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SEQUENTIALITY AND DISTANCE(S) IN CROSS-BORDER MERGERS AND ACQUISITIONS: EVIDENCE FROM MICRO DATA

Massimo Del Gatto
Carlo S. Mastinu

WORKING PAPERS

2016/16

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CRENoS – CAGLIARI
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TEL. +39-070-6756406; FAX +39-070- 6756402

CRENoS - SASSARI
VIA MURONI 23, I-07100 SASSARI, ITALIA
TEL. +39-079-213511

Title: SEQUENTIALITY AND DISTANCE(S) IN CROSS-BORDER MERGERS AND ACQUISITIONS: EVIDENCE FROM MICRO DATA

ISBN: 978 88 9386 013 0

First Edition: November 2016

by Sardegna Novamedia Soc. Coop.
Via Basilicata n.57/59-09127 Cagliari
Tel. e Fax +39070271573

Sequentiality and Distance(s) in Cross-Border Mergers and Acquisitions: Evidence from Micro Data

Massimo Del Gatto[1]
'G.d'Annunzio' University
and
CRENoS

Carlo S. Mastinu
University of Cagliari
and
CRENoS

We study how the probability of engaging in mergers and acquisitions is related to geographical and cultural *distance*, and to a combination of distance and experience, referred to as *sequentiality* (i.e., number of past mergers and acquisitions in the target country and in countries that are, either geographically or culturally, "contiguous" to the acquisition and/or the target country). We start by showing that aggregate flows of mergers and acquisitions are first directed toward culturally similar, larger, richer, more developed, and less risky countries, in spite of higher unit labor costs. Thereafter, the number of mergers and acquisitions in each country continues to be driven by cultural distance, notwithstanding high tax rates and low trade openness. Geographical distance is unimportant in both steps. We then find strong evidence of sequentiality effects related to cultural but not geographical (sharing a common border) contiguity. While the cultural effects tend to disappear at the level of second-order contiguity (being contiguous to the acquisition country's contiguous countries but not to the acquisition country), a geographical pattern seems to emerge only when second-order contiguity is addressed.

Keywords: M&A, FDI, cultural distance, experience, spatial contiguity.
J.E.L. Classification: F23, G34.

[1] Corresponding author: Massimo Del Gatto, `G.d'Annunzio' University, Department of Economics (DEc), Viale Pindaro 42, 65127 - Pescara (Italy). massimo.delgatto@unich.it

1 Introduction

The upsurge in foreign direct investment (FDI) occurred in the 1990s, a period in which trade barriers decreased worldwide, highlighted the inconsistency of the theoretical prediction that there is a positive relationship between FDI and geographical distance stemming from the notion that exports and FDI are alternative modes (i.e., substitutes) for entering foreign markets. While this "proximity–concentration trade-off" has been the dominant view to date, a number of studies, initiated by Brainard (1997), show that, although lower trade costs lead to a substitution away from FDI toward exports, the level of outward FDI actually shrinks with trade costs and geographical distance (Carr et al., 2001; Markusen and Maskus, 2002; Blonigen et al., 2003; Yeaple, 2003).

One theoretical attempt to reconcile FDI theory with the empirical evidence was a focus on mergers and acquisitions (MAs). In fact, while the proximity–concentration literature mainly focused on horizontal FDI in the form of greenfield investments, about two-thirds of world FDI takes place in the form of MAs.2 This literature explains the emergence of MAs with efficiency reasons, such as technology transfer, and with the presence of strategic interaction, entailing that firms engage in MAs in order to reduce the extent of competition in given markets (e.g., Van Long and Vousden, 1995; Falvey, 1998; Horn and Persson, 2001; Bertrand and Zitouna, 2006; Neary, 2007).

The theoretical implications for the role of distance in this class of models are not determined univocally. For example, while high trade costs might encourage export-platform MAs, they might also increase the incentives for domestic MAs (in order to reduce the degree of competition in the domestic market), thereby increasing the acquisition price of domestic targets. This is likely to favor outward MAs over inward MAs. Neary (2007) shows how cross-border MAs can be seen as instruments of comparative advantage: there are decreasing trade costs associated with increasing MAs from high comparative advantage country-sectors to low comparative advantage country-sectors. The latter hypothesis has been tested by Brakman et al. (2013).

Also the empirical evidence is not univocal. Di Giovanni (2005), Hijzen et al. (2008), and Hyun and Kim (2010) document negative effects of geographic distance on the value of bilateral MA flows across countries. Furthermore, Hijzen et al. (2008) show that the relationship is less negative for horizontal mergers, which is more in line with the proximity–concentration hypothesis. Boschma et al. (2015) investigate the role of geographical, industrial, organizational, and institutional proximity, finding positive effects on domestic MAs in Italy. Coeurdacier et al. (2009) find geographical distance to be a non-significant determinant of MA flows in developed economies. Blonigen et al. (2007) estimate a spatial autoregressive model with spatial lags, reporting strong evidence of significant and positive contiguity effects in US outbound FDI.

As well as focusing on geographical distance, the economic literature has recently

[2] Other strands of literature have focused on vertical FDI or "export-platform" FDI (if the host country belongs to an economic union, the dismantling of trade barriers for internal trade can lead to increasing inward FDI). The first solution clashes with the fact that the bulk of FDI is horizontal. The second, although providing a good explanation for the huge inflow of extra-EU FDI associated with the EU Single Market program, produced mixed empirical evidence (see e.g., Head and Mayer, 2004; Blonigen et al., 2007).

emphasized the explanatory power of cultural differences. Borrowing from Guiso et al. (2006), cultural distance can be thought of as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation."3 Spolaore and Wacziarg (2009) and subsequent studies (Fearon, 2003; Desmet et al., 2009; Spolaore and Wacziarg, 2013) point out that differences in GDP per capita across countries are well explained by cultural distance from a global technological frontier (US or UK). Guiso et al. (2009) show that lower bilateral "trust" (i.e., higher cultural distance) leads to less trade, less portfolio investment, and less FDI.

A few studies have recently focused on whether cultural distance can be used to explain the international flows of MAs. According to Di Giovanni (2005), firms tend to invest more in countries with which they share a common language. Di Guardo et al. (2015) show that geographical and cultural distance exert highly significant and negative effects on cross-border MAs in the EU-27 plus 16 EU neighboring countries, using MA data from the Thomson Financial Security Database. Cultural differences are measured using the composite index proposed by Kaasa (2013) and Kaasa et al. (2013). The index is computed by applying principal component analysis to items provided by the World and European Value Surveys and related to four dimensions suggested by Hofstede (1980): power distance, uncertainty avoidance, individualism versus collectivism, and masculinity versus femininity. The Hofstede index is also used by Ragozzino (2009) for MA deals and by Lankhuizen et al. (2011) for FDI. Ahern et al. (2015) find that cross-border MAs, drawn from the SDC Platinum Database are negatively correlated with cultural distance. In this case, cultural distance is measured in terms of trust, hierarchy, and individualism. Information is drawn from the World Values Survey.

An interesting dimension of the relationship between distance (cultural distance in particular) and MA flows is its potential complementarity with firms' realized experience in given markets. Business economics literature has been highlighting this dimension at least since Johanson and Vahlne (1977). Among others, Davidson (1980) has shown that US investment in Canada and the UK are well beyond what their market size, growth, tariffs, and geographical proximity would have predicted, probably because of cultural similarity. In addition, Davidson (1980) shows that firms prefer countries in which they are active to those in which they are not, and that firms with extensive experience exhibit less preference for near and similar markets. Yu (1990) focuses on country-specific experience and general international operations experience. Mitra and Golder (2002) find cultural distance to be a insignificant factor, unlike knowledge. Benito and Gripsrud (1992) find neither cultural distance nor experience effects.

Unfortunately, the limited number of observations in these contributions precludes drawing general conclusions (e.g., in the cited studies, the number of observations ranges from 35, in Mitra and Golder, 2002, to 100, in Yu, 1990), yet the economics literature on MAs and FDI in general has completely neglected this dimension so far, and the international trade literature has addressed it in only a few studies. For example, the work on "sequential exporting" by Albornoz

[3] Spolaore and Wacziarg (2015) posit that genetic distance is a summary statistic for a wide array of cultural traits transmitted inter-generationally.

et al. (2012) produces theoretical and empirical support for the idea that individual export profitability is positively correlated over time and across destinations. In Chaney (2014), firms use their existing network of contacts to search remotely for new partners (i.e., "the network structure of international trade"). El-Khatib et al. (2015) focus on "CEO network centrality", arguing that MAs initiated by high-centrality CEOs are more frequent and carry greater value losses to both the acquirer and the combined entity.

In this study, we ask how the probability that a firm located in country H engages in MAs in country F is related, on the one hand, to geographical and cultural distance, and on the other hand, to the firm's experience (i.e., number of past MAs) in country F and in countries that are, either geographically or culturally, "contiguous" to H and/or F. This combination of distance and experience is referred to as sequentiality.

We start by showing that the aggregate flows of MAs are (negatively) affected by cultural and not geographical distance. This evidence is particularly pervasive for vertical MAs. By considering firms' MA choices as a two-stage process in which firms first decide where to invest and then how much to invest (i.e., number of MAs), we observe that geographic distance is unimportant, in both the first and second stages, once cultural distance is controlled for. Instead, MA flows are first directed toward culturally and industrially similar, bigger, richer, more developed, and less risky countries, in spite of higher unit labor costs. After the country selection in this first step, the number of MAs continues to be driven by cultural and industrial distance, notwithstanding high tax rates and low trade openness, with the degree of economic development no longer significant.

We then investigate the sequentiality effect, by focusing on the combined effect of distance and experience. In so doing, we allow for geographic and cultural first-order contiguity (e.g., sharing a common border) and second-order contiguity (being first-order contiguous to country H's first-order contiguous countries but not to H).

The first-order analysis strongly points to the presence of cultural contiguity effects, with the number of past MAs in countries that are culturally contiguous to both H and F positively affecting the probability of new MAs in country F, independently of the latter being geographically or culturally contiguous to H. Moreover, when two countries are culturally contiguous, but not when they are geographically contiguous, the probability of a new MA is also positively affected by past experience (i.e., number of past MAs) in the target country.

Thus, while the hypothesis of a process of knowledge acquisition associated with MAs in geographically contiguous countries has to be rejected, the results strongly point to decreasing search costs and/or increasing expected revenues associated with the achievement of a higher degree of knowledge of the target countries, when MAs are driven by cultural relationships.

While these cultural effects tend to disappear at the level of second-order contiguity, a geographical contiguity pattern seems to emerge only at that level of analysis: firms seem to expand geographically from neighboring countries; however increasing experience in geographically distant countries results in a lower probability to return to investing in the former.

To the best of our knowledge, our work represents the first attempt to study the role of geographical and cultural distance, in cross-border MAs, in combination with firms' experience, on an extensive basis.

The rest of this paper proceeds as follows. To motivate the analysis, we first sketch an empirical model of MAs in Section 2. In Section 3, we present the data (of which more detail is provided in Appendix 8). We then proceed with the empirical analysis, as follows. Aggregate analysis is reported in Section 4, while firm-level regressions are discussed in Sections 5 (benchmark analysis) and 6 (robustness checks). Section 7 concludes. Appendix 9 explains how we computed our measure of cultural distance. The $195x195$ matrix of our bilateral cultural distance measures (linguistic, religious, and genetic distance, as well as the overall measure of cultural distance) can be downloaded from the first author's website, together with a replication package with the original data and STATA codes. Similarities and differences with respect to available comparable measures are highlighted in the Online Appendix.

2 Empirical model and strategy

Firms engage in MAs to pursue relationship-specific activities. Acquiring firms benefit from MAs if and only if the target firm fulfills given requirements. The acquisition price T_h^t is a sufficient statistic for the set of requirements that firm *h* sets itself at time *t*. This value, hereafter referred to as acquisition target and acquisition price interchangeably, is the same whatever the destination country; only potential acquisitions of price T_h^t are considered by firm *h*. In order to identify a potential target firm *f* (located in country F), firm *h* (located in country H) has to bear a search cost $S_{h,f}^t(\cdot)$ associated with the process of information acquisition.

Using lowercase letters to refer to firms and uppercase letters to refer to countries, the expected net profit associated with the acquisition of firm *f* (in country F) by firm *h* (in country H) at time *t* can be expressed as the expected contribution to gross profits $P_{h,f}^t(\cdot)$, net of the search cost and acquisition price:

$$E^t[\Pi_{h,f}^t(\cdot)] = E^t[P_{h,f}^t(\mathbf{\Delta}_{H,F}, \mathbf{\Phi}_{h,F}^t, \cdot)] - S_{h,f}^t(T_h^t, \mathbf{\Delta}_{H,F}, \mathbf{\Phi}_{h,F}^t, \cdot) - T_h^t \qquad (1)$$

where the two terms $\mathbf{\Delta}_{H,F}$ and $\mathbf{\Phi}_{h,F}^t$ account for the "distance" and "sequentiality" dimensions in the sense presently explained. Two types of distance are considered: geographical and cultural.

The distance term

$$\mathbf{\Delta}_{H,F} = \mathbf{D}_{H,F}^i, \mathbf{C}(n)_{H,F}^i, \qquad \text{with} \quad \mathbf{C}(n)_{H,F}^i = C(n)_{H,F}^i \,|\{F \in H(n)^i\}; \quad n = 1,2; \quad i = geo, cult \qquad (2)$$

includes the distance between H and F (i.e., $D_{H,F}^i$) and an effect associated with the contiguity order between H and F (i.e., $\mathbf{C}(n)^i_{H,F}$), in which $H(n)^i$ denotes the set of countries "contiguous of order n" to country H. When $F \in H(1)^i$, countries H and F are "first-order" contiguous. When $F \in H(2)^i$, they are "second-order" contiguous, that is, F belongs to the set of countries that are contiguous to country H's contiguous countries (use $\breve{H}(2)^i$ to denote this set)with country F not first-order contiguous to H (i.e., $H(2)^i = \breve{H}(2)^i \setminus H(1)^i$). Subscript *i* refers to the type of distance, with *i=geo* denoting geographical distance and *i=cult* cultural distance.

The sequentiality term

$$\mathbf{\Phi}^t_{h,F} = M^t_{h,F}, M^t_{h,F(1)^i \cap H(1)^i}, M^t_{h,F(1)^i \setminus H(1)^i}; \qquad \text{with} \quad i = geo, cult \tag{3}$$

expresses firm *h*'s experience in terms of the cumulative distribution function (i.e., number of past MAs), at time *t*, of firm *h*'s MAs in country F (i.e., $M^t_{h,F}$) and in countries that are first-order geographically (i.e., $M^t_{h,F(1)^{geo}}$) or culturally (i.e., $M^t_{h,F(1)^{cult}}$) contiguous to F. These countries can be contiguous to both H and F (i.e., $F(1)^i \cap H(1)^i$) or contiguous to F only (i.e., $F(1)^i \setminus H(1)^i$). The cumulative distribution function is defined as $M^t_{h,F} = \mathbf{A}^t_h{}' m^{t[-]}_{h,f}$, where $m^t_{h,f}$ is a binary indicator variable taking the value 1 if firm *h* engages in the acquisition of firm *f* at time *t* and 0 otherwise, and $m^{t[-]}_{h,f} = \{m^{t-a}_{h,f} \mid a \in \mathbb{Z}^+, 0 < a \leq A_h\}$ is the sequence of firm *h*'s (0,1) MA choices concerning country F and $\mathbf{A}_h$ is a $A^t_h \mathrm{x}1$ vector of 1s, with A^t_h denoting the age of firm *h* at time *t*.

One way to intend the effect exerted by $\mathbf{\Phi}^t_{h,F}$ on the expected net profit is to imagine a process of knowledge acquisition. With such a process in place, sequentiality is likely to reduce the search cost and increase the expected gross profits. While disentangling these two effects is beyond the scope of this work, we focus on the overall effect of sequentiality and distance.

The search cost in Equation (1) depends on the acquisition target, synthesized by T^f_h. To keep the model as simple as possible, we assume the search cost always involves producing a match with a potential target firm priced T^t_h, which fully meets firm *h*'s requirements. We assume that only one match is produced and evaluated at each period and that the decision concerning whether to take (i.e., $m^t_{h,f} = 1$) or leave (i.e., $m^t_{h,f} = 0$) the opportunity is made independently of the decision to invest in other countries in the same period. Production levels are assumed to adjust freely to the current market conditions, so that profit-maximizing levels of production are always chosen.

The dots in the search cost and gross profit functions highlight that the general formulation in (1) does not specifies how firms' costs and revenues are influenced by other firm-specific factors (e.g., presence of managers with a particular degree of knowledge of a given market and total factor productivity) or country-specific factors (e.g., factor costs, taxation, and knowledge spillovers).

In each period *t*, firm h chooses the infinite sequence of future MAs $m_{h,F}^{t[+]} = \{m_{h,F}^{t+j} \mid j \in \mathrm{Z}, j \geq 0\}$ that maximizes the expected present value of net profits. The maximized payoff takes the form

$$V_{h,f}^{t}(\Omega_h^t) = \max_{m_{h,F}^{t[+]}} E^t\left[\sum_{j=t}^{\infty} \delta^{j-t} \Pi_{h,f}^{t}(\cdot) \mid \Omega_h^t\right] \quad (4)$$

where δ is the one-period discount rate and Ω_h^t is firm *h*'s information set at time *t*.

Using Bellman's equation, firm *h*'s current decision is the value of $m_{h,F}^t$, which satisfies

$$V_{h,f}^{t}(\Omega_h^t) = \max_{m_{h,F}^{t}} \Pi_{h,f}^{t}(\cdot) + \delta E^t\left[V_{h,f}^{t+1}(\Omega_h^t) \mid M_{h,F}^{t+1}, M_{h,F(1)}^{t+1}\right] \quad (5)$$

The firm will choose $m_{h,F}^t = 1$ if

$$\delta\left(E^t\left[V_{h,f}^{t+1}(\Omega_h^t) \mid m_{h,F}^t = 1\right] - E^t\left[V_{h,f}^{t+1}(\Omega_h^t) \mid m_{h,F}^t = 0\right]\right) + E^t\left[P_{h,f}^t(\cdot)\right] > S_{h,f}^t(\cdot) + T_h^t \quad (6)$$

Equation (6) relates a firm's decision to engage in an MA to a number of factors. In particular, as well as depending on the acquisition target that the firm sets itself (i.e., T_h^t), the probability that firm *h* chooses $m_{h,F}^t = 1$ is affected by the geographical and cultural sphere, through the term $\mathbf{\Delta}_{HF}$, and by the type of sequentiality characterizing firm *h*'s MA history (i.e., $\mathbf{\Phi}_{HF}^t$).

Note that with $S_{hf}^t(\cdot) + T_h^t > E^t[P_{h,f}^t(\cdot)]$, firm *h* still chooses $m_{h,F}^t = 1$ if the expected contribution to future profits exceeds the negative expectation for the current period. That might be the case for a firm that wants to invest in a given country in order to improve its production abilities through learning, or that wants to use country F as an export base. Having already invested in country F and/or in countries that are culturally or geographically close to F is likely to increase

$P_{hf}^{t}(\cdot)$ because of better knowledge of the specificities of a given market. Similar effects can be associated with being culturally or geographically close to F.

Equation (6) suggests testable implications concerning the effect of sequentiality, as captured by each firm's MA history in given markets, in combination with distance. In particular, given the nature of our data, we can focus on the probability that firm *h* engages in an MA in country F, conditional on F being geographically or culturally contiguous to H. This can be expressed as

$$Pr(m_{h,F}^{t}=1\,|\,C(n)_{H,F}^{i}=1)=f(T_{h}^{t},M_{h,F}^{t},M_{h,F(1)^{i}\cap H(1)^{i}}^{t},M_{h,F(1)^{i}\setminus H(1)^{i}}^{t},M_{h,F(1)^{j}\cap H(1)^{j}}^{t},M_{h,F(1)^{j}\setminus H(1)^{j}}^{t},D_{HF}^{j})$$

$$\text{with}\quad n=1,2;\quad i,j=geo,cult\quad\text{and}\quad i\neq j. \tag{7}$$

Equation (7) can be estimated under *n=1*, first with *i=geo, j=cult*, and then with *i=cult,j=geo*, in order to understand the extent to which firms' MAs are driven by sequentiality effects, either based on geographical or cultural distance, and to study the role played by cultural differences when the MA pattern is driven by geographical proximity and by geographical proximity when the MA pattern is driven by cultural differences. The same experiment can be repeated for *n=2* in an attempt to uncover whether firms follow a cultural and/or geographical pattern in expanding to distant markets.

3 Data

Our main data source is the Thomson Financial Security Database, extensively described in Brakman et al. (2006). For all MAs worldwide, the database reports information on country of origin and country of destination, year, date of announcement, value of the acquisition, and the International Standard Industrial Classification (ISIC) industry classification of both the acquiring and the target firm.

From the original dataset, we exclude tax havens and domestic MAs, and concentrate on the period 1985-2007, in order to remain removed from the distortive effects of the recent economic crisis.4

A known problem with MA data is the presence of sequences of two or more MAs by the same firm in the same destination announced on the same date. Since these observations usually correspond to the acquisition of different branches of the same firm, in these cases we consider

[4] The problem with the economic crisis is not in terms of "quantities." In fact, as shown in Appendix 8, also in the years included in the analysis, MA flows have been subject to substantial fluctuation. What might be distortive for our purpose is the direction of the MAs.

only the first observation (1054 observations dropped). In addition, we exclude MAs that took place by firms investing in a single country (2244 observations).

The final dataset consists of 24402 deals realized by 17457 firms belonging to 21 (OECD) countries and directed toward 143 countries. Around 73% of the deals occur between firms operating in the same SIC two-digit sector (horizontal MAs). Descriptive statistics for the 21 countries of origin are reported in Table 1 and a more detailed description is in Appendix 8. The US produces the highest number of MAs, followed by the UK. However, it is worth noting that the UK is more involved in so-called "mega deals," especially in the banking sector. This is also the case for France, which generates only 4.52% of the total number of MAs but 10.23% of the total value. This phenomenon is observed in the inverse in other nations, such as Ireland.

Several distance measures are considered in the analysis.

Geographic distance (i.e., variable D_{HF}^{geo}) is taken from the GeoDist database, maintained by the Centre d'Études Prospectives et d'Informations Internationales—Paris (CEPII). The variable dist is used. This is based on simple geodesic distance between the most populated cities/agglomerations in the two countries.[5]

Cultural distance (variable D_{HF}^{cult}) is a bilateral index obtained as a weighted average of three distance measures, with weights obtained via factor (i.e., principal components) analysis. The three measures considered are linguistic, religious, and genetic distances. Genetic distance is provided by Spolaore and Wacziarg (2009). Linguistic and religious distances are our own calculations, based on information drawn from Ethnologue and the CIA World Factbook, respectively.

While a detailed description is reported in Appendix 9, it is noteworthy that the construction of three distance measures as the basis of our cultural index follows the approach suggested by Fearon (2003). This is based on two building blocks: i) the international distribution of languages/ethnic groups/religions (that is, for each country, the percentage of the population speaking each language/belonging to each ethnic group/professing each religion), and ii) a matrix of distance, including all possible language/religion/ethnic group pairs. The distance matrix measures the similarity between any two pairs in terms of number of common branches in a "tree."[6] For the linguistic index, this information is drawn from the phylogenetic tree is provided by "Ethnologue: Languages of the World"; also the international distribution of languages is drawn from Ethnologue. For religious distance, we use the tree used in Spolaore and Wacziarg (2009)[7], while the international distribution of religions is drawn from the CIA World Factbook.

The final index of cultural distance is obtained as a weighted average of the three

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[5] Geodesic distance is calculated following the great circle formula, which uses latitudes and longitudes of the most important cities/agglomerations in terms of population.

[6] As explained in more detail in Appendix 9, the term "branches" describes the points where language/religion/ethnic groups divide in the tree. The tree is a diagram that shows the relationship between groups derived from a single "family."

[7] We thank Roman Wacziarg and James Fearon for kindly providing us with the tree

measures, in which the weights (0.35763 for religious distance, 0.51445 for linguistic distance, and 0.45956 for genetic distance) are obtained via factor analysis. The final index is a 195x195 matrix.

In general, we believe that such a measure of cultural distance denotes quite well the idea of cultural heritage originated by historic linkages.

Industrial distance (variable D_{HF}^{ind}) is obtained, following Finger and Kreinin (1979), as an index of dissimilarity between the export structure of two countries, H and F. It is calculated as $D(H,F) = 1 - \sum_s \min\left[X_s(H)X_s(F)\right]$, with the two terms in brackets referring to the share of sector s in total exports of countries H and F, respectively. The index ranges from 0 to 1 and grows with the "distance" between the two industrial structures.

The correlation among the abovementioned three measures of distance, reported in Table 2, ranges from 0.046 (geographic–cultural) to 0.265 (geographical–industrial).

Among the other variables used in the analysis, information on total population (i.e., variable Population), real interest rate (i.e., variable Intrate), and profit tax rate (variable Tax) is drawn from the World Development Indicators database provided by the World Bank.

CEPII data (Trade and Prod databases) are instead used to obtain information on GDP per capita (variable GDPcap), unit labor costs (variable ULC), and trade openness (variable OPEN), as well as for geographic distance. ULCs are calculated by applying wages to inverse labor productivity8, while OPEN is the ratio of the sum of exports and imports to total production.

Average years of schooling are from Barro and Lee (2013).

The variable Risk is a global index of country risk, provided by SACE, which positions all world countries in a ranking ranging from 1 (lowest risk) to 9 (highest risk).9

4 Aggregate analysis

In this section, we address the role of distance through the lens of the total number—$\widetilde{M}_{H,F}^{T} = \sum_{h \in H} \sum_{t \leq T} \widetilde{m}_{h,F}^{t}$—and value—$\widetilde{T}_{H,F}^{T} = \sum_{h \in H} \sum_{t \leq T} \widetilde{T}_{h}^{t} \widetilde{m}_{h,F}^{t}$—of the MAs that took place from country H to country F. A tilde is used to refer to the realized values of $m_{h,F}^{t}$ and T denotes the last period under consideration.

In the first case, in which the total number of MAs is used as the dependent variable, the

[8] Using the CEPII variables notation, ULC is calculated as $\frac{wage}{va/lab}$, where $wage$ is wage per employee, va is value added, and lab is the number of employees. Variables are expressed in nominal dollars.

[9] The final ranking takes into account political risk (associated with internal policy and international relationships), economic risk (economic conditions, public accounts, inflation, current account, balance of payments, and exchange rate), financial risk (bank structure and financial stability), and operative risk (legal system, attitude towards foreign investors, infrastructure, and natural conditions) (http://www.sace.it/).

estimated equation is

$$\widetilde{M}^{T}_{H,F} = \delta \mathbf{D}_{HF} + \gamma \mathbf{\Gamma}_{F} + Z_{H} + \varepsilon^{t}. \tag{8}$$

where $\mathbf{D}_{HF}$ is a vector encompassing geographic and cultural distance, as well as industrial distance, which is used as a control: $\mathbf{D}_{HF} = D^{geo}_{HF}, D^{cult}_{HF}, D^{ind}_{HF}$; $\mathbf{\Gamma}_{F}$ is a vector of exogenous factors specific to the host country (e.g., taxation, input costs, and knowledge spillovers) affecting firms' expected profits and search costs associated with the MA choice, and Z_{H} is a dummy for the acquiring country.

As mentioned in Section 3, we set T=2007, while the first year considered is 1985. Since we observe only the deals that effectively took place within the period, the analysis poses a zero inflation problem. Indeed, when the dataset is filled in considering all possible combinations of countries and sectors in each year, we end up with 254100 observations, 250544 of which are zeros. To deal with this issue, Equation (8) is estimated using a zero-inflated negative binomial regression. In particular, a hurdle model is considered, in which the equation for the first step (the equation that determines whether the observed count is zero) includes the same variables used in the second step.

With the total value of MAs as the dependent variable, we instead estimate as follows:

$$\widetilde{T}^{T}_{H,F} = \delta \ln \mathbf{D}_{HF} + \gamma \ln \mathbf{\Gamma}_{F} + Z_{H} + \varepsilon^{t}. \tag{9}$$

where the regressors are the same as in equation (8) but are now expressed in logarithms in order to address the zero-inflation issue through the Poisson pseudo-maximum likelihood estimator (PPML) introduced by Silva and Tenreyro (2006).

The estimation results of equations (8) and (9) are reported in Tables 3 and 4, respectively. Moreover, Tables 5 and 6 report the results of the PPML estimation separately for vertical and horizontal MAs.10 In the tables, Model (1) shows the results of a parsimonious regression in which only total population is used as a control for the destination country. A battery of country-specific controls is then introduced, in Models (2) and (3), in order to take several characteristics of the destination country into account. That is, we use unit labor cost (ULC) and real interest rate to control for cross-country differences in factor costs and productivity, profit tax rate to take transfer-pricing issues into account, and a trade openness measure (OPEN), which is meant to capture a higher probability of getting in touch with the firms in the target country and to somehow control for MAs taking place with the final goal of using the target country as an export base, under the fair assumption that higher openness to trade is associated with higher market potential. GDP per capita, country risk, and average years of schooling are used, alternatively, as measures of economic development. Since, as noticed in Section 3 and Appendix 8, the vast majority of MAs occur within a narrow group of developed countries, controlling for the degree of economic

[10] Disentangling between horizontal and vertical MAs is not possible in the zero-inflated negative binomial regressions for convergence achievement issues.

development is essential. In Tables 4, 5, and 6, we are also able to run a specification (Model 0) that includes destination country fixed effects, although the estimation is not able to achieve convergence in the case of vertical MAs. The average within the reference period is used for all the control variables.11

Starting with Table 3, a notable result is that geographic distance is found to be unimportant, in both the first and second stages of the hurdle model, once cultural distance is included. On the other hand, cultural and industrial distances from the target country are significant determinants of both zero inflation and the count process. The sign is as expected: higher distance is associated with more zeros, in the first stage, and a lower number of deals, in the second stage. Thus, MA flows are crucially affected, in terms of number of deals, by cultural and industrial distances, and not by geographical distance.

As for the control variables, estimations in Models (2), (3), and (4) seem to suggest that MA flows are first directed toward larger (more populated), richer, more developed, and less risky countries (i.e., higher GDPcap, Schooling, and Risk), in spite of high ULCs therein. Once the target countries are selected, MAs continue to be driven by cultural and industrial distances, notwithstanding high tax rates and low degree of openness. The degree of economic development is no longer significative in the second stage, since the most developed countries have already been picked in the first step.

These conclusions are broadly confirmed by the estimation via PPML, which, however, does not allow for the two-stage modeling. Although geographical distance is found to affect the value of the MAs in Table 4, Tables 5 and 6 show that this is true only for horizontal MAs. For vertical MAs, that is, for the vast majority of MAs, the prevailing role played by cultural distance with respect to geography is confirmed.12 As for the control variables, country size, together with the degree of economic development, is always significative. This is consistent with the results obtained through the hurdle model.

[11] The control variables are selected trying to keep the model as general and comprehensive as possible, on the one hand, and the correlation among regressors as low as possible, on the other hand. In fact, as Table 2 shows, the highest correlation between two control variables is 0.36 (correlation between *profit tax rate* and GDP per capita), while in Table (9), the R^2 of Model (0), which includes destination-country fixed effects, is only slightly higher than the R^2 of Models (2) and (3). We check for the importance of controlling for the goodness of the "productive environment" by using the number of years needed to enforce a contract (source: World Development Indicators) for the legal system and the ratio of bank deposits to GDP (source: World Development Indicators) for the financial system. R&D as a percentage of GDP (source: World Development Indicators) is used to control for the flows of MAs motivated by learning strategies. Measures of total and foreign market potential, drawn from the CEPII–*Market Potential database*, as well as the national GDP, are used to control for the demand side.

[12] With the zero-inflated negative binomial regressions, disentangling between vertical or horizontal MAs is not possible because the estimation could not achieve convergence.

5 Firm-level analysis

In this section, we investigate the role of sequentiality, inspired by the empirical model described in Section 2. First, to bring equation (7) to the data, a criterion of culturally contiguity has to be identified. The concept of contiguity is straightforward in the case of geographic distance, being contiguous to the generic country F and all those countries that share a border with F. However, in the case of cultural contiguity, we say that country H is culturally contiguous to country F if the cultural distance to the latter is lower than the value corresponding to the second percentile of country H's distribution of bilateral distance and, in addition, lies within the second decile of the worldwide distribution of bilateral cultural distance. Due to the combination of these two requirements, there might be countries in which the culturally closest countries are not "close enough" to identify a culturally contiguous country, given the global distribution of bilateral distances. This is the case, for example, of Japan.13 In back of the envelop calculations, we verify that the final results are not sensitive to deviations from this criterion.

To gain insight into whether sequentiality is actually an important dimension in the data, first we can ask to what extent firms tend to reinvest in the same country. To provide an order of magnitude of this type of persistency in the data, a t-test analysis can be used in order to understand whether having already invested in a country systematically increases the probability of investing in that country, and whether this continues to be true when the destination country is first-order or second-order, geographically or culturally, contiguous to the country of origin. To this end, we consider the conditional probability $Pr(m^t_{h,F} = 1 \mid M^t_{h,F} \geq 1, C(n)^i_{H,F} = 1)$ and perform (see Table 7) t-test statistics for the frequency of MAs directed towards countries in which the firm has already invested at least once (row 1); first-order geographically (row 2) or culturally (row 3) contiguous countries in which the firm has already invested at least once; and second-order geographically (row 4) or culturally (row 5) contiguous countries in which the firm has already invested at least once. The t-test considers the difference between frequency observed in the original sample and frequency observed in a control sample obtained by clustering the observations of the original sample into 553 groups, including only MAs performed in given periods14 by firms belonging to the same country and the same sector. The observations in the control sample are

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[13] Apart from Japan, the number of identified culturally contiguous countries ranges, for each country, from 1 (Greece) to 4 (AU, CA, FN, SW, UK, and US). In the case of the US, for instance, culturally contiguous countries are, in order, AU, UK, NZ, and IR. In the case of the UK, they are AU, NZ, IR, US.

[14] The periods (1985–1995, 1996–1999, 2000–2004, and 2005–2007) are identified considering the quartiles of the MA distribution. The t-test statistics take the form

$$\frac{z_s - z_c}{\sqrt{[z_s(1-z_s) + z_c(1-z_c)]/Z}} \quad \text{under} \quad H_0 : z_s = z_c \quad H_1 : z_s > z_c \quad (10)$$

where Z is the total number of observations and z is the frequency of MAs. Subscripts s and c are used to highlight whether z is observed in the original sample or in the control sample. Only deals by firms with at least one previous MA are considered in each period.

chosen by randomly drawing, from each group, a number of observations equal to the number of MAs in the group, so as to obtain two samples of identical size. The last step is repeated 1000 times in order to obtain confidence intervals for the t-test statistics. The results in Table 7 suggest the presence of a statistically significant tendency to re-invest in the same country. This tendency is statistically significant in general (first row) and when restricted to MAs in contiguous countries (second, third, and fourth rows). The null hypothesis of equal frequencies in the two samples is not rejected only in the case of second-order cultural distance.

In the following econometric analysis, we investigate in detail the sequentiality effects using a dichotomic dependent variable assuming value 1 if the destination country is (first-order or second-order, geographically or culturally, depending on the specification) contiguous to the country of origin, and 0 otherwise. The estimated equation is:

$$\begin{aligned}\tilde{m}^t_{h,F} \mathbf{|}\{C(n)^i_{H,F} = 1\} = \beta_o + \beta_1 \tilde{T}^t_h + \beta_2 \tilde{M}^t_{h,F} + \beta_3 \tilde{M}^t_{h,F(1)^{geo} \cap H(1)^{geo}} + \beta_4 \tilde{M}^t_{h,F(1)^{geo} \setminus H(1)^{geo}} + \\ + \beta_5 \tilde{M}^t_{h,F(1)^{cult} \cap H(1)^{cult}} + \beta_6 \tilde{M}^t_{h,F(1)^{cult} \setminus H(1)^{cult}} + \beta_7 D^j_{HF} + \\ + \beta_8 D^{ind}_{HF} + \beta_9 \mathbf{\Gamma}^t_F + \varepsilon^t\end{aligned} \tag{11}$$

with $n = 1,2; \quad i, j = geo, cult$ and $i \neq j$.

As well as the value of the MA (i.e., $\tilde{T}^t_h$), the right hand side includes the share (with respect to the total number of firm *h*'s past MAs at time *t*) of firm *h*'s past MAs, at time *t*, in: country F (i.e., $M^t_{h,F}$); countries that are first-order geographically contiguous to both H and F (i.e., $F(1)^{geo} \cap H(1)^{geo}$); countries that are first-order geographically contiguous to F only (i.e., $F(1)^{geo} \setminus H(1)^{geo}$); countries that are first-order culturally contiguous to both H and F (i.e., $F(1)^{cult} \cap H(1)^{cult}$); countries that are first-order culturally contiguous to F only (i.e., $F(1)^{cult} \setminus H(1)^{cult}$). $\mathbf{\Gamma}^t_F$ is a vector of exogenous factors specific to the host country. D^{ind}_{HF} is industrial distance between country H and country F. D^j_{HF} refers to cultural distance when the dependent variable is expressed in terms of geographical contiguity and to geographical distance when the dependent variable is expressed in terms of cultural contiguity.

The regression results are reported in Table 8. The estimation is carried out for first-order geographical contiguity (i.e., $\tilde{m}^t_{h,F} \mathbf{|}\{C(1)^{geo}_{H,F} = 1\}$) in column 1, first-order cultural contiguity in column 2 (i.e., $\tilde{m}^t_{h,F} \mathbf{|}\{C(1)^{cult}_{H,F} = 1\}$), second-order geographical contiguity in column 3 (i.e.,

$\widetilde{m}^t_{h,F} \mathrm{I}\{C(2)^{geo}_{H,F} = 1\}$), and second-order cultural contiguity in column 4 (i.e., $\widetilde{m}^t_{h,F} \mathrm{I}\{C(2)^{cult}_{H,F} = 1\}$). The results are obtained through a fixed-effects panel logit.

As well as checking the robustness of the results under different specifications, in Section 6, we provide additional results obtained through a random-effects Probit estimation with controls for the initial condition (Wooldridge, 2005). Throughout the analysis, we limit the discussion to the results passing all the robustness checks. To aid the interpretation, this is visualized in Figure 1, where the robustness results corresponding to models (1) and (2) are represented in panels A–C and E-G, respectively, while those of models (3) and (4) are reported in panels B–D and F-H, respectively.

A first result emerging from Table 8 concerns the effects associated with the number of previous MAs in the target country (i.e., $\widetilde{M}^t_{h,F}$). While uninfluential with respect to the probability of engaging in MAs in geographically contiguous countries, probably because the degree of knowledge of spatially close markets is already high, a positive effect on the probability of investing in culturally contiguous countries is detected (see the positive sign in Panel (G) of Figure 1). This might point to decreasing search costs and/or increasing expected revenues associated with the achievement of higher degrees of market knowledge in the target countries.

The number of past MAs in countries that are "culturally contiguous" to both H and F (i.e., variable $\widetilde{M}^t_{h,F(1)^{cult} \cap H(1)^{cult}}$) positively affects the probability of investing in country F, independently of the latter being geographically or culturally contiguous to H (see the positive sign in panels C and G of Figure 1). The probability of investing in a culturally contiguous country also increases with the number of past MAs in countries that are first-order culturally contiguous to the host but not to the acquisition country ($\widetilde{M}^t_{h,F(1)^{cult} \setminus H(1)^{cult}}$). However, this latter finding disappears under the Probit specification (see section 6). These results strongly point to a key role for cultural similarity in shaping the international geography of MAs. While this sequentiality effect is only in play at the level of first-order contiguity ($\widetilde{M}^t_{h,F(1)^{cult} \cap H(1)^{cult}}$ and $\widetilde{M}^t_{h,F(1)^{cult} \setminus H(1)^{cult}}$ are not significant in column 4), a geographical contiguity pattern seems to emerge only when second-order contiguity is addressed. In fact, the analysis reveals a statistically significant relationship between MAs in second-order geographically contiguous countries and MAs in countries that are geographically contiguous to both H and F. The probability of the former ($\widetilde{m}^t_{h,F} \mathrm{I}\{C(2)^{geo}_{H,F} = 1\}$) is positively related to the number of the latter ($\widetilde{M}^t_{h,F(1)^{geo} \cap H(1)^{geo}}$)—see panel B in Figure 1, while the probability of the latter (i.e., the probability of MAs in geographically contiguous countries— $\widetilde{m}^t_{h,F} \mathrm{I}\{C(1)^{geo}_{H,F} = 1\}$) is negatively affected by the number of the former (

$\widetilde{M}^{t}_{h,F(1)^{geo}\setminus H(1)^{geo}}$) —see panel A in Figure 1. The combination of these two effects seems to reveal that the geographical pattern of past investments matters only when the target markets are not geographically contiguous to the acquiring country. This idea is confirmed in model (4), in which the probability of investing in the second-order culturally contiguous country F is higher when the firm has already invested in countries that are first-order geographically contiguous to both F and H and is negatively affected by having already invested in countries that are first-order geographically contiguous to F but not to the country of origin H —see panel F in Figure 1.

The prominent role played by the cultural sphere with respect to geography is confirmed by the negative and significant coefficient of D^{cult}_{HF} in model (1) and by the positive and significant coefficient D^{geo}_{HF} in model (2). While cultural distance acts as a deterrent with respect to investing in geographically contiguous markets, when MAs are driven mainly by cultural relationships, MAs mostly reach geographically distant markets.

It is noteworthy that lower ULC, profit tax rates, and interest rates increase the probability of incoming MAs in geographically contiguous countries but not in culturally contiguous countries. In the latter case, MAs occur irrespective of higher ULC, profit tax rates, and interest rates. On the contrary, industrial distance always exerts a negative role.

The level of economic development, as captured by schooling, is always significant.

An straightforward interpretation of the positive effect of geographical distance on MAs in culturally contiguous countries and of the positive effect documented for ULC, profit tax rates, and interest rates might lie in the colonial heritage of the major acquiring countries (the US and UK). However, controlling for such an effect does not cause the coefficient of geographic distance to become negative (results available upon request).

Finally, the value of the acquisition is never significative.

6 Robustness analysis

The robustness of the results is tested first by using different specifications for the estimation of models 1 to 4 in Table 8. The results are reported, in order, in Tables 9 (for model 1), 10 (for model 2), 11 (for model 3), and 12 (for model 4).

Together with the benchmark estimation, reported in the first column in order to ease comparison, we show that the results are invariant with respect to using GDPpc (column 2) or Risk (column 3) instead of Schooling, and to including destination fixed effects (column 4). The latter specification increases the goodness of fit but does not affect the substance of the results.

In column 5, we attempt to consider the issue of the initial condition. Our data do not allow us to know whether a firm had already engaged in MAs before 1985. This generates a problem of initial condition15, which we address by estimating the benchmark specification as a

[15] The cumulative MA distribution of our firms becomes strictly positive only with their second MA. Thus,

Probit random-effects model, including the initial and average value of all the time-varying variables, namely the first six variables in the tables. This strategy, put forward by Wooldridge (2005), presents the chance to deal with the fact that we do not have "true" values observed at the beginning of the observed time window and that, as a consequence, we are not able to derive a reduced-form equation for the initial condition, based on available pre-sample information, as suggested by Heckman (1981). With respect to the fixed-effect estimation, this approach provides an alternative way to take firm effects into account, but under the hypothesis that they are not uncorrelated with the explanatory variables. The results, reported in column 5 of Tables 9 to 12, are very much in line with the FE estimation.

In Tables 13 and 14, we run the benchmark regression separately for horizontal and vertical MAs. In this case, we again use the random-effects Probit estimation because the fixed-effects estimation creates problems in terms of convergence achievement. The analysis reveals the absence of remarkable differences between the two types of MAs, meaning that they can be read as general results.

Finally, to ascertain that the final messages are not driven by the main players, we repeat the estimation without the first three countries—the US, UK, and Canada—in terms of both inward and outward flows of MAs (see Table 1). The results are also robust in this check.

7 Conclusions

We brought to the data an empirical model of MAs in which the probability that firm *h*, located in country H, engages in an MA in country F is influenced by two key dimensions—distance and sequentiality—as well as by other firm- and country-specific factors.

Distance is measured in terms of geography and culture. Sequentiality is intended as a combination of firm-level experience and (geographical or cultural) country-level distance and is measured in terms of a firm's (number of) past MAs in country F and in countries that are, either geographically or culturally, contiguous to H and/or F.

We first show that the aggregate flows of MAs are affected by cultural and not geographical distance. This evidence is particularly pervasive for vertical MAs. By considering firms' MA choices as a two-stage process in which firms first decide where to invest and then how much to invest (i.e., number of MAs), we observe that geographic distance is unimportant in both the first and second stages once cultural distance is controlled for. Instead, MA flows are first of all directed toward culturally and industrially similar, larger (more populated), richer, more developed, and less risky countries, in spite of the high ULCs therein. After the country selection in this first-step, the number of Mas in each country continue to be driven by cultural and industrial distances, notwithstanding high tax rates and low trade openness, with the degree of economic development no longer significative.

Moreover, while cultural distance acts as a deterrent with respect to the probability of

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although in the application we drop each firm's first deal, for which our observed experience is zero by construction, we are not aware of the number of past MAs at the time of the first deal observed in our data.

MAs in geographically contiguous countries, the MAs driven by cultural relationships (MAs in culturally contiguous countries) mostly reach geographically distant markets.

We then investigate the sequentiality effect, showing the following results.

The number of previous MAs in countries that are culturally contiguous to both the acquiring and target countries positively affects the probability of investing in the latter, independently of the acquiring and target countries being geographically or culturally contiguous. Moreover, when the acquiring and target countries are culturally contiguous, but not when they are geographically contiguous, the probability of a new MA is positively affected by a firm's experience (i.e., number of past MAs) in the target country.

Thus, while the hypothesis of a process of knowledge acquisition associated with MAs in geographically contiguous countries has to be rejected, the results strongly point to decreasing search costs and/or increasing expected revenues associated with the achievement of a higher degree of knowledge of the target countries when MAs are driven by cultural relationships.

While these cultural effects tend to disappear at the level of second-order contiguity, a geographical contiguity pattern seems to emerge only at that level of analysis. In other words, firms seem to expand geographically from the countries with which they share a common border, but increasing experience in more geographically distant countries results in a lower probability of returning to investing "in between."

These findings motivate further research efforts to better understand the role of sequentiality and distance in firms' international activities in general, not only in MA choices. In particular, while we do not study the processes underlying the experience and cultural effects that we document, targeted theoretical modeling would enable testing for the effectiveness of alternative mechanisms.

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Tables and Figures

Table 1: MA data: descriptive statistics by country of origin.

COUNTRY	Abbr.	N	Value	N (share of tot.)	Value (share of tot.)
United States	US	6474	1112325	26.53%	20.40%
United Kingdom	UK	5869	1269393	24.05%	23.28%
Canada	CA	2409	314659	9.87%	5.77%
France	FR	1102	557689	4.52%	10.23%
Germany	WG	1060	485834	4.34%	8.91%
Australia	AU	1046	175792	4.29%	3.22%
Netherlands	NT	871	331818	3.57%	6.09%
Sweden	SW	830	133608	3.40%	2.45%
Japan	JP	751	110867	3.08%	2.03%
Ireland	IR	581	44217	2.38%	0.81%
Italy	IT	504	120538	2.07%	2.21%
Spain	SP	497	229883	2.04%	4.22%
Switzerland	SZ	493	249992	2.02%	4.59%
Norway	NO	405	50391	1.66%	0.92%
Finland	FN	342	54216	1.40%	0.99%
Belgium	BL	338	88680	1.39%	1.63%
Denmark	DN	324	49160	1.33%	0.90%
Austria	AS	201	29538	0.82%	0.54%
New Zealand	NZ	139	16527	0.57%	0.30%
Portugal	PO	88	14168	0.36%	0.26%
Greece	GR	78	12436	0.32%	0.23%
TOTAL	-	24402	5451731	100%	100%

Table 2: Correlation table: main variables.

	D_{HF}^{geo}	D_{HF}^{cult}	D_{HF}^{ind}
D_{HF}^{geo}	1		
D_{HF}^{cult}	0.0533	1	
D_{HF}^{ind}	0.2912	0.2165	1

	$\tilde{M}^t_{h,F}$	$\tilde{M}^t_{h,F(1)^{geo}\cap H(1)^{geo}}$	$\tilde{M}^t_{h,F(1)^{geo}\setminus H(1)^{geo}}$	$\tilde{M}^t_{h,F(1)^{cult}\cap H(1)^{cult}}$	$\tilde{M}^t_{h,F(1)^{cult}\setminus H(1)^{cult}}$
$\tilde{M}^t_{h,F}$	1				
$\tilde{M}^t_{h,F(1)^{geo}\cap H(1)^{geo}}$	-0.0385	1			
$\tilde{M}^t_{h,F(1)^{geo}\setminus H(1)^{geo}}$	-0.073	-0.014	1		
$\tilde{M}^t_{h,F(1)^{cult}\cap H(1)^{cult}}$	-0.0393	0.1121	-0.0131	1	
$\tilde{M}^t_{h,F(1)^{cult}\setminus H(1)^{cult}}$	-0.0636	0.044	0.4202	-0.0518	1

	ULC	tax	IntRate	OPEN	POP$_{t}ot$	avgyrs	gdpcap	risk
ULC	1							
tax	0.099	1						
IntRate	-0.1343	0.0719	1					
OPEN	0.0226	-0.3182	-0.1002	1				
POP$_{t}ot$	-0.1755	0.2735	-0.0349	-0.4645	1			
avgyrs	-0.1255	0.5036	-0.3293	-0.3426	0.1218	1		
gdpcap	-0.0562	0.3691	-0.3095	-0.2291	0.0025	0.7421	1	
risk	-0.1372	-0.1791	0.4431	0.0927	0.0836	-0.4808	-0.7388	1

Table 3: Aggregate analysis: zero-inflated negative binomial regressions (full sample).

COUNT	Model 1	Model 2	Model 3	Model 4
D_{HF}^{geo}	0.007	-0.075	-0.081	-0.084
	(0.04)	(0.05)	(0.05)	(0.05)
D_{HF}^{cult}	-0.584***	-0.598***	-0.574***	-0.612***
	(0.04)	(0.05)	(0.05)	(0.06)
D_{HF}^{ind}	-0.804***	-0.723***	-0.708***	-0.759***
	(0.06)	(0.07)	(0.07)	(0.07)
$Population$	0.000***	0.000***	0.000***	0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
ULC		-0.000	-0.000	-0.000
		(0.00)	(0.00)	(0.00)
Tax		0.017***	0.015**	0.018**
		(0.01)	(0.00)	(0.01)
$IntRate$		-0.017***	-0.014**	-0.017**
		(0.00)	(0.01)	(0.01)
$OPEN$		-0.716***	-0.695***	-0.692***
		(0.16)	(0.16)	(0.18)
$GDPpc$		0.000		
		(0.00)		
$Risk$			-0.046	
			(0.03)	
$Schooling$				0.022
				(0.03)
Origin Effects	yes	yes	yes	yes
INFLATE	Model 1	Model 2	Model 3	Model 4
D_{HF}^{geo}	0.049	0.050	0.056	0.083
	(0.04)	(0.05)	(0.06)	(0.06)
D_{HF}^{cult}	0.478***	0.283***	0.281***	0.308***
	(0.04)	(0.06)	(0.06)	(0.06)
D_{HF}^{ind}	0.556***	0.170*	0.152	0.259**
	(0.06)	(0.09)	(0.08)	(0.08)
$Population$	-0.000**	-0.000**	-0.000	-0.000**
	(0.00)	(0.00)	(0.00)	(0.00)
ULC		-0.000***	-0.000***	-0.000***
		(0.00)	(0.00)	(0.00)
Tax		0.003	-0.003	-0.003
		(0.01)	(0.01)	(0.01)
$Intrate$		-0.008	-0.011	-0.008
		(0.01)	(0.01)	(0.01)
$OPEN$		0.091	0.222	0.031
		(0.19)	(0.18)	(0.21)
$GDPpc$		-0.000***		
		(0.00)		
$Risk$			0.205***	
			(0.04)	
$Schooling$				-0.125***
				(0.03)
Origin Effects	yes	yes	yes	yes
N	251680	157818	157818	150150
N zero	248398	154960	154960	147304
Vuong	9.736	8.818	8.925	8.861
Converged	1	1	1	1

Dependent variable: $\tilde{M}_{H,F}^{T} = \sum_{h \in H} \sum_{t \leq T} \tilde{m}_{h,F}^{t}$
Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Aggregate analysis: PPML regressions (full sample).

	Model 0	Model 1	Model 2	Model 3	Model 4
ln D^{geo}_{HF}	-0.319***	-0.411***	-0.272**	-0.232*	-0.422***
	(0.10)	(0.11)	(0.08)	(0.10)	(0.08)
ln D^{cult}_{HF}	-0.317	-1.079***	-0.861***	-0.809***	-0.791***
	(0.19)	(0.13)	(0.14)	(0.14)	(0.14)
ln D^{ind}_{HF}	-0.525	-1.824***	0.016	-0.484	-0.931***
	(0.29)	(0.19)	(0.30)	(0.28)	(0.19)
ln *Population*		0.633***	1.131***	0.958***	0.743***
		(0.05)	(0.11)	(0.11)	(0.06)
ln *ULC*			0.060**	0.038	0.047*
			(0.02)	(0.02)	(0.02)
ln *Tax*			0.031	0.195*	0.130
			(0.08)	(0.09)	(0.09)
ln *IntRate*			-0.168	-0.024	-0.084
			(0.15)	(0.17)	(0.11)
ln *OPEN*			0.561**	0.381	0.041
			(0.21)	(0.24)	(0.17)
ln *GDPpc*			1.156***		
			(0.15)		
ln *Risk*				-1.679***	
				(0.26)	
ln *Schooling*					2.592***
					(0.33)
Origin Effects	yes	yes	yes	yes	yes
Destination Effects	yes	not	not	not	not
N	251680	251680	137773	137773	130118
Pseudo R^2	0.443	0.390	0.407	0.397	0.393
Converged	1	1	1	1	1

Dependent variable: $\tilde{T}^T_{H,F} = \sum_{h\in H}\sum_{t\leq T}\tilde{T}^t_h\tilde{m}^t_{h,F}$
Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Aggregate analysis: PPML regressions (vertical MAs).

VERTICAL MAs	Model 0	Model 1	Model 2	Model 3	Model 4
ln D^{geo}_{HF}	-0.032	-0.241*	-0.030	-0.002	-0.203
	(0.13)	(0.12)	(0.12)	(0.16)	(0.13)
ln D^{cult}_{HF}	-0.717**	-1.293***	-1.265***	-1.193***	-1.189***
	(0.24)	(0.09)	(0.21)	(0.22)	(0.19)
ln D^{ind}_{HF}	-0.243	-1.487***	0.608	0.006	-0.575
	(0.50)	(0.24)	(0.58)	(0.54)	(0.37)
ln *Population*		0.587***	1.191***	1.035***	0.694***
		(0.07)	(0.16)	(0.29)	(0.10)
ln *ULC*			0.020	0.002	0.016
			(0.03)	(0.03)	(0.02)
ln *Tax*			-0.106**	-0.057	-0.030
			(0.03)	(0.12)	(0.04)
ln *IntRate*			0.353	0.315	-0.018
			(0.19)	(0.28)	(0.20)
ln *OPEN*			1.087**	0.718	0.382
			(0.41)	(0.69)	(0.48)
ln *GDPpc*			1.771***		
			(0.29)		
ln *Risk*				-2.078**	
				(0.74)	
ln *Schooling*					3.394***
					(0.69)
Origin Effects	yes	yes	yes	yes	yes
Destination Effects	yes	not	not	not	not
N	228800	228800	125245	125245	118288
Pseudo R^2	0.46	0.37	0.42	0.40	0.40
Converged	0	1	1	1	1

Dependent variable: $\tilde{T}^T_{H,F} = \sum_{h \in H} \sum_{t \leq T} \tilde{T}^t_h \tilde{m}^t_{h,F}$
Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Aggregate analysis: PPML regressions (horizontal MAs).

HORIZONTAL MAs	Model 0	Model 1	Model 2	Model 3	Model 4
ln D_{HF}^{geo}	-0.412***	-0.447***	-0.339***	-0.295**	-0.487***
	(0.10)	(0.12)	(0.09)	(0.10)	(0.08)
ln D_{HF}^{cult}	-0.217	-0.988***	-0.736***	-0.682***	-0.653***
	(0.22)	(0.16)	(0.15)	(0.16)	(0.16)
ln D_{HF}^{ind}	-0.610	-1.942***	-0.215	-0.678*	-1.063***
	(0.31)	(0.21)	(0.29)	(0.27)	(0.20)
ln *Population*		0.647***	1.107***	0.942***	0.756***
		(0.05)	(0.12)	(0.12)	(0.07)
ln *ULC*			0.064**	0.042	0.051*
			(0.02)	(0.03)	(0.02)
ln *Tax*			0.124	0.290**	0.239*
			(0.10)	(0.11)	(0.12)
ln *IntRate*			-0.211	-0.049	-0.072
			(0.16)	(0.19)	(0.13)
ln *OPEN*			0.447*	0.310	-0.033
			(0.21)	(0.24)	(0.17)
ln *GDPpc*			1.030***		
			(0.15)		
ln *Risk*				-1.575***	
				(0.25)	
ln *Schooling*					2.419***
					(0.36)
Origin Effects	yes	yes	yes	yes	yes
Destination Effects	yes	not	not	not	not
N	22880	22880	12528	12528	11830
Pseudo R^2	0.624	0.554	0.588	0.578	0.574
Converged	1	1	1	1	1

Dependent variable: $\tilde{T}_{H,F}^{T} = \sum_{h \in H} \sum_{t \leq T} \tilde{T}_h^t \tilde{m}_{h,F}^t$
Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: T-test statistics.

	# obs in Sample	# obs in Control*	ratio*	t-test*	P5*	P95*
$\sum_h \sum_F \sum_t \tilde{m}^t_{h,F}\, \mathbb{I}\{M^t_{h,F} \geq 1\} / \sum_h \sum_F \sum_t \tilde{m}^t_{h,F}$	4862	3658	1.329	15.568	15.106	16.056
$\sum_h \sum_F \sum_t \tilde{m}^t_{h,F}\, \mathbb{I}\{M^t_{h,F} \geq 1, C(1)^{geo}_{H,F} = 1\} / \sum_h \sum_F \sum_t \tilde{m}^t_{h,F}$	1073	894	1.200	4.170	3.841	4.498
$\sum_h \sum_F \sum_t \tilde{m}^t_{h,F}\, \mathbb{I}\{M^t_{h,F} \geq 1, C(1)^{cult}_{H,F} = 1\} / \sum_h \sum_F \sum_t \tilde{m}^t_{h,F}$	2221	1844	1.204	6.377	5.974	6.784
$\sum_h \sum_F \sum_t \tilde{m}^t_{h,F}\, \mathbb{I}\{M^t_{h,F} \geq 1, C(2)^{geo}_{H,F} = 1\} / \sum_h \sum_F \sum_t \tilde{m}^t_{h,F}$	681	564	1.208	3.385	2.337	4.380
$\sum_h \sum_F \sum_t \tilde{m}^t_{h,F}\, \mathbb{I}\{M^t_{h,F} \geq 1, C(2)^{cult}_{H,F} = 1\} / \sum_h \sum_F \sum_t \tilde{m}^t_{h,F}$	935	1003	0.933	-1.601	-2.670	-0.511

* Bootstrapped values (average values after 1000 replications)

Table 8: Firm-level analysis: benchmark results.

	(1)	(2)	(3)	(4)
Dep. Var.:	$\tilde{m}^t_{h,F}\ \mathbb{I}\{C(1)^{geo}_{H,F}=1\}$	$\tilde{m}^t_{h,F}\ \mathbb{I}\{C(1)^{cult}_{H,F}=1\}$	$\tilde{m}^t_{h,F}\ \mathbb{I}\{C(2)^{geo}_{H,F}=1\}$	$\tilde{m}^t_{h,F}\ \mathbb{I}\{C(2)^{cult}_{H,F}=1\}$
$\ln T^t_h$	-0.031	-0.073	-0.070	0.052
	(0.05)	(0.04)	(0.07)	(0.06)
$\tilde{M}^t_{h,F}$	0.529	1.677***	-0.722	-1.803*
	(0.48)	(0.38)	(0.90)	(0.81)
$\tilde{M}^t_{h,F(1)^{geo}\cap H(1)^{geo}}$	0.192	-1.013	20.274***	5.071*
	(0.97)	(1.62)	(4.64)	(2.15)
$\tilde{M}^t_{h,F(1)^{geo}\setminus H(1)^{geo}}$	-3.053**	-0.129	-2.051	-1.939*
	(1.09)	(0.53)	(1.10)	(0.92)
$\tilde{M}^t_{h,F(1)^{cult}\cap H(1)^{cult}}$	5.172***	2.595***	-6.853	-3.958
	(0.83)	(0.48)	(5.60)	(2.29)
$\tilde{M}^t_{h,F(1)^{cult}\setminus H(1)^{cult}}$	-4.700***	2.325***	-0.176	1.160
	(1.01)	(0.61)	(0.58)	(0.84)
D^{geo}_{HF}		5.898***		-4.633**
		(0.41)		(1.41)
D^{cult}_{HF}	-6.836***		3.253*	
	(0.72)		(1.34)	
D^{ind}_{HF}	-4.511***	-4.422***	-5.504***	-3.987*
	(0.86)	(0.75)	(1.40)	(1.82)
ULC	-0.000***	0.000***	-0.000**	0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
Tax	-0.028**	0.065***	-0.055**	0.006
	(0.01)	(0.01)	(0.02)	(0.02)
Intrate	-0.220***	0.013	-0.009	0.190***
	(0.06)	(0.01)	(0.02)	(0.02)
OPEN	0.918*	-0.229	0.931	-0.046
	(0.46)	(0.45)	(0.58)	(0.57)
Population	0.000	-0.000	-0.000**	-0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
Schooling	0.118*	0.589***	-0.094	0.650***
	(0.05)	(0.06)	(0.07)	(0.10)
Firm Effects	yes	yes	yes	yes
Time Effects	yes	yes	yes	yes
N	2455	5505	928	1793
Pseudo R^2	0.546	0.724	0.444	0.585
Converged	1	1	1	1

Fixed-effects Logit estimation. Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Robustness of firm-level analysis: MAs in first-order geographically contiguous countries.

	(1)	(2)	(3)	(4)	(5)
ln T_h^t	-0.031	0.006	-0.018	-0.001	-0.001
	(0.05)	(0.05)	(0.05)	(0.06)	(0.02)
$\tilde{M}_{h,F}^t$	0.529	0.697	0.660	0.038	0.383*
	(0.48)	(0.48)	(0.48)	(0.62)	(0.19)
$\tilde{M}_{h,F(1)^{geo}\cap H(1)^{geo}}^t$	0.192	-0.168	-0.000	-1.981	-0.905
	(0.97)	(0.96)	(0.97)	(1.16)	(0.50)
$\tilde{M}_{h,F(1)^{geo}\setminus H(1)^{geo}}^t$	-3.053**	-2.687*	-2.916**	-2.849*	-1.456***
	(1.09)	(1.11)	(1.10)	(1.29)	(0.42)
$\tilde{M}_{h,F(1)^{cult}\cap H(1)^{cult}}^t$	5.172***	5.737***	5.469***	3.351*	2.583***
	(0.83)	(0.83)	(0.82)	(1.70)	(0.27)
$\tilde{M}_{h,F(1)^{cult}\setminus H(1)^{cult}}^t$	-4.700***	-4.244***	-4.429***	-1.168	-2.004***
	(1.01)	(0.98)	(0.99)	(1.20)	(0.39)
D_{HF}^{cult}	-6.836***	-8.323***	-7.509***	-15.339***	-2.153***
	(0.72)	(0.79)	(0.75)	(1.80)	(0.25)
D_{HF}^{ind}	-4.511***	-5.510***	-4.453***	-0.301	0.248
	(0.86)	(0.95)	(0.92)	(1.95)	(0.25)
ULC	-0.000***	-0.000***	-0.000***		-0.000***
	(0.00)	(0.00)	(0.00)		(0.00)
Tax	-0.028**	-0.012	-0.019		-0.037***
	(0.01)	(0.01)	(0.01)		(0.00)
Intrate	-0.220***	-0.283***	-0.249***		-0.107***
	(0.06)	(0.06)	(0.06)		(0.02)
OPEN	0.918*	0.254	0.577		0.431**
	(0.46)	(0.46)	(0.44)		(0.16)
Population	0.000	0.000	0.000		0.000
	(0.00)	(0.00)	(0.00)		(0.00)
Schooling	0.118*				0.119***
	(0.05)				(0.02)
GDPpc		-0.000**			
		(0.00)			
Risk			0.018		
			(0.07)		
Firm Effects	yes	yes	yes	yes	not
Time Effects	yes	yes	yes	yes	yes
Destination Effects	not	not	not	yes	not
N	2455	2463	2463	2942	10428
Pseudo R^2	0.546	0.548	0.544	0.748	
Converged	1	1	1	0	1

Fixed-effects Logit (models 1 to 4); random-effects Probit (model 5).
Dependent variable: $\tilde{m}_{h,F}^t \, \mathbb{I}\{C(1)_{H,F}^{geo} = 1\}$
Average and initial values of time-varying regressors included in model 5.
Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Robustness of firm-level analysis: MAs in first-order culturally contiguous countries.

	(1)	(2)	(3)	(4)	(5)
$\ln T_h^t$	-0.073	-0.038	-0.017	0.031	-0.050**
	(0.04)	(0.04)	(0.04)	(0.05)	(0.02)
$\tilde{M}_{h,F}^t$	1.677***	2.257***	2.346***	2.201***	0.727***
	(0.38)	(0.36)	(0.35)	(0.45)	(0.15)
$\tilde{M}_{h,F(1)^{geo}\cap H(1)^{geo}}^t$	-1.013	-1.783	-1.924	3.055	0.093
	(1.62)	(1.58)	(1.57)	(1.75)	(0.67)
$\tilde{M}_{h,F(1)^{geo}\setminus H(1)^{geo}}^t$	-0.129	-0.045	-0.014	1.116	-0.520
	(0.53)	(0.55)	(0.54)	(0.81)	(0.28)
$\tilde{M}_{h,F(1)^{cult}\cap H(1)^{cult}}^t$	2.595***	3.818***	4.002***	2.351***	1.930***
	(0.48)	(0.48)	(0.48)	(0.57)	(0.23)
$\tilde{M}_{h,F(1)^{cult}\setminus H(1)^{cult}}^t$	2.325***	1.753**	1.799**	2.647***	0.023
	(0.61)	(0.58)	(0.58)	(0.71)	(0.27)
D_{HF}^{geo}	5.898***	6.226***	6.137***	7.109***	4.119***
	(0.41)	(0.40)	(0.39)	(0.70)	(0.16)
D_{HF}^{ind}	-4.422***	-4.673***	-5.775***	-8.834***	-4.343***
	(0.75)	(0.73)	(0.67)	(1.46)	(0.28)
ULC	0.000***	0.000***	0.000***		0.000***
	(0.00)	(0.00)	(0.00)		(0.00)
Tax	0.065***	0.108***	0.114***		0.062***
	(0.01)	(0.01)	(0.01)		(0.01)
Intrate	0.013	-0.046***	-0.053***		0.007
	(0.01)	(0.01)	(0.01)		(0.01)
OPEN	-0.229	-1.581***	-1.852***		-0.311
	(0.45)	(0.39)	(0.39)		(0.19)
Population	-0.000	-0.000*	-0.000*		-0.000***
	(0.00)	(0.00)	(0.00)		(0.00)
Schooling	0.589***				0.370***
	(0.06)				(0.02)
GDPpc		0.000***			
		(0.00)			
Risk			-0.152*		
			(0.07)		
Firm Effects	yes	yes	yes	yes	not
Time Effects	yes	yes	yes	yes	yes
Destination Effects	not	not	not	yes	not
N	5505	5513	5513	6460	10428
Pseudo R^2	0.724	0.697	0.692	0.828	
Converged	1	1	1	0	1

Fixed-effects Logit (models 1 to 4); random-effects Probit (model 5).
Dependent variable: $\tilde{m}_{h,F}^t \, \mathbb{I}\{C(1)_{H,F}^{cult} = 1\}$
Average and initial values of time-varying regressors included in model 5.
Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Robustness of firm-level analysis: MAs in second-order geographically contiguous countries.

	(1)	(2)	(3)	(4)	(5)
$\ln T_h^t$	-0.070	-0.013	-0.079	0.150	-0.045
	(0.07)	(0.07)	(0.07)	(0.12)	(0.03)
$\tilde{M}_{h,F}^t$	-0.722	-0.372	-0.687	1.157	-0.203
	(0.90)	(0.91)	(0.90)	(1.58)	(0.35)
$\tilde{M}_{h,F(1)^{geo}\cap H(1)^{geo}}^t$	20.274***	21.390***	22.057***	16.237***	8.037***
	(4.64)	(4.66)	(4.58)	(3.25)	(1.03)
$\tilde{M}_{h,F(1)^{geo}\setminus H(1)^{geo}}^t$	-2.051	-1.786	-1.993	-0.483	0.110
	(1.10)	(1.10)	(1.10)	(0.98)	(0.35)
$\tilde{M}_{h,F(1)^{cult}\cap H(1)^{cult}}^t$	-6.853	-7.274	-7.408	-14.287***	-2.893**
	(5.60)	(6.12)	(5.19)	(4.18)	(1.08)
$\tilde{M}_{h,F(1)^{cult}\setminus H(1)^{cult}}^t$	-0.176	-0.052	-0.257	-1.663	-0.629
	(0.58)	(0.44)	(0.53)	(1.59)	(0.39)
D_{HF}^{cult}	3.253*	2.044	2.414	31.362***	0.329
	(1.34)	(1.48)	(1.41)	(6.13)	(0.33)
D_{HF}^{ind}	-5.504***	-6.700***	-6.828***	-1.460	-1.174**
	(1.40)	(1.52)	(1.52)	(3.73)	(0.41)
ULC	-0.000**	-0.000***	-0.000**		-0.000***
	(0.00)	(0.00)	(0.00)		(0.00)
Tax	-0.055**	-0.050**	-0.064***		-0.018**
	(0.02)	(0.02)	(0.02)		(0.01)
Intrate	-0.009	-0.023	-0.025		-0.013
	(0.02)	(0.02)	(0.02)		(0.01)
OPEN	0.931	1.163*	0.966		0.474**
	(0.58)	(0.59)	(0.58)		(0.17)
Population	-0.000**	-0.000**	-0.000**		-0.000***
	(0.00)	(0.00)	(0.00)		(0.00)
Schooling	-0.094				-0.090***
	(0.07)				(0.03)
GDPpc		-0.000***			
		(0.00)			
Risk			0.315**		
			(0.12)		
Firm Effects	yes	yes	yes	yes	not
Time Effects	yes	yes	yes	yes	yes
Destination Effects	not	not	not	yes	not
N	928	930	930	1231	10301
Pseudo R^2	0.444	0.469	0.456	0.802	
Converged	1	1	1	1	1

Fixed-effects Logit (models 1 to 4); random-effects Probit (model 5).
Dependent variable: $\tilde{m}_{h,F}^t\ \mathbb{I}\{C(2)_{H,F}^{geo} = 1\}$
Average and initial values of time-varying regressors included in model 5.
Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: Robustness of firm-level analysis: MAs in second-order culturally contiguous countries.

	(1)	(2)	(3)	(4)	(5)
$\ln T_h^t$	0.052	0.048	0.087	0.002	0.029
	(0.06)	(0.06)	(0.06)	(0.08)	(0.03)
$\tilde{M}_{h,F}^t$	-1.803*	-1.716*	-1.586*	-1.302	-0.745**
	(0.81)	(0.79)	(0.77)	(0.98)	(0.28)
$\tilde{M}_{h,F(1)^{geo}\cap H(1)^{geo}}^t$	5.071*	4.795*	4.604*	8.670**	3.218***
	(2.15)	(2.12)	(1.98)	(3.10)	(0.82)
$\tilde{M}_{h,F(1)^{geo}\setminus H(1)^{geo}}^t$	-1.939*	-2.452**	-2.399**	-2.503	-0.870**
	(0.92)	(0.91)	(0.90)	(1.43)	(0.32)
$\tilde{M}_{h,F(1)^{cult}\cap H(1)^{cult}}^t$	-3.958	-4.247	-3.700	-10.763**	-2.528***
	(2.29)	(2.25)	(2.10)	(3.82)	(0.63)
$\tilde{M}_{h,F(1)^{cult}\setminus H(1)^{cult}}^t$	1.160	0.803	1.208	0.747	0.639**
	(0.84)	(0.79)	(0.78)	(1.11)	(0.23)
D_{HF}^{geo}	-4.633**	-3.295*	-3.835**	-1.615	-6.093***
	(1.41)	(1.36)	(1.32)	(2.41)	(0.50)
D_{HF}^{ind}	-3.987*	-3.173	-4.981**	3.000	-1.721***
	(1.82)	(1.82)	(1.75)	(3.31)	(0.48)
ULC	0.000***	0.000***	0.000***		0.000***
	(0.00)	(0.00)	(0.00)		(0.00)
Tax	0.006	0.036	0.051**		0.033***
	(0.02)	(0.02)	(0.02)		(0.01)
Intrate	0.190***	0.156***	0.166***		0.122***
	(0.02)	(0.02)	(0.02)		(0.01)
OPEN	-0.046	-0.571	-0.800		-0.976***
	(0.57)	(0.60)	(0.61)		(0.28)
Population	-0.000***	-0.000***	-0.000***		-0.000***
	(0.00)	(0.00)	(0.00)		(0.00)
Schooling	0.650***				0.263***
	(0.10)				(0.04)
GDPpc		0.000***			
		(0.00)			
Risk			-0.047		
			(0.13)		
Firm Effects	yes	yes	yes	yes	not
Time Effects	yes	yes	yes	yes	yes
Destination Effects	not	not	not	yes	not
N	1793	1799	1799	2058	10353
Pseudo R^2	0.585	0.563	0.541	0.747	
Converged	1	1	1	0	0

Fixed-effects Logit (models 1 to 4); random-effects Probit (model 5).
Dependent variable: $\tilde{m}_{h,F}^t \, \mathbb{I}\{C(2)_{H,F}^{cult} = 1\}$
Average and initial values of time-varying regressors included in model 5.
Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13: Robustness of firm-level analysis: horizontal MAs (Random-effectsestimation).

	(1)	(2)	(3)	(4)
Dep. Var.:	$\tilde{m}^t_{h,F}\ \mathbb{I}\{C(1)^{geo}_{H,F}=1\}$	$\tilde{m}^t_{h,F}\ \mathbb{I}\{C(1)^{cult}_{H,F}=1\}$	$\tilde{m}^t_{h,F}\ \mathbb{I}\{C(2)^{geo}_{H,F}=1\}$	$\tilde{m}^t_{h,F}\ \mathbb{I}\{C(2)^{cult}_{H,F}=1\}$
$\ln T^t_h$	0.001	-0.058**	-0.085*	0.037
	(0.02)	(0.02)	(0.03)	(0.03)
$\tilde{M}^t_{h,F}$	0.506*	0.852***	-0.202	-0.810*
	(0.22)	(0.18)	(0.40)	(0.33)
$\tilde{M}^t_{h,F(1)^{geo}\cap H(1)^{geo}}$	-1.325*	-0.154	7.209***	3.289***
	(0.60)	(0.80)	(1.09)	(0.92)
$\tilde{M}^t_{h,F(1)^{geo}\setminus H(1)^{geo}}$	-1.200**	-0.392	0.369	-0.866*
	(0.46)	(0.33)	(0.37)	(0.39)
$\tilde{M}^t_{h,F(1)^{cult}\cap H(1)^{cult}}$	2.881***	1.793***	-1.730	-2.305***
	(0.32)	(0.27)	(1.18)	(0.67)
$\tilde{M}^t_{h,F(1)^{cult}\setminus H(1)^{cult}}$	-1.656***	0.229	-0.797	0.473
	(0.42)	(0.31)	(0.43)	(0.27)
D^{geo}_{HF}		4.188***		-5.710***
		(0.19)		(0.55)
D^{cult}_{HF}	-2.328***		0.234	
	(0.29)		(0.35)	
D^{ind}_{HF}	0.226	-4.446***	-1.116*	-1.698**
	(0.29)	(0.33)	(0.44)	(0.54)
ULC	-0.000***	0.000***	-0.000**	0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
Tax	-0.035***	0.063***	-0.015*	0.037***
	(0.00)	(0.01)	(0.01)	(0.01)
Intrate	-0.105***	0.005	-0.015	0.110***
	(0.02)	(0.01)	(0.01)	(0.01)
OPEN	0.410*	-0.533*	0.614**	-0.697*
	(0.19)	(0.23)	(0.19)	(0.31)
Population	0.000	-0.000***	-0.000***	-0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
Schooling	0.096***	0.363***	-0.086**	0.217***
	(0.02)	(0.03)	(0.03)	(0.04)
Firm Effects	not	not	not	not
Time Effects	yes	yes	yes	yes
N	7686	7686	7587	7626
Converged	1	1	1	0

Random-effects Probit estimation. Average and initial values of time-varying regressors included in all columns.
Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
$p < 0.001$

Table 14: Robustness of firm-level analysis: vertical MAs (Random-effectsestimation).

	(1)	(2)	(3)	(4)
Dep. Var.:	$\tilde{m}^t_{h,F}$ $\mathbb{I}\{C(1)^{geo}_{H,F}=1\}$	$\tilde{m}^t_{h,F}$ $\mathbb{I}\{C(1)^{cult}_{H,F}=1\}$	$\tilde{m}^t_{h,F}$ $\mathbb{I}\{C(2)^{geo}_{H,F}=1\}$	$\tilde{m}^t_{h,F}$ $\mathbb{I}\{C(2)^{cult}_{H,F}=1\}$
$\ln T^t_h$	-0.024	-0.010	0.145	-0.003
	(0.05)	(0.04)	(0.09)	(0.06)
$\tilde{M}^t_{h,F}$	0.121	0.428	0.134	-0.277
	(0.43)	(0.32)	(0.85)	(0.57)
$\tilde{M}^t_{h,F(1)^{geo}\cap H(1)^{geo}}$	0.660	-0.039	11.901**	5.710*
	(1.14)	(1.53)	(4.00)	(2.88)
$\tilde{M}^t_{h,F(1)^{geo}\setminus H(1)^{geo}}$	-3.252**	-1.437*	-1.593	-0.769
	(1.23)	(0.67)	(1.31)	(0.81)
$\tilde{M}^t_{h,F(1)^{cult}\cap H(1)^{cult}}$	2.143***	3.011***	-7.947*	.
	(0.56)	(0.53)	(3.48)	.
$\tilde{M}^t_{h,F(1)^{cult}\setminus H(1)^{cult}}$	-3.798***	-1.124	0.858	1.187
	(1.14)	(0.59)	(1.15)	(0.69)
D^{geo}_{HF}		4.490***		-9.155***
		(0.37)		(1.69)
D^{cult}_{HF}	-1.435**		0.659	
	(0.52)		(0.92)	
D^{ind}_{HF}	0.891	-5.151***	-1.900	-1.146
	(0.56)	(0.66)	(1.21)	(1.11)
ULC	-0.000*	0.000***	-0.000*	0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
Tax	-0.050***	0.084***	-0.040*	0.025
	(0.01)	(0.01)	(0.02)	(0.02)
Intrate	-0.125*	0.026	0.013	0.189***
	(0.05)	(0.02)	(0.02)	(0.03)
OPEN	0.576	0.002	-0.314	-2.707***
	(0.32)	(0.46)	(0.59)	(0.75)
Population	-0.000	-0.000*	-0.000*	-0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
Schooling	0.258***	0.513***	-0.060	0.445***
	(0.05)	(0.07)	(0.08)	(0.12)
Firm Effects	not	not	not	not
Time Effects	yes	yes	yes	yes
N	2727	2742	2165	2399
Converged	1	1	1	0

Random-effects Probit estimation. Average and initial values of time-varying regressors included in all columns.
Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
$p < 0.001$

Table 15: Robustness of firm-level analysis: estimation without the US, UK, and Canada.

Dep. Var.:	(1) $\tilde{m}^t_{h,F}\ \mathbb{I}\{C(1)^{geo}_{H,F}=1\}$	(2) $\tilde{m}^t_{h,F}\ \mathbb{I}\{C(1)^{cult}_{H,F}=1\}$	(3) $\tilde{m}^t_{h,F}\ \mathbb{I}\{C(2)^{geo}_{H,F}=1\}$	(4) $\tilde{m}^t_{h,F}\ \mathbb{I}\{C(2)^{cult}_{H,F}=1\}$
$\ln T^t_h$	-0.039	-0.058*	-0.038	0.057
	(0.03)	(0.03)	(0.03)	(0.03)
$\tilde{M}^t_{h,F}$	-0.587	0.604*	0.219	-0.800*
	(0.41)	(0.31)	(0.39)	(0.39)
$\tilde{M}^t_{h,F(1)^{geo}\cap H(1)^{geo}}$	-0.681	-2.062**	8.251***	3.356**
	(0.57)	(0.71)	(1.08)	(1.03)
$\tilde{M}^t_{h,F(1)^{geo}\setminus H(1)^{geo}}$	-1.325*	-0.423	0.278	-1.031**
	(0.58)	(0.41)	(0.38)	(0.38)
$\tilde{M}^t_{h,F(1)^{cult}\cap H(1)^{cult}}$	1.827***	2.560***	-2.997**	-1.415*
	(0.55)	(0.32)	(1.11)	(0.71)
$\tilde{M}^t_{h,F(1)^{cult}\setminus H(1)^{cult}}$	-0.274	-1.375**	-0.775	0.834**
	(0.42)	(0.48)	(0.42)	(0.28)
D^{geo}_{HF}		1.704***		-6.056***
		(0.18)		(0.66)
D^{cult}_{HF}	-0.334		-0.262	
	(0.31)		(0.35)	
D^{ind}_{HF}	-6.229***	2.812***	-1.302**	-4.017***
	(0.64)	(0.38)	(0.45)	(0.72)
ULC	-0.000***	-0.000***	-0.000**	0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
Tax	0.043***	0.008	-0.013	0.024*
	(0.01)	(0.01)	(0.01)	(0.01)
Intrate	-0.057***	0.033***	-0.015	0.136***
	(0.02)	(0.01)	(0.01)	(0.01)
OPEN	0.126	-0.983***	0.356	-1.008**
	(0.18)	(0.23)	(0.19)	(0.32)
Population	-0.000	-0.000***	-0.000	-0.000***
	(0.00)	(0.00)	(0.00)	(0.00)
Schooling	-0.176***	0.379***	0.042	0.416***
	(0.03)	(0.04)	(0.03)	(0.06)
Firm Effects	not	not	not	not
Time Effects	yes	yes	yes	yes
N	5777	5789	5751	5777
Converged	1	1	1	1

Random-effects Probit estimation. Average and initial values of time-varying regressors included in all columns.
Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
$p < 0.001$

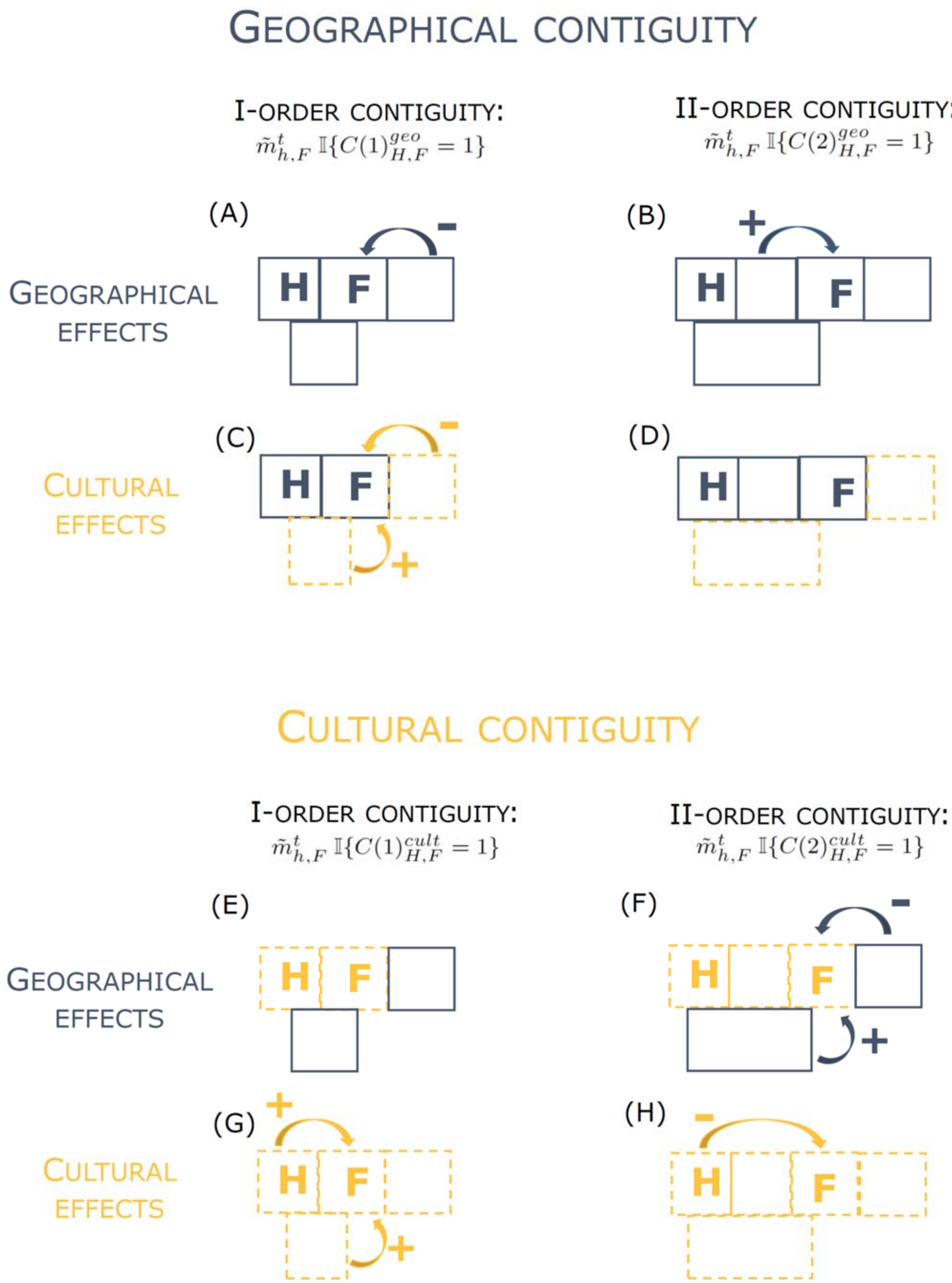

Figure 1: Firm-level analysis: main results on sequentiality.

Appendix

A Appendix: Merger and Acquisition Data

As stated in Section 3, data on MAs are drawn from the Thomson Financial Security Database. A detailed description of the database can be found in Brakman et al. (2006).

The database reports up-to-date information on all MAs around the world. For each deal, the information reported encompasses the following: country of origin and country of destination, year, data of announcement, value of the acquisition, ISIC industry of the acquiring firm, and ISIC industry of the target firm.

Figures 2 to 8 provide a graphical representation of the data.

Figure 2 highlights how the biggest players in terms of outward MAs tend also to be the biggest in terms of inward flows of MAs. These players are mostly developed countries, as highlighted by Figure 3, which shows that the vast majority of MAs is directed toward OECD countries.

Overall, MAs occur mostly within a narrow group of developed countries, among which the US is the undisputed leader.

Figure 4 shows that the sectors more interested in MAs are manufacturing, followed by the finance, insurance, and real estate industry and services industries.

Figure 5 highlights the time variability in the data, which concerns both the number and value of the MAs.

Finally, it is noteworthy that larger MA flows are directed toward the geographically distant countries of South America, which reflect the attention in this region by Spain compared to other countries, such as Japan. This offers a first intuition of the potential role of cultural distance.

B Appendix: Construction of the Cultural Distance Matrix.

As explained in Section 3, our bilateral measure of cultural distance is an index obtained as a weighted average of three distance measures: genetic, linguistic, and religious distances. The former is taken from Spolaore and Wacziarg (2009). The linguistic and religious distances are computed using information drawn from Ethnologue and the CIA World Factbook.

The intuition on which the three measures are based is the same. For all of them, we use the approach conceived by Fearon (2003), also adopted by Desmet et al. (2009). This is based on two pieces of information: i) the international distribution of languages, ethnic groups, or religions (i.e., for each country, the percentage of population speaking each language, belonging to each ethnic group, or professing each religion); ii) a matrix of distance, including all possible language/religion/ethnic group pairs derived by a "tree." The tree is a diagram that shows the relationship between groups derived from a single "family" and that allows measuring the similarity between two languages, ethnic groups, or religions in terms of the number of common "branches" (i.e., points at which languages, religions, or ethnic groups divide).

Fearon (2003) proposes the following index to measure the distance between the two groups i and j:

$$\tau_{ij} = 1 - \left(\frac{l}{m}\right)^{\alpha} \tag{12}$$

where l is the number of shared branches between i and j; m is the maximum number of shared branches between any two languages, religions, or ethnic groups; α is a parameter with an assigned value of 0.5.[15]

The distance between countries H and F is then calculated with the following given formula:

$$\sum_{k=1}^{K} \left(Q_i^H Q_j^F \tau_{ij} \right)_k \tag{13}$$

where Q_i and Q_j denote the share of population speaking a language, belonging to an ethnic group, or professing religion i and j, respectively, and K represents all possible combinations of languages, ethnic groups, or religions in H and F. The index varies between 0 (maximal similarity) and 1 (maximal inequality).

The linguistic distance matrix is fully derived by applying Eq. (12) to information drawn from the phylogenetic linguistic tree provided by "*Ethnologue: Languages of the World*." The phylogenetic tree is a diagram reflecting the tree model of language origination. The first level of the tree consists of a certain number of language families.[16] A family is a monophyletic unit in which all members derive from a common ancestor; all attested descendants of that ancestor are included in the family. Language families can be divided into smaller phylogenetic units ("branches"). The position of each language in the tree is identified by a code from which a common number of branches can be identified. The maximum number of branches in the Ethnologue tree is 15. As an example, since English and Standard German share tree branches (3.5.2.1.1 is the code for English and 3.5.2.3.1.1.1.1 is the code for Standard German), their distance, according to Eq. (12), amounts to $1 - \left(\frac{3}{15}\right)^{0.5}$.

In addition, the international distribution of languages is obtained from Ethnologue.

As explained in Section 3, the final index of cultural distance is obtained as a weighted average of the three measures, in which the weights are obtained via factor analysis. In particular, the weights provided by principal component analysis are: 0.35763 for religious distance, 0.51445 for linguistic distance, and 0.45956 for genetic distance.

In general, our cultural distance measure picks quite well the idea of the cultural heritage originated by historic linkages and combines this idea with the genetic traits of populations.

The final index of linguistic distance is calculated based on 6855 languages distributed across 195 countries. The index is available, together with the other measures of distance, on the first author's website. From the website, it is also possible to download a replication package with all the data and STATA codes.

[15]See Desmet et al. (2009, p.1301), for an explanation of the meaning and estimation of α.

[16]Ethnologue identifies 141 different language families (i.e., top-level genetic groups). Six of these (namely, Afro-Asiatic, Austronesian, Indo-European, Niger-Congo, Sino-Tibetan, and Trans-New Guinea), each of which has at least 5% of the speakers of the world's languages, stand out as the major language families of the world. Together, they account for nearly two-thirds of all languages and five-sixths of the world's population.

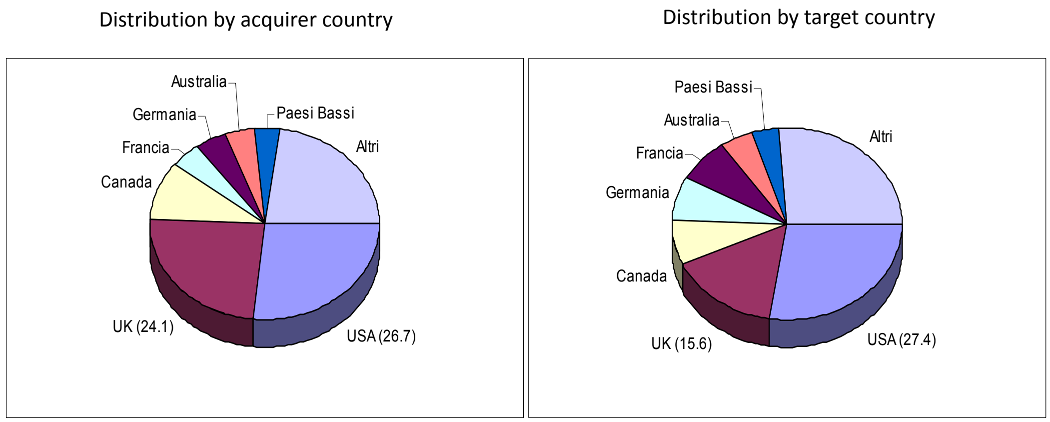

Figure 2: MA data: distribution by country.

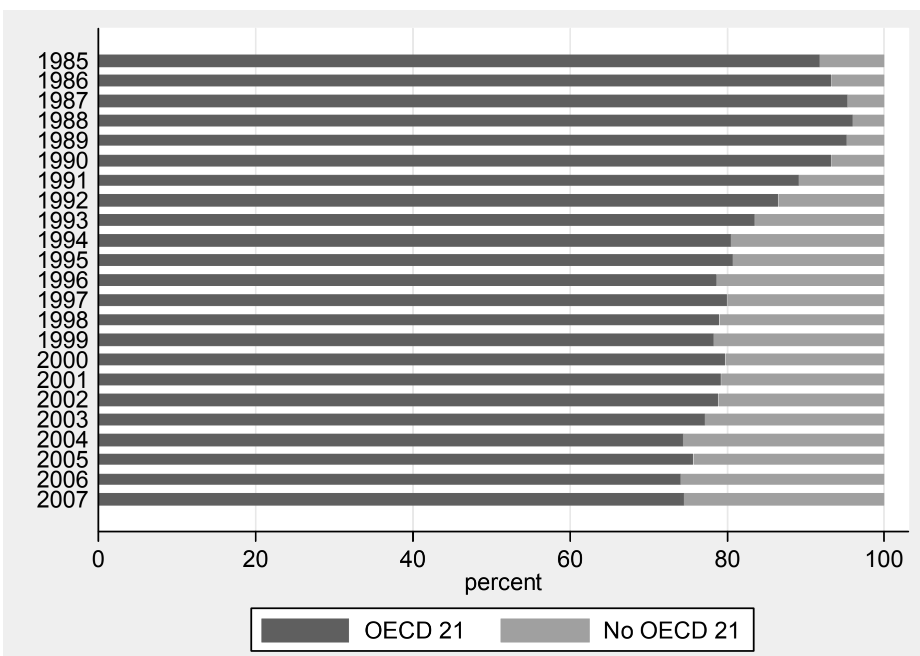

Figure 3: MA data: distribution by OECD membership of the target country.

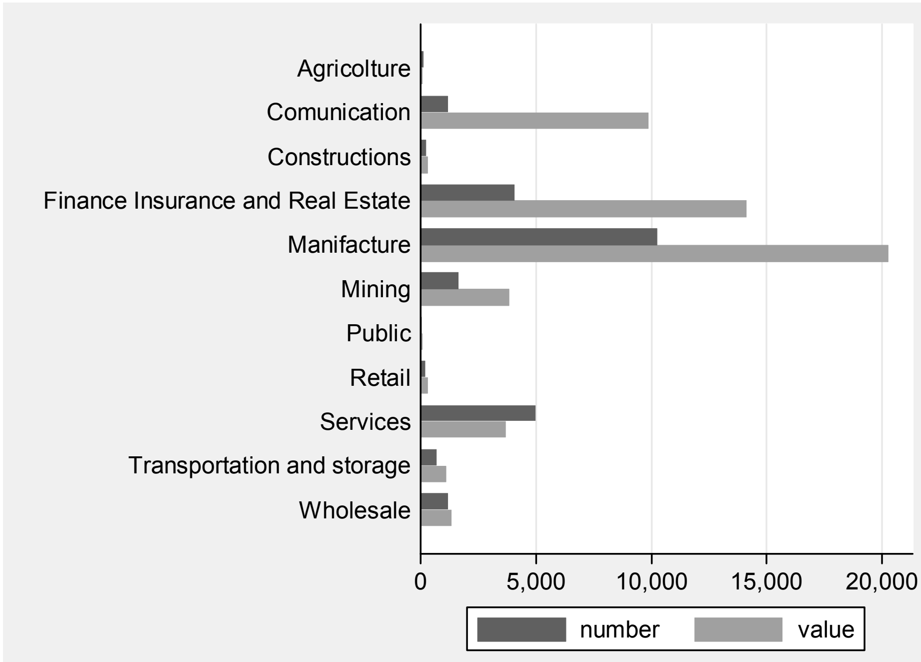

Figure 4: MA data: distribution by sector.

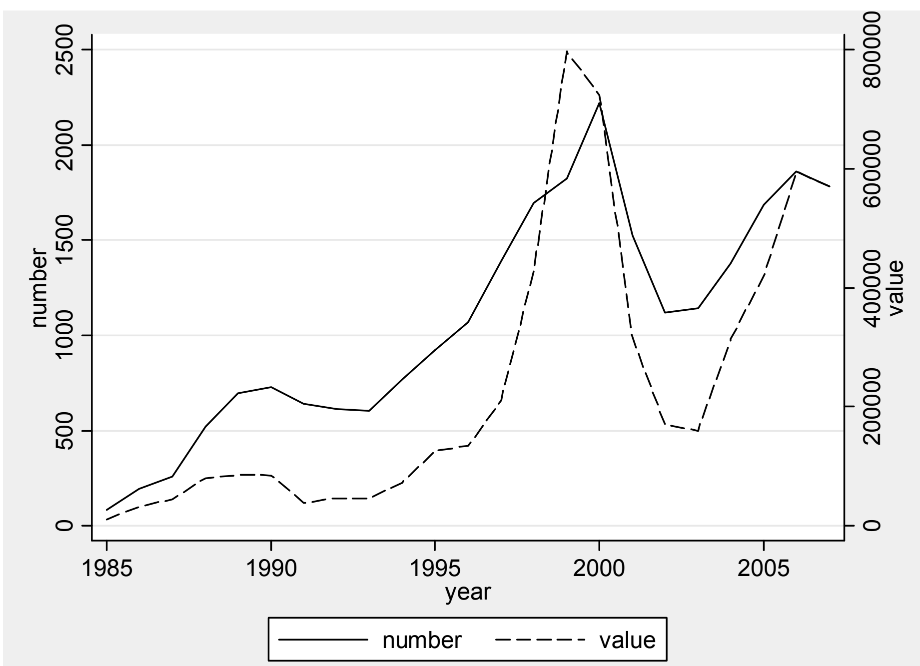

Figure 5: MA data: distribution by year.

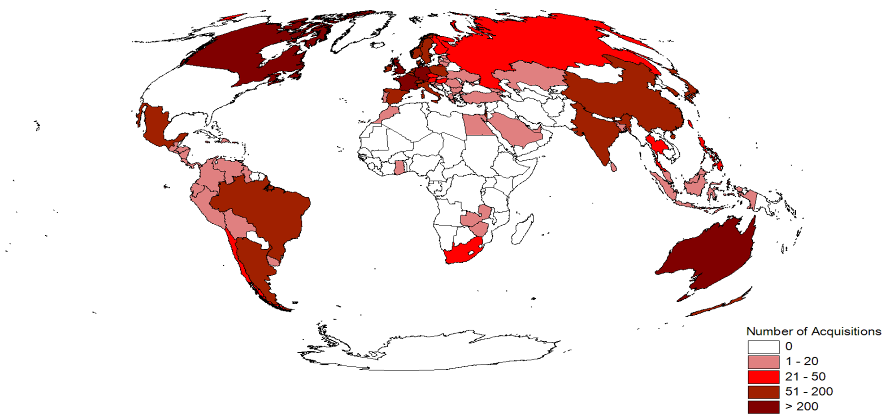

Figure 6: MA data: world map of US outward MAs (number).

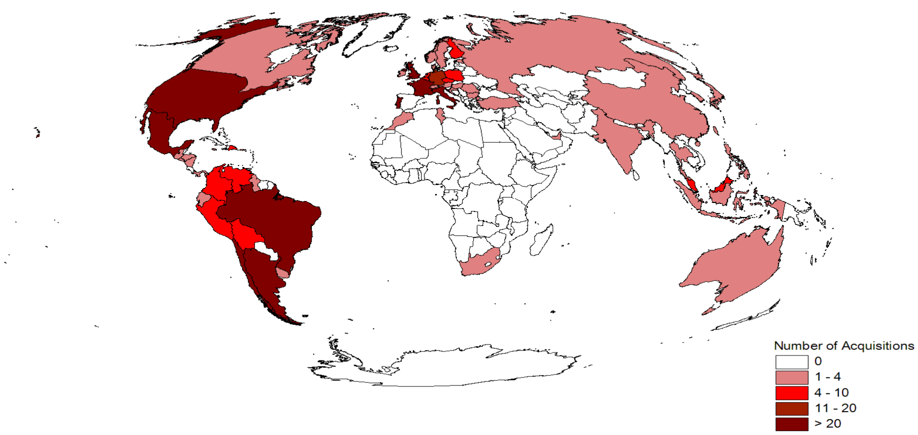

Figure 7: MA data: world map of Spanish outward MAs (number).

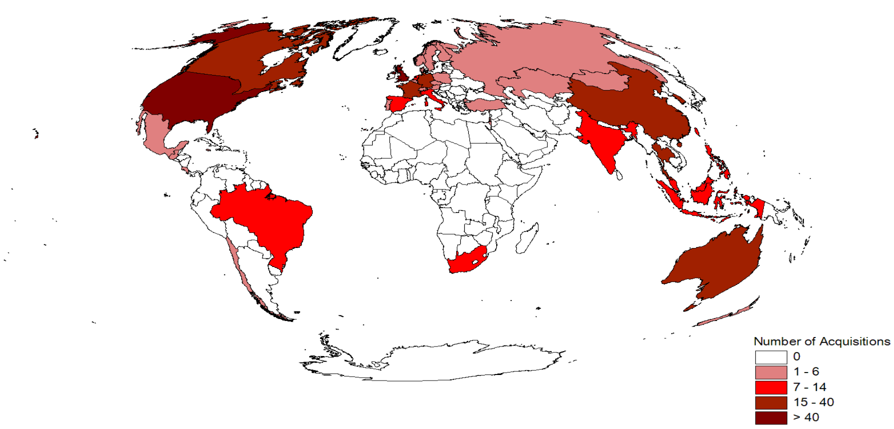

Figure 8: MA data: world map of Japanese outward MAs (number).

Table 16: Data: percentage of horizontal MAs at different sectoral breakdowns.

	Horizontal (Intra-sector) MAs (%)
4-digit	31.1
3-digit	39.1
2-digit	50.7

Table 17: Cultural distance: top four culturally similar countries by acquiring country.

Country A	Country B	Cultural distance	1 if contiguous	Country A	Country B	Cultural distance	1 if contiguous
Australia	United Kingdom	0.0171	1	Italy	France	0.2128	1
Australia	New Zealand	0.0349	1	Italy	Brazil	0.2247	0
Australia	Ireland-Rep	0.0473	1	Japan	Thailand	0.5689	0
Australia	United States	0.0969	1	Japan	China	0.5865	0
Austria	Germany	0.1129	1	Japan	South Korea	0.6016	0
Austria	Switzerland	0.2445	1	Japan	Singapore	0.6192	0
Austria	Netherlands	0.2686	1	Netherlands	Austria	0.2686	1
Austria	Ireland-Rep	0.2730	0	Netherlands	Germany	0.2767	1
Belgium	Netherlands	0.2086	1	Netherlands	Australia	0.2869	0
Belgium	France	0.2458	1	Netherlands	Ireland-Rep	0.2920	0
Belgium	Spain	0.2850	0	New Zealand	Australia	0.0349	1
Belgium	Portugal	0.2850	0	New Zealand	United Kingdom	0.0395	1
Canada	Australia	0.1146	1	New Zealand	United States	0.1179	1
Canada	United Kingdom	0.1227	1	New Zealand	Canada	0.1390	0
Canada	Ireland-Rep	0.1367	1	Norway	Denmark	0.1841	1
Canada	New Zealand	0.1390	1	Norway	Sweden	0.1917	1
Denmark	Norway	0.1841	1	Norway	Germany	0.3219	1
Denmark	Sweden	0.1930	1	Norway	United Kingdom	0.3237	0
Denmark	Germany	0.3211	1	Portugal	Brazil	0.0025	1
Denmark	United Kingdom	0.3239	0	Portugal	Spain	0.1198	1
Finland	Estonia	0.3750	1	Portugal	Poland	0.3443	0
Finland	Hungary	0.3943	1	Portugal	Germany	0.3740	0
Finland	Sweden	0.5007	1	Spain	Uruguay	0.0408	1
Finland	Norway	0.5245	1	Spain	Argentina	0.0633	1
France	Portugal	0.1721	1	Spain	Cuba	0.0846	1
France	Spain	0.1754	1	Spain	Colombia	0.0945	0
France	Uruguay	0.1800	1	Sweden	Norway	0.1917	1
France	Brazil	0.1956	0	Sweden	Denmark	0.1930	1
Germany	Austria	0.1129	1	Sweden	Iceland	0.2540	1
Germany	Switzerland	0.2591	1	Sweden	Germany	0.3274	1
Germany	Netherlands	0.2767	1	Switzerland	Austria	0.2445	1
Germany	Australia	0.2850	0	Switzerland	Germany	0.2591	1
Greece	Ukraine	0.4030	1	Switzerland	France	0.2707	1
Greece	Romania	0.4059	0	Switzerland	Netherlands	0.3059	0
Greece	Bulgaria	0.4170	0	United Kingdom	Australia	0.0171	1
Greece	Macedonia	0.4172	0	United Kingdom	New Zealand	0.0395	1
Ireland-Rep	Australia	0.0473	1	United Kingdom	Ireland-Rep	0.0629	1
Ireland-Rep	United Kingdom	0.0629	1	United Kingdom	United States	0.1011	1
Ireland-Rep	United States	0.1316	1	United States	Australia	0.0969	1
Ireland-Rep	Canada	0.1367	0	United States	United Kingdom	0.1011	1
Italy	Portugal	0.2000	1	United States	New Zealand	0.1179	1
Italy	Spain	0.2113	1	United States	Ireland-Rep	0.1316	1

Online Appendix

Linguistic and religious distance: comparison with available measures

It can be interesting to confront our linguistic and religious indexes with comparable measures obtained through the same procedure.

Recently, two linguistic distance measures, based on Fearon's procedure and using the Ethnologue data, which are thereby comparable with ours, have been made available for download. The first is used in Melitz and Toubal (2014) and is distributed through the CEPII website (variable LP1). The second is described by Spolaore and Wacziarg (2015) and can be downloaded from the authors' website.

For the three measures, Table 18 reports the summary statistics obtained after averaging the values by country (for each country, we consider the average bilateral distance to the other countries).

Spolaore and Wacziarg (2015) have information on 156 countries and for 7 of them, the linguistic distance is always 1 (the maximum value). Compared to our measure, the distribution looks more skewed toward high values.

As for the measure developed by Melitz and Toubal (2014), a key difference with respect to ours is that their measure subsumes the differences between languages in four possible cases: 0 for two languages belonging to separate family trees, 0.25 for two languages belonging to different branches of the same family tree (English and French), 0.50 for two languages belonging to the same branch (English and German), and 0.75 for two languages belonging to the same sub-branch (German and Dutch). Consequently, the resulting index is less articulated than ours: in 35 of the 195 countries under consideration (the index takes a value of zero whenever two languages belong to different families), the index of linguistic proximity takes a value of zero (i.e., the maximum value) and the overall variability is lower than ours.

Our index covers 195 countries and there are no countries for which bilateral distances are always maximum or minimum. A comprehensive list of the countries covered by the three datasets is reported in Table 20.

As recognized by Spolaore and Wacziarg, "a drawback of tree-based measures is that linguistic distance is calculated on a discrete number of common nodes, which could be an imperfect measure of separation times between languages. A single split between two languages that occurred a long time ago would result in the same measure of distance than a more recent single split, but the languages in the first case may in fact be more distant than in the second. Similarly, numerous recent splits may result in two languages sharing few nodes, while a smaller number of very distant linguistic subdivisions could make distant languages seem close." (Spolaore and Wacziarg, 2015, p. 12) To overcome these limitations, other measures have been developed. Spolaore and Wacziarg (2015) describe in detail measures based on the answers provided to the World Values Survey. Melitz and Toubal (2014) rely on a linguistic proximity indicator drawn from the Automated Similarity Judgment Program, which provides an index of similarities of words with identical meanings for a limited vocabulary of words between different language pairs based on expert judgments. However, the number of countries for which these measures are available is in general much lower, which is why we rely only on tree-based measures.

For religious distance, we use the same tree as Spolaore and Wacziarg (2009), which Roman Wacziarg and James Fearon kindly provided us, while the international distribution of religions was drawn from the CIA World Factbook.

Table 19 highlights that, although the distributions of our index of religious distance look quite similar to the one in Spolaore and Wacziarg (2015), our measure includes more countries and features a higher variability, probably because of the different data on the international distribution of religions. A comprehensive list of the countries covered by the two matrixes is reported in Table 21.

Table 18: Index of linguistic distance: comparison of Spolaore and Wacziarg (2015) and Melitz and Toubal (2014)

Melitz and Toubal (2014)

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	195
25%	0.1	0	Sum of Wgt.	195
50%	0.8		Mean	0.6487432
		Largest	Std. Dev.	0.5816996
75%	1.1	1.665007		
90%	1.4	1.815939	Variance	0.3383744
95%	1.5	1.855484	Skewness	0.1467184
99%	1.9	1.882626	Kurtosis	1.463548

Spolaore and Wacziarg (2015)

	Percentiles	Smallest		
1%	0.9	0.8820565		
5%	0.9	0.8879343		
10%	0.9	0.8926941	Obs	156
25%	1	0.9024695	Sum of Wgt.	156
50%	1		Mean	0.9719247
		Largest	Std. Dev.	0.0244978
75%	1	1		
90%	1	1	Variance	0.0006001
95%	1	1	Skewness	-1.534781
99%	1	1	Kurtosis	5.308946

Our index

	Percentiles	Smallest		
1%	0.8	0.8252253		
5%	0.8	0.8252253		
10%	0.9	0.8266248	Obs	195
25%	0.9	0.8274217	Sum of Wgt.	195
50%	0.9		Mean	0.9251468
		Largest	Std. Dev.	0.0449256
75%	1	0.9964985		
90%	1	0.9969382	Variance	0.0020183
95%	1	0.9969657	Skewness	-0.4648507
99%	1	0.9999439	Kurtosis	2.59972

Table 19: Index of religious distance: comparison with Spolaore and Wacziarg (2015).

Spolaore and Wacziarg (2015)

	Percentiles	Smallest		
1%	0.7491348	0.7420148		
5%	0.7654374	0.7491348		
10%	0.7817982	0.7519308	Obs	156
25%	0.818274	0.7585266	Sum of Wgt.	156
50%	0.8598031		Mean	0.8584846
		Largest	Std. Dev.	0.0545077
75%	0.9002472	0.9646417		
90%	0.9278184	0.9731171	Variance	0.0029711
95%	0.9501613	0.9769342	Skewness	-0.022931
99%	0.9769342	0.9812025	Kurtosis	2.408189

Our Index

	Percentiles	Smallest		
1%	0.6265798	0.6265798		
5%	0.6265798	0.6265798		
10%	0.6279002	0.6265798	Obs	195
25%	0.6348516	0.6265798	Sum of Wgt.	195
50%	0.707397		Mean	0.7115864
		Largest	Std. Dev.	0.0895338
75%	0.7450541	0.9653098		
90%	0.8290228	0.9660383	Variance	0.0080163
95%	0.9426194	0.9660496	Skewness	1.320709
99%	0.9660496	0.9701512	Kurtosis	4.247559

Table 20: Index of linguistic distance: comparison with Spolaore-Wacziarg (2015) and Melitz-Toubal (2014).

	Our index		Melitz-Toubal (2014)		Spolaore-Wacziarg (2015)	
	Min	Max	Min	Max	Min	Max
Afghanistan	0.601132	1	0	3.891733	0.9365966	1
Albania	0.6307231	1	0	1.945866	0.8589453	1
Algeria	0.4789545	1	0	5.837599	0.8164966	1
Angola	0.2748575	1	0	5.837599	1	1
Antigua and Barbuda	0.1223147	1	0	3.891733		
Argentina	0.0337567	1	0	5.837599	0.0995034	1
Armenia	0.7511756	1	0	1.945866	0.9578312	1
Australia	0.0178127	1	0	3.891733	0.1103723	1
Austria	0.2315434	1	0	5.837599	0.3090368	1
Azerbaijan	0.6485394	1	0	3.269056	0.9148143	1
Bahamas	0.2948545	1	0	3.891733		
Bahrain	0.3258855	1	0	5.837599	0.8049845	1
Bangladesh	0.5560532	1	0	3.891733	0.8828081	1
Barbados	0.4516945	1	0	3.891733		
Belarus	0.5617793	1	0	4.086319	0.8487618	1
Belize	0.5781972	1	0	3.34689		
Benin	0.5551797	1	0	0	0.8489221	1
Bermuda	0.2948545	1	0	3.891733		
Bhutan	0.7329378	1	0	1.75128	0.8659644	1
Brazil	0.025367	1	0	5.837599	0	1
Bulgaria	0.5999311	1	0	3.891733	0.9046388	1
Burkina Faso	0.5306003	1	0	0	0.8735732	1
Burundi	0.1843011	1	0	3.891733	0.5773503	1
Cameroon	0.4181035	1	0	0	0.8239278	1
Canada	0.2000898	1	0	3.307973	0.5383005	1
Cape Verde	0.6585576	1	0	3.891733		
Central African Republic	0.6160944	1	0	0	0.8815502	1
Chad	0.867963	1	0	0	0.9220702	1
Chile	0.0153058	1	0	5.837599	0	1
China	0.5589733	1	0	1.070227	0.4794149	1
Colombia	0.0180865	1	0	5.837599	0	1
Comoros	0.272656	1	0	5.837599		
Costa Rica	0.023918	1	0	5.837599	0.1428572	1
Croatia	0.4913954	1	0	5.837599	0.9081706	1
Cuba	0	1	0	5.837599	0.0999999	1
Cyprus	0.2465824	1	0	1.537235	0.4584368	1
Czech Republic	0.5422176	1	0	5.837599	0.9436892	1
Denmark	0.430337	1	0	5.837599	0.7745967	1
Djibouti	0.2853348	1	0	0	0.9499445	1
Dominica	0.1984033	1	0	5.837599		
Dominican Republic	0.0233717	1	0	5.837599	0	1
Ecuador	0.1418713	1	0	5.837599	0	1
Egypt	0.4492703	1	0	5.837599	0.1417761	1
El Salvador	0.0082664	1	0	5.837599	0	1
Eritrea	0.644192	1	0	3.891733	1	1
Estonia	0.658197	1	0	2.840965	0.8365045	1
Fiji	0.6001015	1	0	1.945866	0.9555105	1
Finland	0.658197	1	0	2.840965	0.9414484	1
France	0.3796932	1	0	5.837599	0.3249468	1
Gabon	0.2275005	1	0	0	0.740755	1
Georgia	0.9343106	1	0	0	0.9677145	1
Germany	0.2315434	1	0	5.837599		
Ghana	0.4885217	1	0	0	0.850944	1
Greece	0.2465824	1	0	1.945866	0.9520463	1
Greenland	0.8591734	1	0	5.837599		
Grenada	0.4369094	1	0	3.891733		
Guatemala	0.4879393	1	0	5.837599	0.663325	1
Guinea	0.5577977	1	0	0	0.8727937	1
Guyana	0.6893518	1	0	3.891733	0.6875896	1
Haiti	0.624027	1	0	5.837599	0.7745967	1
Honduras	0.0264587	1	0	5.837599	0.1466471	1
Hungary	0.7457266	1	0	1.945866	0.9473763	1
Iceland	0.5537792	1	0	5.837599		
India	0.6172843	1	0	0	0.9248534	1
Indonesia	0.6365855	1	0	3.891733	0.8970595	1
Iraq	0.5331682	1	0	5.837599	0.4748498	1
Ireland	0.0650404	1	0	3.891733	0.9349844	1
Israel	0.5637879	1	0	0.5312214	0.7777162	1
Italy	0.2907522	1	0	3.891733	0.8563488	1
Jamaica	0.5540789	1	0	3.891733	0.3465336	1
Japan	0.9945585	1	0	0	1	1
Jordan	0.4378405	1	0	5.837599	0.2394368	1
Kazakhstan	0.5479229	1	0	2.514254	0.7844148	1
Kenya	0.4902678	1	0	5.837599	0.7960392	1
Kiribati	0.3225637	1	0	3.891733		
Kuwait	0.3046775	1	0	5.837599	0.7949461	1
Kyrgyzstan	0.6662565	1	0	2.840965	0.8788032	1
Latvia	0.5539984	1	0	3.385808	0.8141656	1
Lebanon	0.2558222	1	0	5.837599	0.7876299	1
Liberia	0.6529831	1	0	0	0.9319282	1
Lithuania	0.5539984	1	0	3.385808	0.9258971	1
Madagascar	0.6357519	1	0	1.945866	0.8961299	1
Malawi	0.2761755	1	0	3.891733	0.6531972	1
Malaysia	0.6659513	1	0	2.607461	0.8394758	1
Mali	0.6131939	1	0	0	0.8690562	1
Malta	0.5879993	1	0	5.837599		
Mauritania	0.4693248	1	0	5.837599	0.8484744	1
Mauritius	0.7701765	1	0	5.837599	0.9192018	1

Mexico	0.0680444	1	0	5.837599	0.1252673	1
Morocco	0.5138625	1	0	5.837599	0.8523507	1
Mozambique	0.2554138	1	0	0	0.6892869	1
Nepal	0.6266349	1	0	3.891733	0.9136314	1
Netherlands	0.4284745	1	0	5.837599	0.8988882	1
Netherlands Antilles	0.7235321	1	0	5.837599		
New Caledonia	0.5817834	1	0	5.837599		
New Zealand	0.0235442	1	0	3.891733	0.4691953	1
Nicaragua	0.0429515	1	0	5.837599	0.2236068	1
Niger	0.8370821	1	0	0	0.9695034	1
Nigeria	0.7253903	1	0	0	0.9208692	1
Norway	0.430337	1	0	5.837599	0.8215674	1
Oman	0.3793254	1	0	5.837599	0.4950654	1
Pakistan	0.5758918	1	0	3.891733	0.9279807	1
Panama	0.1856813	1	0	5.837599	0.1466471	1
Papua New Guinea	0.8751732	1	0	0		
Paraguay	0.9532863	1	0	0	1	1
Peru	0.2211512	1	0	5.837599	0	1
Philippines	0.6508641	1	0	1.945866	0.9814199	1
Poland	0.562347	1	0	3.891733	0.8973128	1
Portugal	0.025367	1	0	5.837599	0.68313	1
Qatar	0.4228716	1	0	5.837599		
Romania	0.2070801	1	0	3.891733	0.9096477	1
Rwanda	0.1843011	1	0	3.891733	0.68313	1
Sao Tome and Principe	0.6585576	1	0	5.837599		
Saudi Arabia	0.4225538	1	0	5.837599	0.4219803	1
Senegal	0.5513123	1	0	1.945866	0.9301646	1
Seychelles	0.6473948	1	0	5.837599		
Sierra Leone	0.6371534	1	0	0	0.9529988	1
Singapore	0.6043872	1	0	1.023526	0.9213296	1
Slovakia	0.5422176	1	0	5.837599	0.8741308	1
Slovenia	0.4913954	1	0	5.837599	0.8262433	1
Solomon Islands	0.4379734	1	0	0		
Somalia	0.2853348	1	0	1.945866	0.7148305	1
South Africa	0.3479718	1	0	0	0.7473043	1
Spain	0.1197343	1	0	5.837599	0.4397123	1
Sri Lanka	0.585974	1	0	3.50256	0.9507262	1
Sudan	0.6008883	1	0	5.837599	0.8525953	1
Suriname	0.6395724	1	0	4.903584		
Sweden	0.4486489	1	0	5.837599	0.9327321	1
Switzerland	0.5080295	1	0	4.825749	0.8011405	1
Taiwan	0.5589733	1	0	1.070227	1	1
Thailand	0.57307	1	0	5.837599	0.7916228	1
Togo	0.4885217	1	0	0	0.8926896	1
Tonga	0.1837693	1	0	1.945866		
Trinidad and Tobago	0.6199217	1	0	3.891733	0.6753542	1
Tunisia	0.4242706	1	0	5.837599	0.7860477	1
Turkey	0.6226946	1	0	3.269056	0.9250069	1
Turkmenistan	0.6096752	1	0	3.269056	0.9068432	1
Uganda	0.5096226	1	0	0	0.8178677	1
Ukraine	0.5617793	1	0	4.086319	0.7947614	1
United Arab Emirates	0.3046775	1	0	5.837599	0.9420407	1
Uruguay	0	1	0	5.837599	0	1
Uzbekistan	0.6096752	1	0	3.269056	0.9380861	1
Vanuatu	0.3693715	1	0	0		
Zambia	0.2767366	1	0	0	0.6788306	1
Zimbabwe	0.2386447	1	0	3.891733	0.6947421	1
Cambodia	0.6487034	1	0	3.891733		
Yemen	0.424408	1	0	5.837599		
American Samoa	0.022531	1				
Belgium	0.4284745	1			0.8529574	1
Bolivia	0.5789325	1			0.7491492	1
Botswana	0.2330396	1			0.6193295	1
Brunei	0.6365855	1				
Cote d'Ivoire	0.5146606	1			0.894869	1
Equatorial Guinea	0.2275005	1				
Ethiopia	0.6276844	1			0.9171333	1
French Guiana	0.6937249	1				
French Polynesia	0.3446193	1				
Guadeloupe	0.0536571	1				
Guam	0.5212091	1				
Guinea Bissau	0.621531	1			0.8462576	1
Iran	0.6529881	1			0.9029343	1
Laos	0.57307	1			1	1
Lesotho	0.2289814	1			0.6202783	1
Libya	0.7282829	1			0.7880133	1
Luxembourg	0.3743481	1				
Macedonia	0.6342529	1				
Maldives	0.5560532	1				
Martinique	0.0536571	1				
Moldova	0.2070801	1			0.655131	1
Mongolia	0.7407994	1			0.9671745	1
Namibia	0.4101656	1			0.7985259	1
Puerto Rico	0.0275477	1				
Reunion	0.6364548	1				
San Marino	0.2907522	1				
Swaziland	0.2289814	1			0.6567597	1
Syria	0.2558222	1			0.3578582	1
Tanzania	0.3062449	1			0.6994997	1
United Kingdom	0.0178127	1			0.5126991	1
Venezuela	0.013318	1			0.9660918	1

Vietnam	0.6487034	1			0.9903958	1
Yugoslavia	0.6307231	1			0.4848392	1
Congo			0	0	0.7324676	1
Gibraltar			0	3.463642		
Russian Federation			0	4.086319	0.6647279	1
Tajikistan			0	3.891733	0.8657795	1
Congo, Dem. Rep.	0.43622	1				
Congo, Rep.	0.4829018	1				
Gambia, The	0.5513123	1				
Korea, North	0	1				
Korea, South	0	1				
Myanmar	0.7830979	1				
Russia	0.5479229	1				
Samoa	0.022531	1				
St. Kitts and Nevis	0.1223147	1				
St. Lucia	0.1984033	1				
St. Vincent and the Grenadines	0.4272408	1				
Tajikstan	0.601132	1				
United States	0.1025335	1				
Virgin Islands	0.5036657	1				
Andorra			0	5.020335		
Anguilla			0	3.891733		
Aruba			0	5.837599		
Belgium and Luxembourg			0	4.164155		
Bolivia (Plurinational State of)			0	3.152304		
Bosnia and Herzegovina			0	5.837599		
British Virgin Islands			0	3.891733		
Brunei Darussalam			0	3.891733		
Cayman Islands			0	3.891733		
China, Hong Kong Special Administrative Region			0	1.070227		
Cook Islands			0	0		
Côte d'Ivoire			0	0		
Democratic Republic of the Congo			0	0		
Falkland Islands (Malvinas)			0	3.891733		
Gambia			0	0		
Guinea-Bissau			0	0		
Iran (Islamic Republic of)			0	2.802048		
Lao People's Democratic Republic			0	5.837599		
Libyan Arab Jamahiriya			0	5.837599		
Marshall Islands			0	3.891733		
Micronesia (Federated States of)			0	0		
Montserrat			0	3.891733		
Nauru			0	3.891733		
Niue			0	1.945866		
Norfolk Island			0	3.891733		
Northern Mariana Islands			0	0		
Palau			0	1.945866		
Pitcairn			0	3.891733		
Republic of Korea			0	0		
Republic of Moldova			0	3.891733		
Saint Helena			0	3.891733		
Saint Kitts and Nevis			0	3.891733		
Saint Lucia			0	5.837599		
Saint Pierre and Miquelon			0	3.891733		
Saint Vincent and the Grenadines			0	3.891733		
Syrian Arab Republic			0	5.837599		
The former Yugoslav Republic of Macedonia			0	3.891733		
Turks and Caicos Islands			0	3.891733		
Tuvalu			0	1.945866		
United Kingdom of Great Britain and Northern Ireland			0	3.891733		
United Republic of Tanzania			0	5.837599		
United States of America			0	3.599853		
Venezuela (Bolivarian Republic of)			0	5.837599		
Viet Nam			0	3.891733		
Channel Islands						
Czechoslovakia					0.5602881	1
Faeroe Islands						
German Democratic Republic					0.9660918	1
Germany, Federal Republic of					0.6086931	1
Hong Kong						
Isle of Man						
Kampuchea, Democratic					0.9076005	1
Korea					1	1
Korea,Dem.Rep.					0	1
Macao						
Myanmar(Burma)					0.9672489	1
St Christopher and Nevis						
St Lucia						
St. Vincent						
The Gambia					0.8480354	1
U.S.A					0.8993456	1
U.S.S.R.					0.9448028	1
Virgin Islands (U.S.)						
Western Samoa						
Yemen, Arab Republic of					0.9403723	1
Yemen, People's Democratic Republic of						
Zaire					0.714349	1

Table 21: Index of religious distance: comparison with Spolaore and Wacziarg (2015).

	Our index		Spolaore-Wacziarg (2015)	
	Min	Max	Min	Max
Cambodia	0.6487034	1		
Congo, Dem. Rep.	0.43622	1		
Congo, Rep.	0.4829018	1		
Gambia, The	0.5513123	1		
Korea, North	0	1		
Korea, South	0	1		
Myanmar	0.7830979	1		
Russia	0.5479229	1		
Samoa	0.022531	1		
St. Kitts and Nevis	0.1223147	1		
St. Lucia	0.1984033	1		
St. Vincent and the Grenadines	0.4272408	1		
Tajikstan	0.601132	1		
United States	0.1025335	1		
Virgin Islands	0.5036657	1		
Yemen	0.424408	1		
Channel Islands				
Congo			0.7068239	1
Czechoslovakia			0.7085337	0.9977975
Faeroe Islands				
German Democratic Republic			0.8041393	1
Germany, Federal Republic of			0.6523802	1
Gibraltar				
Hong Kong				
Isle of Man				
Kampuchea, Democratic			0.296648	1
Korea			0.7332121	0.9787952
Korea,Dem.Rep.			0.7138347	0.9992497
Macao				
Myanmar(Burma)			0.4117039	0.9934989
Russian Federation			0.747556	0.9976974
St Christopher and Nevis				
St Lucia				
St. Vincent				
Tajikistan			0.4862098	1
The Gambia			0.2863564	1
U.S.A			0.6239872	0.9919677
U.S.S.R.				
Virgin Islands (U.S.)				
Western Samoa				
Yemen, Arab Republic of			0.6253799	0.9941328
Yemen, People's Democratic Republic of			0.8455767	0.9899495
Zaire			0.6403124	0.9904544
Afghanistan	0.601132	1	0.3162278	1
Albania	0.6307231	1	0.5196153	1
Algeria	0.4789545	1	0.1000002	1
American Samoa	0.022531	1		
Angola	0.2748575	1	0.7834029	1
Antigua and Barbuda	0.1223147	1		
Argentina	0.0337567	1	0.2863565	1
Armenia	0.7511756	1	0.6659729	1
Australia	0.0178127	1	0.654981	1
Austria	0.2315434	1	0.4523273	1
Azerbaijan	0.6485394	1	0.2449489	1
Bahamas	0.2948545	1		
Bahrain	0.3258855	1	0.4341659	1
Bangladesh	0.5560532	1	0.3464101	0.9988994
Barbados	0.4516945	1		
Belarus	0.5617793	1	0.4613025	1
Belgium	0.4284745	1	0.3316625	1
Belize	0.5781972	1		
Benin	0.5551797	1	0.6752778	1
Bermuda	0.2948545	1		
Bhutan	0.7329378	1	0.4816638	1
Bolivia	0.5789325	1	0.2029778	1
Botswana	0.2330396	1	0.7071068	1
Brazil	0.025367	1	0.4664761	0.9983987
Brunei	0.6365855	1		
Bulgaria	0.5999311	1	0.6889993	0.9994999
Burkina Faso	0.5306003	1	0.6928203	1
Burundi	0.1843011	1	0.5859522	1
Cameroon	0.4181035	1	0.7523297	1
Canada	0.2000898	1	0.5837808	0.9983587
Cape Verde	0.6585576	1		
Central African Republic	0.6160944	1	0.7549834	0.9951382
Chad	0.867963	1	0.6708204	1

Chile	0.0153058	1	0.2534561	1
China	0.5589733	1	0.7339755	0.9925523
Colombia	0.0180865	1	0.3461214	0.9981984
Comoros	0.272656	1		
Costa Rica	0.023918	1	0.2924721	0.998018
Cote d'Ivoire	0.5146606	1	0.5966573	1
Croatia	0.4913954	1	0.7933851	0.8388087
Cuba	0	1	0.410731	0.9982985
Cyprus	0.2465824	1	0.4433509	0.9982585
Czech Republic	0.5422176	1	0.9153797	0.9229301
Denmark	0.430337	1	0.3466698	0.998018
Djibouti	0.2853348	1	0.6437391	1
Dominica	0.1984033	1		
Dominican Republic	0.0233717	1	0.2662705	0.9980982
Ecuador	0.1418713	1	0.2662705	0.9980982
Egypt	0.4492703	1	0.2190891	1
El Salvador	0.0082664	1	0.3986477	0.9982785
Equatorial Guinea	0.2275005	1		
Eritrea	0.644192	1	0.7519308	0.7519308
Estonia	0.658197	1	0.7178301	1
Ethiopia	0.6276844	1	0.6557438	0.9966946
Fiji	0.6001015	1	0.8014362	0.9979379
Finland	0.658197	1	0.4586502	0.997998
France	0.3796932	1	0.3223041	1
French Guiana	0.6937249	1		
French Polynesia	0.3446193	1		
Gabon	0.2275005	1	0.6689544	0.9973966
Georgia	0.9343106	1	0.6975958	0.9982284
Germany	0.2315434	1		
Ghana	0.4885217	1	0.7989994	0.9939618
Greece	0.2465824	1	0.6464055	0.998028
Greenland	0.8591734	1		
Grenada	0.4369094	1		
Guadeloupe	0.0536571	1		
Guam	0.5212091	1		
Guatemala	0.4879393	1	0.3550211	0.9980381
Guinea	0.5577977	1	0.3660601	1
Guinea Bissau	0.621531	1	0.7345747	1
Guyana	0.6893518	1	0.748131	0.9967447
Haiti	0.624027	1	0.3500856	0.9980782
Honduras	0.0264587	1	0.2265831	0.9980581
Hungary	0.7457266	1	0.4323886	0.9981382
Iceland	0.5537792	1		
India	0.6172843	1	0.5166043	0.9981583
Indonesia	0.6365855	1	0.3224903	0.9988193
Iran	0.6529881	1	0.5133225	0.9990095
Iraq	0.5331682	1	0.6218038	0.9990295
Ireland	0.0650404	1	0.2973212	0.9981182
Israel	0.5637879	1	0.8282512	0.9989495
Italy	0.2907522	1	0.2219009	1
Jamaica	0.5540789	1	0.7134844	0.9986991
Japan	0.9945585	1	0.428859	0.9991496
Jordan	0.4378405	1	0.2280352	1
Kazakhstan	0.5479229	1	0.6618157	0.998609
Kenya	0.4902678	1	0.6870226	0.997998
Kiribati	0.3225637	1		
Kuwait	0.3046775	1	0.6244998	0.9942334
Kyrgyzstan	0.6662565	1	0.4582576	0.9937304
Laos	0.57307	1	0.9528903	1
Latvia	0.5539984	1	0.7435321	0.9984989
Lebanon	0.2558222	1	0.7278736	1
Lesotho	0.2289814	1	0.5385165	1
Liberia	0.6529831	1	0.7523297	1
Libya	0.7282829	1	0.1732049	0.9948367
Lithuania	0.5539984	1	0.5546891	1
Luxembourg	0.3743481	1		
Macedonia	0.6342529	1		
Madagascar	0.6357519	1	0.7302055	1
Malawi	0.2761755	1	0.6395311	1
Malaysia	0.6659513	1	0.697137	0.9720494
Maldives	0.5560532	1		
Mali	0.6131939	1	0.3130494	1
Malta	0.5879993	1		
Martinique	0.0536571	1		
Mauritania	0.4693248	1	0.0894427	1
Mauritius	0.7701765	1	0.720708	0.9764425
Mexico	0.0680444	1	0.3133051	0.9966444
Moldova	0.2070801	1	0.6832276	1

Mongolia	0.7407994	1	0.2939388	0.9983186
Morocco	0.5138625	1	0.1604992	1
Mozambique	0.2554138	1	0.745654	1
Namibia	0.4101656	1	0.6136774	1
Nepal	0.6266349	1	0.8366122	0.9984388
Netherlands	0.4284745	1	0.7124605	0.9969353
Netherlands Antilles	0.7235321	1		
New Caledonia	0.5817834	1		
New Zealand	0.0235442	1	0.7190132	1
Nicaragua	0.0429515	1	0.4132796	0.9958413
Niger	0.8370821	1	0.4608687	0.9939819
Nigeria	0.7253903	1	0.6517668	1
Norway	0.430337	1	0.4809989	0.997998
Oman	0.3793254	1	0.8117881	0.9937304
Pakistan	0.5758918	1	0.3872983	0.9948367
Panama	0.1856813	1	0.2905168	1
Papua New Guinea	0.8751732	1	0.7144228	1
Paraguay	0.9532863	1	0.2561252	1
Peru	0.2211512	1	0.3509986	0.9958916
Philippines	0.6508641	1	0.3594441	0.9951583
Poland	0.562347	1	0.276767	1
Portugal	0.025367	1	0.2917534	0.9959317
Puerto Rico	0.0275477	1		
Qatar	0.4228716	1		
Reunion	0.6364548	1		
Romania	0.2070801	1	0.7946823	1
Rwanda	0.1843011	1	0.554617	0.9955803
San Marino	0.2907522	1		
Sao Tome and Principe	0.6585576	1		
Saudi Arabia	0.4225538	1	0.228035	0.997998
Senegal	0.5513123	1	0.3040394	1
Seychelles	0.6473948	1		
Sierra Leone	0.6371534	1	0.6246599	1
Singapore	0.6043872	1	0.5105488	0.9914434
Slovakia	0.5422176	1	0.6581489	0.88
Slovenia	0.4913954	1	0.6232175	0.8820431
Solomon Islands	0.4379734	1		
Somalia	0.2853348	1	0.2683282	1
South Africa	0.3479718	1	0.6910861	0.9987993
Spain	0.1197343	1	0.2582248	0.997998
Sri Lanka	0.585974	1	0.5505089	0.9903737
Sudan	0.6008883	1	0.5498182	1
Suriname	0.6395724	1		
Swaziland	0.2289814	1	0.7099296	1
Sweden	0.4486489	1	0.6748333	0.9958614
Switzerland	0.5080295	1	0.5598929	0.9963031
Syria	0.2558222	1	0.4788319	1
Taiwan	0.5589733	1	0.6587867	0.9947361
Tanzania	0.3062449	1	0.7451174	1
Thailand	0.57307	1	0.340441	0.9981683
Togo	0.4885217	1	0.7395945	1
Tonga	0.1837693	1		
Trinidad and Tobago	0.6199217	1	0.7764277	0.9699278
Tunisia	0.4242706	1	0.2540867	0.997998
Turkey	0.6226946	1	0.4356145	1
Turkmenistan	0.6096752	1	0.365568	0.9959919
Uganda	0.5096226	1	0.6717142	1
Ukraine	0.5617793	1	0.798724	0.9955401
United Arab Emirates	0.3046775	1	0.6936858	0.9947864
United Kingdom	0.0178127	1	0.677761	0.9919677
Uruguay	0	1	0.4442521	0.99
Uzbekistan	0.6096752	1	0.3783649	0.9943842
Vanuatu	0.3693715	1		
Venezuela	0.013318	1	0.4519735	0.9959919
Vietnam	0.6487034	1	0.5905759	0.9904141
Yugoslavia	0.6307231	1		
Zambia	0.2767366	1	0.819451	0.980714
Zimbabwe	0.2386447	1	0.8146778	0.997998

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ISBN 978-88-9386-013-0

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