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ABSTRACT

Network Abroad and Culture: Global Individual-Level Evidence*

This paper analyzes whether natives with a network abroad have a distinctive cultural stance compared to similar individuals without such connections within the same region. Using individual-level data on connectedness from the Gallup World Poll across 2,256 within-country regions over 148 countries, it characterizes the cultural stance based on three traits: pro-social behavior, religiosity and gender-egalitarian attitudes. The paper shows that natives who have a connection abroad are characterized by stronger pro-social behavior, religiosity and genderegalitarian attitudes. To address potential biases arising from omitted variables, it controls for an extensive array of individual characteristics and region-by-year fixed effects. The results are also consistent after employing comprehensive measures of connectedness, employing matching techniques, and assessing selection biases related to unobservable factors. Finally, by leveraging both country and individual-level heterogeneity, the analysis indicates that the pro-social behavior stance of connected individuals is fairly consistent across different contexts and individuals, while the findings on religiosity and gender-egalitarian attitudes are more sensitive to local and individual factors. The paper therefore shows that factors enhancing or dampening this relation are cultural trait specific.

JEL Classification: F22, O15, Z10

Keywords: cultural traits, connectedness, social remittances, international migration

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1 Introduction

The last few decades have witnessed an unprecedented rise in the global stocks of international migrants. The international migrant population surged to 280 million in 2020, a stark increase from 77 million in 1960 (United Nations, 2020). International migrants maintain strong ties with their countries of origin and the people they leave behind. On one hand, they contribute to the economic development of their origin countries through the transmission of economic remittances (Rapoport and Docquier, 2006). Moreover, findings of a burgeoning literature reveals that emigrants do remit to their origin country knowledge, norms and good practices acquired in the host country in the form of social remittances (Levitt, 1998; Tuccio and Wahba, 2020). This process stands as a significant channel through which international migration shapes the distribution of values and preferences (Rapoport *et al.*, 2020). This paper aims to provide novel empirical evidence on the implications of this unparalleled era of globalization for individuals who remain in their country of birth.

The literature have shown the relevance of social remittances for political preferences (Batista and Vicente, 2011; Chauvet and Mercier, 2014; Barsbai *et al.*, 2017; Batista *et al.*, 2019), civic engagement (Nikolova *et al.*, 2017) and fertility and gender norms (Bertoli and Marchetta, 2015; Diabate and Mesplé-Somps, 2019) of those left behind with country-specific micro-level studies. Although providing well-identified estimates of such phenomenon, the local nature of these studies neither allow for a generalization of the results out of the studied context, nor allow for exploiting the country-specific factors influencing such relationship. Additionally, by focusing on one specific cultural trait or dimension, these studies are also silent on the potential heterogeneity across cultural traits, as highlighted by the literature (Desmet and Wacziarg, 2021; Bertrand and Kamenica, 2023). Finally, some of these studies employ exposure to returnees as a proxy for exposure to foreign norms and values, yet return migration represents only a minor aspect of the overall exposure of individuals in the country of origin to their diaspora abroad.

This paper complements and contributes to the existing studies, by exploring the implications of having a reliable network abroad (referred to as connectedness) by examining the cultural stance of connected individuals over a global sample across different cultural traits. Initially, I compare connected individuals with similar, non-connected counterparts residing in the same region. The global scope of the dataset allows for a descriptive analysis over a sample covering the 98% of the world non-institutionalized population. Subsequently, I investigate the persistence of differences in cultural stances, accounting for a comprehensive set of origin-specific fixed effects, the cultural context of the connection's country of residence, and employing various techniques to address biases stemming from omitted variables, both observable and unobservable. Finally, I explore the rich heterogeneity available from the global sample across country of origin and individuals characteristics, to elucidate potential cultural trait specific factors driving such distinctive cultural stance.

The analysis is carried out using individual-level data from Gallup World Polls spanning the 2009-2012 period, offering a representative sample of 700,000 individual observations in 148 countries. I harmonize intra-country regional identifiers with the database of Global Administrative Areas, resulting in 2,256 comparable within-country geographical units. The focus is on natives in their

country of birth. To evaluate the cultural stance of connected individuals, I construct proxies for individual pro-social behavior, religiosity, and gender-egalitarian attitudes. This study emphasizes these traits due to their relevance in shaping individuals' preferences and influencing countries' economic growth.[1] Moreover, by studying different cultural traits, this paper provides evidence on whether the influence of local and individual factors on the relationship between culture and having a network abroad is specific to each trait.

In the empirical analysis I find that connected individuals exhibit a distinct cultural stance compared to their peers in the same region: they demonstrate heightened pro-social behavior, increased religiosity, and a greater alignment with gender-egalitarian views. This difference persists even after accounting for region-by-year factors and employing both matching techniques and tests for selection on unobservables (Rosenbaum, 2002; Hainmueller, 2012; Imbens and Rubin, 2015; Oster, 2019). In the preferred specification, connectedness is associated with estimates ranging between one-third and two-thirds of those linked to education, and they are able to explain an higher share of within-region cultural heterogeneity than other individual characteristics. Furthermore, I observe a positive relationship between the cultural stance of connected natives and the prevailing norm in the connection's country of residence, aligned with the potential interpretation of social remittances.

By exploiting the rich heterogeneity across countries and individuals, this paper provides evidence that the factors enhancing or dampening the distinctive cultural stance associated with having a network abroad are specific to each cultural trait. While the relationship between pro-social behavior and having a network abroad is fairly consistent across countries and individuals, the distinctive stance on religiosity and gender-egalitarian attitudes is influenced by various local and individual factors. Drawing on country-level characteristics, I find higher and statistically significant estimates in countries where religiosity and gender-egalitarian views are minority norms. The distinctive gender-egalitarian views of connected individuals are stronger in countries where connectedness is widespread or among individuals with better access to means of communication. Moreover, I find heterogeneous estimates among connected individuals based on the location of their network abroad.

This paper makes two important contributions to the literature. First, it provides individual-level evidence over the whole globe accounting for within-country heterogeneity of the relevance of connectedness as identity marker of individual cultural preferences and values. Thus, it provides systematic evidence of the implications of globalization on the distribution of norms and values (Rapoport *et al.*, 2020). Second, by describing the role of country and individual characteristics in shaping the distinctive cultural stance of having a network abroad, this paper shows that factors influencing this distinctive cultural stance are cultural trait specific (Desmet and Wacziarg, 2021).

This paper contributes to the fast-growing literature on how immigration and foreign networks influence the origin country population through social remittances (Levitt, 1998; Tuccio and Wahba, 2020). The reduction in communication costs has affected the flow and quality of information through networks, which has been highlighted as a key driver of individuals' preferences and behaviors (Gra-

[1] Numerous studies highlight the socioeconomic relevance of these traits, such as social behavior (Tabellini, 2010; Flanagan and Levine, 2010; Falk *et al.*, 2018), religiosity (Weber, 1946; Chase, 2014; Benabou *et al.*, 2015), and gender-egalitarian views (Baxter and Kane, 1995; Duflo, 2012; Inglehart *et al.*, 2017).

novetter, 2005; Jackson, 2014; Bailey *et al.*, 2018). Both macro and micro-level studies have pointed out the significance of the social remittances channel in international migration, often proxied by the diaspora abroad or the share of returnees. This channel has been linked to various preferences and values, including political preferences (Spilimbergo, 2009; Batista and Vicente, 2011; Chauvet and Mercier, 2014; Docquier *et al.*, 2016; Barsbai *et al.*, 2017; Karadja and Prawitz, 2019), fertility behaviors and gender-related norms (Beine *et al.*, 2013; Bertoli and Marchetta, 2015; Tuccio and Wahba, 2018; Diabate and Mesplé-Somps, 2019), technological norms (Valette, 2018; Bahar and Rapoport, 2018), educational choices (Rahman, 2023), and migration preferences (Bertoli and Ruyssen, 2018).[2] The closest paper to this analysis is Nikolova *et al.* (2017), which relies on a similar proxy of connectedness, and show that individuals with a reliable connection abroad share higher pro-social behavior in Romania and Bulgaria. To the best of my knowledge, this study is the first to provide systematic individual-level evidence covering the entire world on the relevance of connectedness as a correlate of individual preferences and norms, highlighting the cultural trait specific heterogeneity in terms of local and individual level factors driving such relationship.

Furthermore, this paper relates with the literature exploring the individual level characteristics underpinning the distribution of cultural values across and within societies. Globalization and access to new sources of information has been analyzed as potential determinants of the changes of cultural heterogeneity world-wide (Putnam, 2000; Inglehart and Baker, 2000; Inglehart, 2018; Giavazzi *et al.*, 2019; Rapoport *et al.*, 2020). Desmet and Wacziarg (2021), relying on individual level data from the U.S. General Social Survey, show an increase of cultural heterogeneity from the 1990s, but it is related only to specific cultural traits, and it is only partially explained by specific identity markers. Similarly, Bertrand and Kamenica (2023) explores the role of specific identity trait such as income, education, gender, race, and political ideology to explain between group cultural distance in the United States. The contribution to this literature lies therefore in introducing connectedness as a relevant marker related to individuals' preferences and norms. Moreover, while most of the studies focus on the United States, I depart from them by providing evidence on a global scale.

The remainder of the paper is structured as follows. Section 2 provides an overview of the data, detailing the measures of connectedness and cultural traits, and explores the correlations between these measures and alternative data sources. Section 3 delves into the empirical specification and addresses the econometric challenges. The results of the analysis are presented in Section 4. Section 5 exploit the rich heterogeneity across country and individual characteristics. Finally, Section 6 concludes the paper.

2 Data and Stylized Facts

The primary source of individual-level data concerning connectedness, cultural traits, and a wide range of socioeconomic variables is the *Gallup World Polls* (GWP). Originating in 2005, the GWP is a global survey that spans over 160 countries, assessing various aspects of individuals' lives, ranging

[2] Yarkin (2023) and Bassetto and Monteiro (2023) explores the opposite channel, hence the effect of events and changes in the country of origin on migrants' behavior abroad.

from sociodemographic characteristics to attitudes and beliefs. The sample includes 157 countries where Gallup conducted at least one wave of its survey between 2007 and 2016.[3] For each year and country, the sample comprises approximately 1,000 randomly selected respondents, chosen to be representative of the population aged 15 and above. In the case of larger countries such as China and Russia, the number of respondents in each wave varies, ranging from 2,000 to 5,000 respondents. Surveys are conducted via telephone in countries with at least 80% telephone coverage, whereas in other cases, face-to-face interviews are conducted in randomly selected households. The full dataset includes around 712,000 respondents aged 15 to 90. I exclude foreign-born from the sample to narrow the analysis down to natives.

Although not being designed to be representative of the within-country population, the Gallup World Polls (GWP) provides respondent's unharmonized intra-country region of residence.[4] To leverage this geographical information effectively in the analysis, I harmonized the GWP data to align it with the *Database of Global Administrative Areas* (GADM), a high-resolution database containing administrative areas from the country to the provincial level. I harmonized the data at the regional level wherever possible.[5] For instance, this level of resolution corresponds to state-level data for the United States and NUTS2 level for most European countries. While the majority of individuals in the sample (93%) matched perfectly between GWP and GADM intra-country identifiers, 7% of respondents report a broader geographical or administrative cluster in GWP that did not correspond precisely to a GADM-administrative area. In such cases, I randomly assigned these respondents to the nearest finer regional unit.[6] The harmonized sample encompasses 2,256 regions across 148 countries and represents approximately 98% of the world's population.

2.1 Measuring Network Abroad

The GWP question used to grasp individuals' international connections is as follows: "*Do you have relatives or friends who are living in another country whom you can count on to help you when you need them or not?*" This study defines "connected" individuals as those who answered this question affirmatively. This proxy for connection captures the existence of a network abroad, which the respondent considers reliable. Bertoli and Ruyssen (2018) shows that those answering this question affirmatively are not only more prone to emigrate, but also express a preference to move to the country where their connected friend or relative resides. Over the period 2007-2012,

[3] The list of countries in analysis is available in Table OA-I in the Online Appendix. Descriptive statistics are available in Table OA-III in the Online Appendix

[4] Online Appendix Appendix OB compares the GWP with the European Labor Force Survey (EULFS), to grasp the degree of representativeness both at country and regional level. Interestingly, the differences in sociodemographic descriptive statistics between the two datasets are similar once comparing them at country or regional level.

[5] A few countries, like Croatia, Iceland, Kosovo, Luxembourg, Macedonia, Malta, Qatar, the Philippines and Singapore, were impossible to match, due to the too fine geographical location of respondents in the GWP. To avoid comparison between different geographical and administrative units, I remove them from the analysis.

[6] I keep track of these respondents and broad regions through the analysis. In particular Table OA-XVI provides robustness checks of the main results after removing those randomly assigned individuals and after performing the analysis with the broader geographical/administrative clusters. The main results remain unchanged.

the GWP also provides information about the country of residence for each connection.[7] In the sample, around 31% of the population has a reliable connection abroad. Such high percentage can be explained since one person in a foreign country may serve as a connection for several individuals in their home country, and foreign natives can also be counted as reliable connections. Figure 1 leverages the heterogeneous distribution of connected individuals by illustrating the proportion of connected individuals at the national level. There is significant variation across countries, with the highest percentages of connected individuals found in New Zealand (73%), Ireland (73%), and Jamaica (68%), while Vietnam (7%), India (5%), and China (3%) have the lowest shares of connected people. European countries are characterized by a consistent share of connected individuals, while Latin American and African countries exhibit a significant degree of heterogeneity.

The GWP also elicits the country of residence of the network abroad. Of all connections, 69% lives in high-income OECD countries, with the US hosting the largest share at 20%. Other Western developed nations like Germany (7.1%), the UK (6.5%), and France (6.3%) also host significant numbers. In non-OECD high-income countries, Russia (5.01%), Saudi Arabia (2.3%), and Argentina (2.01%) are common locations for connections. This trend persists even when considering the diversity of connected people across countries: 86% of connections of those living in an OECD high-income country reside in another OECD high-income country, and 64% of connections of those in non-OECD high-income nations live in an OECD high-income countries.

International migration significantly influences network abroad, as emigrants become the reliable connections for friends and peers in their home country. Using bilateral migration stocks from Özden *et al.* (2011) for the year 2000, Figure 2 show a strong positive correlation between emigrant distributions and the locations of connections in destination countries, whether considering matched corridors or all corridors. Linear regression coefficients are approximately 0.66, statistically significant at the 1% threshold, and the R^2 is 0.55 in both cases.[8]

2.2 Cultural Traits: selection and definition

Measuring cultural traits is a challenging endeavor due to the broad and multifaceted nature of culture, which encompasses behaviors, ways of thinking, customs, and beliefs (Kroeber and Kluckhohn, 1952; Shenkar, 2012). Economics literature defines culture as a set of values and beliefs that tend to persist across generations (Guiso *et al.*, 2006). Approaches to studying culture and its aspects vary within the literature. Some authors analyze the comprehensive range of questions available in surveys without focusing on specific cultural traits (Desmet and Wacziarg, 2021). In contrast, another segment of the literature concentrates on specific traits considered crucial for economic development, such as trust (Knack and Keefer, 1997; Tabellini, 2010) or religiosity (Benabou *et al.*, 2015). In this study I discuss about culture in terms of specific traits, henceforth I adopt the latter approach and focus on three distinct cultural traits identified in GWP data: *Pro Social Behavior*, *Religiosity*, and

[7] GWP allows for respondents to indicate up to three countries of residence, but I focus the analysis on the first answer.

[8] Table OA-VIII in the Appendix contains results from linear (OLS) and non-linear (PPML) regressions, consistently showing positive and statistically significant partial correlations.

Gender-Egalitarian views.

Selection of Traits - The reason to focus on specific traits is threefold. First, the evolution and change over time and across space of culture is trait specific: some traits are more prone to change while other remains fairly persistent across generations. Inglehart (2018) shows that certain self-expression values changed significantly across generations in the recent decades, while other values (e.g. religiosity) followed a different path. Similarly, Desmet and Wacziarg (2021) shows that the evolution of cultural heterogeneity in the United States is not homogeneous across cultural traits (or memes).

Secondly, the approach of this study is guided by data availability. This research aims to provide a global overview of the relationship between connectedness and cultural traits. To achieve this, I initially explore the Core questions from the GWP, which are asked globally. Table OA-II in the Online Appendix shows the variables that can be labelled as "cultural" variables across the different domains of the GWP. I exclude all the questions concerning satisfaction on personal and local conditions, because not immediately related to cultural aspects. Among the remaining variables, I decide to exclude from the analysis individuals' attitudes towards institutions and political attitudes, since they are more prone to be treated in a separated analysis, given also the fact that they are more likely to change across generations (Guiso *et al.*, 2006). This leaves us with nine items covering social behavior, religiosity, and social issues. To enhance the set of cultural variables, I also incorporate three additional variables related to gender-egalitarian attitudes into the final analysis.

Finally, the selection criteria and decision to include the variables concerning gender-egalitarian attitudes is based on the socioeconomic relevance of the selected traits. Pro social behaviors, tied to individual altruism and civic engagement, are beneficial for democratic functioning, trust, and personal growth within a nation (Fukuyama, 2001; Tabellini, 2010; Flanagan and Levine, 2010; Falk *et al.*, 2018). Religiosity's impact on individual preferences and behavior has been extensively examined in the literature, from the seminal theory of the Protestant work ethic (Weber, 1946) to recent studies on the evolution and distribution of religiosity and religious practices (Inglehart and Baker, 2000; Carvalho *et al.*, 2019). While a consensus exists regarding the effects of religiosity on outcomes such as fertility (e.g., Baudin 2015), its overall influence on societies remains unclear. Some studies suggest a negative association with individual openness to innovation (Benabou *et al.*, 2015) and economic growth (Chase, 2014), while others find that religious practices lead to increased individual subjective well-being (Campante and Yanagizawa-Drott, 2015). Gender-egalitarian attitudes are significant due to their direct impact on gender discrimination and their contribution to female empowerment and economic growth (Baxter and Kane, 1995; Duflo, 2012). Inglehart *et al.* (2017), using World Values Survey data, reveals a robust positive correlation between a country's gender-egalitarian values and female empowerment.[9]

[9]The cross-country correlation between the UN Gender Empowerment Index and the Individual-choice index, which captures gender-egalitarian views, is approximately 0.87.

Construction of indices - To construct an index of pro social behavior, I focus on three questions in the GWP where respondents answer either "yes" or "no" regarding their participation in certain activities during the last month: (SB_1) "*How about donated money to a charity?*"; (SB_2) "*How about volunteered your time to an organization?*"; and (SB_3) "*How about helped a stranger or someone you didn't know who needed help?*" They capture the extent of the respondent's societal involvement, reflecting their interactions and contributions to others (Nikolova *et al.*, 2017). I aggregate these three variables into a composite index using Multiple Correspondence Analysis (MCA), a dimensionality reduction technique suitable for categorical/binomial data.[10] The resulting index is normalized to have a mean of zero and a standard deviation of one. Figure 3(Ia) shows the worldwide distribution of social behavior weighting country averages by their population, which is slightly right-skewed, due to China's large population and its relatively lower social behavior levels. Furthermore, when differentiating between connected and non-connected individuals, the connected group exhibits a higher mean. Figure 3(Ib) shows the geographical distribution of the index. Developed countries show a distinctively higher level of social behavior compared to developing ones, on average. This result should not be surprising due to the higher availability of volunteer organizations and charity activities in western developed societies. Furthermore, high degree of heterogeneity can be appreciated among African and Asian countries.[11]

The second trait is religiosity. To measure individuals' positions toward religion, I focus on the following question: (RE_1) "*Is religion an important part of your daily life?*" In nearly all surveyed countries, except for Jordan and Oman, this question is commonly asked. Individuals who respond positively to this query are categorized as "religious". Figure 3(IIa), show the global distribution of the percentage of religious people, which exhibits a bimodal pattern: most countries are either marked by a high or low percentage of religious individuals. When I segment this distribution by connectedness, it becomes evident that those with strong social connections tend to display lower levels of religiosity. Figure 3(IIb) depicts the geographical distribution of religious people around the world. Sub-Saharan African countries and Indonesia stand out for the highest share of religious individuals, while China is characterized by having the lowest proportions of religious people.

To approximate gender-egalitarian views, I adopt the approach outlined by Docquier *et al.* (2020), focusing on three questions where respondents express their agreement or disagreement with the following statements: (GE_1) "*Women and men should have equal legal rights?*"; (GE_2) "*Women should be allowed to hold any job for which they are qualified outside the home?*"; and (GE_3) "*Women should have the right to initiate a divorce?*" I encode responses using a binary variable, with 'one' signifying the presence of gender-egalitarian views. These questions were not surveyed for the complete set of countries within the GWP dataset: they were exclusively gathered from a subset of countries where gender-egalitarian attitudes were particularly lacking (i.e., developing countries)

[10] Results of the MCA are available in Table OA-IV in the Online Appendix. Correlations between questions and the synthetic index are available in Table OA-VI in the Online Appendix. Using alternative methods to reduce data dimensionality like Factor Analysis or Polychoric PCA produces indexes that are extremely correlated with the one produced through MCA (around 0.999), both for Social Behavior and Gender-egalitarian attitudes.

[11] China tend to have the lowest level of social behavior, attributed to historical cultural factors that have led to lower levels of trust and interpersonal interactions (Greif and Tabellini, 2010).

and for a limited time span (i.e., until 2011). I combine these three questions in one synthetic index of gender-egalitarian views through a Multiple Correspondence Analysis;[12] then, I normalize it with mean zero and standard deviation equal to one. Figures 3(IIIa) and 3(IIIb) illustrate the weighted density and geographic distribution of average gender-egalitarian views across the sampled countries. Notably, the weighted density associated with non-connected individuals exhibits a higher mean compared to that of their connected counterparts. South Africa and Turkey emerge as the countries with the most gender-egalitarian attitudes, while Sub-Saharan countries tend to show higher levels of gender inequality. However, it is important to note a significant caveat: the GWP provides these questions only for countries with pronounced gender-unequal views.[13]

Cross validation alternative sources - Online Appendix OC provides evidence to validate and support the economic relevance of the chosen cultural traits. Firstly, I assess the correlation of constructed indices with similar traits found in the World Values Surveys, revealing statistically significant positive correlations at the country level across the two dataset. Secondly, I present suggestive evidence of the economic significance of these cultural traits by showing their partial correlation with six individual-level measures of economic preferences from the Global Preferences Survey (GSP) (Falk *et al.*, 2018). These selected traits serve as meaningful predictors of various economic preferences, including patience and risk aversion. Finally, I establish a positive relationship between gender-egalitarian attitudes and country-level measurements of women's enrollment in secondary education, along with a negative correlation with the gender employment gap provided by the World Bank.

3 Empirical Strategy

This study aims to provide empirical evidence on the cultural differences between individuals with a network abroad and those from the same region who do not have such connection. The analysis focuses on offering consistent and robust descriptive evidence of the relationship between connectedness and three different cultural traits. According to the theoretical framework outlined in Appendix A, these cultural differences may arise from social remittances and/or the selection of culturally distinct individuals into connectedness. Decomposing these mechanisms is behind the scope of this study, that aims to provide systematic descriptive evidence of the presence (or lack thereof) of such distinctive cultural stance associated to having a network abroad across different cultural traits and wide set of countries.

To explore the individual-level relationship between connectedness and cultural traits, I estimate the following linear model:

$$Cult_{i,r,c,t} = \alpha + \beta_1 Connect_{i,r,c,t} + \zeta \mathbf{\Gamma}_{i,r,c,t} + \theta_{r,c,t} + \epsilon_{i,r,c,t}. \quad (1)$$

[12] Results of the MCA are available in Table OA-V in the Online Appendix.

[13] For additional information on cultural variables associated with social issues and active participation in religious activities, see the Online Appendix OD1 in Table OA-II

As a main explanatory variable I include $Connect_{i,r,c,t}$, a dummy variable which takes the value of one if individual i in region r in country c at year t has a reliable network abroad, and zero otherwise. The outcome variable $Cult_{i,r,c,t}$ is alternatively one of the index of cultural traits: social behavior, religiosity or gender-egalitarian views.[14] The vector $\mathbf{\Gamma}_{i,r,c,t}$ contains a set of individual socioeconomic characteristics, such as dummies for gender, marital status, the presence of children in the household, education, living in an urban area and employment status, and continuous variables for age and level of income per household member in international dollars.[15] Time-variant intra-country regional factors, such as economic growth, exports, local culture, institutions, and diaspora are captured by the region-year fixed effects ($\theta_{r,c,t}$). I cluster the error terms at the regional level (Abadie *et al.*, 2023).

3.1 Econometric Issues

By estimating the linear model presented in equation (1) with OLS, the estimated $\widehat{\beta_1}$ provides a measure of partial correlation between connectedness and individual cultural traits. However, the presence of unobserved factors not included in the empirical model but correlated with the error term ($\epsilon_{i,r,c,t}$) can introduce a bias in the estimation, affecting direction, precision and magnitude of the estimates. Therefore, I firstly tackle issues directly connected with connection-specific characteristics, and then discuss the more general omitted variable bias (OVB) that may arise in this empirical analysis.[16]

Accounting for Connection's Characteristics - The baseline model does not include any specific information on the connection, such as the education level, her specific cultural stances or the relationship with the respondent. The reason behind such lack of additional controls is related to the nature of the dataset, which provides only a few information concerning connection's characteristics.

To proxy for connection's cultural stance, I rely on the recent evidence of the literature, which suggest that emigrants are selected along cultural traits compared to origin country population, and they tend to select the country of destination based on cultural values and stances (Berlinschi and Harutyunyan, 2019; Docquier *et al.*, 2020). Since GWP provides country of residence d for each connection during the period 2009 to 2012, I enrich the baseline model as follows:

$$Cult_{i,r,c,t} = \alpha + \beta_2 Connect_{i,r,c,t} + \gamma Connect_{i,r,c,t} * \overline{Cult}_d + \zeta \mathbf{\Gamma}_{i,r,c,t} + \theta_{r,c,t} + \epsilon_{i,r,c,t}. \quad (2)$$

The time-invariant $\overline{Cult}_d \in \{SB, RE, GE\}$ captures the average culture of the country of residence of the connection d. As such, the parameter γ encompasses both connections' cultural stance

[14] Dependent variables are standardized with mean zero and standard deviation equal to one for the index of gender-egalitarian views and social behavior, while it is a dummy variable for religiosity. This implies that the interpretation of the standard OLS estimator depends on whether the outcome is continuous or dichotomous.

[15] Education is measured as a dummy variable equal to one if the respondent has at least nine years of education.

[16] It is important to recall that my empirical analysis aims to provide descriptive evidence of the relationship between having a network abroad and cultural traits, being silent about the direction of the causal interpretation of the estimates.

and her exposure to the culture of the host country.[17] The value of $\overline{Cult}_d$ is computed after pooling data from all available years in GWP, and supplemented with data from alternative sources when necessary.[18] The model presented in equation (2) is an interaction model (Brambor *et al.*, 2006). Therefore, the interpretation of the magnitude of the partial correlation between having a network abroad and the respondent's cultural stance depends on the culture of the country where the connection resides. Unlike the canonical interaction model, I do not include the constitutive term ($\overline{Cult}_d$) independently, as the culture of the connection's country of residence is only relevant and exist when an individual has a network abroad (Brambor *et al.*, 2006). Thus, this empirical exercise is akin to including a set of dummy variables that capture the presence of a network abroad based on the average cultural level of the connection's country of residence.

While Bertoli and Ruyssen (2018) suggests that the variable of interest serves as a reliable proxy for a strong connection, heterogeneous results can emerge based on the nature of the relationship between respondents and their connections. Existing literature has shown that the quality of information provided by 'weak ties' has a more pronounced impact on individuals' behavior compared to 'strong ties,' such as family bonds (Granovetter, 2005; Batista *et al.*, 2019). The rationale behind this is that close relatives and acquaintances often share a similar social and cultural environment, thereby offering a smaller marginal contribution to individuals' knowledge compared to other peers. To investigate the significance of the relationship's nature, I employ a GWP question asking respondents whether any members of their household have relocated to a foreign country, either permanently or temporarily, within the past five years.[19] I subsequently replace the primary connectedness variable in equation (2) with either (i) $Family\ Net_{i,r,c,t}$, a binary variable taking the value of one if individual i has a relative abroad in any country d, or (ii) $Connect^{Cl}_{i,r,c,t}$, a binary variable taking the value of one if individual i has a connection abroad who is not a relative in any country d (i.e., the difference between the total and family network).

Omitted Variable Bias: Non-Cultural Selection - A potential concern associated to the estimated partial correlation is related to factors that may be related to both the cultural stance of individuals and the presence of a network abroad. For instance, if highly educated individuals are on average more likely to have a network abroad, then the estimated partial correlation may just reflect the general correlation between education and values. The empirical model presented in equation (1) aims to minimize such potential source of *omitted variable bias* (OVB), by including a rich set

[17] The literature on social remittances (Levitt, 1998) shows that the norms of the country of residence has an effect on both the behavior of the migrant in the host country and on aggregate behaviors of the population in the country of origin on various outcomes such as fertility and political preferences (Spilimbergo, 2009; Beine *et al.*, 2013; Docquier *et al.*, 2016).

[18] Regarding $\overline{SB}d$ and $\overline{RE}d$, I were able to compute this variable for 99% of the connections due to the extensive coverage of GWP. For $\overline{GE}_d$, the GWP provides information only on a limited set of countries. Hence I first complement it with the gender-egalitarian index computed in the sixth wave of the WVS. For the remaining set of countries (14% of the connections) I impute the average level of gender-egalitarian views based on their level of development, which has been identified as a reliable predictor of gender egalitarian attitudes (Inglehart, 2018).

[19] The question is as follows: "*Have any members of your household gone to live in a foreign country permanently or temporarily in the past 5 years?*" If the response is affirmative, GWP also inquires about the country of residence of the family member abroad.

of individual characteristics and controlling for time-varying regional characteristics. Nonetheless, there may be other not directly observed factors that may affect the likelihood to have a network abroad and a specific cultural stance.

To gauge the potential role of the omitted variable bias, I propose three empirical tests to account for different facets of this bias. However, all theses tests rely on the same identifying assumption, which is that the unobserved factors are related to other observable characteristics (Altonji *et al.*, 2010; Oster, 2019). In simpler terms, unobserved factors not accounted for in the empirical model are not entirely independent of other observable individual characteristics. Indeed, while it might initially seem like a challenging assumption, it would be even more stringent to assert that the factors responsible for selection are entirely unrelated to all other individual and contextual characteristics. This is because cultural traits and preferences are known to be influenced by a diverse range of both individual and contextual factors, as highlighted in prior research (Sinding Bentzen, 2019; Giuliano and Nunn, 2021; Bertoli *et al.*, 2022).

The three methods aim to minimize the influence of potential external factors that may simultaneously affect the presence of a reliable network abroad and an individual's cultural stance, thereby influencing both the magnitude and direction of the estimated partial correlation. However, these methods are not designed to address the potential cultural selection into connectedness, which undermines a possible causal interpretation of the estimates, as described in the theoretical framework in Appendix A. Instead, they seek to provide converging evidence using a range of non-experimental methods, demonstrating the robustness of the relationship while accounting for other potential observed and unobserved confounding factors.

First, I follow Oster (2019) methodology and I quantify the threat of selection driven by unobserved factors. Based on the seminal paper of Altonji *et al.* (2005), Oster's approach rests on the assumption that the relation between treatment (i.e., connectedness) and unobserved factors can be retrieved from the relationship between treatment and observables. Given this assumption and the amount of desired explained variation by the model ($R_{max} \in [0, 1]$), I compute the degree of selection on unobservables (δ) relative to observables for which the estimated coefficient of connectedness is equal to zero.[20] As a general rule of the thumb, if the magnitude of $|\delta|$ exceeds 1, then the potential threat stemming from the selection of unobservables should be minimized. Furthermore, the robustness of the estimates improves with higher values of $|\delta|$.

Second, I account for the potential selection driven by observable characteristics by relying on matching methods, which has been widely used in non experimental studies (Dehejia and Wahba, 2002; Sianesi, 2004; DiPrete and Gangl, 2004; Ichino *et al.*, 2008; Hainmueller, 2012). These methods enable us to compare individuals who are connected with those who are not, while minimizing differences in observable characteristics. I follow Caliendo and Kopeining (2008) guidelines and implement both Propensity Score Matching (PSM) and Covariates Matching (CVM). To deal with the poten-

[20] Oster (2019) defines the proper bounds of R_{max} on a set of randomized results from top journals. The cutoff of R_{max} should allow at least 90% of randomized results to be robust to selection on unobserved factors. The suggested cutoff is 1.3 times the estimated R^2. I provide results with both the cutoff at 1.3 and 2 times the estimated R^2. A broader and more detailed discussion of the Oster (2019) approach is described in Online Appendix OE1.

tial imbalance arising for the excessively trimmed sample with PSM methods (King and Nielsen, 2019), I also implement an Entropy Balancing (EM) approach to reweight the sample without losing any observations and balancing the covariates between connected and not connected individuals (Hainmueller, 2012). Additionally, I perform a sensitivity analysis of the estimates computing the Rosenbaum Bounds (Rosenbaum, 2002), which measure how strong selection on unobserved factors should be to undermine the estimated treatment effect after matching (Aakvik, 2001; DiPrete and Gangl, 2004). Furthermore, I present placebo matching results in which I randomly assign having a network abroad to individuals as an additional analysis.[21]

Finally, since similar underlying factors could push into connectedness, either locally or abroad, I introduce an additional control variable that measures general connectedness. I utilize a question from the GWP survey that asks individuals, "*If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?*" and create a binary variable, denoted as *Rel. Connect*, which equals one if individuals respond affirmatively to this question. The correlation between *Rel. Connect* and the measure of connectedness abroad is around 0.148, which allows us to include both variables simultaneously. Moreover, such a small correlation suggests that not all the individuals who have a reliable connection in general have also a reliable connection abroad: only 35% of them. By including this measure of general connectedness as a control, I are able to account for the common underlying factors that influence connectedness, whether it is at the local or international level.

4 Results

This Section provides a comprehensive analysis of the relationship between connectedness and cultural traits. Benchmark results are presented in Section 4.1. Section 4.2 shows an array of robustness tests that I have conducted to assess the consistency of the findings. Finally, in Section 4.3, I present a series of empirical results aimed at mitigating concerns related to omitted variable bias.

4.1 Benchmark Results

Table 1 presents baseline results. The reported coefficients show the relation between having a connection abroad and cultural traits, expressed with an index of social behavior in Columns (1) and (2), a dummy of religiosity in Columns (3) and (4) and an index of gender-egalitarian views in Columns (5) and (6). I report the estimates using a simple specification with just the connectedness dummy as variable of interest in odd columns, and after including the interaction term with the culture of the connection's country of residence in even columns. All specifications include region-year fixed effects, and the full set of individual controls described in equation (1).

Focusing on the baseline specification presented in odd-numbered columns, the estimates point out that, on average, connected individuals are culturally different: having a connection abroad is associated with an higher level of pro-social behavior, higher religiosity and more gender-egalitarian

[21] The methodological aspects and choices underpinning the matching results are presented in Appendix C.1.

views. Notably, the estimated coefficients are statistically significant at the 1% level, and their magnitudes are comparable to those of other individual-level characteristics. For instance, compared to the proxy of education, connectedness accounts for 78% of the coefficient of education on pro-social behavior, 35% on gender-egalitarian views, and 36% of the correlation of education on religiosity, although with an opposite sign. Evaluating the magnitude of the coefficient of connectedness compared to the standard deviation of each dependent variable reported in Table OA-III, shows that connectedness is related with an increase of 20 percentage points of a standard deviation for pro-social behavior, a 5.4 percentage points increase in standard deviation for gender-egalitarian views, and a 1.2% increase in the probability of being religious.

The results in the even-numbered columns, which explore the connection's cultural orientation and exposure to the values of the country of residence, reveal that the contribution of the country of residence's culture is trait-specific. For cultural traits such as pro-social behavior and gender-egalitarian attitudes, the estimated coefficient associated with the interaction term is positive and statistically significant. These findings align with the potential social remittances channel highlighted by migration literature (Levitt, 1998; Rapoport *et al.*, 2020). However, the degree of religiosity in the connection's country of residence has no statistically significant relation to the connected individuals' cultural stance. This result can be attributed to the relatively persistent nature of religiosity compared to other cultural traits (Inglehart and Baker, 2000). These intriguing findings, therefore, support the intuition that cultural traits have their own specific evolution and characteristics and should be studied separately (Desmet and Wacziarg, 2021; Bertrand and Kamenica, 2023).

Table B-1 in the Appendix explores the role played by the quality of the connectedness ties. The results indicate that, in general, the point estimates associated with connectedness remain fairly consistent in size and significance even after removing parental ties. Having a family connection abroad also retains a positive relationship with all cultural traits, albeit of smaller magnitude, and it becomes statistically insignificant for religiosity. These results suggest the relevance of 'weak ties' as source of novel information (Granovetter, 2005).

Finally, to have an intuition of the relevance and magnitude of the estimated coefficient at a regional and global scale, I provide two quantification exercises. First, I rely on the measurement framework developed by Desmet and Wacziarg (2021) to quantify the role of connectedness relative to other individual characteristics in explaining regional cultural heterogeneity. The results, detailed in the Online Appendix OG, reveal that while connectedness explains only a modest portion of regional cultural heterogeneity, it accounts for an average of 47% more variation than other individual traits such as education or employment status. Second, the Online Appendix OH conducts back-of-the-envelope calculations to assess the impact of connectedness on the average cultural traits at the global level. In comparison to a benchmark scenario in which people have no connections abroad, the predicted cultural effect of connectedness results in the following relative deviations from the benchmark: an 7.9% difference for social behavior, a 0.85% difference for gender-egalitarian views, and a mere 0.2% difference for religiosity.

4.2 Robustness Checks

I now describe the series of robustness checks available in the Online Appendix OD to test the stability of the estimates. As specification I rely on equation (2), hence accounting for the role of connection's cultural stance.

Active Religious Participation - Previous findings indicate a positive association between connectedness and religiosity. To further explore whether this relationship extends to religious active participation and trust in religious institutions, I turn to Table OA-XI in the Online Appendix, which estimates the partial correlation between connectedness and religious participation. Interestingly, the results reveal that connectedness is positively associated with active religious participation, while it is not related with the likelihood to trust religious organization. Moreover, the positive relationship between connectedness and religiosity primarily holds true for individuals who already belong to religious groups, such as Christians and Muslims. This result suggest that respondent's religious denomination is a relevant factor to account for the understanding of the positive relationship between having a network abroad and his/her religious stance.

Perceived unfairness - Table 1 shows that connectedness is linked to greater active participation in society, indicated by higher levels of pro-social behavior and more gender-egalitarian attitudes. These relationships could be influenced by individuals' perceptions of their society. Unfair and discriminatory conditions may heighten the desire for an alternative and fairer scenario, which might be reflected in the behaviors and attitudes of those who have connections in more equitable societies abroad. To further investigate this, Table OA-XII in the Online Appendix presents estimates that take into account perceived justice towards poor people, migrants, and women. Perceived discrimination does not influence the estimated coefficients on pro-social behavior and gender-egalitarian attitudes.

Individuals Openness and Migration Experience - The results may encompass an individual's general openness to foreign norms and preferences. To address this possibility, Online Appendix OD2 aims to account for this general openness in two ways at the individual level. First, in Table OA-XIII I include additional controls capturing individual's intention and likelihood to emigrate and access to means of communication such as internet. The estimated coefficients between connectedness and cultural traits remain relatively stable across various specifications and subsamples, suggesting that they are not substantially influenced by these measures of general openness. Second, I explore whether having a previous migration experience influences the results. Individuals who have migrated abroad are more likely to have a connection abroad but benefit less from the experiences of others abroad, as they have experienced it themselves. For a subset of countries and years, GWP provides information on whether respondents have lived abroad for more than six months.[22] I estimated the benchmark model on two separate samples based on whether individuals have previously emigrated. The results in Table OA-XIV show that the main findings are confirmed among

[22]The question asked by GWP is: "*Have you ever lived in a foreign country (including countries of the former Soviet Union) for more than six months?*" (WP9549). This question is asked only in a subset of sub-national regions by GWP: European Union, Balkans, Commonwealth Independent State, Middle East & North Africa.

individuals who have never left the country, while having a network abroad is not associated with any distinct religious or gender-egalitarian stance among those who have lived abroad. Therefore, these results suggest that the distinctive cultural stance is not explained by previous emigration experience.

Conditional and Unconditional Results - The baseline model includes a variety of individual controls and fixed effects. While these individual-level characteristics allow for a comparison of more similar connected and unconnected individuals within each region, their inclusion may hide important and informative patterns concerning the relationship between cultural traits and having a network abroad. To address this, I perform a series of empirical tests. First, in columns (1) and (2) of Online Appendix Table OA-XV, I describe the explanatory power of these individual characteristics, by comparing the R^2 of a model with just region-year fixed effects with one including also individual level controls. The adjusted R^2 increases around 4% for social behavior and religiosity, and of 22% for gender-egalitarian attitudes. This result suggest again that the implications of individual level characteristics differ across cultural traits, as suggested by Desmet and Wacziarg (2021). Second, column (3) of Table OA-XV shows that the estimated relationship between connectedness and each cultural trait remains qualitatively and quantitatively the same after excluding individual controls. Therefore the estimated relationship is not fully explained by specific groups. Third, in columns (4) to (9) of Table OA-XV I gradually saturate the model with region-year-individual characteristics fixed effects. While both the R^2 and Adjusted R^2 gradually increase across the specifications, the estimated relationship between network abroad and cultural traits remains robust.

Connection's Imputed Culture - As described in Section 3, I imputed the average cultural trait for a subset of connection's country of residence. This imputation could be particularly relevant for the results on gender-egalitarian views, as I imputed the average culture of the country of residence for 14% of the connections available. Nonetheless, Column (1) of Table OA-XVI demonstrates that the results remain stable even after avoiding this imputation.

Regional Classification and F.E. - In Table OA-XV I then explore whether the results are driven by the specific set of fixed effects employed. Columns (2) and (3) reveal that the results remain largely unaffected when I alter the geographical fixed effects structure. This means that including separately country (or region) and year fixed effects, does not significantly impact the relationship between connectedness and cultural traits. As described in Section 2, an exact correspondence between the regional identifier in GWP and in GADM is not available for 7% of the sample of individuals. Nonetheless, Columns (4) and (5) of Table OA-XVI illustrate that the results remain unaltered even when I exclude these individuals from the sample or perform the analysis by relying on broader regions. Furthermore, Columns (6) and (7) of Table OA-XVI present similar results after removing from the sample the regions that appear only once or those characterized by a small number of observations (i.e., fewer than 100 observations).

Non linear models - I test whether the results presented in Table 1 are robust to estimation methods other then simple linear models. Following Galor and Savitskiy (2018) and using a Probit model for religiosity and Ordered Probit for social behavior and gender-egalitarian attitudes, I

estimate the probability of being religious and the ranked levels of social behavior and gender-egalitarian attitudes conditional on connectedness. Table OA-XVII demonstrates that employing these non-linear models yields estimates consistent with the benchmark approach, further reinforcing the stability of the observed relationships.

Indices sub components - Indices of gender-egalitarian views and pro-social behavior are composite indices aggregating information over three different questions for each trait. To ensure that the estimated coefficients are not being driven by any specific sub-items within these indices, I conduct an analysis on each sub-component and presented in Table OA-XVIII. The results indicate a positive and statistically significant relationship between connectedness and each of the specific sub-traits.

Countries' extension - The interaction between individuals, both locally and abroad, may be influenced by the geographical extension of the country, which can impact population density. To investigate whether the results are driven by geographically small countries, I conduct an analysis by removing countries with at most 50,000, 100,000, or 200,000 square kilometers of land area and presented in Table OA-XIX. The results indicate that the relationship between connectedness and each cultural trait remains unchanged even after excluding small countries from the sample. This suggests that the estimated relationships between cultural traits and connectedness are not contingent on the size of the countries.

Multiple Connections abroad - Regarding reliable connections abroad, GWP asks respondents about the existence of up to three connections and their respective countries of residence. Table OA-XX firstly demonstrates that the relationship between each cultural trait and the sum of reliable connections abroad is positive. Furthermore, it performs a comparison between the first, second, and third reliable connections mentioned. Interestingly, the first connection mentioned has a positive and statistically significant relationship with all three traits. In contrast, the estimated relationships for the second and third connections are lower in magnitude and are less statistically precise. These results suggest that the first connection, which I rely on as a proxy for connectedness, appears to be the most relevant one for individuals' cultural traits.

4.3 Dealing with Omitted Variable Bias

As described in Section 3.1, the estimated results can be affected by factors not accounted for in the benchmark model. In this section, I present the results of an empirical analysis designed to tackle this source of omitted variable bias. The identifying assumption is that the unobserved source of selection is related to other observable characteristics (Altonji *et al.*, 2010).

Table 2 presents the empirical results based on Oster (2019), which assesses the role played by *selection driven by unobserved factors*. For each cultural trait, I estimate the degree of selection on unobservables (δ) and the bounded identified set of the estimated coefficients after correcting for potential selection on unobservables as relevant as selection on observables. I provide results for the amount of explained variation using both the cutoff of 1.3, as suggested by Oster (2019), and 2 times the estimated R^2 from the model. Findings indicate that the estimated relationship between connectedness and cultural traits remains robust to selection on unobservables. The estimated δ is

above the cutoff level of one (in absolute terms), and the estimated bounding set never includes zero. Not surprisingly, the proxy of the connection's culture is less robust to selection on unobservables, as it can be influenced by other unobserved characteristics of the connections, such as age or education.

To address potential *selection on observables*, I initially employ propensity score matching (Caliendo and Kopeining, 2008). I estimate the probability to being a connected individual with two different models, the "Main model" including variables that influence both connectedness and culture (Heckman *et al.*, 1997), and the "Short model", which includes only exogenous variables such as age and gender.[23] As Figure C-1 illustrates, both models satisfy the Common Support assumption. I then match connected and not connected individuals with the same propensity score within the same region using a Kernel Epanechnikov algorithm, with a 0.05 kernel bandwidth (DiPrete and Gangl, 2004).[24] To assess the quality of the matching, Table C-2 shows that the standardized bias is below the |5%| threshold for the majority of the covariates (Rosenbaum and Rubin, 1985; Sianesi, 2004), implying no systematic differences in observables across connected and not connected individuals.[25] Figure 4 plots the average effect of the treatment (i.e., connectedness) on the treated after PSM from the "Main model" (a) and the "Short Model" (b). The results confirm the estimates presented in Table 1, both in terms of direction and magnitude.

To conduct a placebo test, I perform a second round of matching over individuals belonging to the control group. In this test, I randomly assign them a fake treatment drawn from a uniform distribution. Figure C-2 in the Appendix presents the average estimates of the fake treatment on each cultural trait after employing the same Propensity Score Matching (PSM) approach described earlier. The results of the placebo test indicate that the fake treatment does not highlight any estimated cultural difference. This finding helps mitigate the threat of potential selection into the control group and reinforces the validity of the analysis. Additionally, following the sensitivity analysis proposed by Rosenbaum (2002), I test the robustness of the results to hidden bias (DiPrete and Gangl, 2004). Hidden bias is generated by unobserved factors that simultaneously affect an individual's culture and connectedness. The methodology and results of the sensitivity analysis are presented in Appendix C.3. Overall, the results show that the estimated relationship between connectedness and social behavior or gender-egalitarian attitudes is strongly robust to hidden bias, while the relationship with religiosity is slightly less robust. This additional analysis adds further confidence to the robustness of the findings.

Propensity score matching is not the only approach to conducting a matching. Moreover, this approach may generate imbalances when it requires excessive trimming of the sample (King and

[23]The "Main model" includes all variables that are significantly related with connectedness, and that should be exogenous. The variables included are age, gender, education, marital status, rural/urban location and unemployment status. The "Short model" has a more parsimonious specification, including only purely exogenous variables like gender, age and age-transformations. Table C-1 in the Appendix presents both estimated models. I use both models to predict the propensity score used for the matching. Performing matching with both models allows us to check whether the estimated results may be driven by the selection of the variables in the probit model.

[24]In the Online Appendix OE2 I provide results with alternative matching algorithms: Kernel (Normal and Uniform), Nearest Neighbour (one or five individuals, with replacement) and Radius matching.

[25]Moreover, Figures OA-III, OA-IV and OA-V in Online Appendix OE2 show similarities in the distribution of the covariates between connected and not connected individuals after matching (Heckman *et al.*, 1998).

Nielsen, 2019). Therefore, I implement two alternative covariate-based matching methods. First, I match connected and unconnected individuals within each region using the Mahalanobis Metric Matching method to minimize covariate distances (Imbens and Rubin, 2015). This method results in a sample with an equal number of connected and unconnected individuals within each region, leading to a significantly trimmed but extremely balanced sample. Second, to use the full set of observations while balancing the average characteristics between individuals with and without a network abroad, I conduct an Entropy Balancing (EM) approach, which reweighs the existing observations to balance them in terms of average observable characteristics (Hainmueller, 2012). This approach does not require trimming the sample, allowing for the full exploitation of dataset variability while balancing observable characteristics. Both approaches generated balanced samples in terms of observable characteristics, as shown in the last columns of Table C-2.

Table 3 presents the estimates over the matched and trimmed samples of individuals, and over the re-weighted sample of individuals after matching, which either combine both survey weights with matching weights (col. (3),(7) and (11)) or relies on the Entropy Balance weighting scheme (col. (4),(8) and (12)). The size and significance of the estimates are similar between the benchmark results, reported for comparison purposes, and the matched results. After removing unbalanced distributions of observable characteristics through covariate matching, connected individuals are still associated with higher levels of social behavior, religiosity, and gender-egalitarian views.

Finally, Table 4 provides the results after including a *proxy for general connectedness*. Intuitively, if there are factors that drive individuals' likelihood to have connections (locally or abroad), then controlling for a general proxy of connectedness should capture the common selection into connectedness. Therefore, controlling for connectedness (in general) should reduce the potential threat driven by individual selection into connectedness (abroad). Even though the measure of general connectedness is significantly related to all the three cultural traits, the estimates associated with connectedness abroad still remains positive and statistically significant. Moreover, the general reduction of the coefficients' size suggests that part of the potential positive selection into connectedness is now captured by the variable of general connectedness (*Rel. Connection*).[26] Including this proxy for general connectedness strengthens the robustness of the findings by addressing the potential common selection into connectedness, both locally and abroad.

5 Heterogeneity Analysis: Country and Individual Evidence

Section 4 reveals that connected individuals exhibit a distinct set of cultural traits, in line with the general theoretical framework outlined in Appendix A. Leveraging both country and individual-level sources of variation, this section aims to exploit the heterogeneity underpinning the global sample to highlight contextual and individual factors that bolster or undermine such relationship across the three cultural traits, therefore providing insightful evidence of the driving factors of this estimated relationship.

[26]Table OA-XXII in the online Appendix shows similar results across subsamples, after performing a subsample analysis based on individuals' answers relating to the measure of general connectedness.

5.1 Country-level Evidence

In this section, I exploit country-specific heterogeneity driven by the 148 countries available in the global sample. First, I explore the heterogeneity across broad continents and regions, to highlight whether the cultural-trait specific results are driven by specific geographical areas. Then I perform a subsample analyses based on country-level characteristics to grasp whether the majority norms (i.e., the average cultural norm), the diffusion of connectedness or the country-specific degree of development and openness may influence the estimated relationship.

To grasp whether the main results are driven by some specific global sub-region and their intrinsic characteristics, Figure OA-VI in the Online Appendix plots the estimated coefficients once excluding one global sub-region at the time from the sample. The magnitude and precision of the estimates remain stable and consistent, suggesting that the results are not entirely driven by specific sub-regions. Nonetheless, the estimated relationship may vary across specific areas and contextual factors. Table 5 presents the estimated results by subsample of regions based by eight broad global sub-regions defined by the GWP dataset: Europe, Former Soviet Union, Asia, Latin America, Middle East and North Africa (MENA), Sub-Saharan Africa, North America and Oceania. The results highlight relevant differences across cultural traits. Concerning pro-social behavior (Panel A), the estimated correlation with having a network abroad remains on average positive and statistically different from zero across global sub-regions, and it is stronger among individuals in the Latin American region. The sole exception is among individuals living in Oceania, but this result may be influenced by the small sample size. However, results on Religiosity (Panel B) and Gender-Egalitarian Attitudes (Panel C) reveals some relevant heterogeneity. Having a network abroad is not associated with stronger religiosity in North America, and the estimated relationship is absent or smaller among individuals in the African continent. Similarly, connectedness is not correlated with distinctive gender-egalitarian attitudes among respondents in Asian or Sub-Saharan regions. Interestingly, connected individuals in the MENA region have no distinctive religious stance compared to their local peers, although they do exhibit higher gender-egalitarian attitudes. These results suggest that depending on the cultural trait, local and contextual factors may be relevant to explain the cultural stance associated on having a network abroad.

But what local factors may be relevant? I explore two country-specific potential sources of heterogeneity. First, if the cultural stance associated to having a network abroad on individual values and preferences is more pronounced when those values are considered as a minority trait within the local community, I would anticipate heterogeneous estimated coefficients based on the country average norm. Therefore, I calculate the average country cultural trait across the sample 148 countries, and I then estimate equation (2) over samples of countries belonging to different terciles of the average trait distribution. These terciles range from countries with the lowest average value of the cultural trait (first tercile) to those with the highest value (third tercile). Second, the diffusion of having a network abroad may play a role. For instance, in countries where having a network abroad is a common feature, then the specific cultural specific stance of connectedness may be less relevant. I explore this source of heterogeneity by dividing the sample of countries into terciles based on the

diffusion of connectedness and estimate the benchmark model within these different subsamples.

Table 6 provides the results across the different subsample of countries, categorized based on the average cultural norm (Panel A) or by the average connectedness diffusion (Panel B). Focusing on the results by average prevailing norm, the relationship between connectedness and pro-social behavior is rather stable across the different subsamples. However, results vary across subsamples when looking at religiosity and gender-egalitarian views. In particular, the estimated coefficients are positive and statistically significant in countries where the prevailing norm is either low religiosity or gender-unequal views (i.e., first tercile), while they are not statistically different from zero in more religious or gender-equal countries (i.e., third terciles). Similarly, Yakubenko and Azarnert (2022) shows that countries with high gender-inequality are those that benefit the most from the process of cultural remittances. These latter results can be interpreted through the lens of connectedness as source of cultural innovation, accounting for the fact that each cultural traits may have its own predictors (Desmet and Wacziarg, 2021). Turning to Panel B, the diffusion of connectedness does not significantly impact the estimates for religiosity and pro-social behavior.[27] Nonetheless, the estimated relationship is positive and statistically significant for gender-egalitarian views only in countries where connectedness is widely spread. This result suggests that a wide diffusion of network abroad may be beneficial for the development of a gender-egalitarian cultural stances among connected individuals. All in all, these results suggest that the contextual factors that drives the distinctive cultural stance of having a network abroad are cultural trait specific.[28]

5.2 Individual-level Evidence

In this section, I present three individual-level based heterogeneity analysis, to provide suggestive evidence that shed light on potential interpretations of the main empirical result – the distinctive cultural stance associated with having a network abroad. Leveraging the rich individual-level heterogeneity available, I therefore explore various factors that might explain the relationship between having a network abroad and distinctive cultural stance.

First, I consider the possibility that connectedness acts as a distinctive source of novel information across different individuals, by influencing individual cultural traits through a Bayesian Updating mechanism (Della Vigna and Gentzkow, 2010). If connectedness and networks indeed enhance the quality and quantity of an individual's information (Granovetter, 2005; Jackson, 2014), it would be plausible to find a more distinctive cultural stance among those holding less information. Additionally, depending on their characteristics and on the cultural traits in analysis, the relationship between connectedness and cultural stance may vary. For instance, male respondent with a network

[27] It is worth noting that Beine *et al.* (2013) and Spilimbergo (2009) reached a similar conclusion in their papers on fertility norms and democracy looking at emigration rates rather than connectedness diffusion.

[28] The Online Appendix OF provides additional consistent results over different subsamples (i.e., median and quartiles), and by using the cultural distance between connection's country of residence and respondent region of origin as interaction term. Moreover, Table OA-XXVII shows consistent results after exploring whether country's development and openness influences the estimated coefficients between connectedness and cultural traits by estimating the benchmark equation on subsamples of countries according to country development and world exposure, measured by GDP per capita, imports and exports. Data on GDP per capita, imports and exports as shares of GDP at the country level are provided by the World Bank over the period of analysis.

abroad may hold a more distinctive gender-egalitarian attitudes then female respondent. Pursuing this intuition, I split the population by education (more or less then 9 years of education), gender, location (rural or urban area), age (15-35, 36-55 and 55+) and access to means of communication (internet and land line telephone), and I estimate the equation (2) across different subsamples based on individual characteristics. Table 7 summarizes the results on social behavior (Panel A), religiosity (Panel B) and gender-egalitarian views (Panel C).

The estimates are positive and statistically significant with each cultural trait across the majority of the population's subsamples. Nonetheless, three patters are worthy to be highlighted. First, the estimates do not show some distinctive pattern across education groups, and access to means of communication has no implication for pro-social behavior. These results do not suggest a potential mechanism of connectedness driven by access to new information for this latter trait.[29] However, connected individuals with higher access to means of communication, such as land line phone, do not exhibit higher religiosity. Moreover, connected individuals with access to internet and land line phone have a more distinctive gender-egalitarian attitudes. This result confirms country-level evidence presented in Table 6, where the estimated relationship with gender-egalitarian attitudes is stronger with a wider diffusion of connectedness. Second, the estimated coefficients are bigger among males and among individuals in urban areas. Concerning the estimates among age groups, the results depend on the analyzed cultural trait. For instance, the influence on gender-egalitarian attitudes increases with age. This may be attributed to the fact that individuals aged 55 and older are less accustomed to gender-equal attitudes due to the recent evolution of such values (Inglehart and Baker, 2000); therefore, the information brought by their connection abroad has an higher relevance on the formation of their values.

Second, to further explore the potential heterogeneous effects depending on the prevailing cultural norms of the connection's country of residence, I focus on the sample of individuals having a network abroad. The results presented in Table 1 associated to the benchmark model have shown that network's country of residence norms have implication for the cultural stance of connected individuals with respect to not connected ones, mainly for social behavior and, with less precision, for gender-egalitarian attitudes. However, these results do not yet inform whether there are differential cultural stances among connected individuals based on the location of their network. Therefore, this empirical exercise directly addresses this aspect by examining whether having a connection in a country belonging to a specific global sub-region, characterized by certain norms, is associated with distinctive cultural traits compared to other types of networks. This approach also has the relevant feature that individuals are less likely to actively choose their connection's country of residence based on cultural factors, even though they may actively choose to have a network abroad. However, the interpretation of the estimates differs from the main analysis, as I compare connected individuals with *different* networks abroad. Estimating heterogeneous coefficients based on the prevailing cultural norms in the connection's country of residence would thus suggest an interpretation of the results related to social remittances (Levitt, 1998; Tuccio and Wahba, 2020).

[29] However, this result may also be driven by the imperfect measure of education available in GWP (i.e. whether individuals have at least nine years of education)

I examine this potential heterogeneous effects in Table 8, by estimating specific partial correlation of having a connection in either an OECD high-income country (Panel A), in a Muslim-majority country (Panel B) or in Christian-majority country (Panel C) compared to having it in another country.[30] OECD high-income countries tend to exhibit higher pro-social behavior, gender-egalitarian attitudes, and lower religiosity compared to the rest of the world. In contrast, Muslim-majority countries often have a strong religious creed that influence not only religiosity but also a wide range of individual values and beliefs, encompassing aspects from fertility norms to dietary habits (Atkin *et al.*, 2021; Rahman, 2023). Finally, Christian-majority countries are generally characterized by high pro-social behavior, though the degree of gender-egalitarian attitudes varies with the country's level of development.[31]

Results presented in Table 8 shows various statistically significant coefficients, in line with a social remittances interpretation. In Panel A, I observe that having a connection living in an OECD high-income country, as opposed to another country, is associated with higher levels of pro-social behavior and gender-egalitarian views, and, if any, a lower likelihood of being religious. Conversely, Panel B shows that having a connection in a Muslim-majority country, compared to another country, is associated with lower pro-social behavior. However, there is no specific stance on religiosity or gender-egalitarian attitudes. Finally, Panel C reveals that having a connection in a Christian-majority country is associated with stronger pro-social behavior and gender-egalitarian attitudes, while the specific stance on religiosity depends on the degree of religiosity in the Christian-majority country of residence. These results among the selected group of connected individuals suggest that the social remittances channel is a potential explanation for the heterogeneous results among those with a network abroad. This interpretation is more salient for specific cultural traits, such as social behavior. Furthermore, the relationship between having a network abroad and stronger gender-egalitarian attitudes and religiosity seems nuanced by the prevailing norms and religion in the connection's country of residence, as the results in Panel B and C show.[32]

Finally, connected individuals may hold a distinctive set of values due to their unique economic status. As suggested by Inglehart (2018), achieving existential and economic security may lead individuals to adopt more open and post-materialist values, such as gender-equal values. Therefore, I examine whether having a reliable connection abroad increases the probability of receiving economic assistance from other individuals and whether this has any bearing on the household income of the respondent (Ivlevs *et al.*, 2019).[33] To mitigate endogeneity stemming from simultaneity bias, I only

[30] This study defines a Muslim-majority country by more than 50% of the population being considered Muslim, following the data of (Lugo and Cooperman, 2011). A Christian-majority country is characterized by at least 50% of the population being considered Christian, using data from the CIA World Factbook, PEW Center and Joshua Project.

[31] Table OA-VI in the Online Appendix shows that, on average, gender-egalitarian attitudes and religiosity are negatively correlated.

[32] Specifically, having a connection in a Muslim-majority country is not associated with any particular religious or gender-egalitarian stance, whereas having a network in a Christian-majority country has implications that depend on the average norms of the country of residence.

[33] The GWP includes a question regarding economic assistance provided to the household by other individuals. The question is phrased as follows: "*In the past 12 months, did this household receive help in the form of money or goods from another individual(...)?*" Individuals can respond with a "yes" or "no," and they can also specify whether

include controls that cannot be influenced by the dependent variable, specifically gender and age.

The first three columns of Table 9 indicate a higher likelihood for connected individuals to receive economic assistance from abroad, specifically in the form of remittances. Notably, other labor market outcomes, such as the respondent's employment status (col. 4), remain unaffected. In addition, Column (5) shows a positive association between having a reliable connection abroad and household income. When examining subgroups receiving economic assistance (col. 6), local assistance (col. 7), or assistance from abroad (col. 8), only the latter group shows a significant positive relationship between connectedness and household income. This suggests that through the provision of economic aid to respondents, connectedness contributes to enhanced economic security and stability. These factors, in turn, align with self-expression values, including pro-social behavior and gender egalitarian attitudes (Inglehart and Baker, 2000).

6 Conclusions

Relying on individual-level data obtained from the Gallup World Polls, encompassing 2,256 within-country regions across 148 countries, this paper compares the cultural stance of natives with a reliable connection abroad to those without this cross-border tie. Cultural traits such as pro-social behavior, religiosity, and gender-egalitarian attitudes are considered. The findings demonstrate that connected individuals worldwide exhibit a distinct cultural stance. They manifest stronger pro-social behavior and gender-egalitarian views, along with higher levels of religiosity. These differences persist even after controlling for a comprehensive set of individual characteristics, region-by-year fixed effects, and employing empirical techniques to mitigate potential bias arising from the selection from both observed and unobserved factors. From a quantitative point of view, the estimates are sizeable: comparable between one-third and two-thirds or those associated with education as an individual characteristic, and able to explain on average fifty percent more regional cultural heterogeneity than other individual traits.

Relying on the global scope of the analysis and leveraging both country and individual heterogeneity, this paper shows that the conditions influencing the distinctive cultural stance of individuals with a network abroad are specific to each cultural trait. While the positive relationship between pro-social behavior and connectedness is stable and consistent across various subsamples at both individual and country levels, the distinctive cultural stance of individuals with a network abroad on issues such as gender-egalitarian attitudes and religiosity is influenced by local and individual-level characteristics. For instance, the estimated coefficients are larger in countries where religiosity and gender-egalitarian views are minority norms. Additionally, the distinctive stance on gender-egalitarian norms is stronger in contexts where there are relatively more people with a network abroad or where more means of communication are available. Overall, while highlighting the unique cultural stance associated with having a network abroad, this paper also emphasizes that the conditions and factors enhancing this relationship are specific to each cultural trait (Desmet and Wacziarg,

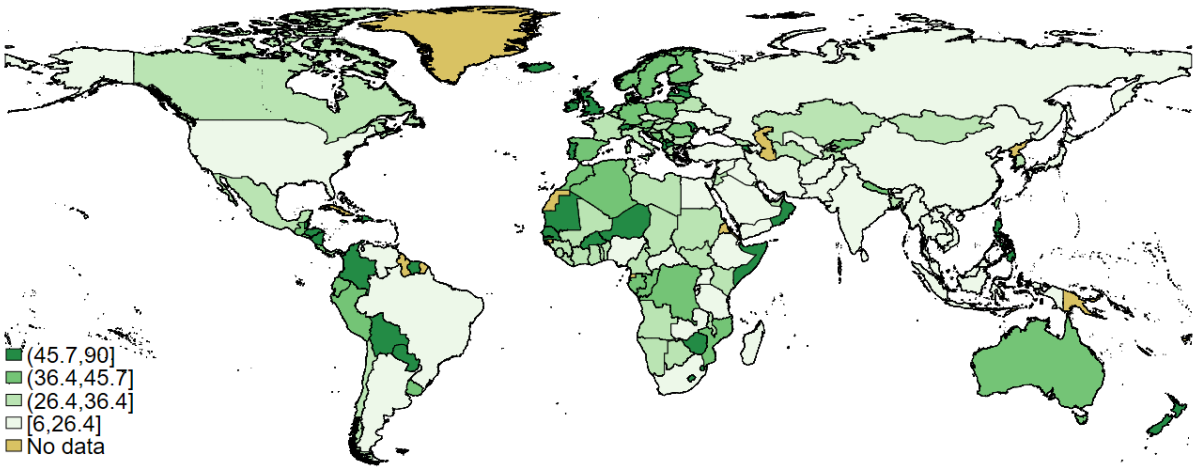
they received assistance from individuals residing in the same country or from abroad.

2021).

The results presented offer further evidence of the role played by globalization and international migration as contributing factors to the development of a distinctive set of values and preferences globally (Rapoport *et al.*, 2020). Given the availability of novel data, similar analyses should be extended to attitudes towards other global and contemporary issues, such as climate change or the relationship with artificial intelligence, which require a multilateral approach to be properly addressed. This would provide a better understanding of whether connectedness contributes to shaping a common consciousness and awareness over the various issues at stake in our time.

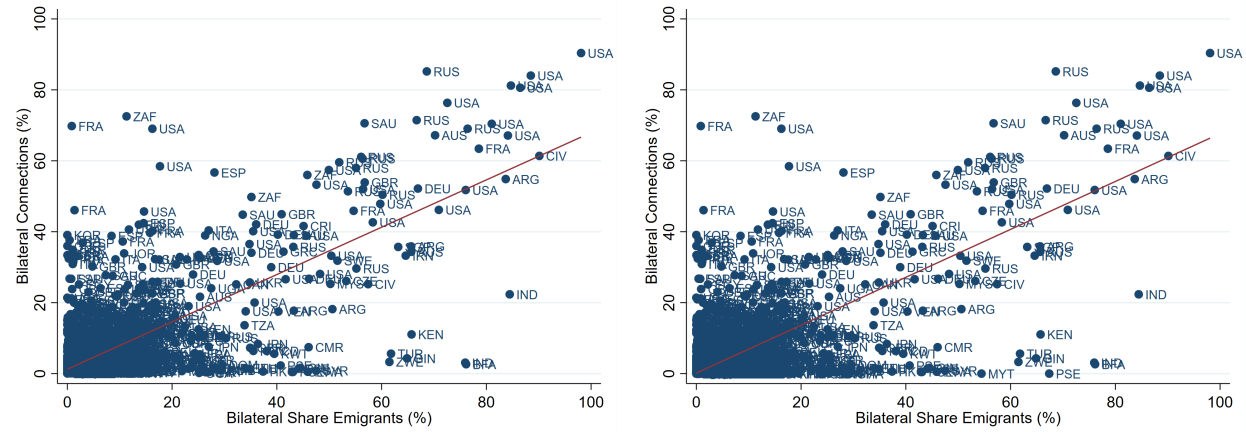
Tables and Figures

Figure 1: Geographical distribution of Connected People



Note: authors' calculations on Gallup World Poll Data. The figure plots the country average percentage of people with a reliable connection abroad.

Figure 2: Bilateral Connections and Emigration

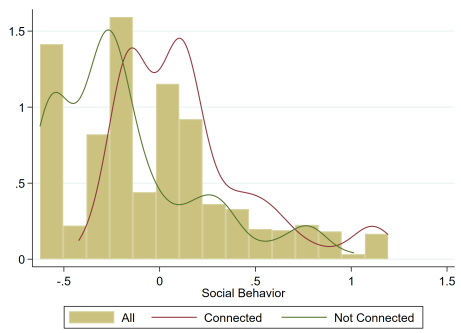


(a) Matched Corridors

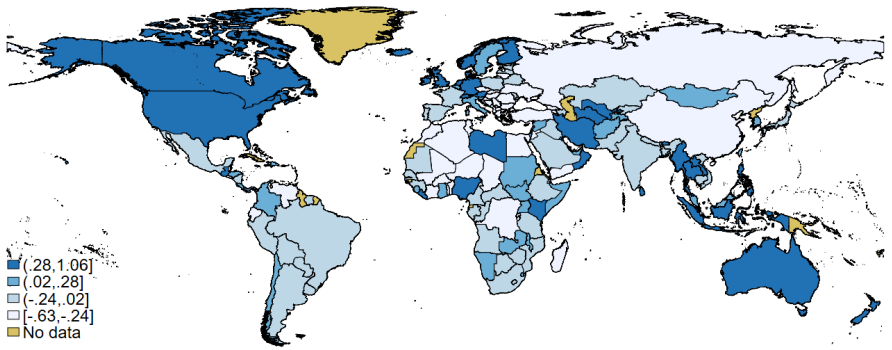
(b) All Corridors

Note: authors' calculations on Gallup World Poll Data and Özden *et al.* (2011). The Figure plots for each origin country the average destination-specific share of connections abroad and destination-specific share of emigrants in year 2000. The countries of destination are labelled. Figure (a) plots only the matched corridors, while Figure (b) plots all corridors. Each Figure also plots a linear regression line.

Figure 3: Distribution of Cultural Traits

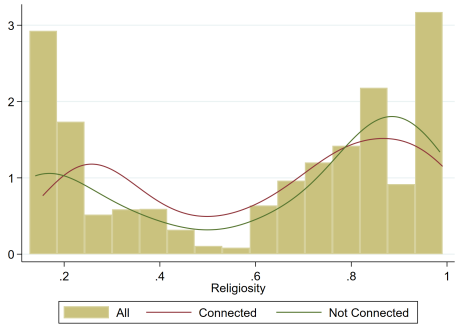


(a) Density

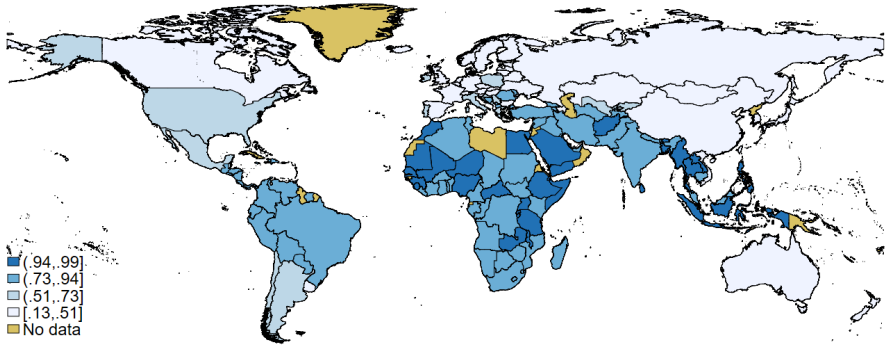


(b) Geographical Distribution

(I) Social Behavior

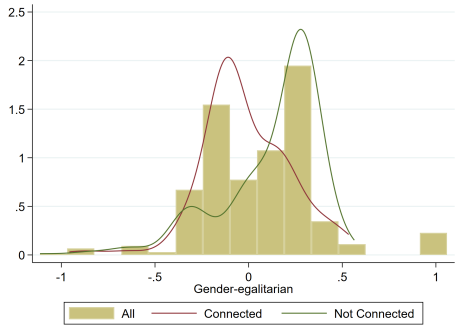


(a) Density

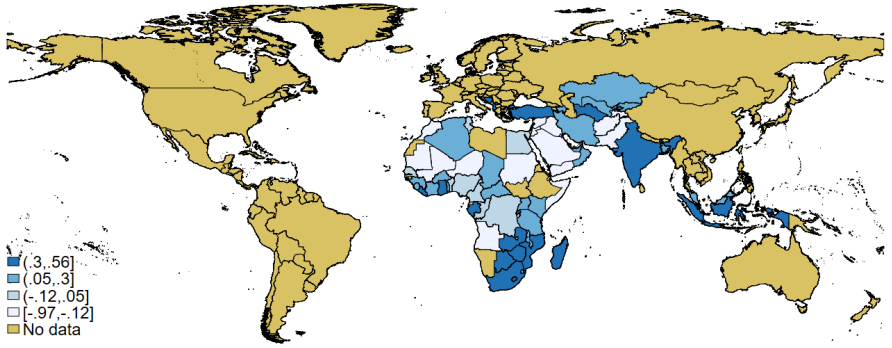


(b) Geographical Distribution

(II) Religiosity



(a) Density



(b) Geographical Distribution

(III) Gender-Egalitarian

Note: authors' calculations on Gallup World Poll Data. The Figures plot the weighted density and geographical distribution of each cultural trait: (I) Social Behavior, (II) Religiosity and (III) Gender-egalitarian views. The countries are split by quartiles.

Table 1: Connectedness and Cultural Traits - Benchmark Results

	(1) OLS 2009-2012	(2) OLS 2009-2012	(3) LPM 2009-2012	(4) LPM 2009-2012	(5) OLS 2009-2011	(6) OLS 2009-2011
	Social Behavior		*Religiosity*		*Gender-Egalitarian*	
Connect	0.201***	0.192***	0.012***	0.012***	0.052***	0.044***
	(0.006)	(0.006)	(0.002)	(0.002)	(0.011)	(0.011)
Interaction		0.093***		-0.004		0.075*
		(0.013)		(0.006)		(0.041)
Education	0.258***	0.257***	-0.033***	-0.033***	0.150***	0.150***
	(0.008)	(0.008)	(0.003)	(0.003)	(0.018)	(0.018)
Female	-0.062***	-0.062***	0.060***	0.060***	0.411***	0.411***
	(0.006)	(0.006)	(0.002)	(0.002)	(0.015)	(0.015)
Married	0.080***	0.080***	0.008***	0.008***	-0.011	-0.011
	(0.005)	(0.005)	(0.002)	(0.002)	(0.010)	(0.010)
Child	0.002	0.002	0.004**	0.004**	-0.017	-0.017
	(0.005)	(0.005)	(0.002)	(0.002)	(0.011)	(0.011)
Age	0.000	0.000	0.002***	0.002***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urban	0.041***	0.041***	-0.018***	-0.018***	0.053***	0.053***
	(0.008)	(0.008)	(0.003)	(0.003)	(0.019)	(0.019)
Family Size	0.007***	0.007***	0.003***	0.003***	-0.002	-0.002
	(0.001)	(0.001)	(0.000)	(0.000)	(0.003)	(0.003)
Unempl.	-0.024***	-0.024***	0.001	0.001	0.001	0.001
	(0.009)	(0.009)	(0.003)	(0.003)	(0.019)	(0.019)
Income	0.006	0.006	0.002	0.002	0.772	0.761
	(0.005)	(0.005)	(0.001)	(0.001)	(0.511)	(0.511)
Region-Year FE	✓	✓	✓	✓	✓	✓
Observations	411355	411355	391893	391893	90238	90238
Regions	2095	2095	2064	2064	736	736
Adj. R-Square	0.19	0.19	0.39	0.39	0.24	0.24

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. Columns (1), (3) and (5) show the estimates from the specification presented in equation (1) while columns (2), (4) and (6) show the estimates from the specification presented in equation (2). The dependent variable in each column is: social-behavior index (col. (1)-(2)), religiosity dummy (col. (3)-(4)) and gender-egalitarian index (col. (5)-(6)). The set of individual controls includes dummies for education, gender, marital status, parental status, living in an urban area, employment status and continuous variables for age, family size and income.

Table 2: Connectedness and Cultural Traits - Selection on Unobservables

	(1)	(2)	(3)	(4)	(5)
		$R_{max} = 1.3\tilde{R}$		$R_{max} = 2\tilde{R}$	
	Benchmark	δ	*Id. Set*	δ	*Id. Set*
Panel A - Social Behavior (OLS)					
Connect	0.192***	3.838	[0.159; 0.192]	1.230	[0.051; 0.192]
	(0.006)				
Interaction	0.093***	0.585	[-0.072; 0.093]	0.176	[-0.620; 0.093]
	(0.013)				
Adj. R-Square ($\tilde{R}$)	0.189				
Panel B - Religiosity (LPM)					
Connect	0.012***	-4.118	[0.008; 0.012]	-1.236	[0.001; 0.013]
	(0.002)				
Interaction	-0.004	0.801	[-0.004; 0.001]	0.242	[-0.004; 0.218]
	(0.006)				
Adj. R-Square ($\tilde{R}$)	0.389				
Panel C - Gender-Egalitarian (OLS)					
Connect	0.044***	-4.185	[0.030; 0.044]	-1.258	[0.007; 0.044]
	(0.011)				
Interaction	0.075*	-3.455	[0.047; 0.075]	-1.037	[0.002; 0.075]
	(0.041)				
Adj. R-Square ($\tilde{R}$)	0.244				

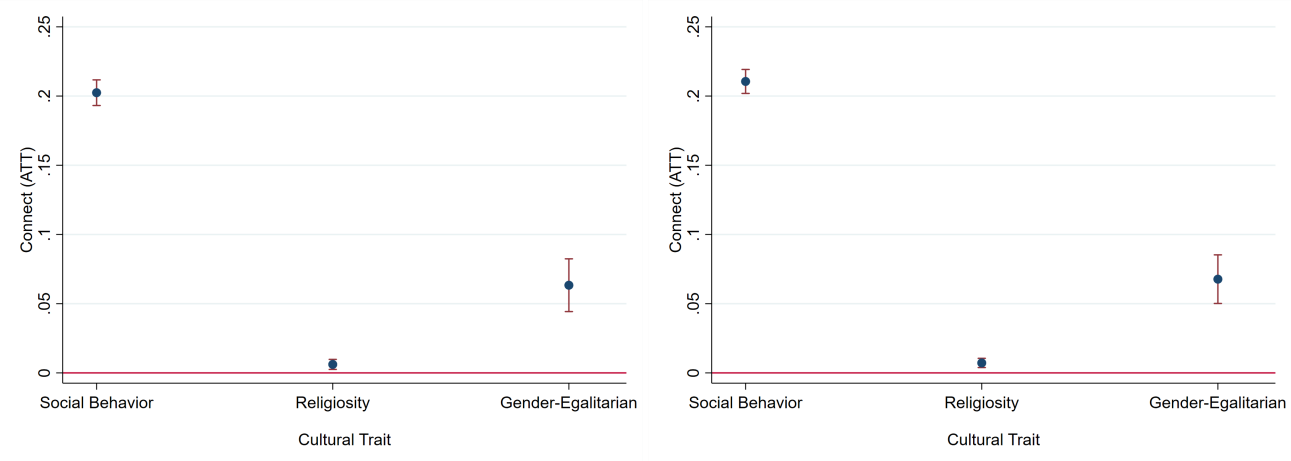
Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level in column (1). * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (Panel A), religiosity dummy (Panel B) and gender-egalitarian index (Panel C). Column (1) shows the estimates of the augmented model presented in equation (2). Columns (2) and (4) show the value of selection on unobservables (δ) which produces $\beta = 0$ given the value of R_{max}. Columns (3) and (5) show the identified set of the estimated $\hat{\beta}$ when $\delta = 0$ (no bias-adjustment) and $\tilde{\beta}$ when $\delta = 1/-1$ (observables as important as unobservables) given the value of R_{max}. Columns (2) and (3) shows the results for the suggested level of R_{max} by Oster (2019).

Table 3: Connectedness and Cultural Traits - Mahlanobis Matched and Entropy Balance Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	OLS	OLS	OLS	OLS	LPM	LPM	LPM	LPM	OLS	OLS	OLS	OLS
	Social Behavior				*Religiosity*				*Gender-Egalitarian*			
Sample	Main	Mahlanob. Matched	Mahlanob. Matched (RW)	Entropy Balance	Main	Mahlanob. Matched	Mahlanob. Matched (RW)	Entropy Balance	Main	Mahlanob. Matched	Mahlanob. Matched (RW)	Entropy Balance
Connect	0.192***	0.190***	0.187***	0.205***	0.012***	0.012***	0.014***	0.010***	0.044***	0.049***	0.054***	0.055***
	(0.006)	(0.006)	(0.007)	(0.006)	(0.002)	(0.003)	(0.003)	(0.002)	(0.011)	(0.016)	(0.017)	(0.011)
Interaction	0.093***	0.091***	0.097***	0.080***	-0.004	0.000	-0.003	-0.000	0.075*	0.047	0.032	0.104***
	(0.013)	(0.013)	(0.015)	(0.012)	(0.006)	(0.006)	(0.007)	(0.005)	(0.041)	(0.039)	(0.047)	(0.034)
Observations	411355	241430	190360	411355	391893	231096	182670	391893	90238	49518	39753	90238
Regions	2095	2031	2030	2095	2064	1998	1998	2064	736	644	644	736
Adj. R-Square	0.19	0.18	0.18	0.18	0.39	0.37	0.37	0.36	0.24	0.25	0.25	0.25
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (col. (1)-(4)), religiosity dummy (col. (5)-(8)) and gender-egalitarian index (col. (9)-(12)). The set of individual controls includes dummies for education, gender, marital status, parental status, living in an urban area, employment status and continuous variables for age, family size and income. Columns (1), (5) and (9) show the benchmark estimates presented in Table 1. Columns (2), (6) and (10) show the estimates on the matched sample using a Mahlanobis Metric Matching procedure and associated weights. Columns (3), (7) and (11) show the estimates on the matched sample using a Mahlanobis Metric Matching procedure and reweighted weights (matching weights*survey weights). Columns (4), (8) and (12) show the estimates using the weights obtained from the Entropy Balance method (Hainmueller, 2012).

Figure 4: Connectedness and Cultural Traits - Propensity Score Matching Results



(a) Main Model

(b) Short Model

Note: authors' calculations on Gallup World Poll Data. The figure plots the average effect of connectedness after propensity score matching on three different cultural traits (Social Behavior, Religiosity and Gender-Egalitarian) and the interval of confidence at 99% level. Standard errors are bootstrapped. Figure (a) shows the results form the Main Model presented in Column (2) of Table C-1 to compute the propensity score for the matching, while Figure (b) shows the results from the Short Model presented in Column (3) in Table C-1. The matching method is Kernel Epanechnikov matching.

Table 4: Connectedness and Cultural Traits - Controlling for General Connectedness

	(1) OLS 2009-2012	(2) OLS 2009-2012	(3) LPM 2009-2012	(4) LPM 2009-2012	(5) OLS 2009-2011	(6) OLS 2009-2011
	Social Behavior		*Religiosity*		*Gender-Egalitarian*	
Connect	0.191***	0.183***	0.010***	0.011***	0.038***	0.033***
	(0.006)	(0.006)	(0.002)	(0.002)	(0.011)	(0.011)
Interaction		0.093***		-0.001		0.060
		(0.014)		(0.007)		(0.048)
Rel. Connect	0.107***	0.108***	0.020***	0.020***	0.046***	0.046***
	(0.007)	(0.007)	(0.002)	(0.002)	(0.014)	(0.014)
Observations	378165	378165	362061	362061	75811	75811
Regions	2082	2082	2044	2044	709	709
Adj. R-Square	0.19	0.19	0.39	0.39	0.25	0.25
Individual Controls	✓	✓	✓	✓	✓	✓
Region-Year FE	✓	✓	✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. Columns (1), (3) and (5) show the estimates from the specification presented in equation (1) while columns (2), (4) and (6) show the estimates from the specification presented in equation (2). The dependent variable is: social-behavior index (col. (1)-(2)), religiosity dummy (col. (3)-(4)) and gender-egalitarian index (col. (5)-(6)). The set of individual controls includes dummies for education, gender, marital status, parental status, living in an urban area, employment status and continuous variables for age, family size and income.

Table 5: Connectedness and Cultural Traits - Country-level Heterogeneity
Subsample by Broad Continents

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Broad Geography	Europe	Former SU	Asia	Latin America	MENA	Sub-Saharan	North America	Oceania
Panel A - Social Behavior (OLS)								
Connect	0.193***	0.162***	0.193***	0.237***	0.149***	0.198***	0.182***	0.096
	(0.011)	(0.013)	(0.019)	(0.016)	(0.016)	(0.012)	(0.048)	(0.064)
Interaction	0.065***	0.094**	0.117***	0.039	0.101**	0.139***	0.188**	0.197**
	(0.023)	(0.040)	(0.039)	(0.027)	(0.039)	(0.049)	(0.078)	(0.090)
Observations	67752	54473	79680	56186	56549	89400	4561	2754
Regions	406	237	339	377	258	395	60	23
Adj. R-Square	0.22	0.16	0.23	0.11	0.15	0.17	0.10	0.05
Panel B - Religiosity (LPM)								
Connect	0.025***	0.018**	0.019***	0.015**	0.002	0.007**	0.018	0.051**
	(0.007)	(0.008)	(0.006)	(0.006)	(0.005)	(0.003)	(0.023)	(0.019)
Interaction	-0.015	0.030	-0.002	-0.007	-0.016	0.005	-0.021	0.067
	(0.020)	(0.025)	(0.016)	(0.014)	(0.014)	(0.005)	(0.065)	(0.072)
Observations	67752	54473	76217	56186	39511	89798	5202	2754
Regions	406	237	339	377	226	395	61	23
Adj. R-Square	0.22	0.26	0.55	0.17	0.15	0.08	0.16	0.05
Panel C - Gender-Egalitarian (OLS)								
Connect	-	0.058**	0.017	-	0.085***	0.023	-	-
	-	(0.024)	(0.038)	-	(0.025)	(0.015)	-	-
Interaction	-	-0.128	0.167	-	-0.002	0.114**	-	-
	-	(0.159)	(0.108)	-	(0.110)	(0.045)	-	-
Observations	-	8540	11374	-	21280	49044	-	-
Regions	-	54	89	-	228	365	-	-
Adj. R-Square	-	0.18	0.36	-	0.20	0.25	-	-
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
Region-Year FE	✓	✓	✓	✓	✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (Panel A), religiosity dummy (Panel B) and gender-egalitarian index (Panel C). The set of individual controls includes dummies for education, gender, marital status, parental status, living in an urban area, employment status and continuous variables for age, family size and income. Each column estimates the benchmark model in equation (2) on a different subset of countries of individuals based on their broad geographical area: Europe (col. (1)), Former Soviet Union (col. (2)), Asia (col. (3)), Latin America (col. (4)), Middle East and North Africa (col. (5)), Sub-Saharan Africa (col. (6)), North America (col. (7)) and Oceania (col. (8)). For Panel C, estimates associate to Europe, Latina America, North America and Oceania are not available since GWP does not ask questions about gender-egalitarian attitudes in These regions.

Table 6: Connectedness and Cultural Traits - Country-level Heterogeneity

	(1) OLS 2009-2012	(2) OLS 2009-2012	(3) OLS 2009-2012	(4) LPM 2009-2012	(5) LPM 2009-2012	(6) LPM 2009-2012	(7) OLS 2009-2011	(8) OLS 2009-2011	(9) OLS 2009-2011
	Social Behavior			*Religiosity*			*Gender-Egalitarian*		
Tercile Culture/Diffusion	1^{st}	2^{nd}	3^{rd}	1^{st}	2^{nd}	3^{rd}	1^{st}	2^{nd}	3^{rd}
Panel A - Average Culture									
Connect	0.171***	0.211***	0.193***	0.023***	0.016***	0.004*	0.059***	0.039**	0.027
	(0.008)	(0.011)	(0.013)	(0.006)	(0.004)	(0.002)	(0.019)	(0.017)	(0.024)
Interaction	0.065***	0.085***	0.116***	0.004	-0.019*	0.003	0.117*	-0.018	0.157**
	(0.023)	(0.022)	(0.023)	(0.016)	(0.011)	(0.005)	(0.069)	(0.070)	(0.063)
Observations	180529	137092	93734	125553	135694	130646	33430	33846	22962
Regions	823	611	661	775	686	603	190	289	257
Adj. R-Square	0.12	0.10	0.13	0.18	0.11	0.05	0.22	0.16	0.12
Panel B - Conn. Diffusion									
Connect	0.202***	0.180***	0.195***	0.012***	0.014***	0.012***	0.019	0.046***	0.073***
	(0.011)	(0.010)	(0.010)	(0.004)	(0.004)	(0.004)	(0.020)	(0.017)	(0.024)
Interaction	0.156***	0.052**	0.094***	-0.004	-0.001	-0.009	0.127*	0.006	0.122**
	(0.027)	(0.022)	(0.020)	(0.010)	(0.009)	(0.012)	(0.068)	(0.069)	(0.057)
Observations	183151	129509	98695	173209	123534	95150	44732	31988	13518
Regions	1002	494	599	999	487	578	469	179	88
Adj. R-Square	0.22	0.14	0.18	0.44	0.33	0.37	0.26	0.18	0.32
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (col. (1)-(3)), religiosity dummy (col. (4)-(6)) and gender-egalitarian index (col. (7)-(9)). The set of individual controls includes dummies for education, gender, marital status, parental status, living in an urban area, employment status and continuous variables for age, family size and income. The sample of countries is splitted by terciles of the average cultural traits (Panel A) or connectedness diffusion (Panel B), respectively: first tercile (col. (1),(4),(7)), second tercile (col. (2),(5),(8)) and third tercile (col. (3),(6),(9)).

Table 7: Connectedness and Cultural Traits - Individual-level heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Education		*Gender*		*Age*			*Location*		*Internet*		*Land Line*	
Individual Characteristic	LS	HS	Male	Female	15-35	36-55	55+	Rural	Urban	No	Yes	No	Yes
Panel A - Social Behavior (OLS)													
Connect	0.191***	0.197***	0.206***	0.179***	0.187***	0.209***	0.189***	0.177***	0.194***	0.174***	0.182***	0.186***	0.179***
	(0.006)	(0.013)	(0.008)	(0.007)	(0.008)	(0.009)	(0.011)	(0.010)	(0.007)	(0.007)	(0.009)	(0.007)	(0.008)
Interaction	0.102***	0.031	0.086***	0.100***	0.081***	0.094***	0.101***	0.094***	0.091***	0.093***	0.076***	0.081***	0.092***
	(0.015)	(0.029)	(0.020)	(0.016)	(0.019)	(0.021)	(0.025)	(0.027)	(0.015)	(0.018)	(0.019)	(0.021)	(0.016)
Observations	357852	52802	187881	223402	193219	134534	84453	121056	289989	288514	123745	236150	167503
Regions	2095	1706	2091	2094	2080	2082	1997	1802	2036	2067	1887	1872	1870
Adj. R-Square	0.18	0.21	0.19	0.20	0.18	0.22	0.25	0.24	0.18	0.19	0.19	0.19	0.20
Panel B - Religiosity (LPM)													
Connect	0.013***	0.012*	0.014***	0.012***	0.012***	0.016***	0.014***	0.009**	0.015***	0.014***	0.011**	0.011***	0.004
	(0.002)	(0.007)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)
Interaction	-0.003	-0.012	-0.004	-0.005	-0.005	0.000	-0.007	-0.004	-0.005	-0.008	0.013	-0.007	0.003
	(0.006)	(0.018)	(0.008)	(0.007)	(0.008)	(0.009)	(0.013)	(0.008)	(0.007)	(0.006)	(0.014)	(0.006)	(0.011)
Observations	340511	50688	178466	213350	181942	128259	82537	115988	275596	276262	116527	226625	158546
Regions	2063	1672	2059	2063	2052	2051	1967	1772	2005	2035	1858	1850	1846
Adj. R-Square	0.39	0.33	0.41	0.38	0.42	0.43	0.33	0.41	0.39	0.34	0.32	0.39	0.31
Panel C - Gender-Egalitarian (OLS)													
Connect	0.044***	0.054**	0.055***	0.030**	0.037***	0.044**	0.088***	0.027	0.056***	0.030**	0.090***	0.028**	0.087***
	(0.012)	(0.027)	(0.017)	(0.015)	(0.013)	(0.019)	(0.033)	(0.017)	(0.015)	(0.013)	(0.027)	(0.013)	(0.023)
Interaction	0.077*	0.025	0.066	0.069	0.063	0.082	0.152	0.103*	0.042	0.083*	-0.014	0.094**	-0.004
	(0.042)	(0.105)	(0.059)	(0.048)	(0.045)	(0.064)	(0.105)	(0.058)	(0.050)	(0.043)	(0.094)	(0.047)	(0.104)
Observations	83371	6716	44993	45236	54242	26404	9580	34147	56047	77411	12830	68602	18764
Regions	736	395	734	734	734	715	578	572	703	734	508	686	498
Adj. R-Square	0.24	0.26	0.24	0.23	0.24	0.26	0.29	0.27	0.25	0.25	0.19	0.24	0.19
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (Panel A), religiosity dummy (Panel B) and gender-egalitarian index (Panel C). The set of individual controls includes dummies for education, gender, marital status, parental status, living in an urban area, employment status and continuous variables for age, family size and income. Each column estimates the benchmark model in equation (2) by subsamples based on individual characteristics: education (col. (1)-(2)), gender (col. (3)-(4)), age group (col. (5)-(7)), residence (col. (8)-(9)), having internet at home (col. (10)-(11)) and land line telephone (col. (12)-(13)).

Table 8: Connectedness and Cultural Traits - Heterogeneous analysis among Connected Individuals

	(1) OLS 2009-2012	(2) OLS 2009-2012	(3) LPM 2009-2012	(4) LPM 2009-2012	(5) OLS 2009-2011	(6) OLS 2009-2011
	Social Behavior		*Religiosity*		*Gender-Egalitarian*	
Panel A - OECD Connection						
$Connect^{OECD}$	0.071***	0.043**	-0.004	-0.024**	0.096**	0.072
	(0.017)	(0.019)	(0.007)	(0.012)	(0.041)	(0.091)
$Interaction^{OECD}$		0.062***		0.045**		0.036
		(0.019)		(0.019)		(0.139)
Observations	120295	120295	115156	115156	24703	24703
Regions	2017	2017	1985	1985	641	641
Adj. R-Square	0.18	0.18	0.37	0.37	0.26	0.26
Panel B - Muslim Maj. Connection						
$Connect^{ISL}$	-0.081***	-0.081***	0.010	0.063	-0.068	-0.065
	(0.024)	(0.024)	(0.011)	(0.067)	(0.058)	(0.056)
$Interaction^{ISL}$		-0.005		-0.060		0.036
		(0.059)		(0.073)		(0.123)
Observations	120295	120295	115156	115156	24703	24703
Regions	2017	2017	1985	1985	641	641
Adj. R-Square	0.18	0.18	0.37	0.37	0.26	0.26
Panel C - Christian Maj. Connection						
$Connect^{CHR}$	0.049***	0.018	0.005	-0.019*	0.083*	0.004
	(0.019)	(0.019)	(0.008)	(0.012)	(0.045)	(0.066)
$Interaction^{CHR}$		0.078***		0.050***		0.145
		(0.017)		(0.015)		(0.095)
Observations	120295	120295	115156	115156	24703	24703
Regions	2017	2017	1985	1985	641	641
Adj. R-Square	0.18	0.18	0.37	0.37	0.26	0.26
Individual Controls	✓	✓	✓	✓	✓	✓
Region-Year FE	✓	✓	✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. Columns (1), (3) and (5) show the estimates from the specification presented in equation (1) while columns (2), (4) and (6) show the estimates from the specification presented in equation (2). The dependent variable is: social-behavior index (col. (1)-(2)), religiosity dummy (col. (3)-(4)) and gender-egalitarian index (col. (5)-(6)). The set of individual controls includes dummies for education, gender, marital status, parental status, living in an urban area, employment status and continuous variables for age, family size and income.

Table 9: Connectedness and Economic Outcomes

	(1) LPM	(2) LPM	(3) LPM	(4) LPM	(5) OLS	(6) OLS	(7) OLS	(8) OLS
Dep. Variable	Help	Help Local	Help Abroad	Unemployed	*Income*			
Sample	All	All	All	All	All	Help	Help Local	Help Abroad
Connect	0.157***	0.000	0.125***	-0.002	1.621***	2.959	5.028	0.504***
	(0.005)	(0.002)	(0.005)	(0.001)	(0.537)	(2.238)	(4.398)	(0.099)
Female	0.014***	0.009***	0.004***	-0.006***	-0.262	2.310	4.930	-0.174***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.370)	(2.710)	(5.355)	(0.067)
Age	0.000	-0.000***	0.000***	-0.002***	-0.003	-0.085	-0.157	0.005**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.020)	(0.088)	(0.156)	(0.002)
Observations	486744	486744	486744	475782	481486	76107	45818	22144
Regions	2216	2216	2216	2200	2150	1988	1872	1229
Adj. R-Square	0.17	0.11	0.15	0.06	-0.01	-0.06	-0.08	0.08
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
Region-Year FE	✓	✓	✓	✓	✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is a dummy equal to one if the individual: received economic help (col. 1), received economic help from locals (col. 2), received economic help from individuals abroad (col. 3), is unemployed (col. 4). The dependant variable is the household income in thousands of international dollars from columns (5) to (8). The analysis is performed over the following samples: overall population (col. (1)-(5)), who receive economic help (col. 6), who receive economic help from locals (col. 7) and who receive economic help from abroad (col. 8).

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Appendix

A General Theoretical Framework

The general theoretical framework borrows its architecture from the discrete choice model proposed in Desmet and Wacziarg (2021). The simplified model describes a society with one identity cleavage k (in this case, connectedness) and one cultural trait (e.g., religiosity). As described in Section 2, the identity cleavage includes only two identity traits c and $-c$ (i.e., connected and not connected), and the cultural trait has only to values i and j (e.g., religious and not religious), which are unequally distribute in the society. I define i as the value hold by the majority, while j the value hold by the minority group. To simplify the description of the model, I assume that the identity groups have equal size, that time is discrete, and each trait is imperfectly transmitted across generations. Moreover, through interaction with other individuals, an agent can change her cultural value if, through the emergence of cultural innovation, one value become more socially acceptable.[34]

I can now formally describe agent's discrete choice model over the value choice at a given time t. Given her identity trait $k \in \{c, -c\}$ and cultural value $x \in \{i, j\}$, the agent decides x' by solving the following problem:

$$u(x,k) = max_{x' \in \{i,j\}} \Big\{ I(i)s^i, I(j)\frac{1}{r_k}s^j \Big\}, \tag{A-1}$$

where $I(i) = 1$ if $x' = i$ and zero otherwise, and $I(j) = 1$ if $x' = j$ and zero otherwise. The share of individuals holding value i and j in the identity group k are defined as s^i and s^j, respectively, and they are taken as given by the agent. Additionally, each agent draws a random variable r from a uniform distribution with support $[0,\ 1/\bar{r}_k]$, where $\bar{r}_k$ is specific to each identity trait. An higher $\bar{r}_k$ is related to higher likelihood to gain utility from choosing the minority value j, since it becomes more socially acceptable. Once r is drawn, the agent decides the cultural value which maximize her utility.

By having a connection abroad, connected agents have access to a broader set of information and values, which can make the minority trait j more interesting and acceptable. From a formal point of view, I then expect that $\bar{r}_c > \bar{r}_{-c}$. Hence, by acting as source of *cultural innovation*, connections abroad influence agent's decision problem, increasing the likelihood of holding the minority trait j compared to a not connected individuals, holding all the other things equal. The model can be further extended by accounting that the contribution of the connection c can be a function of the culture of his/her country of residence d, hence $r_{c(d)}$.

Nonetheless, the *choice of identity* trait k is not necessarily exogenous. Individuals can indeed pick up the identity trait that better fits their preferences. In that case, the discrete choice problem of an agent holding the cultural value x becomes:

[34] In the original Desmet and Wacziarg (2021) model, agents are sensitive to the majority value, hence if she holds the minority value, she may change over time due to conformity. However, I simplify this potential mechanism.

$$u(x) = max\Big\{u(x,c), u(x,-c)\Big\}, \tag{A-2}$$

where $u(x,c)$ and $u(x,-c)$ are the discrete choice problem described in equation (A-1) and faced by an agent that decide to have a connection abroad or not having it.

Both cultural innovation and the choice of identity can contribute to the formation of a distinct set of cultural values associated to connected individuals. While both channels can describe the presence of a distinctive set of values and preferences associated to having a network abroad, the main testable empirical hypothesis of this study is the following one:

Hypothesis: Individuals with a network abroad are characterized by a distinct set of values and preferences compared to alike individuals.

B Additional Results

Table B-1: Connectedness and Cultural Traits - Quality of Connectedness tie

	(1) OLS 2009-2012	(2) OLS 2009-2012	(3) LPM 2009-2012	(4) LPM 2009-2012	(5) OLS 2009-2011	(6) OLS 2009-2011
	Social Behavior		*Religiosity*		*Gender-Egalitarian*	
$Network^{Cl}$	0.191***		0.012***		0.039***	
	(0.006)		(0.002)		(0.012)	
$FamilyNet.$		0.159***		0.010		0.086**
		(0.018)		(0.013)		(0.039)
$Interaction$	0.077***	0.157***	-0.006	0.006	0.071*	0.039
	(0.014)	(0.030)	(0.006)	(0.019)	(0.039)	(0.085)
Observations	403509	411355	384137	391893	87755	90238
Regions	2095	2095	2064	2064	736	736
Adj. R-Square	0.19	0.18	0.39	0.39	0.24	0.24
Individual Controls	✓	✓	✓	✓	✓	✓
Region-Year FE	✓	✓	✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (col. (1)-(2)), religiosity dummy (col. (3)-(4)) and gender-egalitarian index (col. (5)-(6)). The set of individual controls includes dummies for education, gender, marital status, parental status, living in an urban area, employment status and continuous variables for age, family size and income. *Family Net.* is a dummy equal to one if the individual has a relative abroad, while $Connect^{Cl}$ is a dummy equal to one if the individual has a connection abroad who is not a relative.

C Matching Results

C.1 Matching: Methodological Discussion

In the matching literature, individuals can be matched either on the estimated probability of receiving a treatment or directly on covariates. Those matching approaches are defined as Propensity Score Matching (PSM) and Covariate Matching (CVM).[35] To deal extensively with the potential selection bias, I applied both methods in the following way.

Following the guidelines of Caliendo and Kopeining (2008), I implement PSM to compute the average cultural stance due to having a connection abroad on connected individuals. In this case the interaction term between connection location and average culture of the destination is not included,[36] so I just focus on connectedness, disregarding connection location. I first compute the individual probability of having a connection abroad (propensity score) using a probit model and a set of relevant covariates. Since the choice the of variables used to compute the propensity score is crucial, I estimate two propensity scores with statistically significant variables (Heckman *et al.*, 1998): one with a set of all relevant and statistically significant covariates (*Main model*) and the other with only a subset of truly exogenous covariates, like age and gender (*Short model*). After graphically testing whether these two models satisfy the Common Support Assumption, I perform matching through different matching algorithms. As a benchmark, I use Kernel (Epanechnikov) matching, a non-parametric matching estimator which uses a weighted average of unconnected individuals within the kernel bandwidth to construct a counter-factual outcome. I match individuals within the same region with similar propensity scores, estimated with both models (main and short). I test the quality of the matching by computing the standardized bias for each covariate (Rosenbaum and Rubin, 1985 and Sianesi, 2004) and their distribution (Heckman *et al.*, 1998 and Aakvik, 2001) after matching. Finally, I estimate the average cultural stance due to connectedness on connected people for each cultural trait with bootstrapped standard errors. As a robustness check, I estimate the same results using other matching algorithms suggested by the literature[37] and estimating the result of a placebo treatment over the control group. I also perform a sensitivity analysis of the treatment driven by a hidden bias, i.e. biased driven by selection in connectedness driven by unobserved factors, by computing the Rosenbaum Bounds (Rosenbaum, 2002). Such bounds measure how strong selection on unobserved factors should be to undermine the estimated treatment effect after matching (Aakvik, 2001 and DiPrete and Gangl, 2004).

Since I estimate the average culture due to connectedness, disregarding connection location (i.e. the interaction term in equation (2)), I rely on CVM methods to asses the robustness of the analysis once disparities in the distribution of covariates between connected and unconnected people are min-

[35] Zhao (2004) describes the main differences of the two approaches, showing through Monte Carlo experiments that these different methods do not dominate each other in terms of performance.

[36] To the best of author's knowledge, this method allows us to compute the average treatment on the treated (ATT) but implementation issues arise when interaction terms are included.

[37] Precisely, I compute the average cultural effect of connectedness on connected people with the following algorithms: Kernel (Normal and Uniform), Nearest Neighbour (one or five individuals, with replacement) and Radius matching. The kernel/radius bandwidth, both for the benchmark and the robustness, is around 0.05.

imized. As Imbens and Rubin (2015) point out, large distributional gaps in covariates increase the sensitivity of estimated coefficients to minor modifications in the specification. Following Ruyssen and Salomone (2018) and Docquier *et al.* (2020), I implement a design phase before the empirical analysis to create a balanced sample of individuals in terms of covariates. I match connected and unconnected individuals within the same region using the Mahalanobis Metric Matching method. This method creates a trimmed sample with an equal number of connected and unconnected individuals where distances in terms of observables are minimized. As for PSM, I test the quality of the matching by computing the standardized bias for each covariate. Estimating equation (2) on the balanced sample after implementing CVM methods shows the robustness of the estimates from the augmented approach, after I have mitigated the selection bias.

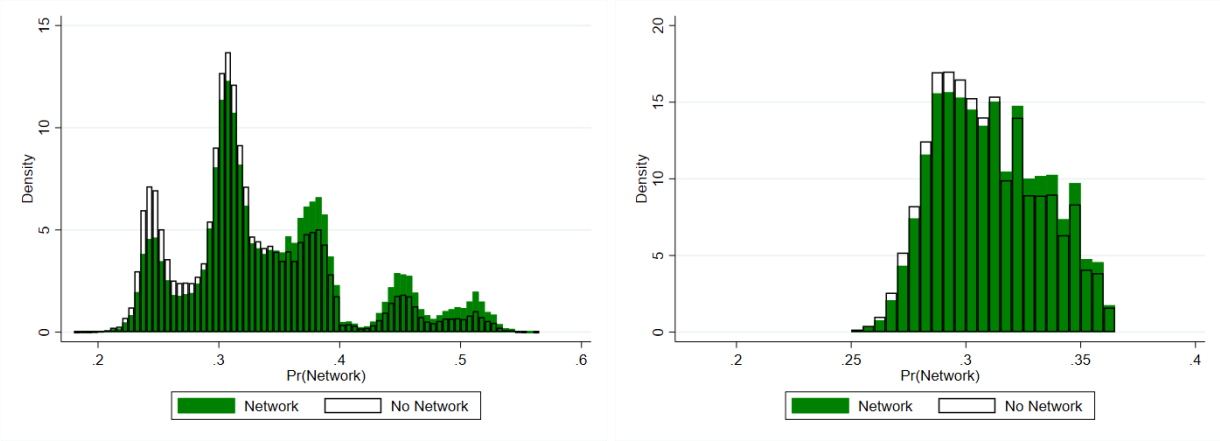
C.2 Matching: Tables and Figures

Table C-1: Propensity Score Matching Estimation

	(1) Probit 2009-2015	(2) Probit 2009-2015 Main	(3) Probit 2009-2015 Short
Education	0.3745***	0.3774***	
	(0.0050)	(0.0050)	
Female	-0.0262***	-0.0264***	-0.0248***
	(0.0034)	(0.0034)	(0.0030)
Married	-0.1249***	-0.1149***	
	(0.0036)	(0.0038)	
Age	-0.0025***	-0.0159***	-0.0144***
	(0.0001)	(0.0018)	(0.0015)
Urban	0.1963***	0.1936***	
	(0.0038)	(0.0038)	
Unempl.	0.0404***	0.0429***	
	(0.0068)	(0.0067)	
Family Size	0.0050***		
	(0.0009)		
Child	0.0058		
	(0.0037)		
Age^2		0.0003***	0.0002***
		(0.0000)	(0.0000)
Age^3		-0.0000***	-0.0000***
		(0.0000)	(0.0000)
Observations	839707	850609	1108028
Pseudo R2	0.01	0.01	0.00

Note: authors' calculations on Gallup World poll data. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is a dummy equal to one if the individual has a reliable connection abroad. The coefficient are estimated with a Probit model.

Figure C-1: Probability Score Matching Distribution



(a) Main Model (b) Short Model

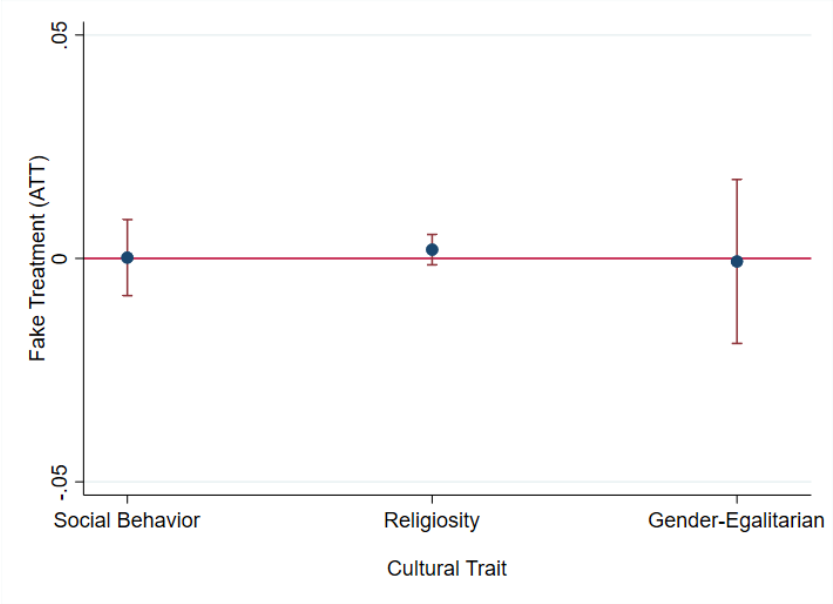
Note: authors' calculations on Gallup World Poll Data. The Figure plots the probability density of having a reliable connection abroad using the main model (figure a) and the short model (figure b) estimated in Table C-1.

Table C-2: Sample Means and Standardized Bias - Before and After Matching

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	All Sample			*Matched Sample (PS-Main)*			*Matched Sample (PS-Short)*			*Matched Sample (Mahala)*			*Entropy Balance*		
	Treated	Control	Bias (%)	Treated	Control	Bias (%)	Treated	Control	Bias (%)	Treated	Control	Bias (%)	Treated	Control	Bias (%)
Panel A - Social Behavior															
Education	0.14	0.08	11.65	0.18	0.17	0.75	0.18	0.13	9.42	0.18	0.17	1.14	0.18	0.18	-0.10
Female	0.51	0.52	-1.47	0.55	0.56	-1.22	0.54	0.55	-0.92	0.55	0.55	-0.08	0.54	0.54	0.11
Married	0.49	0.55	-9.41	0.50	0.49	1.63	0.49	0.53	-4.98	0.49	0.50	-0.27	0.50	0.50	-0.12
Child	0.58	0.59	-1.05	0.55	0.55	0.46	0.55	0.56	-1.62	0.55	0.55	-0.70	0.55	0.55	0.11
Age	37.07	38.91	-6.99	39.01	40.48	-5.58	39.00	40.21	-4.59	39.00	38.95	0.18	39.00	39.04	-0.15
Urban	0.73	0.65	11.73	0.76	0.76	-0.79	0.75	0.73	3.33	0.76	0.76	-0.36	0.76	0.76	-0.06
Unempl.	0.07	0.07	2.41	0.07	0.07	0.37	0.07	0.07	0.16	0.07	0.07	0.56	0.07	0.07	-0.02
Family Size	3.69	3.65	1.28	3.29	3.21	2.75	3.29	3.21	2.89	3.29	3.26	0.98	3.29	3.29	0.05
Income	6.24	4.47	0.45	9.73	6.85	0.70	9.74	6.57	0.80	9.84	6.78	0.74	9.75	9.78	-0.01
Panel B - Religiosity															
Education	0.14	0.08	11.52	0.18	0.18	0.80	0.18	0.13	9.62	0.18	0.17	1.18	0.18	0.18	-0.10
Female	0.51	0.52	-1.46	0.55	0.56	-1.29	0.55	0.55	-0.95	0.55	0.55	-0.13	0.55	0.55	0.11
Married	0.48	0.55	-8.66	0.49	0.48	1.77	0.49	0.53	-4.91	0.49	0.49	-0.25	0.49	0.49	-0.12
Child	0.58	0.59	-1.27	0.55	0.54	0.64	0.54	0.56	-1.45	0.54	0.55	-0.56	0.55	0.54	0.12
Age	37.27	39.04	-6.72	39.26	40.79	-5.80	39.25	40.50	-4.76	39.25	39.21	0.15	39.25	39.30	-0.16
Urban	0.73	0.65	10.86	0.75	0.76	-0.86	0.75	0.73	3.36	0.75	0.76	-0.38	0.75	0.75	-0.07
Unempl.	0.07	0.07	2.22	0.07	0.07	0.49	0.07	0.07	0.23	0.07	0.07	0.57	0.07	0.07	-0.02
Family Size	3.66	3.64	0.78	3.26	3.17	2.89	3.26	3.17	2.94	03.26	3.22	1.15	3.26	3.26	0.05
Income	6.21	4.49	0.42	9.88	6.91	0.73	9.89	6.61	0.80	9.89	6.84	0.75	9.90	9.93	-0.01
Panel C - Gender-Egalitarian															
Education	0.07	0.04	7.82	0.10	0.09	1.91	0.11	0.07	7.54	0.10	0.10	1.34	0.11	0.11	0.01
Female	0.50	0.51	-0.94	0.49	0.50	-1.14	0.50	0.51	-1.58	0.50	0.50	-0.01	0.50	0.50	-0.08
Married	0.50	0.55	-6.12	0.50	0.50	0.35	0.49	0.53	-4.89	0.49	0.50	-0.35	0.51	0.51	-0.07
Child	0.75	0.75	-0.13	0.73	0.74	-1.01	0.73	0.75	-2.85	0.73	0.74	-1.00	0.73	0.73	0.01
Age	33.43	34.41	-4.08	33.89	34.17	-1.13	33.89	33.84	0.21	34.89	33.48	1.70	34.10	34.11	-0.05
Urban	0.65	0.58	8.21	0.67	0.68	-1.25	0.67	0.65	1.71	0.67	0.68	-0.67	0.67	0.67	-0.05
Unempl.	0.08	0.07	0.95	0.08	0.08	-0.50	0.08	0.08	-0.56	0.08	0.08	1.03	0.07	0.07	0.03
Family Size	4.73	4.47	7.03	4.13	4.09	2.23	4.13	4.01	2.99	4.13	4.07	1.73	4.11	4.11	0.04
Income	2.56	2.10	2.34	3.18	2.82	1.80	3.19	2.53	3.29	3.20	3.22	-0.17	3.19	3.21	-0.07

Note: authors' calculations on Gallup World poll data. Columns (3), (6), (9), (12) and (15) reproduce the standardized bias suggested by Rosenbaum and Rubin (1985). The standardized bias is computed as follow before and after the matching procedure: $SB_{Bef}(X) = 100 * \frac{\bar{X}_1 - \bar{X}_0}{\sqrt{[V_1(X)+V_0(X)]0.5}}$ and $SB_{Aft}(X) = 100 * \frac{\bar{X}_{1M} - \bar{X}_{0M}}{\sqrt{[V_1(X)+V_0(X)]0.5}}$. The Entropy Balance statistics reported in columns (13) to (15) are based on the new weights associated developed by the Entropy Balance method.

Figure C-2: Matching Results - Robustness to fake treatment on control group



Note: authors' calculations on Gallup World Poll Data. The Figure plots the average effect of a fake treatment drawn from an uniform distribution and randomly assigned over the unconnected individuals belonging to the control group on three different cultural traits (Social Behavior, Religiosity and Gender-Egalitarian) and the interval of confidence at 99% level. The propensity score matching is done using Kernel Epanechnikov matching. Standard errors are bootstrapped.

C.3 Matching: Sensitivity Analysis

Following the sensitivity analysis proposed by Rosenbaum (2002), I test the robustness of the estimates cultural to unobserved factors after matching methods. Matching methods manage to eliminate bias driven by selection into observable characteristics, by minimizing the difference between connected and unconnected individuals. However, as for linear methods, they are not robust against "hidden bias" (DiPrete and Gangl, 2004): unobserved factors that affect simultaneously individual culture and conncetedness. Even though Section 4.3 shows that selection on unobservables is a minor concern, I decide to follow the matching literature (Aakvik, 2001 and DiPrete and Gangl, 2004) and compute the Rosenbaum bounds of the estimates.[38] Assumed a certain level of hidden bias (presented with the variable γ), such approach allows us to compute the bounds of average cultural stance due to connectedness, once I assume that hidden bias is causing an over-estimation of the relationship (MH^+) and under-estimation of the relationship (MH^-). To give an intuition behind the value of γ, a value of $\gamma = 1$ is associated with no hidden-bias, while $\gamma = 1.5$ implies that individuals with the same characteristics differ in their odds of having a connection by a factor of 1.5. Following Becker and Caliendo (2007), I use Mantel and Haenszel (1959) test statistic to compute the Rosenbaum bounds after PSM. Table C-3 presents the results of the sensitivity analysis on social behavior (panel A), religiosity (panel B) and gender-egalitarian views (panel C). Column

[38] Due to the high amount of regions in the analysis, the available Stata packages have issues to compute Rosenbaum Bounds over an high number of strata. For this reason, for this sensitivity analysis I perform the matching disregarding the geographical location of individuals.

(1) reports the level of hidden bias (γ). Since the estimates are always positive, then the main concern is related to an over-estimation of the relationship due to hidden bias. For this reason I report the p-value related to the over-estimated (MH^+) bound in column (2). Columns (3) and (4) report the bounds while column (5) the confidence interval. The critical level of γ at which the estimated positive estimates of having a connection abroad after matching should be questioned is between 1.85 and 1.90 for social behavior, between 1.20 and 1.25 for gender-egalitarian views and between 1.15 and 1.20 for religiosity. It is important to recall that this approach allow us to evaluate the robustness of the results in the *worst-case scenario*. For instance, concerning the estimate on religiosity, the cultural stance of connectedness would include zero if unobserved variables influence the odds ratio of having a connection abroad between connected and unconnected people with equal characteristics by 1.15 and influence the cultural trait. If unobserved factor influence only individual connectedness and not individual culture, then the confidence interval should not include zero. Nonetheless, those results suggest that the distinctive cultural stance of connected individuals is less robust on religiosity, compared to gender-egalitarian views and social behavior.

Table C-3: Sensitivity Analysis - Rosenbaum Bounds

	(1) Gamma (γ)	(2) p-value	(3) MH^+	(4) MH^-	(5) C.I.
Panel A - Social Behavior					
	1.00	<0.001	0.159	0.159	[0.158, 0.160]
	1.80	<0.001	0.010	0.608	[0.005, 0.609]
	1.85	<0.001	0.003	0.613	[0.002, 0.615]
	1.90	0.341	0.001	0.616	[-0.009, 0.617]
	1.95	0.999	-0.021	0.617	[-0.052, 0.618]
Panel B - Religiosity					
	1.00	<0.001	0.227	0.227	[0.227, 0.228]
	1.10	<0.001	0.224	0.234	[0.223, 0.235]
	1.15	<0.001	0.219	0.237	[0.217, 0.238]
	1.20	0.102	0.206	0.237	[-0.048, 0.239]
	1.25	1.00	-0.075	0.240	[-0.085, 0.241]
Panel C - Gender-Egalitarian					
	1.00	<0.001	0.217	0.217	[0.211, 0.231]
	1.10	<0.001	0.183	0.272	[0.161, 0.292]
	1.15	<0.001	0.156	0.304	[0.137, 0.311]
	1.20	0.013	0.117	0.313	[0.006, 0.318]
	1.25	0.780	-0.003	0.321	[-0.011, 0.332]

Note: authors' calculations on Gallup World poll data. Column (1) presents the difference in odds of having a connection abroad between matched connected and unconnected individuals (hidden bias). Column (2) present the significance level associated to the over-estimated bound (MH^+). Columns (3) and (4) show the over-estimated and under-estimated bounds due to hidden bias. Column (5) shows the confidence interval of the estimated bounds.