ECONtribute
MARKETS & PUBLIC POLICY

ECONtribute
Discussion Paper No. 253

# Gender Norms and the Gender Gap in Higher Education

Stefanie J. Huber Hannah Paule-Paludkiewicz

September 2023 www.econtribute.de

UNIVERSITÄT BONN Universität zu Köln

Funding by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC 2126/1-390838866 is gratefully acknowledged.

# Gender Norms and the Gender Gap in Higher Education

Stefanie J. Huber[⋆] and Hannah Paule-Paludkiewicz[†]

Version: September 6, 2023

**Abstract**

Cross-country differences in the gender gap of higher education attainment are large. In this paper, we study the role of gender norms for this particular gender gap. To isolate the effect of gender norms from institutional and economic factors, we investigate the decisions of second-generation immigrants in the United States to achieve at least a bachelor's degree. We measure gender norms using economic outcomes as well as beliefs prevailing in the migrants' parents' country of origin. We find that gender norms explain part of the observed differences in the gender gap in attaining at least a bachelor's degree. There is also a sizable effect of gender norms on gender gaps in higher educational attainment levels, such as a master's degree or a PhD. We confirm the gender norms effect using a sample of siblings, which allows us to hold unobservable and observable household characteristics constant.

Keywords: gender gap, tertiary education, gender norms, culture, second-generation migrants, sibling fixed effects.

JEL Classifications: I23, I24, J15, J16, J24, Z10.

---

We are indebted to Nicola Fuchs-Schündeln for many fruitful conversations and advice. This paper has greatly benefited from comments and suggestions from three anonymous referees. We would also like to thank Irma Clots-Figueras, Michael Haliassos, Hessel Oosterbeek, Núria Rodríguez-Planas and all participants who commented on our presentations at the Second Catalan Economic Society Conference (IEC) in Barcelona, the Bank of Canada Brownbag seminar in Ottawa, the Money and Macro Brown Bag Seminar at the Goethe University Frankfurt, the Macro Seminar at Mannheim University, and the European Economic Association Congress 2020. The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Deutsche Bundesbank or the Eurosystem. Stefanie Huber gratefully acknowledges support from the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany´s Excellence Strategy – EXC 2126/1-390838866.

⋆ Department of Economics, University of Bonn and ECONtribute, Germany and Department of Economics, University of Amsterdam and Tinbergen Institute, The Netherlands. E-mail: shuber@uni-bonn.de.

† Deutsche Bundesbank, Frankfurt, Germany. E-mail: hannah.paule-paludkiewicz@bundesbank.de.

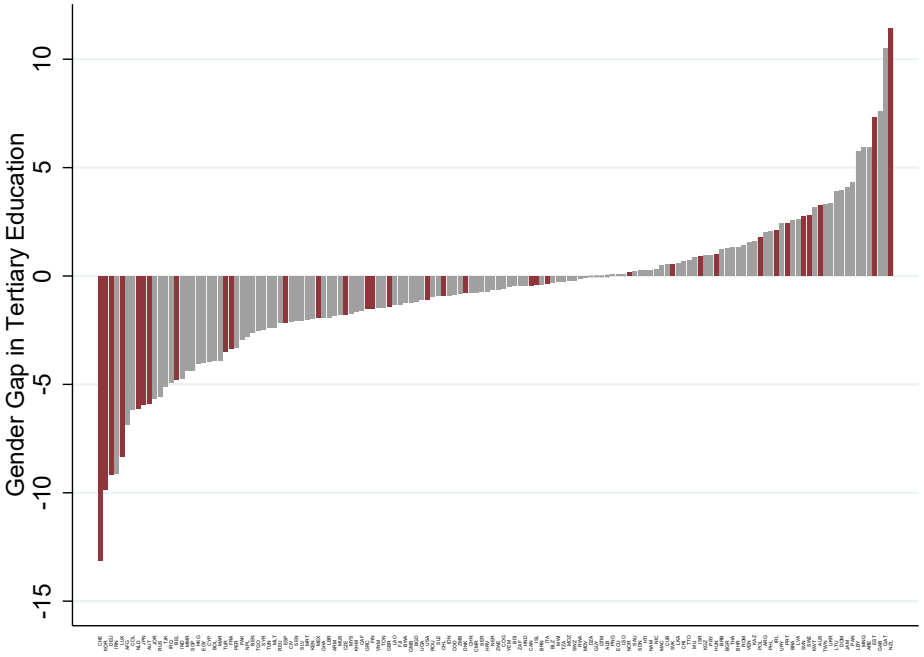
# 1 Introduction

Cross-country differences in the gender gap of tertiary education attainment are large. Figure 1 presents this gender gap (measured as the female minus the male attainment rate) for a sample of 146 countries for 2010. The gap varies from large negative rates (Switzerland) to large positive rates (New Zealand). In some countries, such as the US, the gender gap in college degrees has reversed for the younger cohorts (Goldin et al. (2006); Blau et al. (2014)). Despite this fact, the inequality in the gender gap in tertiary education across countries even rises for the youngest cohort in our data.[1] Moreover, the higher the level of educational attainment considered (up to "at least PhD"), the larger is the number of countries with a negative gender gap.[2] Theoretical and empirical research points to a positive association between gender equality in education and long-run economic growth (Galor and Weil (1996); Knowles et al. (2002); Lagerlöf (2003)). More gender diversity in workplaces that require high-skilled workers may also be beneficial for corporate performance and for economic growth (García-Meca et al. (2015), Hoogendoorn et al. (2013), and Hsieh et al. (2019)), among others due to a better allocation of talent. A prerequisite for a more gender–equal pool of high-skilled workers is the reduction of the gender gap in higher educational attainment. To reduce this gender gap, knowledge of the underlying drivers is necessary.

In this paper, we consider one potential driver and study whether beliefs about and values with regard to the role of women and men in society affect higher educational attainment. The part of the gender gap in higher educational attainment that is driven by gender norms might lead to efficiency losses, as higher education opportunities are not given to the most talented individuals. We refer to "gender norms" (Bertrand (2011); Olivetti et al. (2020)) as "culture". We follow Guiso et al. (2006) and define culture as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation." We use a large US data set, which provides information about the cultural origin of individuals and their parents, and thus allows us to study the differential educational outcomes of second-generation-immigrant men and women. We

[1] For evidence on the education gender gaps of the younger cohorts see Appendix Figures A6–A7. The cross-country inequality is larger when restricting the data to younger cohorts, e.g. the standard deviation and the Gini coefficient are larger in Figure A6 than in Figure 1. Consistent with the literature on the reversal of the gender gap in tertiary education in countries like the US, the number of countries with a positive gap is larger the younger the cohort.

[2] See Appendix Figures A8–A10.




Tertiary education gender gaps. Source: Latest Barro–Lee Educational Attainment Data (year 2010). The gender gap is measured as the female rate (percentage of complete tertiary education attained in female population) minus the corresponding male rate. The red color indicates OECD countries (see Table A4).

Figure 1: Tertiary Education Gender Gaps

identify an important effect of gender norms on the gender gap in higher education while holding observable and unobservable country–of–origin characteristics or even household characteristics (in a sample of brothers and sisters living in the same household) constant.

To isolate the impact of gender norms from the effects of markets and institutions we use the epidemiological approach. Institutions like labor market regulations (e.g., childcare availability) may cause women to expect a different return from higher education compared to men, thereby affecting the decision of women and men to invest in such education differentially. Therefore, we study gender differences in the decisions of second-generation immigrants in the United States to pursue higher education, using the Current Population Survey (CPS). We define a second-generation immigrant as someone born in the United States while having foreign-born parents. All second-generation immigrants have grown up with the same economic and institutional environment and encounter the same labor market institutions. Parental cultural background, and hence values and beliefs with regard to gender norms, might, however differ. If culture is persistent, these differences will be transmitted to the children (second-generation migrants).

To measure gender norms we construct two main proxies using variables related to the economic outcome of interest prevailing in the country of ancestry. First, we use the share of female senior and middle managers in the country of ancestry for this purpose.[3] This proxy may capture how common and how well accepted it is in the country of ancestry for women to hold leading professional positions and to build careers (see for example Beaman et al. (2009)).[4] The second proxy measures the gender gap in higher-education in the country of ancestry. We associate the value of each cultural proxy measured in the country of parental origin to the second-generation migrants in the sample.[5]

We find a statistically significant effect of gender norms on the gender differences of second-generation immigrants in attaining at least a bachelor's degree. Our estimates suggest that, holding everything else constant, switching from a country at the 10th percentile in the distribution of the female share of managers to a country at the 90th percentile, is associated with an increase in the relative tertiary educational attainment of second-generation-immigrant women over their male counterparts in the United States of 5.94 percentage points. A similar comparison relating to the distribution of the higher education gender gap in the source country suggests an increase in the relative female educational attainment of 5.77 percentage points.

We account for exogenous individual characteristics, differences in location of residence (MSA fixed effects), time fixed effects, and country–of–origin fixed effects in our baseline regressions. We confirm the result when we identify the effect based on the differential behavior of brothers and sisters living in the same household.

Our findings that gender norms are an important driver for the higher education gender gap are robust to alternative measures for gender norms, differential selection of migrants, different sample specifications, alternative ways of accounting for the location of residence, and to the inclusion of further country–level control variables (interacted with the female dummy). Further, our results indicate a sizable effect of gender norms on the gender gap in higher educational attainment levels, such as the gap in having at least a master's degree or a PhD. We also shed light on the transmission of gender norms. The evidence suggests that,

[3] Casarico et al. (2016) find that women's decision to invest in post-secondary education are affected by the local market outcomes of older women living in the same region.

[4] The share of female managers is shaped by the markets and institutions of the country as well as by cultural factors such as gender norms. However, only the cultural component of the aggregate rate prevailing in the country of parental origin should be relevant to the higher education decisions of second-generation immigrants who have lived their entire lives in the United States.

[5] In Section 5.1, we consider various alternative gender norm proxies and the results are robust.

in the United States, the size of the cultural effect and its statistical significance increase when second-generation migrants are more exposed to their cultural heritage. Specifically, the cultural effect is stronger for second-generation migrants who live in states with a high fraction of migrants from the same country of origin and for those whose mother and father share the same home country.

In the literature using the epidemiological approach one of the main challenges is to account for country–of–ancestry characteristics that may be correlated with culture and that affect the outcome variable of interest.[6] In contrast to the aforementioned studies, a major advantage of our empirical approach consists of being able to include country–of–origin fixed effects in addition to the term that captures gender norms. As in Rodríguez-Planas and Nollenberger (2018) and Nollenberger et al. (2016), we thereby account for observable and unobservable country-level characteristics.

A further challenge of the epidemiological approach is to account for parental characteristics, which are often hard to observe and to measure in the data, and include socioeconomic background, genetics, experiences, networks, and parenting style. To address this concern, in a second empirical specification, we restrict our sample of second-generation immigrants to opposite gender siblings that live in the same household. Thus, we identify the effect of gender norms on the gender gap in higher educational attainment based on a sample of brothers and sisters. This allows us to hold time-invariant key factors constant that will affect sons' and daughters' educational outcomes, including parental genetics and characteristics, networks, the educational infrastructure, and the labor market at the location of residence. As a novum to the literature, we include parental characteristics that we interact with a female dummy. Hence, we also control for the possibility that these parental characteristics affect sons and daughters differentially.

This paper relates to the literature that studies the effect of gender norms on differences in economic outcomes between men and women. Several studies have established that gender role attitudes and work values can explain part of the differences in the women's labor force participation across countries and ethnicities (Fortin (2005, 2015); Bertrand

[6]The epidemiological approach has been used to study a variety of topics, including the savings behavior of households (Carroll et al. (1994); Carroll et al. (1999); Fuchs-Schündeln et al. (2020)), homeownership decisions (Huber and Schmidt (2022)), mortgage choices (Rodriguez-Planas (2018)), fertility decisions and female labor force participation (Blau et al. (2013); Blau et al. (2011); Alesina and Giuliano (2010); Fernández and Fogli (2009); Fernández (2007); Antecol (2000)), trust (Algan and Cahuc (2010)), and preferences for redistribution (Luttmer and Singhal (2011)).

et al. (2015); Fernández and Fogli (2009)). The recent review by Blau and Kahn (2017) suggests that additional explorations of gender norms by economists would be fruitful in understanding gender differences in other outcomes. We do so, and study the impact of gender norms on the gender gap in attaining higher education.

Our paper contributes to a young strand of literature that studies the effect of culture on individuals' educational outcomes (De Philippis and Rossi (2020); Figlio et al. (2019); van Hoorn (2019)). While the aforementioned studies investigate the effect of culture on individuals' educational performance, we study the difference between men and women, i.e. the gender gap. We provide evidence that gender norms have a differential impact on higher educational outcomes of women relative to men.

Moreover, we contribute to the strand of literature that studies the effect of culture on the gender gap in math test scores of children (Holmlund et al. (2023); Dossi et al. (2021); Ericsson (2020); Breda et al. (2018); Lippmann and Senik (2018); Rodríguez-Planas and Nollenberger (2018); Nollenberger et al. (2016); Pope and Sydnor (2010); Guiso et al. (2008)) and the effect of culture on the gender gap in choice of major (Aldén and Neuman (2022); Noghanibehambari et al. (2020)).[7] Instead of looking at the gender gap of one particular field of study, we provide evidence that gender norms matter for the higher education gender gap independent of the field.

In addition, our second estimation strategy identifies the effect of gender norms on the education gender gap in a neat way using a sample of opposite gender siblings. This allows us to hold all time-invariant household characteristics constant, thereby advances the identification approaches used to date within most of the related literature. This approach has recently also been applied by Holmlund et al. (2023), Aldén and Neuman (2022), and Ericsson (2020), using Swedish data. Our study differs from the aforementioned strands of literature in two aspects. First, we additionally control for the possibility that the parental characteristics affect sons and daughters differentially. And second, we focus on the top of the educational distribution. In addition to the gender gap in attaining a bachelor's degree, we study the impact of gender norms on the gap in having a master's degree or a PhD.

[7] For a recent literature survey on the education gender gap and its evolution, see Bertocchi and Bozzano (2020). The primary outcome variable in Holmlund et al. (2023) is the average GPA over all subjects at the age of 16; they confirm their result using the GPA in math and Swedish. Aldén and Neuman (2022) show that cultural gender norms affect the probability of girls choosing STEM and other male-dominated fields as their major in high school or university. Noghanibehambari et al. (2020) find that culture affects the gender gap in children's years of schooling and the gender gap in the probability of attaining a college degree in Art and Humanities.

These degrees are prerequisites for many leading positions both in top management and academia. Our results are thus of interest when interpreted against the background of the large underrepresentation of women in these high-rank positions for which opportunities for women are especially unequal across countries (e.g. UNESCO (2018); World Economic Forum (2018); Bagues et al. (2017)).[8]

The remainder of this paper is organized as follows. Section 2 outlines our empirical strategy and Section 3 describes the data and sample selection. Section 4 presents our results and investigates cultural transmission. Section 5 discusses the robustness of our findings. Finally, Section 6 concludes.

## 2 Empirical Strategy

To investigate the impact of gender norms on the gender gap in higher education attainment, we study the educational choices of second-generation migrants. These migrants were born in the United States, and thus, have faced the same labor markets, regulations, and institutions since birth. However, these migrants might differ in terms of their perceived role of women and men in society—the gender norms transmitted by their foreign-born parents.

As a baseline, we define a second-generation immigrant as someone born in the United States while having a foreign-born father. The decision to pursue higher education is partially a financial matter, especially in the United States. The choice to pursue at least a bachelor's degree might therefore not be taken by the young adult alone, but jointly with their parents. The existing literature suggests that for financial household decisions, the father's view may matter more in comparison to the mother's. In a recent paper, Ke (2021) provides both empirical and experimental evidence that gender norms constrain women's influence over intra-household financial decision making, even if she is more financially sophisticated.[9] In addition, by using the father's country of origin, we

[8] As pointed out by the World Economic Forum (2018): "[...] while there are still relevant gender-biased labour market outcomes, the presence of women in management roles is today one of the main barriers to overcome, both in the public and private sector, in order to achieve full economic gender parity. Managerial opportunities for women are particularly uneven across countries [...]."

[9] Fonseca et al. (2012) show that within couples, higher male financial literacy is correlated with higher male decision-making responsibilities. This correlation between financial literacy and decision making does not, however, exist for women. In a similar vein, Smith et al. (2010) investigate who takes the financial decisions within a household and why. They find that for most couples, the husband is selected (by both spouses) to be the most financially knowledgeable person. Within the decision to select the most financially knowledgeable person, the husband's education has a larger impact than that of his spouse. If

follow the majority of the related literature that studies the effect of culture on the economic choices of second-generation migrants. As Blau (2015) reports, "the previous literature has focused only on the father's source country and the matching variable" (see, e.g., Huber and Schmidt (2022), Noghanibehambari et al. (2020), Alesina and Giuliano (2010), Fernández and Fogli (2009), Fernández (2007), Fernández and Fogli (2006), Feliciano (2005), and Antecol (2000)). In Section 4.3, Cultural Transmission, we also report results where a second-generation immigrant is alternatively defined as someone born in the United States while having both parents (mother and father) foreign-born and sharing the same country of origin (as e.g. in Nollenberger et al. (2016)). We also present results where the second-generation migrants are defined based on the maternal source country (as in Figlio et al. (2019), Dossi et al. (2021), and De Philippis and Rossi (2020)). In each case, we find a positive and significant effect of gender norms.

Studying migrants of the second-generation instead of the first-generation is advantageous for at least three reasons. First, there might be selection of the foreign-born population that decides to emigrate. We address this matter in Section 5.5. Second, first-generation migrants may be differentially affected by immigration shocks. For example, there might be systematic differences on the country of origin-level in speaking the language of the host country, and hence in education and employment opportunities. Third, if immigrants plan to return to their country of ancestry at some point in the future, their behavior may still be affected by the home country institutions. Return migration is, however, rather unlikely to play a role for second-generation immigrants, who were born in the United States and are, thus, Americans. The disadvantage of studying second-generation migrants is that the degree of assimilation to the host country's culture might be advanced—which diminishes the effect of the home country's culture on their economic choices.

We measure gender norms at the country-of-origin level of the father using two key proxies.[10] While these aggregate proxies may be affected both by the economic environment and by the prevailing culture in the country of origin, only the cultural component should matter for the educational choices of second-generation immigrants, who have all faced the

the husband is a college graduate, the odds are more than three to one that he will be the household's financial decision-maker—no matter what the educational attainment level of the wife is.

[10]We discuss the choice of the two gender norms proxies in Section 3.2. Section 5.1 proposes alternative proxies and shows the results using four different measures of gender norms at the country-of-origin level.

markets and institutions of the United States since birth.

## 2.1 Baseline Analysis

Using the Current Population Survey, we estimate linear probability models using the following baseline specification:

$$Educ_{imot} = \beta_0 + \beta_1 female_i + \beta_2 female_i \times \tilde{Z}_o + \beta_3' X_{i,t} + F_o + F_m + F_t + \varepsilon_{imot} \quad (2.1)$$

$Educ_{imot}$ denotes the education status of the second-generation immigrant $i$ surveyed in year $t$, who resides in the metropolitan area $m$ and whose father emigrated from the country of origin $o$. This indicator is equal to one if individual $i$ attained at least a bachelor's degree and zero otherwise.

The dummy $female_i$ is equal to one if the second-generation immigrant $i$ is female and zero otherwise. $\tilde{Z}_o$ is the proxy for gender norms assigned according to the immigrant's country of ancestry. We code the gender norms proxy in such a way that a higher value corresponds to what one may call a less traditional view of the role of women. We interact $\tilde{Z}_o$ with the $female_i$ dummy. The coefficient $\beta_2$ is our coefficient of interest and captures the role of gender norms in explaining the gender differences between second-generation-immigrant women and men with regard to attaining at least a bachelor's degree. If gender norms help explain the cross-country differences in the gender gap in higher education, we would expect the coefficient $\beta_2$ to be positive and statistically significant. $X_{i,t}$ denotes a vector of additional exogenous controls for individual $i$; we include age, age squared, and categories for race. These controls account for sources of exogenous heterogeneity across second-generation immigrants other than culture.[11]

Generally, the related literature using the epidemiological approach assumes that there are no country-level variables that are correlated with the culture of the home country and at the same time affect the outcome of interest. However, if any such variable at the country of ancestry level exists, the coefficient of the cultural variable would be biased. In contrast, our estimation strategy allows us to include country-of-origin fixed effects $F_o$. These fixed effects account for characteristics in the second-generation immigrant's country

[11] Note that we do not control for other socioeconomic characteristics of the second-generation migrants (e.g., marital status, number of children, income) since these variables are likely to be endogenous with respect to the outcome variable of higher educational attainment. Nonetheless, including these endogenous variables does not alter the results.

of ancestry that may be related to gender roles in the country of ancestry and educational attainments of the second-generation immigrants.

Schooling quality, the proximity to a college/university, and the labor market situation might differ within the United States from location to location. We control for these geographical differences, independent of their source, by including a large vector of 415 metropolitan area dummies $F_m$. We also control for calendar year effects using time dummies $F_t$ in all specifications. The standard errors are clustered at the country-of-origin level and are denoted by $\varepsilon_{imot}$.

To account for potential changes over time and across locations (e.g., in the number of schools, school quality, population composition, and labor market prospects), we perform several robustness checks and include various measures for location-time trends in Section 5.2. In addition, it could also be that specific location characteristics have a differential impact on the labor market prospects of women and men. Therefore, we interact various location fixed effects with a female dummy. These specifications account for location characteristics that might have a gendered impact on labor market prospects—independent of the source. Section 5.2 shows that our results are unaffected.

## 2.2 Siblings Analysis

In a second specification, we advance the methodology of the epidemiological approach and follow a young but growing literature that uses opposite-sex sibling comparisons in Sweden to investigate the role of culture on gender gaps in education (e.g, Holmlund et al. (2023); Aldén and Neuman (2022); Ericsson (2020)). We, hence, identify the cultural effect based on a sample of opposite-gender siblings living in the same household. This allows us to compare the choice of pursuing higher education between brothers and sisters within the same family.

In addition to the factors already accounted for in Equation (2.1), this allows us to hold constant e.g., the socioeconomic background, the human capital, the genetics, the experiences, and networks of the parents, as well as the location of residence including schooling quality, the proximity and quality of nearby colleges and universities, and the local labor market situation. We conduct the following within-household estimation:

$$Educ_{ioht} = \beta_0 + \beta_1 female_i + \beta_2 female_i \times \tilde{Z}_o + \beta_3' X_{i,t} + \beta_4' female_i \times P_{i,t} + F_h + F_t + \varepsilon_{ioht} \quad (2.2)$$

$Educ_{ioht}$ denotes the education status of the second-generation immigrant $i$ surveyed in year $t$, who lives in household $h$ and whose father emigrated from the country of origin $o$. This indicator is equal to one if the individual attained at least a bachelor's degree and zero otherwise.

As in the baseline specification (2.1), the dummy $female_i$ is equal to one if the second-generation immigrant $i$ is female and zero otherwise. $\tilde{Z}_o$ remains the proxy for gender norms, which we interact with the $female_i$ dummy. In contrast to the model in Section 2.1, we include household fixed effects $F_h$ rather than country-of-origin fixed effects $F_o$. Including household fixed effects $F_h$ allows us to control for all (un)observed time-invariant factors that affect brothers and sisters equally and that are potentially correlated with gender norms. The coefficient $\beta_2$ is our coefficient of interest and captures the role of culture in explaining the differences between second-generation-immigrants' brothers and sisters in attaining at least a bachelor's degree. If the gender norms help to explain the cross-country differences in the gender gap in higher education, we would, again, expect the coefficient $\beta_2$ to be statistically significant and positive. Given that we exploit the variation within households and the variable of interest $\tilde{Z}_o$ varies at the country-of-origin level, we use two-way clustered standard errors $\varepsilon_{iht}$, which are clustered at the country of origin and at the household level.

The epidemiological approach does, in general, not allow us to disentangle the effect of cultural traits from genetic characteristics. In most cases, the related literature does not distinguish between these two factors. In our Specification (2.2), we compare the educational choices of opposite gender siblings; and hence we control—at least to some extent—for genetic components.[12]

A further difference to the baseline model (2.1) is the inclusion of parental characteristics $P_{it}$ that we interact with the $female_i$ dummy—which distinguishes our estimation strategy from the related literature using opposite-sex sibling comparisons (Holmlund et al. (2023); Aldén and Neuman (2022); Ericsson (2020)). Hence, we control for the possibility that the parental characteristics affect sons and daughters differentially.[13] The

[12] In general, genetic characteristics might vary across countries, and it has been shown that genetics matter for individual behavior (e.g., Cronqvist and Siegel (2015) and Cronqvist et al. (2015) show that genetic characteristics affect individual saving and investment behavior).

[13] Autor et al. (2019), Bertrand and Pan (2013), and Autor et al. (2020) demonstrate a differential effect of family disadvantage on boys (relative to girls) in terms of disciplinary problems, lower achievement scores, and fewer high school completions.

parental characteristics $P_{it}$ vary with the specification considered, and include for each parent (mother and father) the level of education and the income.[14] $X_{i,t}$ is a vector of additional exogenous controls for individual $i$: age, age squared, and categories for race. We also control for time-variant factors by including year dummies $F_t$.

# 3 Data and Sample Selection

## 3.1 Individual Data

The main dataset consists of the March supplement of the Current Population Survey (CPS) from 1994 to 2017.[15] Starting from 1994, the March CPS includes questions about the birthplace of each individual and his or her parents. We define second-generation immigrants as individuals who were born in the United States while having fathers born abroad. Our baseline sample consists of second-generation immigrants that are at least 25 years old. Depending on the gender norms proxy used, we have 111,240 (148,058) observations from 64 (114) different countries of origin, out of which 59,521 (78,829) are women. Appendix Table A6 shows the composition of the sample in terms of countries of origin. While the majority of individuals in the sample have fathers from American, European, or Asian countries of origin, the data set also includes some second-generation immigrants from Africa and Oceania.

For the siblings analysis, we use a subsample of the baseline sample. In the CPS, characteristics of family members are only observable if the family members share the same household. Hence, information about the educational attainment of siblings is only available as long as the siblings share the same household. To observe the educational choice of the siblings as well as parental socio-economic characteristics, we have to rely on the subsample of second-generation immigrants living in the same household as their parents and siblings. We further restrict the sample to those second-generation migrants with at least one opposite-gender sibling residing in the same household. This leaves us

[14] We do not control for the parental socioeconomic background in the baseline specification as we do not have any information about the parents, except for their birth country, for most of the individuals in the baseline sample. Additional parental information are only available if the second-generation migrant lives in the same household as his/her parents. This sample is small as we study second-generation migrants that are at least 25 years old.

[15] Sarah Flood, Miriam King, Steven Ruggles, and J. Robert Warren. Integrated Public Use Microdata Series, Current Population Survey: Version 5.0. [dataset]. Minneapolis: University of Minnesota, 2017. https://doi.org/10.18128/D030.V5.0.

with 1,692 (2,305) observations from 37 (63) different countries of origin—depending on the gender norm proxy used.

### 3.2 Country Level Cultural Data

Our analysis uses aggregate country-level variables to measure gender norms prevailing in the second-generation immigrant's father's home country. We specify two different cultural explanatory variables related to the economic outcome of interest. For our first proxy, we use the female share of managers in senior and middle management positions (in %), and for the second proxy, we use the higher-education gender gap. To ease the comparison and interpretation of coefficients, we standardize all cultural variables to have mean zero and a standard deviation of one based on our baseline sample. Appendix A provides a detailed description of the aggregate data employed in this study, and Appendix Table A5 reports the values of the gender norm proxies for all countries in the baseline sample.

*Female Share of Managers as cultural variable*: Our first indicator measures the percentage of female employment in senior and middle management prevailing in the country of origin. The female share of managers in the country of ancestry reflects the labor market participation decision of highly educated women (relative to men) and is likely to convey prevailing beliefs about the role of women as compared to men in society in the country of origin. The presence of women in managerial positions may e.g. capture "role models" for other women in the country of ancestry.[16] A large literature shows that the exposure to role models can influence girls' and women's gender norms and career choices.[17] Kahn and Ginther (2018) conclude that role models are vital in generating gender differences in beliefs and ambitions concerning education. Breda et al. (2018) find that the exposure to external female role models significantly reduces the prevalence of stereotypes associated to jobs in science, for both female and male students, as well as stereotypes related to innate gender differences in cognitive abilities. Beaman et al. (2009) show that the prior exposure to a female leader weakens stereotypes about gender roles in the public and domestic spheres and is thereby associated with electoral gains for women. Beaman et al.

[16] Following Morgenroth et al. (2015), we define female role models as women who can "influence role aspirants' achievements, motivation, and goals by acting as behavioral models, representations of the possible, and/or inspirations."

[17] For an excellent review see Olsson and Martiny (2018). For example, Stout et al. (2011) and Lockwood (2006) clearly demonstrate that women are more likely to identify with and be inspired by female role models than male ones.

(2012) find that an increase in the presence of women in government councils significantly affects the aspirations of young girls, eliminated the gender gap in educational attainment among adolescents, and caused girls to spend less time on household chores. Larger shares of female managers may, thus, shape and reflect societies beliefs about whether women can (and should) compete with men in the labor market for high positions. This, in turn, would affect the expected returns from investing in higher education for women.

We collected the data on the female share of managers in senior and middle management positions (in %) from the International Labour Organization, ILOSTAT database. The data is annual and covers the period 2000 to 2017. For the proxy, we compute the average over all available years.

*Higher-Education Gender Gaps as cultural variable*: As our second proxy, we use the higher education gender gap prevailing in the country of origin (Barro–Lee Educational Attainment Data). We use the data for the year 1950 in the main analysis, and also for the 1960s and 1970s in robustness checks. Using the same variable as the dependent variable (measured in the source countries) is the obvious choice for the cultural variable and is standard practice in the epidemiological approach literature (e.g., Aldén and Neuman (2022); Huber and Schmidt (2022); Antecol (2000); Fernández and Fogli (2009); Fernández and Fogli (2006)).

### 3.3 Descriptive Evidence

Table 1 provides summary statistics for the entire sample of second-generation immigrants and the subsample of opposite-sex siblings living at their parent's place. Unsurprisingly, individuals in the siblings sample are, on average, younger than those in the full sample. A further difference is that individuals in the siblings sample are more likely to have both a mother and a father born abroad. As Table 1 shows, the distribution of tertiary education is very similar for both samples. About one-third have tertiary education. Also, the distribution of our two main cultural variables (i.e., the proxies for gender norms) is very similar. The two samples have a similar mean and standard deviation.[18]

Figure 2 shows for the two cultural proxies (described in Section 3.2), the correlation between the proxy of gender norms and the average gender gap in having attained at least

[18]Appendix Table A5 reports the gender norms proxies and the second-generation immigrant's average exogenous characteristics (age, gender) and the share with tertiary education at the country-of-origin level.

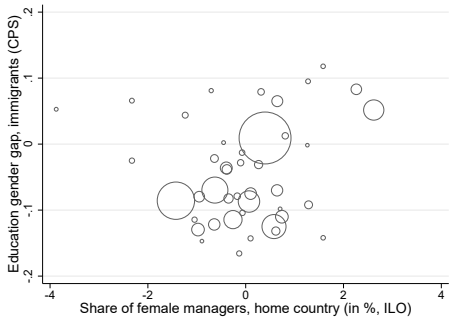
| | Full immigrants sample | | | | Siblings sample | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Min | Max | Mean | Std. Dev. | Min | Max |
| *Individual Characteristics* | | | | | | | | |
| Age | 53.45 | 19.50 | 25 | 90 | 30.72 | 6.01 | 25 | 90 |
| Higher education | 0.30 | 0.46 | 0 | 1 | 0.30 | 0.46 | 0 | 1 |
| Female | 0.53 | 0.49 | 0 | 1 | 0.43 | 0.50 | 0 | 1 |
| Both parents foreign born (same) | 0.55 | 0.50 | 0 | 1 | 0.79 | 0.41 | 0 | 1 |
| Both parents foreign born | 0.64 | 0.48 | 0 | 1 | 0.87 | 0.34 | 0 | 1 |
| *Cultural Variables* | | | | | | | | |
| Share female managers | 0.32 | 0.07 | 0.04 | 0.52 | 0.36 | 0.08 | 0.04 | 0.52 |
| Higher education gender gap | -1.92 | 1.01 | -6.82 | 0.04 | -1.39 | 0.95 | -6.82 | 0.04 |
| Observations | 148,335 | | | | 2,309 | | | |

The table shows the sample mean, standard deviation, minimum and maximum for various individual characteristics and country level variables separately for the full sample of immigrants and for the sample of siblings only. The row "both parents foreign born" refers to the variable that measures whether both the mother and the father of the second-generation immigrant were born abroad, whereas "both parents foreign born (same)" measures whether the mother and the father were born abroad in the same country. As for the cultural variables, summary statistics are based on the unstandardized variables.

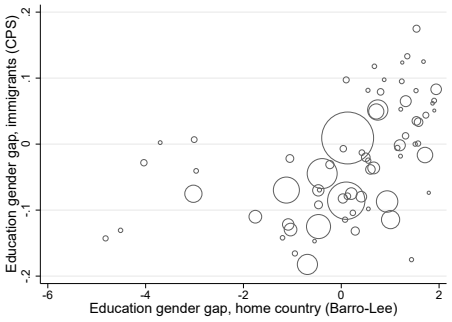
Table 1: Summary Statistics

a Bachelor degree for the corresponding second-generation immigrant group living in the United States.[19] In line with our hypothesis, we find a positive correlation between the culture variables and the educational choices of second-generation immigrants. For second-generation immigrants in the US, the female attainment in higher education relative to the male attainment tends to increase with the share of female managers in the home country (Panel (a), correlation of 0.51) and with the higher educational attainment of women relative to men in the home country (Panel (b), correlation of 0.43).

(a) Share of Female Managers




(b) Higher Education Gender Gap




To compute the education gender gap of the second-generation immigrants, for each country we estimate a linear probability model regressing the higher education dummy on a female dummy using the sample of second-generation migrants. Circle size represents the number of second-generation immigrants by country of origin.

Figure 2: Education Gaps of Second-Generation Immigrants and Culture in Home Country

[19] Countries with at least 100 observations are included. In the regressions, all observations are included.

# 4 Results

## 4.1 Baseline

Table 2 shows the main results of estimating the model in (2.1). In the first, third, and fifth column, we use the female share of managers in the home country to capture gender norms, and in the second, fourth, and sixth column, we use the gender gap in higher education in the home country; the respective cultural variable is indicated at the top of each column. The first row shows the marginal effect of the interaction between the female dummy and the proxy for gender norms. The standard errors are corrected for clustering at the country of origin level and are reported in parentheses.

Columns 1 and 2 show the estimation results without any control variables. In columns 3 and 4, we add exogenous controls for the second-generation immigrants, namely, age, age squared, and categories for race. We also include fixed effects for the second-generation immigrant's metropolitan area of residence and the year of the survey. Moreover, as we do not control yet for country-of-origin fixed effects in the first four columns, we are able to also include the gender norms variable itself (i.e. without interaction with a female dummy). This allows us to shed some light on whether the effect on the gender gap is rather driven by men or women. The results in columns (3) and (4) indicate that an increase in the female share of managers in the country of origin is associated with a lower probability of tertiary education for men (-0.027), however, the effect is (marginally) not statistically significant. The effect for women is much smaller (0.028-0.027). Considering the other cultural proxy, the gender gap in tertiary education measured in the source country, the results are similar: there is a negative impact on the probability of having higher education for men (-0.029) and a very small effect on women (0.025-0.029). This suggests that the effect on the gender gap is rather driven by men.

Finally, in Columns 5 and 6, we show our main results as specified in our baseline specification (2.1). We include country-of-origin fixed effects to account for any characteristics in the second-generation immigrant's country of ancestry that may be both related to gender roles and educational attainments of the second-generation immigrants.

We find for all specifications a positive and statistically significant impact of the interaction between the female dummy and the proxy of culture—indicating that culture in the country of origin can explain part of the gender differences of second-generation immigrant

women and men living in the United States in attaining at least a Bachelor degree. Adding the additional controls leaves all results fairly unchanged.

An increase of the female share of managers in senior and middle management in the country of the father's origin by one standard deviation is associated with an increase in the relative tertiary educational attainment of second-generation-immigrant women over men in the US by 2.8%-points. This accounts for 10.8% of the variation in the gender gap of tertiary education across immigrant groups within the United States.[20] An increase of one standard deviation in the "higher education gender gap"-variable presented in Column 6 of Table 2 accounts for 9.6% of the variation in the gender gap of tertiary education across immigrant groups within the US.

Bolzendahl and Myers (2004) and the references herein argue that higher education attainment is associated with weaker gender stereotypes and a greater liberalization of attitudes, both across countries and individuals, and over time. We investigate whether the magnitude of the effect of gender norms on the gender gap in higher education varies with the exact level of higher education considered. According to Bolzendahl and Myers (2004), we would expect the impact of gender norms on the gender gap in higher education to decrease with the level of educational attainment. We run three additional regressions of the model (2.1), each with a different dependent variable. In the baseline, we use a dummy variable that equals one if the second-generation migrant has at least a Bachelor degree. In addition, we construct a dummy variable of having at least some college, but no degree and of having at least a Master degree. Finally, we construct a variable that is equal to one if the individual has at least either a professional school degree or a doctorate degree and zero otherwise, which we label "PhD" for simplicity.

Table 3 shows the results. In Panel A, we replicate the baseline results for convenience. In Panel B, we use the dependent variable "having at least some college". In Panel C, we use as dependent dummy variable "having at least a Master degree", and finally, in Panel D, the dependent variable is "having at least a PhD". For all specifications we find a positive and statistically significant impact of the interaction between the female dummy and the gender norms proxy.

While there is a steady decline in the size of the estimated effect of gender norms on

[20] Using the estimates from Table 2, Column 5, the quantitative effect is calculated by $\frac{0.028}{std(Educ_{IM})} = \frac{0.028}{0.26} = 0.108$.

| Cultural variable | (1) Female share of managers | (2) Higher education gender gap | (3) Female share of managers | (4) Higher education gender gap | (5) Female share of managers | (6) Higher education gender gap |
|---|---|---|---|---|---|---|
| Source | ILO | Barro-Lee | ILO | Barro-Lee | ILO | Barro-Lee |
| Cultural variable | 0.031*** | 0.028*** | 0.028*** | 0.025*** | 0.028*** | 0.025*** |
| x female | (0.007) | (0.008) | (0.007) | (0.007) | (0.006) | (0.007) |
| Cultural variable | -0.019 | 0.001 | -0.027 | -0.029** | | |
| | (0.023) | (0.018) | (0.017) | (0.014) | | |
| Observations | 111240 | 148059 | 111240 | 148059 | 111240 | 148059 |
| No. of countries | 64 | 114 | 64 | 114 | 64 | 114 |
| Individual controls | NO | NO | YES | YES | YES | YES |
| MSA FE | NO | NO | YES | YES | YES | YES |
| Year FE | NO | NO | YES | YES | YES | YES |
| Country of origin FE | NO | NO | NO | NO | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country of origin level) are reported in parentheses. Individual controls in columns 3 to 6 are age, age squared and categories for race.

Table 2: Baseline Results

the gender gap in educational attainment as the level of educational attainment increases, the effect is sizable in all specifications. As for the share of managers variable, an increase of one standard deviation of the cultural proxy accounts for 10.8% of the variation in the Bachelor-degree gender gap of second-generation migrants as mentioned above. This fraction increases to 15.0% if we consider the decision to have at least come college, but no degree. For the decision to attain a PhD, the number decreases to 6.7%.[21]

## 4.2 Siblings Analysis

Next, we turn to the sample of second-generation migrant opposite-sex siblings. The first, third, fifth, and seventh column of Table 4 refer to the specification, where we capture gender norms by the female share of managers in the home country, and in the second, fourth, sixth, and eighth column we use the "higher-education gender gap"-variable. In a first step, we estimate our baseline model (Equation (2.1)) using the sample of siblings, i.e. the specification without household fixed effects, but with country-of-origin fixed effects. Table 4 show the results in Columns 1 and 2. The coefficients of interest are similar to the respective coefficients based on the full sample (see Table 2, Columns 5 and 6).[22] The fact that the gender norm effect in the baseline model for the sample of siblings and the full sample are similar mitigates the possible concern that the siblings results are driven by any particularities of this sub-sample.

[21] The standard deviations of the education gender gaps across the second-generation migrant groups in the United States are equal to $std(SomeCollege_{IM}) = 0.22$, $std(Master_{IM}) = 0.17$, $std(PhD_{IM}) = 0.09$.

[22] The strong decline in sample size in Table 4 leads to the larger standard errors.

| | (1) | (2) |
|---|---|---|
| Cultural variable | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee |
| **A: Baseline** | | |
| Cultural variable | 0.028*** | 0.025*** |
| x female | (0.006) | (0.007) |
| Observations | 111240 | 148059 |
| **B: Dependent Variable: Some College** | | |
| Cultural variable | 0.033*** | 0.019*** |
| x female | (0.010) | (0.007) |
| Observations | 111240 | 148059 |
| **C: Dependent Variable: Master** | | |
| Cultural variable | 0.016*** | 0.019*** |
| x female | (0.003) | (0.004) |
| Observations | 111240 | 148059 |
| **D: Dependent Variable: PhD** | | |
| Cultural variable | 0.006** | 0.010*** |
| x female | (0.003) | (0.003) |
| Observations | 111240 | 148059 |
| Individual controls | YES | YES |
| MSA FE | YES | YES |
| Year FE | YES | YES |
| Country of origin FE | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least some College (Panel B), a Bachelor (Panel A), a Master (Panel C) or a PhD degree (Panel D) and zero otherwise. We estimate linear probability models. Clustered standard errors (at country of origin level) are reported in parentheses. Individual controls are age, age squared and categories for race.

Table 3: Tertiary Education: Some College, Master and PhD-degree

Next, we include household fixed effects to control for any (un)observed parental characteristics that might influence children's choices of pursuing higher education. Among others, this alleviates the potential concern that unobserved parental human capital could be systematically correlated with the "cultural variable x female" term and affects the higher education of the children.[23] Table 4, Columns 3 and 4, display the results of estimating Equation (2.2) without the inclusion of any further interaction terms of parental characteristics with the female dummy. Just as in the baseline specification, gender norms have a positive and significant impact on the gender gap of second-generation immigrant brothers and sisters in attaining at least a Bachelor degree. A one standard deviation increase in the share of female managers is associated with a 6.2%-points increase in the relative educational attainment of women versus men, which accounts for 17.3% of the standard deviation in the higher education gender gap of second-generation migrants. In Columns 5 and 6, we also control for the interaction between parental education and a female dummy (separately for mothers and fathers) to allow for the possibility that parental education affects sons and daughters differentially. In Columns 7 and 8, we add interaction terms of mother's and father's income with the female dummy. Adding these additional terms hardly affects the estimate of the gender norms effect. Moreover, mother's and father's education and income do not seem to have a differential effect on daughters and sons higher education choices. The estimated coefficients are rather small and not statistically significant.

These results relate to the literature that studies how parental education influences children's educational attainment. Strategies to account for the endogeneity of parental education include comparisons of adopted and natural children to account for genetic effects (e.g., Sacerdote (2004); Plug (2004)) and the comparison of the children of twins (e.g., Behrman and Rosenzweig (2002)). Twin studies support the positive effect of paternal education but find no effect of maternal education on the educational outcomes of the children. In adoption studies, positive effects of both parents are found. Chevalier (2013) investigate the intergenerational transmission of education, and the extent to which early school leaving (at age 16) may be due to variations in permanent income and parental

[23] In Appendix Table B1, we show that the correlation of our culture x female interaction terms and parental education for the sample of siblings is between 0.05 and 0.14. Table B2 shows that controlling for parental education does not change the cultural coefficients of interest (columns (3) and (4)), compared to our standard regressions without parental education (columns (1) and (2)).

education levels. Depending on the estimation strategies, the authors find different results. Using least squares leads to stronger maternal than paternal education effects and more substantial effects on sons than daughters. When using IV, only paternal education matters. In contrast, maternal education has no statistically significant impact on the likelihood of remaining in education for either sons or daughters—a result robust to the range of instrument sets used.[24]

In contrast, Chetty et al. (2016b) find a differential advantage of growing up in a higher-income family for boys' relative to girls' college attendance, employment, and earnings outcomes. Autor et al. (2019) find maternal education and income reduce the relative boy-girl disadvantage in math and reading. However, the authors report that the effect sizes are much smaller, and these academic outcomes are far less predictive of high school non-completion than behavioral outcomes observed at the same ages. In addition, and essential for us, they find that family disadvantage contributes only modestly to the cross-race and cross-ethnic group variation in the gender gap in these educational measures.

We conclude that how paternal and maternal education influences children's educational attainment has yet to be fully understood. The estimated impacts are sensitive to the selection of the sample and estimation methods used. We contribute to this literature by showing that maternal and paternal education and income have no differential effects on daughters' and sons' higher education choices—for a sample of second-generation migrants in the United States.

While the beauty of the siblings analysis is that it allows us to control for all time-invariant factors that affect, both brothers and sisters, the disadvantage is the much smaller sample size. The number of observations drops by 99%. For the female manager (higher education gender gap) variable, the sample size drops from 111,240 (148,059) observations in the baseline to 1,692 (2,305) observations in the siblings analysis. Still, the results are very much in line using the two different specifications. In the remainder of the paper, we largely focus on the baseline model specified in Equation (2.1) as the larger number of observations gives us some leeway to execute robustness checks, where we split or alter the specification of the sample.

[24]The excellent early review of Holmlund et al. (2011) concludes that "intergenerational schooling associations are largely driven by selection, and the causal effect of parental schooling effects are minimal".

| Cultural variable | (1) Female share of managers | (2) Higher education gender gap | (3) Female share of managers | (4) Higher education gender gap | (5) Female share of managers | (6) Higher education gender gap | (7) Female share of managers | (8) Higher education gender gap |
|---|---|---|---|---|---|---|---|---|
| Source | ILO | Barro-Lee | ILO | Barro-Lee | ILO | Barro-Lee | ILO | Barro-Lee |
| Cultural variable | 0.029 | 0.070*** | 0.062*** | 0.047* | 0.061*** | 0.044* | 0.061*** | 0.046* |
| x female | (0.020) | (0.021) | (0.024) | (0.026) | (0.020) | (0.026) | (0.020) | (0.025) |
| Dad education | | | | | 0.031 | 0.004 | 0.033 | 0.008 |
| x female | | | | | (0.031) | (0.029) | (0.032) | (0.029) |
| Mom education | | | | | 0.014 | 0.031 | 0.019 | 0.045 |
| x female | | | | | (0.031) | (0.034) | (0.036) | (0.035) |
| Dad income | | | | | | | 0.000 | -0.001 |
| x female | | | | | | | (0.000) | (0.001) |
| Mom income | | | | | | | 0.000 | 0.000 |
| x female | | | | | | | (0.001) | (0.000) |
| Observations | 1692 | 2305 | 1692 | 2305 | 1692 | 2305 | 1692 | 2305 |
| No. of countries | 37 | 63 | 37 | 63 | 37 | 63 | 37 | 63 |
| Individual controls | YES | YES | YES | YES | YES | YES | YES | YES |
| Household FE | NO | NO | YES | YES | YES | YES | YES | YES |
| MSA FE | YES | YES | NO | NO | NO | NO | NO | NO |
| Country of Origin FE | YES | YES | NO | NO | NO | NO | NO | NO |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. The standard errors are reported in parentheses and are clustered at country-of-origin level in columns 1-2, and clustered at country of origin level and household level in columns 3-8. Individual controls are age, age squared and categories for race. Parental education categories are: less than high school, high school, more than high school. Parental income is measured in units of $1,000.

Table 4: Siblings Analysis

### 4.3 Cultural Transmission

We then turn to the process of cultural transmission. We consider three different channels of cultural transmission, and consistently find larger effects of gender norms on the gender gap in higher education, the more the second-generation migrants are exposed to their culture of ancestry within the United States.[25]

#### Parental Background

First, we study the process of vertical cultural transmission based on the cultural background of the parents. Does the strength of the cultural effect differ depending on whether both parents were born in the same home country or whether they have a different cultural background? E.g., Bisin and Verdier (2000) argue that parents with the same cultural background "enjoy a more efficient socialization technology for their shared trait" than parents with a mixed cultural background. In Table 5, Panel A shows the baseline results for convenience, and in Panel B and Panel C we split the sample based on the cultural background of the father and the mother. In Panel B, we only include second-generation migrants, whose mother and father were born in the same country of origin. In Panel C, we include all other second-generation migrants, i.e. those where only the father was born abroad and also those where mother and father were both born abroad, but in different countries of origin.

The results indicate that the cultural effect is indeed more pronounced for second-generation migrants with same background parents. The coefficients in Panel B for the sample with parents from the same country of origin are larger than in Panel C and strongly statistically significant. In Panel C, for the sample of individuals with parents from different home countries, the coefficients become smaller than in the baseline.

Next, we investigate whether gender norms are more strongly transmitted through fathers or mothers. In other words, we investigate whether the father's or mother's culture affects the gender gap in higher education more. To do so, we only include second-generation immigrants with both parents (mother and father) born abroad.

Table 6 reports the results for the baseline specification (Equation (2.1)) in Panel A and for the siblings specification (Equation (2.2)) in Panel B. We find that gender norms

[25] This section also contributes to the literature on the assimilation of immigrants in terms of gender norms.

| | (1) | (2) |
|---|---|---|
| Cultural variable | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee |
| **A: Baseline** | | |
| Cultural variable | 0.028*** | 0.025*** |
| x female | (0.006) | (0.007) |
| Observations | 111240 | 148059 |
| **B: Parents: Same Home Country** | | |
| Cultural variable | 0.033*** | 0.033*** |
| x female | (0.007) | (0.008) |
| Observations | 61754 | 81472 |
| **C: Parents: Different Home Country** | | |
| Cultural variable | 0.020*** | 0.014** |
| x female | (0.007) | (0.007) |
| Observations | 49486 | 66587 |
| Individual controls | YES | YES |
| MSA FE | YES | YES |
| Year FE | YES | YES |
| Country of origin FE | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Individual controls are age, age squared and categories for race.

Table 5: Cultural Transmission I: Parental Background

matter for the gender gap in higher education—independent of whether we define a second-generation immigrant via the source country of the father or the mother. In both cases, we find a positive and significant effect of gender norms. However, the quantitative effect size differs for both gender norms proxies. In the baseline sample, the effect is roughly 20% larger when defining a second-generation immigrant as someone having a foreign-born father. For the siblings sample, we find that the effect is 13% to 35% larger, depending on the gender norms proxy used. However, these differences in magnitude are not statistically significant.

In summary, we find suggestive evidence that gender norms tend to have a stronger effect on the higher education gender gap of second-generation immigrants if we assign the father's source country. Our result aligns with the scarce literature that compares the norm transmission via the father and mother for education outcomes. For example, the baseline estimation's results of Noghanibehambari et al. (2020) show a stronger effect of the father's compared to the mother's culture on first- and second-immigrants' years of schooling. When analyzing the impact of culture on the gender gap (difference in years of schooling), their results show that solely the father's culture has explanatory power. This result also corresponds to Blau et al. (2013), who show a solid intergenerational transmission of education for a sample of second-generation immigrant women, with stronger effects through immigrant fathers than immigrant mothers.

The question of why the father's culture matters more for gender differences of second-generation migrants in higher educational attainment is beyond the scope of this paper. However, as higher education is a significant financial investment in the United States, this result is consistent with the empirical literature on intra-household decision-making. This literature suggests that independent of whether the man or woman is more financially sophisticated, the man's view may matter more than the woman's for financial household decisions (see e.g., Ke (2021), Fonseca et al. (2012), or Smith et al. (2010)).

Also, it is interesting to investigate how the timing of parental immigration to the US influences the strength of the cultural transmission. Those that immigrated as young kids might be much more culturally integrated in the US than those who immigrated as adults. Unfortunately, we do not have information on the year of immigration for the parents of second-generation immigrants in our entire (baseline) sample. However, we observe the year of immigration for the parents in our siblings sample. Its small sample size prevents us

PANEL A: Baseline sample

| | Culture of Mother | | Culture of Father | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Cultural variable | Female share of managers | Higher education gender gap | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee | ILO | Barro-Lee |
| Cultural variable x female | 0.026*** | 0.026*** | 0.031*** | 0.031*** |
| | (0.006) | (0.006) | (0.007) | (0.007) |
| Observations | 68921 | 93717 | 68921 | 93717 |
| Individual controls | YES | YES | YES | YES |
| MSA FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |
| Country of origin FE | YES | YES | YES | YES |

PANEL B: Siblings sample

| | Culture of Mother | | Culture of Father | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Cultural variable | Female share of managers | Higher education gender gap | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee | ILO | Barro-Lee |
| Cultural variable x female | 0.061** | 0.069*** | 0.069** | 0.093*** |
| | (0.032) | (0.025) | (0.029) | (0.032) |
| Observations | 1414 | 1974 | 1414 | 1974 |
| Individual controls | YES | YES | YES | YES |
| MSA FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |
| Household FE | YES | YES | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level in Panel A and at country-of-origin level and household level in columns in Panel B) are reported in parentheses. Individual controls are age, age squared and categories for race.

Table 6: Transmission through father and mother

from doing a proper sample split. However, we still provide some evidence on whether the timing of parental immigration matters for transmitting culture. From the siblings sample, we drop all second-generation immigrants whose parents migrated at age 20 or younger. Hence, the parents of the second-generation migrants in the remaining subsample lived in their home countries during their entire childhood. Thus, we expect a larger cultural effect for this subsample than for the baseline sample, which also includes parents that already immigrated as young kids and might thus be expected to be much more integrated in the US. The evidence presented in Appendix Table B4, Columns 3 and 4, indeed points in this direction. The coefficients on our variable of interest are larger compared to the baseline. However, the difference is not statistically significant.

### Ethnic Density

Fernández and Fogli (2009) argue that the "degree to which ethnic groups cluster in the same neighborhoods appears to be an important mechanism in maintaining culture". To provide some suggestive evidence for the process of horizontal cultural transmission, we analyze the impact of ethnic clustering. Similar to Borjas (1995), we construct the following index using the Current Population Survey data:

$$\text{Exposure index } S_{os} \equiv \frac{N_{os}}{N_s},$$

where $N_{os}$ denotes the number of first- and second-generation migrants with country of origin $o$ and who live in state $s$, and where $N_s$ denotes the number of persons (including natives) who live in state $s$. We compute the average over all available years.

Based on the state of residence $s$ and the country of origin $o$, we assign this exposure index to our sample of second-generation migrants and split the sample at the median of the exposure index $S_{os}$. We estimate our main specification separately for the high ethnic density sample (those second-generation immigrants who live in a state with above median ethnic clustering) and the low ethnic density sample (those second-generation immigrants who live in a state with below median ethnic clustering). Table 7 provides the baseline results as a reference point in Panel A, the high ethnic density estimation results in Panel B and the low ethnic density results in Panel C. The cultural effect tends to be larger for the group of immigrants who are living in states where the ethnic density is above the median. On the one hand, this effect could be due to the higher exposure to the culture of the country of ancestry, which leads to the culture being more easily maintained, which would be evidence for cultural transmission. On the other hand, it may also be due to the fact that second-generation immigrants with stronger preferences for their country of ancestry culture tend to move to (or to stay in) areas with a high share of immigrants from the same country of origin, i.e. there might be a selection effect. Both effects are in line with a cultural interpretation. Still, given that we cannot further disentangle the two components, we cannot interpret our result as causal evidence for cultural transmission.[26]

[26] As Mexicans constitute by far the largest group of immigrants in the United States and the ethnic density for second-generation immigrants from Mexico is basically always above the median, this could potentially drive our estimation results in Panel B, Table 7. Therefore, we repeat the analysis, dropping second-generation immigrants with Mexican origin from our sample. Appendix Table B3 shows that the results are robust to excluding second-generation migrants with Mexican origin.

| Cultural variable | (1) Female share of managers | (2) Higher education gender gap |
|---|---|---|
| Source | ILO | Barro-Lee |
| **A: Baseline** | | |
| Cultural variable | 0.028*** | 0.025*** |
| x female | (0.006) | (0.007) |
| Observations | 111240 | 148059 |
| **B: High Ethnic Density** | | |
| Cultural variable | 0.035*** | 0.028*** |
| x female | (0.006) | (0.011) |
| Observations | 58721 | 76201 |
| **C: Low Ethnic Density** | | |
| Cultural variable | 0.005 | 0.019*** |
| x female | (0.009) | (0.006) |
| Observations | 52519 | 71858 |
| Individual controls | YES | YES |
| MSA FE | YES | YES |
| Year FE | YES | YES |
| Country of origin FE | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Individual controls are age, age squared and categories for race.

Table 7: Cultural Transmission II: Ethnic Density

### Marital Status

As a third transmission channel, we study whether the strength of the cultural effect depends on the marital status. We would expect the cultural effect of the country of origin to be stronger for second-generation migrants married to a spouse with the same cultural background than for second-generation migrants who are either single or whose spouse has a different cultural background. Note that this could either be due to assortative matching along cultural dimensions (selection effect) or because spouses share the same values and norms, which are, thus, strengthened in marriage (cultural transmission).[27] Thus, the results in this section should be interpreted as suggestive evidence, rather than as a causal effect of cultural transmission.

Results are displayed in Table 8. For comparison, Panel A depicts the baseline results for the whole sample of second-generation immigrants. In Panel B to Panel D, we split the sample based on the marital status. Panel B shows the results for the subsample of singles, in Panel C we consider married individuals, where the fathers of both spouses were born in the same home country, and in Panel D the subsample consists of married individuals, where the fathers of the spouses were born in different home countries. In Panel D, we consider both second-generation migrants married to individuals whose father was born abroad in a different country and also those married to individuals whose father was born in the United States.

Table 8 shows that the cultural effect is strongest for the group of married second-generation migrants that share the same country of ancestry with their spouses (Panel C). We find a positive and significant coefficient for both cultural variables, and the coefficient of each gender norm proxy is larger than in the baseline specification. For the group of singles (Panel B), the coefficients are also positive and significant for both cultural proxies, larger than in the baseline specification and smaller than in the group of same ancestry country couples. However, the differences to the coefficients in Panel A and Panel C are not statistically significant. Finally, for the group of second-generation migrants whose spouse has a different cultural background (Panel D), the coefficients shrink in size, and the significance level decreases.

[27] If the partnership is formed after the decision to pursue a Bachelor's degree, any effect that we observe would be due to assortative matching.

| Cultural variable | (1) Female share of managers | (2) Higher education gender gap |
|---|---|---|
| Source | ILO | Barro-Lee |
| **A: Baseline** | | |
| Cultural variable | 0.028*** | 0.025*** |
| x female | (0.006) | (0.007) |
| Observations | 111240 | 148059 |
| **B: Singles** | | |
| Cultural variable | 0.031*** | 0.026*** |
| x female | (0.006) | (0.007) |
| Observations | 48366 | 65071 |
| **C: Married: Same Home Country** | | |
| Cultural variable | 0.032*** | 0.031*** |
| x female | (0.009) | (0.007) |
| Observations | 18259 | 23442 |
| **D: Married: Different Home Country** | | |
| Cultural variable | 0.017* | 0.014* |
| x female | (0.009) | (0.008) |
| Observations | 44615 | 59546 |
| Individual controls | YES | YES |
| MSA FE | YES | YES |
| Year FE | YES | YES |
| Country of origin FE | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Individual controls are age, age squared and categories for race.

Table 8: Cultural Transmission III: Marital Status

# 5 Robustness

## 5.1 Alternative Measures for Culture

This section investigates whether our results are sensitive to our gender norm proxies. First, we test the robustness using three alternative outcome variables at the country-of-origin level. Instead of using the female share of managers, we use the percentage of women holding parliamentary seats. We also use the gender gap in tertiary education attainment rates of different decades. We collect the percentage of women holding parliamentary seats from the Global Gender Gap Report of the World Economic Forum for 2018—the first year for which this data is available. For the gender gap in tertiary education attainment rates, we use the Barro and Lee (2013) Educational Attainment Data and construct the gender gap for the 1960s and the 1970s instead of using the year 1950. Columns 1 to 3 in Table 9 shows that our results are robust to these alternative measures of gender norms.

*Attitudinal data as cultural variable*: An alternative to capturing culture by outcome variables is using measures of attitudes directly. We construct such a proxy of gender norms using attitudinal survey data on the role of women in society from the World Value Survey and the European Values Study (WVS/EVS). These studies consist of nationally representative surveys about values, beliefs, and preferences, which have been conducted in 90 countries from 1980 to 2022. We focus on five particular questions that might capture women's perceived role in society and might, thus, be particularly useful for our purpose. We measure the agreement of respondents with the following five statements: "A university education is more important for a boy than for a girl", "Being a housewife is just as fulfilling as working for pay", "Both the husband and wife should contribute to household income", "Please tell me [..] whether you think it is very important, rather important or not very important for a successful marriage? Sharing household chores", "A pre-school child is likely to suffer if his or her mother works".

We use this attitudinal data and compute the average agreement with these five statements for each country of ancestry. In a second step, we build the attitudinal index by averaging these five questions. We code the gender attitudes index in a way such that a higher value corresponds to what one may call a less traditional view on the role of women

| Cultural variable | (1) Gender gap in education, 1960s | (2) Gender gap in education, 1970s | (3) Women holding parliamentary seats (%) | (4) Gender attitudes |
|---|---|---|---|---|
| Source | Barro/Lee | Barro/Lee | IPU | WVS/EVS |
| Cultural variable | 0.013** | 0.009*** | 0.094*** | 0.023*** |
| x female | (0.005) | (0.003) | (0.024) | (0.005) |
| Observations | 148059 | 148059 | 146915 | 145313 |
| Individual controls | YES | YES | YES | YES |
| MSA FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |
| Country of origin FE | YES | YES | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Individual controls are age, age squared and categories for race. IPU refers to the Inter-Parliamentary Union.

Table 9: Alternative Cultural Measures

and standardize the variable.[28] Column 4 of Table 9 shows that our results are robust to this alternative measure of gender norms.[29]

Next, we address the potential concern that our results might vanish if we would include alternative aspects of culture (such as the cultural dimensions of Hofstede e.g., used by Figlio et al. (2019) and Holmlund et al. (2023) and risk-taking and patience based on the Global Preferences Survey e.g., used by Hanushek et al. (2022)). These cultural aspects might be correlated with our gender norm proxies and might differentially affect women and men. We use eight different cultural dimensions, interact each with the female dummy, and include this interaction term in our baseline specification. Appendix Table B6 shows the results. We interpret our results to be robust to this exercise. Our key measures of gender norms (interacted with the female dummy) remain statistically significant in 14 out of 16 regressions.

[28] Appendix A provides a detailed description on the index construction. To understand how stable these attitudinal measures are, we decompose the variance of the five variables into a within variation that measures how strongly each of the variables varies within a country over time and a between variation that captures the variation in each variable between countries. Appendix Table A1 shows that for all five attitudinal variables, the between variation is always substantially higher than the within variation.

[29] According to the literature on survey methodology, the share of "Don't know" indicates the survey question's quality. A high percentage raises doubt about the question's quality and measurement equivalence (i.e., how comparable the survey question is across countries). We calculated the share of "Don't know" answers for each question and country. We report the frequency and distribution of "Don't know" answers for each survey question in Appendix Table A2. As the fraction of "Don't know"s varies considerably across questions, we run robustness checks, taking the fraction of "Don't know" responses by country and question into account. Specifically, in Columns 2 and 3 of Appendix Table B5, we do not use those questions to construct the index for a particular country if the average fraction of "don't know"s of the three waves exceeds 5% (Column 2) or 7.5% (Column 3). The coefficients show that the results are very robust to the exercise. Its robustness is another advantage of using such an index.

### 5.2 Alternative specifications for the location of residence

Throughout the paper, we control for geographical differences, independent of their source, by including a large vector of metropolitan statistical area dummies $F_m$. We also control for calendar year effects using time dummies $F_t$ in all specifications.

To account for potential systematic changes over time across locations (e.g., changes in the number of schools, school quality, population composition, and labor market prospects), we perform two robustness checks by using measures for location-time trends. Table 10 shows that our results are robust to the inclusion of location-time interaction terms in addition to time and location fixed effects—when using metropolitan area (Panel A) or metropolitan central city status (Panel B) as the location of residence identifier.[30]

It could also be that specific location characteristics have a differential impact on the labor market prospects of women and men. For example, Autor et al. (2016) show that the quality of the school matters for the size of the gender gap in math and reading scores of children (grades 6-8). Chetty et al. (2016b) find that gender differences in labor market outcomes can vary significantly across the United States. Chetty and Hendren (2018) find that the location within the United States shapes earnings, college attendance rates, and fertility and marriage patterns. Without investigating gender differences, Chetty et al. (2016a) report that the causal effect of location on labor market prospects (measured by lifetime earnings) stems from location characteristics and not selection effects.

With two robustness checks, we address the possibility that location-specific characteristics might affect women's and men's educational attainment differentially. We interact various location fixed effects with the female dummy, while controlling for time trends $F_t$ and location fixed effects. Hence, these two robustness checks account for location characteristics that might have a gendered impact on labor market prospects—independent of the source. Table 10 shows that our results are unaffected by including the interaction term of metropolitan areas with the female dummy (Panel C). Similarly, our results are robust to using the location identifier 'county' interacted with the female dummy instead (Panel D).

[30]The metropolitan central city status indicates whether the household is located in a metropolitan area. For households within metropolitan areas, it specifies whether the household resides inside or outside the central city of the metropolitan area. Metropolitan statistical areas (MSA) serve to group counties and cities into specific geographic areas for population censuses and compilations of statistical data. A county is an administrative or political subdivision of a state. There exist 3,144 counties and county equivalents in the 50 US states (2022).

| | (1) | (2) |
|---|---|---|
| Cultural variable | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee |
| **A: Include MSA FE, interation term MSA x year** | | |
| Cultural variable | 0.028*** | 0.025*** |
| x female | (0.006) | (0.007) |
| Observations | 110431 | 147372 |
| **B: Include metro FE, interaction term metro x year** | | |
| Cultural variable | 0.028*** | 0.026*** |
| x female | (0.007) | (0.007) |
| Observations | 114001 | 152038 |
| **C: Include MSA FE, interaction term MSA x female** | | |
| Cultural variable | 0.018*** | 0.024*** |
| x female | (0.006) | (0.005) |
| Observations | 111197 | 148029 |
| **D: Include county FE, interaction term county x female** | | |
| Cultural variable | 0.020*** | 0.023*** |
| x female | (0.007) | (0.006) |
| Observations | 105112 | 140466 |
| Individual controls | YES | YES |
| Year FE | YES | YES |
| Country of origin FE | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Each regression includes time fixed effects, country-of-origin fixed effects, and the individual controls for age, age squared and categories for race. MSA stands for metropolitan statistical area. METRO stands for metropolitan central city status. COUNTY is an administrative or political subdivision of a state. There exist 3,144 counties and county equivalents in the 50 US states (2022).

Table 10: Alternative Specifications for Location

### 5.3 Additional Control Variables

Next, we consider potential omitted variables. Given that our empirical specification includes a whole set of country-of-origin fixed effects $F_o$, both observable and unobservable country level characteristics are already captured. Still, it could be the case that some country level variables affect second-generation migrant women and men differently.

For example, it might be that countries with a lower average degree of education or poorer countries tend to provide less educational opportunities to girls relative to boys and at the same time, these could be the countries with the more conservative views on gender roles. Gender-specific education opportunities in the home country, experienced by the parents, may still affect the educational outcomes of second-generation immigrants, if parents do not have full information about the educational opportunities in the United States and have not fully adjusted their expectations about the educational opportunities of their sons and daughters.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Cultural variable | Female share of managers | Higher education gender gap | Female share of managers | Higher education gender gap | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee | ILO | Barro-Lee | ILO | Barro-Lee |
| Cultural variable | 0.030*** | 0.011* | 0.031*** | 0.025*** | 0.029*** | 0.023*** |
| x female | (0.008) | (0.006) | (0.006) | (0.009) | (0.006) | (0.007) |
| Log GDP per Capita | -0.033*** | -0.029*** | | | | |
| x female | (0.012) | (0.010) | | | | |
| Education x female | | | -0.030*** | 0.001 | | |
| | | | (0.011) | (0.007) | | |
| Stock Market Capitalization | | | | | -0.001* | 0.000 |
| x female | | | | | (0.000) | (0.000) |
| Observations | 96295 | 121055 | 110964 | 148059 | 110028 | 141935 |
| Individual controls | YES | YES | YES | YES | YES | YES |
| MSA FE | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES |
| Country of origin FE | YES | YES | YES | YES | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Individual controls are age, age squared and categories for race. Log real GDP per capita is measured by the average between 1950 and 1959. For education, we use BarroLee data, the fraction of the population with higher education in the 1950s. Stock market capitalization to GDP (%) is measured by the average over all available years (1975-2017).

Table 11: Additional Country Controls

Therefore, in Table 11 we add log GDP per capita and a measure of education in the country of origin interacted with a female dummy to our regression.[31] Even after controlling for these additional factors, we find a positive and significant effect of gender

[31] We use data on real GDP per capita provided by the Penn World Table. We take the log and compute the average between 1950 and 1959. For education, we use the BarroLee data. We compute the fraction of the population with tertiary education for each country of origin in the 1950s.

norms on the gender gap in higher education. Finally, we also account for the possibility that the financial development in the country of origin affects boys and girls differently. The financial development may matter for the decision to pursue a Bachelor degree given that in many countries higher education is associated with great expenses and bank loans, and may, thus, play an important role for the funding of higher education. In Columns 5 and 6 of Table 11, we use the stock market capitalization in the country of origin as a measure of financial development and interact it with the female dummy.[32] Our results are robust to this inclusion.

### 5.4 Sample Selection

As the number of observations varies a lot across countries of origin, we perform sample selection robustness checks. For example, we drop all countries of origin that have less than 100 (1000) observations. In addition, we run a robustness check where we drop all those second-generation immigrants with Mexican origin (they form the largest group with 29% of our baseline observations). Lastly, we exclude all those second-generation immigrants with Italian origin (they form the second-largest group with 19% of our baseline observations). Appendix Table B7 shows that our results are robust to these sample size variations.

### 5.5 Differential Selection

As discussed before, migrant parents might be a selective sample and, therefore, might not be representative for their home country. We are interested in studying the gender gap of higher education, and therefore in our case, a systematic selection of migrants would only matter if it was correlated with gender norms in the country of origin for which the selection would have to be differential across countries of origin. As long as the selection of migrants is not systematically correlated with gender norms in the country of origin, it should not drive our finding that culture matters for the gender gap in higher education of second-generation immigrants.[33] To be clear, our results would be biased if for some reason migrants from highly traditional countries (in terms of gender norms) would have more traditional views than the home country average, while the migrants from female

[32] We use data on stock market capitalization to GDP (%) from the World Bank. The variable is available for the years 1975 to 2017. We compute the average over all available years.

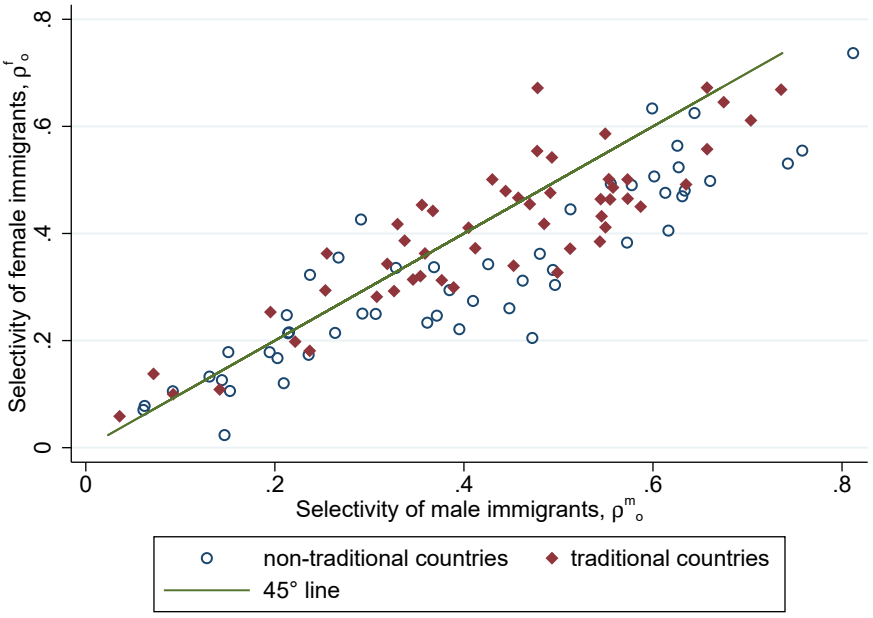
[33] A systematic selection of migrants that is correlated with gender norms in the country of origin could happen either because of a systematic selection based on norms or because of of a systematic selection based on characteristics of migrants that are correlated with norms.

favoring countries have more female favoring views than the country average.

In our sample of countries, the United States is not very traditional on the role of women. Why would the emigrants to the United States from the most traditional countries be selected from the most traditional members of society? Exactly those might prefer to stay in the home country given that their values and norms are the most opposed to the ones prevailing in the United States. Although this kind of selection is rather unlikely, we still address this concern.

To test for this kind of selection, ideally, we would have liked to observe the beliefs and preferences about gender norms of the first-generation immigrants directly. Given that we do not have any direct information on gender norms at the individual level, we base our analysis on the educational attainment of the first-generation migrants. This is appropriate, if gender norms are reflected by the educational decisions. Thus, in terms of educational attainment, differential selection would be problematic if above average educated men and below average educated women emigrated from the more traditional countries (i.e. countries with a large negative gender gap in higher education) such that the gender gap of the emigrants would be larger than the gender gap prevailing in the country of origin. The opposite would need to be true for the less traditional and more female favoring countries (i.e. countries with a large positive gender gap): we would be concerned, if below average educated men and above average educated women emigrated from these countries.

We construct a gender-specific selection index $\rho_o^g$ with $g \in \{f, m\}$ for each country of origin $o$ and check whether there are systematic differences for male versus female migrants. To be precise, for each gender and country of origin, we subtract the tertiary education attainment rate in the country of origin from the tertiary education attainment rate of the corresponding first-generation migrant group living in the United States. Figure 3 plots the female selection index $\rho_o^f$ against the male selection index $\rho_o^m$ for all countries in our sample. Based on the distribution of tertiary education gender gaps across countries according to Barro Lee data set in the 1950s, we split our sample of countries at the median in traditional countries (marked with a diamond) and non-traditional countries (marked with a circle). In this framework, differential selection would be problematic, if the more traditional countries (diamonds) would cluster below the 45°line and the less traditional countries (circles) would cluster above the 45°line. Figure 3 does not show such patterns.




Gender- and country of origin specific selection measures are calculated as the female or male tertiary education attainment rate of the group of first generation immigrants from a specific country of origin living in the United States (based on the CPS data) minus the corresponding rate in the country of origin measured in the 1950s (based on Barro-Lee data).

Figure 3: Selection

The observations cluster around the 45°line, indicating that within one country of origin the selection of migrants is independent of its gender. So, we do not find evidence for the concern that our results are driven by differential selection.

In addition, we address the differential selection concern by varying the sample specifications. The idea here is that the reasons for emigration might vary depending on the country of origin because some countries might have experienced war or a dictatorship and therefore induced a systemically different type of emigrant. If this selection is correlated with the cultural proxies, the positive effect of culture might reflect a systematic difference in the degree of emigrant's selection across countries of origin. We, therefore, exclude countries of origin that might have induced systematically different types of emigrants (parents of our subjects of study). Appendix Table B8 shows the corresponding estimation results. In Panel A, we exclude all those countries that have been a Post-Soviet State. In Panel B, we drop socialist and communist countries of origin from our sample. Each culture proxy remains highly statistically significant. In Panel C (D), we exclude all countries of origin that experienced a war (military dictatorship) after World War II and before 1992.[34] Our

[34]This period corresponds to the most likely time window of the parent's emigration. We study the

results are robust to these sample variations.

# 6 Conclusion

According to the United Nations, "gender equality is not only a fundamental human right but a necessary foundation for a peaceful, prosperous and sustainable world". To achieve gender equality, closing the gender gap in high-skilled and influential positions in the private and public sphere is fundamental. A prerequisite for a leading position is receiving higher education.

In this paper, we examine the extent to which gender norms are relevant in explaining the gender gap in higher educational attainment. Based on a sample of second-generation immigrants in the United States, we find beliefs about the role of women and men in society have a significant effect, both statistically and economically, on the gender gap of higher education attainment. The effect is larger the stronger is the exposure of the individuals to their culture of ancestry. Differentiating between different degrees of higher education (from "at least some college, but no degree" to "at least a PhD"), we find a quantitatively meaningful effect of gender norms even for the highest education level. Differential selection into emigration does not seem to drive our results, and the results are robust to numerous additional checks.

Methodologically, unlike the majority of the epidemiological approach literature, our analysis has the major advantage of including country-of-origin fixed effects in all our regressions. In addition, we run a siblings analysis, where we are even able to include household fixed effects. This makes it possible to neatly identify the effect of gender norms on the gender gap in higher education by comparing brothers and sisters living in the same household. Hence, we hold constant factors such as; socioeconomic background, parenting style, parental genetics, the local labor market, and the educational infrastructure at the location of residence. In addition, we control for the possibility that the parental education affect sons and daughters differentially.

We contribute to the literature on the transmission of (gender) norms. Our results show that both the father's and the mother's culture significantly influence the higher-education gender gap of second-generation migrants in the United States. Our evidence suggests

behavior of second-generation immigrants during 1994-2017, and who are at least 25 years old. Therefore the parents must have arrived in the United States at the latest during the time window 1969-1992.

that the transmission of gender norms on the higher-educational attainment gender gap is stronger through fathers than mothers. We leave the question of whether this finding is externally valid (i.e. outside of anglophone countries, where higher education is less of a financial investment decision) for future research.

Our findings contribute to the literature that studies the importance of gender norms for the observed differences in economic outcomes between men and women—and how these outcomes impact the overall economy. Higher educational attainment is, for example, a crucial factor for $R\&D$, and hence for the economic growth of a country. Efficient human capital investment would match the most talented individuals with higher-education opportunities. The part of the gender gap in higher educational attainment that is driven by gender norms might therefore lead to efficiency losses (Hsieh et al. (2019)).

Further, gender equality may in and of itself be positive for economic growth, as diversity brings together complementary skills. Recent empirical evidence shows that higher gender diversity enhances overall performance and productivity in teamwork (e.g., Bayer and Rouse (2016), Ellison and Mullin (2014), Hoogendoorn et al. (2013), Bear and Woolley (2011)). In a similar vein, The European Commission has argued that achieving greater gender balance is not just a question of fairness, but that it contributes to greater productivity and innovation, better company performance, and improved public policy. The empirical literature provides evidence that these benefits of gender equality are important in organizations requiring high-skilled workers. For example, García-Meca et al. (2015) show that board-level gender diversity improves the performance of firms. The positive effects on firm's performance are especially large for those whose strategy is based on innovation (Dezsö and Ross, 2012), and for firms in high-tech manufacturing and knowledge-intensive services (Christiansen et al., 2016). Gender diversity on the boards of banking-supervision agencies has also been associated with greater financial stability (Sahay and Cihak, 2018).

For outcomes in policy design, the advantage of gender equality relates to differing perspectives of men and women. For example, May et al. (2018a), May et al. (2018b), and May et al. (2014) find that female and male PhD economists both in the United States and Europe have significantly different views on a variety of policy issues, especially on the crucial questions of environmental protection, government interventions, and gender equality. The gender gap in views on the economy might have important implications for policymaking and the outcomes of decisions that are pursued.

Our results suggest that policies aiming to change gender norms may be a promising way to reduce gender gaps in higher education. Such reductions in higher education gender gaps may—in turn—lead to increases in the efficiency and productivity of high-skilled teams, *R&D* firms and in overall improvements in economic growth. In addition, equal gender representation in high-skilled and influential positions might lead to different policy outcomes that would better represent the average (women and men's) views of society.

Hence, the relevant policy question is whether public policies can change gender norms and thereby change gender equality in higher education attainment. Especially in the field of economics, gender norms are seen as deeply engrained, sticky, and hard to change. However, the extensive literature in social psychology concludes that role models are vital in creating (and changing) gender norms and attitudes towards gender roles in society (e.g., Olsson and Martiny (2018); Kahn and Ginther (2018); Stout et al. (2011); Lockwood (2006)). Moreover, there is also evidence in economics that culture can change rapidly e.g. based on cultural shocks or policy interventions (Bau and Fernández (2023)). Recent experimental studies in economics show that exposure to role models (causally) changes gender norms.[35]

Hence, larger shares of women in leading positions may shape societies' beliefs about whether women can (and should) compete with men in the labor market for influential positions. This, in turn, would affect the expected returns from investing in higher education for women. We conclude, by combining our results and the reviewed evidence on how role models influence gender norms, that policies aiming to increase the representation of women in leading positions will be a promising tool to change gender norms. In addition, the reviewed experimental evidence indicates that simple, low-cost, and easily scalable interventions (e.g., short exposure to female role models in high school or university) might already change gender norms and significantly increase the percentage of women attaining higher education.

[35]For example, Breda et al. (2018) conduct a large-scale randomized experiment and find that exposure to external female role models significantly reduces the prevalence of stereotypes associated with jobs in science for both female and male students, as well as stereotypes related to innate gender differences in cognitive abilities. Beaman et al. (2009) show that prior exposure to a female leader weakens stereotypes about gender roles in the public and domestic spheres and is associated with electoral gains by female candidates. Exploiting a randomized natural experiment in India, Beaman et al. (2012) have shown that an increase in the presence of women in government councils significantly affected the aspirations of young girls. Porter and Serra (2020) conducts a field experiment to increase the percentage of women majoring in economics at the University. The quantitative (and causal) effect through the channel of aspiration of female role models is enormous; a nearly 100 percent increase in the share of female economics majors.

## Bibliography


Aldén, L. and E. Neuman (2022): "Culture and the gender gap in choice of major: An analysis using sibling comparisons," *Journal of Economic Behavior & Organization*, 201, 346–373.

Alesina, A. and P. Giuliano (2010): "The Power of the Family," *Journal of Economic Growth*, 15, 93–125.

Algan, Y. and P. Cahuc (2010): "Inherited Trust and Growth," *American Economic Review*, 100, 2060–92.

Antecol, H. (2000): "An Examination of Cross-Country Differences in the Gender Gap in Labor Force Participation Rates," *Labour Economics*, 7, 409–426.

Autor, D., D. Figlio, K. Karbownik, J. Roth, and M. Wasserman (2016): "School Quality and the Gender Gap in Educational Achievement," *American Economic Review*, 106, 289–95.

——— (2019): "Family Disadvantage and the Gender Gap in Behavioral and Educational Outcomes," *American Economic Journal: Applied Economics*, 11, 338–81.

Autor, D. H., D. Figlio, K. Karbownik, J. Roth, and M. Wasserman (2020): "Males at the Tails: How Socioeconomic Status Shapes the Gender Gap," *NBER Working Paper*.

Bagues, M., M. Sylos-Labini, and N. Zinovyeva (2017): "Does the Gender Composition of Scientific Committees Matter?" *American Economic Review*, 107, 1207–38.

Barro, R. and J.-W. Lee (2013): "A New Data Set of Educational Attainment in the World, 1950-2010," *Journal of Development Economics*, 104, 184–198.

Bau, N. and R. Fernández (2023): "Culture and the Family," in *Handbook of the Economics of the Family*, vol. 1.

Bayer, A. and C. E. Rouse (2016): "Diversity in the Economics Profession: A New Attack on an Old Problem," *Journal of Economic Perspectives*, 30, 221–42.

Beaman, L., R. Chattopadhyay, E. Duflo, R. Pande, and P. Topalova (2009): "Powerful Women: Does Exposure Reduce Bias?" *The Quarterly Journal of Economics*, 124, 1497–1540.

Beaman, L., E. Duflo, R. Pande, and P. Topalova (2012): "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India," *Science*, 335, 582–586.

Bear, J. and A. Woolley (2011): "The Role of Gender in Team Collaboration and Performance," *Interdisciplinary Science Reviews*, 36.

Behrman, J. R. and M. R. Rosenzweig (2002): "Does Increasing Women's Schooling Raise the Schooling of the Next Generation?" *American Economic Review*, 92, 323–334.

Bertocchi, G. and M. Bozzano (2020): "Gender gaps in education," *Handbook of Labor, Human Resources and Population Economics, in Klaus F Zimmermann (ed.), Springer*, 1–31.

Bertrand, M. (2011): *New Perspectives on Gender*, Elsevier, vol. 4 of *Handbook of Labor Economics*, chap. 17, 1543–1590.

Bertrand, M., E. Kamenica, and J. Pan (2015): "Gender Identity and Relative Income within Households," *The Quarterly Journal of Economics*, 130, 571–614.

Bertrand, M. and J. Pan (2013): "The Trouble with Boys: Social Influences and the Gender Gap in Disruptive Behavior," *American Economic Journal: Applied Economics*, 5, 32–64.

Bisin, A. and T. Verdier (2000): ""Beyond the Melting Pot": Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits," *The Quarterly Journal of Economics*, 115, 955–988.

Blau, F. (2015): "Immigrants and Gender Roles: Assimilation Vs. Culture," *IZA Journal of Migration*, 4.

Blau, F., L. Kahn, A. Liu, and K. Papps (2013): "The Transmission of Women's Fertility, Human Capital, and Work Orientation across Immigrant Generations," *Journal of Population Economics*, 26, 405–435.

Blau, F. D., M. A. Ferber, and A. E. Winkler (2014): *The Economics of Women, Men, and Work*, Upper Saddle River, NJ: Pearson, seventh ed.

Blau, F. D. and L. M. Kahn (2017): "The Gender Wage Gap: Extent, Trends, and Explanations," *Journal of Economic Literature*, 55, 789–865.

Blau, F. D., L. M. Kahn, and K. L. Papps (2011): "Gender, Source Country Characteristics, and Labor Market Assimilation among Immigrants," *The Review of Economics and Statistics*, 93, 43–58.

Bolzendahl, C. I. and D. J. Myers (2004): "Feminist Attitudes and Support for Gender Equality: Opinion Change in Women and Men, 1974-1998," *Social Forces*, 83, 759–789.

Borjas, G. (1995): "Ethnicity, Neighborhoods, and Human-Capital Externalities," *American Economic Review*, 85, 365–90.

Breda, T., E. Jouini, and C. Napp (2018): "Societal inequalities amplify gender gaps in math," *Science*, 359, 1219–120.

Carroll, C. D., B.-K. Rhee, and C. Rhee (1994): "Are There Cultural Effects on Saving? Some Cross-Sectional Evidence," *The Quarterly Journal of Economics*, 109, 685–99.

——— (1999): "Does Cultural Origin Affect Saving Behavior? Evidence from Immigrants," *Economic Development and Cultural Change*, 48, 33–50.

Casarico, A., P. Profeta, and C. D. Pronzato (2016): "On the Regional Labour Market Determinants of Female University Enrolment in Europe," *Regional Studies*, 50, 1036–1053.

Chetty, R. and N. Hendren (2018): "The Impacts of Neighborhoods on Intergenerational Mobility I: Childhood Exposure Effects*," *The Quarterly Journal of Economics*, 133, 1107–1162.

Chetty, R., N. Hendren, and L. F. Katz (2016a): "The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment," *The American Economic Review*, 106, 855–902.

Chetty, R., N. Hendren, F. Lin, J. Majerovitz, and B. Scuderi (2016b): "Childhood Environment and Gender Gaps in Adulthood," *American Economic Review*, 106, 282–88.

Chevalier, A., H. C. O. S. V. (2013): "The impact of parental income and education on the schooling of their children," *IZA Journal of Labor Economics*, 2.

Christiansen, L., H. Lin, J. Pereira, P. B. Topalova, and R. Turk-Ariss (2016): "Gender Diversity in Senior Positions and Firm Performance: Evidence from Europe," *IMF Working Paper*.

Cronqvist, H., A. Previtero, S. Siegel, and R. E. White (2015): "The Fetal Origins Hypothesis in Finance: Prenatal Environment, the Gender Gap, and Investor Behavior," *The Review of Financial Studies*, 29, 739–786.

Cronqvist, H. and S. Siegel (2015): "The Origins of Savings Behavior," *Journal of Political Economy*, 123, 123–169.

De Philippis, M. and F. Rossi (2020): "Parents, Schools and Human Capital Differences Across Countries," *Journal of the European Economic Association*, 19, 1364–1406.

Dezsö, C. L. and D. G. Ross (2012): "Does Female Representation in Top Management Improve Firm Performance? a Panel Data Investigation," *Strategic Management Journal*, 33, 1072–1089.

Dossi, G., D. Figlio, P. Giuliano, and P. Sapienza (2021): "Born in the family: Preferences for boys and the gender gap in math," *Journal of Economic Behavior & Organization*, 183, 175–188.

Ellison, S. F. and W. P. Mullin (2014): "Diversity, Social Goods Provision, and Performance in the Firm," *Journal of Economics & Management Strategy*, 23, 465–481.

Ericsson, S. (2020): "Cultural Gender Norms and Neighbourhood Exposure: Impacts on the Gender Gap in Math," Working Papers 2020:6, Lund University, Department of Economics.

Feliciano, C. (2005): "Does Selective Migration Matter? Explaining Ethnic Disparities in

Educational Attainment among Immigrants' Children," *International Migration Review*, 39, 841–871.

Fernández, R. (2007): "Alfred Marshall Lecture Women, Work, and Culture," *Journal of the European Economic Association*, 5, 305–332.

Fernández, R. and A. Fogli (2009): "Culture: An Empirical Investigation of Beliefs, Work, and Fertility," *American Economic Journal: Macroeconomics*, 1, 146–77.

Fernández, R. and A. Fogli (2006): "Fertility: The Role of Culture and Family Experience," *Journal of the European Economic Association*, 4, 552–561.

Figlio, D., P. Giuliano, U. Özek, and P. Sapienza (2019): "Long-Term Orientation and Educational Performance," *American Economic Journal: Economic Policy*, 11, 272–309.

Fonseca, R., K. J. Mullen, G. Zamarro, and J. Zissimopoulos (2012): "What Explains the Gender Gap in Financial Literacy? The Role of Household Decision Making," *The Journal of Consumer Affairs*, 46, 90–106.

Fortin, N. M. (2005): "Gender Role Attitudes and the Labour-market Outcomes of Women across OECD Countries," *Oxford Review of Economic Policy*, 21, 416–438.

——— (2015): "Gender Role Attitudes and Women's Labor Market Participation: Opting-Out, AIDS, and the Persistent Appeal of Housewifery," *Annals of Economics and Statistics*, 379–401.

Fuchs-Schündeln, N., P. Masella, and H. Paule-Paludkiewicz (2020): "Cultural Determinants of Household Saving Behavior," *Journal of Money, Credit, and Banking*, 52, 1035–1070.

Galor, O. and D. N. Weil (1996): "The Gender Gap, Fertility, and Growth," *The American Economic Review*, 374–387.

García-Meca, E., I.-M. García-Sánchez, and J. Martínez-Ferrero (2015): "Board diversity and its effects on bank performance: An international analysis," *Journal of Banking & Finance*, 53, 202 – 214.

Goldin, C., L. F. Katz, and I. Kuziemko (2006): "The Homecoming of American College Women: The Reversal of the College Gender Gap," *Journal of Economic Perspectives*, 20, 133–156.

Guiso, L., F. Monte, P. Sapienza, and L. Zingales (2008): "Culture, Gender, and Math," *Science*, 320, 1164–1165.

Guiso, L., P. Sapienza, and L. Zingales (2006): "Does Culture Affect Economic Outcomes?" *Journal of Economic Perspectives*, 20, 23–48.

Hanushek, E. A., L. Kinne, P. Lergetporer, and L. Woessmann (2022): "Patience, Risk-taking, and Human capital Investment across Countries," *The Economic Journal*, 132, 2290–2307.

Holmlund, H., M. Lindahl, and E. Plug (2011): "The Causal Effect of Parents' Schooling on Children's Schooling: A Comparison of Estimation Methods," *Journal of Economic Literature*, 49, 615–651.

Holmlund, H., H. Rainer, and P. Reich (2023): "All geared towards success? Cultural origins of gender gaps in student achievement," *Journal of Economic Behavior & Organization*, 209, 222–242.

Hoogendoorn, S., H. Oosterbeek, and M. van Praag (2013): "The Impact of Gender Diversity on the Performance of Business Teams: Evidence from a Field Experiment," *Management Science*, 59, 1514–1528.

Hsieh, C.-T., E. Hurst, C. I. Jones, and P. J. Klenow (2019): "The Allocation of Talent and US Economic Growth," *Econometrica*, 87, 1439–1474.

Huber, S. J. and T. Schmidt (2022): "Nevertheless, they persist: Cross-country differences in homeownership behavior," *Journal of Housing Economics*, 55, 101804.

Kahn, S. and D. Ginther (2018): "Women and Science, Technology, Engineering, and Mathematics (stem): Are Differences in Education Ad Careers Due to Stereotypes, Interests, or Family," in *The Oxford Handbook of Women and the Economy*, Oxford University Press, New York (2018), 767–798.

Ke, D. (2021): "Who Wears the Pants? Gender Identity Norms and Intrahousehold Financial Decision-Making," *The Journal of Finance*, 76, 1389–1425.

Knowles, S., P. K. Lorgelly, and P. D. Owen (2002): "Are Educational Gender Gaps a Brake on Economic Development? Some cross-country empirical evidence," *Oxford Economic Papers*, 54, 118–149.

Lagerlöf, N.-P. (2003): "Gender Equality and Long-run Growth," *Journal of Economic Growth*, 8, 403–426.

Lippmann, Q. and C. Senik (2018): "Math, Girls and Socialism," *Journal of Comparative Economics*, 46, 874–888.

Lockwood, P. (2006): "Someone like me can be successful": Do college students need same-gender role models?" *Psychology of Women Quarterly*, 30, 36–46.

Luttmer, E. F. P. and M. Singhal (2011): "Culture, Context, and the Taste for Redistribution," *American Economic Journal: Economic Policy*, 3, 157–79.

May, A., D. Kucera, and M. Mcgarvey (2018a): "Mind the gap: Differing perspectives of men and women economists may affect policy outcomes," *Finance and Development*.

May, A. M., M. G. McGarvey, and D. Kucera (2018b): "Gender and European Economic Policy: A Survey of the Views of European Economists on Contemporary Economic Policy," *Kyklos*, 71, 162–83.

May, A. M., M. G. McGarvey, and R. Whaples (2014): "Are Disagreements among Male and Female Economists Marginal at Best?: A Survey of AEA Members and Their Views on Economics," *Contemporary Economic Policy*, 32, 111–32.

Morgenroth, T., M. K. Ryan, and K. Peters (2015): "The Motivational Theory of Role Modeling: How Role Models Influence Role Aspirants' Goals," *Review of General Psychology*, 19, 465–483.

Noghanibehambari, H., N. Tavassoli, and F. Noghani (2020): "Intergenerational Transmission of Culture Among Immigrants: Gender Gap in Education Among First and Second Generations," *Journal of Economics and Political Economy*, 7, 284–318.

Nollenberger, N., N. Rodriguez-Planas, and A. Sevilla (2016): "The Math Gender Gap: The Role of Culture," *American Economic Review*, 106, 257–261.

Olivetti, C., E. Patacchini, and Y. Zenou (2020): "Mothers, Peers, and Gender-role Identity," *Journal of the European Economic Association*, 18, 266–301.

Olsson, M. and S. E. Martiny (2018): "Does Exposure to Counterstereotypical Role Models Influence Girls' and Women's Gender Stereotypes and Career Choices? A Review of Social Psychological Research," *Frontiers in Psychology*, 9.

Plug, E. (2004): "Estimating the Effect of Mother's Schooling on Children's Schooling Using a Sample of Adoptees," *The American Economic Review*, 94, 358–368.

Pope, D. G. and J. R. Sydnor (2010): "Geographic Variation in the Gender Differences in Test Scores," *Journal of Economic Perspectives*, 24, 95–108.

Porter, C. and D. Serra (2020): "Gender Differences in the Choice of Major: The Importance of Female Role Models," *American Economic Journal: Applied Economics*, 12, 226–54.

Rodriguez-Planas, N. (2018): "Mortgage Finance and Culture," *Journal of Regional Science*, 58, 786–821.

Rodríguez-Planas, N. and N. Nollenberger (2018): "Let the Girls Learn! It Is Not Only about Math... It's about Gender Social Norms," *Economics of Education Review*, 62, 230–253.

Rodríguez-Planas, N. and N. Nollenberger (2018): "Let the girls learn! It is not only about math ... it's about gender social norms," *Economics of Education Review*, 62, 230–253.

Sacerdote, B. (2004): "What Happens When We Randomly Assign Children to Families?" NBER Working Papers 10894, National Bureau of Economic Research, Inc.

Sahay, R. and M. Cihak (2018): "Women in Finance: A Case for Closing Gaps," *IMF Staff Discussion Notes*.

Smith, J. P., J. J. McArdle, and R. Willis (2010): "Financial Decision Making and Cognition in a Family Context," *The Economic Journal*, 120, 363–380.

Stout, J., N. Dasgupta, M. Hunsinger, and M. A. Mcmanus (2011): "STEMing the tide: using ingroup experts to inoculate women's self-concept in science, technology, engineering, and mathematics (STEM)." *Journal of personality and social psychology*, 100 2, 255–70.

UNESCO (2018): "Global Education Monitoring Report Gender review 2018: Meeting our Commitments to Gender Equality in Education," .

van Hoorn, A. (2019): "Cultural Determinants of Human Capital Accumulation: Evidence from the European Social Survey," *Journal of Comparative Economics*.

World Economic Forum (2018): "The Global Gender Gap Report 2018," .

# Appendix A: Data and Summary Statistics

## Country-of-Origin Variables and Data Sources

**Female managers in senior and middle management (%):** Percentage of female employment in senior and middle management. Source: International Labour Organization, ILOSTAT database. The data is yearly and covers the period 2000-2017. For the proxy, we compute the average over all available years.

**Women in parliament (%):** Percentage of women holding parliamentary seats. In instances where a parliamentary system is bicameral, the figure used is the one for the lower house. Data source: Global Gender Gap Report of the World Economic Forum for the year 2018—the first year for which this data is available. Inter-Parliamentary Union, Women in National Parliaments database. Data reflects information provided by National Parliaments by 1 October 2018.

**Tertiary Education:** We compute the fraction of the population with completed tertiary education for each country of origin for the year 1950, and for the 1960s and in the 1970s, respectively. Data source: Barro-Lee Educational Attainment Data. Tertiary Education Attainment is defined by the schooling attainment at ISCED level 5A, 5B or 6 or by having been ever enrolled in the 4th year of colleges or universities. The International Standard Classification of Education (ISCED) is a statistical framework for organizing information on education maintained by the UNESCO and displayed in Table A3 for convience.

**GDP per capita:** We use data on real GDP per capita provided by the Penn World Table. We take the log and compute the average between 1950 and 1959.

**Stock market capitalization to GDP (%):** Value of listed shares to GDP, calculated using the following deflation method: $(0.5) * \frac{[F_t/P_{e,t}+F_{t-1}/P_{e,t-1}]}{[GDP_t/P_{a,t}]}$ where $F$ is stock market capitalization, $P_e$ is end-of period CPI, and $P_a$ is average annual CPI. End-of period CPI (IFS line PCPI) and average annual CPI is calculated using the monthly CPI values (IFS line PCPI). Data source: The World Bank, Global Financial Development, World Federation of Exchanges; Global Stock Markets Factbook and supplemental S&P data, Standard & Poor's. The data is yearly and covers the period 1975-2017. For the proxy, we compute the average over all available years.

**Gender attitudes**: We construct the gender attitudes index based on five different questions on aspects related to gender norms from the World Value Survey. These are the questions:

- "A university education is more important for a boy than for a girl"
  1 'Agree strongly' 2 'Agree' 3 'Disagree' 4 'Strongly disagree'

- "Being a housewife is just as fulfilling as working for pay"
  1 'Agree strongly' 2 'Agree' 3 'Disagree' 4 'Strongly disagree'

- "Both the husband and wife should contribute to household income"
  1 'Agree strongly' 2 'Agree' 3 'Disagree' 4 'Strongly disagree'

- "Here is a list of things which some people think make for a successful marriage. Please tell me, for each one, whether you think it is very important, rather important or not very important for a successful marriage? Sharing household chores"
  1 'Very' 2 'Rather' 3 'Not very'

- "A pre-school child is likely to suffer if his or her mother works"
  1 'Agree strongly' 2 'Agree' 3 'Disagree' 4 'Strongly disagree'

To construct the index, we follow a three-step approach:

- For each of the five WVS questions, we generate a dummy variable in a way such that a higher value (1) corresponds to what one may call a less traditional view on the role of women. The re-coding makes sure that all variables have the same scale.

- To construct the index, we compute the average value for each question at the country level over the first three waves of the WVS (1981-1998)

- Next, we compute the mean value over all five questions for each country.

Note that in the baseline case, we do not consider "Don't know" responses, but only code up the other answer categories. As discussed in the paper, we run robustness checks, where we take the fraction of "Don't know" responses by country and question into account.

| Variable | | Std. dev. | Observations |
|---|---|---|---|
| Pre-school child suffers if mother works | overall | .199 | N = 230 |
| | between | .173 | n = 89 |
| | within | .123 | T = 2.584 |
| Important in marriage: sharing household chores | overall | .147 | N = 151 |
| | between | .143 | n = 49 |
| | within | .078 | T = 3.081 |
| Husband & wife should contribute to income | overall | .112 | N = 185 |
| | between | .108 | n = 77 |
| | within | .038 | T = 2.402 |
| Housewife as fulfilling as working for pay | overall | .148 | N = 323 |
| | between | .131 | n = 95 |
| | within | .084 | T = 3.400 |
| University more important for boy than for girl | overall | .128 | N = 269 |
| | between | .123 | n = 93 |
| | within | .058 | T = 2.892 |

All variables are coded as binary variables, where zero corresponds to more conservative views and one to less conservative views. N corresponds to the overall number of year times country observations, n corresponds to the number of countries and T corresponds to the average number of years that are available for each country.

Table A1: Between and Within Variation of WVS Variables

| Variable | Mean | Median | 75 percentile | 95 percentile |
|---|---|---|---|---|
| Pre-school child suffers if mother works | 0.028 | 0.021 | 0.028 | 0.045 |
| Important in marriage: sharing household chores | 0.000 | 0.000 | 0.000 | 0.007 |
| Husband & wife should contribute to income | 0.037 | 0.034 | 0.047 | 0.068 |
| Housewife as fulfilling as working for pay | 0.060 | 0.060 | 0.064 | 0.111 |
| University more important for boy than for girl | 0.047 | 0.052 | 0.056 | 0.139 |

For this table we computed the average fraction of survey participants that answer "Don't know" to the respective question in the first three waves of the WVS/EVS. The table presents the distribution of these fractions across countries. The first column shows the mean fraction of "Don't knows" across countries. Column 2 to 4 show the fraction of "Don't know"s for the country at the respective percentile of the "Don't know"-distribution.

Table A2: Distribution of Answer Option "Do not know"

| Level | Description | Principal characteristics |
|---|---|---|
| 5 | First stage of tertiary education | Tertiary programmes having an educational content more advanced than those offered at ISCED levels 3 and 4. These programmes may be academically based or practically oriented / occupationally specific. Entry to these programmes normally requires the successful completion of ISCED level 3A or 3B or a similar qualification at ISCED level 4A. All degrees and qualifications are cross-classified by type of programmes, position in national degree or qualification structures and cumulative duration at tertiary. |
| 6 | Second stage of tertiary education | Tertiary programmes leading to the award of an advanced research qualification, e.g. Ph.D. These programmes are therefore devoted to advanced study and original research and are not based on course-work only. It typically requires the submission of a thesis or dissertation of publishable quality which is the product of original research and represents a significant contribution to knowledge. |

Table A3: ISCED Levels of Education

| Tertiary Education Rates and Gender Difference | | | |
|---|---|---|---|
| Country | Female | Male | Difference |
| Switzerland | 15.91 | 29.06 | -13.15 |
| Republic of Korea | 30.10 | 39.96 | -9.86 |
| Germany | 11.98 | 21.12 | -9.14 |
| Luxembourg | 17.53 | 25.86 | -8.33 |
| Netherlands | 16.20 | 22.3 | -6.10 |
| Japan | 17.21 | 23.14 | -5.93 |
| Austria | 8.81 | 14.69 | -5.88 |
| Belgium | 17.77 | 22.56 | -4.78 |
| Turkey | 5.42 | 8.89 | -3.47 |
| France | 10.26 | 13.63 | -3.37 |
| Spain | 15.83 | 17.97 | -2.14 |
| Mexico | 12.11 | 14.03 | -1.92 |
| Czech Republic | 7.86 | 9.61 | -1.75 |
| Greece | 24.35 | 25.84 | -1.49 |
| Finland | 13.98 | 15.45 | -1.48 |
| United Kingdom | 17.62 | 19.01 | -1.40 |
| USA | 30.55 | 31.61 | -1.06 |
| Chile | 7.85 | 8.74 | -0.89 |
| Denmark | 18.48 | 19.26 | -0.78 |
| Canada | 27.40 | 27.81 | -0.42 |
| Iceland | 17.69 | 18.11 | -0.41 |
| Italy | 7.76 | 8.11 | -0.34 |
| Norway | 15.17 | 15.01 | 0.16 |
| Slovakia | 9.31 | 8.78 | 0.53 |
| Israel | 29.05 | 28.17 | 0.88 |
| Hungary | 18.15 | 17.14 | 1.01 |
| Poland | 14.62 | 12.86 | 1.76 |
| Ireland | 31.37 | 29.27 | 2.10 |
| Portugal | 5.13 | 2.7 | 2.43 |
| Slovenia | 16.43 | 13.7 | 2.73 |
| Sweden | 19.76 | 16.96 | 2.80 |
| Australia | 26.25 | 22.99 | 3.27 |
| Estonia | 26.72 | 19.39 | 7.33 |
| New Zealand | 24.23 | 12.82 | 11.41 |

Source: Barro-Lee Educational Attainment Data for 2010. Percentage of Complete Tertiary Schooling Attained in Population by gender. The gender gap is measured as the female rate minus the male rate.

Table A4: Gender Gaps in Tertiary Education across OECD Countries

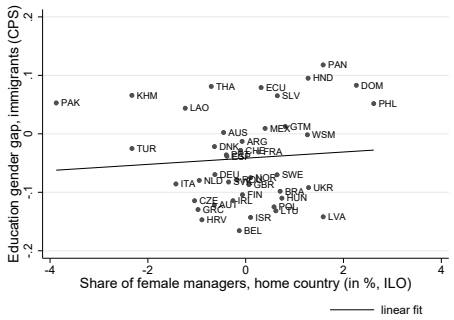
| | Country-of-origin variables | | Characteristics of $2^{nd}$ generation immigrants | | |
|---|---|---|---|---|---|
| Father's birthplace | Managers | Higher Education Gap (1950) | Tertiary Educ (%) | Female | Age |
| Afghanistan | n.a. | 1,6 | 0,5 | 0,5 | 33,7 |
| Albania | -1,4 | 1,9 | 0,4 | 0,5 | 58,6 |
| Algeria | -3,5 | 1,6 | 0,5 | 0,7 | 43,1 |
| Argentina | -0,1 | 0,4 | 0,5 | 0,5 | 41,1 |
| Armenia | n.a. | -4,5 | 0,4 | 0,5 | 64,3 |
| Australia | -0,5 | -3,7 | 0,4 | 0,5 | 55,9 |
| Austria | -0,6 | -1,1 | 0,3 | 0,6 | 68,0 |
| Bangladesh | -2,9 | 1,6 | 0,6 | 0,5 | 31,6 |
| Barbados | n.a. | 1,2 | 0,4 | 0,5 | 48,1 |
| Belgium | -0,1 | -0,9 | 0,3 | 0,5 | 61,0 |
| Belize/British H | 0,6 | -0,1 | 0,3 | 0,4 | 34,9 |
| Bolivia | n.a. | 0,6 | 0,6 | 0,5 | 36,0 |
| Bosnia and Herze | -1,1 | n.a. | 0,5 | 0,3 | 55,8 |
| Brazil | 0,7 | 0,6 | 0,4 | 0,5 | 45,6 |
| Bulgaria | 0,6 | -0,8 | 0,4 | 0,4 | 62,7 |
| Burma (Myanmar) | -0,3 | 1,5 | 0,8 | 0,3 | 37,0 |
| Cambodia | -2,3 | 1,9 | 0,2 | 0,5 | 42,0 |
| Cameroon | n.a. | 1,9 | 0,3 | 0,0 | 35,3 |
| Canada | n.a. | -0,4 | 0,3 | 0,5 | 57,5 |
| Chile | n.a. | -0,4 | 0,5 | 0,5 | 39,1 |
| China | n.a. | 1,7 | 0,6 | 0,5 | 47,0 |
| Colombia | n.a. | 0,5 | 0,4 | 0,5 | 36,0 |
| Congo | n.a. | 1,8 | 1,0 | 1,0 | 34,5 |
| Costa Rica | n.a. | 0,9 | 0,4 | 0,5 | 37,8 |
| Croatia | -0,9 | -0,5 | 0,5 | 0,5 | 56,2 |
| Cuba | n.a. | 0,7 | 0,4 | 0,5 | 38,4 |
| Cyprus | -1,6 | 0,4 | 0,8 | 0,5 | 46,7 |
| Czech Republic | -1,0 | 0,1 | 0,3 | 0,6 | 67,4 |
| Denmark | -0,6 | -1,1 | 0,3 | 0,5 | 67,3 |
| Dominican Republ | 2,3 | 1,9 | 0,3 | 0,6 | 34,9 |
| Ecuador | 0,3 | 0,8 | 0,4 | 0,5 | 39,4 |
| Egypt/United Ara | n.a. | 0,5 | 0,7 | 0,5 | 39,6 |
| El Salvador | 0,6 | 1,3 | 0,2 | 0,5 | 37,5 |
| Estonia | -0,1 | -0,6 | 0,6 | 0,6 | 55,4 |
| Ethiopia | -1,5 | n.a. | 0,6 | 0,6 | 36,1 |
| Fiji | 0,3 | 0,9 | 0,2 | 0,5 | 34,9 |
| Finland | -0,1 | 0,2 | 0,2 | 0,6 | 68,7 |
| France | 0,3 | -0,2 | 0,4 | 0,5 | 53,5 |
| Germany | -0,6 | -1,1 | 0,3 | 0,5 | 58,6 |
| Ghana | -0,3 | 1,4 | 0,7 | 0,5 | 33,1 |

| | | | | | |
|---|---|---|---|---|---|
| Greece | -1,0 | -1,0 | 0,4 | 0,5 | 54,1 |
| Guatemala | 0,8 | 1,3 | 0,2 | 0,4 | 35,4 |
| Guyana/British G | n.a. | 1,5 | 0,5 | 0,5 | 35,5 |
| Haiti | n.a. | 1,5 | 0,5 | 0,5 | 35,3 |
| Honduras | 1,3 | 1,2 | 0,2 | 0,5 | 36,8 |
| Hong Kong | n.a. | -3,0 | 0,7 | 0,4 | 36,4 |
| Hungary | 0,7 | -1,8 | 0,3 | 0,6 | 62,3 |
| Iceland | 0,7 | -1,0 | 0,5 | 0,4 | 62,1 |
| India | n.a. | 1,2 | 0,8 | 0,5 | 35,3 |
| Indonesia | n.a. | 1,9 | 0,5 | 0,6 | 42,2 |
| Iran | n.a. | 1,6 | 0,7 | 0,5 | 36,7 |
| Iraq | n.a. | 1,2 | 0,5 | 0,5 | 36,0 |
| Ireland | -0,3 | 1,0 | 0,4 | 0,5 | 60,7 |
| Isreal/Palestine | 0,1 | -4,8 | 0,5 | 0,5 | 39,9 |
| Italy | -1,4 | 0,1 | 0,2 | 0,5 | 63,7 |
| Ivory Coast | n.a. | 1,4 | 0,5 | 0,5 | 28,5 |
| Jamaica | n.a. | 1,6 | 0,4 | 0,5 | 39,6 |
| Japan | n.a. | -3,0 | 0,3 | 0,6 | 68,5 |
| Jordan | n.a. | 1,2 | 0,5 | 0,6 | 36,4 |
| Kazakhstan | n.a. | -0,1 | 0,2 | 0,6 | 35,0 |
| Kenya | n.a. | 1,7 | 0,8 | 0,6 | 37,4 |
| Korea | n.a. | 0,0 | 0,7 | 0,5 | 38,8 |
| Kuwait | n.a. | 0,1 | 0,0 | 0,3 | 29,0 |
| Laos | -1,2 | 1,7 | 0,2 | 0,5 | 31,5 |
| Latvia | 1,6 | -1,2 | 0,6 | 0,5 | 54,2 |
| Liberia | -1,7 | 1,1 | 0,4 | 0,4 | 32,0 |
| Libya | n.a. | 1,9 | 0,5 | 0,5 | 37,0 |
| Lithuania | 0,6 | 0,3 | 0,3 | 0,6 | 67,4 |
| Macedonia | -1,1 | n.a. | 0,8 | 0,5 | 45,8 |
| Malaysia | -1,5 | 1,5 | 0,8 | 0,5 | 34,5 |
| Mexico | 0,4 | 0,1 | 0,1 | 0,5 | 43,7 |
| Moldova | n.a. | -0,3 | 0,5 | 0,5 | 67,0 |
| Montenegro | -1,1 | n.a. | 0,3 | 0,7 | 56,0 |
| Morocco | n.a. | 1,9 | 0,6 | 0,4 | 35,6 |
| Nepal | n.a. | 1,8 | 0,5 | 0,5 | 34,5 |
| Netherlands | -0,9 | 0,4 | 0,4 | 0,5 | 56,5 |
| New Zealand | n.a. | 0,8 | 0,4 | 0,5 | 43,2 |
| Nicaragua | n.a. | 1,1 | 0,3 | 0,5 | 39,4 |
| Norway | 0,1 | 0,2 | 0,3 | 0,6 | 67,5 |
| Other USSR/Russi | n.a. | -0,7 | 0,3 | 0,5 | 70,7 |
| Pakistan | -3,9 | 1,2 | 0,6 | 0,5 | 33,6 |
| Panama | 1,6 | 0,7 | 0,4 | 0,6 | 40,7 |
| Paraguay | n.a. | 1,1 | 0,4 | 0,5 | 46,8 |

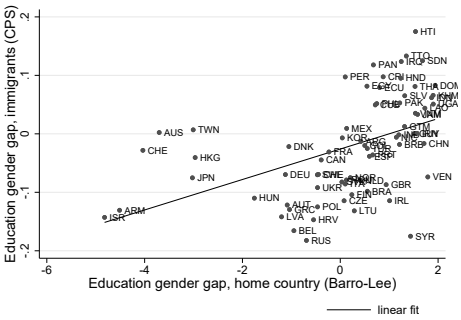
| | | | | | |
|---|---|---|---|---|---|
| Peru | n.a. | 0,1 | 0,5 | 0,6 | 35,5 |
| Philippines | 2,6 | 0,7 | 0,4 | 0,5 | 44,0 |
| Poland | 0,6 | -0,5 | 0,3 | 0,6 | 66,8 |
| Portugal | -0,4 | 0,7 | 0,2 | 0,6 | 52,4 |
| Romania | -0,2 | 0,1 | 0,4 | 0,5 | 65,5 |
| Samoa | 1,3 | n.a. | 0,2 | 0,5 | 39,1 |
| Saudi Arabia | n.a. | -1,8 | 0,3 | 0,5 | 34,7 |
| Sengal | n.a. | 1,8 | 0,3 | 0,3 | 25,7 |
| Serbia | -0,1 | n.a. | 0,5 | 0,4 | 47,5 |
| Sierra Leone | n.a. | 1,7 | 0,6 | 0,5 | 32,1 |
| Singapore | n.a. | 0,7 | 0,6 | 0,4 | 37,3 |
| Slovakia | -0,4 | 0,0 | 0,2 | 0,6 | 67,5 |
| South Africa (Un | n.a. | 1,5 | 0,6 | 0,5 | 45,1 |
| South Korea | n.a. | 0,0 | 0,7 | 0,5 | 37,6 |
| Spain | -0,4 | 0,6 | 0,3 | 0,5 | 56,6 |
| Sri Lanka | -1,3 | 1,7 | 1,0 | 0,5 | 31,8 |
| Sudan | n.a. | 1,7 | 0,3 | 0,5 | 54,6 |
| Sweden | 0,6 | -0,5 | 0,3 | 0,6 | 68,9 |
| Switzerland | -0,1 | -4,0 | 0,3 | 0,6 | 62,9 |
| Syria | n.a. | 1,4 | 0,4 | 0,6 | 57,7 |
| Taiwan | n.a. | -3,0 | 0,9 | 0,5 | 33,2 |
| Tanzania | n.a. | 1,8 | 0,7 | 0,4 | 39,0 |
| Thailand | -0,7 | 1,5 | 0,6 | 0,5 | 34,6 |
| Togo | n.a. | 1,8 | 1,0 | 0,3 | 61,3 |
| Tonga | n.a. | 0,5 | 0,1 | 0,5 | 32,6 |
| Trinidad and Tob | n.a. | 1,3 | 0,4 | 0,5 | 37,5 |
| Turkey | -2,3 | 0,6 | 0,4 | 0,5 | 58,9 |
| Uganda | n.a. | 1,9 | 0,3 | 0,5 | 51,0 |
| Ukraine | 1,3 | -0,5 | 0,4 | 0,5 | 59,6 |
| United Arab Emir | -2,8 | 0,1 | 0,2 | 0,5 | 53,3 |
| United Kingdom, | 0,1 | 0,9 | 0,4 | 0,5 | 58,9 |
| Uruguay | 0,2 | 0,4 | 0,4 | 0,6 | 37,7 |
| Venezuala | n.a. | 1,8 | 0,6 | 0,6 | 39,1 |
| Vietnam | n.a. | 1,5 | 0,5 | 0,5 | 35,1 |
| Yemen | n.a. | 1,9 | 0,2 | 0,6 | 31,0 |
| Zambia | n.a. | 1,8 | 1,0 | 1,0 | 35,5 |
| Zimbabwe | n.a. | 1,7 | 0,9 | 0,3 | 39,1 |

Table A5: Summary Statistics

(a) Share of Female Managers




(b) Higher Education Gender Gap



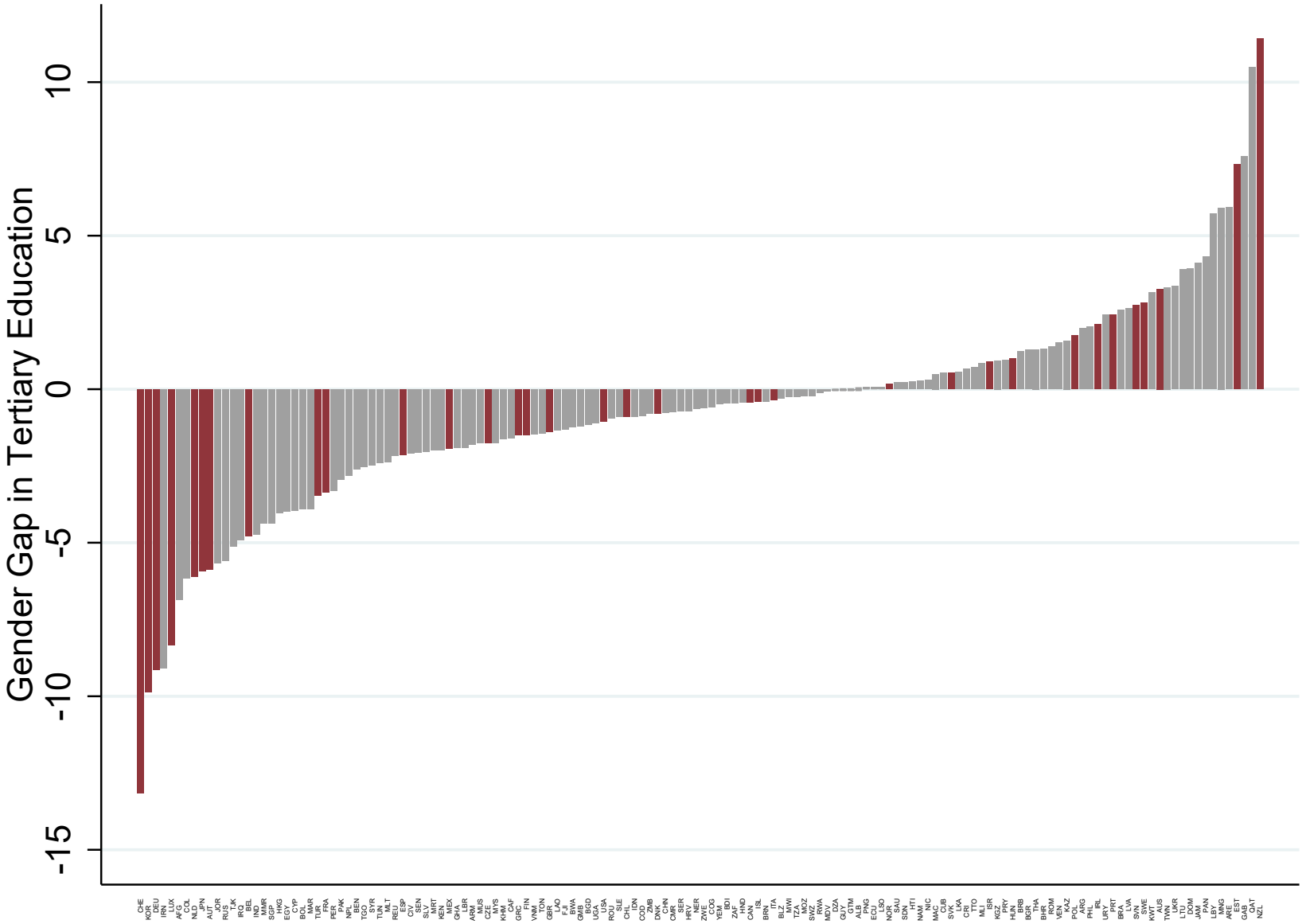

To compute the education gender gap of the second-generation immigrants, for each country we estimate a linear probability model regressing the higher education dummy on a female dummy using the sample of second-generation migrants. Not weighted by the number of observations.

Figure A4: Education Gaps of Second-Generation Migrants and Culture in Home Country

| **Europe (66470)** | **Asia (25108)** | **Americas (60200)** | **Africa (921)** | **Oceania (523)** |
|---|---|---|---|---|
| Albania (73) | Afghanistan (28) | Argentina (408) | Algeria (16) | Australia (192) |
| Austria (1702) | Armenia (260) | Barbados (201) | Cameroon (3) | Fiji (27) |
| Belgium (355) | Bangladesh (48) | Belize (93) | Congo (2) | New Zealand (53) |
| Bosnia and Herzegovina (5) | Cambodia (311) | Bolivia (84) | Egypt (228) | Samoa (164) |
| Bulgaria (27) | China (3127) | Brazil (188) | Ethiopia (47) | Tonga (87) |
| Croatia (173) | Hong Kong (291) | Canada (11710) | Ghana (63) | |
| Cyprus (11) | India (1590) | Chile (231) | Ivory Coast (2) | |
| Czech Republic (369) | Indonesia (168) | Colombia (973) | Kenya (29) | |
| Denmark (798) | Iran (367) | Costa Rica (180) | Liberia (37) | |
| Estonia (8) | Iraq (137) | Cuba (3013) | Libya (4) | |
| Finland (391) | Japan (3874) | Dominican Republic (1463) | Morocco (43) | |
| France (879) | Jordan (85) | Ecuador (565) | Senegal (3) | |
| Germany (8838) | Kazakhstan (5) | El Salvador (1570) | Sierra Leone (16) | |
| Greece (2092) | Korea (651) | Guatelmala (540) | South Africa (98) | |
| Hungary (2106) | Kuweit (3) | Guyana (246) | Sudan (176) | |
| Iceland (12) | Laos (467) | Haiti (643) | Tanzania (20) | |
| Ireland (4317) | Malaysia (26) | Honduras (305) | Togo (3) | |
| Israel (354) | Nepal (4) | Jamaica (966) | Uganda (118) | |
| Italy (18196) | Russia (5301) | Mexico (35130) | Zambia (2) | |
| Latvia (273) | Pakistan (194) | Nicaragua (358) | Zimbabwe (11) | |
| Lithuania (880) | Philippines (5360) | Panama (274) | | |
| Macedonia (15) | Saudi Arabia (31) | Paraguay (14) | | |
| Montenegro (12) | Singapore (23) | Peru (474) | | |
| Netherlands (1478) | South Korea (362) | Trinidad and Tobago (364) | | |
| Norway (1774) | Sri Lanka (13) | Uruguay (68) | | |
| Poland (7539) | Syria (235) | Venezuela (139) | | |
| Portugal (1841) | Thailand (239) | | | |
| Romania (560) | Turkey (366) | | | |
| Serbia (43) | United Arab Emirates (73) | | | |
| Slovakia (1130) | Vietnam (973) | | | |
| Spain (1194) | Yemen (25) | | | |
| Sweden (1675) | Burma (31) | | | |
| Switzerland (532) | Taiwan (440) | | | |
| Ukraine (821) | | | | |
| UK (5993) | | | | |
| Moldova (4) | | | | |

The number of observations is indicated in parentheses. If a country belongs to more than one continent, it is classified according to the largest geographical area.

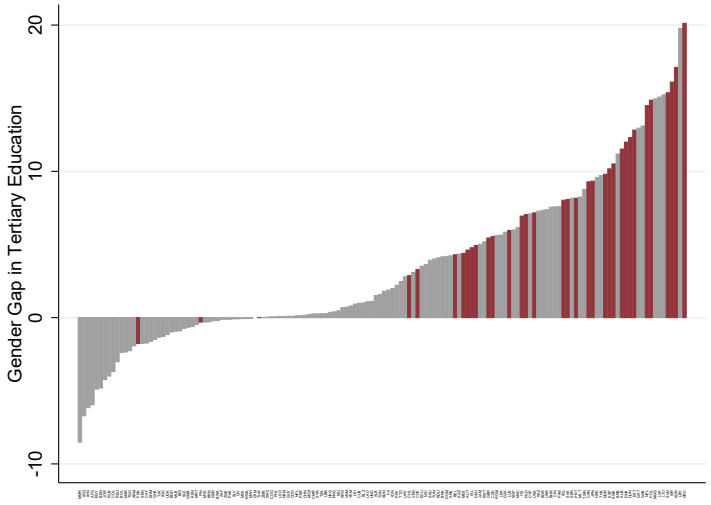
Table A6: Composition of Baseline Sample




Source: Barro-Lee Educational Attainment Data for 2010. Percentage of Complete Tertiary Schooling Attained in Population by gender.

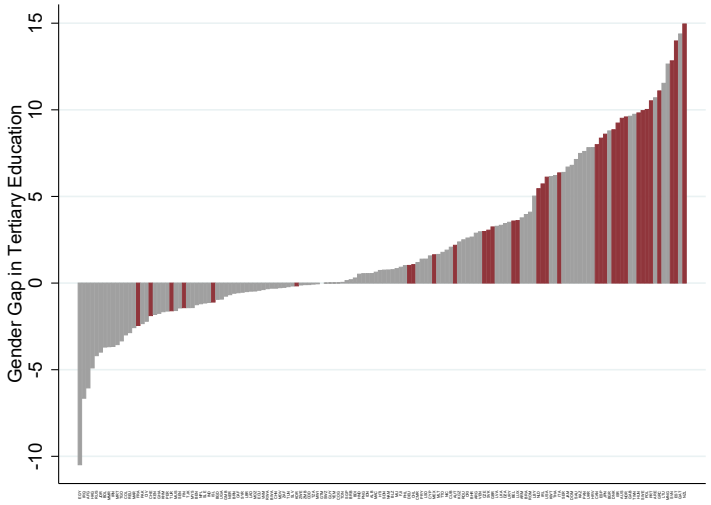
Figure A5: Tertiary Education Gender Gaps

## Tertiary Education Gender Gaps by Age Groups




Source: Barro-Lee Educational Attainment Data for 2010 for age group 25-29. Percentage of Complete Tertiary Schooling Attained in Population by gender. The gender gap is measured as the female rate minus the male rate.

Figure A6: Tertiary Education Gender Gaps: Age Group 25-29



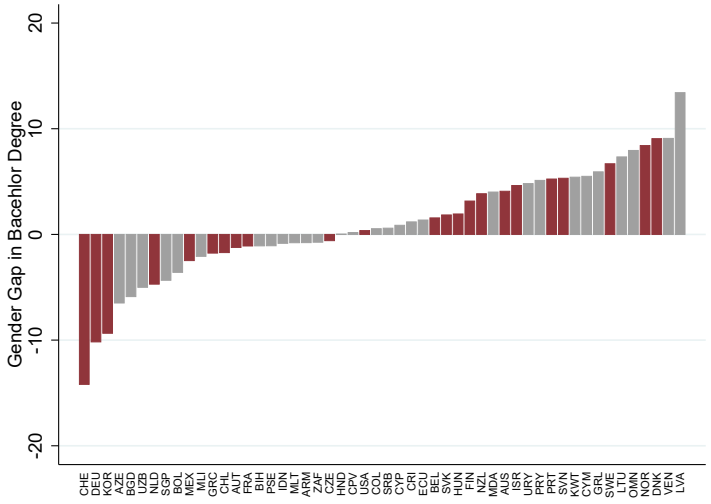

Source: Barro-Lee Educational Attainment Data for 2010 for age group 30-34. Percentage of Complete Tertiary Schooling Attained in Population by gender. The gender gap is measured as the female rate minus the male rate.

Figure A7: Tertiary Education Gender Gaps: Age Group 30-34

### Tertiary Education Gender Gaps by Education Level

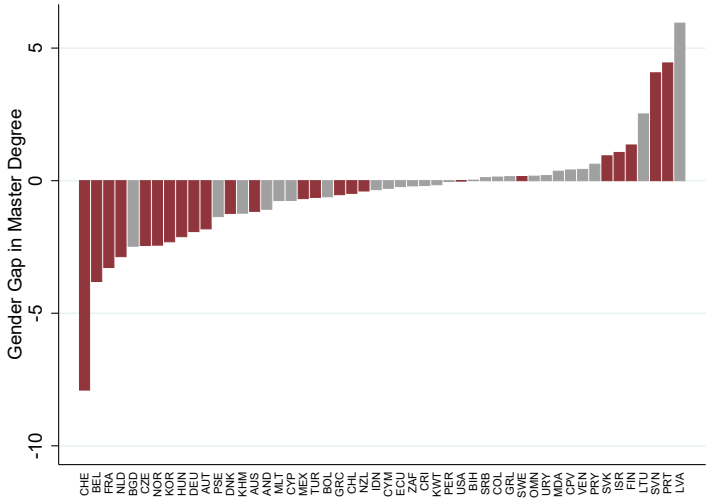
Figures A8-A10 show the cross-country differences in the gender gap for different levels of higher education. We observe that the higher the level of educational attainment considered, the larger the number of countries with a negative gender gap.

The vertical axis shows the percentage point difference between the two genders. In Figure A10, the largest gap is equal to $-2.3$ percentages points for Switzerland. This pecentage point difference might sound small, but the overall percentage of the population having a PhD is small too. It means that in Switzerland around 90% of the PhD population is male. Hence, a large gender gap in higher education.



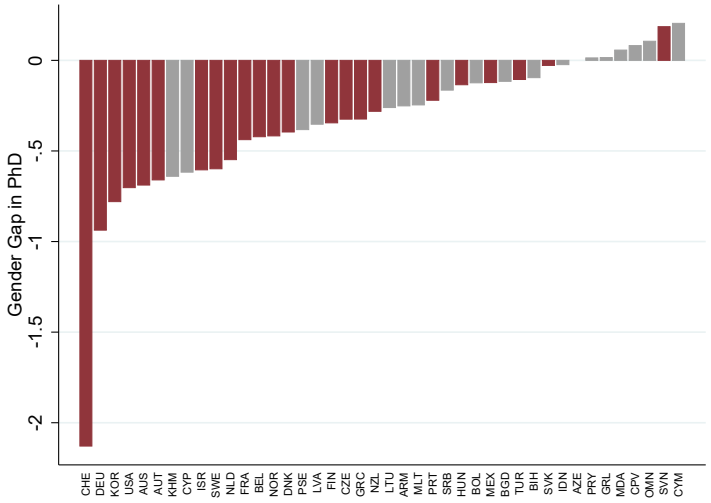

Source: UNESCO Institute for Statistics. The gender gap is measured as the female rate (the percentage of population ages 25 and over that attained or completed Bachelor's or equivalent) minus the corresponding male rate. The red color indicates OECD countries.

Figure A8: Education Gender Gaps: at least Bachelor Degree




Source: UNESCO Institute for Statistics. The gender gap is measured as the female rate (the percentage of population ages 25 and over that attained or completed Master's or equivalent) minus the corresponding male rate. The red color indicates OECD countries.

Figure A9: Education Gender Gaps: at least Master Degree




Source: UNESCO Institute for Statistics. The gender gap is measured as the female rate (the percentage of population ages 25 and over that attained or completed PhD degree or equivalent) minus the corresponding male rate. The red color indicates OECD countries.

Figure A10: Education Gender Gaps: at least PhD Degree

# Appendix B: Additional Results

| | Higher Education Gender Gap × Female | Female Share of Managers × Female |
|---|---|---|
| Maternal Education | 0.05 | 0.14 |
| Paternal Education | 0.09 | 0.07 |

Table B1: Siblings Sample: Correlation Culture × Female and Parental Education

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Cultural variable | Female share of managers | Higher education gender gap | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee | ILO | Barro-Lee |
| Cultural variable × female | 0.029 | 0.070*** | 0.029 | 0.070*** |
| | (0.020) | (0.021) | (0.020) | (0.021) |
| Dad education | | | 0.018 | 0.026 |
| | | | (0.019) | (0.019) |
| Mom education | | | -0.008 | 0.014 |
| | | | (0.016) | (0.017) |
| Observations | 1692 | 2305 | 1692 | 2305 |
| Individual controls | YES | YES | YES | YES |
| Household FE | NO | NO | NO | NO |
| MSA FE | YES | YES | YES | YES |
| Country of Origin FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. The standard errors are reported in parentheses and are clustered at country-of-origin level. Individual controls are age, age squared and categories for race. MSA stands for metropolitain statistical area. Parental education categories are: less than high school, high school, more than high school.

Table B2: Siblings Sample: Controlling for Parental Education

| Cultural variable | (1) Female share of managers | (2) Higher education gender gap |
|---|---|---|
| Source | ILO | Barro-Lee |
| **A: Baseline** | | |
| Cultural variable | 0.021*** | 0.023*** |
| x female | (0.008) | (0.007) |
| Observations | 76952 | 113771 |
| **B: High Ethnic Density** | | |
| Cultural variable | 0.030*** | 0.028** |
| x female | (0.005) | (0.011) |
| Observations | 35925 | 57667 |
| **C: Low Ethnic Density** | | |
| Cultural variable | 0.007 | 0.020*** |
| x female | (0.010) | (0.006) |
| Observations | 41027 | 56104 |
| Individual controls | YES | YES |
| MSA FE | YES | YES |
| Year FE | YES | YES |
| Country of origin FE | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probabilit models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Individual controls are age, age squared and categories for race.

Table B3: Cultural Transmission: Ethnic Density (without Mexico)

| | Baseline | | Parental immigration as adults | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Cultural variable | Female share of managers | Higher education gender gap | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee | ILO | Barro-Lee |
| Cultural variable x female | 0.062*** (0.024) | 0.047* (0.026) | 0.070** (0.031) | 0.054* (0.029) |
| Observations | 1692 | 2305 | 1133 | 1578 |
| No. of countries | 37 | 63 | 32 | 54 |
| Individual controls | YES | YES | YES | YES |
| Household FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models based on the sample of siblings. Clustered standard errors (at country-of-origin level and household level) are reported in parentheses. Individual controls are age, age squared and categories for race. In columns (3) and (4), we exclude second-generation immigrants whose parents migrated at age 20 or younger.

Table B4: Parental Age at Immigration

| | (1) | (2) | (3) |
|---|---|---|---|
| | Gender attitudes (Baseline) | Gender attitudes (Drop if "Don't know" > 5%) | Gender attitudes (Drop if "Don't know" > 7.5%) |
| Source | WVS/EVS | WVS/EVS | WVS/EVS |
| Cultural variable x female | 0.023*** (0.005) | 0.024*** (0.006) | 0.022*** (0.007) |
| Observations | 145313 | 144527 | 145313 |
| Individual controls | YES | YES | YES |
| MSA FE | YES | YES | YES |
| Year FE | YES | YES | YES |
| Country of origin FE | YES | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Individual controls are age, age squared and categories for race. MSA stands for metropolitain statistical area. In Column (2) we exclude questions from the index if the fraction of "Don't know"-answers is higher than 5% for a particular country. In Column (3) we do the same based on a threshold of 7.5%.

Table B5: Robustness of Gender Attitudes towards Coding of "Don't know"

PANEL A: Female share of managers (ILO)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Power distance | Individualism | Masculinity | Long-term orientation | Indulgence | Uncertainty avoidance | Risk taking | Patience |
| Source | Hofstede | Hofstede | Hofstede | Hofstede | Hofstede | Hofstede | GPS | GPS |
| Female managers | 0.0116* | 0.00879 | 0.0285*** | 0.0157** | 0.0198** | 0.0294*** | 0.0226*** | 0.0262*** |
| x female | (0.00606) | (0.00781) | (0.00748) | (0.00715) | (0.00941) | (0.00860) | (0.00715) | (0.00920) |
| Hofstede/GPS | 0.0265*** | -0.0430*** | 0.00325 | -0.0257** | 0.0259*** | 0.0111 | -0.0138 | -0.00583 |
| x female | (0.00629) | (0.00773) | (0.00549) | (0.0128) | (0.00726) | (0.0130) | (0.00983) | (0.00997) |
| Observations | 106,641 | 106,641 | 106,641 | 108,254 | 107,911 | 106,641 | 97,761 | 97,761 |
| Individual controls | YES | YES | YES | YES | YES | YES | YES | YES |
| Country of origin FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES |

PANEL B: Gender Gap in Higher Education (BarroLee)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Power distance | Individualism | Masculinity | Long-term orientation | Indulgence | Uncertainty avoidance | Risk taking | Patience |
| Source | Hofstede | Hofstede | Hofstede | Hofstede | Hofstede | Hofstede | GPS | GPS |
| Education gender gap | 0.0149* | 0.0132** | 0.0207** | 0.00918 | 0.0163** | 0.0195** | 0.0229*** | 0.0227*** |
| x female | (0.00806) | (0.00593) | (0.00785) | (0.00784) | (0.00765) | (0.00795) | (0.00811) | (0.00821) |
| Hofstede/GPS | 0.0161 | -0.0338*** | 0.00726 | -0.0269** | 0.0287*** | 0.00118 | -0.00805 | 0.00708 |
| x female | (0.0122) | (0.00898) | (0.00765) | (0.0107) | (0.00615) | (0.0131) | (0.0105) | (0.00926) |
| Observations | 137,596 | 137,596 | 137,596 | 139,023 | 138,423 | 137,596 | 128,460 | 128,460 |
| Individual controls | YES | YES | YES | YES | YES | YES | YES | YES |
| Country of origin FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. The standard errors are reported in parentheses and are clustered at country of origin level. Individual controls are age, age squared and categories for race.

Table B6: Controlling for Additional Cultural Dimensions

| Cultural variable | (1) Female share of managers | (2) Higher education gender gap |
|---|---|---|
| Source | ILO | Barro-Lee |
| **A: Exclude Mexico** | | |
| Cultural variable | 0.021*** | 0.023*** |
| x female | (0.008) | (0.007) |
| Observations | 76952 | 113771 |
| **B: Exclude Italy** | | |
| Cultural variable | 0.025*** | 0.025*** |
| x female | (0.007) | (0.007) |
| Observations | 93497 | 130316 |
| **C: Exclude countries of origin with <100 obs.** | | |
| Cultural variable | 0.028*** | 0.025*** |
| x female | (0.006) | (0.007) |
| Observations | 111126 | 147905 |
| **D: Exclude countries of origin with <1000 obs.** | | |
| Cultural variable | 0.028*** | 0.028*** |
| x female | (0.007) | (0.008) |
| Observations | 108312 | 143724 |
| Individual controls | YES | YES |
| MSA FE | YES | YES |
| Year FE | YES | YES |
| Country of origin FE | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country-of-origin level) are reported in parentheses. Individual controls are age, age squared and categories for race.

Table B7: Sample Variations I

| | (1) | (2) |
|---|---|---|
| Cultural variable | Female share of managers | Higher education gender gap |
| Source | ILO | Barro-Lee |
| **A: Exclude Post-Soviet Countries** | | |
| Cultural variable | 0.029*** | 0.022*** |
| x female | (0.006) | (0.006) |
| Observations | 109332 | 140839 |
| **B: Exclude Socialist and Communist Countries** | | |
| Cultural variable | 0.036*** | 0.019*** |
| x female | (0.005) | (0.005) |
| Observations | 97513 | 128375 |
| **C: Exclude War-Countries** | | |
| Cultural variable | 0.029*** | 0.024*** |
| x female | (0.006) | (0.007) |
| Observations | 110713 | 145490 |
| **D: Exclude Dictatorship Countries** | | |
| Cultural variable | 0.026** | 0.019*** |
| x female | (0.013) | (0.007) |
| Observations | 99424 | 132406 |
| Individual controls | YES | YES |
| MSA FE | YES | YES |
| Year FE | YES | YES |
| Country of origin FE | YES | YES |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is a dummy that is equal to one if individual i has at least a Bachelor degree and zero otherwise. We estimate linear probability models. Clustered standard errors (at country of origin level) are reported in parentheses. Individual controls are age, age squared and categories for race. In Panel C (D), we exclude all countries of origin that experienced a war (military dictatorship) after WW2 and before 1992, respectively. This period corresponds to the most likely time window of the parent's emigration.

Table B8: Sample Variations II