NETWORK-BASED CONNECTEDNESS AND THE DIFFUSION OF CULTURAL TRAITS

Riccardo Turati

DISCUSSION PAPER | 2020 / 12

UCLouvain

LIDAM
IRES | Louvain Institute of Data Analysis and Modeling in economics and statistics

Network-based Connectedness and the Diffusion of Cultural Traits*

Riccardo Turati
IRES/LIDAM, UCLouvain

March 2020 - Latest version here

Abstract

This paper empirically investigates the impact of network-based connectedness on the diffusion of cultural traits. Using Gallup World Poll data on 148 countries on individual connectedness, opinions and beliefs, we find that natives who have a connection abroad are associated with higher levels of social behavior, religiosity and gender-egalitarian attitudes. Due to the endogenous nature of the variables, we strongly mitigate the threat of selection into connectedness by showing robust estimates even after controlling for broad measure of connectedness and performing propensity score and covariate matching techniques. Statistical tests are carefully implemented to quantify the selection threat of unobserved factors, which appears negligible. Our evidence shows that connectedness leads to cultural convergence across regions, while increases cultural heterogeneity within regions. Exploring the mechanisms by which these effects occur, we provide evidence that the effects are precisely estimated among less educated natives and that connectedness affects economic outcomes through remittances. We estimate differential cultural effects based on the connection's country of residence, suggesting a destination-specific transfer of norms. Overall, the effects on social behavior are sizeable at the global level, once simulations based on estimated coefficients are performed. Although robust and certainly not negligible, gender-egalitarian and pro-religiosity effects of connectedness are limited.

Keywords: Cultural change, connectedness, international migration, gender-egalitarian views, religiosity, social behavior.

JEL codes: F22, O15, Z10

*I am grateful to David de la Croix, Frédéric Docquier, Annalisa Frigo, Alexandre Jacquemain, Fabio Mariani, Simone Moriconi, William Pariente, Giovanni Peri, Hillel Rapoport, Yannik Schenk, Stefanjia Veljianoska and Romain Wacziarg for helpful comments. This paper has also benefited from discussions at the Doctoral Workshop in Economics (Louvain-la-Neuve), the ARC Workshop on Family Transformations (Durbuy) the EDP Jamboree (Louvain-la-Neuve), the IRES Lunch Seminar (Louvain-la-Neuve) the PSE Migration Seminar (Paris), the EQM Research Seminar (Lille), the UAB Seminar (Barcelona) and the Seminar at Groningen University (Groningen). The usual disclaimer applies. The author acknowledges financial support from the EOS programme of the Flemish (FWO) and French-speaking (FRS-FNRS) communities of Belgium (convention 30784531 on "Winners and Losers from Globalization and Market Integration: Insights from Micro-Data").

1 Introduction

In recent decades the population of international migrants has considerably increased at the global level. The size of the international migrant population reached 258 million in 2017, but was only 77 million in 1960 (United Nations, 2017). Although it is still only a moderate portion of the worldwide population (3.4% in 2017, United Nations, 2017), the role and contribution of this population has changed dramatically due to recent technological development. New means of communication and globalization, in general, facilitate and increase the interactions between people living geographically apart. Individuals, thanks to interactions with peers living abroad, can learn about the world in ways which were hardly accessible decades ago. Such an increase in connectedness and interaction with people living abroad raises a relevant set of questions: Does having a reliable connection abroad make natives *culturally* different from their neighbours? If so, how, and in what way(s)? Do these cultural differences resulting from connectedness (i.e. having a reliable connection abroad) influence the distribution of cultural traits at the global level?

The present paper empirically investigates these questions using a novel and exhaustive approach. Using Gallup World Polls data on 148 countries and harmonizing intra-country regional identifiers over the 2009-2012 period, our representative sample of 700,000 individuals covers around 97% of the world population over 2256 regions. We focus our analysis on natives in their country of birth. In order to assess the cultural effect of connectedness we built proxies of individual pro-social behavior (i.e., helping strangers and being active in society), religiosity and gender-egalitarian attitudes. We focus on these traits due to their relevance to individuals' preferences and countries' economic growth.[1] Correlations of these cultural traits with similar indicators and with deep economic preferences are provided using alternative datasets. We test the effect of transferred cultural norms by including the average level of culture in the connection's country of residence. Since the quality of the relationship (i.e., whether or not the connected people are related) can influence the interaction with the connection, careful robustness checks are provided to account for the closeness of the relationship with the connection abroad. To minimize the potential threat driven by unobserved omitted factors, a great variety of time and geographic fixed effects and individual controls are included in

[1]Several papers address the socioeconomic relevance of these traits, for instance: 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).

our benchmark specification.

A relevant contribution of our paper is that, by exploiting three sources of heterogeneity (country, regional and individual) we are able to look at variations of the cultural effect of connectedness. Considering the average regional level of each cultural trait, as well as information about cultural distances and the diffusion of connectedness,, our analysis sheds some light on whether connectedness brings cultural convergence across regions and traits (Rapoport *et al.*, 2018). Moreover, we explore whether connectedness influences cultural heterogeneity within regions (Desmet and Wacziarg, 2018). We also investigate whether or not the effects are not driven by confounding factors such as countries, and individuals' openness to foreign societies and influence. Moreover, since connections abroad are sources of novel and different information, their influence on individual culture can vary given the information set held by each individual (Della Vigna and Gentzkow, 2010; Moriconi *et al.*, 2018). Economic channels, differential effects driven by the connection's country of residence, and changes in the cultural effect across separated groups of individuals are explored to clarify potential mechanisms of these effects.

Assessing the impact of connectedness on individual culture is a serious empirical challenge. The ideal comparison for our empirical question would be between two identical individuals apart from an exogenous cultural shock due to connectedness (e.g. a friend moves and lives abroad). However, connectedness and cultural traits are endogenous and related to several individual and contextual characteristics. Due to the structure of the data (i.e. repeated cross-section) and the individual nature of our analysis, it is hard to find a source of exogenous variation which is not related to cultural traits. Nevertheless, to go beyond partial correlations and to strongly mitigate endogeneity issues driven by omitted variables and selection into connectedness, we control for broader measures of connectedness and combine statistical tests on selection driven by unobserved factors and matching techniques. As far as the latter are concerned, we use two different matching approaches from the literature. The first is a propensity score matching approach (Dehejia and Wahba, 2002; DiPrete and Gangl, 2004; Caliendo and Kopeining, 2008), which matches connected and unconnected individuals who are equally likely to have a connection abroad. Matching methods are widely applied in nonexperimental causal studies in which selection bias could arise. We estimate the probability of having a connection abroad with different models and use a full battery of different matching algorithms to assess the robustness of the estimated effects. The second is a covariate

matching approach (Imbens and Rubin, 2012; Ruyssen and Salomone, 2018; Docquier *et al.*, 2019b), which matches individuals after minimizing distances across observed characteristics. Concerning selection driven by unobserved factors, Oster (2019) provides statistical tests to evaluate the size of the bias. Moreover, we estimate Rosenbaum bounds to evaluate the robustness of matching results to unobservables (Aakvik, 2001; Rosenbaum, 2002). Overall, those methods strongly mitigate the potential selection threat and provides consistent estimates.

We present four main findings. First, we find a strong and positive correlation between having a connection abroad and each separate cultural trait. Individuals with a reliable connection abroad are more active in society (indicated by a higher level of pro-social behavior), are more religious and share more gender-egalitarian views compared to the rest of the population. Second, the cultural effect of connectedness brings cultural convergence across regions, but only for religiosity and gender-egalitarian attitudes. This effect is stronger among individuals living in regions characterized by low levels of religiosity and gender-egalitarian attitudes, suggesting that the positive cultural effect is enhanced when the respective average cultural norm is low. Moreover, we provide evidence suggesting that, for each trait, connectedness enhances cultural diversity within regions. Third, we provide some insight into the means through which connectedness affects individual culture. One significant result is that cultural changes due to connectedness are precisely estimated among less-educated rather than highly-educated individuals. This is consistent with the idea that connections abroad bring novel experiences and information to individuals, so individuals with less prior information and knowledge respond more strongly to new information. Moreover, connectedness positively influences the economic condition of natives through remittances. Receiving economic help from connections abroad can affect natives' attitudes towards different culture. We also show differential effects of connectedness on connected individuals based on their connections' location. These results suggest a transmission of destination-specific norms and traits to natives. Fourth, we use our findings to simulate and evaluate the magnitude of the cultural effect at the individual and global level. At the individual level, having a connection abroad significantly influences natives' culture, particularly in terms of social behavior and gender-egalitarian views. At the global level, the cultural effect is sizeable on social behavior, while a minor, albeit not negligible, effect is predicted on gender-egalitarian attitudes and religiosity. The predicted relative distance due to connectedness, compared to a benchmark scenario where people have no connection abroad, is around of 8% for social behavior, 0.8%

for gender-egalitarian views and only 0.2% for religiosity.

This paper is related to and contributes to fours strands of the literature. First, this study is related to the growing literature linking culture and economic development (see Guiso *et al.*, 2006, for an overview of the relation between culture and economics). Cultural aspects affect the quality of economic interactions and institutional development (Guiso *et al.*, 2009; Tabellini, 2010), the utilization of resources (Duflo, 2012), and individual preferences (Campante and Yanagizawa-Drott, 2015, Atkin, 2016). Cultural distances between countries can influence the speed of democratic transition (Murtin and Wacziarg, 2014) and knowledge diffusion (Spolaore and Wacziarg, 2011). Moreover, the rising cultural diversity driven by increasing diversity within a country's population due to migration is positively associated with economic growth (Alesina *et al.*, 2016; Docquier *et al.*, 2019b).

Second, our paper contributes to the literature on the measurement of cultural traits. In the economic literature, culture is defined as a set of beliefs, attitudes and behaviors that influences individual preferences and national institutions and remains fairly unchanged across generations (Guiso *et al.*, 2006). Trust towards other individuals, belief in an afterlife and patience are all examples of cultural traits which have implications for countries' and individuals' economic and human development (Knack and Keefer, 1997; Fukuyama, 2001; Ager and Ciccone, 2017; Falk *et al.*, 2018). Two main approaches are used to analyze and measure cultural traits: a broad approach which analyzes several aspects and proxies of culture simultaneously (see Spolaore and Wacziarg, 2016; Desmet *et al.*, 2017; Desmet and Wacziarg, 2018, and Rapoport *et al.*, 2018) a narrow approach which focuses on specific cultural traits and highlights their effect on individual and national outcomes (see Tabellini, 2010; Chase, 2014 and Docquier *et al.*, 2019). We follow the latter approach by focusing on specific cultural traits, building proxies of individual social behavior, religiosity and gender-egalitarian attitudes. Our proxy of social behavior is a combination of civic engagement and interpersonal trust, which both play a key role in explaining personal growth and democratic engagement, institutional development and economic exchanges (Flanagan and Levine, 2010; Guiso *et al.*, 2009; Tabellini, 2010). Religiosity is negatively associated with openness to innovation and economic development (Benabou *et al.*, 2015; Chase, 2014), but is positively associated with individual well-being (Campante and Yanagizawa-Drott, 2015). Gender-egalitarian attitudes have a pivotal role in explaining actual gender discrimination and inequality in several spheres of society

which increases barriers to countries' development (Baxter and Kane, 1995; Duflo, 2012; Inglehart *et al.*, 2017). Using microdata on the above-mentioned cultural traits, we build novel proxies of those traits all over the world.

Third, our paper is linked with the growing literature analyzing the determinants of cultural change and evolution. Exogenous factors like climate instability have been shown to play key roles in the persistence of cultural traditions and the degree of individual loss aversion (Galor and Savitskiy, 2018; Giuliano and Nunn, 2019; Sinding Bentzen, 2019). Institutions, like regulatory bodies and governments, have an influence on individual culture, although no causal relationship is clearly established (Alesina and Giuliano, 2015). Cultural changes are also associated with the nature of cultural transmission across generations. Using inter-generational transmission models, the persistence and the eventual evolution of culture is affected by parental preferences and costs of departure from the dominant cultural norm (Bisin and Verdier, 2000; Baudin, 2010; Chabé-Ferret, 2019). Moreover, the speed of cultural evolution changes across generations and varies across different cultural traits (Giavazzi *et al.*, 2019). More closely related to our analysis, researchers have also investigated the role of modernization and globalization on cultural changes. Economic development and access to new sources of information have been analyzed as potential determinants of the rise or decline of cultural homogeneity world-wide (Putnam, 2000; Inglehart and Baker, 2000; Inglehart, 2018). Desmet and Wacziarg (2018), using the General Social Survey in the US, show an increase of cultural heterogeneity from the 1990s, but it is related only to certain cultural traits and social groups. Access to information and interaction with individuals belonging to different social groups are underlined as leading factors of cultural evolution. Our article, using different data and a different approach, investigates similar determinants of cultural change through connection and interaction with peers abroad. With a particular focus on international migration, Rapoport *et al.* (2018) provide three mechanisms through which international migrants could affect cultural convergence/divergence across countries: emigrants' cultural selection, social mixing in destination countries and social remittances from destination to origin countries. To the best of our knowledge, we are the first to provide evidence of the latter mechanism using microdata at the global level, providing an extensive analysis of the heterogeneity of the effects across regions and individuals and also simulating the overall impact.

Fourth, our paper contributes to the literature on the role of peers and networks, in general,

and migrant networks in particular. Networks conveys new information and behaviors. Thanks to increased ability to communicate over distances, the flow and quality of information from personal connections plays an increasingly key role in explaining individual preferences and behaviors (Granovetter, 2005; Jackson, 2014; Bailey *et al.*, 2018). Recent works have produced empirical results of the effect the diaspora abroad has on the political preferences (Spilimbergo, 2009; Batista and Vicente, 2011; Docquier *et al.*, 2016; Barsbai *et al.*, 2017), fertility behaviors (Beine *et al.*, 2013) and technological norms (Valette, 2018) of the populations left behind. However few evidence has yet been provided of any similar effect of the diaspora on cultural traits like gender-egalitarian attitudes, religiosity and social behavior.[2] One exception is Nikolova *et al.* (2017), who shows a positive effect of a reliable connection abroad on social behaviors of natives in Romania and Bulgaria.

The rest of the paper is organized as follows. Section 2 describes the data, the proxy of connectedness and cultural traits and the correlations between these measures and alternative data sources. Section 3 discusses the empirical specification and the econometric challenges of our analysis. Section 4 shows the results of our analysis. Section 5 investigates whether connectedness influences cultural heterogeneity across and within regions and explores potential mechanisms. Section 6 presents the simulations based on our estimates. Section 7 concludes the paper.

2 Data and Summary Statistics

Individuals' culture is influenced and determined by several individual and contextual factors. Birthplace, family traditions and background, education and work experience are examples of aspects that influence people's beliefs. In this context, interactions with other individuals (e.g. parents, friends, colleagues, etc.), all of whom have their own experiences and cultural beliefs, are among the main drivers of the formation of individual cultural identity. The focus of this paper is a specific type of interaction; namely interaction with individuals who are living in a foreign country. These connections abroad have a unique effect on the cultural attitudes of natives. First, by sharing their experience of living in a different country, they affect their contacts' openness to cultural beliefs different from those held in the local context; second, by facing a foreign country's culture, these

[2]Evidence is provided on the effect of returning migrants on gender-egalitarian attitudes (Tuccio and Wahba, 2015), on fertility behaviors (Bertoli and Marchetta, 2015) and on political norms (Chauvet and Mercier, 2014; Tuccio *et al.*, 2019).

connections abroad can influence the culture of the individuals in the origin countries through their judgment and appreciation of the foreign culture. However, the direction of this influence on natives' culture depends on several individual aspects associated with both the connection abroad and the native.

To test whether having connections abroad makes individuals culturally different from those who are not connected, we need micro-level data on cultural traits, connectedness and other individual characteristics. These data are available in the representative Gallup World Polls (GWP). Originating in 2005, the GWP is a world-spread survey which covers over 160 countries and measures different aspects of individuals' lives, from sociodemographic characteristics to attitudes and beliefs. Our sample includes around 157 countries where Gallup conducted at least one wave of its survey over the period 2007-2016.[3] For each year and country, the sample includes around 1000 randomly selected respondents who are representative of the population aged 15 and over. For large countries, like China and Russia, the sample of respondents varies between 2000 and 5000 respondents per wave. The surveys are conducted by telephone in countries with at least 80% where the telephone coverage; otherwise, face-to-face interviews are conducted in randomly selected households. Our full sample covers around 712,000 respondents aged 15 to 90.[4] We then remove migrants from our sample, to focus our analysis on natives.

In addition to information on respondents' beliefs and connections across most of the world, GWP includes unharmonized intra-country regional locations of respondents. The combination wide coverage and fine geographical precision of respondents makes GWP an exceptional database for our research question.[5] To properly exploit the intra-country geographical location, we harmonized the GWP data to match the Database of Global Administrative Areas (GADM), which is a high-resolution database of country administrative areas on several administrative levels (from country to province level). We match the data at the regional level, when such information is available.[6] For example, such a level of resolution corresponds to the state level for the US and to the NUTS2 level for

[3]The list of countries in analysis is available in Table A-I in the Online Appendix

[4]Descriptive statistics are available in Table A-II in the Online Appendix

[5]Few other papers use GWP data on migration research, both at micro (Dustmann and Okatenko (2014), Bertoli and Ruyssen (2018), Ruyssen and Salomone (2018) and Docquier *et al.* (2019)), and macro level (Docquier *et al.* (2014), Docquier *et al.* (2015) and Dao *et al.* (2018))

[6]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, we remove them from the analysis.

the majority of European countries. The GWP and GADM intra-country identifiers match perfectly for the majority of individuals in our sample (93%). However, the intra-country regional location available in GWP does not correspond to a precise GADM-administrative area for the remaining 7% of respondents, but instead to broader geographical/administrative clusters. In these case we randomly distribute the respondents to the first finer regional unit available.[7] Our harmonized sample covers 2256 regions over 148 countries and around 97% of the world population.

2.1 Measuring Connectedness

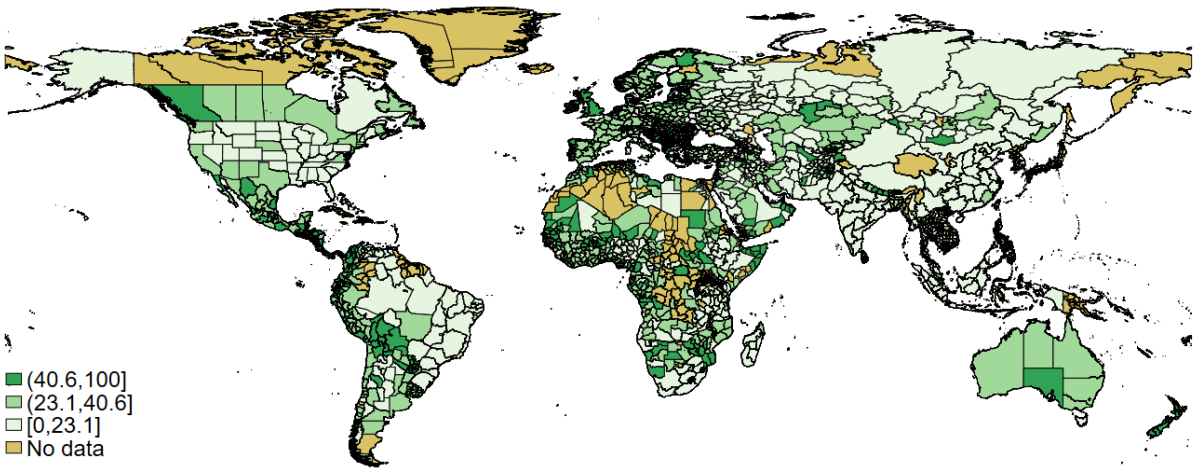
The GWP question used to measure whether individuals are connected with peers abroad is the following: "Do you have relatives or friends who are living in another country whom you can count on to help you when you need them or not?" We define connected people as those who answered this question affirmatively. The question does not merely indicate whether respondents know someone abroad, but whether those connections are strong and reliable. GWP does not provide information on the characteristics or the economic status of the connection; however, it proxies the degree of the relation between the respondent and the connection. A recent paper by Bertoli and Ruyssen (2018), investigating the role of networks abroad on natives' preferences, shows that those answering this question affirmatively are not only more prone to emigrate, but would like to emigrate to the country where their connection lives. Indeed, over a shorter period (2007-2012), the GWP also provides each connection's country of residence.[8] In our sample, around 31% of the population has a reliable connection abroad. Although the size of the connected population is quite high compared to the share of international migrants in the world population (around 3.4 %), it is important to recall that one individual in a foreign country could be the connection for several peers in the origin country, and foreign natives could be counted as reliable connection abroad. Moreover, there is large variation across countries. The countries exhibiting the highest share of connected individuals are New Zealand (73%), Ireland (73%) and Jamaica (68%), while the countries with the lowest share of connected people include Vietnam (7%), India (5%) and China (3%).

Figure 1 exploits the heterogeneous distribution of connected individuals by plotting the share

[7] We keep track of these respondents and broad regions through the analysis. In particular Table 4 provides robustness checks of our main results after removing those randomly assigned individuals and after performing the analysis with the broader geographical/administrative clusters. The main results remain unchanged.

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

Figure 1: Geographical distribution of Connected People



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

of connected individuals at the regional level. While European regions present a similar distribution of connected people, American and African regions are deeply heterogeneous. Moreover, Asian regions (particularly those in Russia, China and India) exhibit the lowest share of connected people. The within-country variation of the share of connected people across administrative units can be even more relevant than across-country variation.In Mexico, for instance, the share of connected people in the state of Quintana Roo is 23.1%, while it reaches 65% in the Chihuahua state. The country that exhibits the highest intra-country variation is Afghanistan, where 80% of the Daykundi province population has a connection abroad, while only around 2% of the population of the Kapisa or Panjshir provinces are connected. Furthermore, developed countries presents large intra-country variation. In the US, almost 70% of the population in the District of Columbia has a reliable connection abroad, while almost no one does in Wyoming. Countries characterized by the lowest level of intra-country variation (only about a 7% difference between the highest and lowest share of connected people) are small ones like Bahrain and Cyprus, or northern European countries like Finland.

Focusing on the connections' country of residence, around 69% of the connections reside in an OECD high income country, with only 31% in developing countries. The country which hosts the highest percentage of connections (i.e. people who are considered reliable connections by individuals from origin countries) is the US, which hosts around 20%. Other western and developed societies host

a sizable percentage of connections, like Germany (7.1%), the United Kingdom (6.5%) and France (6.3%). Among the non-OECD high-income countries, Russia (5.01%), Saudi Arabia (2.3%) and Argentina (2.01%) are the connections' most frequently reported countries of residence. These figures show a strong presence of reliable connections in developed high-income societies. This distribution remains true after exploiting the heterogeneity across countries of connected people. From OECD high-income countries, 86% of connected people have a connection in an OECD high-income country, while 64% of connected people in non-OECD high-income countries have a connection in an OECD high-income country.

2.2 Measuring Cultural Traits

Measuring cultural traits is not an easy task, since the definition of culture is broad and includes behaviors, way of thinking, customs and beliefs (Shenkar, 2012). According to the economic literature and Guiso *et al.* (2006), culture comprises values and beliefs that remain fairly unchanged across generations. Moreover, the literature approaches culture and cultural aspects in a variety of ways. On one hand, some authors do not focus on specific cultural traits, but rather analyze the whole set of related questions available in the survey (Desmet *et al.*, 2017 and Desmet and Wacziarg, 2018). On the other hand, another part of the literature prefers to focus on specific traits recognized as relevant for economic development, like trust (Knack and Keefer, 1997 and Tabellini, 2010) or religiosity (Benabou *et al.*, 2015). We decide to follow the latter approach by focusing on three distinct cultural traits highlighted by the literature and identifiable in the GWP: *Social Behavior*, *Religiosity* and *Gender-Egalitarian views*.

Why focus on these specific cultural traits? The reason resides in the relevant and distinct socioeconomic effect associated with each of them. Through different mechanisms, these cultural traits deeply influence countries' economic growth, as well as numerous socioeconomic outcomes. Social behaviors are associated with individual altruism and civic engagement, which are positive for a country's democratic functioning, trust and personal growth (Tabellini, 2010; Flanagan and Levine, 2010; Falk *et al.*, 2018). Moreover, these behaviors signal a higher level of inter-personal trust and can be one of the product of what Fukuyama (2001) defines as social capital: an informal norm that promotes cooperation between individuals, and therefore economic growth.[9] Religiosity's

[9]In the same vein, Coleman (1990) points out that social capital is embodied in personal relationships, and is

importance in shaping individual preferences and behavior is well-studied in the literature from the seminal theory of the Protestant work ethic (Weber, 1946) to more recent studies on the evolution and distribution of religiosity and religious practices (Inglehart and Baker, 2000). Although there is a consensus about the effect of religiosity on several socioeconomic outcomes (e.g. fertility), the overall effect of religiosity on societies is still unclear: some papers find a negative association with individual openness to innovation (Benabou *et al.*, 2015) and economic growth (Chase, 2014), while others show an increase of individual subjective well-being due to religious practices (Campante and Yanagizawa-Drott, 2015). Finally, gender-egalitarian attitudes are relevant due to their direct impact on gender discrimination (Baxter and Kane, 1995) and on female empowerment and economic growth (Duflo, 2012). Inglehart *et al.* (2017), using World Values Survey data, show a strong positive correlation between countries' gender-egalitarian values and female empowerment.[10]

To identify an indicator of social behavior, we focus on three questions available in the GWP where the respondent has to answer[11] whether he or she has done one of the following activities during the last month:

SB_1 How about donated money to a charity?

SB_2 How about volunteered your time to an organization?

SB_3 How about helped a stranger or someone you didn't know who needed help?

These questions are asked in all the countries and waves available in the GWP. They capture whether the respondent is actively involved in the society, helping and interacting with other individuals (see Nikolova *et al.* (2017)). We combine those three questions in one index[12] through Multiple Correspondence Analysis (MCA), which reduces the data dimensionality similar to the Principal Component Analysis, but is particularly well-suited for categorical/binomial variables. Finally, we normalize the index with mean zero and standard deviation equal to one. Figure 2(Ia) shows the worldwide distribution of social behavior weighting country averages by their population. The distribution is slightly right-skewed, given the low level of social behavior and the high weight in

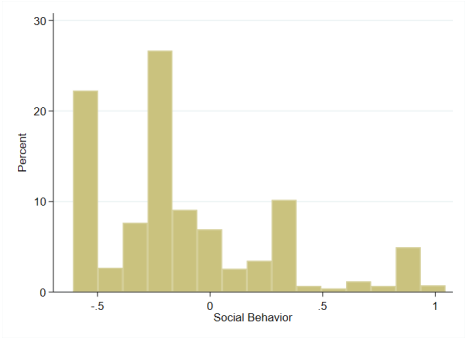
created when these relationships facilitate actions.

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

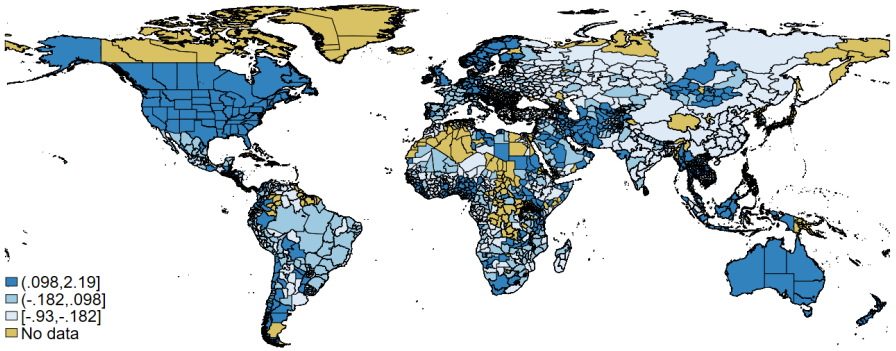
[11]The respondent could answer either yes or no.

[12]Correlations between questions and the synthetic index are available in Table A-III 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 Gener-egalitarian attitudes.

Figure 2: Distribution of Cultural Traits

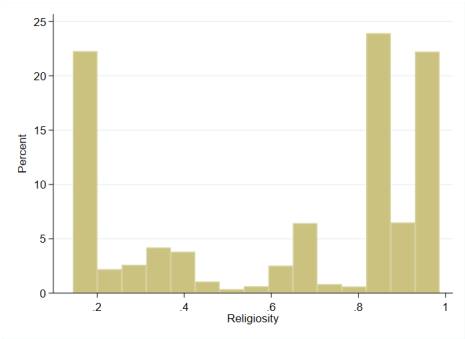


(a) Density

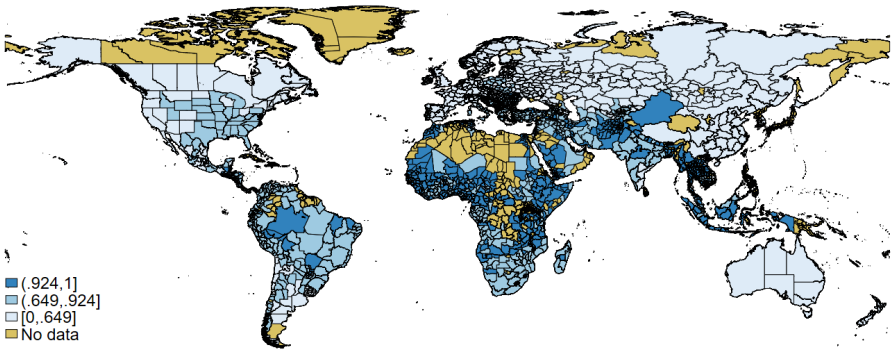


(b) Geographical Distribution

(I) Social Behavior

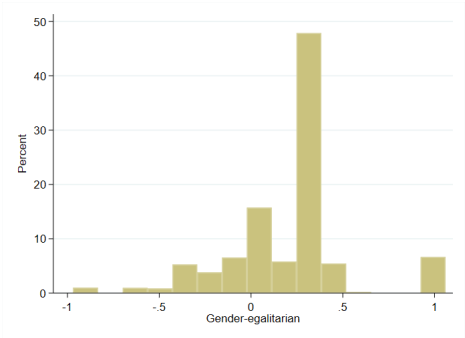


(a) Density

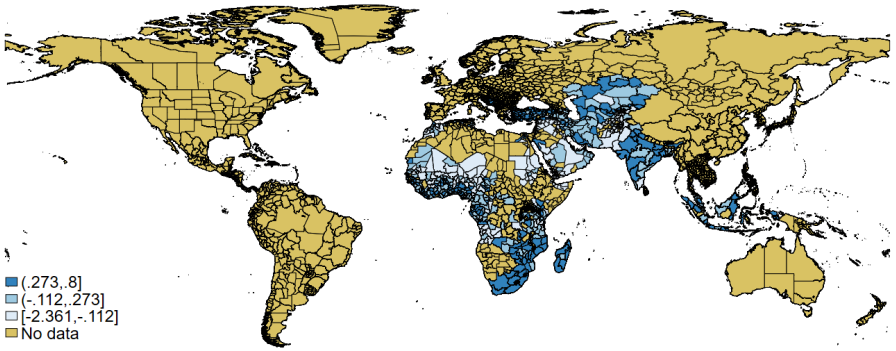


(b) Geographical Distribution

(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 regions are split by terciles.

terms of China's population. Figure 2(Ib) shows the geographical distribution of our index. Regions belonging to developed societies show a distinctively higher level of social behavior compared to those in developing societies. This result should not be surprising due to the higher availability of volunteer organizations and charity activities in western developed societies. However, a high level of heterogeneity is present among regions in developing countries, particularly in Africa and Latin America. Finally, Chinese regions exhibit the lowest level[13] of social behavior index.

The second trait in this analysis is religiosity. To measure individuals' positions toward religion, we focus on the following question:

RE_1 Is religion an important part of your daily life?

This question is asked in almost all the countries available in the sample, excluding Jordan and Oman. Respondents who answer affirmatively to this question are defined as religious people. Figure 2(IIa) shows the world-wide distribution of the share of religious people, which resembles a bimodal distribution: countries are mainly characterized by either a high or low share of religious people. Figure 2(IIb) presents the world geographical distribution of religious people. Regions belonging to Sub-Saharan African countries and Indonesia exhibit the highest share of religious people, while Chinese regions are characterized by the lowest share of religious people. Moreover western developed societies are characterized by a lower share of religious people compared to the rest of the world.

As a measure of gender-egalitarian views we follow Docquier *et al.* (2019) and focus on three questions where the respondent has to answer whether he or she agrees or disagrees with the following statement:

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?

GE_3 Women should have the right to initiate a divorce?

We code the responses with a dummy such that having gender-egalitarian views is coded as one. These questions are not surveyed for the whole set of countries available in the GWP, but only for a subset of countries where gender-egalitarian attitudes are particularly salient (i.e. developing countries) and on a reduced time span (until 2011). We combine these three questions in one

[13] Greif and Tabellini (2010) show that due to historical institutions and culture, China, based on Confucian moral obligation among kins and clans structure, is characterized by lower levels of trust and inter-personal interactions than Europe, where the presence of the Church and the development of cities brought an increase of cooperation among large populations.

synthetic index of gender-egalitarian views through a Multiple Correspondence Analysis; then, we normalize it with mean zero and standard deviation equal to one. Figures 2(IIIa) and 2(IIIb) show the weighted density and the geographical distribution of average gender-egalitarian views among the available countries in the sample. Regions belonging to southern Africa and Turkey are the most gender-egalitarian while Sub-Saharan regions are characterized by high gender-unequal attitudes. Afghanistan is undoubtedly the country with the lowest level of gender-egalitarian views. However, two caveats should be kept in mind. First, it is important to recall that the sample of countries includes those with the lowest levels of gender-egalitarian views: western and more gender-egalitarian societies are not included in the sample. Second, measures of gender-egalitarian attitudes are hardly comparable across countries, due to different contextual factors (McHugh and Frieze, 1997; Constantin and Voicu, 2015). Nevertheless, our empirical strategy overcomes this issue by comparing individuals within the same region.

2.2.1 Correlates of cultural traits

These three cultural traits (social behavior, religiosity and gender-egalitarian views) are the focus of this paper. GWP is an ideal data source for these cultural traits due to the geographical coverage and availability of questions related to connections abroad. However, it is not the only data set available which encompasses these cultural aspects. Over a smaller sample of countries, the World Values Survey (WVS) makes similar inquires. Using the sixth wave of the WVS to compute country averages of similar cultural traits, we can test whether the cultural traits in our analysis are indeed correlated with other similar data sources. Related to inter-personal trust and social behavior, the WVS asks: (i) "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" Concerning religiosity, four questions from WVS are particularly relevant: (i) "How important in life is religion?"; (ii) "How often do you attend religious service?"; (iii) "How often do you pray?" and (iv) "Are you a religious person?" Concerning gender-egalitarian attitudes, WVS submits to the respondents' judgment three statements on gender-egalitarian views: (i) "When jobs are scarce, men should have more right to a job than women"; (ii)" On the whole, men make better political leaders than women do"; and (iii) "On the whole, men make better business

executives than women do". We code and normalize those questions[14] to have the same order as the GWP and also an overall index of gender-egalitarian views is created from the three above-mentioned questions.[15] Table 1 shows the correlation of the country averages of each cultural trait from the GWP with the related trait measured with the WVS. The maximum number of countries available in the sixth wave of WVS is 60, and only 25 of them overlap with our sample of countries that covers gender-egalitarian views. The reported correlations are all positive and statistically significant. The GWP measure of religiosity and the index of gender-egalitarian attitudes are highly correlated with the WVS responses. The index of social behavior is correlated with the measure of trust from the WVS; however, the size of the correlation is smaller, since our index of social behavior does not only capture inter-personal trust but also active involvement in society. Overall, these results show reassuring correlations across different data sources.

Table 1: Cultural traits Correlations - GWP and WVS

	(1)	(2)	(3)	(4)
WVS Questions	Social Behavior	Religiosity	Gender-Egalitarian	Countries
Trust People (V24)	0.292**	-	-	60
Religion Important (V9)	-	0.948***	-	60
Active Rel. Participation (V25)	-	0.498***	-	60
Active Prayer (V146)	-	0.857***	-	60
Religious Person (V147)	-	0.787***	-	60
Women have Job (V45)	-	-	0.702***	25
Women be politicians (V51)	-	-	0.782***	25
Women able run business (V53)	-	-	0.745***	25
Gender-Egalitarian Index (WVS)	-	-	0.795***	25

Note: authors' calculations on Gallup World poll data and the sixth wave of the World Values Survey. The significance of the correlations are presented as follow: * p<0.1, ** p<0.05, *** p<0.01. Each column show the correlation with a specific trait computed from the GWP: social behavior (col. 1), religiosity (col. 2) and gender-egalitarian views (col. 3). Column 4 shows the number of countries.

Our focus on these cultural traits is driven by their power to shape societies, economic development and personal well-being (Flanagan and Levine, 2010; Tabellini, 2010; Duflo, 2012; Benabou *et al.*, 2015; and Inglehart, 2018). However, to test their economic relevance, we investigate whether

[14]These questions are coded in the sixth wave of the WVS as follows: V24, V9, V25, V146, V147, V45, V51 and V53,

[15]All the answers are coded as dummies, which take values of one when respondent trusts others, is religious and shares gender-egalitarian views. The three questions related to gender-egalitarian attitudes are combined using a MCA.

these cultural traits are also related with deep individual economic preferences. Data on deep economic preferences are available for the 2012 wave of GWP, thanks to the Global Preferences Survey (GPS) developed by Armin Falk and his coauthors. Through the framework of the 2012 wave of GWP, Falk *et al.* (2018) provide six measures of individual economic preferences: patience, risk-taking, positive reciprocity, negative reciprocity, altruism and trust.[16] From their cross-country analysis, they show that patience is highly correlated with economic development and that risk taking is correlated with TFP and scientific articles per capita, while negative reciprocity is correlated with the probability of armed conflicts. We regress these six measures of preferences on social behavior and religiosity, to test the relation between cultural traits and economic preferences. Since GPS is available only for 2012, we are unable to test the relation between gender-egalitarian attitudes and economic preferences.

Table 2 shows the partial correlation of social behavior (panel A) and religiosity (panel B) with economic preferences. Each column has a different economic preference as dependent variable and includes a set of individual socio-demographic characteristics.[17] The estimates in the top panel show that the index of social behavior has a positive and significant relation with all the measures of economic preferences, except for negative reciprocity. On average, an increase of one standard deviation in the index of social behavior is associated with a 10% standard deviation increase in the measures of economic preferences. Estimates relative to religiosity, presented in the lower panel of Table 2, show that being religious is significantly associated with a lower level of patience and negative reciprocity. Moreover, religious people are more altruistic. Two conclusions can be drawn from the previous results. First, the cultural traits in analysis are indeed related with deep individual economic preferences. Knowing the importance of deep individual economic preferences on individual behaviors, outcomes and decisions, those correlations confirm the economic relevance of focusing on these specific cultural aspects. Second, the relation between cultural traits and economic preferences is trait specific. Social behavior is positively related with all the economic preferences which produce

[16] Almost all the preferences are measured through a combination of qualitative and quantitative items, to validate respondent answers to the survey with behavioral experiments. "Patience" measures the propensity of the respondent to give up on something today to gain more in the future. "Risk-taking" measures the respondent's propensity to taking a risk through lottery experiments. "Positive reciprocity" indicates the propensity to thank a stranger that helped them and to return favors. "Negative reciprocity" indicates the willingness to take revenge after being unjustly treated. "Altruism" quantifies how much the respondent would act for a good cause without expecting anything in return. How strongly other people have good intentions is measured by "trust".

[17] Each regression includes dummies on gender, marital status, parental status, education and a continuous measure of age. Moreover, each dependent variable is standardized with mean zero and standard deviation equal to one.

Table 2: Cultural traits and Economic preferences
Global Preferences Survey

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS
Year	2012	2012	2012	2012	2012	2012
Econ. Pref.	Patience	Risk Taking	Pos. Recipr.	Neg. Recipr	Altruism	Trust
Panel A - Social Behavior						
Social Behavior	0.120***	0.101***	0.097***	0.004	0.179***	0.051***
	(0.021)	(0.012)	(0.017)	(0.014)	(0.021)	(0.016)
Observations	56739	56736	57029	55863	56800	55989
Countries	59	59	59	59	59	59
Adj. R-Square	0.05	0.09	0.02	0.03	0.04	0.01
Panel B - Religiosity						
Religiosity	-0.269***	0.006	0.084*	-0.121***	0.256***	-0.010
	(0.061)	(0.041)	(0.049)	(0.035)	(0.050)	(0.042)
Observations	57886	57864	58196	56947	57952	57086
Countries	60	60	60	60	60	60
Adj. R-Square	0.05	0.08	0.01	0.03	0.02	0.01
Individual Controls	✓	✓	✓	✓	✓	✓

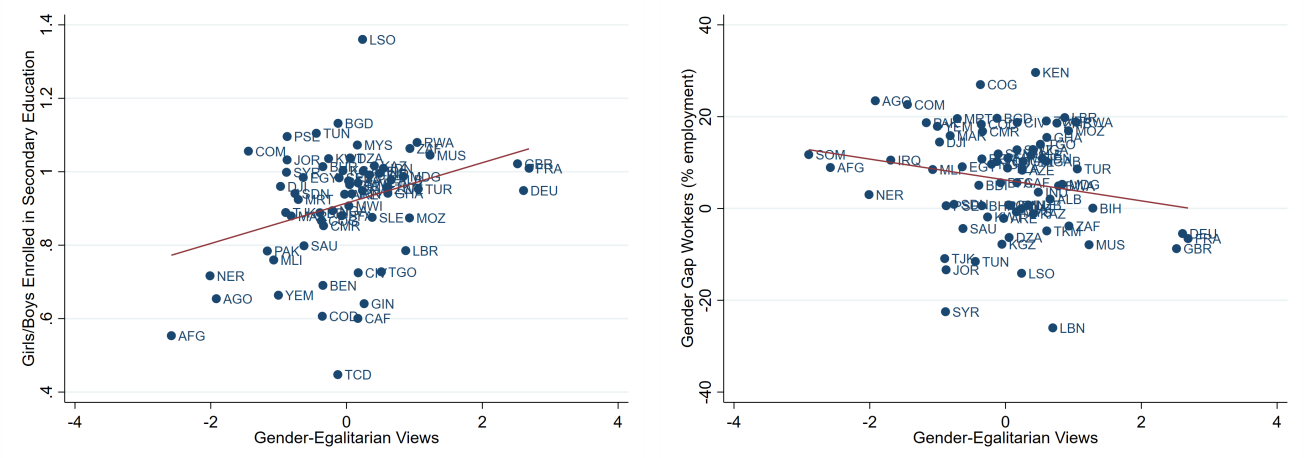
Note: authors' calculations on Gallup World poll data and Global Preferences Survey. Standard errors are clustered at country level. * p<0.1, ** p<0.05, *** p<0.01. Each regression also includes respondents' ages and dummies for education, gender, marital status, and parental status.

a positive economic outcome, like being patient or being risk-taking. Religiosity is, on one hand, negatively related with patience, which is recognized by Falk *et al.* (2018) as the most relevant economic preference to explain economic development. On the other hand, religiosity is associated with lower levels of negative reciprocity and more altruistic preferences, which are both beneficial for social cohesion and peaceful relationships.[18]

Although we cannot explore the relationship between gender-egalitarian views and deep economic preferences due to a mismatch in the time dimension of the two datasets, we follow Inglehart *et al.* (2017) and explore the cross-country relationship between gender-egalitarian views and economic outcomes. Using World Bank data, and averaging them over the period 2010-2016, we explores the cross-country relation between gender-egalitarian attitudes and: (i) the ratio of female over male

[18]Those results confirm the Campante and Yanagizawa-Drott (2015) findings, where religious practices have a negative economic effect a positive effect on individual satisfaction.

Figure 3: Gender-Egalitarian views and Economic Indicators



(a) Enrollment Secondary Education

(b) Employment Gap

Note: authors' calculations on Gallup World Poll Data and World Bank Data. The Figure plots for each country the average gender-egalitarian views and: (a) the ratio of female over male pupils in secondary school, (b) the difference in the percentage of paid workers over the gender-specific employment force between female and male. The correlation is statistically significant at 5% level in panel (a), while at 10% level in panel (b).

pupils in secondary school, and (ii) the difference in the percentage of paid workers over the gender-specific employment force between female and male. The correlations are presented in Figure 3. Figure 3(a) shows a positive relationship between gender-egalitarian views and the ratio of female over male pupils in secondary education. Societies characterized by more equal gender-attitudes do not discourage female education, which has important positive implication not only for women self-realization and independence, but for the overall society. Along the same line, Figure 3(b) presents a negative correlation between gender-egalitarian views and the difference between female paid workers and male paid workers over the gender-specific employment population. Indeed, even though women are able to participate to the workforce and being employed, women in less gender-equal countries have less favorable contractual conditions, which implies that they receive their source of remuneration from the informal labour market. Participating to the informal labor market not only generates lower wages compared to the formal one (Bargain and Kwenda, 2014), but also increases individual economic uncertainty. Overall, those cross-country correlations point out that gender-egalitarian views are positively related with human capital formation and labor market dynamics, which are relevant for countries economic development

3 Empirical Strategy

One of the aims of our paper is to test whether individual cultural traits are affected by connectedness. In section 3.1 we describe the benchmark empirical specification. Due to the empirical challenges of our analysis, section 3.2 presents some econometric issues driven by selection and omitted variable bias, and how we tackle them.

3.1 Benchmark Specifications

In this section we present our empirical approach to investigate the impact of a connection abroad on individual cultural traits. As a main explanatory variable we include $Network_{i,r,t}$, a dummy variable which takes the value of one if individual i in region r in country c at year t has a reliable connection abroad, and zero otherwise. Defining $Cult_{i,r,t}$ as our proxy of cultural traits (social behavior, religiosity and gender-egalitarian attitudes), we describe the basic specification as follows:

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

The dependent variable $Cult_{i,r,t}$ represents our proxy of cultural traits, which is a standardized variable 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. The vector $\mathbf{\Gamma}_{i,r,t}$ contains a set of individual characteristics that can influence individual cultural traits, including sociodemographic factors (gender, age, marital status, the presence of children in the household and the household size) and socioeconomic factors (level of income per household member in international dollars, education[19] level, living in an urban area and employment status). Time-invariant intra-country regional factors, such as local culture and institutions, are captured by regional fixed effects η_r, while time-variant country.specific factors, like economic growth and exports, are captured by the country-year fixed effects $\theta_{c,t}$. We cluster the error terms at the regional level. Including such a wide set of individual controls should mitigate potential omitted variable bias; however, they can act as bad controls if they are determined simultaneously with our measure of connectedness (see Angrist and Pischke, 2009). We will provide a robustness check excluding these controls.

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

Estimating equation (1) using a linear model[20] produces a measure of the partial correlation between being connected and culture, captured by the estimated coefficient β. However, unobserved factors not captured by our linear model but correlated with the error term $\epsilon_{i,r,t}$ can bias the estimated effect. In particular, the lack of information related to connections' characteristics (e.g. education, age, etc.) could be a relevant threat to the estimation of the true effect. For instance, if connections are culturally selected, then our model will merely capture the effect of being connected with individuals with a distinctive set of cultural traits rather than the effect of being connected with individuals that are experiencing different cultural norms by living abroad. Docquier *et al.* (2019) show that intending migrants from the MENA region are culturally selected: individuals who are less religious and more gender-egalitarian are more prone to emigrate to western high-income societies.[21] However, such cultural selection has a limited effect on the cultural distance between countries. To mitigate the potential bias driven by unobserved factors, we fully exploit the set of information available from GWP and we augment our basic specification in two ways.

First, knowing each connection's country of residence d over the period 2009-2012, we augment the model by including in the regression an interaction term with the average culture of the connection's country of residence. If the connection's residence choice is driven by cultural aspects, this term should be able to act as a proxy of the connection's culture and control for the potential cultural selection of the connection country of residence. Moreover, it should also capture the cultural influence of the connection's country of residence. We can describe the augmented basic specification as follows:

$$Cult_{i,r,t} = \alpha + \beta Network_{i,r,t} + \gamma Network_{i,r,t} * \overline{Cult}_d + \zeta \mathbf{\Gamma}_{i,r,t} + \eta_r + \theta_{c,t} + \epsilon_{i,r,t}. \tag{2}$$

It is important to recall that regional fixed effects (η_r) capture all the time-invariant geographical and cultural distances which could affect a connection's location but which are common to all individuals in the same region r.[22] The time-invariant average culture of a connection's country of

[20] It is important to recall that indices of social behavior and gender-egalitarian views are continuous variables, while religiosity is a dichotomous variable. This implies that for the former two traits we are using Ordinary Least Squares (OLS), while for the latter we are using a Linear Probability Model (LPM).

[21] Similarly, Berlinschi and Harutyunyan (2018) shows the intending migrants from former Soviet Union countries are more politically active, critical of current institutions and tolerant towards other culture.

[22] Regional fixed effects also capture the shared probability that individuals in the same region r have connections in countries closer to them (geographically or culturally).

residence d is $\overline{Cult}_d \in \{SB, RE, GE\}$. As for equation (1), the term $Cult$ continually represents a different cultural trait (social behavior, religiosity and gender-egalitarian views). The average cultural trait of the connection's country of residence is computed after pooling all the available years in GWP. Thanks to the global scope of GWP, we can compute the term $\overline{SB}_d$ and $\overline{RE}_d$ for almost all countries of the world.[23] However, as we described in subsection 2.2, the index of gender-egalitarian views is computed only on a subset of countries. To cover the full set of connections' countries of residence we first complement the GWP with the gender-egalitarian index computed in the sixth wave of the WVS. As shown in Table 1, it is highly correlated with the average gender-egalitarian views computed with the GWP data at the country level. For the remaining set of countries we impute the average level of gender-egalitarian views based on their level of development.[24] As Inglehart (2018) points out, high-income countries have a distinctive set of gender-egalitarian views compared to developing countries. Estimating the parameters β and γ of equation (2) not only produces a measure of partial correlation between connectedness and individual culture, but also captures the effect driven by the culture of the connection's country of residence. However, through our analysis we use both specifications presented in equations (1) and (2).

Second, even though we are capturing whether individuals have a strong connection abroad, the quality of their tie could influence their interactions and the cultural effect. People may interact more with and be more influenced by close relatives rather than friends or other peers in their network. In such cases, the estimated relation between our measure of connectedness and culture could be driven mainly by connections between relatives. Nevertheless, Granovetter (2005) points out that networks affect individuals' behavior through the quality of information and argues that "weak ties" are more likely than "strong ties" to transmit unique and relevant information. Since close relatives may belong to the same cultural circles, the novelty of their acquired information could be less significant than that of friends or acquaintances who may belong to more heterogeneous and groups. Similarly, Batista *et al.* (2019) show that having a network with households who experienced international migration increases the political participation of individuals in Mozambique, and that the effect is

[23] Only for 1% of the connections do we not exactly define the average cultural traits of the country of residence. In these cases, we impute them the average cultural traits using the same imputation method as that used for the gender-egalitarian views.

[24] Using the available data, we compute the country average index of gender-egalitarian views for OECD high-income countries and for the rest of the world. Then we impute it to countries without an average level for gender-egalitarian views, based on whether or not they are OECD high-income countries or not. We impute the value of gender-egalitarian views for 14% of the connections.

stronger through a chatting network than a kinship network. To test whether the quality of the tie matters, we use the following question from the GWP: "Have any members of your household gone to live in a foreign country permanently or temporally in the past 5 years?". If the individual answers affirmatively, GWP also asks the destination country. We then replace our main variable of connectedness in equation (2) ($Network_{i,r,t}$) with $Family\ Net_{i,r,t}$ or $Network^{Cl}_{i,r,t}$, respectively. $Family\ Net_{i,r,t}$ is a dummy which takes the value of one if individual i has a relative abroad in any country d, while $Network^{Cl}_{i,r,t}$ is a dummy which takes 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 total and family network). Estimating the partial correlations β and γ of equation (2) after decomposing our measure of connectedness between kinship ties and other ties sheds some light on whether the quality of ties affects the cultural effect of connectedness.

3.2 Econometric Issues: dealing with selection

Our empirical approach involves methodological issues that might produce inconsistent estimates of the true relation between connectedness and culture or affect the interpretation of the estimates. A serious threat is the possibility of selection among connected people. If connected people are culturally selected, then our estimated coefficients are just spurious correlations between connectedness and culture. For instance, if religious individuals are more likely to have connections abroad, then a positive relation between connectedness and religiosity should be expected. Dealing with this potential threat is difficult from an econometric point of view due to the scarcity of sources of exogenous variation which are not related to individual cultural traits. Our empirical approach tries to overcome a potential selection threat by controlling for a set of relevant observable characteristics (Angrist and Pischke, 2010). Moreover, if unobserved factors are correlated with observed factors, the inclusion of observables also can reduce the selection threat of unobservables (Altonji *et al.*, 2010, Oster, 2019). However, to properly address cultural selection into connectedness, it is better to disentangle any potential selection threat into two components. First, if selection into connectedness is completely unrelated to any kind of observable individual characteristic, then our approach is unable to completely rule out such a threat. Depending on the direction of the relation and of the selec-

tion, our estimates could be either a lower bound of the effect or a simple correlation.[25] However, claiming an endogeneity threat which is not related to any other kind of individual characteristic is quite unreasonable, since several individual and contextual aspects can influence both cultural traits and connectedness. For instance, a few papers shows that individual culture is related to weather shocks (Giuliano and Nunn, 2019; Sinding Bentzen, 2019), which can also influence human relations and migration preferences (Bertoli *et al.*, 2019). If we believe that endogeneity is a threat, then it is more reasonable to assume that it affects all our variables. Nevertheless, to minimize this potential threat we test the robustness of our estimates after controlling for a broader measure of connectedness. Since similar factors could push individuals into having reliable connections, either locally or abroad, then controlling for a more general measure of connectedness, which captures both local and international connections, should also capture common selection into having reliable connections. Second, if selection into connectedness is driven by observable characteristics, or by unobservable characteristics which are related to observables, we can properly treat it with two methodologies: (i) we address the potential threat driven by selection on unobserved factors following Oster (2019) approach; (ii) we address the potential threat driven by selection on observables with matching techniques, which allow us to compare similar individuals in a set of relevant covariates.

Concerning selection into unobservables, we test whether the threat of selection driven by unobserved factors is enough to cripple our estimations. Oster (2019) provides a methodology to measure the degree of selection on unobserved variables. Based on the seminal paper of Altonji *et al.* (2005), Oster's approach rests on the assumption that the relation between treatment (in our case, connectedness) and unobserved factors can be retrieved from the relationship between treatment and observables. Given this assumption, this approach allows us to compute two relevant indicators of the bias driven by selection on unobservables in linear models. Given the amount of variation in the dependent variable that we want to explain with our model (defined by the value of R-squared: $R_{max} \in [0, 1]$), Oster's methodology first allows us to compute the degree of selection on unobservables (δ) relative to observables for which the estimated coefficient of connectedness is equal to zero. To give some insight behind this estimator, if $\delta = 3$, then unobserved factors should be three times

[25] Individuals can be either positively or negatively cultural selected into connectedness. However, after plotting the average cultural trait associated with groups of individuals who spent from 0 to 12+ hours in social activities with families and friends, no clear cultural pattern is perceived across different groups. Results available in Figure A-I in the online Appendix

as important as observed characteristics to produce a partial correlation between connectedness and culture equal to zero. As a suggested rule of the thumb, if $\delta > 1$ then the threat driven by selection of unobservables should be minimized.[26] Moreover, the robustness of the estimates of selection on unobservables increases with an higher estimator δ. Since a relevant parameter to compute the estimator δ is the amount of variance of the dependent variable that we want to explain (R_{max}), we follow Oster (2019) suggestion which defines $R_{max} = 1.3\tilde{R}$, where $\tilde{R}$ is the variance explained by our fully specified model.[27] Then, Oster's methodology allow us to compute the bounding values of the treatment effect after correcting for selection on unobservables (δ) and after defining the amount of variance explained (R_{max}). Precisely, we compute the identification set of the effect of connectedness when we do not adjust for unobservables ($\delta = 0$) and when selection on unobservables is as important as selection on observables ($\delta = 1$).[28] If the bounding set of the effect of connectedness does not include zero, then it implies that our estimates are also robust after the correction for selection on unobservables. We compute the degree of selection on unobservables (δ) and the identification set for both the cultural effect of connectedness and the interaction term (namely, β and γ in equation (2)).

Concerning selection driven by observable characteristics, we estimate the cultural effect of connectedness after implementing matching techniques. Matching methods are widely applied in non-experimental causal studies where selection bias could arise (e.g. Dehejia and Wahba, 2002; Sianesi, 2004; DiPrete and Gangl, 2004; Caliendo and Kopeining, 2008; Ichino *et al.*, 2008). In our case, these methods allow us to compare the culture of connected people with that of similar not connected individuals people in a set of relevant characteristics. Since differences in terms of observable characteristics are minimized, the differences in cultural outcomes between those selected groups of connected and unconnected people can only be associated with connectedness and not other relevant

[26] A value of $\delta = 1$ implies that selection on unobservables is as important as selection on observables to produce estimates equal to 0. A value of δ close to zero implies that an insignificant selection on unobservables compared to observed covariates makes the estimated effect equal to zero. Finally, the value of δ can also be negative, given the relation between observables and unobservables. The intuition related to the estimator remains the same: if $\delta < -1$ then the threat on unobservables is minimized.

[27] Making too much effort to explain the variance of the dependent variable can lead to an excessive correction due to unobservables, when the robustness of the results could also be undermined by other factors, like measurement error. For this reason 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-squared. We test both with the cutoff 1.3 and 2 times the estimated R-squared.

[28] Both Oster (2019) and Altonji *et al.* (2005) suggest that equal selection ($\delta = 1$) is an appropriate upper bound on δ. If the estimated δ is negative, then we correct for the selection on unobservables with $\delta = -1$.

factors. 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).[29] To deal extensively with the potential selection bias, we applied both methods in the following way.

Following the guidelines of Caliendo and Kopeining (2008), we implement PSM to compute the average cultural effect of 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,[30] so we just estimate the cultural effect of connectedness, disregarding connection location. We first compute the individual probability of having a connection abroad (propensity score) using a probit model and a set of relevant covariates. Since one of the assumptions of PSM is the Conditional Independence Assumption (CIA), which assumes that potential outcomes between treated individuals and controls are independent of the treatment given the propensity score, the choice the of variables used to compute the propensity score is crucial. On one hand, omitting important variables in the estimation of the propensity score could increase the bias in the estimates (Heckman *et al.*, 1997); on the other hand, including variables affected by connectedness, or simply including too many variables undermines the CIA condition and increases the variance of the estimated effect. For this reason we estimated 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.e. some of the connected and unconnected individuals should have the same probability of having a connection abroad), we perform matching through different matching algorithms. As a benchmark, we 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. We match individuals within the same region with similar propensity scores, estimated with both models (main and short). We 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

[29] 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.

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

et al., 1998 and Aakvik, 2001) after matching. Finally, we estimate the average cultural effect of connectedness on connected people for each cultural trait with bootstrapped standard errors. As a robustness check, we estimate the same effect using other matching algorithms suggested by the literature[31] and estimating the effect of a fake treatment over the control group. We also perform a sensitivity analysis of our treatment effect 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 we estimate the average culture effect of connectedness, disregarding connection location (i.e. the interaction term in equation (2)), we rely on CVM methods to asses the robustness of our analysis once disparities in the distribution of covariates between connected and unconnected people are minimized. As Imbens and Rubin (2012) 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.* (2019), we implement a design phase before the empirical analysis to create a balanced sample of individuals in terms of covariates. We 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. Moreover, if unobserved factors are related to observable characteristics (Altonji *et al.*, 2005), minimizing distances in observables should also minimize distances on unobserved factors. As for PSM, we 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 our estimates from our augmented approach, after we have mitigated the selection bias.

4 Results

Following the outline of Section 3, our empirical analysis is structured as follows. In section 4.1 we investigate the effect of connectedness on different cultural traits using linear models; we also produce

[31] Precisely, we 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.

separate results, including those for the connection's country of residence, and we test whether the findings are robust to different specifications and to family ties. In section 4.2 we test whether the results are robust after controlling for a measure of local connectedness (section 4.2.1) to selection on unobservables (section 4.2.2) and observables, through matching methods (section 4.2.3).

4.1 Benchmark Results

Table 3 presents our baseline results. The reported coefficients show the relation between having a connection abroad and culture, expressed with the 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). The set of estimates are the product of linear models, by OLS for columns (1), (2), (5) and (6) and by LPM for columns (3) and (4). We report the estimates found using a simple specification with just the connectedness variable (col. (1), (3) and (5)) and those found after including the interaction term with the culture of the connection's country of residence (col. (2), (4), and (6)). All specifications include regional dummies, country-year fixed effects and a set of individual controls.

Baseline estimates suggest that, on average, connectedness makes individuals culturally different. Specifically, having a connection abroad is associated with an higher level of pro-social behavior, higher religiosity and more gender-egalitarian views. The coefficients are always significant at the 1% level.[32] Moreover, the interaction with the average culture of the connection's country of residence has a significant effect on individual social behavior and gender-egalitarian attitudes, but not on religiosity. As the literature points out, religiosity can be a rather persistent cultural trait compared to others (Inglehart and Baker (2000)). We can evaluate the economic magnitude of connectedness on each cultural trait using the standard deviations reported in Table A-II and the mean value of each cultural trait abroad.[33] Taken at face value, the estimates in column (2), (4) and (6) indicate that having a connection in an average country in terms of culture increases individual social behavior by 0.22(=0.196+0.100*0.275) standard deviation, the probability of being religious

[32]Correcting the significance level of our estimates due to potential Multiple Hypothesis testing using Bonferroni's correction does not affect the significance level of connectedness and the interaction term on social behavior and religiosity, while the interaction term in column (6) becomes statistically insignificant. However, due to the open debate on statistical significance in the field of statistics (see Wasserstein *et al.*, 2019), those results should be taken with caution.

[33]The average values of each cultural measure of the connections' countries of residence are 0.275 for social behavior, 0.543 for religiosity and 0.587 for gender-egalitarian views.

Table 3: 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*	
Network	0.205***	0.196***	0.012***	0.013***	0.054***	0.046***
	(0.006)	(0.006)	(0.002)	(0.002)	(0.011)	(0.012)
Interaction		0.100***		-0.008		0.055*
		(0.013)		(0.006)		(0.030)
Education	0.261***	0.260***	-0.034***	-0.034***	0.151***	0.151***
	(0.008)	(0.008)	(0.003)	(0.003)	(0.018)	(0.018)
Female	-0.062***	-0.062***	0.060***	0.060***	0.410***	0.410***
	(0.006)	(0.006)	(0.002)	(0.002)	(0.016)	(0.016)
Married	0.078***	0.078***	0.008***	0.008***	-0.010	-0.010
	(0.005)	(0.005)	(0.002)	(0.002)	(0.010)	(0.010)
Child	0.002	0.002	0.005***	0.005***	-0.018*	-0.018*
	(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***	0.040***	-0.018***	-0.018***	0.048**	0.048**
	(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
	(0.002)	(0.002)	(0.000)	(0.000)	(0.003)	(0.003)
Unempl.	-0.019*	-0.019**	0.001	0.001	0.004	0.003
	(0.009)	(0.009)	(0.003)	(0.003)	(0.019)	(0.019)
Income	0.006	0.006	0.002*	0.002*	0.750	0.741
	(0.005)	(0.005)	(0.001)	(0.001)	(0.536)	(0.537)
Observations	411367	411367	391901	391901	90239	90239
Regions	2097	2097	2065	2065	736	736
Adj. R-Square	0.16	0.16	0.38	0.38	0.22	0.22
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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.

by 0.8%(=0.013-0.008*0.543) and gender-egalitarian views by 0.078(=0.046+0.055*0.587) standard deviation.[34] This is a sizable effect. Compared to the effect of education, which appears to be

[34]Aware that using a linear model with a dichotomous variable can be risky due to the possible prediction of the

one of the main determinants of each cultural trait, connectedness has a relevant magnitude. It accounts for 85% of the effect of education on social behavior and 52% of the effect of education on gender-egalitarian views. Having a connection abroad is responsible for 23% of the effect of education on religiosity, although education reduces religiosity, while connectedness has a positive effect on it.[35] Among individual controls, education, gender, marital status and place of residence (rural/urban area) have the most significant relation with each cultural trait. Women are more religious and share more gender-egalitarian views; however, they are characterized by lower levels of social behavior. Having a child or being married is associated with a higher level of religiosity. While age is not associated with social behavior, older individuals are on average more religious and hold less gender-egalitarian attitudes. Finally, individuals living in urban areas are characterized by greater social behavior and more gender-egalitarian views, but less religiosity.

These results suggest that connectedness spurs an overall rise in individual religiosity. However, this positive effect on individual religiosity does not imply active participation in places of worship or an increase in trust towards religious organizations. Table A-IV in the Online Appendix shows that connectedness is not related to active religious participation. Moreover, the pro-religiosity effect is mainly present in individuals who already belong to religious groups, like Christians and Muslims.

Table 3 shows that connectedness is associated with more active participation in society, interpreted by an higher level of pro-social behavior, and more gender-egalitarian attitudes. These effects can be affected by individuals' perception of the society. Unfair and discriminatory conditions can enhance the desire of an alternative and fairer scenario, which can then be revealed by connections living in more fairer societies abroad. Table A-V in the Online Appendix shows the cultural effect of connectedness after taking into account perceived justice towards poor people, migrants and women. Perceived discrimination does not influence the pro-social behavior effect of connectedness, but it enhances the positive effect on gender-egalitarian attitudes.

model outside the range 0-1 and the inappropriate use of linear tests, Hellevik (2009) points out that these are minor arguments and that linear models should be used, particularly for a causal analysis and for easy interpretation of the coefficients.

[35] Evaluating the magnitude of the effect of connectedness disregarding the interaction term produces similar results: an increase of 0.20 standard deviation for social behavior, an increase of 0.054 standard deviation for gender-egalitarian views and an increase of 1.2% of the probability of being religious.

4.1.1 Robustness Checks

This subsection investigates the robustness of the previous results. Table 4 summarizes the findings for connectedness on social behavior (Panel A), religiosity (Panel B) and gender-egalitarian views (Panel C) according to the benchmark model presented in equation (2). Each column presents a different robustness check. In column (1) we estimate our model by avoiding the imputation of the average culture of the connection's country of residence, which is particularly relevant for gender-egalitarian values, since we imputed the average culture for 14% of the connections. Column (2) shows the estimates when we do not include individual controls, while columns (3) and (4) do not include regional and country-by-year fixed effects, but do include, respectively, country and region-by-year fixed effects. In column (5) we estimate our model after removing all individuals with an imprecise regional identifier, while column (6) shows the estimates using broader regions as geographical units. Finally, in columns (7) and (8) we investigate whether the results are affected after removing from the sample regions that appears only once or after removing regions with less then one hundred observations.

Overall, we show that the estimates presented in Table 3 are robust to different variations of the specification and of the sample. The coefficients associated with connectedness and the interaction term are always positively related to social behavior and significant at a 1% level. Furthermore, the size of the coefficients remains rather similar across different robustness checks.

We then investigate whether the quality of the tie with the connection abroad influences the cultural effect of connectedness. Knowing whether individuals have relatives abroad, Table 5 shows the estimates of our benchmark model when we split our variable of connectedness between family connection ($Family\ Net.$) and other connections ($Network^{Cl}$). We estimate our model by separately including these two types of connection, with their respective interaction terms associated to the average culture in the connection's country of residence. In columns (1), (3) and (5) we show the linear estimates using for general, non-familial connectedness, while in columns (2), (4) and (6) we present the estimates using family connections. The first finding is that, in general, the point estimates associated with connectedness after removing parental ties remain quite consistent, both in size and significance, with our previous results: having a connection abroad makes individuals more social, religious and gender egalitarian. Having a family connection abroad still has a positive effect

Table 4: Benchmark Results - Robustness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dest. Clean	No Controls	Country F.E.	Reg.-Year F.E	No Imp.	Broad Reg.	Single Reg.	Small Reg.
Panel A - Social Behavior (OLS)								
Network	0.196***	0.212***	0.199***	0.192***	0.194***	0.199***	0.197***	0.195***
	(0.006)	(0.006)	(0.009)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Interaction	0.100***	0.097***	0.087***	0.095***	0.114***	0.102***	0.099***	0.103***
	(0.013)	(0.013)	(0.016)	(0.013)	(0.015)	(0.014)	(0.014)	(0.014)
Observations	411367	473340	448138	411355	369481	417907	396898	372419
Regions/Countries	2097	2221	144	2095	1749	1075	1907	1311
Adj. R-Square	0.16	0.15	0.12	0.19	0.16	0.15	0.16	0.15
Panel B - Religiosity (LPM)								
Network	0.013***	0.007***	0.013***	0.012***	0.013***	0.014***	0.013***	0.013***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
Interaction	-0.006	-0.005	-0.001	-0.004	-0.004	-0.008	-0.008	-0.006
	(0.006)	(0.005)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	391901	451701	428132	391893	350015	398441	378628	353011
Regions/Countries	2065	2190	141	2064	1717	1045	1888	1284
Adj. R-Square	0.38	0.36	0.34	0.39	0.38	0.37	0.38	0.38
Panel C - Gender-Egalitarian (OLS)								
Network	0.051***	0.050***	0.059***	0.043***	0.046***	0.040***	0.046***	0.046***
	(0.011)	(0.011)	(0.019)	(0.011)	(0.012)	(0.014)	(0.012)	(0.012)
Interaction	0.044	0.041*	0.015	0.057*	0.051*	0.061**	0.048	0.051
	(0.028)	(0.025)	(0.051)	(0.029)	(0.031)	(0.030)	(0.030)	(0.031)
Observations	90239	113308	93148	90238	87388	90223	84776	84521
Regions/Countries	736	862	58	736	593	390	685	513
Adj. R-Square	0.22	0.18	0.17	0.24	0.22	0.21	0.22	0.22
Individual Controls	✓		✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓			✓		✓	✓
Broad Region F.E.						✓		
Country F.E.			✓					
Region-year F.E.				✓				
Country-year F.E.	✓	✓			✓	✓	✓	✓

Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level, apart from columns (4)-(5), where they are clustered at country 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 columns estimates the benchmark model in equation (2) by: not imputing the average culture of country of residence of connection (col. 1), not including individual controls (col. 2), removing region and country-year fixed effects and including just country fixed effects (col. 3) or region-year fixed-effects (col. 4), removing by the sample all the individuals whose region we impute (col. 5), performing the analysis on broad regions rather then decomposing them (col. 6), performing the analysis on the subsample that appears twice (col. 7) and removing regions with fewer then 100 observations (col. 8).

on all cultural traits, although it becomes insignificant for religiosity. Possibly, family connections bring less novelty to information sets, particularly in terms of a delicate trait like religiosity. Finally, evaluating the economic magnitude of those estimates, we find rather similar results between the different specifications and our benchmark estimates presented in Table 3.

Of course, our measure of connectedness could simply capture an overall individual's general taste and preference for foreign knowledge. In that case, the cultural effect of connectedness is not driven by interaction with the connection abroad, but captures a broader individual propensity to be exposed and assimilate extra-national norms. Moreover, a country's openness to foreign activities

Table 5: Broad Connections or Household Connections?

	(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*	
$Network^{Cl}$	0.195***		0.014***		0.043***	
	(0.006)		(0.002)		(0.012)	
$FamilyNet.$		0.163***		0.006		0.076*
		(0.019)		(0.013)		(0.040)
$Interaction$	0.082***	0.170***	-0.011*	0.011	0.052*	0.029
	(0.014)	(0.032)	(0.006)	(0.019)	(0.030)	(0.063)
Observations	403521	411367	384145	391901	87756	90239
Regions	2097	2097	2065	2065	736	736
Adj. R-Square	0.16	0.15	0.38	0.38	0.22	0.22
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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 $Network^{Cl}$ is a dummy equal to one if the individual has a connection abroad who is not a relative.

could also influence individual attitudes towards novelties from abroad. We test the robustness of our estimates to a broader taste and exposure to foreign experiences in two steps. We first test whether a country's openness influences the cultural effect of connectedness by estimating our benchmark equation on subsamples of regions according to country development and world exposure, measured by GDP per capita, imports and exports.[36] We then include in our regression model additional individual controls which capture an open attitude towards the international world or higher exposure to global information. As proxies for openness towards foreign societies, we include whether the individual would like to move abroad permanently or is actually planning to move abroad permanently.[37] To capture the exposure to not local information we include dummies on

[36]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.

[37]GWP includes questions on migration intentions which are included as dummy variables. These variables take the value of one when the respondent answers either of the following questions affirmatively: "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this

whether the individual has internet or land-line telephone in his/her house.[38]. The estimates of both tests are presented in Tables A-VI and A-VII in the Online Appendix. Overall the estimates associated with connectedness and the interaction term remain stable and precise across different specifications.

We then test whether the results presented in Table 3 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, we estimate the probability of being religious and the ranked levels of social behavior and gender-egalitarian attitudes conditional on connectedness. Table A-VIII in the Online Appendix shows that using non-linear models produces estimates in line with our benchmark approach. As an additional robustness check, we investigate whether the results are not driven by the way we construct our indices of social behavior and gender-egalitarian views. Table A-IX in the Online Appendix shows the estimates of connectedness on each item of the two indexes using Linear Probability Models. Connectedness has a positive and significant effect on each cultural question. Finally, we test whether the results are driven by geographically small countries. Individuals can more easily interact with peers in smaller countries due to a higher density of individuals. Table A-X in the Online Appendix shows the estimates after dropping small countries (i.e. those with at most 200,000 KM^2 of land area). The cultural effect of connectedness remains unchanged across samples and cultural traits.

4.2 Dealing with Selection

In this section we investigate the likelihood that our results are affected by selection bias. In section section 4.2.1 we investigate whether our relation between connectedness and cultural traits is made irrelevant by an overall individual propensity towards having networks and connection. We test for the threat driven by selection on unobservables in section 4.2.2, applying the methodology suggested by Oster (2019). In section 4.2.3 we test whether the results are robust after controlling for selection on observable characteristics through matching methods.

country?" (Migration Int.); "Are you planning to move permanently to that country in the next 12 months, or not?" (Migration Plan.). Descriptive statistics of those variables are available in Table A-II

[38] Around 37% of the population has an internet connection, while 47.8% of the population has a land-line telephone at home.

4.2.1 Controlling for General Connectedness

As we state previously, dealing fully with the endogeneity threat between connectedness and culture at the individual level is extremely challenging from an econometric point of view. In particular, if individuals' selection into connectedness is positively associated with cultural traits and it is also completely unrelated with observable characteristics, then any causal claim based on our estimates would be outrageous. However, if we believe that endogeneity is an issue, then it would be hard to claim that it does not involve other individual characteristics. To partially address this issue we include in our regression model a broader measure of individual connectedness. Intuitively, if cultural factors influence individual propensity to have connections (locally or abroad), then controlling for a broader measure of connectedness should capture the common selection into connectedness. Controlling for connectedness (in general) should then reduce the threat driven by individual selection into connectedness (abroad).

Table 6: 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*	
Network	0.195***	0.186***	0.011***	0.011***	0.041***	0.035***
	(0.006)	(0.006)	(0.002)	(0.002)	(0.012)	(0.012)
Interaction		0.102***		-0.004		0.060
		(0.014)		(0.006)		(0.037)
Rel. Connection	0.106***	0.106***	0.020***	0.020***	0.052***	0.052***
	(0.007)	(0.007)	(0.002)	(0.002)	(0.014)	(0.014)
Observations	378177	378177	362070	362070	75811	75811
Regions	2084	2084	2045	2045	709	709
Adj. R-Square	0.17	0.17	0.38	0.38	0.23	0.23
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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.

As general measure of connectedness we use the following question from GWP: "If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?". We code such question as a dummy variable (*Rel. Connection*) which takes the value of one if individuals answer affirmatively. These individuals are then characterized by having a reliable connection, either locally or abroad. The correlation between *Rel. Connection* and *Network* is around 0.148, which allows us to include both variables in the same regression. 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.

Table 6 is structured like our benchmark Table 3 after including our measure of general connectedness as qn additional control. Even though our 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 our variable of general connectedness *Rel. Connection*. Table A-XII in the online Appendix shows similar results after performing a subsample analysis based on individuals' answers relating to our measure of general connectedness. Overall, those results shows that the positive relation between connectedness and cultural traits is robust after controlling for the potential positive selection, which is partially captured by broader measure of individual's propensity to have a trustworthy connection.

4.2.2 Selection on Unobservables

We now investigate whether our results could be driven by selection on unobserved factors. To test the robustness of our previous estimates to selection on unobserved characteristics, we implement the methodology recently proposed by Oster (2019), computing for each estimated model: (i) the degree of selection on unobservables relative to observed characteristics for which the estimated coefficient associated with connectedness is equal to zero (δ) and (ii) a bounded identified set of the effect of connectedness on culture after correcting for a reasonable degree of selection on unobservables (i.e. assuming they are as important as observable characteristics). Since both the estimator and the bounding set of the effect are computed based on the amount of variance that our model would like to explain (defined as R_{max}), and given $\tilde{R}$ the R-squared of the model with all the controls, we implemented Oster's methodology with the suggested bounded value ($R_{max} = 1.3\tilde{R}$) and an

over-explaining value of R_{max} ($R_{max} = 2\tilde{R}$).

Table 7: 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)					
Network	0.196***	4.860	[0.171; 0.196]	1.446	[0.082; 0.196]
	(0.006)				
Interaction	0.100***	0.773	[-0.031; 0.100]	0.208	[-0.416; 0.100]
	(0.013)				
Adj. R-Square ($\tilde{R}$)	0.16				
Panel B - Religiosity (LPM)					
Network	0.013***	-4.563	[0.008; 0.013]	-1.275	[0.002; 0.013]
	(0.002)				
Interaction	-0.008	2.197	[-0.008; -0.005]	0.614	[-0.008; 0.030]
	(0.006)				
Adj. R-Square ($\tilde{R}$)	0.38				
Panel C - Gender-Egalitarian (OLS)					
Network	0.046***	-4.970	[0.034; 0.046]	-1.346	[0.009; 0.046]
	(0.012)				
Interaction	0.055*	-2.517	[0.030; 0.055]	-0.680	[-0.018; 0.055]
	(0.030)				
Adj. R-Square ($\tilde{R}$)	0.22				

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 $\tilde{\beta}$ 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 7 presents the results regarding to the threat of selection on unobserved factors. Each panel shows the results for each cultural trait in our analysis: social behavior (panel A), religiosity (panel B) and gender-egalitarian views (panel C). Column (1) reports the estimates associated with our benchmark model, while the degree of selection on unobservables and the bounding set of the estimates with different degree of R_{max} are presented from column (2) to (5).[39] Focusing on the

[39]The analysis associated with the estimates of the model presented in equation (1) are available in Table A-XIII

results associated with the suggested level of $R_{max} = 1.3\tilde{R}$ in columns (2) and (3), there are two main findings. First, our estimates are robust to selection on unobservables. The degree of selection on unobservables relative to observables (δ) is above the cut off of one[40] (the point at which selection on unobservables must be as important as selection on observables in order to invalidate the estimated coefficient), excluding the interaction term associated with social behavior. Moreover, column (3) shows the bounding set of the estimates when we do not correct for unobservables (i.e. $\delta = 0$) and when we correct for a reasonable degree of selection on unobservables (i.e. $\delta = -1/1$). On average, the bounding set does not include zero, suggesting that the estimates are statistically different from zero after correcting for selection on unobservables. Second, the estimates associated with the interaction term are less robust than the estimates associated with connectedness to selection on unobservables. As a matter of fact, the estimated values of δ are lower for the interaction terms. This result is not surprising: the cultural effect of connectedness can be influenced by the connection's characteristics, like his or her education or age, and also by the connection's experience abroad. An higher implication and exposure to the local culture in the country of residence could magnify or reduce the amount and quality of information communicated to peers in the origin country, therefore influencing the cultural effect. The lack of relevant information about the connection's experience and characteristics is a defect of our data source and also of our analysis.

Columns (4) and (5) present the results after increasing the amount of dependent variable variance that we want to explain. As we are aware that over-controlling for selection on unobservables could invalidate our estimation, the degree of selection on unobservables remains above the cut off level of one for each cultural trait, but not for the interaction terms. Overall, those results provide reassurance about the potential threat driven by selection on unobservables.

4.2.3 Matching Results

This section presents the results of our analysis using matching methods. These broadly used methods are particularly popular in non-experimental causal studies, since they are able to create a relevant control group to test the effect of a treatment on the treated population. As we explained in section 4.2, we implement both Propensity Score Matching (PSM) and Covariates Matching

in the Online Appendix. Overall the results are in line with Table 7.

[40] δ can be negative when the correlation between observables and unobservables is negative rather then positive.

(CVM), the former to capture the cultural effect of connectedness on connected people and the latter to include information related to connection location in the estimates. We present the results of PSM first, followed by those of CVM.

Propensity Score Matching - We follow the guidelines of Caliendo and Kopeining (2008) to properly implement PSM methods. First, we compute the probabilityof having a connection abroad using a probit model.[41] The choice of the variables in the model is crucial: on one hand all the variables that affect both connectedness and culture should be included in the model (Heckman *et al.*, 1997); however, these variables must be exogenous to having a connection abroad to avoid invalidation of the CIA. We then estimated two probit models: the first (called *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.[42] The second model (called *Short model*), has a more parsimonious specification, including only purely exogenous variables like gender, age and age-transformations. Table A-1 in the Appendix presents both estimated models. We use both models to predict the propensity score used for the matching. Performing matching with both models allows us to check whether the effects may be driven by the selection of the variables in the probit model. Both models satisfy the Common Support assumption, as Figure A-1 in the Appendix shows. This result implies that we can find for each connected individual at least a proper counterfactual, unconnected individual with the same probability of having a connection abroad.

We matched connected and unconnected individuals within the same region using a Kernel Epanechnikov algorithm. We set 0.05 as the bandwidth of our kernel following DiPrete and Gangl (2004). The advantage of this approach is the utilization of all the information available to build a synthetic but close counterfactual. However, some included individuals could be bad matches. For this reason we also match with alternative algorithms, as a robustness check.[43] We matched individuals using the propensity scores estimated both with the main and short model. To asses

[41] In the case of dichotomous variables, Caliendo and Kopeining (2008) point out that logit and probit models produce similar results.

[42] Column 1 of Table A-1 shows the estimates when we also include family size and parental status dummy. Since estimates associated with those variables are not statistically significant, we remove them from the main model. Income is not included since it can easily be endogenous. We include age transformation, to increase the fit of the model.

[43] The alternative matching algorithms used are: Kernel (Normal and Uniform), Nearest Neighbour (one or five individuals, with replacement) and Radius matching.

the quality of the matching, we first test the covariates balance between connected (treatment group) and unconnected (control group) individuals before and after the matching. We compute the standardized bias $SB(X)$ (Rosenbaum and Rubin, 1985, and Sianesi, 2004) for each covariate X as follow:

$$SB(X) = 100 * \frac{\overline{X_C} - \overline{X_{NC}}}{\sqrt{[V_C(X) + V_{NC}(X)]0.5}} \tag{3}$$

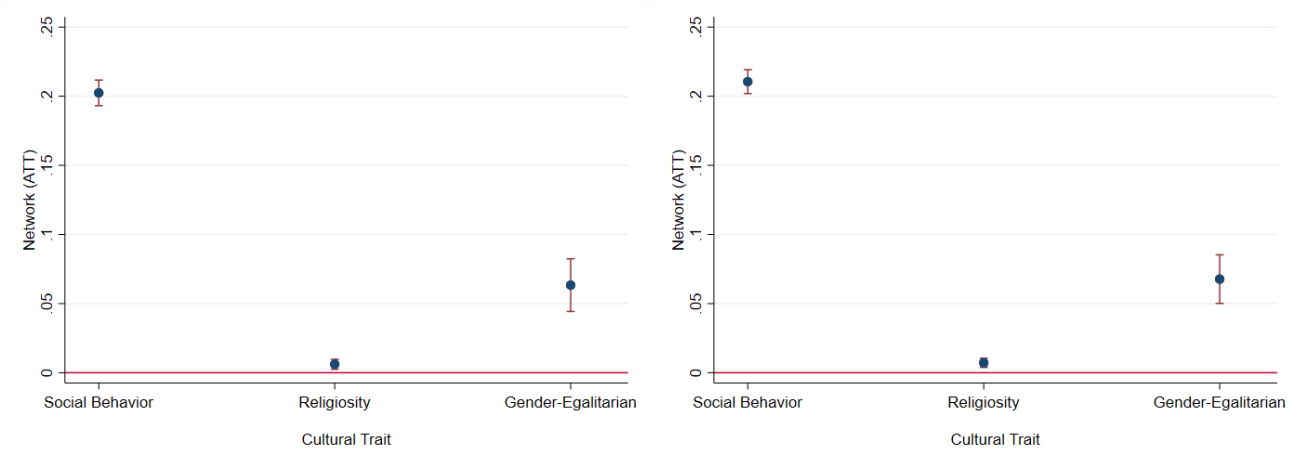
where $\overline{X_C}$ and $V_C(X)$ are the sample mean and variance for the connected population, while $\overline{X_{NC}}$ and $V_{NC}(X)$ are the sample mean and variance for the unconnected population. Standardized bias is a convenient way to measure the distance between the two groups for each observable. We compute the average and standardized bias of each variable used in the benchmark model before and after matching individuals, using both estimated propensity scores.[44] Table A-2 presents the results. Columns (1) to (3) present the results for the whole sample, while columns (4) to (6) and (7) to (9) present the results after matching with the propensity score from the main and short model, respectively. Each panel presents the results associated with each cultural trait: social behavior (panel A), religiosity (panel B) and gender-egalitarian views (panel C). Given that |5%| constitutes a reasonable level of standardized bias (Caliendo and Kopeining (2008)), column (6) shows that matching with propensity score from the main model reduces the biases of all the covariates below that reasonable threshold (excluding age in Panel A and B). Matching individuals with the propensity score computed through the short model is able to significantly reduce the standardized bias across the covariates, although it is not able to completely reduce education disparities (column (9)). These results show that, after matching, connected and unconnected individuals are highly comparable in terms of observable characteristics.

We also test whether there are differences in the distribution of covariates between connected and unconnected individuals. Heckman *et al.* (1998) point out that differences in covariate distribution between treated and control groups could generate another source of selection bias. Figures A-III, A-IV and A-V in the Online Appendix plot the distribution of each covariate after matching connected and unconnected individuals with those in the main model for each cultural trait. The figures show similar distribution of observables after matching, minimizing another potential source of selection

[44]The denominator of equation (3) remains constant before and after matching, and it is computed on the overall population.

bias (Aakvik, 2001).

Figure 4: Matching Results - Average effect of Connectedness



(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) in Table A-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 A-1. The matching method is Kernel Epanechnikov matching.

Figure 4 plots the average cultural effect of connectedness on connected individuals for each cultural trait, using Kernel Epanechnikov matching and propensity scores computed from the main model (a) and from the short model (b). The results confirm the estimates from our benchmark linear model: having a connection abroad is positively associated with higher social behavior, higher religiosity, and stronger gender-egalitarian views. Furthermore, the size of the effect is rather similar to the estimates presented in columns (1), (3) and (5) of Table 3: having a connection abroad is associated with an increase in social behavior of 0.197, an increase of 0.6% in the probability of being religious and an increase in gender-egalitarian views of 0.065 standard deviation. The estimates are slightly bigger after matching with the propensity score from the short model (figure b), but overall the effects are always statistically significant at the 1% level. It is important to recall that these results do not account for the effect driven by the location of the connection, which are taken into account after direct matching on the covariates. Figure A-II in the Online Appendix shows that the average cultural effects of connectedness on each cultural trait are robust after using different matching algorithms: Kernel (Normal and Uniform), Nearest Neighbour (one or five individuals,

with replacement) and Radius matching.

As a robustness check, we perform a second round of matching over the individuals belonging to the control group after randomly assign them a fake treatment drawn from a uniform distribution. Figure A-2 in the Appendix shows the average effect of the fake treatment on each cultural trait after performing the same PSM approach described above. The fake treatment does not produce any significant cultural effect on the treated group. This result mitigates the threat of potential selection into the control group.

Finally, following the sensitivity analysis proposed by Rosenbaum (2002), we test the robustness of our estimated cultural effects to unobserved factors after our use of matching methods. Matching methods managed to eliminate any bias driven from selection into observable characteristics, by minimizing differences between connected and unconnected individuals. However,they are not robust against "hidden bias" (DiPrete and Gangl, 2004): unobserved factors that affect simultaneously an individual's culture and conncetedness. The methodology and results of our sensitivity analysis are presented in Appendix A-2. Overall, the results show that the cultural effect of connectedness on social behavior and gender-egalitarian attitudes is strongly robust to hidden bias, while the effect on religiosity is slightly less robust.

Covariates Matching - An alternative way to perform matching between connected and unconnected individuals is to match individuals directly on covariates instead of on the probability of having a connection abroad. We matched connected and unconnected individuals within each region using Mahalanobis Metric Matching method to minimize covariates distances across individuals.[45] Since this method produces a sample with an equal number of connected and unconnected individuals within each region, the sample size is significantly trimmed and extremely balanced. Columns (10) to (12) of Table A-2 show that the quality of the matching is indeed satisfying, considering both at the average and standardized bias of each covariate.

Table 8 presents the linear estimates over the matched and trimmed samples of individuals. Columns (1) to (3) show the effect of connectedness on social behavior, columns (4) to (6) on religiosity and columns (7) to (9) on gender-egalitarian views. The table also reports the estimates presented in Table 3, to facilitate comparison with the results on the matched sample. Overall, all the

[45]This approach is suggested by Imbens and Rubin, 2012, and Ruyssen and Salomone (2018) and Docquier *et al.* (2019) provide applications of this method.

Table 8: Mahlanobis Matched Sample Analysis

	(1) OLS	(2) OLS	(3) OLS	(4) LPM	(5) LPM	(6) LPM	(7) OLS	(8) OLS	(9) OLS
	Social Behavior			*Religiosity*			*Gender-Egalitarian*		
Sample	Main	Matched	Matched (RW)	Main	Matched	Matched (RW)	Main	Matched	Matched (RW)
Network	0.196***	0.194***	0.190***	0.013***	0.012***	0.014***	0.046***	0.050***	0.056***
	(0.006)	(0.007)	(0.007)	(0.002)	(0.003)	(0.003)	(0.012)	(0.016)	(0.017)
Interaction	0.100***	0.097***	0.104***	-0.008	-0.001	-0.005	0.055*	0.050	0.034
	(0.013)	(0.013)	(0.015)	(0.006)	(0.006)	(0.007)	(0.030)	(0.031)	(0.035)
Observations	411367	241537	190470	391901	231198	182776	90239	49527	39762
Regions	2097	2034	2034	2065	2001	2001	736	644	644
Adj. R-Square	0.16	0.16	0.16	0.38	0.36	0.36	0.22	0.22	0.23
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓

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. Columns (1), (4) and (6) show the benchmark estimates presented in Table 3. Columns (2), (5) and (8) show the estimates on the matched sample using a Mahlanobis Metric Matching procedure and associated weights. Columns (3), (6) and (9) show the estimates on the matched sample using a Mahlanobis Metric Matching procedure and reweighted weights (matching weights*survey weights).

estimates of the benchmark regressions hold when using matched samples. The size of the estimates is quite similar between the benchmark results and the matched results. Moreover, re-weighting the sample of individuals combining both survey weights and matching weights does not change the size and significance of the estimates (col. (3),(6),(9)). After removing unbalanced distributions of observable characteristics through covariate matching, connectedness is still associated with higher levels of social behavior, religiosity and gender-egalitarian views.

5 Understanding the Results: cultural convergence/divergence and mechanisms

After identifying a positive and significant effect of connectedness on each individual cultural trait, in this section we further analyze our results by exploring (i) whether connectedness creates cultural convergence or divergence across and within regions (section 5.1) and (ii) the potential channel of transmission of the cultural effect, considering through spill-over effects, economic channels and destination-specific cultural effects (section 5.2).

5.1 Cultural Convergence or Divergence

Our analysis shows a strong and positive relation between connectedness and the three relevant cultural traits. However, due to the global dimension of our analysis, there could be significant heterogeneity of the effects across different world regions. We investigate the differential effects of connectedness on each cultural trait to understand whether the positive cultural effect of connectedness: (i) generates cultural convergence or divergence *across regions* (section 5.1.1), and (ii) makes populations *within regions* more or less culturally diverse (section 5.1.2).

5.1.1 Convergence and divergence across regions

Given the positive effect of connectedness on each cultural trait, connectedness can generate cultural convergence or divergence across regions depending on the differential effect of connectedness compared to the average regional level of culture. On one hand, if the positive effect of connectedness is enhanced in regions which share high levels of cultural traits and is undermined in regions characterized by low levels of cultural traits, then being connected with people abroad will create cultural divergence across regions. For instance, individuals living in regions with strong gender-egalitarian views may be more open to accepting and adopting even more gender-equal attitudes shared by their connections abroad, compared to those who live in regions where gender-unequal views are commonly held and who are less prone to adopt uncommon views. In this case, connectedness makes regions more culturally distant. On the other hand, if the cultural effect is magnified in regions with low levels of cultural traits and minimized in those with high levels, then connectedness will create cultural convergence across regions. In this case, the effect may be driven by the information novelty introduced by the connection compared to the norm. Using macro-data on migration, Rapoport *et al.* (2018) show that international migration generally creates cultural convergence across countries, although the direction of the convergence is still unclear. They suggest two different mechanisms: either a convergence of host countries towards home countries, due to social mixing between migrants and natives (e.g. Baudin, 2010 and Chabé-Ferret, 2019), or a convergence of home countries towards host countries, driven by migrants' social remittances at the origin (e.g. Levitt, 1998; Chauvet and Mercier, 2014; Docquier *et al.*, 2016 and Valette, 2018).

To provide evidence of the latter mechanism, we split our sample of regions by terciles of average

regional culture and perform a subsample analysis over each tercile of the distribution. Moreover, we provide additional evidence of the cultural convergence/divergence dynamic of connectedness by estimating equation (2) after replacing the average culture of the connection's country of residence (i.e. $\overline{Cult_d}$) with the cultural distance between the connection's culture and the average regional culture of each respondent. This distance is computed as a difference between the two averages, and a positive sign associated with the estimated parameters implies that the cultural effect increases with the increase of the cultural distance. Since the individual cultural trait is included and influenced by the regional average culture, endogeneity arises and caution is needed when interpreting these results. Table 9 presents the results by cultural terciles using the standard specification presented in equation (2) in Panel A, while the estimates associated with cultural distances are presented in Panel B.[46] Columns (1) to (3) present the estimates on social behavior, columns (4) to (6) on religiosity and columns (7) to (9) on gender-egalitarian views.

There are two main findings we can take from Table 9. First, the pro-social behavior effect of connectedness is persistent and unrelated with the regional level of social behavior. Having a connection abroad is always associated with an higher degree of positive interactions within society. The coefficients associated with connectedness and the interaction term have similar magnitudes across different regional subsamples, although the effect is slightly stronger in regions in the upper tercile of regional social behavior. Those results are also confirmed by taking into account cultural distance rather then the average culture of the destination country (Panel B). Second, the positive effect of connectedness on religiosity and gender-egalitarian views is stronger in regions with lower the average cultural traits. Panel A shows that individuals in regions belonging to the first tercile of the distribution of each trait are strongly influenced by connectedness: having a connection abroad is associated with a 3% increase in the probability of being religious and with 0.085 standard deviations of gender-egalitarian views.[47] The cultural effect of connectedness fades away and becomes statistically not significant with an increase in regional average culture. Similar evidence is presented in Panel B, when cultural distances are included. These results suggest a cultural convergence across regions due to connectedness concerning religiosity and gender-egalitarian views.[48] Although the

[46] Tables A-XIV and A-XV in the Online Appendix shows the results after splitting our sample of regions by median and quartiles of average regional culture. The results are in line with those presented in Table 9.

[47] Since the interaction terms are not statistically significant, we do not take them into account in evaluating the magnitude of the effect.

[48] Splitting the sample on broad geographical units gives similar results. Table A-XVI in the Online Appendix

Table 9: Cultural Convergence or Divergence - Regional subsamples by regional culture

	(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*		
Tertile Trait	1^{st}	2^{nd}	3^{rd}	1^{st}	2^{nd}	3^{rd}	1^{st}	2^{nd}	3^{rd}
Panel A - Average									
Network	0.174***	0.202***	0.213***	0.030***	0.013***	0.003	0.085***	0.021	0.015
	(0.008)	(0.011)	(0.012)	(0.005)	(0.004)	(0.002)	(0.019)	(0.017)	(0.020)
Interaction	0.079***	0.105***	0.095***	-0.013	-0.021*	0.005	0.063	0.054	0.050
	(0.024)	(0.028)	(0.020)	(0.016)	(0.011)	(0.004)	(0.044)	(0.050)	(0.046)
Observations	166746	123398	121223	126457	127389	138055	33427	36409	20403
Regions	821	518	758	719	701	645	210	302	224
Adj. R-Square	0.06	0.05	0.09	0.14	0.06	0.02	0.18	0.08	0.05
Panel B - Distance									
Network	0.170***	0.200***	0.229***	0.026***	0.015***	0.005***	0.078***	0.022	0.021
	(0.009)	(0.011)	(0.012)	(0.004)	(0.004)	(0.002)	(0.022)	(0.017)	(0.019)
Distance	0.044**	0.097***	0.076***	0.067***	0.060***	0.007	0.046	0.059	0.072
	(0.018)	(0.027)	(0.021)	(0.022)	(0.017)	(0.006)	(0.032)	(0.052)	(0.059)
Observations	166746	123398	121223	126457	127389	138055	33427	36409	20403
Regions	821	518	758	719	701	645	210	302	224
Adj. R-Square	0.06	0.05	0.09	0.14	0.06	0.02	0.18	0.08	0.05
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓

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 regions is splitted by cultural traits terciles, respectively: first tercile (col. (1),(4),(7)), second tercile (col. (2),(5),(8)) and third tercile (col. (3),(6),(9)). Panel A shows the estimates using the specification presented in equation (2), while Panel B replaces the average culture of the connection's country of residence with a measure of cultural distance.

catch-up effect of gender-unequal regions with their more egalitarian counterparts is surely positive and good, there is still an open debate regarding religiosity.[49]

presents the estimates after splitting the sample into eight broad geographical units: Europe, Former Soviet Union, Asia, Latina America, Middle East and North Africa, Sub-Saharan Africa, North America and Oceania. While the pro-social behavior effect of connectedness is spread in all the continents, the positive effect on religiosity and gender-egalitarian attitudes is stronger in continents characterized by a lower level of each cultural trait (see Figures 2(IIb) and 2(IIIb) for a comparison).

[49]Some authors points out the negative economic effect of religiosity (Benabou *et al.*, 2015 and Chase, 2014); however, religiosity is also associated with an increase in subjective well-being (Campante and Yanagizawa-Drott, 2015).

5.1.2 Diversity and Homogeneity within regions

To investigate whether the presence of connected individuals within each region is associated with a culturally homogeneous or heterogeneous population, we use the measurement framework proposed by Desmet *et al.* (2017) and Desmet and Wacziarg (2018). These papers provide few measures to compute the degree of cultural heterogeneity of a given cultural value (which they define as "meme") and to what degree identity cleavages (e.g. education, gender, etc.) can explain the heterogeneity in memes.

Let's consider a cultural trait $t = \{SB, RE, GE\}$, which can take values $n_t = m_t, ..., M_t$, where m_t and M_t are respectively the minimum and the maximum value of each trait. We define x^{n_t} as the share of the total population which holds the value n_t of cultural trait t. Given our set of regions $r = 1, ..., R$, we can then compute the regional overall heterogeneity of cultural trait t as a simple measure of cultural fractionalization:

$$CF_r^t = 1 - \sum_{n_t=m_t}^{M_t} (x_r^{n_t})^2. \tag{4}$$

Namely, CF_r^t measures the probability to randomly drawing two individuals from the population of region r who hold different values of cultural trait t. To evaluate how much of the overall heterogeneity can be explained by the divide between connected and unconnected individuals, we compute a measure of regional cultural fixation F_{ST}. F_{ST} measures the share of overall heterogeneity which can be explained by the heterogeneity between defined groups or cleavages of the society. Considering the individual characteristic $g = 1, ..., G$, which determines groups $z_r^g = 1, .., Z_r^g$ in the population of region r (e.g. g can be connectedness, and the groups are connected and unconnected individuals), we can compute the overall cultural heterogeneity of cultural trait t in group z^g in region r as follows:

$$CF_{z_r^g}^t = 1 - \sum_{n_t=m_t}^{M_t} (x_{z_r^g}^{n_t})^2 \tag{5}$$

where $x_{z_r^g}^{n_t}$ is the share of individuals in region r belonging to group z^g who hold value n_t of cultural trait t. After defining the share of each group z_r^g in the population of region r as $s_{z_r^g}$, we can compute the within-group heterogeneity of cultural trait t as a weighted average over groups:

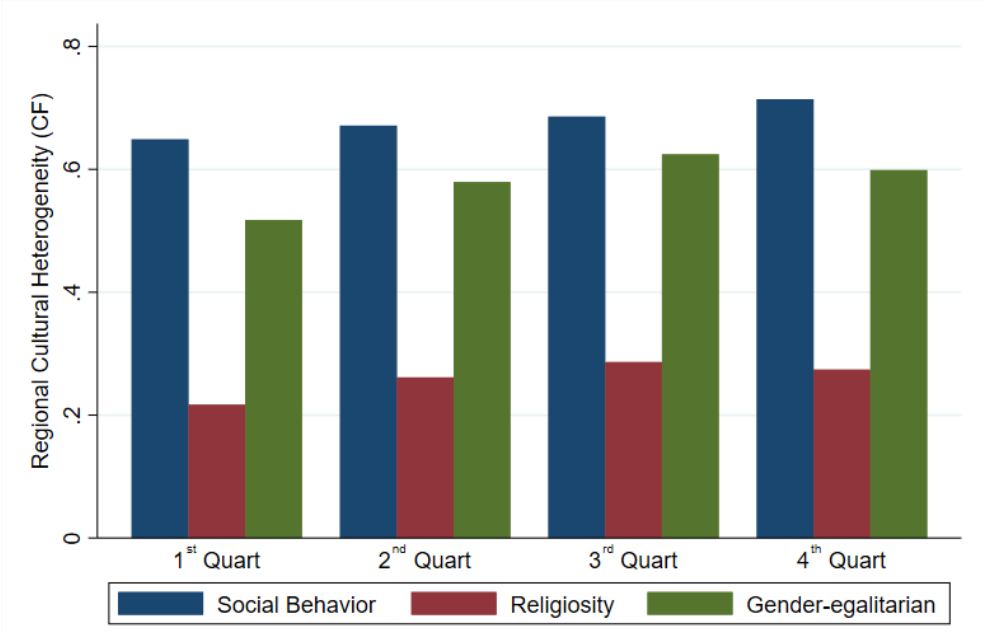
$$CF_{g_r}^t = \sum_{z_r^g=1}^{Z_r^g} s_{z_r^g} CF_{z_r^g}^t \tag{6}$$

Finally, F_{ST} for a cultural trait t defined over the characteristic g in region r is just the share of the overall heterogeneity which is not explained by the within-group heterogeneity:

$$(F_{ST})_r^t = 1 - \frac{CF_{g_r}^t}{CF_r} \tag{7}$$

The index $(F_{ST})_r^t$ takes values between 0 and 1. When it is equal to 0, the overall cultural heterogeneity is explained by within-group heterogeneity. When it is equal to 1, the overall cultural heterogeneity is explained by the between-groups g heterogeneity (i.e., knowing the individual characteristic g is is equivalent to knowing the individual's cultural trait).

Figure 5: Within Regions Cultural Heterogeneity - Overall Heterogeneity

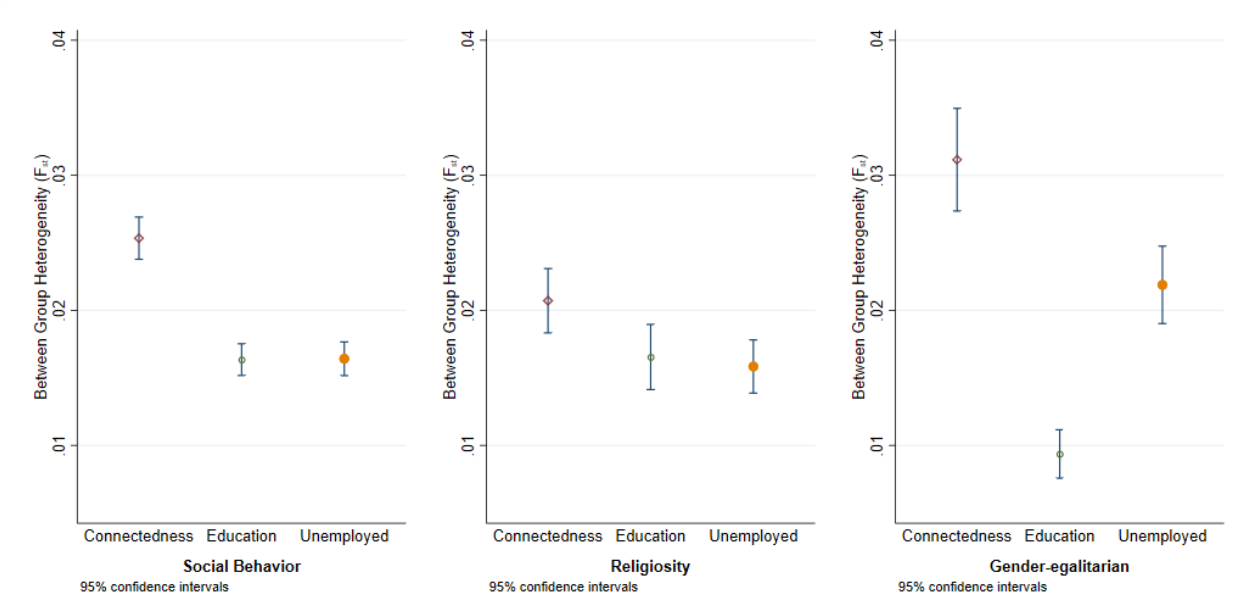


Note: authors' calculations on Gallup World Poll Data. The figure plots the average regional cultural heterogeneity computed over subsamples of regions based on quartiles of shares of connected people. Trait specific graphs with associated confidence interval are available in Figure A-VI in the on-line Appendix.

We first compute the overall regional heterogeneity for each cultural trait. We aggregate all the waves for each region to get a time-invariant measure of cultural heterogeneity for each trait. To investigate whether the presence of connected individuals influences the regional cultural diversity,

Figure 5 shows the average regional cultural diversity of each trait computed over the subsamples of regions splitted by quartiles based on the share of connected people. These results suggest two primary findings. First, the overall regional diversity is trait-specific. Social behavior and gender-egalitarian attitudes are characterized by a higher level of within-region diversity compared to religiosity. However, part of this effect is driven by the nature of the variables: since religiosity is a dummy variable, there is less variation in responses, which implies less variation in the shares used to compute the measure of cultural heterogeneity presented in equation (4). Second, the degree of within-region cultural diversity is positively related with the share of connected individuals in the region. The overall diversity is on average higher for each trait in regions characterized by a higher presence of connected individuals.[50] This result suggests that connectedness contributes to an higher level of within-region cultural heterogeneity rather then homogeneity.

Figure 6: Within Regions Cultural Heterogeneity - Between Groups Heterogeneity



Note: authors' calculations on Gallup World Poll Data. Each figure shows the average amount of total regional heterogeneity associated with each trait (CF^t) which is not attributable to within-group heterogeneity, but rather is related to between-group heterogeneity. Each region has the same weight. The defined group cleavages are based on: connectedness, education and employment status.

We then compute the amount of overall regional cultural diversity not explained by the within-groups heterogeneity but rather by between-groups heterogeneity. Namely, we compute the F_{ST}

[50] Figure A-VI in the on-line Appendix shows the traits specific plots with the associated confidence interval. While the confidence interval may overlap between the second and third quartiles, the averages between the first and the fourth quartiles are always statistically different.

index for each trait using connectedness as an identity cleavage/group characteristic. Additionally, we compute the amount of overall heterogeneity explained by the between-groups heterogeneity based on two other characteristics: education and employment status. Desmet and Wacziarg (2018) show that these identity cleavages have a higher cultural divide, compared to other cleavages like gender or urbanicity. Figure 6 plots the average regional F_{ST} index over each cultural trait and characteristic. Overall, we find a low level of average regional cultural heterogeneity explained by between-groups heterogeneity, which is on average between 2% and 3%. These results suggest that cultural heterogeneity is not fully explained by the cultural divide between some specific groups. Moreover, they are in line with Desmet and Wacziarg (2018), who find that the pluralism in the US is mainly explained by diversity within identity categories rather then diversity between identity categories. However, among the three individual characteristics in our analysis, the cultural heterogeneity explained by between-groups diversity is higher when based on the connected/unconnected divide. This is particularly true for social behavior and gender-egalitarian attitudes, but less prominent for religiosity. Overall these results provide suggestive evidence that connectedness, compared to other relevant cleavages like education or employment status, identifies a specific set of cultural traits and values within regions.[51]

5.2 Mechanisms and channels of transmissions

In this section we exploit two sources of heterogeneity (regional and individual) to explore potential mechanisms and channels through which the cultural effect of connectedness could be transmitted. Section 5.2.1 tests whether the diffusion of connectedness within a region influences the magnitude of the individual cultural effect of connectedness. Section 5.2.2 explores whether individuals react differently to connectedness, depending on their education, gender, age and area of residence and whether connectedness affects individual economic outcomes. Finally, section 5.2.3 investigates whether there are differential effects of connectedness on connected individuals based on the connection's country of residence.

[51] Table A-XVII in the Online Appendix provides a full set of statistics associated with the overall heterogeneity and between-group heterogeneity computed over the three cultural traits and the three individual characteristics.

5.2.1 Connectedness Diffusion

One might be concerned not only with the cultural effects of having a connection abroad, but also with whether those effects are conditional to connectedness diffusion within a region. Regions characterized by a high diffusion of connectedness may be more accustomed to receiving and embracing new information coming from their peers abroad, enhancing the cultural effect of connectedness due to this low prejudice. However, connected people living in regions where connectedness is not broadly diffused are exposed to unique information and novelties compared to their regional peers. In that case the effect of connectedness may be stronger in places where few people have a connection abroad. We empirically investigate these conditional cultural effects of connectedness by splitting our sample of regions by terciles of connectedness. We perform a subsample analysis on each tercile and estimate our augmented equation for each cultural trait across different subsamples by connectedness diffusion.

Table 10: Connectedness Diffusion - Regional subsamples by connected population

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	OLS	OLS	OLS	LPM	LPM	LPM	OLS	OLS	OLS
	2009-2012	2009-2012	2009-2012	2009-2012	2009-2012	2009-2012	2009-2011	2009-2011	2009-2011
	Social Behavior			*Religiosity*			*Gender-Egalitarian*		
Network Tertile	1^{st}	2^{nd}	3^{rd}	1^{st}	2^{nd}	3^{rd}	1^{st}	2^{nd}	3^{rd}
Network	0.218***	0.195***	0.181***	0.014***	0.012***	0.015***	0.003	0.061***	0.070***
	(0.012)	(0.010)	(0.010)	(0.005)	(0.004)	(0.004)	(0.022)	(0.018)	(0.019)
Interaction	0.160***	0.082***	0.100***	-0.010	-0.001	-0.009	0.150**	0.016	0.036
	(0.032)	(0.022)	(0.019)	(0.012)	(0.008)	(0.010)	(0.071)	(0.044)	(0.045)
Observations	156047	145555	109762	147009	137335	107555	37743	33043	19453
Regions	835	695	566	827	683	555	384	243	109
Adj. R-Square	0.17	0.14	0.16	0.44	0.33	0.36	0.22	0.19	0.26
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓

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 regions is split by terciles based on the regional share of connected individuals: first tercile (col. (1),(4),(7)), second tercile (col. (2),(5),(8)) and third tercile (col. (3),(6),(9)).

Table 10 shows the estimates of our subsample analysis of connectedness diffusion. Columns (1) to (3) present the estimates on social behavior, columns (4) to (6) on religiosity and columns (7) to (9) on gender-egalitarian views. Overall the significance and the direction of the results are in line with our benchmark results. Moreover, connectedness diffusion does not significantly

influence the cultural effect of connectedness on religiosity and social behavior. 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. The estimates remain reasonably close to each other across different subsamples, even though the effects are slightly stronger on individual social behavior when connectedness diffusion is low (column (1)). However, this is not the case for gender-egalitarian views. Comparing the estimates across different subsamples (columns (7)-(9)), the magnitude of the cultural effect of connectedness decreases with the share of the connected population. Column (7) shows that the effect even becomes insignificant for individuals living in regions with the lowest diffusion of connectedness. Overall these results suggest that the diffusion of connectedness can influence the cultural effect of having a connection abroad, but this conditional effect is trait-specific.[52]

5.2.2 Individual heterogeneity and economic channels

Individual characteristics of connected people could play a pivotal role in identifying the channels through which connectedness is significantly related with culture. If one of the main effects of connections and networks is to affect the quality and size of individuals' information sets (Granovetter, 2005 and Jackson, 2014), people with less information should react more strongly to the new source of information. As the literature on political persuasion has shown (Della Vigna and Gentzkow, 2010; Moriconi *et al.*, 2018), individuals revise their views based on their previous set of information in a Bayesian updating. The updating process is inversely related with the size of the information set: the more you know, the less you update. Pursuing this intuition, we split the population by education (more or less then 9 years of education), gender, location (rural or urban area) and age (15-35, 36-55 and 55+) and we estimate our equation (2) across different subsamples based on individual characteristics. Table 11 summarizes the results on social behavior (Panel A), religiosity (Panel B) and gender-egalitarian views (Panel C).

The effect of connectedness is positive and significant across the majority of the population's subsamples. Moreover, the point estimates are quite close across different subsamples related to the same characteristic. However, there are a few small yet noteworthy differences across subsamples.

[52]Tables A-XVIII and A-XIX in the Appendix shows the results after splitting our sample of regions by median and quartiles of connectedness diffusion. The results are in line with those presented in Table 10.

Table 11: Individuals heterogeneity - Sociodemographic groups

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Education		*Gender*		*Age*			*Location*	
Individual Characteristic	LS	HS	Male	Female	15-35	36-55	55+	Rural	Urban
Panel A - Social Behavior (OLS)									
Network	0.195***	0.196***	0.209***	0.183***	0.191***	0.214***	0.183***	0.183***	0.200***
	(0.006)	(0.012)	(0.008)	(0.007)	(0.008)	(0.009)	(0.011)	(0.010)	(0.007)
Interaction	0.111***	0.035	0.094***	0.108***	0.094***	0.096***	0.108***	0.106***	0.095***
	(0.016)	(0.029)	(0.021)	(0.017)	(0.019)	(0.022)	(0.025)	(0.029)	(0.015)
Observations	357864	53356	187927	223437	193325	134647	84761	121278	290022
Regions	2096	1762	2094	2095	2085	2087	2016	1815	2038
Adj. R-Square	0.15	0.18	0.16	0.17	0.14	0.18	0.22	0.20	0.16
Panel B - Religiosity (LPM)									
Network	0.014***	0.012*	0.015***	0.013***	0.014***	0.018***	0.014***	0.009**	0.016***
	(0.002)	(0.007)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)	(0.003)
Interaction	-0.007	-0.012	-0.006	-0.010	-0.010	-0.004	-0.005	-0.003	-0.009
	(0.006)	(0.017)	(0.008)	(0.007)	(0.007)	(0.009)	(0.012)	(0.008)	(0.007)
Observations	340524	51228	178510	213388	182049	128372	82833	116210	275624
Regions	2064	1731	2062	2064	2057	2057	1984	1784	2006
Adj. R-Square	0.38	0.31	0.40	0.36	0.40	0.41	0.32	0.39	0.37
Panel C - Gender-Egalitarian (OLS)									
Network	0.047***	0.042	0.052***	0.035**	0.041***	0.045**	0.091***	0.033*	0.051***
	(0.012)	(0.027)	(0.017)	(0.015)	(0.014)	(0.019)	(0.034)	(0.018)	(0.015)
Interaction	0.054*	0.022	0.091**	0.012	0.032	0.073	0.098	0.079	0.056
	(0.030)	(0.086)	(0.043)	(0.034)	(0.033)	(0.050)	(0.084)	(0.049)	(0.036)
Observations	83372	6779	44995	45242	54246	26419	9623	34151	56049
Regions	736	406	734	734	735	715	581	572	703
Adj. R-Square	0.22	0.24	0.21	0.20	0.22	0.24	0.25	0.24	0.23
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓

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)) and location (col. (8)-(9)).

First, across education groups, the cultural effect of connectedness is not statistically significant or poorly significant on religiosity and gender-egalitarian attitudes among highly educated individuals. These suggestive results point towards a potential mechanism of connectedness driven by access to new information, which is more relevant for low educated individuals. However, given the imperfect measure of education available in GWP (i.e. whether individuals have at least nine years of education), the differential effect across education groups can be less precisely estimated. Second, the effect is stronger among males and among individuals in urban areas. Concerning the effects among

age groups, the results depend on the analyzed cultural trait. For instance, the gender-egalitarian effect of having a connection abroad increases with age. Compared to younger cohorts, individuals 55 and older are less used to gender-equal attitudes due to their recent evolution (Inglehart and Baker, 2000); therefore, the information brought by their connection abroad has an higher impact on their cultural values.

Table 12: 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
Network	0.159***	0.002	0.126***	-0.002	1.616***	3.235	6.054	0.564***
	(0.005)	(0.002)	(0.005)	(0.001)	(0.531)	(2.332)	(4.818)	(0.104)
Female	0.013***	0.008***	0.004***	-0.006***	-0.277	2.604	4.873	-0.194***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.356)	(2.813)	(5.127)	(0.062)
Age	0.000	-0.000***	0.000***	-0.002***	-0.004	-0.066	-0.111	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.020)	(0.074)	(0.124)	(0.002)
Observations	486754	486754	486754	475792	481496	76731	46711	22925
Regions	2217	2217	2217	2201	2151	2034	1951	1332
Adj. R-Square	0.15	0.09	0.14	0.05	-0.00	-0.02	-0.04	0.16
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓

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).

The cultural effect of connectedness can also occur through economic channels. As Inglehart (2018) suggest, reaching existential and economic security may induce individuals to adopt more open and post-materialist values (e.g. gender-equal values). Moreover, if having a reliable connection abroad helps the economic condition of natives in the origin countries, then those natives may be more willing to receive not only the economic aid but also the cultural beliefs of individuals abroad. First, we investigate whether having a reliable connection abroad increases the probability of receiving economic help from other individuals.[53] To minimize endogeneity driven by simultaneity bias, we include only controls which cannot be influenced by the dependent variable, namely gender and

[53]The GWP provides a question concerning economic help provided to the household by other individuals. It asks as follows: "In the past 12 months, did this household receive help in the form of money or goods from another individual...?". Individuals can answer yes or no, and they can also specify whether they were helped by individuals living in the same country or abroad.

age. Column (1) of Table 12 shows that having a reliable connection abroad increases the probability of being economically helped by others by 16%. Moreover, when we split the dependent variable between individuals who receive economic help from individuals living in the same country (col. 2) and from individuals living abroad, as a proxy of remittances (col. 3), connectedness increases the probability of receiving remittances around 12.5%, while it has no effect on the probability of receiving help from other locals. These results suggest a direct economic effect of connectedness on natives through remittances. Interestingly, connectedness does not affect other economic outcomes which are not directly related with having a reliable connection abroad, like employment status (col. 4). Finally, we investigate the impact of connectedness on household income from column (5) to (8) of Table 12. Having a reliable connection abroad is positively related with household income (col. 5). However, when we focus on the sample of individuals who are economically helped (col. 6), helped by locals (col. 7) or helped by people abroad (col. 8), positive and statistically significant effect of connectedness on household income is estimated only for the latter group of individuals. This result is in line with the previous ones: connectedness influences the household level of income through remittances and not through other channels. Connectedness has a cultural as well as an economic effect on individuals in the origin countries. Such economic effect may induce different values to connected natives through an higher economic security (Inglehart, 2018) or by increasing their openness to the values of the connection abroad.

5.2.3 Differential effects based on connection location

The set of results presented in Section 4 shows that connected individuals are, on average, characterized by a higher level of social behavior, religiosity and gender-egalitarian attitudes compared to unconnected individuals in the same region. However, due to the global scope of our analysis, connectedness can have differential effects on connected individuals depending on connection's characteristics as well. In this section we focus on the sample of connected individuals and exploit the only reliable information on the connections by differentiating the connectedness variable on the connection's country of residence. The country of residence can proxy the cultural set of values with which the connection has to interact, and also the set of culture and values that the connection abroad shares with natives in his or her origin country.

First, since developed societies hold a distinctive set of culture and values (as Figure 2 shows),

Table 13: Benchmark Results among Connected People - Connection Location

	(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						
$Network^{OECD}$	0.075***	0.047**	-0.008	-0.030***	0.117***	0.123
	(0.017)	(0.019)	(0.006)	(0.011)	(0.041)	(0.109)
$Interaction^{OECD}$		0.067***		0.047**		-0.007
		(0.019)		(0.018)		(0.110)
Observations	120564	120564	115409	115409	24738	24738
Regions	2032	2032	1999	1999	643	643
Adj. R-Square	0.16	0.16	0.35	0.35	0.23	0.23
Panel B - Not OECD Connection						
$Network^{NOECD}$	-0.074***	-0.071***	0.009	-0.017	-0.121***	-0.122***
	(0.017)	(0.018)	(0.006)	(0.018)	(0.041)	(0.042)
$Interaction^{NOECD}$		0.025		0.036		0.039
		(0.050)		(0.023)		(0.098)
Observations	120564	120564	115409	115409	24738	24738
Regions	2032	2032	1999	1999	643	643
Adj. R-Square	0.16	0.16	0.35	0.35	0.23	0.23
Panel C - Muslim Maj. Connection						
$Network^{ISL}$	-0.069***	-0.069***	0.017*	0.108	-0.101*	-0.101*
	(0.024)	(0.024)	(0.010)	(0.066)	(0.058)	(0.057)
$Interaction^{ISL}$		0.056		-0.102		0.005
		(0.063)		(0.071)		(0.124)
Observations	120564	120564	115409	115409	24738	24738
Regions	2032	2032	1999	1999	643	643
Adj. R-Square	0.16	0.16	0.35	0.35	0.23	0.23
Panel D - Christian Maj. Connection						
$Network^{CHR}$	0.056***	0.024	0.003	-0.022**	0.107**	0.031
	(0.019)	(0.019)	(0.007)	(0.011)	(0.046)	(0.076)
$Interaction^{CHR}$		0.083***		0.051***		0.106
		(0.017)		(0.015)		(0.075)
Observations	120564	120564	115409	115409	24738	24738
Regions	2032	2032	1999	1999	643	643
Adj. R-Square	0.16	0.16	0.35	0.35	0.23	0.23
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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.

we explore the differential effect of having a reliable connection in an OECD high-income country or in another country. OECD high-income countries are characterized by higher level of social behavior index, low religiosity and on average more gender-egalitarian attitudes compared to non-OECD countries. The estimates are presented in Panels A and B of Table 13. Distinctive effects are associated with the connection's country of residence: having a connection in an OECD high-income country is associated with a strong positive effect on social behavior and gender-egalitarian attitudes, and a negative effect on religiosity. The estimates associated with a non-OECD connection go in the opposite direction but have a similar magnitude.

Another relevant differential effect can be driven by the primary religion in the connection's country of residence. The typical religion creed not influences religiosity, but also a broad set of individual values and beliefs, from fertility norms to food consumption (Atkin *et al.*, 2019). For this reason, we evaluate the differential effect of having a reliable connection in a Muslim-majority (Panel C) or Christian-majority country (Panel D) on the sample of connected individuals.[54] Having a connection in a Muslim-majority country is associated with lower social behavior and less gender-egalitarian attitudes, with a stronger (but not precisely estimated) positive effect on religiosity. Having a connection in a Christian-majority country produces opposite results, although they are less precisely estimated.

Overall, these estimates provide evidence that, although it causes an increase of all the cultural traits we analyze, connectedness has differential effects driven by the set of culture and values of the connection's country of residence.[55] However, given the fact that 69% of the connections resides in an OECD high income country, the overall differential effects driven by connection's location are skewed towards stronger pro social behaviors and gender-egalitarian attitudes and a weaker pro religiosity effect of connectedness.

[54] We define 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.

[55] However, it is important to recall that these effects are differential and in addition to the overall effect of connectedness, while the main effect is driven by the difference between connected and unconnected individuals. Tables A-XXII and A-XXIII present estimates after splitting the sample of connections by the median or terciles of connection's country of residence culture. The results do not vary across subsamples, suggesting that the average cultural effect between connected and unconnected individuals does not depend on the culture of the connection's country of residence.

6 How much does it count?

Our results provide a new understanding of the individual cultural effect of having a connection in a foreign country who shares novel experiences and information. Particularly, we show that connectedness makes individuals more active in society, associated with an increase in their social behaviors, religiosity and with egalitarian gender attitudes. Although the effect is positive and robust across different specifications and methodologies, questions about the relevance and the size of this effect still remain: is it a big or a small effect? In this section we produce some simulations of the effects based on our estimates. We first simulate the effect at the individual level and then we simulate the global effect.

At the individual level we consider, as a benchmark, the predicted culture of the average unconnected individual by the coefficients estimated in Table 3. Using the same estimates, we predict the average culture of connected individuals, disregarding the connection's location, and also accounting for the interaction effect. Lastly, for each cultural trait we compute the relative distance (in percentage) using unconnected individuals as benchmark. Figure A-VII in the Online Appendix shows the simulated individual relative cultural distance due to connectedness on social behavior, religiosity and gender-egalitarian views. These simulations display two main results. First, average connected individuals have a distinctive set of cultural traits compared to unconnected individuals. The size of the relative distance varies significantly across cultural traits: social behaviors almost triple for connected individuals compared to unconnected ones, while it increases around 37% for gender-egalitarian attitudes and around 10% for the probability of being religious. Second, the inclusion in the predictions of the effect driven by the interaction with the average culture of the connection's country of residence has only a marginal additional effect.

After simulating the effect between unconnected and connected individuals, we produce some simulations at the global level. As a benchmark for each cultural trait, we consider the world level of culture if each country of the world were composed only of unconnected individuals. We compute the benchmark as a weighted average of the culture of unconnected people in each country, using countries' population as weight. We define this benchmark as follows:

$$\overline{Cult}_0^W = \frac{1}{Pop^W} \sum_{o \in W} \overline{Cult}_{NC}^o * Pop^o \tag{8}$$

where $\overline{Cult}^o_{NC}$ and Pop^o are the average culture of unconnected people and the population in 2010 in country o, respectively. Then we compute the world cultural effect of connectedness by firstly defining, for each country, the share of connected people as γ^o. Assuming that connectedness is the only determinant of the cultural difference between connected and unconnected individuals, and defining $\hat{\beta}_C$ as the estimated coefficient of the effect of connectedness on culture, we predict the global effect of connectedness as follow:

$$\overline{Cult}^W_1 = \frac{1}{Pop^W} \sum_{o \in W} \left(\overline{Cult}^o_{NC} + \gamma^o \hat{\beta}_C \right) * Pop^o. \tag{9}$$

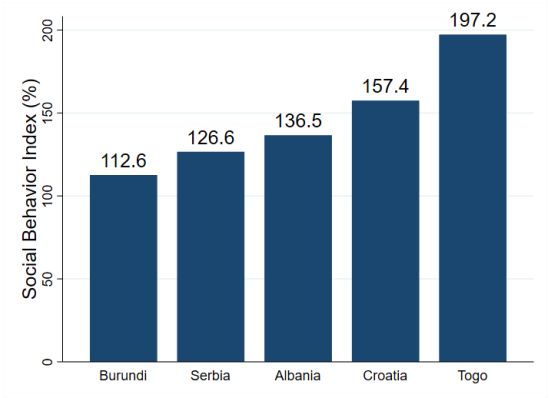
We also predict the level of culture after including the interaction effect with the culture of the connection's country of residence. We compute, for each country o the average culture of the connections' country of residence (defined as $\overline{Cult}^o_d$). Defining $\hat{\beta}^{Int}_C$ as the estimated coefficient associated with the interaction term in equation (2), we predict the cultural effect of connectedness, including the effect driven by the connection's country of residence, as follows:

$$\overline{Cult}^W_2 = \frac{1}{Pop^W} \sum_{o \in W} \left[\overline{Cult}^o_{NC} + \gamma^o (\hat{\beta}_C + \hat{\beta}^{Int}_C * \overline{Cult}^o_d) \right] * Pop^o. \tag{10}$$

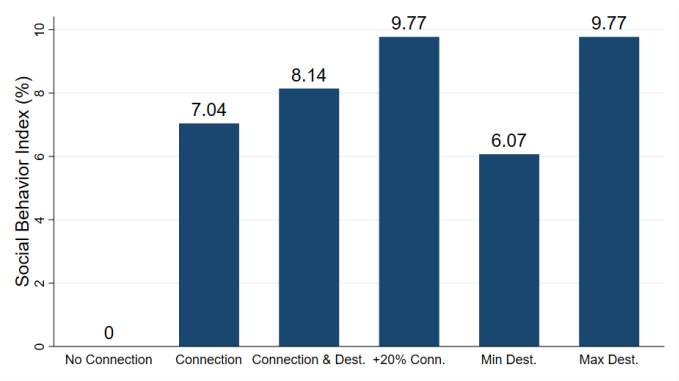
Figures 7(Ib), 7(IIb) and 7(IIIb) show the predicted global changes of each cultural trait, by computing the relative deviation between the benchmark (i.e. a world without connected people) and the predicted values computed in equations (9) and (10). Moreover, they also display the world cultural change due to connectedness under three hypothetical scenarios: increasing the share of connected people by 20% within each country and replacing the average culture of connections' country of residence (namely $\overline{Cult}^o_d$) with the minimum or maximum computed level across all countries of the world.

Figure 7(Ib) shows the simulation on the social behavior index. The predicted global effect of connectedness on social behavior generates an increase of 7.04/8.14% from the benchmark scenario. Among the hypothetical scenarios, increasing the country share of connected individuals or associating to all the countries the highest value of social behavior of the connections' country of residence give similar results, generating an increase in the global level of social behavior of 9.77% compare to the benchmark scenario. However, it is important to recall that there is extensive cross-country heterogeneity, as is reported in Table A-XXIV in the Online Appendix. Figure 7(Ia) shows the top

Figure 7: Relative deviation from the No-connection Scenario - Country Level

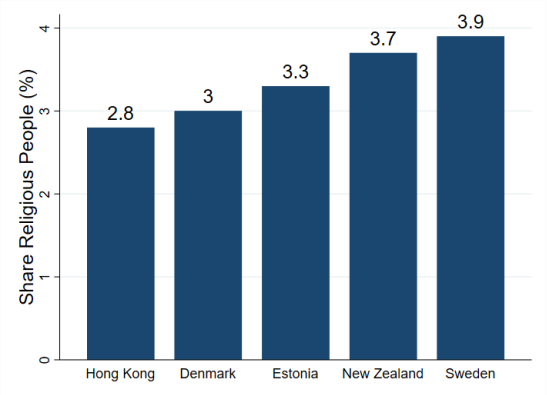


(a) Top-5 Countries

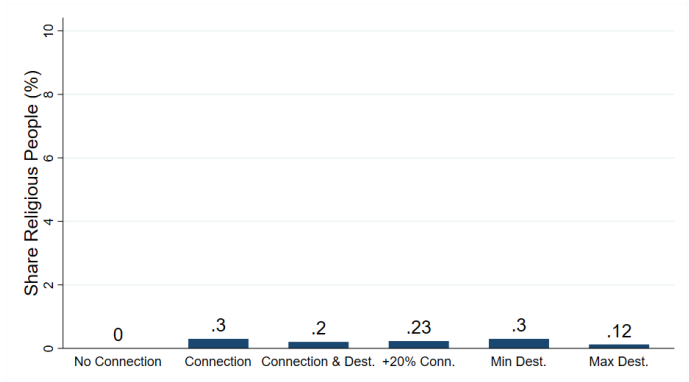


(b) World

(I) Social Behavior

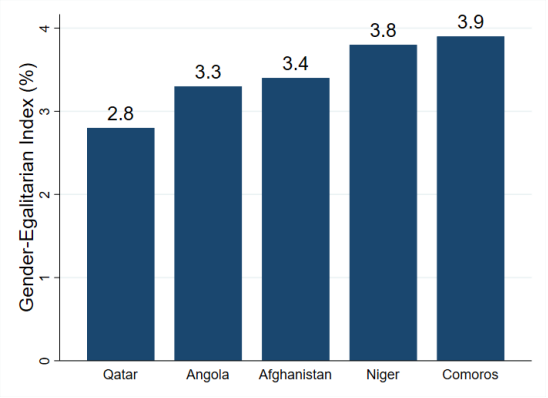


(a) Top-5 Countries

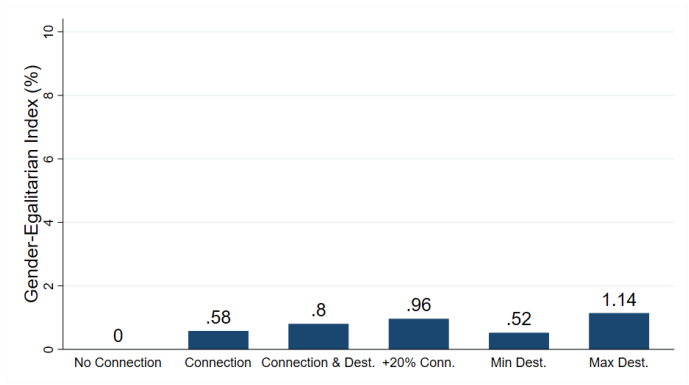


(b) World

(II) Religiosity



(a) Top-5 Countries



(b) World

(III) Gender-egalitarian views

Note: authors' calculations on Gallup World Poll Data. The Figure plots the simulated cultural effect of connectedness on each cultural trait. Figures (Ia), (IIa) and (IIIa) shows the top five countries that perform the highest relative distance compared to the no-connection scenario. Figures (Ib), (IIb) and (IIIb) show the simulated cultural effect of connectedness at the world level using the estimates presented in Table 3. Moreover it shows the simulated effects if the size of connected population increases by 20% in each country, and if all the connections reside in the country with the lowest and highest level of cultural trait.

five countries in terms of relative deviation from the benchmark scenario (i.e. a country without connected individuals): for those countries, the distance is sizeable, ranging from 110% (Burundi) to 197% (Togo). These sizeable effects are explained by both a low initial value of social behavior and an high share of connected individuals.

Concerning religiosity, the predicted global effect of connectedness is smaller. Figure 7(IIb) shows that it accounts for an increase in the share of religious people of 0.3% compared to the benchmark scenario, and it reaches its maximum level for few countries like Sweden and New Zealand, around 3.5/3.9% (see 7(IIa)). Increasing the size of the connected population or the average culture of the connections' country of residence does not significantly influence the predictions, which remain small at the global level.

Figure 7(IIIb) displays the predicted global effect on gender-egalitarian attitudes. Gender-egalitarian attitudes' relative distance from the benchmark scenario is around 0.58/0.8%. This predicted effect is smaller than the predicted effect on social behavior. Among the hypothetical scenarios, those associated with the extreme culture of the connections' country of residence plays a significant role. Replacing $\overline{Cult}_d^o$ with the minimum and the maximum values in the sample, displayed by Tajikistan(-0.103) and Algeria(0.941), the predicted global increase in gender-egalitarian attitudes varies between 0.52% and 1.14%. In line with the simulations at the individual level, the effect of having a connection abroad on pro-gender-egalitarian attitudes is significantly influenced by the culture of the connection's country of residence. Among the countries most influenced by connectedness, Figure 7(IIIa) shows that Comoros and Niger are the countries which will benefit the most from their connections abroad.

Nevertheless, the results presented in Figure 7 should be interpreted cautiously and with a few caveats in mind. These results implicitly assume that all other individuals and regional factors do not change or otherwise influence the average culture of countries. In particular, if the increase of the share of connected individuals is due to emigration flows from countries of origin, then the average culture of the population can change if emigrants are culturally selected.[56] However, as Figure A-VIII in the Online Appendix shows, such a specific issue should not be overemphasized: the average culture of people in the origin countries and their diaspora abroad is similar across cultural traits.

[56]For instance, Anelli and Peri (2017) shows that Italian municipalities characterized by large outflows of young individuals experiences a deterioration of both turnout and vote for anti-establishment parties, due to a deterioration of political values hold by young cohorts.

7 Conclusions

In this paper we investigate the effect of having a reliable connection abroad on relevant individual cultural traits. Using an unique database on connectedness and individual beliefs, we test whether having a connection with individuals living abroad makes individuals culturally different than their peers living in the same region. We first estimate the aggregate effect across regions at the individual level; then we analyze heterogeneous effects, potential cultural convergences and divergences across and within regions, and potential mechanisms and factors allowing for this cultural effect. To mitigate the endogeneity issue related to selection, we provide estimates after controlling for broader measures of connectedness, matching methods and testing for the potential threat of unobserved variables.

We address these questions using a large global sample of individuals from 148 countries, measuring both their connectedness and some relevant cultural traits: social behavior, religiosity and gender-egalitarian views. Those traits are strongly related with individuals behaviors and economic preferences and countries development. We investigate the cultural effect of connectedness by comparing natives within the same intra-country region, and we run fixed-effects regressions for each distinctive cultural trait accounting for the culture of connection's country of residence. We strongly mitigate potential endogeneity threats due to selection into connectedness driven by observable characteristics by controlling for a broad measure of connectedness and by implementing matching techniques. We also test the relevance of the threat driven by selection into unobservable characteristics. We test whether the effects vary across regions, bringing cultural convergence or divergence across and within regions. Moreover, we investigate potential mechanisms driven by the regional diffusion of connectedness, individual characteristics, economic channels and differential effects driven by the connection's location.

We find a robust and positive effect of having a connection abroad on natives' social behavior, religiosity and gender-egalitarian attitudes. However, the size of the effect is different and trait-specific. These results are robust to the inclusion of broad measures of connectedness, matching techniques and selection on unobserved factors. The effect of connectedness is stronger in regions characterized by low levels of religiosity and gender-egalitarian views, suggesting a converging catch-up effect across regions, meanwhile, it increases cultural heterogeneity within regions. Concerning its

mechanisms, the positive effect of connectedness is precisely estimated among less educated natives, which is consistent with the intuited belief that connections abroad are sources of new information and experiences, which are more incisive for individuals who know less. Connectedness positively influences individuals' economic conditions through remittances, which can also convey novel cultural norms. Moreover, the location of the connection produces differential cultural effects on connected individuals, suggesting a transmission of destination-specific norms and traits.

Finally, we present some simulations to evaluate the magnitude of the cultural effect at both the individual and global level. At the individual level, connected individuals are significantly different from unconnected ones. At the global level, the sizeable cultural effect of connectedness is perceivable on social behavior, while a minor, albeit not negligible, effect is predicted on gender-egalitarian and religiosity. Compared to a benchmark scenario where people have no connection abroad, the predicted cultural effect due to connectedness accounts, at the global level, for the following relative distances from the benchmark: 8.1% for social behavior, 0.8% for gender-egalitarian views and only 0.2% for religiosity.

This article demonstrates that having reliable connection abroad makes individuals more active in society, religious and open-minded towards the role of women. However, further data on the experience and beliefs of the connection abroad are needed to improve the understanding of the cultural effect of connectedness. We hope this study will stimulate further research on the determinants of individual culture and individuals' interactions with their networks abroad.

References

Aakvik, A. (2001). Bounding a matching estimator: the case of a Norwegian training program. *Oxford Bulletin of Economics and Statistics* 63(1): 115-143.

Ager, P., & Ciccone, A. (2017). Agricultural risk and the spread of religious communities. *Journal of the European Economic Association* 16(4): 1021-1068.

Alesina, A., Harnoss, J., & Rapoport, H. (2016). Birthplace diversity and economic prosperity. *Journal of Economic Growth* 21(2): 101-138.

Alesina, A., & Giuliano, P. (2015). Culture and institutions. *Journal of Economic Literature* 53(4): 898-944.

Altonji, J. G., Elder, T. E., & Taber, C. R. (2005). Selection on observed and unobserved variables: Assessing the effectiveness of Catholic schools. *Journal of Political Economy* 113(1): 151-184.

Altonji, J. G., Conley, T., Elder, T. E., & Taber, C. R. (2010). Methods for using selection on observed variables to address selection on unobserved variables. Mimeo, Yale University.

Anelli, M., & Peri, G. (2017). Does emigration delay political change? Evidence from Italy during the Great Recession. *Economic Policy* 32(91): 551-596.

Angrist, J., and Pischke, J. S. (2009). Mostly harmless econometrics: an empiricists guide. Princeton University Press (392 p.).

Angrist, J. D., & Pischke, J. S. (2010). The credibility revolution in empirical economics: How better research design is taking the con out of econometrics. *Journal of Economic Perspectives* 24(2): 3-30.

Atkin, D. (2016). The caloric costs of culture: Evidence from Indian migrants. *American Economic Review* 106(4): 1144-81.

Atkin, D., Colson-Sihra, E., & Shayo, M. (2019). How Do We Choose Our Identity? A Revealed Preference Approach Using Food Consumption. *NBER Working Paper* No. 25693.

Bailey, M., Cao, R., Kuchler, T., Stroebel, J., & Wong, A. (2018). Social connectedness: measurement, determinants, and effects. *Journal of Economic Perspectives* 32(3): 259-80.

Bargain, O., & Kwenda, P. (2014). The informal sector wage gap: New evidence using quantile estimations on panel data. *Economic Development and Cultural Change* 63(1): 117-153.

Barsbai, T., Rapoport, H., Steinmayr, A., & Trebesch, C. (2017). The effect of labor migration on the diffusion of democracy: evidence from a former Soviet Republic. *American Economic Journal: Applied Economics* 9(3), 36-69.

Batista, C., & Vicente, P. C. (2011). Do migrants improve governance at home? Evidence from a voting experiment. *The World Bank Economic Review* 25(1), 77-104.

Batista, C., Seither, J., & Vicente, P. C. (2019). Do migrant social networks shape political attitudes and behavior at home? *World Development* 117: 328-343.

Baudin, T. (2010). A role for cultural transmission in fertility transitions. *Macroeconomic Dynamics* 14(4): 454-481.

Baxter, J., & Kane, E. W. (1995). Dependence and independence: A cross-national analysis of gender inequality and gender attitudes. *Gender & Society* 9(2): 193-215.

Beine, M., Docquier, F., & Schiff, M. (2013). International migration, transfer of norms and home country fertility. *Canadian Journal of Economics/Revue canadienne d'économique* 46(4): 1406-1430.

Becker, S. O., & Caliendo, M. (2007). Sensitivity analysis for average treatment effects. *The Stata Journal* 7(1): 71-83.

Bénabou, R., Ticchi, D., & Vindigni, A. (2015). Religion and innovation. *American Economic Review* 105(5): 346-51.

Berlinschi, R., & Harutyunyan, A. (2018). Do migrants think differently? Evidence from Eastern European and post-Soviet states. *International Migration Review* forthcoming.

Bertoli, S., & Marchetta, F. (2015). Bringing it all back home–return migration and fertility choices. *World Development* 65, 27-40.

Bertoli, S., & Ruyssen, I. (2018). Networks and migrants' intended destination. *Journal of Economic Geography* 18(4): 705-728.

Bertoli, S., Docquier, F., Rapoport, H., & Ruyssen, I. (2019). Weather shocks and migration intentions in Western Africa: Insights from a multilevel analysis. Mimeo

Bisin, A., & Verdier, T. (2000). "Beyond the melting pot": cultural transmission, marriage, and the evolution of ethnic and religious traits. *The Quarterly Journal of Economics* 115(3): 955-988.

Bouoiyour, J., & Miftah, A. (2017). Do Migrants Transfer Political and Cultural Norms to Their Origin Country? Some Evidence From Some Arab Countries. ERF Working Papers No. 1098.

Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of economic surveys* 22(1): 31-72.

Campante, F., & Yanagizawa-Drott, D. (2015). Does religion affect economic growth and happiness? Evidence from Ramadan. *The Quarterly Journal of Economics* 130(2): 615-65.

Chabé-Ferret, B. (2019). Adherence to cultural norms and economic incentives: evidence from fertility timing decisions. *Journal of Economic Behavior & Organization* 162: 24-48.

Chase, G. (2014). Religiosity, corruption and economic growth. *Quarterly Review of Business Disciplines* 1(3): 263-272.

Chauvet, L., & Mercier, M. (2014). Do return migrants transfer political norms to their origin country? Evidence from Mali. *Journal of Comparative Economics* 42(3): 630-651.

Coleman, J. S. (1990). Foundations of social theory. Harvard university press.

Constantin, A., & Voicu, M. (2015). Attitudes towards gender roles in cross-cultural surveys: Content validity and cross-cultural measurement invariance. *Social Indicators Research* 123(3): 733-751.

Dehejia, R. H., & Wahba, S. (2002). Propensity score-matching methods for nonexperimental causal studies. *Review of Economics and Statistics* 84(1): 151-161.

Dao, T.H., F. Docquier, C. Parsons & G. Peri (2016). Migration and Development: Dissecting the Anatomy of the Mobility Transition. *Journal of Development Economics* 132: 88-101

Della Vigna, S. & M. Gentzkow (2010). Persuasion: Empirical Evidence. *Annu. Rev. Econ.*, 2(1): 643-669.

Desmet, K., Ortuño-Ortín, I., & Wacziarg, R. (2017). Culture, ethnicity, and diversity. *American Economic Review* 107(9): 2479-2513.

Desmet, K., & Wacziarg, R. (2018). The cultural divide. *NBER Working Paper* No. 24630.

DiPrete, T. A., & Gangl, M. (2004). Assessing Bias in the Estimation of Causal Effects: Rosenbaum Bounds on Matching Estimators and Instrumental Variables Estimation with Imperfect Instruments. *Sociological Methodology* 34(1): 271-310.

Diwan, I., Tuccio, M., & J. Wahba (2017). Diaspora Networks as a bridge between civilizations. *World Scientific Encyclopaedia of Global Migration* forthcoming.

Docquier, F., G. Peri, I. Ruyssen (2014). The Cross-country Determinants of Potential and Actual Migration. *International Migration Review* 48: S37–S99.

Docquier, F., J. Machado, K. Sekkat (2015). Efficiency Gains from Liberalizing Labor Mobility. *Scandinavian Journal of Economics* 117(2): 303–346.

Docquier, F., Lodigiani, E., Rapoport, H., & Schiff, M. (2016). Emigration and Democracy. *Journal of Development Economics* 120: 209-223.

Docquier, F., Turati, R., Valette, J., & Vasilakis, C. (2019b). Birthplace Diversity and Economic Growth: Evidence from the US States in the Post-World War II Period. *Journal of Economic Geography* forthcoming.

Docquier, F., Tansel, A., & Turati, R. (2019). Do Emigrants Self-Select Along Cultural Traits? Evidence from the MENA Countries. *International Migration Review* forthcoming.

Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature* 50(4): 1051-79.

Dustmann, C. & A. Okatenko (2014). Out-migration, wealth constraints, and the quality of local amenities. *Journal of Development Economics* 110: 52-63.

Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global evidence on economic preferences. *The Quarterly Journal of Economics* 133(4): 1645-1692.

Flanagan, C., & Levine, P. (2010). Civic engagement and the transition to adulthood. *The future of children* 159-179.

Fukuyama, F. (2001). Social capital, civil society and development. *Third World Quarterly* 22(1): 7-20.

Galor, O., & Savitskiy, V. (2018). Climatic roots of loss aversion. *NBER Working Paper* No. 25273.

Giavazzi, F., Petkov, I., & Schiantarelli, F. (2019). Culture: Persistence and evolution. *Journal of Economic Growth* 24(2): 117-154.

Giuliano, P., & Nunn, N. (2019). Understanding Cultural Persistence and Change. *NBER Working Paper* No. 23617.

Granovetter, M. (2005). The impact of social structure on economic outcomes. *Journal of Economic Perspectives* 19(1): 33-50.

Greif, A., & Tabellini, G. (2010). Cultural and institutional bifurcation: China and Europe compared. *American Economic Review* 100(2): 135-40.

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes? *Journal of Economic Perspectives* 20(2): 23-48.

Guiso, L., Sapienza, P., & Zingales, L. (2009). Cultural biases in economic exchange? *The Quarterly Journal of Economics* 124(3): 1095-1131.

Heckman, J. , Ichimura, H., & Todd, P. (1997). Matching as an econometric evaluation estimator: Evidence from evaluating a job training programme. *The Review of Economic Studies* 64(4): 605-654.

Heckman, J., Ichimura, H., Smith, J., & Todd, P. (1998). Characterizing Selection Bias Using Experimental Data. *Econometrica* 66(5): 1017-1098.

Hellevik, O. (2009). Linear versus logistic regression when the dependent variable is a dichotomy. *Quality & Quantity* 43(1): 59-74.

Ichino, A., Mealli, F., & Nannicini, T. (2008). From temporary help jobs to permanent employment: what can we learn from matching estimators and their sensitivity? *Journal of Applied Econometrics* 23(3): 305-327.

Imbens, G. & D. Rubin (2012). Casual Inference for Statistic, Social and Biomedical Sciences. Cambridge University Press

Inglehart, R., & Baker, W. E. (2000). Modernization, cultural change, and the persistence of traditional values. *American Sociological Review* 65: 19-51.

Inglehart, R. F., Ponarin, E., & Inglehart, R. C. (2017). Cultural change, slow and fast: The distinctive trajectory of norms governing gender equality and sexual orientation. *Social Forces* 95(4): 1313-1340.

Inglehart, R. (2018). Cultural evolution: people's motivations are changing, and reshaping the world. Cambridge University Press.

Jackson, M. O. (2014). Networks in the understanding of economic behaviors. *Journal of Economic Perspectives* 28(4): 3-22.

Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics* 112(4): 1251-1288.

Levitt, P. (1998). Social remittances: Migration driven local-level forms of cultural diffusion. *International Migration Review* 32(4): 926-948.

Lodigiani, E., & Salomone, S. (2015). Migration-induced transfers of norms. The case of female political empowerment. University Ca'Foscari of Venice, Dept. of Economics Research Paper Series No, 19. ISSN 1827-3580.

Lugo, L., & Cooperman, A. (2011). The future of the global Muslim population. Pew Research Center, USA.

Mantel, N., & Haenszel, W. (1959). Statistical aspects of the analysis of data from retrospective studies of disease. *Journal of the national cancer institute* 22(4): 719-748.

McHugh, M. C., & Frieze, I. H. (1997). The Measurement of Gender-Role Attitudes. A Review and Commentary. *Psychology of women quarterly* 21(1): 1-16.

Moriconi, S., G. Peri & R. Turati (2018). Skill of the Immigrants and Vote of the Natives: Immigration and Nationalism in European Elections 2007-2016. *NBER Working Paper* No. 25077.

Murtin, F., & Wacziarg, R. (2014). The democratic transition. *Journal of Economic Growth* 19(2): 141-181.

Nikolova, M., Roman, M., & Zimmermann, K. F. (2017). Left behind but doing good? Civic engagement in two post-socialist countries. *Journal of Comparative Economics* 45(3): 658-684.

Oster, E. (2019). Unobservable selection and coefficient stability: Theory and evidence. *Journal of Business & Economic Statistics* 37(2): 187-204.

Putnam, R. D. (2000). Bowling alone: America's declining social capital. New York: Simon & Schuster.

Rapoport, H., Sardoschau, S., & Silve, A. (2018). International Migration and Cultural Convergence. Mimeo. Paris: Paris School of Economics.

Rosenbaum, P. R., & Rubin, D. B. (1985). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *The American Statistician* 39(1): 33-38.

Rosenbaum, P. R. (2002). Overt bias in observational studies. In Observational studies (pp. 71-104). Springer, New York, NY.

Ruyssen, I. & S. Salomone (2018). Female Migration: a Way out of Discrimination? *Journal of Development Economics* 130: 224-41.

Shenkar, O. (2012). Cultural distance revisited: Towards a more rigorous conceptualization and measurement of cultural differences. *Journal of International Business Studies* 43(1): 1-11.

Sianesi, B. (2004). An evaluation of the Swedish system of active labor market programs in the 1990s. *Review of Economics and Statistics* 86(1): 133-155.

Sinding Bentzen, J. (2019). Acts of God? Religiosity and natural disasters across subnational world districts. *The Economic Journal* 129(622): 2295-2321.

Spilimbergo, A. (2009). Democracy and foreign education. *American Economic Review* 99(1), 528-43.

Spolaore, E., & Wacziarg, R. (2011). Long-term barriers to the international diffusion of innovations. *NBER Working Paper* No. 17271.

Spolaore, E., & Wacziarg, R. (2016). Ancestry, language and culture. In The Palgrave handbook of economics and language (pp. 174-211). Palgrave Macmillan, London.

Tabellini, G. (2010). Culture and institutions: economic development in the regions of Europe. *Journal of the European Economic association* 8(4): 677-716.

Tuccio, M., & Wahba, J. (2015). Can I have permission to leave the house? Return migration and the transfer of gender norms. *IZA Discussion Paper* No.9216

Tuccio, M., Wahba, J., & Hamdouch, B. (2019). International migration as a driver of political and social change: evidence from Morocco. *Journal of Population Economics* 32(4): 1171–1203.

Valette, J. (2018). Do migrants transfer productive knowledge back to their origin countries? *The Journal of Development Studies* 54(9): 1637-1656.

United Nations, Department of Economic and Social Affairs (2017). Trends in International Migrant Stock: Migrants by Destination and Origin. Data available online.

Wasserstein, R. L., Schirm, A. L., & Lazar, N. A. (2019). Moving to a world beyond "p$<$ 0.05". *The American Statistician* 73: 1-19.

Weber, M. (1946). The Social Psychology of World Religions. In : H.H. Gerth and C. Wright Mills (eds) pp. 267-301, in From Max to Weber, 267-301. New York: Oxford University Press.

World Bank, 2020. World Development Indicators. The World Bank Group, access 24-03-20

Wuthnow, R. (1998). After heaven: Spirituality in America since the 1950s. University of California Press.

Zhao, Z. (2004). Using matching to estimate treatment effects: Data requirements, matching metrics, and Monte Carlo evidence. *Review of Economics and Statistics* 86(1): 91-107.

Appendix A Matching Additional Material

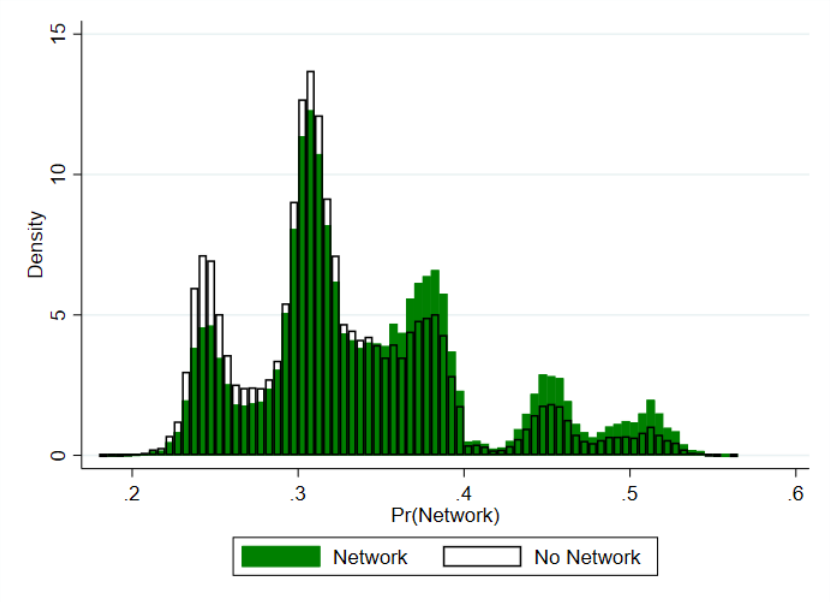
Appendix A-1 Matching: Tables and Figures

Table A-1: Propensity Score Matching Estimation

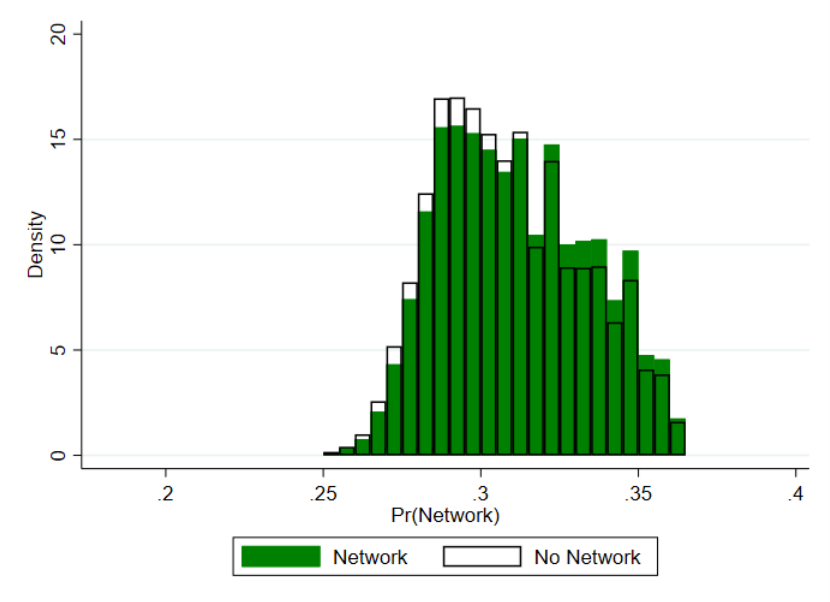
	(1) Probit 2009-2015	(2) Probit 2009-2015 Main	(3) Probit 2009-2015 Short
Education	0.3745***	0.3774***	
	(0.0050)	(0.0050)	
Female	-0.0262***	-0.0264***	-0.0248***
	(0.0034)	(0.0034)	(0.0030)
Married	-0.1249***	-0.1149***	
	(0.0036)	(0.0038)	
Age	-0.0025***	-0.0159***	-0.0144***
	(0.0001)	(0.0018)	(0.0015)
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 A-1: Probability Score Matching Distribution



(a) Main Model



(b) Short Model

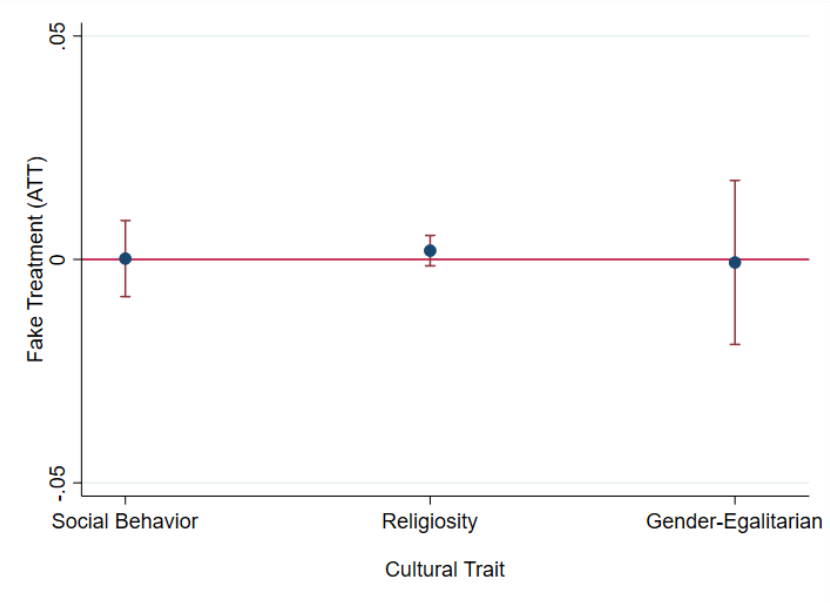
Note: authors' calculations on Gallup World Poll Data. The Figure plots the probability density of having a reliable connection abroad using the main model (figure a) and the short model (figure b) estimated in Table A-1.

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

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All Sample			*Matched Sample (PS-Main)*			*Matched Sample (PS-Short)*			*Matched Sample (Mahala)*		
	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

Note: authors' calculations on Gallup World poll data. * p<0.1, ** p<0.05, *** p<0.01. Columns (3), (6), (9) and (12) reproduce the standardized bias suggested by Rosenbaum and Rubin (1985). The standardized bias is computed as follow before and after the matching procedure: $SB_{Bef}(X) = 100 * \frac{\overline{X_1} - \overline{X_0}}{\sqrt{[V_1(X)+V_0(X)]0.5}}$ and $SB_{Aft}(X) = 100 * \frac{\overline{X_{1M}} - \overline{X_{0M}}}{\sqrt{[V_1(X)+V_0(X)]0.5}}$

Figure A-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.

Appendix A-2 Matching: Sensitivity Analysis

Following the sensitivity analysis proposed by Rosenbaum (2002), we test the robustness of our estimated cultural effects 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 4.2.2 shows that selection on unobservables is a minor concern, we decide to follow the matching literature (Aakvik, 2001 and DiPrete and Gangl, 2004) and compute the Rosenbaum bounds of our estimates.[57] Assumed a certain level of hidden bias (presented with the variable γ), such approach allows us to compute the bounds of average cultural effect of connectedness, once we assume that hidden bias is causing an over-estimation of the effect (MH^+) and under-estimation of the effect (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), we use Mantel and Haenszel (1959) test statistic to compute the Rosenbaum bounds after PSM. Table A-3 presents the results of our sensitivity analysis on social behavior (panel A), religiosity (panel B) and gender-egalitarian views (panel C). Column (1) reports the level of hidden bias (γ). Since the cultural effect of connectedness is always positive, then our concern is related mainly to an over-estimation of the effect due to hidden bias. For this reason we 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 our estimated positive cultural effect 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 our results in the *worst-case scenario*. For instance, concerning the effect on religiosity, the cultural effect of connectedness would include zero if unobserved variables influence the odds ratio of having a connection abroad between connected and unconnected people

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

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 cultural effect of connectedness is less robust on religiosity, compared to gender-egalitarian views and social behavior.

Table A-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.

Network-based Connectedness and the Diffusion of Cultural Traits - Online Appendix

Riccardo Turati

IRES/LIDAM, UCLouvain

March 2020 - Latest version here

Contents

Appendix A Descriptive Statistics

Table A-I: List of origin countries (157)

Afghanistan, Albania, Algeria, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Comoros, Costa Rica, Croatia, Cyprus, Czech Republic, Côte d'Ivoire, Democratic Republic of the Congo, Denmark, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Finland, France, Gabon, Georgia, Germany, Ghana, Greece, Guatemala, Guinea, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kosovo, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Northern Cyprus, Norway, Oman, Pakistan, Palestina, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Congo, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Serbia, Sierra Leone, Singapore, Slovakia, Slovenia, Somalia, South Africa, South Korea, Spain, Sri Lanka, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe

Table A-II: Descriptive Statistics

Variable	(1) Obs	(2) Mean	(3) Std.Dev.	(4) Min	(5) Max
Network	573,425	0.314	0.464	0	1
Education	703,827	0.154	0.360	0	1
Female	712,722	0.535	0.499	0	1
Married	708,664	0.547	0.498	0	1
Child	701,653	0.537	0.499	0	1
Age	709,064	40.580	17.289	15	90
Urban	683,310	0.741	0.4378	0	1
Family size	698,058	3.217	1.880	0	78
Unempl.	657,520	0.060	0.238	0	1
Income	689,822	0.017	6.068	0	5014.626
Family Net.	435,037	0.033	0.178	0	1
Migration Int.	640,004	0.198	0.399	0	1
Migration Plan.	640,004	0.017	0.131	0	1
Migrant	712,724	0.053	0.223	0	1
Internet	692,959	0.369	0.482	0	1
Landline Phone	673,762	0.478	0.499	0	1
Social Behavior	626,329	0	1	-1.105	2.622
Religiosity	597,269	0.731	0.443	0	1
Gender-Egalitarian	141,077	0	1	-3.025	0.816

Note: authors' calculations on Gallup World Polls.

Table A-III: Pearson's Correlation across cultural questions

Variable	(1) *Social Behavior*	(2) *Religiosity*	(3) *Gender-Egalitarian*
Social Behavior (ind.)	1.0000		
Religiosity (RE_1)	0.0420***	1.0000	
Gender-egalitarian (ind.)	-0.0046*	-0.0206***	1.0000
Donate money (SB_1)	0.7087***	-0.0045***	-0.0169***
Volunteer (SB_2)	0.7111***	0.0258***	0.0163***
Helped stranger (SB_3)	0.6781***	0.0685***	-0.0099***
Women same right as men (GE_1)	-0.0045*	-0.0273***	0.7583***
Women right to hold job (GE_2)	0.0052*	0.0043	0.7684***
Women right initiate divorce (GE_3)	-0.0082***	-0.0277***	0.6634***

Note: authors' calculations on Gallup World Polls. The table shows Pearson's correlations across indicators and questions related to culture. * p<0.1, ** p<0.05, *** p<0.01.

Appendix B Active Religious participation and Discrimination

This section investigates even further the implication and potential causes of the cultural effect of having a connection abroad. The results presented in section 4 show that having a connection abroad is associated with higher social behavior, religiosity and gender-egalitarian views. However few questions still remain. The positive effect of connectedness on religiosity requires further explanations, to understand the implications for the society: does the pro-religiosity effect of connectedness impact individual direct implication to religious activities? Does it vary across religious groups? Moreover individuals can react differently to the information given by their connection due to their social context: does perceived discrimination towards social outcasts and women influence the cultural effect of connectedness on social behavior and gender-egalitarian views?

Table A-IV: Religiosity: Practicing and Religious groups

	(1) LPM	(2) LPM	(3) LPM	(4) LPM	(5) LPM	(6) LPM	(7) LPM	(8) LPM
	Practicing		Religiosity & Religious Groups					
	Place of Worship	Trust Rel. Org.	Christians	Muslims	Hinduists	Buddhists	Agnostics	Other Rel
Network	0.012	0.003	0.007**	0.020***	0.019	0.006	0.004	0.021
	(0.007)	(0.003)	(0.003)	(0.003)	(0.016)	(0.008)	(0.006)	(0.023)
Interaction	0.021	0.002	-0.020***	-0.006	-0.040	0.010	0.005	-0.041
	(0.013)	(0.006)	(0.007)	(0.009)	(0.040)	(0.020)	(0.020)	(0.042)
Observations	159756	325925	111046	191946	21387	18061	18556	6138
Regions	1657	1900	816	1625	80	239	816	436
Adj. R-Square	0.25	0.17	0.26	0.29	0.14	0.32	0.21	0.25
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓

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: being to a place of worship dummy (col. (1)), trust religious organizations dummy (col. (2)) and religiosity dummy (col. (3)-(8)). 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 individual is split by religious groups between columns (3) and (8): Christians (col. (3)), Muslims (col. (4)), Hinduists (col. (5)), Buddhists (col. (6)), agnostics (col. (7)) and a residual group of other religions (col. (8)).

We address the issues related to the pro-religiosity effect of connectedness in two ways. First, we exploit two questions available in the GWP concerning active participation to religious life and confidence in religious organizations. The questions are the following: (i) "Have you attended a place of worship or religious service within the past seven days?" and (ii) "In this country, do you have confidence in religious organizations (churches, mosques, temples, etc.)?". They are coded as dummy variables which take value of one if individual answer affirmatively. These item is available only over

2009-2011 period and on a subset of countries. We use them as alternative dependent variable, to investigate the effect of connectedness on actual religious practices. Second, we perform a subsample analysis based on individual religious groups to understand whether the pro-religiosity effect of connectedness is enhancing individuals belonging to some specific religious groups or is affecting all individuals indiscriminately. Table A-IV presents the estimates using the benchmark equation (2) as a model but with different dependent variables and on different subsamples. Columns (1) and (2) show the estimates on active religious participation and confidence towards religious organization, respectively, while columns (3) to (8) shows the cultural effect of connectedness on religiosity across different religious groups. Two main findings emerge from this table. First, the pro-religiosity effect of connectedness is not associated with an active implication with religious organizations: having connection abroad has no statistically significant effect on individual attendance at places of worship and on individual confidence towards religious organizations. These results are in line with the arguments of Wuthnow (1998) and Inglehart *et al.* (2017), which point out that individual allegiance towards religious institutions is declining but not spiritual concerns. Second, the pro-religiosity effect is stronger among Christians and Muslims, and not statistically significant among other religious groups or among agnostic individuals. Such result suggest that the pro-religiosity effect of connectedness is reinforcing religiosity of individuals who already belong to a religious group, rather then affecting individuals who are far from a religious life.

Concerning the positive effect of connectedness on social behavior and gender-egalitarian views, individual's perception of the society may influence the size of the effect. Individuals who perceive an unequal society towards social outcasts and women could have a strong cultural reaction after interacting with the new source of information given by his/her connection abroad. We test whether perceived justice towards people/migrants and discrimination towards women influence the cultural effect of connectedness by performing a subsample analysis at individual level. Using three questions[1] available in GWP, we split the sample of individuals between who is satisfied on how poor people/migrants/women are treated in the country and who, instead, think that they are treated poorly or without respect. Table A-V presents the estimates using social behavior index (col. (1)

[1]The question associated with poor people is: "In this country, are you satisfied or dissatisfied with efforts to deal with the poor?". Concerning immigrants, GWP asks the following question: "Is the city or area where you live a good place or not a good place to live for immigrants from other countries?". Finally, concerning discrimination towards women: "Do you believe that women in this country are treated with respect and dignity, or not?".

Table A-V: Social Behavior and Gender-egalitarian views: perceived discrimination

	(1) OLS 2009-2012	(2) OLS 2009-2012	(3) OLS 2009-2012	(4) OLS 2009-2012	(5) OLS 2009-2011	(6) OLS 2009-2011
Dep. Var.	*Social Behavior*				*Gender-Egalitarian*	
	Poor People		Migrants		Women	
Treated	Not Satisfied	Satisfied	Not Good Place	Good Place	Not Respect	Respect
Network	0.194***	0.214***	0.173***	0.199***	0.047**	0.051***
	(0.008)	(0.012)	(0.009)	(0.008)	(0.021)	(0.014)
Interaction	0.090***	0.082***	0.128***	0.087***	0.080*	0.017
	(0.018)	(0.024)	(0.028)	(0.018)	(0.046)	(0.042)
Observations	158702	92896	127527	207135	22715	59662
Regions	1919	1881	2043	2069	637	659
Adj. R-Square	0.17	0.16	0.17	0.17	0.27	0.22
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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)) 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. Each regression includes regional and country-year fixed effects. The estimates are computed on the subsample of individuals who: is not satisfied/satisfied (col. (1)/(2))) with the effort to deal with the poor in the country, think that the city/area is not a good place/good place (col.(3)/(4)) to live for immigrants from other countries, believe that women are not treated/treated (col. (5)/(6)) with respect and dignity in the country.

to (4)) and gender-egalitarian index (col. (5)-(6)) as dependent variable. Overall, the estimates are positive and significant across all the subsamples, suggesting a stable and robust cultural effect of connectedness. Nevertheless, columns (5) and (6) show that the magnitude of the effect on gender-egalitarian views is influenced by perceived discrimination. Taking the estimates at their face value and using the average gender-egalitarian views in the destination countries (0.587), having a connection abroad increase gender-egalitarian views by 0.108(=0.042+0.113*0.587) standard deviation among individuals who think that women are not treated with respect in the country, while only 0.061(=0.056+0.010*0.587) standard deviation among individuals who do not perceive a discriminatory society towards women. These results suggest that gender-egalitarian norms introduced by the interaction with peers abroad are stronger when discrimination towards women is perceived.

Appendix C Additional Robustness

Table A-VI: Connectedness or Openness - Individual controls

	(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*		
Additional Controls	Migration	Communication	Both	Migration	Communication	Both	Migration	Communication	Both
Network	0.192***	0.179***	0.175***	0.016***	0.017***	0.019***	0.045***	0.037***	0.037***
	(0.006)	(0.006)	(0.006)	(0.002)	(0.002)	(0.002)	(0.012)	(0.012)	(0.012)
Interaction	0.101***	0.089***	0.090***	-0.007	-0.009	-0.009	0.053*	0.054*	0.052*
	(0.013)	(0.013)	(0.013)	(0.006)	(0.006)	(0.006)	(0.030)	(0.031)	(0.031)
Observations	406441	402748	398806	387959	384266	380324	88305	87353	86403
Regions	2079	2083	2073	2055	2059	2049	723	722	717
Adj. R-Square	0.16	0.17	0.17	0.38	0.38	0.38	0.22	0.21	0.21
Migration Controls	✓		✓	✓		✓	✓		✓
Means of Communication		✓	✓		✓	✓		✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓

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. As additional migration controls we include: willingness to migrate permanently abroad and planning to migrate permanently abroad. As additional means of communications controls we include: having internet and having land-line telephone in the house.

Table A-VII: Connectedness or Openness - Country subsamples by development and trade exposure

	(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*	
Median Characteristic	Below	Above	Below	Above	Below	Above
Panel A - GDP per Capita						
Network	0.176***	0.222***	0.013***	0.018***	0.042***	0.061**
	(0.008)	(0.009)	(0.003)	(0.004)	(0.013)	(0.024)
Interaction	0.136***	0.058***	-0.009	-0.007	0.057	0.042
	(0.024)	(0.016)	(0.006)	(0.012)	(0.035)	(0.075)
Observations	225409	176333	212143	172054	69916	16445
Regions	960	1118	936	1110	526	191
Adj. R-Square	0.15	0.17	0.36	0.30	0.21	0.12
Panel B - Import						
Network	0.203***	0.193***	0.007*	0.020***	0.040**	0.054***
	(0.009)	(0.009)	(0.004)	(0.003)	(0.017)	(0.016)
Interaction	0.099***	0.096***	-0.004	-0.013	0.044	0.071
	(0.020)	(0.019)	(0.008)	(0.008)	(0.037)	(0.053)
Observations	209837	191241	203728	180792	51071	35225
Regions	1091	967	1089	939	497	209
Adj. R-Square	0.17	0.15	0.40	0.35	0.19	0.26
Panel C - Export						
Network	0.196***	0.200***	0.009***	0.019***	0.034**	0.065***
	(0.009)	(0.008)	(0.003)	(0.004)	(0.015)	(0.019)
Interaction	0.115***	0.080***	-0.004	-0.014	0.057*	0.058
	(0.020)	(0.019)	(0.007)	(0.010)	(0.034)	(0.068)
Observations	216810	184268	213189	171331	55663	30633
Regions	1105	953	1105	923	504	202
Adj. R-Square	0.17	0.15	0.41	0.33	0.24	0.19
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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. The sample of countries is split by the median level of GDP per capita (Panel A), import (Panel B) and export (Panel C) as share of GDP: below the median (col. (1),(3),(5)) and above the median (col. (2),(4),(6)).

Table A-VIII: Benchmark Estimates - Probit and Ordered Probt Model

	(1) Oprobit 2009-2012	(2) Probit 2009-2012	(3) Oprobit 2009-2011
	Social Behavior	*Religiosity*	*Gender-Egalitarian*
Network	0.234***	0.065***	0.057***
	(0.007)	(0.011)	(0.015)
Interaction	0.094***	-0.027	0.066*
	(0.015)	(0.029)	(0.035)
Observations	411367	385046	90239
Regions	2097	1938	736
Pseudo-R^2	0.05	0.34	0.08
Individual Controls	✓	✓	✓
Region F.E.	✓	✓	✓
Country-year F.E.	✓	✓	✓

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)), religiosity dummy (col. (2)) and gender-egalitarian index (col. (3)). 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. Coefficients are estimated using a Probit model (col. (2)) and Ordered Probit Model (col. (1) and (3)).

Table A-IX: Analysis on Subcomponents of Social Behavior and Gender-Egalitarian attitudes

	(1) LPM 2009-2012 Donate (SB_1)	(2) LPM 2009-2012 Volunteer (SB_2)	(3) LPM 2009-2012 Stranger (SB_3)	(4) LPM 2009-2011 Women as man (GE_1)	(5) LPM 2009-2011 Women Job (GE_2)	(6) LPM 2009-2011 Women Divorce (GE_3)
Network	0.058***	0.041***	0.082***	0.012**	0.014***	0.031***
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.007)
Interaction	0.030***	0.065***	0.020**	-0.006	0.006	-0.005
	(0.008)	(0.013)	(0.009)	(0.014)	(0.010)	(0.016)
Observations	411367	410373	411367	90239	90239	85874
Regions	2097	2095	2097	736	736	712
Adj. R-Square	0.20	0.11	0.10	0.18	0.14	0.19
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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 variables are dummy whether an individual: donated money in the last month (col. 1), volunteered time to an organization (col.2) helped a stranger (col. 3), believe that women and men should have the same rights (col. 4), believe that women should have the right to hold a job (col. 5) and believe that women should have the right to initiate a divorce. 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 A-X: Benchmark Analysis - Countries Land

	(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*		
Land KM^2	>50000	>100000	>200000	>50000	>100000	>200000	>50000	>100000	>200000
Network	0.205***	0.207***	0.216***	0.013***	0.010***	0.007**	0.040***	0.041***	0.040***
	(0.007)	(0.007)	(0.008)	(0.003)	(0.003)	(0.003)	(0.012)	(0.013)	(0.015)
Interaction	0.105***	0.109***	0.103***	0.000	0.001	0.006	0.050	0.067**	0.123***
	(0.016)	(0.018)	(0.021)	(0.006)	(0.007)	(0.008)	(0.033)	(0.034)	(0.034)
Observations	345944	291430	240227	327987	279016	230758	77815	71910	58286
Regions	1787	1555	1340	1755	1530	1315	668	617	545
Adj. R-Square	0.16	0.16	0.17	0.38	0.39	0.42	0.22	0.23	0.25
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓

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 in analysis is based on countries area of land in KM^2: above 50000 KM^2 (col. (1), (4) and (7)), above 100000 KM^2 (col. (2), (5) and (8)) and above 200000 KM^2 (col. (3), (6) and (9)).

Table A-XI: Connectedness and Culture - Multiple Connections

	(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*	
$\sum$ *Network*	0.154***		0.011***		0.028***	
	(0.005)		(0.002)		(0.009)	
$Network_1$		0.178***		0.014***		0.047***
		(0.006)		(0.002)		(0.012)
$Network_2$		0.080***		-0.024**		-0.038
		(0.014)		(0.010)		(0.042)
$Network_3$		0.129***		-0.010		0.013
		(0.022)		(0.014)		(0.061)
$Interaction_1$	0.063***	0.065***	-0.005	-0.007	0.048*	0.049*
	(0.014)	(0.014)	(0.006)	(0.006)	(0.029)	(0.029)
$Interaction_2$	-0.011	0.042*	-0.017**	0.030**	0.031	0.077
	(0.020)	(0.021)	(0.008)	(0.014)	(0.044)	(0.050)
$Interaction_3$	-0.019	0.034	-0.006	0.029	-0.043	-0.010
	(0.031)	(0.033)	(0.011)	(0.019)	(0.058)	(0.070)
Observations	412136	412136	392653	392653	90316	90316
Regions	2097	2097	2065	2065	736	736
Adj. R-Square	0.16	0.16	0.38	0.38	0.22	0.22
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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. The table report the coefficients associated with the total number of connections (max 3), to the first, second and third connection and their interaction term with the average culture of connection's country of residence.

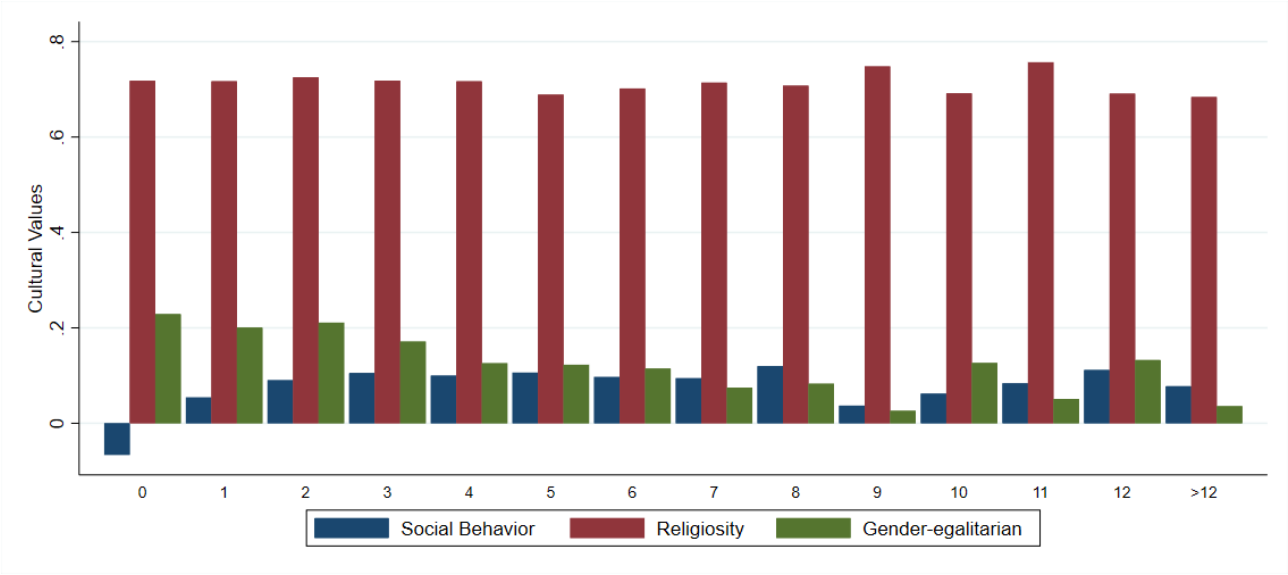
Appendix D Controlling for General Connectedness

Table A-XII: Controlling for General Connectedness - Subsamples

	(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*	
Rel. Connection	No	Yes	No	Yes	No	Yes
Network	0.191***	0.187***	0.012**	0.012***	0.051*	0.028**
	(0.014)	(0.006)	(0.005)	(0.003)	(0.028)	(0.014)
Interaction	0.061	0.104***	0.004	-0.005	0.015	0.074**
	(0.042)	(0.014)	(0.014)	(0.007)	(0.084)	(0.037)
Observations	76353	301754	72430	289569	19498	56275
Regions	1956	2084	1919	2045	653	707
Adj. R-Square	0.17	0.17	0.35	0.38	0.25	0.23
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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. The analysis is performed on subsamples based on whether individuals have a reliable connection in general: individuals without a connection (col. (1), (3) and (5)) and individuals with a connection (col. (2), (4) and (6)).

Figure A-I: Social Activities and Cultural Traits



Note: authors' calculations on Gallup World Poll Data. The Figure plots the average cultural trait associated with groups of individuals who spent from 0 to more than 12 hours in social activities with relatives and friends the day before the survey. Each group of individuals is represented on the x-axis.

Appendix E Selection on Unobservables

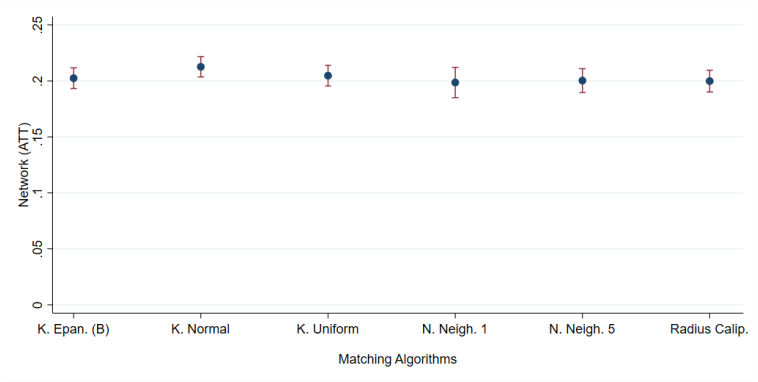
Table A-XIII: Selection on Unobservables - No interaction

	(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)					
Network	0.205***	6.452	[0.185; 0.205]	1.959	[0.122; 0.205]
	(0.006)				
Adj. R-Square ($\tilde{R}$)	0.16				
Panel B - Religiosity (LPM)					
Network	0.012***	-4.372	[0.008; 0.012]	-1.222	[0.002; 0.012]
	(0.002)				
Adj. R-Square ($\tilde{R}$)	0.38				
Panel C - Gender-Egalitarian (OLS)					
Network	0.054***	-4.654	[0.041; 0.054]	-1.265	[0.009; 0.054]
	(0.011)				
Adj. R-Square ($\tilde{R}$)	0.22				

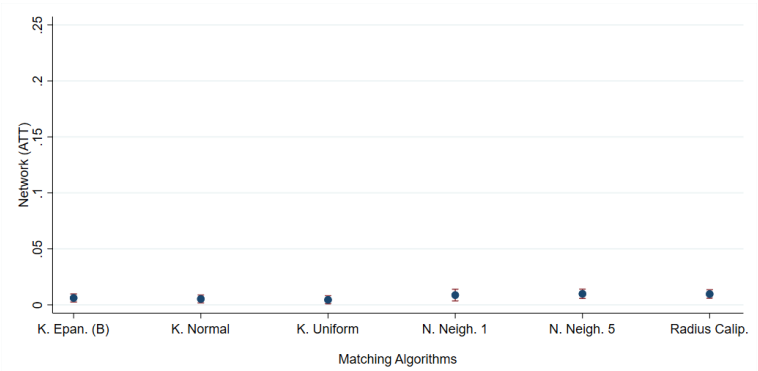
Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level in column (1). * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (Panel A), religiosity dummy (Panel B) and gender-egalitarian index (Panel C). Column (1) show the estimates of the model presented in equation (1). Columns (2) and (4) shows the value of selection on unobservables (δ) which produces $\beta = 0$ given the value of R_{max}. Columns (3) and (5) shows 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).

Appendix F Matching Results

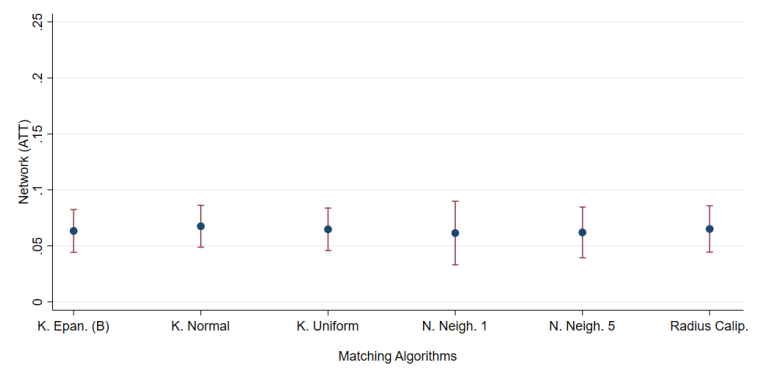
Figure A-II: Average Effect of Connection - Different Matching Algorithms



(a) Social Behavior



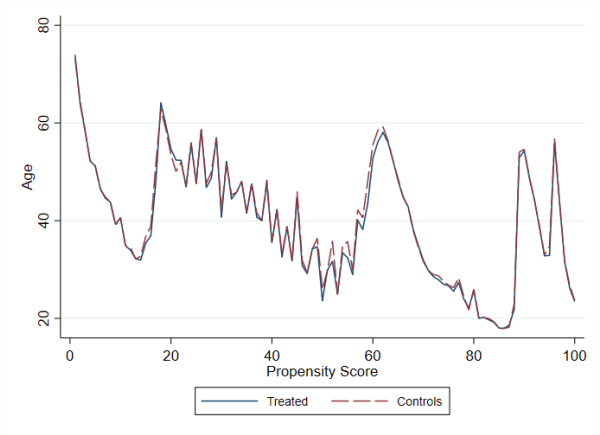
(b) Religiosity



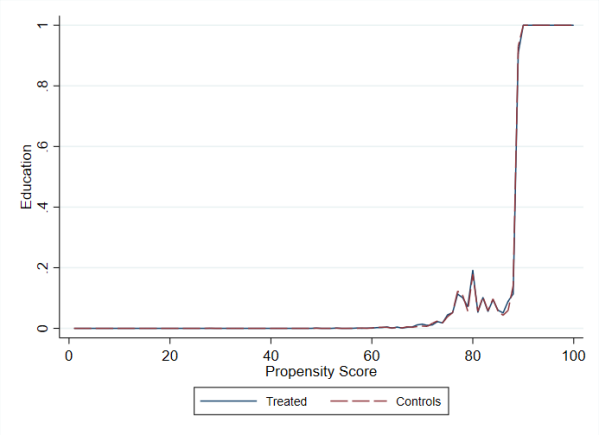
(c) Gender-Egalitarian

Note: authors' calculations on Gallup World Poll Data. The Figure plots the average effect of having a connection abroad after a propensity score matching on three different cultural traits: Social Behavior (Figure a), Religiosity (Figure b) and Gender-Egalitarian (Figure c) and the interval of confidence at 99% level. Each figure shows the results using the propensity score computed in column (2) in Table A-1 and different matching algorithms: Kernel (Epanechnikov, Normal and Uniform) matching, Nearest Neighbour Matching (1 and 5 individuals with replacement) and Radius Matching.

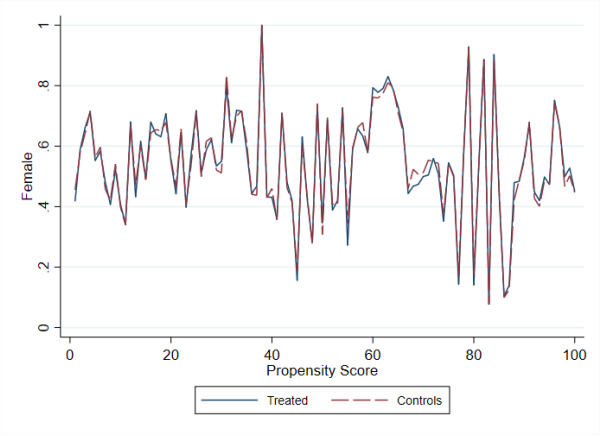
Figure A-III: Distribution Covariates after Matching - Social Behavior



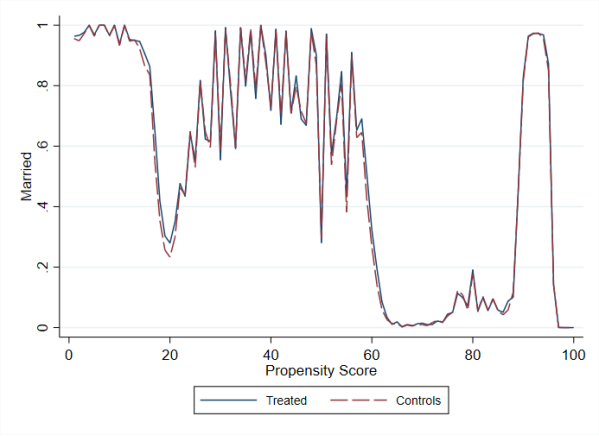
(a) Age



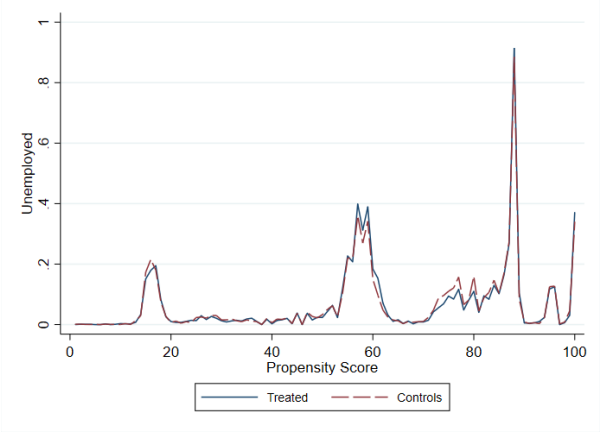
(b) Education



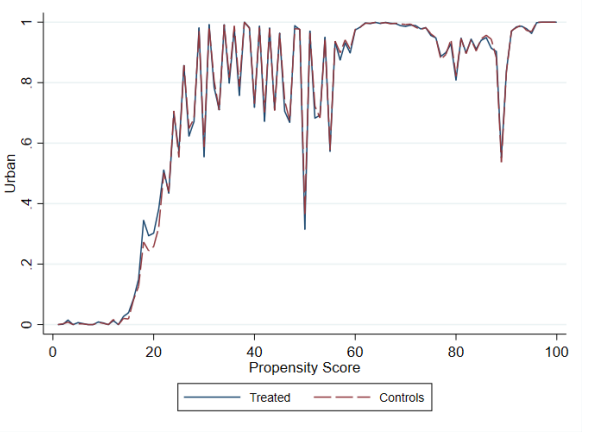
(c) Gender



(d) Marital



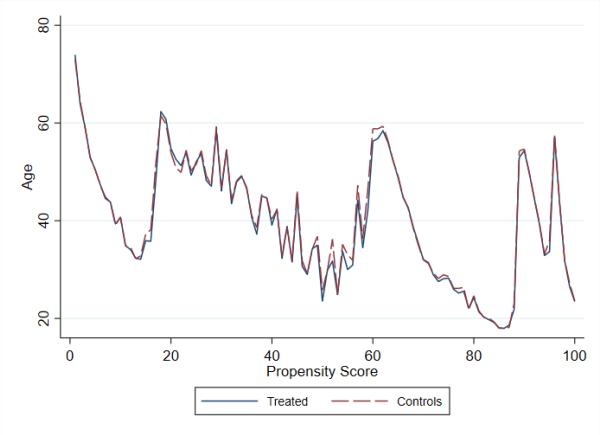
(e) Unemployment



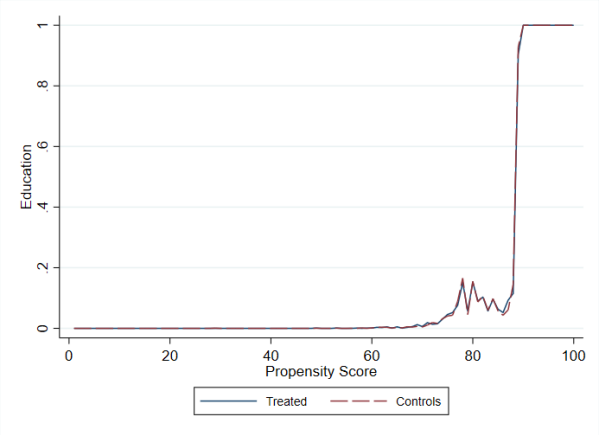
(f) Urban

Note: authors' calculations on Gallup World Poll Data. The Figure plots the distribution of covariates by centiles of propensity score.

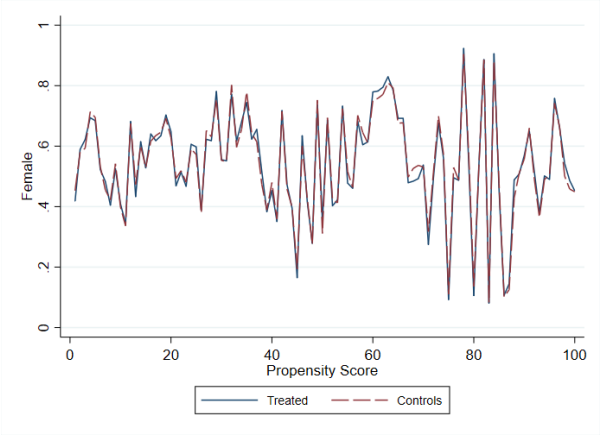
Figure A-IV: Distribution Covariates after Matching - Religiosity



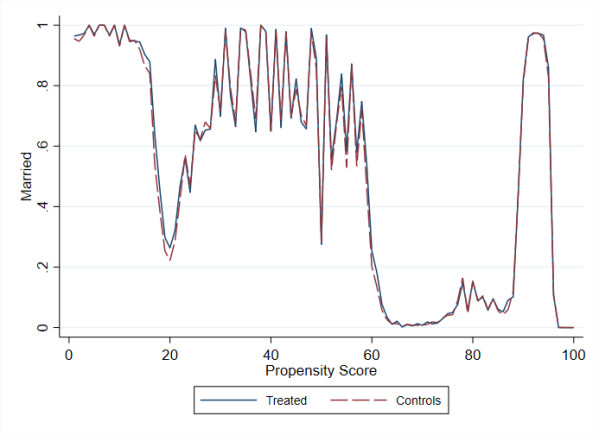
(a) Age



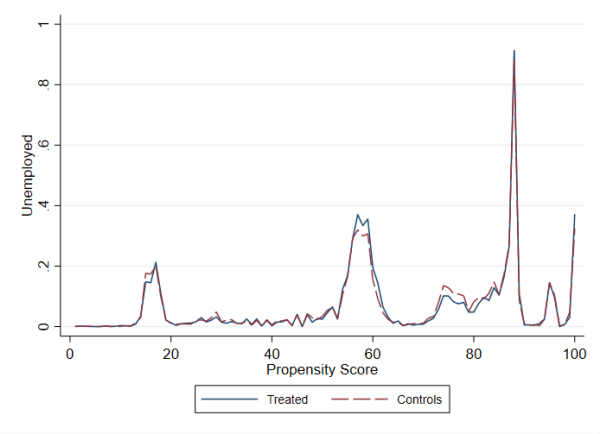
(b) Education



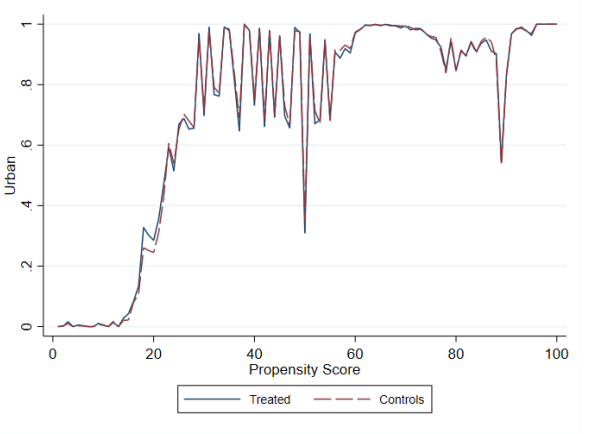
(c) Gender



(d) Marital



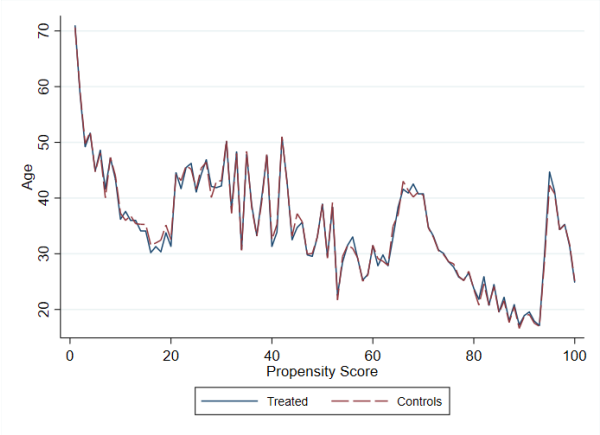
(e) Unemployment



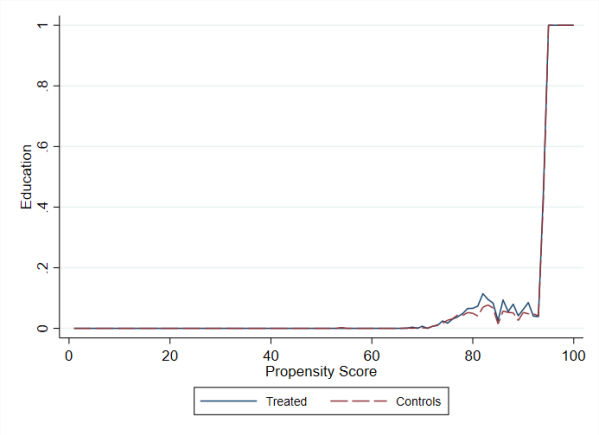
(f) Urban

Note: authors' calculations on Gallup World Poll Data. The Figure plots the distribution of covariates by centiles of propensity score.

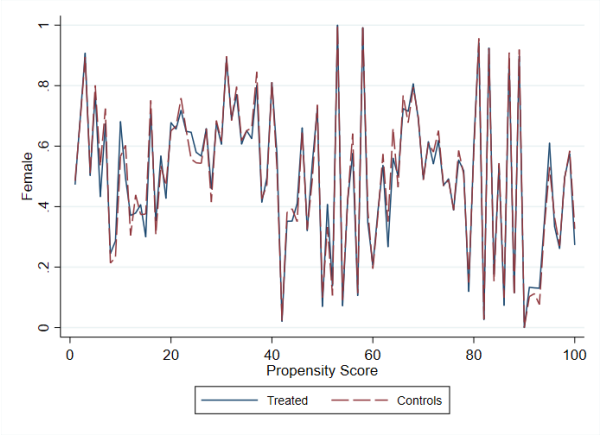
Figure A-V: Distribution Covariates after Matching - Gender-Egalitarian



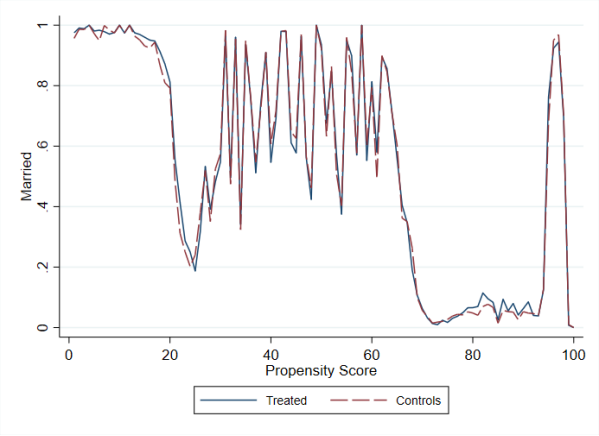
(a) Age



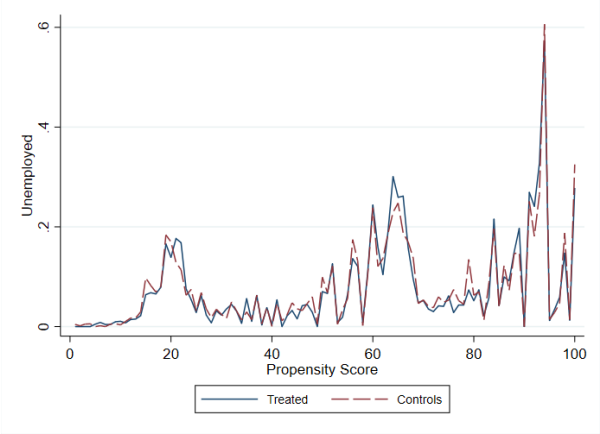
(b) Education



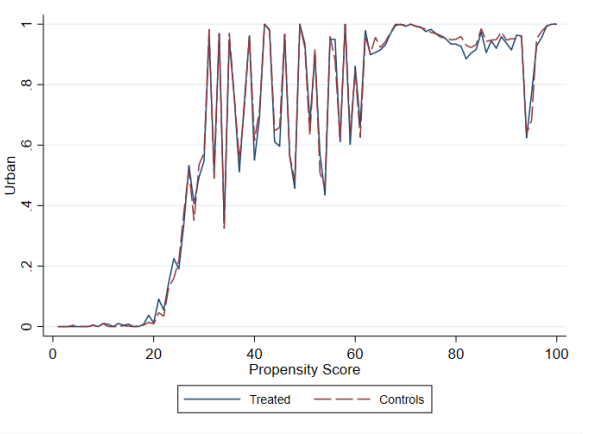
(c) Gender



(d) Marital



(e) Unemployment



(f) Urban

Note: authors' calculations on Gallup World Poll Data. The Figure plots the distribution of covariates by centiles of propensity score.

Appendix G Cultural Convergence or Divergence

Table A-XIV: Cultural Convergence or Divergence - Regional subsamples by regional culture (Median)

	(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*	
Median Trait	Below	Above	Below	Above	Below	Above
Panel A - Average						
Network	0.184***	0.209***	0.027***	0.005**	0.067***	0.010
	(0.007)	(0.010)	(0.004)	(0.002)	(0.015)	(0.016)
Interaction	0.086***	0.102***	-0.022*	0.003	0.054	0.046
	(0.019)	(0.019)	(0.013)	(0.004)	(0.037)	(0.047)
Observations	246093	165274	176830	215071	52764	37475
Regions	1143	954	999	1066	366	370
Adj. R-Square	0.08	0.09	0.21	0.05	0.18	0.08
Panel B - Distance						
Network	0.181***	0.223***	0.023***	0.007***	0.062***	0.013
	(0.008)	(0.010)	(0.004)	(0.002)	(0.017)	(0.016)
Distance	0.051***	0.080***	0.082***	0.015*	0.048*	0.072
	(0.015)	(0.021)	(0.016)	(0.008)	(0.027)	(0.058)
Observations	246093	165274	176830	215071	52764	37475
Regions	1143	954	999	1066	366	370
Adj. R-Square	0.08	0.09	0.21	0.05	0.18	0.08
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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. The sample of regions is split by cultural traits median, respectively: below the median (col. (1),(3),(5)) and above the median (col. (2),(4),(6)). Panel A shows the estimates using the specification presented in equation (2), while Panel B replace the average culture of connection's country of residence with a measure of cultural distance.

Table A-XV: Cultural Convergence or Divergence - Regional subsamples by regional culture (Quartiles)

	(1) OLS 2009-2012	(2) OLS 2009-2012	(3) OLS 2009-2012	(4) OLS 2009-2012	(5) LPM 2009-2012	(6) LPM 2009-2012	(7) LPM 2009-2012	(8) LPM 2009-2012	(9) OLS 2009-2011	(10) OLS 2009-2011	(11) OLS 2009-2011	(12) OLS 2009-2011
	Social Behavior				*Religiosity*				*Gender-Egalitarian*			
Trait Quartile	1^{st}	2^{nd}	3^{rd}	4^{th}	1^{st}	2^{nd}	3^{rd}	4^{th}	1^{st}	2^{nd}	3^{rd}	4^{th}
Panel A - Average												
Network	0.169***	0.198***	0.208***	0.211***	0.031***	0.025***	0.006	0.003*	0.081***	0.051**	0.008	0.015
	(0.009)	(0.010)	(0.015)	(0.014)	(0.006)	(0.006)	(0.004)	(0.002)	(0.023)	(0.021)	(0.025)	(0.020)
Interaction	0.061**	0.104***	0.105***	0.098***	0.019	-0.059***	0.006	0.001	0.053	0.065	0.053	0.050
	(0.029)	(0.025)	(0.032)	(0.024)	(0.019)	(0.017)	(0.009)	(0.003)	(0.051)	(0.051)	(0.078)	(0.046)
Observations	125706	120387	81322	83952	84757	92073	109802	105269	25017	27746	17072	20403
Regions	624	519	373	581	465	534	546	520	167	199	146	224
Adj. R-Square	0.06	0.04	0.04	0.08	0.09	0.10	0.03	0.01	0.18	0.08	0.05	0.05
Panel B - Distance												
Network	0.166***	0.195***	0.212***	0.231***	0.030***	0.018***	0.010***	0.004**	0.072***	0.051**	0.009	0.021
	(0.010)	(0.011)	(0.015)	(0.013)	(0.006)	(0.006)	(0.004)	(0.002)	(0.026)	(0.021)	(0.025)	(0.019)
Distance	0.031	0.086***	0.099***	0.080***	0.075***	0.064***	0.025	0.007	0.045	0.056	0.076	0.072
	(0.020)	(0.023)	(0.035)	(0.025)	(0.027)	(0.024)	(0.017)	(0.006)	(0.035)	(0.048)	(0.091)	(0.059)
Observations	125706	120387	81322	83952	84757	92073	109802	105269	25017	27746	17072	20403
Regions	624	519	373	581	465	534	546	520	167	199	146	224
Adj. R-Square	0.06	0.04	0.04	0.08	0.09	0.10	0.03	0.01	0.18	0.08	0.05	0.05
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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. The sample of regions is split by cultural traits quartiles, respectively: first quartile (col. (1),(5),(9)), second quartile (col. (2),(6),(10)), third quartile (col. (3),(7),(11)) and fourth quartile (col. (4),(8),(12)). Panel A shows the estimates using the specification presented in equation (2), while Panel B replace the average culture of connection's country of residence with a measure of cultural distance.

Table A-XVI: Cultural Convergence or Divergence - Broad Continents

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Broad Geography	Europe	Former SU	Asia	Latina America	MENA	Sub-Saharan	North America	Oceania
Panel A - Social Behavior (OLS)								
Network	0.194***	0.162***	0.208***	0.247***	0.157***	0.196***	0.175***	0.096
	(0.011)	(0.013)	(0.019)	(0.016)	(0.015)	(0.013)	(0.050)	(0.065)
Interaction	0.072***	0.103**	0.098**	0.034	0.100**	0.181***	0.215***	0.198**
	(0.023)	(0.043)	(0.040)	(0.027)	(0.040)	(0.049)	(0.078)	(0.092)
Observations	67754	54473	79680	56186	56549	89400	4569	2756
Regions	406	237	339	377	258	395	61	24
Adj. R-Square	0.21	0.13	0.19	0.09	0.13	0.13	0.09	0.05
Panel B - Religiosity (LPM)								
Network	0.028***	0.017**	0.020***	0.016***	0.003	0.008**	0.017	0.047**
	(0.007)	(0.008)	(0.006)	(0.006)	(0.005)	(0.003)	(0.022)	(0.018)
Interaction	-0.019	0.028	-0.006	-0.009	-0.024*	0.002	-0.015	0.082
	(0.020)	(0.024)	(0.015)	(0.014)	(0.014)	(0.005)	(0.061)	(0.068)
Observations	67754	54473	76217	56186	39511	89798	5206	2756
Regions	406	237	339	377	226	395	61	24
Adj. R-Square	0.21	0.24	0.54	0.16	0.14	0.06	0.16	0.04
Panel C - Gender-Egalitarian (OLS)								
Network	-	0.073***	0.005	-	0.080***	0.029*	-	-
	-	(0.025)	(0.038)	-	(0.026)	(0.015)	-	-
Interaction	-	-0.046	0.139**	-	0.012	0.076***	-	-
	-	(0.118)	(0.063)	-	(0.084)	(0.033)	-	-
Observations	-	8540	11374	-	21281	49044	-	-
Regions	-	54	89	-	228	365	-	-
Adj. R-Square	-	0.16	0.35	-	0.18	0.22	-	-
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓

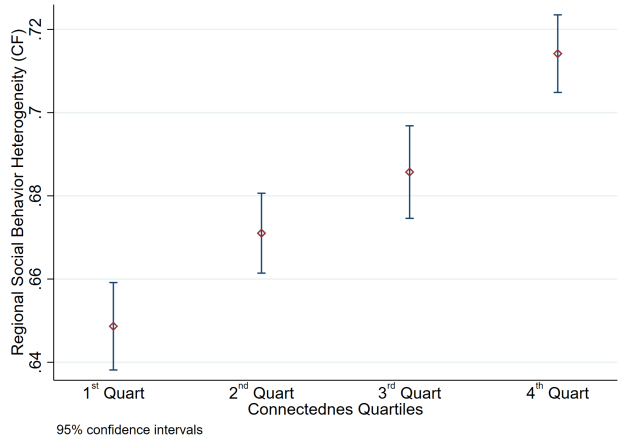
Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (Panel A), religiosity dummy (Panel B) and gender-egalitarian index (Panel C). The set of individual controls includes 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)), Latina America (col. (4)), Middle East and Noth 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 A-XVII: CF by Trait and F_{st} by Cleavage

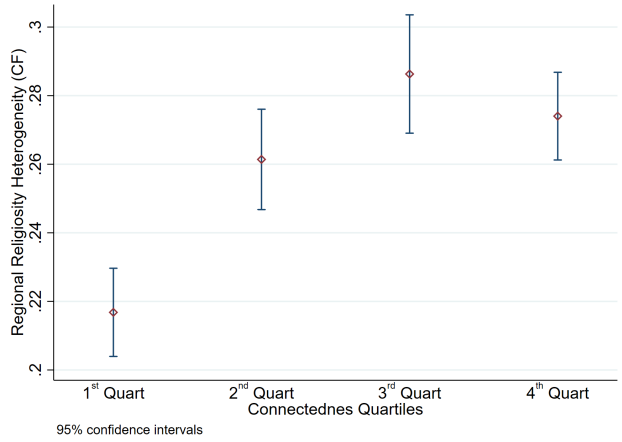
	(1) # Regions	(2) Mean	(3) SD	(4) Min	(5) Max
Panel A - Social Behavior					
CF	2197	0.677	0.124	0	0.894
F_{st} Connectedness	2197	0.025	0.038	0	0.556
F_{st} Education	2197	0.016	0.028	0	0.645
F_{st} Unemployed	2197	0.016	0.030	0	0.540
Panel B - Religiosity					
CF	2041	0.255	0.170	0	0.499
F_{st} Connectedness	2041	0.021	0.054	0	1
F_{st} Education	2041	0.017	0.055	0	1
F_{st} Unemployed	2041	0.016	0.045	0	1
Panel C - Gender-egalitarian					
CF	805	0.562	0.188	0	0.857
F_{st} Connectedness	805	0.031	0.055	0	1
F_{st} Education	805	0.009	0.026	0	0.321
F_{st} Unemployed	805	0.021	0.041	0	0.421

Note: authors' calculations on Gallup World poll data. Each panel presents the results related to: social behavior (A), religiosity (B) and gender-egalitarian attitudes (C). Each panel shows the average regional total heterogeneity (CF) and the share of the total heterogeneity which is not attributable to withing-groups heterogeneity. The three groups-cleavages are based on: connectedness, education and employment status.

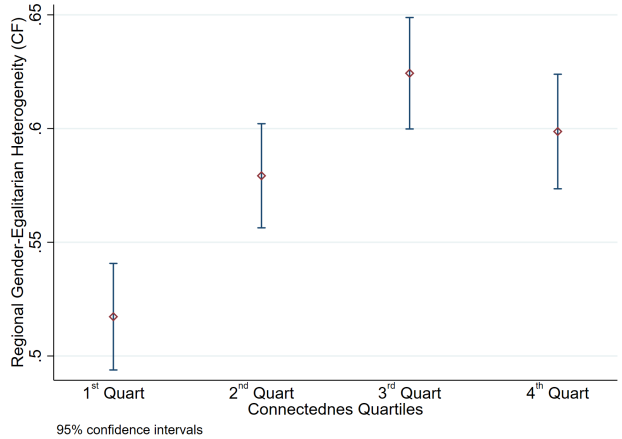
Figure A-VI: Within Regions Cultural Heterogeneity - Overall Heterogeneity



(a) Social Behavior



(b) Religiosity



(c) Gender-Egalitarian

Note: authors' calculations on Gallup World Poll Data. The figure plots the average regional cultural heterogeneity computed over subsamples of regions based on quartiles of shares of connected people.

Appendix H Connectedness Diffusion

Table A-XVIII: Country of origin heterogeneity - Network presence (Median)

	(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*	
Median Network	Below	Above	Below	Above	Below	Above
Network	0.213***	0.185***	0.011***	0.016***	0.023	0.067***
	(0.010)	(0.007)	(0.004)	(0.003)	(0.016)	(0.016)
Interaction	0.131***	0.090***	-0.012	-0.004	0.108**	0.017
	(0.024)	(0.016)	(0.008)	(0.008)	(0.054)	(0.035)
Observations	228655	182712	215379	176522	54616	35623
Regions	1201	896	1189	876	526	210
Adj. R-Square	0.17	0.15	0.40	0.35	0.22	0.22
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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. The sample of regions is split by median based on the regional share of connected individuals: below median (col. (1),(3),(5)) and above median (col. (2),(4),(6)).

Table A-XIX: Country of origin heterogeneity - Network presence (Quartiles)

	(1) OLS 2009-2012	(2) OLS 2009-2012	(3) OLS 2009-2012	(4) OLS 2009-2012	(5) LPM 2009-2012	(6) LPM 2009-2012	(7) LPM 2009-2012	(8) LPM 2009-2012	(9) OLS 2009-2011	(10) OLS 2009-2011	(11) OLS 2009-2011	(12) OLS 2009-2011
	Social Behavior				*Religiosity*				*Gender-Egalitarian*			
Network Quartile	1^{st}	2^{nd}	3^{rd}	4^{th}	1^{st}	2^{nd}	3^{rd}	4^{th}	1^{st}	2^{nd}	3^{rd}	4^{th}
Network	0.214***	0.212***	0.187***	0.181***	0.015**	0.008*	0.017***	0.015***	0.012	0.033	0.058**	0.070***
	(0.014)	(0.013)	(0.010)	(0.011)	(0.006)	(0.004)	(0.005)	(0.004)	(0.025)	(0.021)	(0.026)	(0.019)
Interaction	0.128***	0.128***	0.091***	0.091***	-0.021	-0.002	0.004	-0.010	0.207**	0.068	-0.013	0.034
	(0.039)	(0.029)	(0.028)	(0.020)	(0.016)	(0.009)	(0.011)	(0.010)	(0.086)	(0.066)	(0.055)	(0.046)
Observations	121178	107477	79538	103170	115910	99469	75688	100832	29440	25176	16310	19313
Regions	658	543	360	535	653	536	352	524	307	219	105	105
Adj. R-Square	0.18	0.16	0.14	0.16	0.45	0.33	0.33	0.37	0.23	0.21	0.18	0.26
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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. The sample of regions is split by quartiles based on the regional share of connected individuals: first quartile (col. (1),(5),(9)), second quartile (col. (2),(6),(10)), third quartile (col. (3),(7),(11)) and fourth quartile (col. (4),(8),(12)).

Appendix I Individual Heterogeneity

Table A-XX: Individuals heterogeneity - Natives and Migrants

	(1)	(2)	(3)	(4)	(5)	(6)
Cultural Trait	*Social Behavior*		*Religiosity*		*Gender-Egalitarian*	
Migration Status	Natives	Migrants	Natives	Migrants	Natives	Migrants
Network	0.196***	0.179***	0.013***	-0.031***	0.046***	0.077
	(0.006)	(0.022)	(0.002)	(0.011)	(0.012)	(0.052)
Interaction	0.100***	0.065	-0.008	0.083***	0.055*	0.255**
	(0.013)	(0.044)	(0.006)	(0.024)	(0.030)	(0.100)
Observations	411367	17107	391901	15222	90239	3207
Regions	2097	1002	2065	985	736	239
Adj. R-Square	0.16	0.21	0.38	0.26	0.22	0.18
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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) and (2)), religiosity dummy (col. (3) and (4)) and gender-egalitarian index (col. (5) and (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. The analysis is performed on subsamples based on individual migration status: natives (col. (1), (3) and (5)) and migrants (col. (2), (4) and (6)).

Table A-XXI: Individuals heterogeneity - Education, same sample of regions

	(1)	(2)	(3)	(4)	(5)	(6)
Cultural Trait	*Social Behavior*		*Religiosity*		*Gender-Egalitarian*	
Education Level	LS	HS	LS	HS	LS	HS
Network	0.193***	0.196***	0.016***	0.012*	0.052***	0.042
	(0.007)	(0.012)	(0.003)	(0.007)	(0.014)	(0.027)
Interaction	0.115***	0.035	-0.007	-0.012	0.038	0.022
	(0.016)	(0.029)	(0.006)	(0.017)	(0.034)	(0.086)
Observations	326943	53356	309102	51228	63933	6779
Regions	1761	1762	1730	1731	406	406
Adj. R-Square	0.15	0.18	0.37	0.31	0.20	0.24
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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) and (2)), religiosity dummy (col. (3) and (4)) and gender-egalitarian index (col. (5) and (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. The analysis is performed on subsamples based on individual education level: less then nine years of education (col. (1), (3) and (5)) and more then nine years of education (col. (2), (4) and (6)).

Appendix J Differential effects based on connection location

Table A-XXII: Cultural Convergence or Divergence - Country subsamples by connection culture (Median)

	(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*	
Median Trait	Below	Above	Below	Above	Below	Above
Network	0.198***	0.195***	0.014***	0.017***	0.048***	0.049***
	(0.007)	(0.007)	(0.002)	(0.002)	(0.013)	(0.014)
Interaction	0.127***	0.099***	-0.013*	-0.005	0.050	0.050
	(0.045)	(0.016)	(0.008)	(0.006)	(0.120)	(0.033)
Observations	379904	398736	384849	355367	84670	87391
Regions	2095	2097	2064	2065	736	736
Adj. R-Square	0.16	0.16	0.38	0.38	0.22	0.22
Individual Controls	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓

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 individuals is split by average culture of connection's country of location median, respectively: below the median (col. (1),(3),(5)) and above the median (col. (2),(4),(6)).

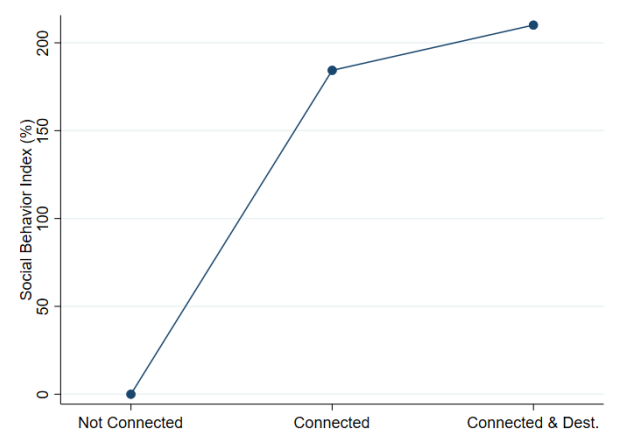
Table A-XXIII: Cultural Convergence or Divergence - Country subsamples by connection culture (Terciles)

	(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*		
Tertile Trait	1^{st}	2^{nd}	3^{rd}	1^{st}	2^{nd}	3^{rd}	1^{st}	2^{nd}	3^{rd}
Network	0.197***	0.196***	0.194***	0.014***	0.017***	0.017***	0.048***	0.049***	0.053***
	(0.007)	(0.007)	(0.007)	(0.002)	(0.002)	(0.002)	(0.013)	(0.014)	(0.014)
Interaction	0.127***	-0.430	0.102***	-0.012	-0.003	-0.009	0.050	-0.478	0.047
	(0.045)	(0.349)	(0.017)	(0.008)	(0.011)	(0.006)	(0.120)	(0.570)	(0.033)
Observations	376764	377826	391323	384079	350647	353805	84670	82448	86765
Regions	2095	2095	2097	2064	2064	2065	736	736	736
Adj. R-Square	0.16	0.16	0.16	0.38	0.38	0.38	0.22	0.22	0.22
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-year F.E.	✓	✓	✓	✓	✓	✓	✓	✓	✓

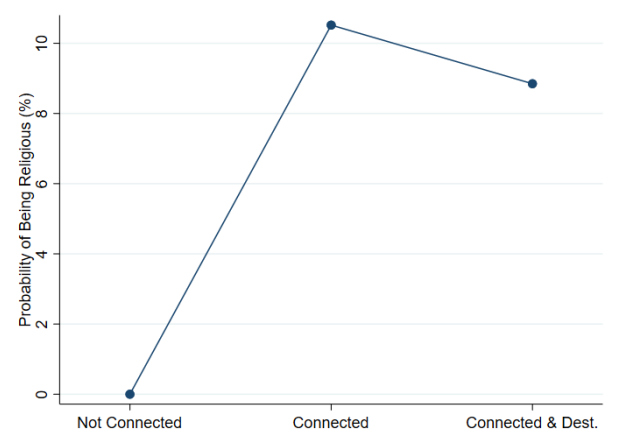
Note: authors' calculations on Gallup World poll data. Standard errors are clustered at the regional level. * p<0.1, ** p<0.05, *** p<0.01. The dependent variable is: social-behavior index (col. (1)-(3)), religiosity dummy (col. (4)-(6)) and gender-egalitarian index (col. (7)-(9)). The set of individual 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 individuals is split by average culture of connection's country of location terciles, respectively: first tercile (col. (1),(4),(7)), second tercile (col. (2),(5),(8)) and third tercile (col. (3),(6),(9)).

Appendix K How much does it count?

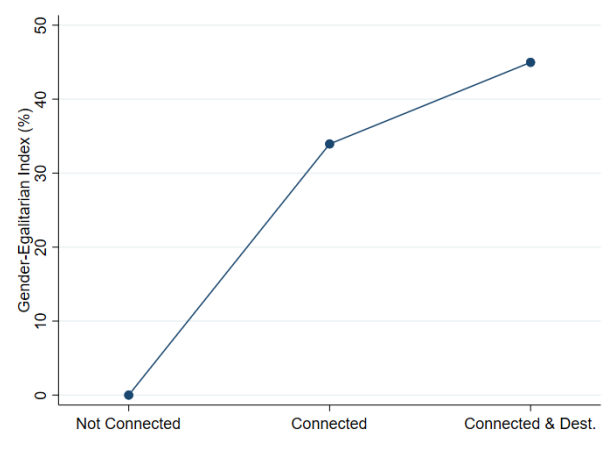
Figure A-VII: Relative deviation from the No-connection Scenario - Individual Level



(a) Social Behavior



(b) Religiosity



(c) Gender-egalitarian

Note: authors' calculations on Gallup World Poll Data. The Figure plots the simulated cultural effect of connectedness on each cultural trait. Figures (a), (b) and (c) shows the relative deviation each cultural trait between individuals who has no connection and who hasa connection abroad. The effects are simulated using coefficients from Table 3

Table A-XXIV: Simulations: country values

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Social Behavior				Religiosity				Gender-Egalitarian		
Country	Network	Actual	No Con.	Con.	Inter.	Actual	No Con.	Con.	Inter.	Actual	No Con.	Con.
Afghanistan	0.18	0.17	0.12	0.16	0.16	0.97	0.97	0.97	0.97	-0.90	-0.90	-0.89
Albania	0.46	-0.53	-0.55	-0.46	-0.46	0.42	0.43	0.43	0.43	0.32	0.22	0.25

Algeria	0.39	-0.40	-0.52	-0.44	-0.43	0.93	0.94	0.94	0.94	0.10	-0.01	0.02
Angola	0.32	0.04	-0.08	-0.01	-0.01	0.84	0.81	0.81	0.81	-0.65	-0.65	-0.63
Argentina	0.25	-0.12	-0.20	-0.15	-0.14	0.63	0.64	0.64	0.64	.	.	.
Armenia	0.41	-0.34	-0.36	-0.28	-0.28	0.74	0.74	0.74	0.74	.	.	.
Australia	0.50	0.84	0.83	0.93	0.96	0.32	0.30	0.30	0.30	.	.	.
Austria	0.41	0.36	0.27	0.35	0.36	0.49	0.50	0.51	0.51	.	.	.
Azerbaijan	0.16	-0.05	-0.08	-0.04	-0.05	0.45	0.44	0.45	0.45	0.17	0.15	0.16
Bahrain	0.27	0.06	-0.14	-0.09	-0.09	0.95	0.95	0.95	0.95	-0.05	0.04	0.06
Bangladesh	0.25	-0.26	-0.30	-0.25	-0.25	0.99	0.99	0.99	0.99	0.06	0.07	0.08
Belarus	0.29	-0.13	-0.21	-0.15	-0.15	0.38	0.37	0.37	0.37	.	.	.
Belgium	0.37	0.09	0.03	0.11	0.11	0.35	0.31	0.31	0.31	.	.	.
Benin	0.25	-0.46	-0.52	-0.47	-0.47	0.83	0.83	0.83	0.83	-0.06	-0.07	-0.05
Bolivia	0.57	-0.01	-0.17	-0.05	-0.05	0.87	0.86	0.87	0.87	.	.	.
Bosnia & Herzeg.	0.36	-0.38	-0.45	-0.37	-0.36	0.71	0.69	0.70	0.70	0.56	0.57	0.60
Botswana	0.26	-0.14	-0.22	-0.17	-0.17	0.87	0.85	0.85	0.85	0.37	0.38	0.40
Brazil	0.14	-0.12	-0.16	-0.13	-0.13	0.88	0.89	0.89	0.89	.	.	.
Bulgaria	0.31	-0.46	-0.52	-0.46	-0.45	0.41	0.39	0.39	0.39	.	.	.
Burkina Faso	0.45	-0.37	-0.41	-0.32	-0.33	0.94	0.93	0.94	0.94	0.14	0.15	0.18
Burundi	0.08	-0.59	-0.60	-0.59	-0.59	0.96	0.97	0.97	0.97	-0.07	-0.07	-0.07
Cambodia	0.15	-0.10	-0.14	-0.11	-0.10	0.94	0.94	0.94	0.94	.	.	.
Cameroon	0.32	-0.04	-0.14	-0.07	-0.07	0.95	0.95	0.95	0.95	-0.06	-0.06	-0.04
Canada	0.40	0.79	0.67	0.75	0.77	0.41	0.40	0.40	0.40	.	.	.
Central African Rep.	0.23	-0.18	-0.23	-0.19	-0.19	0.98	0.98	0.98	0.98	0.14	0.13	0.14
Chad	0.29	-0.20	-0.26	-0.20	-0.20	0.92	0.91	0.92	0.92	0.04	0.02	0.03
Chile	0.30	0.21	0.12	0.18	0.19	0.69	0.70	0.70	0.70	.	.	.
China	0.03	-0.51	-0.53	-0.52	-0.52	0.15	0.15	0.15	0.15	.	.	.
Colombia	0.48	0.18	0.09	0.18	0.20	0.86	0.88	0.88	0.88	.	.	.
Comoros	0.53	-0.06	-0.14	-0.03	-0.03	0.98	0.98	0.99	0.99	-0.47	-0.45	-0.42
Costa Rica	0.40	0.21	0.12	0.20	0.22	0.81	0.81	0.81	0.81	.	.	.

Croatia	0.28	-0.54	-0.58	-0.52	-0.51	0.64	0.64	0.64	0.64	.	.	.
Cyprus	0.66	0.34	0.14	0.27	0.29	0.75	0.79	0.80	0.80	.	.	.
Czech Republic	0.16	-0.20	-0.24	-0.21	-0.20	0.23	0.23	0.23	0.23	.	.	.
Côte d'Ivoire	0.14	-0.41	-0.44	-0.41	-0.41	0.88	0.87	0.87	0.87	0.12	0.13	0.14
Dem. Rep. Congo	0.27	-0.43	-0.46	-0.41	-0.40	0.95	0.95	0.95	0.95	-0.06	-0.06	-0.04
Denmark	0.41	0.46	0.40	0.48	0.50	0.18	0.16	0.17	0.17	.	.	.
Djibouti	0.27	-0.23	-0.36	-0.31	-0.30	0.96	0.95	0.95	0.95	-0.29	-0.39	-0.38
Dominican Rep.	0.68	0.22	0.13	0.27	0.31	0.88	0.88	0.89	0.89	.	.	.
Ecuador	0.41	-0.29	-0.35	-0.27	-0.26	0.85	0.85	0.85	0.85	.	.	.
Egypt	0.19	-0.30	-0.33	-0.29	-0.29	0.98	0.97	0.97	0.97	-0.12	-0.29	-0.28
El Salvador	0.37	-0.26	-0.33	-0.25	-0.22	0.87	0.86	0.86	0.86	.	.	.
Estonia	0.43	-0.20	-0.37	-0.28	-0.27	0.18	0.18	0.18	0.18	.	.	.
Ethiopia	0.19	-0.33	-0.37	-0.33	-0.33	0.96	0.97	0.97	0.97	.	.	.
Finland	0.47	0.36	0.23	0.33	0.34	0.29	0.29	0.30	0.30	.	.	.
France	0.37	-0.03	-0.13	-0.06	-0.04	0.27	0.23	0.24	0.24	.	.	.
Gabon	0.35	-0.15	-0.21	-0.14	-0.14	0.89	0.89	0.89	0.89	0.28	0.28	0.30
Georgia	0.29	-0.39	-0.45	-0.39	-0.39	0.84	0.83	0.83	0.83	.	.	.
Germany	0.40	0.30	0.24	0.32	0.33	0.39	0.40	0.40	0.40	.	.	.
Ghana	0.29	0.18	0.11	0.16	0.18	0.95	0.94	0.95	0.95	0.31	0.32	0.34
Greece	0.28	-0.59	-0.62	-0.56	-0.56	0.71	0.72	0.73	0.73	.	.	.
Guatemala	0.42	0.30	0.16	0.24	0.27	0.90	0.90	0.91	0.91	.	.	.
Guinea	0.31	-0.07	-0.11	-0.05	-0.05	0.97	0.96	0.96	0.96	0.17	0.27	0.29
Haiti	0.39	0.16	-0.01	0.07	0.09	0.85	0.85	0.85	0.85	.	.	.
Honduras	0.45	0.11	-0.06	0.03	0.06	0.82	0.81	0.82	0.82	.	.	.
Hong Kong	0.51	0.45	0.29	0.40	0.43	0.25	0.24	0.24	0.24	.	.	.
Hungary	0.26	-0.24	-0.32	-0.27	-0.26	0.37	0.36	0.37	0.37	.	.	.
India	0.05	-0.20	-0.25	-0.24	-0.24	0.85	0.87	0.87	0.87	0.36	0.40	0.41
Indonesia	0.09	0.36	0.34	0.35	0.36	0.99	0.99	0.99	0.99	0.37	0.38	0.38
Iran	0.20	0.51	0.46	0.50	0.50	0.91	0.93	0.94	0.94	0.17	0.16	0.17

Iraq	0.22	-0.23	-0.23	-0.19	-0.19	0.83	0.83	0.84	0.84	-0.56	-0.69	-0.67
Ireland	0.73	0.86	0.75	0.90	0.95	0.52	0.53	0.54	0.54	.	.	.
Israel	0.33	0.26	0.18	0.25	0.27	0.48	0.51	0.51	0.51	.	.	.
Italy	0.25	0.15	-0.01	0.04	0.05	0.69	0.69	0.69	0.69	.	.	.
Jamaica	0.68	0.24	0.11	0.25	0.25	0.84	0.80	0.81	0.81	.	.	.
Japan	0.14	-0.19	-0.22	-0.19	-0.19	0.26	0.26	0.26	0.26	.	.	.
Jordan	0.31	-0.36	-0.36	-0.30	-0.29	.	.	.	.	-0.22	-0.24	-0.22
Kazakhstan	0.30	-0.20	-0.27	-0.21	-0.21	0.47	0.50	0.50	0.50	0.25	0.18	0.19
Kenya	0.23	0.20	0.16	0.21	0.22	0.94	0.94	0.94	0.94	0.24	0.22	0.24
Kosovo	0.40	-0.05	-0.12	-0.04	-0.03	0.89	0.89	0.90	0.90	0.39	0.43	0.45
Kuwait	0.36	0.26	0.35	0.42	0.42	0.94	0.91	0.92	0.92	-0.07	-0.08	-0.06
Kyrgyzstan	0.37	-0.14	-0.20	-0.12	-0.13	0.69	0.69	0.70	0.70	0.07	-0.04	-0.01
Laos	0.22	0.59	0.51	0.55	0.55	0.98	0.98	0.98	0.98	.	.	.
Latvia	0.46	-0.18	-0.27	-0.18	-0.16	0.37	0.39	0.39	0.39	.	.	.
Lebanon	0.45	0.00	-0.08	0.01	0.03	0.87	0.87	0.87	0.87	0.31	0.24	0.27
Lesotho	0.51	-0.04	-0.05	0.05	0.05	0.94	0.92	0.93	0.93	0.17	0.13	0.16
Liberia	0.35	0.52	0.46	0.53	0.55	0.93	0.92	0.93	0.93	0.40	0.41	0.43
Libya	0.28	0.46	0.44	0.50	0.50	.	.	.	.	.	.	.
Lithuania	0.39	-0.40	-0.46	-0.39	-0.37	0.41	0.40	0.41	0.41	.	.	.
Luxembourg	0.70	0.36	0.26	0.40	0.41	0.34	0.35	0.36	0.36	.	.	.
Macedonia	0.40	-0.32	-0.41	-0.33	-0.31	0.77	0.75	0.75	0.75	.	.	.
Madagascar	0.10	-0.40	-0.45	-0.43	-0.43	0.91	0.91	0.91	0.91	0.39	0.39	0.39
Malawi	0.27	0.20	0.14	0.20	0.20	0.98	0.98	0.99	0.99	0.10	0.07	0.09
Malaysia	0.13	-0.04	-0.07	-0.05	-0.04	0.93	0.93	0.93	0.93	0.08	0.05	0.06
Mali	0.27	-0.32	-0.36	-0.31	-0.31	0.96	0.95	0.96	0.96	-0.33	-0.39	-0.37
Malta	0.58	0.45	0.31	0.43	0.47	0.87	0.86	0.87	0.87	.	.	.
Mauritania	0.38	-0.04	-0.13	-0.05	-0.05	0.99	0.98	0.99	0.99	-0.26	-0.26	-0.24
Mauritius	0.47	0.40	0.32	0.41	0.41	0.95	0.94	0.95	0.95	0.55	0.54	0.57
Mexico	0.31	-0.03	-0.11	-0.04	-0.02	0.63	0.62	0.63	0.63	.	.	.

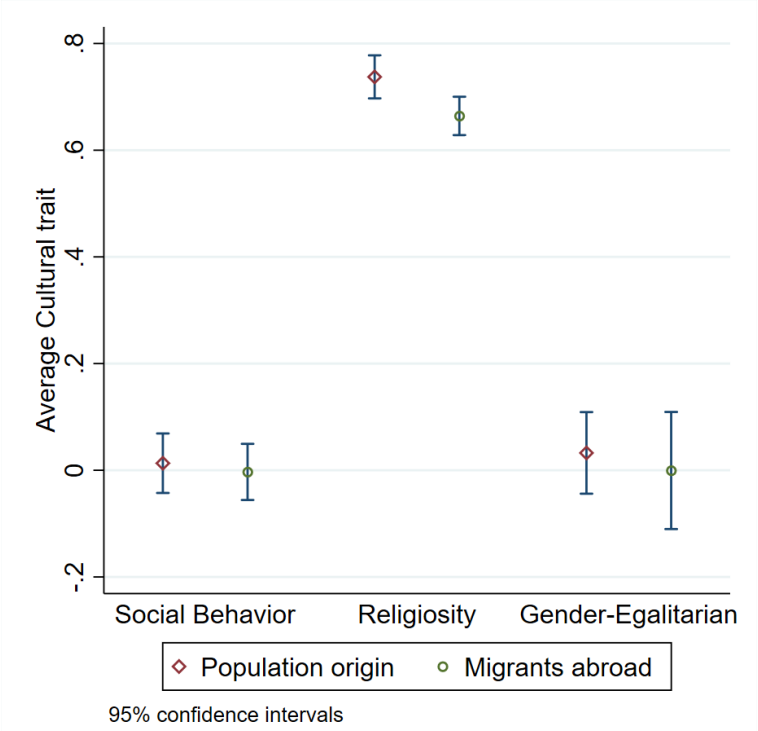
Moldova	0.54	-0.15	-0.24	-0.13	-0.14	0.74	0.72	0.73	0.73	.	.	.
Mongolia	0.29	0.18	0.11	0.17	0.17	0.45	0.47	0.47	0.47	.	.	.
Montenegro	0.29	-0.46	-0.54	-0.48	-0.47	0.60	0.59	0.59	0.59	.	.	.
Morocco	0.40	-0.37	-0.39	-0.31	-0.31	0.95	0.94	0.94	0.94	-0.23	-0.34	-0.31
Mozambique	0.41	-0.31	-0.43	-0.35	-0.35	0.90	0.91	0.92	0.92	0.43	0.38	0.40
Myanmar	0.15	0.90	0.87	0.90	0.90	0.98	0.98	0.98	0.98	.	.	.
Nepal	0.39	-0.12	-0.19	-0.11	-0.11	0.95	0.95	0.95	0.95	.	.	.
Netherlands	0.41	0.73	0.65	0.73	0.75	0.32	0.33	0.34	0.34	.	.	.
New Zealand	0.75	0.83	0.71	0.86	0.92	0.32	0.28	0.29	0.29	.	.	.
Nicaragua	0.53	-0.13	-0.30	-0.20	-0.18	0.83	0.81	0.82	0.82	.	.	.
Niger	0.37	-0.33	-0.36	-0.28	-0.28	0.99	0.99	0.99	0.99	-0.64	-0.66	-0.64
Nigeria	0.21	0.32	0.25	0.30	0.31	0.96	0.96	0.96	0.96	-0.02	-0.05	-0.04
Oman	0.51	0.38	0.23	0.33	0.33	.	.	.	.	0.09	0.06	0.09
Pakistan	0.15	-0.07	-0.08	-0.05	-0.05	0.93	0.94	0.94	0.94	-0.32	-0.33	-0.33
Palestina	0.32	-0.40	-0.47	-0.41	-0.40	0.94	0.93	0.94	0.94	-0.26	-0.28	-0.27
Panama	0.28	0.09	-0.04	0.02	0.04	0.80	0.80	0.80	0.80	.	.	.
Paraguay	0.57	0.22	0.08	0.20	0.20	0.91	0.90	0.91	0.91	.	.	.
Peru	0.41	-0.15	-0.31	-0.23	-0.22	0.82	0.84	0.84	0.84	.	.	.
Philippines	0.50	0.37	0.24	0.34	0.36	0.95	0.94	0.95	0.95	.	.	.
Poland	0.32	-0.16	-0.23	-0.16	-0.15	0.67	0.69	0.69	0.69	.	.	.
Portugal	0.43	-0.22	-0.32	-0.24	-0.23	0.63	0.64	0.64	0.64	.	.	.
Qatar	0.68	0.45	0.40	0.53	0.53	0.96	0.97	0.98	0.98	0.13	0.12	0.16
Republic of Congo	0.39	-0.18	-0.23	-0.15	-0.15	0.89	0.87	0.87	0.87	-0.09	-0.07	-0.05
Romania	0.40	-0.37	-0.49	-0.41	-0.40	0.80	0.81	0.81	0.81	.	.	.
Russia	0.17	-0.37	-0.41	-0.38	-0.38	0.33	0.32	0.32	0.32	.	.	.
Rwanda	0.13	-0.49	-0.53	-0.51	-0.51	0.96	0.96	0.96	0.96	0.48	0.49	0.50
Saudi Arabia	0.24	-0.05	-0.16	-0.11	-0.11	0.94	0.93	0.94	0.94	-0.12	-0.15	-0.14
Senegal	0.37	-0.16	-0.22	-0.15	-0.14	0.97	0.97	0.97	0.97	0.01	0.02	0.04
Serbia	0.27	-0.50	-0.58	-0.52	-0.51	0.55	0.55	0.55	0.55	.	.	.

Sierra Leone	0.27	0.20	0.05	0.11	0.12	0.97	0.96	0.97	0.97	0.22	0.21	0.23
Singapore	0.34	-0.06	-0.12	-0.05	-0.05	0.59	0.56	0.57	0.57	.	.	.
Slovakia	0.30	-0.19	-0.23	-0.17	-0.16	0.50	0.50	0.50	0.50	.	.	.
Slovenia	0.45	0.24	0.18	0.27	0.29	0.44	0.46	0.46	0.46	.	.	.
Somalia	0.54	0.26	-0.02	0.09	0.12	0.99	0.99	0.99	0.99	-1.03	-1.19	-1.16
South Africa	0.11	-0.09	-0.13	-0.11	-0.10	0.85	0.85	0.86	0.86	0.43	0.43	0.44
South Korea	0.26	0.07	-0.03	0.03	0.04	0.45	0.42	0.43	0.43	.	.	.
Spain	0.39	-0.06	-0.18	-0.11	-0.10	0.46	0.46	0.47	0.47	.	.	.
Sri Lanka	0.19	0.63	0.60	0.64	0.65	0.99	0.99	0.99	0.99	.	.	.
Sudan	0.33	0.17	0.09	0.16	0.17	0.95	0.94	0.94	0.94	-0.21	-0.33	-0.31
Suriname	0.53	-0.01	-0.03	0.08	0.08	0.79	0.76	0.76	0.76	.	.	.
Swaziland	0.46	0.11	-0.03	0.07	0.07	0.94	0.93	0.93	0.93	0.14	0.10	0.13
Sweden	0.43	0.22	0.13	0.21	0.23	0.16	0.13	0.13	0.13	.	.	.
Switzerland	0.52	0.46	0.30	0.41	0.42	0.39	0.43	0.43	0.43	.	.	.
Syria	0.20	0.02	-0.03	0.01	0.01	0.84	0.84	0.84	0.84	-0.26	-0.33	-0.32
Tajikistan	0.27	0.14	0.12	0.18	0.17	0.84	0.84	0.84	0.84	-0.26	-0.27	-0.26
Tanzania	0.12	0.04	0.01	0.03	0.04	0.94	0.94	0.94	0.94	0.11	0.10	0.11
Thailand	0.10	0.41	0.40	0.42	0.42	0.98	0.98	0.98	0.98	.	.	.
Togo	0.24	-0.55	-0.58	-0.53	-0.53	0.86	0.87	0.87	0.87	0.27	0.25	0.26
Trinidad & Tobago	0.57	0.43	0.28	0.39	0.39	0.87	0.89	0.89	0.89	.	.	.
Tunisia	0.29	-0.23	-0.22	-0.16	-0.16	0.94	0.94	0.94	0.94	-0.09	-0.08	-0.06
Turkey	0.17	-0.46	-0.49	-0.45	-0.45	0.83	0.83	0.83	0.83	0.41	0.39	0.40
Turkmenistan	0.20	0.51	0.46	0.50	0.50	0.80	0.80	0.81	0.81	0.32	0.27	0.28
Uganda	0.19	0.07	0.00	0.04	0.04	0.94	0.95	0.95	0.95	0.23	0.23	0.24
Ukraine	0.22	-0.31	-0.37	-0.32	-0.33	0.48	0.48	0.48	0.48	.	.	.
United Arab Emir.	0.32	0.15	0.09	0.16	0.16	0.93	0.93	0.93	0.93	0.08	0.12	0.13
United Kingdom	0.49	0.70	0.57	0.67	0.69	0.28	0.24	0.25	0.25	.	.	.
United States	0.22	0.86	0.77	0.82	0.82	0.66	0.66	0.67	0.67	.	.	.
Uruguay	0.39	-0.14	-0.27	-0.20	-0.19	0.38	0.37	0.38	0.38	.	.	.

Uzbekistan	0.14	0.23	0.23	0.26	0.26	0.59	0.59	0.59	0.59	0.21	0.22	0.23
Venezuela	0.17	-0.28	-0.33	-0.30	-0.29	0.79	0.79	0.79	0.79	.	.	.
Vietnam	0.07	-0.32	-0.33	-0.32	-0.32	0.32	0.31	0.31	0.31	.	.	.
Yemen	0.20	-0.37	-0.50	-0.46	-0.46	0.97	0.98	0.98	0.98	-0.30	-0.32	-0.31
Zambia	0.17	0.12	0.05	0.09	0.09	0.96	0.95	0.96	0.96	0.36	0.39	0.40
Zimbabwe	0.46	-0.11	-0.19	-0.10	-0.09	0.88	0.87	0.88	0.88	0.30	0.20	0.22

Note: author calculation on Gallup World Poll Data. Column (1) shows the average share of people with connection abroad in the country. Columns (2), (6) and (10) show the average level of each cultural trait. Columns (3), (7) and (11) show the average level of each cultural trait in the population without connection. Columns (4), (8) and (12) show the predicted level of each cultural trait in the population after including the effect of the connection estimated in Table 3. Columns (5), (9) and (13) shows the predicted level of each cultural trait in the population after including the effect of the connection and interaction with the cultural trait in the destination country estimated in Table 3

Figure A-VIII: Average Trait by country of birth - Population and Migrants abroad



Note: authors' calculations on Gallup World Poll Data. The figure plots the average cultural trait for the population in the origin countries and their migrants abroad.

INSTITUT DE RECHERCHE
ÉCONOMIQUES ET SOCIALES

Place Montesquieu 3
1348 Louvain-la-Neuve

ISSN 1379-244X D/2020/3082/12

UCLouvain

IRES | LIDAM
Louvain Institute of Data Analysis and Modeling in economics and statistics