basically zero and not statistically significant.

In order to compare the magnitude of our effect to those found for immigrant women in the U.S., we further conduct our analysis by using women's working hours (including

[15]Note that for first-generation immigrants who immigrated as children, parental employment is measured in the host country and not in the source country. However, as 83% of the immigrant women in our sample migrated after 18 (see Table 1), this limitation should be of minor relevance.

zero hours) instead of their participation decisions as our outcome variable, as done by Fernández and Fogli (2009), Blau *et al.* (2011), and Blau and Kahn (2015). The respective results are shown in column (5) of Table 4. The results reveal that the positive correlation between the source-country LFP ratio and the labor supply of first-generation female immigrants remains when using working hours as outcome measure. An increase in the source-country LFP ratio by 10 pp. increases women's weekly working hours by approximately 0.6 hours (or 2,7% based on an average working time of 21.9 hours/week). This effect is smaller than previous estimates for immigrant women in the U.S. In their basic model, Blau and Kahn (2015) find that a 10 pp. increase in the source-country LFP ratio is associated with an increase in annual working hours of 98.2 hours (or 13.4%).[16] The finding that source-country culture plays a smaller role for immigrant women in Europe than for immigrant women in the U.S. supports our argument that the institutional setting in the host country matters for the size of the cultural effect on immigrant women's labor force participation. For second-generation female immigrants, the estimated effect of the source-country's female-to-male LFP rate is even negative, but small in size and not statistically significant.

Lastly, to test whether source-country LFP ratios actually reflect the attitudes towards working women, we conduct placebo tests by re-estimating Eq. (1) for male immigrants. If our cultural proxy reflects the preferences and beliefs regarding women's role in society and not any economic or institutional conditions of the source country that affect the labor supply of men and women alike, it should have no explanatory power for the labor supply decisions of men. The respective results, using men's participation decision and men's working hours as outcome variables, are shown in columns (6) and (7) of Table 4. For both first- and second-generation immigrant men, the estimated effect of the source-country LFP ratio is close to zero and not statistically significant, irrespective of whether participation decisions or working hours are used as outcome variables. This supports our argument that source-country LFP ratios capture the values and norms regarding women's roles

[16] Blau *et al.* (2011) find a somewhat smaller effect (46.5 to 61.5 annual working hours) for married women.

in the source country rather than any economic and institutional conditions having an impact on immigrants' labor supply in general.

4.3 Heterogeneity Analyses

In the following, we conduct a series of heterogeneity analyses to investigate whether the cultural effect differs for different groups of immigrant women. In doing so, we subsequently interact our variable of interest, the source-country's female-to-male LFP ratio, with different observable characteristics.

We start by testing whether the cultural effect differs by women's age. In particular, we split the sample at age 35 to distinguish between women inside and outside the standard fertility age. The estimated effects of the source-country LFP ratio for the two groups of women are displayed in Panel (a) of Figure 1. For both first- and second-generation immigrants, the estimated cultural effects are fairly similar for the two age groups. If anything, the effects are slightly larger for younger women, but the differences are small and not statistically significant. Hence, the basic pattern is the same for both groups: There is a positive and significant cultural effect on the labor supply of first-generation immigrant women, but no such effect for second-generation women.

Next, we analyze heterogeneity by immigrants' skill level (Panel (b) of Figure 1). For first-generation immigrants, the results reveal a large and strongly significant cultural effect for low-skilled women, while the effect for high-skilled women is close to zero and not statistically significant. The finding that the cultural effect diminishes with immigrants' skill level is in line with Kessler and Milligan (2020) and might be explained by selection into education based on gender norms. Women with strong traditional gender norms are likely to invest less in education, and are thus underrepresented among the group of high-skilled immigrant women. Although the differences in point estimates between the skill groups are large and the observed pattern matches theoretical expectations, it must be noted though that, given small sample sizes, none of the skill-specific effects is statistically different from each other. For second-generation immigrant women, the estimated effect

of the source-country LFP ratio is close to zero and not statistically significant for all skill groups.

To analyze whether the influence of source-country culture changes as time spent in the host country increases, we re-estimate Eq. (1) for first-generation immigrants by interacting the source-country LFP ratio with years since migration. The marginal effect of $FLFPR/MLFPR$ for each years-since-migration category is displayed in Figure 2. The results show that the positive association between the source-country female-to-male LFP ratio and immigrant women's labor supply only exits from year six onward, and then slightly decreases with time spent in the host country. The absence of a cultural effect in the first years after arrival is likely to be explained by the fact that immigrants might face difficulties in entering employment shortly after arrival, for example because they have restricted access to the labor market, lack destination-country language skills, or because their foreign professional or vocational qualifications have not (yet) been recognized. Hence, even women with a high preference for working might not participate in the labor market shortly after arrival. Note, however, that given the large confidence intervals of the estimates, the category-specific effects are not significantly different from each other.

Next, we check whether the cultural effect differs for immigrants arriving in the host country as a child vs. as an adult. As outlined in Section 4.2, the source-country LFP ratio might be correlated with immigrant women's work experience prior to migration, which itself is likely to be correlated with their labor supply after migrating. If this were the case, the positive effect of the source-country LFP ratio on immigrant women's labor supply could be driven by those women who arrived in the host country as adults. The results in Panel (c) of Figure 1, however, show hardly any difference in the cultural effect for immigrant women who arrived as children vs. adults. If anything, the effect of the source-country's LFP ratio is larger for those who migrated before the age of 18, thus eliminating the concern that part of the cultural effect might be driven by the unobserved work experience prior to migration.

In addition to individual characteristics, we explore heterogeneity in regional character-

istics. First, we analyze whether the role of source-country culture differs across immigrants' host countries. In doing so, we follow Bredtmann *et al.* (2018) and group host countries according to a modified Esping-Andersen welfare regime typology (Esping-Andersen, 1990). As illustrated by Panel (d) of Figure 1, we see some, though not strong (and not statistically significant) differences in the cultural effect across different groups of host countries. The largest effects are observed for women in the Scandinavian, the Anglo-Saxon, and the Central and Eastern European countries, while the cultural effect is somewhat smaller and not statistically significant for women in Continental Europe and the Mediterranean countries. The finding of strong effects in the Anglo-Saxon and Eastern European countries could be explained by the role of the welfare state in shaping the cultural effect. Similar to the U.S., the Anglo-Saxon and Eastern European countries are characterized by less generous welfare states with limited transfers and subsidies to households. Given the large gap between labor and non-labor income in these countries, only those women with particularly strong gender norms might decide to not participate in the labor market, thus accounting for the strong cultural effect in countries with limited welfare states. This interpretation, though, does not explain the strong cultural effect in the Scandinavian countries, which have the most extensive system of social benefits among the European countries. Yet the Scandinavian countries are also special in that their FLFP rates are among the highest in the Western countries. In extremely gender-egalitarian countries, the social costs of following the source country's cultural norm of non-participation are high, so that only immigrant women from countries with particularly strong gender norms might decide to not participate in the labor market.

For second-generation immigrants, the heterogeneity analysis by host country confirms the overall finding for the second generation, with the exception of the Central and Eastern European countries, for which there is a significantly positive, though small effect of source-country culture on the labor supply of immigrant women. This finding corroborates the argument of stronger cultural effects in countries with weaker welfare states. Note, however, that we cannot rule out that heterogeneous effects of source-country culture across different host-country groups may also be a result of differences in immigrant composition

across these countries.[17]

Second, we analyze whether the cultural effect varies with the size of the immigrant network in the host country. On the one hand, a larger immigrant network in the host country might make it easier for immigrant women to find a job shortly after arrival. On the other hand, a larger network of immigrants from the same source country could help to preserve the norms and values of the source country and thus reinforce the cultural effect. Panel (e) of Figure 1, however, shows hardly any difference in the effect of the source country's female-to-male LFP ratio between women with an immigrant network above the median network size and those with an immigrant network below the median network size.

Third, we check whether first-generation immigrant women who migrated from another EU country and underlie the right of free movement of workers differ from women who migrated from outside the EU (Panel (f)). Again, we see hardly any difference in the cultural effect across the two groups. The effect for women who underlie the right of free movement of workers is not statistically significant, but this is mainly due to the large standard error, while the size of the effect is similar to the baseline results. Hence, although women who underlie the right of free movement of workers in the host country have a significantly higher LFP probability than those who do not (see Table 3), the effect of source-country culture on the decision to participate in the labor market is similar for the two groups.

5 Conclusion

In the present paper, we focus on an important aspect of migration and integration policy: the labor supply of first- and second-generation female immigrants. Specifically, we examine the role of source-country culture in the labor supply of female immigrants in Europe. While previous literature on the role of source-country culture in female

[17]Note also that for the sample of second-generation immigrants, the number of observations in some host countries is rather small (i.e., in Scandinavia, the Anglo-Saxon, and the Mediterranean countries), so that the coefficients are imprecisely estimated. The number of observations included in each sub-group is displayed in Table A4 in the Appendix.

immigrant labor market behavior has mostly focused on the U.S., we complement the existing literature by providing comprehensive evidence on this relationship for Europe.

Based on data from the European Social Survey covering immigrants in 26 European countries, we find that the labor supply of first-generation immigrant women is positively associated with the female-to-male LFP ratio in their source country. The estimated cultural effect is smaller than previous estimates for immigrant women in the U.S. (e.g., Blau and Kahn, 2015) but confirmed by several sensitivity analyses and placebo tests. This finding reveals that the attitudes and norms towards working women held in their country of origin may play an important role in the labor supply decisions of immigrant women in Europe. Our results further have important policy implications. As the native-born working-age population declines in many European countries, the active recruitment of high-skilled immigrants as well as the integration of an increasing diverse immigrant population into the host countries' labor markets have become important policy goals within Europe. Our results suggest that the success in increasing the labor market attachment of immigrant women is likely to vary depending on immigrants' cultural background, which is important for the design of integration policies.

We further find some heterogeneities in the cultural effect across individuals and countries. Although the sub-group effects are not statistically different from each other, the cultural effect seems to be strongest for low-skilled women and for women living in countries with less generous welfare systems, i.e., the Anglo-Saxon and the Central and Eastern European countries. Our results further reveal that the cultural effect on women's labor supply diminishes with time since migration and does not persist through the second generation, which contradicts previous evidence for second-generation immigrants in the U.S. (e.g., Antecol, 2000; Fernández and Fogli, 2009). These findings suggest that the existence and the magnitude of the effect of source-country culture on female immigrant labor supply varies across institutional settings. In particular, the cultural effect seems to be strongest in countries with limited public transfers to households, such as the U.S. or the Anglo-Saxon European countries, in which the costs of following the source country's cultural norm of non-participation are particularly high. In countries with stronger welfare

states, in contrast, source-country norms seem to play a smaller role in the individual decision to participate in the labor market, as the decision also depends on the incentives set by the country's tax-and-transfer system.

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Figures

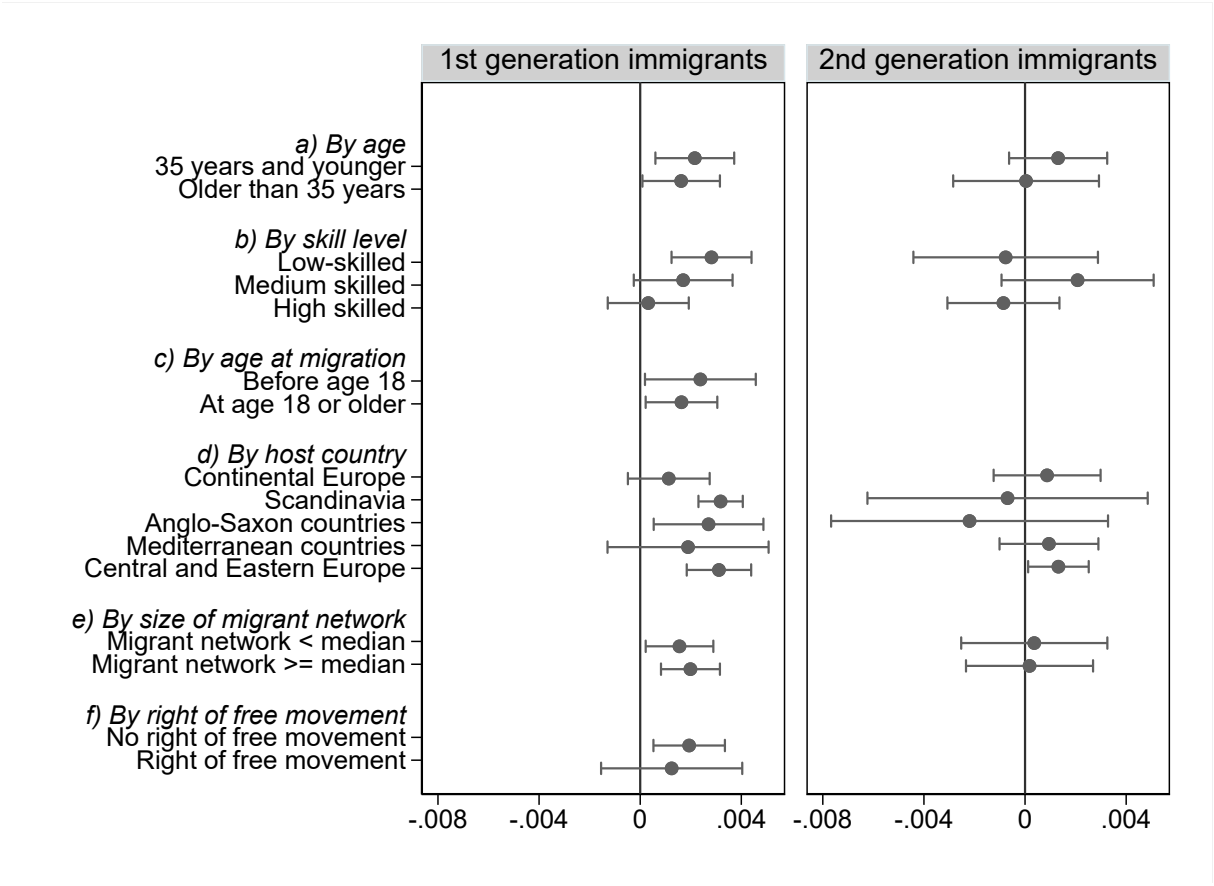

Figure 1: Heterogeneous Effects of Source-Country LFP Ratio on Female Immigrant Labor Supply

Notes: – The figure shows the marginal effects and 95%-confidence intervals of the effect of the source-country labor force participation ratio on women's labor force participation for different subgroups. – The number of observations included in each sub-group is displayed in Table A4 in the Appendix.

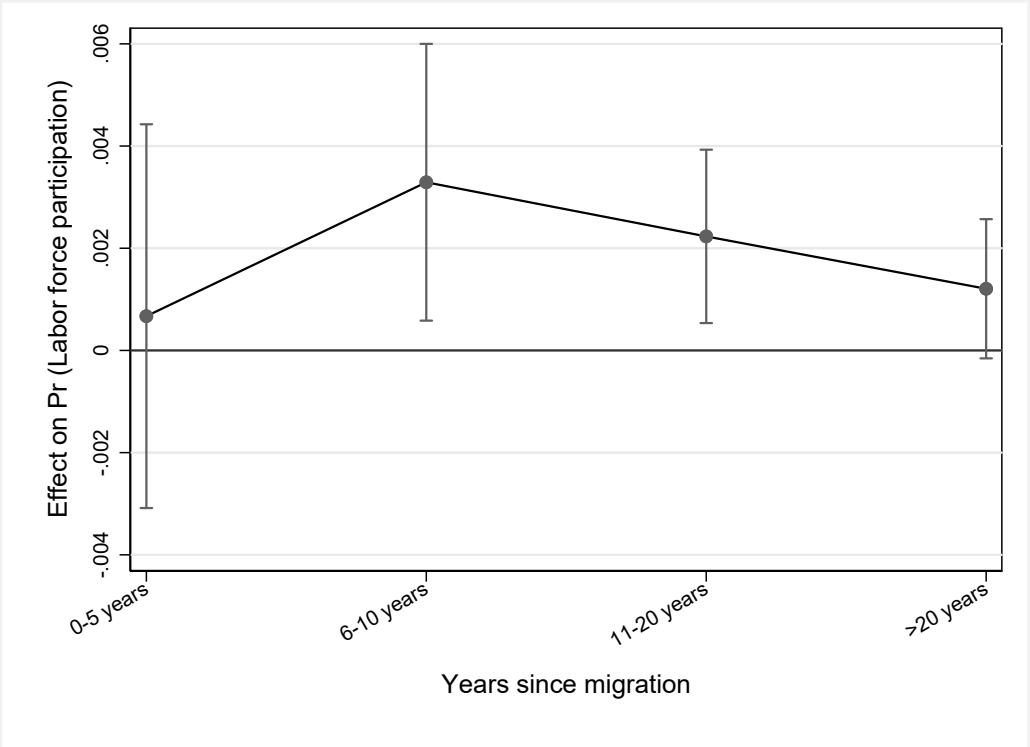

Figure 2: Effect of Source-Country LFP Ratio by Years since Migration
Notes: – The figure shows the marginal effects and 95%-confidence intervals of the effect of the source-country labor force participation ratio on the labor force participation of first-generation immigrant women by years since migration.

Tables

Table 1: Descriptive Statistics – Individual Variables

	1^{st}-Generation Immigrants		2^{nd}-Generation Immigrants		Native Women	
	Mean	StdD	Mean	StdD	Mean	StdD
Participates in the labor market	0.647	0.478	0.705	0.456	0.688	0.463
Age	40.748	9.343	42.900	9.376	42.924	9.498
Highest level of education						
Primary education	0.349	0.476	0.285	0.452	0.339	0.473
Secondary education	0.287	0.452	0.390	0.488	0.359	0.479
Tertiary education	0.361	0.480	0.325	0.469	0.302	0.459
Partner in household	0.746	0.435	0.702	0.458	0.735	0.441
No. of children in household	0.732	0.977	0.617	0.942	0.586	0.899
Youngest child 0-2	0.115	0.319	0.088	0.283	0.086	0.280
Youngest child 3-5	0.115	0.319	0.091	0.288	0.085	0.279
Population density						
Densely populated	0.410	0.492	0.352	0.478	0.292	0.455
Medium populated	0.356	0.479	0.347	0.476	0.351	0.477
Thinly populated	0.234	0.424	0.301	0.459	0.357	0.479
Years since migration						
0 to 5 years	0.179	0.364	–	–	–	–
6 to 10 years	0.176	0.381	–	–	–	–
11 to 20 years	0.237	0.425	–	–	–	–
More than 20 years	0.408	0.491	–	–	–	–
Migrated after age 18	0.828	0.377	–	–	–	–
Speaks host-country language	0.841	0.366	–	–	–	–
Both parents migrants	–	–	0.290	0.453	–	–
Partner characteristics[a]						
Working hours	34.980	19.077	35.035	19.006	35.663	19.353
Education						
Primary education	0.312	0.463	0.267	0.443	0.331	0.471
Secondary education	0.325	0.469	0.373	0.484	0.365	0.482
Tertiary education	0.344	0.475	0.346	0.476	0.290	0.454
Other education	0.019	0.136	0.014	0.117	0.014	0.116
Parents characteristics[a]						
Father employed at age 14	0.912	0.283	0.922	0.268	0.935	0.247
Father's Education						
Primary education	0.559	0.497	0.542	0.498	0.594	0.491
Secondary education	0.204	0.403	0.259	0.438	0.255	0.436
Tertiary education	0.221	0.415	0.188	0.391	0.140	0.347
Other education	0.015	0.123	0.011	0.105	0.010	0.102
Mother employed at age 14	0.481	0.500	0.577	0.494	0.547	0.498
Mother's Education						
Primary education	0.661	0.474	0.670	0.471	0.697	0.460
Secondary education	0.177	0.381	0.212	0.409	0.217	0.412
Tertiary education	0.147	0.354	0.111	0.314	0.076	0.265
Other education	0.015	0.123	0.009	0.093	0.010	0.099
Observations	5,167		3,022		53,090	

Notes: – [a] Partner and parents characteristics are calculated for a reduced sample size. Partner characteristics are shown for women with a partner only. – Host-country population weights are applied.

Table 2: Descriptive Statistics – Aggregated Variables

	1^{st}-Generation Immigrants		2^{nd}-Generation Immigrants	
	Mean	StdD	Mean	StdD
	Measured at time of observation			
Source-country characteristics				
FLFP rate (in %)	63.716	21.822	64.010	21.594
MLFP rate (in %)	90.038	8.153	88.644	9.316
FLFPR/MLFPR	70.622	23.090	72.001	22.376
Total fertility rate	1.940	0.740	1.677	0.394
GDP per capita (in USD 1,000)	14.302	15.205	20.598	15.836
Average years of schooling	9.538	2.721	10.394	2.291
Relationship between source and host country				
Source-country migrant stock (% of population)	1.049	1.784	1.238	2.121
Colonial ties	0.287	0.452	0.354	0.478
Geographic distance (in 1,000 km)	3.026	3.320	1.320	1.807
Genetic distance	0.327	0.512	0.167	0.305
Linguistic distance	79.923	30.692	77.735	30.126
Right of free movement of workers	0.325	0.469	–	–
	Measured at time of migration			
Source-country characteristics				
FLFP rate (in %)	58.289	23.215	–	–
Total fertility rate	2.439	1.271	–	–
GDP per capita (in USD 1,000)	10.829	11.898	–	–
Average years of schooling	7.960	3.208	–	–
Relationship between source and host country				
Source-country migrant stock (% of population)	1.030	2.077	–	–
Observations	5,167		3,022	

Notes: – Time of observation refers to the years 2002 to 2011, while time of migration spans the years 1982 to 2011. – The variables describing the relationship between the source and the host country are time invariant, except for the share of migrants from the same source country in the immigrant's host country. Technically, the "right of free movement"-variable is time variant as well, as the countries underlying this fundamental principle change over time. However, as this variable serves as a proxy for the immigrants' restrictions in their access to the host country's labor market, a calculation of past values for this variable is of little meaning. – Host-country population weights are applied.

Table 3: Source-Country Culture and Immigrant Women's Labor Supply

	1^{st}-Generation Immigrants		2^{nd}-Generation Immigrants	
	ME/StdE	ME/StdE	ME/StdE	ME/StdE
Source-country characteristics				
FLFPR/MLFPR	0.0030†	0.0016***	0.0001	0.0002
	(0.0009)	(0.0005)	(0.0011)	(0.0013)
Total fertility rate	–	0.0001	–	0.0355
		(0.0237)		(0.0359)
GDP per capita (in USD 1,000)	–	−0.0050***	–	0.0006
		(0.0019)		(0.0024)
Average years of schooling	–	0.0235***	–	0.0055
		(0.0072)		(0.0096)
Source-country group (Ref.: Northern & Western Europe)				
East Asia & Pacific	–	−0.1823	–	0.2581
		(0.1330)		(0.2839)
Eastern Europe & Central Asia	–	−0.1052*	–	0.0361
		(0.0592)		(0.0644)
Latin America & Caribbean	–	−0.0384	–	–
		(0.1217)		
Middle East & North Africa	–	−0.0154	–	0.0469
		(0.0911)		(0.0836)
North America	–	−0.0212	–	−0.2244
		(0.0721)		(0.1755)
South Asia	–	0.0276	–	0.2146
		(0.1457)		(0.1347)
Sub-Saharan Africa	–	−0.0436	–	–
		(0.1202)		
Relationship between source and host country				
Source-country migrant stock (% of population)	–	0.0135*	–	−0.0125**
		(0.0078)		(0.0063)
Colonial ties	–	0.0237	–	0.0350
		(0.0274)		(0.0246)
Geographic distance (in 1,000km)	–	0.0097	–	0.0045
		(0.0096)		(0.0286)
Genetic distance	–	0.0431	–	−0.1631†
		(0.0371)		(0.0359)
Linguistic distance	–	0.0005	–	0.0004
		(0.0005)		(0.0005)
Right of free movement of workers	–	0.1017†	–	–
		(0.0298)		
Individual controls	no	yes	no	yes
Host-country FE	no	yes	no	yes
Source-country FE	no	no	no	no
Time FE	no	yes	no	yes
Log likelihood	-2,600.2	-2,291.1	-1,575.3	-1,391.8
Pseudo R^2	0.017	0.134	0.000	0.117
Observations	5,167	5,167	3,022	3,022

*Notes: – † $p < 0.001$; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. – Standard errors are clustered at the source-country level. – Host-country population weights are applied. – Individual controls are: age, highest level of education, marital status, number of children, children at the age of 0-2 and 3-5 years, respectively in the household, population density, years since migration (first-generation immigrants), migrated after age 18 (first-generation immigrants), speaks the host country's language at home (first-generation immigrants), and both parents are migrants (second-generation immigrants). The estimated effects of these control variables are shown in Table A1 in the Appendix. – The results are robust to including host-country x time fixed effects instead of single host-country and time fixed effects. The respective estimation results are shown in Table A2 in the Appendix.*

Table 4: Robustness Checks

	(1) Time of migration	(2) Gender Gap Index	(3) Partner controls	(4) Parent controls	(5) Working hours	(6) Male LFP	(7) Male WH
A. 1st-GENERATION IMMIGRANTS	ME/StdE	ME/StdE	ME/StdE	ME/StdE	ME/StdE	ME/StdE	ME/StdE
Source-country characteristics							
FLFPR/MLFPR	0.0010*	–	0.0013**	0.0018***	0.0581**	−0.0001	0.0069
	(0.0005)		(0.0005)	(0.0006)	(0.0282)	(0.0005)	(0.0353)
Global Gender Gap Index	–	0.9194**	–	–	–	–	–
		(0.4115)					
Total fertility rate	0.0048	0.0197	0.0049	−0.0084	−0.7488	0.0071	−0.4374
	(0.0176)	(0.0350)	(0.0243)	(0.0218)	(0.9117)	(0.0128)	(0.7487)
GDP per capita (in USD 1,000)	−0.0053***	−0.0060**	−0.0058***	−0.0047**	−0.2738†	−0.0015*	0.0466
	(0.0020)	(0.0024)	(0.0020)	(0.0020)	(0.0770)	(0.0008)	(0.0783)
Average years of schooling	0.0229***	0.0266***	0.0241***	0.0216***	0.7652***	0.0105**	0.1892
	(0.0074)	(0.0101)	(0.0074)	(0.0078)	(0.2712)	(0.0049)	(0.2981)
Log likelihood	-2,299.5	-1,389.3	-2,150.3	-1,954.3	-21,717.4	-1,135.7	-18,266.5
Adj./Pseudo R^2	0.131	0.126	0.132	0.133	0.150	0.139	0.094
Observations	5,167	3,029	4,788	4,531	4,999	4,271	4,158
B. 2nd-GENERATION IMMIGRANTS		ME/StdE	ME/StdE	ME/StdE	ME/StdE	ME/StdE	ME/StdE
Source-country characteristics							
FLFPR/MLFPR		–	0.0002	−0.0000	−0.0053	0.0001	−0.0244
			(0.0013)	(0.0015)	(0.0531)	(0.0007)	(0.0416)
Global Gender Gap Index		−0.7371	–	–	–	–	–
		(0.4519)					
Total fertility rate		0.0427	0.0332	0.0373	−2.3917	−0.0537	−0.5512
		(0.0402)	(0.0370)	(0.0432)	(2.1305)	(0.0355)	(2.1506)
GDP per capita (in USD 1,000)		0.0021	0.0024	−0.0001	−0.0213	0.0044†	0.2720***
		(0.0027)	(0.0026)	(0.0024)	(0.0872)	(0.0012)	(0.0828)
Average years of schooling		0.0026	0.0068	0.0090	0.4928	0.0150**	0.7655
		(0.0125)	(0.0098)	(0.0142)	(0.3072)	(0.0075)	(0.4677)
Log likelihood		-1,057.6	-1,295.3	-1,104.2	-12,701.4	-826.4	-11,533.0
Adj./Pseudo R^2		0.120	0.130	0.144	0.137	0.162	0.113
Observations		2,197	2,780	2,604	2,948	2,733	2,636

Notes: – † $p < 0.001$; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. – *Standard errors are clustered at the source-country level.* – *Host-country population weights are applied.* – *LFP and WH are used to abbreviate labor force participation and working hours, respectively.* – *All models include individual controls, bilateral controls, host-country fixed effects, source-country group fixed effects, and time fixed effects. Individual controls are: age, highest level of education, marital status, number of children, children at the age of 0-2 and 3-5 years, respectively in the household, population density, years since migration (first-generation immigrants), migrated after age 18 (first-generation immigrants), speaks the host country's language at home (first-generation immigrants), and both parents are migrants (second-generation immigrants). Bilateral controls are: the stock of migrants from the same source country, the geographic, genetic, and linguistic distance between the source and the host country and dummy variables for whether the source and host country have a colonial relationship and for whether individuals from source country j underlie the right of free movement in host country k. Full estimation results are available from the authors upon request.*

Appendix

Table A1: Source-Country Culture and Immigrant Women's Labor Supply – Full Results

	1^{st}-Generation Immigrants		2^{nd}-Generation Immigrants	
	ME	StdE	ME	StdE
Age group (Ref.: Age 25-29)				
Age 30-34	0.0063	(0.0348)	0.0301	(0.0553)
Age 35-39	0.0398	(0.0523)	0.0598	(0.0403)
Age 40-44	0.0105	(0.0552)	−0.0039	(0.0424)
Age 45-49	−0.0117	(0.0473)	−0.0364	(0.0422)
Age 50-54	−0.0212	(0.0698)	0.0045	(0.0551)
Age 55-59	−0.1495**	(0.0603)	−0.2283†	(0.0491)
Highest level of education (Ref.: Secd. education)				
Primary education	−0.0839†	(0.0230)	−0.0663	(0.0405)
Tertiary education	0.0569**	(0.0263)	0.0944***	(0.0366)
Partner in household	−0.1111†	(0.0247)	0.0347**	(0.0161)
No. of children in household	−0.0807†	(0.0120)	−0.0897†	(0.0130)
Youngest child 0-2	−0.1470†	(0.0361)	−0.1313***	(0.0475)
Youngest child 3-5	−0.0055	(0.0404)	−0.0645	(0.0561)
Population density (Ref.: Medium populated)				
Densely populated	0.0180	(0.0236)	0.0482*	(0.0279)
Thinly populated	0.0168	(0.0206)	−0.0012	(0.0221)
Years since migration (Ref.: > 20 years)				
0 to 5 years	−0.1134†	(0.0321)	–	–
6 to 10 years	−0.0406	(0.0323)	–	–
11 to 20 years	0.0290	(0.0254)	–	–
Migrated after age 18	0.0118	(0.0319)	–	–
Speaks host-country language	0.0950†	(0.0224)	–	–
Both parents migrants	–	–	0.0169	(0.0348)
Source-country characteristics				
FLFPR/MLFPR	0.0016***	(0.0005)	0.0002	(0.0013)
Total fertility rate	0.0001	(0.0237)	0.0355	(0.0359)
GDP per capita (in USD 1,000)	−0.0050***	(0.0019)	0.0006	(0.0024)
Average years of schooling	0.0235***	(0.0072)	0.0055	(0.0096)
Source-country group (Ref.: Northern & Western Europe)				
East Asia & Pacific	−0.1823	(0.1330)	0.2581	(0.2839)
Eastern Europe & Central Asia	−0.1052*	(0.0592)	0.0361	(0.0644)
Latin America & Caribbean	−0.0384	(0.1217)	–	–
Middle East & North Africa	−0.0154	(0.0911)	0.0469	(0.0836)
North America	−0.0212	(0.0721)	−0.2244	(0.1755)
South Asia	0.0276	(0.1457)	0.2146	(0.1347)
Sub-Saharan Africa	−0.0436	(0.1202)	–	–
Relationship between source and host country				
Source-country migrant stock (% of population)	0.0135*	(0.0078)	−0.0125**	(0.0063)
Colonial ties	0.0238	(0.0277)	0.0352	(0.0250)
Geographic distance (in 1,000km)	0.0097	(0.0096)	0.0045	(0.0286)
Genetic distance	0.0431	(0.0371)	−0.1631†	(0.0359)
Linguistic distance	0.0005	(0.0005)	0.0004	(0.0005)
Right of free movement of workers	0.1035†	(0.0312)	–	–
Host-country FE	yes		yes	
Time FE	yes		yes	
Log likelihood	-2,291.1		-1,391.8	
Pseudo R^2	0.134		0.117	
Observations	5,167		3,022	

Notes: – † $p < 0.001$; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. – *Standard errors are clustered at the source-country level.* – *Host-country population weights are applied.*

Table A2: Source-Country Culture on Immigrant Women's Labor Supply – Including Host-Country x Time FE

	1st-Generation Immigrants		**2nd-Generation Immigrants**	
	ME	StdE	ME	StdE
Source-country characteristics				
FLFPR/MLFPR	0.0017***	(0.0005)	0.0001	(0.0013)
Total fertility rate	−0.0013	(0.0233)	0.0510	(0.0375)
GDP per capita (in USD 1,000)	−0.0053***	(0.0017)	−0.0001	(0.0025)
Average years of schooling	0.0226***	(0.0075)	0.0071	(0.0086)
Source-country group (Ref.: Northern & Western Europe)				
East Asia & Pacific	−0.1850	(0.1343)	0.2840	(0.2622)
Eastern Europe & Central Asia	−0.0948*	(0.0551)	0.0163	(0.0682)
Latin America & Caribbean	−0.0508	(0.1199)	–	–
Middle East & North Africa	0.0022	(0.0837)	0.0136	(0.0854)
North America	−0.0171	(0.0730)	−0.2079	(0.1609)
South Asia	0.0346	(0.1444)	0.2331*	(0.1398)
Sub-Saharan Africa	−0.0527	(0.1192)	–	–
Relationship between source and host country				
Source-country migrant stock (% of population)	0.0143*	(0.0081)	−0.0138**	(0.0062)
Colonial ties	0.0261	(0.0286)	0.0339	(0.0274)
Geographic distance (in 1,000km)	0.0114	(0.0096)	−0.0009	(0.0252)
Genetic distance	0.0454	(0.0367)	−0.1675†	(0.0355)
Linguistic distance	0.0003	(0.0005)	0.0004	(0.0005)
Right of free movement of workers	0.1257†	(0.0308)	–	–
Individual controls	yes		yes	
Host-country FE	no		no	
Time FE	no		no	
Host-country x time FE	yes		yes	
Log likelihood	-2,226.2		-1,365.0	
Pseudo R^2	0.155		0.125	
Observations	5,104		2,934	

Notes: – † $p < 0.001$; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. – *Standard errors are clustered at the source-country level.* – *Host-country population weights are applied.* – *Individual controls are: age, highest level of education, marital status, number of children, children at the age of 0-2 and 3-5 years, respectively in the household, population density, years since migration (first-generation immigrants), migrated after age 18 (first-generation immigrants), speaks the host country's language at home (first-generation immigrants), and both parents are migrants (second-generation immigrants). Full estimation result are available from the authors upon request.*

Table A3: List of Source Countries

	1^{st}-Generation Immigrants		2^{nd}-Generation Immigrants	
Source Country	Observations	Frequency (in %)	Observations	Frequency (in %)
Albania	121	2.33	–	–
Algeria	54	1.04	66	1.99
Argentina	32	0.62	–	–
Australia	36	0.69	–	–
Austria	49	0.94	72	2.38
Belgium	73	1.41	28	0.93
Bolivia	18	0.35	–	–
Brazil	111	2.14	–	–
Bulgaria	48	0.93	–	–
Canada	36	0.69	–	–
Chile	26	0.50	–	–
China	27	0.52	–	–
Colombia	33	0.64	–	–
Congo	32	0.62	–	–
Czechoslovakia	135	2.60	239	7.91
Denmark	38	0.73	35	1.16
DR Congo	15	0.29	–	–
Ecuador	41	0.79	–	–
Finland	104	2.01	93	3.08
France	224	4.32	123	4.07
Germany	385	7.42	310	10.26
Ghana	17	0.33	–	–
Greece	32	0.62	21	0.69
Hungary	38	0.73	86	2.85
India	67	1.29	27	0.89
Indonesia	32	0.62	64	2.12
Iran	49	0.94	–	–
Iraq	35	0.67	–	–
Ireland	26	0.50	70	2.32
Italy	141	2.72	286	9.46
Japan	16	0.31	–	–
Kenya	17	0.33	–	–
Mauritius	18	0.35	–	–
Morocco	112	2.16	47	1.56
Mozambique	18	0.35	–	–
Netherlands	66	1.27	49	1.62
Norway	31	0.60	32	1.06
Pakistan	33	0.64	–	–
Peru	20	0.39	–	–
Philippines	63	1.21	–	–
Poland	215	4.14	142	4.70
Portugal	188	3.62	31	1.03
Republic of Korea	16	0.31	–	–
Romania	152	2.93	58	1.92
South Africa	35	0.67	–	–
Spain	67	1.29	66	2.18
Sri Lanka	31	0.60	–	–
Sweden	90	1.74	34	1.13
Switzerland	31	0.60	16	0.53
Thailand	30	0.58	–	–
Tunisia	24	0.46	23	0.76
Turkey	179	3.45	72	2.38
United Kingdom	307	5.92	109	3.61
USA	98	1.89	48	1.59
USSR	755	14.56	574	18.99
Venezuela	19	0.37	–	–
Viet Nam	24	0.46	–	–
Yugoslavia	457	8.81	207	6.85
Total	5,167	100.00	3,022	100.00

Notes: – To form a consistent list of source countries, we aggregate source countries that split or combined over time (i.e., Czechoslovakia, the USSR, and Yugoslavia). – We excluded source countries with fewer than 15 observations from our sample.

Table A4: Number of Observations in Heterogeneity Analysis

	1^{st}-Generation Immigrants	**2^{nd}-Generation Immigrants**
Age		
35 years and younger	1,460	730
Older than 35 years	3,707	2,292
Skill level		
Low-skilled	1,675	755
Medium-skilled	1,553	1,237
High-skilled	1,939	1,030
Years since migration		
0 to 5 years	925	–
5 to 10 years	909	–
10 to 20 years	1,225	–
More than 20 years	2,108	–
Age at migration		
Before age 18	845	–
At age 18 or older	4,322	–
Host country		
Continental Europe	2,252	1,389
Scandinavia	631	323
Anglo-Saxon countries	684	228
Mediterranean countries	805	74
Central and Eastern Europe	795	1,008
Size of migrant network		
Migrant network < median	2,579	1,506
Migrant network >= median	2,588	1,516
Right of free movement of workers		
No right of free movement	2,997	–
Right of free movement	2,170	–

Notes: – The table shows the number of observations included in the sub-group analyses shown in Figures 1 and 2.

Table A5: Macroeconomic Data – Sources and Descriptions

Variable	Description	Years	Source
I. Source-country variables			
FLFPR & MLFPR	Labor force participation rate is the proportion of a country's working-age population that engages actively in the labor market, either by working or looking for work. It provides an indication of the relative size of the supply of labor available to engage in the production of goods and services during a specified time-reference period. The rates are calculated for females and males by 5-year age group for the population aged 26 to 59 years. We interpolate missing values for intervening years from the available data. When linear interpolation is not possible, we impute missing values using estimated rates of change derived from available data for other age groups in the respective country.	1982–2011	ILO Department of Statistics, ILOSTAT Internet. https://ilostat.ilo.org/
Total fertility rate	Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates. We interpolate missing values for intervening years from the available data. When linear interpolation is not possible, we impute missing values using estimated rates of change derived from available data for the respective country.	1982–2011	World Bank Database, World Development Indicators. http://data.worldbank.org/indicator/SP.DYN.TFRT.IN
GDP per capita (in USD 1,000)	Per capita GDP is GDP in constant 2005 prices in USD 1,000 divided by the population. Data in constant prices in USD are converted into national currency using the annual period-average exchange rate of the base year for all years.	1982–2011	United Nations Statistics Division, National Accounts Main Aggregates Database. http://unstats.un.org/unsd/snaama/introduction.asp
Average years of schooling	Average years of schooling represents the number of years of schooling attained by an average person at all levels of schooling combined (primary, secondary, and tertiary). These data are measured by 5-year age group for the population aged 26 to 59 years. The data are available in 5-year intervals for the years 1980–2010. We interpolate missing values for intervening years from the available data for the period 1980–2010 and extrapolate for the year 2011.	1982–2011	Barro and Lee (2013). http://www.barrolee.com
II. Bilateral variables			
Source-country migrant stock	Source-country migrant stock provides information on the host country's international migrant stock by country of birth in 10-year intervals for the years 1980–2010. The data are mostly based on population censuses and population register records. We interpolate missing values for intervening years from the available data for the period 1980–2010 and extrapolate for the year 2011.	1982–2011	World Bank Database, Global Bilateral Migration Database. http://data.worldbank.org/data-catalog/global-bilateral-migration-database
Colonial ties	Binary variable that is unity if the country pair has ever had a colonial relationship.	constant	Mayer and Zignago (2011). http://www.cepii.fr/anglaisgraph/bdd/distances.htm

Table A5: Macroeconomic Data – Sources and Descriptions (Continued)

Variable	Description	Years	Source
Geographic distance	Geographic distance is the geodesic distance between country capitals in 1,000km. Geodesic distances are calculated following the great circle formula, which uses the geographic coordinates of the capital cities for calculating the distances between the countries.	constant	Mayer and Zignago (2011). http://www.cepii.fr/anglaisgraph/bdd/distances.htm
Genetic distance	The F_{ST} genetic distance index measures the genetic differences between populations as a fraction of the total genetic variance. The genetic distance data are collected by Cavalli-Sforza *et al.* (1994). The F_{ST} index is based on the frequency of 128 alleles related to 45 genes. By construction, the F_{ST} index ranges between 0 and 1; a higher F_{ST} is associated with larger differences. Genetic distance reports the calculated distance divided by 1,000.	constant	Spolaore and Wacziarg (2009). http://www.anderson.ucla.edu/faculty_pages/romain.wacziarg
Linguistic distance	The linguistic distance measure is drawn from linguistic research. The Automatic Similarity Judgment Program (ASJP), developed by the German Max Planck Institute for Evolutionary Anthropology, automatically evaluates the phonetic similarity between all of the world's languages. The basic idea is to compare pairs of words having the same meaning in two different languages according to their pronunciation. For each word pair, it is evaluated how many additions or subtractions are necessary to transform one word in one language into the same word in another language. The approach is called normalized and divided Levenshtein distance. We use the most prevalent native language of each country to calculate the distance.	constant	Bakker *et al.* (2009). http://www.eva.mpg.de
Right of free movement of workers	Binary variable that is unity if citizens of a given source country underlie the right of free movement of workers in a given host country. The right of free movement of workers permits workers to search for employment, to be employed, and to reside in any Member State of the European Union. While it generally applies to all immigrants migrating within the European Union, there is a clause about a transition period before workers from the new Member States can be employed on equal, non-discriminatory terms in the old Member States. The old Member States have the right to impose such transitional period for 2 years, then to decide whether to extend it for additional 3 years, and then, if there is serious proof that labor from new Member States would be disruptive to the market in the old Member States, the period can be extended for the last time for 2 more years. Furthermore, citizens of the Member States of the European Economic Area and Switzerland have the same right of freedom of movement and these countries are treated as old Member States inside the EEA (European Commission, 2003, 2005).		

Notes: – The macroeconomic indicators for the combined countries (i.e., Czechoslovakia, the USSR, and Yugoslavia) are calculated as a population-weighted average of the single-country values.