The Impact of Culture on FDI Disentangled: Separating the "Level" and the "Distance" Effects

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Abstract
The most important concern of this paper centers on the question of whether the difference in FDI inflows across countries is a result of the fact that destination countries have different cultures, or the fact that they are more distant culturally from the origin country than others? We argue that answering this question requires disentangling the impact of culture, which consists of separating two effects: the "level" (the former) and the "distance" effect (the latter), which are mixed in the literature, leading in this way to biased conclusions in relation to how cultural distance matters for FDI. In this paper we propose an econometric method to separate the two effects of the culture, in which the key is that cultural distance does not depend on the origin country's culture. The results of random effects and cross section IV regressions, most importantly, evidence that the level effect is very "strong" in the sense that it is in effect in the case of all the three cultural variables we use and its size is economically significant, as well. However, the distance effect is proved to be very "weak", if not missing, meaning that the literature has "overemphasized" the impact of cultural distance due to the biased empirical results arising from the lack of measurement equivalence in cultural distance.
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JEL Classification: F21, F23, E02, Z10

1. Introduction

During the last decade cultural explanations for FDI flows have been emerging and gaining ground. In the current state of affairs, however, this literature[1] is still limited, not only in terms of the number of studies, but more importantly, regarding the depth of our understanding of the impact culture exerts on foreign investments. The main concern of researchers in the field has been how *cultural distance* between origin and destination countries affect FDI flows.[2] Although the findings of various empirical analyses on this issue are far from being unanimous[3], *per se* we do not find these controversial findings problematic; on the contrary, different cultural dimensions can be supposed to affect investors in different ways because "cultural difference does not always imply cultural conflicts" (Tang 2012:249). The most important problem we do associate with this literature is that conclusions in relation to how cultural distance matters for FDI are, potentially, biased since the cultural distance measures used in the literature cannot be meaningfully compared across countries, a problem identified by van Hoorn and Maseland (2014). We argue accordingly, that the impact identified by the above studies as arising from cultural distance is, in fact, a mixed impact of the cultural distance and the culture in the host country.

The cultural distance measures used in the literature are constructed by subtracting the origin and the host country scores on one or more cultural dimensions.[4] The problem with these measures, as proved by van Hoorn and Maseland (2014), is that they correlate differently with the destination country culture for each origin country, a problem which they

[1] For a review of the literature on the culture–FDI link see Kapás (2019).

[2] Note that a couple of studies have focused on the question of how *culture in the destination country* influences foreign investments (e.g. Bhardwaj et al. 2007, Holmes et al. 2013).

[3] Siegel at al. (2012), for instance, find that greater cultural distance in egalitarianism leads to lower FDI flows because it requires greater adjustment costs for multinational firms to engage effectively with their stakeholders. The negative association between cultural distance and FDI is confirmed by Slangen and Beugelsdijk (2010), as well for the Hofstede composite cultural measure, but they give a more nuanced answer by evidencing that cultural distance exerts a greater impact on vertical FDI than on horizontal FDI. When analyzing trends in US FDI location, Sethi et al. (2003) find that cultural distance exerts a significant negative impact on FDI flows. Tang (2012) documents different results for the different cultural dimensions proposed by Hofstede. A clearly positive association between cultural distance and FDI is found in Lucke and Eicher (2016), which shows that foreign investors from developing countries are attracted by greater cultural distance. Grosse and Trevino (1996) explore the factors affecting US inward FDI by country of origin, but they do not document the significant impact of cultural distance except for one specification. Du et al. (2012) is unique in addressing the issue of the interplay of institutions and cultural distance. The authors are able to show that FDI coming from a country that is more culturally different from China exhibits higher sensitivity towards regional economic institutions in the FDI location choice.

[4] A widely used measure was introduced in a seminal paper by Kogut and Sighn (1980), in which they defined a composite cultural index based on Hofstede's (1980) cultural dimensions.

refer to as the lack of measurement equivalence in cultural distance.[5] As a consequence, we cannot compare the impact of cultural distance on a dependent variable (for instance FDI) if the US is the origin country with the effect of cultural distance on the same dependent variable if, for instance, Belgium is the origin country.

An implication of this argument is that we cannot generalize the effects of cultural distance when using cultural distance measures in the way they are used in the papers mentioned above. The aim of this paper is to propose a possible solution to a meaningful comparison of the impact of cultural distance (on FDI) across countries even if we are driven to use the distance measures of the literature.[6] The starting point in this endeavor is the recognition that the effect of cultural distance identified in the literature is in fact a mix of two effects: on the one hand a "level" effect, which means that a different culture in the destination country might attract a different level of FDI, independently of the culture of the origin country; and on the other hand a "distance" effect, meaning that a different cultural distance between the origin and the host country can induce different FDI flows, independently of the culture of the destination country.

In order to progress further in our understanding of the impact of culture on FDI, we argue that this mixed impact must be disentangled, which requires a separation of the above two effects of culture. In this paper we will propose an econometric method to separate the level and the distance effects of culture, which ensures at the same time that cultural distance does not depend on the origin country's culture, which is precisely van Hoorn and Maseland's (2014) condition for measurement equivalence in cultural distance.

We will integrate this method of disentangling the two effects into various regression estimations of an equation relying on the gravity framework to ensure the robustness of the results. Our panel dataset includes 34 OECD host countries and, depending on the specification of the regression, 52-170 destination countries for the period 2000-2013. When explaining FDI flows, we will control for culture and formal institutions at the same time, a procedure which is not common in the literature, but which, on the theoretical side, is supported by the insight that formal institutions are embedded in culture (Boettke et al. 2008,

[5] As the two scholars explain, the measurement equivalence requires that cultural distance exhibits cross-culturally consistent relationships with other country factors.

[6] The main advantage of using the distance measures lies in the ease of their calculation. The suggestion made by van Horn and Maseland (2016) in response to the failure of the literature to distinguish between distance and level effects in relation to institutions, namely to use using reference points, is hard to apply in regression analyses. Accordingly, relying on the distance measures but designing the model accordingly seems to be the best option to solve the measurement inequivalence problem.

Williamson 2000). Given that the above institutional economics theories on which we rely understand culture in terms of "deep" culture, as a proxy for culture we therefore need a cultural measure which intends to express culture in this "deep" sense. For our field of inquiry, the best choice is to use individual values scores from the Schwartz Values Survey (Schwartz 1999, 2006) because Schwartz sees individual values as the *core* of culture, to which formal institutions are stuck. We include one value item from all the three bipolar value dimensions (egalitarianism–hierarchy, embeddedness–autonomy, and harmony–mastery) determined by Schwartz (1999).

Our empirical results, besides confirming the findings of previous papers concerning the impacts of the "traditional" gravity variables, bring some new evidence as regards the impact of culture on foreign investments. First of all, we evidence that culture matters for FDI inflows on its own, meaning that it affects foreign investments beyond formal institutions. Secondly, and more importantly our empirical results indicate a very "strong" level and a very "weak", if not missing, distance effect: the level effect is a working effect in the case of all the three cultural dimensions, and its size is economically significant, but the distance effect is working only in the case of embeddedness, and even in this case, its size is negligible as compared to the size of the level effect. So, it seems that the literature has "overemphasized" the impact of cultural distance, due to the biased empirical results arising from the lack of measurement equivalence, because what is deemed to be a distance effect in the literature is in fact not so, but a mixed effect of the level and the distance.

The rest of the paper is organized as follows. Section 2 will present our econometric method to disentangle the impact of culture on FDI, by separating the level and the distance effects, and the model. We will explain our variables and describe the data in Section 3. The results of the empirical analyses will be discussed in Section 4. Section 5 will conclude.

2. Disentangling the impact of culture, and the model

An intuitive way to separate the two effects of culture would be to include both the level of the culture in the destination country and the cultural distance between the origin and the destination country among the independent variables. In this way, we assume that our "true" model includes the level of the culture in the destination country ($cult_j$) as well as its cultural distance from the origin country ($|cult_i - cult_j|$):

$$\mathrm{fdi}_{ij} = \boldsymbol{\beta}'\mathbf{X} + \beta_{lev}\mathrm{cult}_j + \beta_{dist}\left|\mathrm{cult}_i - \mathrm{cult}_j\right| \tag{1}$$

The reason why this model is not appropriate is twofold. On the one hand, origin country dummies must be included among the independent variables for two reasons. The first reason comes from the discussion of van Hoorn and Maseland (2014), who argue that we should not equalize, to take their example, the cultural distance of the partner countries from Belgium and those from the USA. Our accounting for the origin country with country dummies ensures that we do not equalize them. What we do implicitly is compare the cultural distance from Belgium with Belgian outward FDI and the cultural distance from the USA with USA outward FDI. The second reason is that we need origin country dummies to account for other country-specific effects such as biases in reporting FDI figures. On the other hand, once the culture in the origin country (implicitly through the inclusion of origin country dummies) together with the culture of the destination country (explicitly) are controlled for, cultural distance becomes determined. Accordingly, the inclusion of the cultural distance together with the level of culture would simply be meaningless. And what is more, even if it were included, it would be very difficult to see what the coefficient of the cultural distance variable means.

Therefore, we should think about whether including either only the cultural distance or only the level of culture in the destination country would be a solution to our problem. To see how the level and the distance effects can be separated, let us first consider this latter case when we include only the level of culture and take account of the origin country by fixed effects:

$$\mathrm{fdi}_{ij} = \boldsymbol{\beta}'\mathbf{X} + \beta_a\mathrm{cult}_j \tag{2}$$

Then β_a reveals a combination of the level and distance effects in a way which makes it possible to isolate the two effects, by using equation (1) as the "true" one:

$$\beta_a = \frac{\partial \mathrm{fdi}_{ij}}{\partial \mathrm{cult}_j} = \begin{cases} \beta_{lev} - \beta_{dist}, & \text{if } \mathrm{cult}_j \le \mathrm{cult}_i, \\ \beta_{lev} + \beta_{dist}, & \text{if } \mathrm{cult}_j > \mathrm{cult}_i. \end{cases} \tag{3}$$

As can be seen from the above formulas, the impact of a change in the level of the culture in the destination country does not equal β_{lev}, but also depends on the relation between cult_i

and $cult_j$. Equation (3) can be seen as a system of equations with two unknowns, β_{lev} and β_{dist}. Then, this system of equations can be solved for β_{lev} and β_{dist}, which allows us to express each of them as a function of the two partial effects of $cult_j$:

$$\beta_{dist} = \frac{1}{2}\left[\left.\frac{\partial fdi_{ij}}{\partial cult_j}\right|_{cult_j > cult_i} - \left.\frac{\partial fdi_{ij}}{\partial cult_j}\right|_{cult_j \le cult_i} \right], \text{ and} \tag{4}$$

$$\beta_{lev} = \frac{1}{2}\left[\left.\frac{\partial fdi_{ij}}{\partial cult_j}\right|_{cult_j > cult_i} + \left.\frac{\partial fdi_{ij}}{\partial cult_j}\right|_{cult_j \le cult_i} \right]. \tag{5}$$

If we include only the distance among the independent variables, we assume the following model[7]:

$$fdi_{ij} = \boldsymbol{\beta}'\mathbf{X} + \beta_b \left| cult_i - cult_j \right| \tag{6}$$

while the "true" model remains the same as above. The distance effect from this model, β_b, will then be different from what it really is:[8]

$$\beta_b = \frac{\partial fdi_{ij}}{\partial \left| cult_i - cult_j \right|} = \begin{cases} -\beta_{lev} + \beta_{dist}, & \text{if } cult_j \le cult_i, \\ \beta_{lev} + \beta_{dist}, & \text{if } cult_j > cult_i. \end{cases} \tag{7}$$

That is, including only the cultural distance and finding it significant in a regression can still hide the level effect. The true effects could, however, be derived in a similar way as in the previous case.

To sum up, neither the inclusion of only the level of the culture in the regression, nor the inclusion of the cultural distance exclusively makes it possible to separate the level and distance effects by simply looking at the coefficients estimated, since the coefficients in each

[7] A somewhat similar approach is applied by Siegel et al. (2012) who include cultural distance in two forms, namely sheer (the square of the difference between the host and source country egalitarianism) and directional (with a positive or negative sign) in their regressions, but not the level of culture in the destination country with the aim of separating the effect of the two kinds of cultural distance. In this way, these authors answer the question of whether the effect of the distance is different if it is the destination country, not the origin country, where culture is "better". Clearly, the effect of the signed distance may still be a mix of the level effect and the distance effect.

[8] Note that it is β_b that is usually estimated in the literature, which indicates a mixed impact of the level and the distance effects.

case will show a mix of the two effects. It may seem that the two methods we discussed are equivalent if we consider that the "true" coefficients could be derived equally well from both. Since we think that origin country dummies are necessary, we choose the first approach (including only the level of culture) because with origin countries controlled for, it is hard to see what the cultural difference variable would mean in the second approach (see our discussion above).

Bearing these problems in mind, we propose a novel way – in accordance with the first approach above – to separate the level and the distance effects of the culture, in which we focus on the fact that the coefficient of the level of culture in the destination country depends on the relation between the culture of the origin and that of the destination country (whether it is $cult_i > cult_j$ or vice versa). To capture this idea we introduce two dummy variables that account for a negative (ncd) (if $cult_j \geq cult_i$) and a positive cultural distance (pcd) (if $cult_i > cult_j$):

$$ncd_{ij} = \begin{cases} 1, & \text{if } cult_j \leq cult_i, \\ 0, & \text{otherwise.} \end{cases} \tag{8}$$

$$pcd_{ij} = \begin{cases} 1, & \text{if } cult_j > cult_i, \\ 0, & \text{otherwise.} \end{cases} \tag{9}$$

With the help of these two dummy variables, equation (3) implies that the partial effect of $cult_j$ can be written as

$$\frac{\partial fdi_{ij}}{\partial cult_j} = \left(\beta_{lev} - \beta_{dist}\right) \times ncd_{ij} + \left(\beta_{lev} + \beta_{dist}\right) \times pcd_{ij} \tag{10}$$

All in all, together with the origin country dummies we will include only the level of culture in the destination country and make use of the fact that the absolute value of the distance between the culture of the origin country ($cult_i$) and the culture of the destination country ($cult_j$), $|cult_i - cult_j|$, will be decreased or increased by an increase in $cult_j$, depending on whether $cult_j$ is smaller or larger than $cult_i$. As an application of this argument, supposing a

panel setting with a random effects model and using the gravity model framework[9], our specification is:

$$\mathrm{fdi}_{ijt} = \mathbf{X}_{1it}\boldsymbol{\beta}_1 + \mathbf{X}_{2jt}\boldsymbol{\beta}_2 + \mathbf{X}_{3ijt}\boldsymbol{\beta}_3 + \beta_4\mathrm{inst}_{jt} + \beta_5\mathrm{ncd}_{ij} \times \mathrm{cult}_j + \beta_6\mathrm{pcd}_{ij} \times \mathrm{cult}_j + \beta_7\mathrm{d}_i + \beta_8\mathrm{d}_t + \alpha_{ij} + \mathrm{u}_{ijt} \tag{11}$$

where i denotes the country of origin, j is the destination country, $cult_j$ is a measure of culture in the destination country, d_i is an origin country dummy, d_t is a year dummy, and α_{ij} is country-pair specific random effect. The vector variables $\boldsymbol{X}_{1it}$, $\boldsymbol{X}_{2jt}$, $\boldsymbol{X}_{3ijt}$ include the "traditional" variables from the gravity model: $\boldsymbol{X}_{1it}$ and $\boldsymbol{X}_{2jt}$ include, respectively, the variables specific for the origin (i) and for the destination (j) country, while $\boldsymbol{X}_{3ijt}$ denotes the bilateral variables.

As can be seen from equation (11), we will control for the formal institutions in the destination country ($inst_j$), at the same time, which is the recognition of the fact that culture and institutions influence FDI simultaneously. The theoretical reason behind this argument arises from the theory of institutional stickiness (Boettke et al. 2008), and the hierarchy of institutions (Williamson 2000), both suggesting that formal institutions are embedded in culture.

This specification allows us to look at the effect of a larger value of $cult_j$ on FDI, depending on whether the cultural distance from the origin country is positive or negative. Supposing, as do most authors in the literature, that the effect of both the level of culture in the destination country and cultural distance on FDI is monotonous and linear, the signs of the coefficients (β_5 and β_6), and the relation between them makes it possible to draw conclusions on whether it is only the level of culture in the destination country or it is only the cultural distance between the two countries that matters, or both matter.

To derive our conclusions, consider that according to equation (11)

[9] The gravity model framework was designed originally for an analysis of international bilateral trade, but extended later to that of FDI flows as the baseline model. The main reason why we apply it is that it allows us to look at bilateral FDI flows, which makes it possible to take advantage of the available data on FDI affecting factors.

$$\left.\frac{\partial \mathrm{fdi}_{ij}}{\partial \mathrm{cult}_j}\right|_{\mathrm{cult}_j>\mathrm{cult}_i} = \beta_5 \mathrm{ncd}_{ij} + \beta_6 \mathrm{pcd}_{ij}\Big|_{\mathrm{cult}_j>\mathrm{cult}_i} = \beta_5 \times 0 + \beta_6 \times 1 = \beta_6 \text{, and} \tag{12}$$

$$\left.\frac{\partial \mathrm{fdi}_{ij}}{\partial \mathrm{cult}_j}\right|_{\mathrm{cult}_j\le\mathrm{cult}_i} = \beta_5 \mathrm{ncd}_{ij} + \beta_6 \mathrm{pcd}_{ij}\Big|_{\mathrm{cult}_j\le\mathrm{cult}_i} = \beta_5 \times 1 + \beta_6 \times 0 = \beta_5 . \tag{13}$$

Equations (4) and (5) therefore imply that

$$\beta_{\mathrm{lev}} = \frac{1}{2}\left(\beta_5 + \beta_6\right) \text{ and } \beta_{\mathrm{dist}} = \frac{1}{2}\left(\beta_6 - \beta_5\right) \tag{14}$$

Since both the level effect and the distance effect can be zero, negative or positive, we have nine possible combinations of the two effects as listed in Table 1, which we will use when interpreting our regression results.

case	**sign of β_5**	**sign of β_6**	**relation between β_5 and β_6**	**implied sign of β_{lev}**	**implied sign of β_{dist}**
1	+	+	$\beta_5 = \beta_6$	+	0
2	+	-/0/+	$-\beta_5 < \beta_6 < \beta_5$	+	-
3	+	-	$\beta_6 = -\beta_5$	0	-
4	-/0/+	+	$-\beta_6 < \beta_5 < \beta_6$	+	+
5	-/0/+	-	$\beta_6 < \beta_5 < -\beta_6$	+	-
6	-	+	$\beta_6 = -\beta_5$	0	-
7	-	-/0/+	$\beta_5 < \beta_6 < -\beta_5$	-	+
8	-	-	$\beta_5 = \beta_6$	-	0
9	0	0	$\beta_5 = \beta_6$	0	0

Table 1. Possible values of β_5 and β_6, and their interpretations

The cases in Table 1 can be illustrated in figures. With the culture of the destination country (cult_j) being measured on the horizontal axis, the slope of the line is β_5 on the left of the culture in the origin country (cult_i), and β_6 on its right. The left-hand panel of Figure 1 shows case 3 in Table 1, in which there is only a negative distance effect and no level effect. In this case the partial effect of the level of culture is expected to have the opposite effect on the two "sides" of the culture of the origin country (cult_i). This is for the simple reason that a marginal increase in cult_j started from cult_{j1} will decrease the distance while the same marginal increase starting from cult_{j2} will increase it. Assuming that it is only the absolute

distance that matters implies that these effects must be equal in absolute value, which means that β_6=- β_5.

The right-hand panel of Figure 1 illustrates another case, in which there is only a positive level effect but there is no distance effect (case 1 in Table 1). In this case it does not matter whether the level of culture in the destination country is "higher" or "lower" than in the origin country; it is only the measure of culture in the destination country that affects FDI. Consequently, there is no "break" at the level of culture of the origin country: the effect of a marginal change in $cult_{j1}$ will be equal to the effect of a cultural change at $cult_{j2}$, that is β_6= β_5>0.

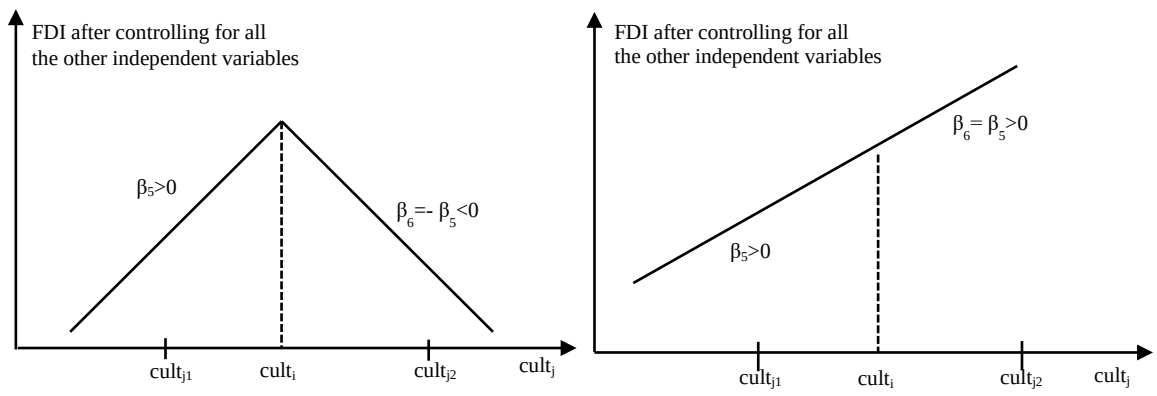

Figure 1. Negative distance effect and no level effect (left panel), and positive level effect and no distance effect (right panel)

Following the logic of the above two cases, it is possible to make sense of all the remaining cases shown in Table 1.

3. Variables and data

In equation (11) fdi_{ijt} is the log of outward FDI stocks from origin (reporting) country i to destination (partner) country j in year t. FDI data are from the OECD International Direct Investment database (OECD 2017), as a consequence the origin country can only be one of the 34 member countries. The advantage of using outward stocks is that the possible differences across countries in the definition or measurement of FDI do not alter the relative allocation of FDI for the source countries (Daude and Stein 2007:320).

The vector variables $\boldsymbol{X}_{1\mathrm{it}}$, $\boldsymbol{X}_{2\mathrm{jt}}$, $\boldsymbol{X}_{3\mathrm{ijt}}$ in our model include the "traditional" variables from the gravity model. $\boldsymbol{X}_{1\mathrm{it}}$ and $\boldsymbol{X}_{2\mathrm{jt}}$ include, respectively, the variables specific for the

origin (i) and for the destination (j) country. To express the size of the two economies we use nominal GDPs and population. The data are from the World Development Indicators (World Bank 2017a), and in the regression we take the natural logarithm of these variables (*ln(NGDP)_origin, ln(NGDP)_dest, ln(pop)_origin, ln(pop)_dest*). Besides nominal GDP and population, the vector $\boldsymbol{X}_{2\mathrm{jt}}$ also includes openness of the destination country, measured by trade per GDP (*openness_dest*) from WDI (World Bank 2017a).

The vector variable $\boldsymbol{X}_{3\mathrm{ijt}}$ denotes the "traditional" bilateral variables from the gravity model: the geographical distance between the most important cities in the two countries (*ln(distance)*), and dummies for whether the two countries in question have ever had a colonial link (*colonial relations*), whether they are contiguous (*contiguity*), and whether they have a common official language (*common official language*). These bilateral variables are from the GeoDist database of the CEPII (Mayer and Zignago 2011).

Our main independent variables are those expressing formal institutions and culture. As for institutions, both the theoretical and empirical studies highlight the role of various institutions in encouraging FDI simultaneously (see the introductory section). However, for econometric reasons, it is best to incorporate a composite measure of formal institutions in the regressions since including several institutions at the same time raises the problem of multicollinearity; and including them one by one might lead to an omitted variables bias. The usual way to reduce dimensions is calculating the first principal component from a principal component analysis. When selecting the formal institutions on which we run the principal component analysis, we rely on the results of previous studies: governance and regulatory institutions, corruption and political risk have been proved to exert a significant effect on FDI.

In this spirit we use the following data to derive our measure for formal institutions (*formal institutions_dest*).

- Six measures of World Governance Indicators of the World Bank (World Bank 2017b): Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption.
- The political risk rating provided by the International Country Risk Guide (PRS Group 2017) which is the weighted sum of twelve variables: Government Stability, Socioeconomic Conditions, Investment Profile, Internal Conflict, External Conflict, Corruption, Military in Politics, Religious Tensions, Law and Order, Ethnic Tensions, Democratic Accountability, Bureaucracy Quality.

- The area 5 called Regulation of the Economic Freedom of the World Index (Gwartney et al. 2017) which is concerned with the regulation of credit and labor markets, and business in general.

The first principal component is derived for all years between 2000 and 2013 except for 2001 for which the WGI data are not available. Our first principal component explains more than 80% of the total variance for each of the twelve years considered, and its eigenvalue is above six in every case.

The other key independent variable is a measure of culture. There is a multitude of concepts of culture in the literature, amongst which we stick with the one which understands culture as values of people, reflecting the most basic norms, judgments, and beliefs in relation to how to interact with and behave towards other people, transmitted from generation to generation. In this meaning cultural values can be seen as external and unalterable conditions on individuals. We have two reasons for relying on this conceptualization; one comes from the theoretical considerations we have behind our model, and the other is related to econometrics. On the theoretical side, clearly, in our model the conceptualization of culture has to be in line with that of formal institutions. This conceptual link between formal institutions and culture, we think, is established in the theory of institutional stickiness (Boettke et al. 2008) which suggests that formal institutions are stuck to what the authors call *metis*[10]. The authors, however, fail to analyze *metis* in detail, although based on their brief description, it is thought to consist of those values that are to a large extent exogenous to people, comprising unwritten (informal) norms, practices, beliefs, and conventions in the field of people's interactions. *Metis* constitutes a core onto which formal institutions are stuck. In our understanding *metis* is nothing other than the "deepest" cultural layer, consisting of values.

On the side of econometrics, an understanding of culture in terms of values, we think, offers the advantage of minimizing multicollinearity in regression analysis. Recall that we will control in our regression analysis both for formal institutions and culture. Relying on a concept of culture which is exogenous to the developmental process can serve this aim since in this case culture is not assumed to be adjusted to formal institutions, leading to a lower correlation between our measures for culture and formal institutions as opposed to a correlation between institutions and an "adjustable" component of culture, such as trust.[11]

[10] *Metis* is a Greek word, and means *wisdom* or *skill*.
[11] Trust is found to be endogenous in economic development in, for instance, Tabellini (2010).

To express culture in terms of values, the best dataset is the Schwartz Values Survey (Schwartz 1999, 2006). Since individual values are assumed to be relatively time-invariant we include as many observations as possible taken from all the waves of the survey, and take the mean of the scores for the cultural dimensions we use for each country.

An advantage of this dataset vis-à-vis the other cultural databases (e.g., Hofstede 2001, WVS) is that the survey questions and the variables derived from them rely on *a priori* theorizing.[12] The starting point for Schwartz (1999, 2006) is that all societies confront three basic issues when forming social relations, and the answers to these questions are inherently different in different societies. Based on these, he identifies seven value types, forming three bipolar value dimensions, namely egalitarianism–hierarchy, embeddedness–autonomy, and harmony–mastery.[13] Since there are two value types alongside the three dimensions, we do not need to use all the seven values, just one from every dimension. In selecting the value type alongside each dimension we look at which one is supposed to exercise a more straightforward impact on firm-level decisions about investments abroad. Table 2 explains the meaning of the seven values.

bipolar values	**meaning**
embeddedness – autonomy (affective/intellectual)	In societies characterized by a high degree of embeddedness, individuals are embedded in the group, and expected to restrain actions that might disrupt the solidarity of the group or the traditional order. In (intellectually and affectively) autonomous societies, individuals can act independently, and pursue their own interests and goals.
hierarchy – egalitarianism	In highly hierarchical societies, there is an unequal distribution of power, roles and resources. In egalitarian societies collective action is achieved by voluntary cooperation of individuals who see themselves as equals.
mastery – harmony	Mastery stresses an emphasis on assertiveness and ambition in order to master the environment and reach personal and group goals. Harmony stresses the acceptance of the environment as it is and the importance of its preservation.

Table 2. Individual values and their meanings
Source: based on Schwartz (1999)

Concerning the embeddedness–autonomy value pair, we posit that embeddedness is related to the ease and cost of rule compliance in the destination country. Higher embeddedness can be favorable for foreign firms to operate in the destination country since in a high-embeddedness society people are supposed to comply with rules "imposed" on them to

[12] See Siegel et al. (2012) for more reasons why the Schwartz dataset is superior to its competitors.
[13] Autonomy is divided into two types.

a greater extent than in a low-embeddedness society. Accordingly, foreign investors may find it attractive to work with people who are ready to comply with the "rules" of the company. When it comes to the egalitarianism–hierarchy pair, we follow Siegel et al. (2012) who argue that egalitarianism affects the way in which multinational firms can adjust to engage with their foreign stakeholders: a higher level of egalitarianism can make it easier and less costly to cooperate with employees, suppliers etc. Of the harmony–mastery value pair we choose mastery because we can assume that foreign firms prefer countries where stakeholders put great emphasis on reaching the goals of the company, and behaving in an entrepreneurial way to provide solutions to various problems.

To sum up, we will use three cultural variables (*culture_dest*), namely egalitarianism, embeddedness, and mastery. Since we are interested in separating their level and the distance effect, we will analyze their impacts separately.

To account for the usual potential problems associated with institutions in regression, we will apply instrumental variables techniques as well. Institutions may easily be endogenous in the FDI–institutions nexus because, on the one hand, the competition between governments to attract more FDI might make them improve some elements of their formal institutions, and on the other, countries which attract more FDI can be pressured to improve their institutions by the multinational firms present in the country.

The potential candidates for an instrument for formal institutions are numerous since the literature has provided us with several variables that are good predictors of institutions. Of them, we have chosen English legal origin (La Porta et al. 2008) which, besides fulfilling the social science requirements vis-à-vis an instrument, meets the formal requirements, namely being correlated with the endogenous variables and being uncorrelated with the error term, too.

4. Empirical analysis

For our field of inquiry, based on our data structure, the use of both cross-section (with variables averaged over the period 2000-2012) and panel regressions can be justified. Because of the possible endogeneity of institutions, in each case the full model will also be estimated by using an instrumental variable approach. However, as we have good reasons to assume the

exogeneity of our cultural variables, we do not need to instrument them.[14] Although cross-section investigations are very frequently used in gravity models, they do not make use of all information we have. Pooled regressions make some use of the panel structure of the data but assume that within-country-pair observations are as independent as cross country-pair observations, which, indeed, does not seem to be a plausible assumption. For this reason and since a number of independent variables, including the cultural variables we are focusing on, are time-invariant and country- or country-pair-specific, we will also estimate our equation with a random effects model. So, at the end of the day, we will run cross-section OLS and IV, pooled OLS and IV, and random effects and random effects IV regressions. We do not choose *a priori* among them; rather we will apply all of them, with the aim, of course, of providing robustness checks and to select – on the basis of various econometrics tests and/or the plausibility of the results – the most appropriate one, and consider the others as robustness checks. The results are shown in Tables 3-5.

All the three tables have four panels. The first panel includes the basic specifications, which is the one with only the "traditional" gravity variables, and another that adds institutions to this. In the remaining three panels we add our three cultural variables separately, that is, embeddedness, egalitarianism and mastery, respectively.

4.1. Baseline specifications results

The "traditional" gravity variables in the first baseline specification (column 1 in Tables 3-5), by using all the three techniques, are proved to behave as expected. A country with a higher GDP will send more FDI provided that its population is held constant, while population has the opposite effect. This seems to show that rich countries (in terms of per capita GDP) invest more in other countries than poorer ones. The signs of these two variables are the same for the destination country, too, meaning that countries with a higher GDP and the same population receive more FDI, whereas countries with a higher population but the same GDP receive less.

This interpretation is strengthened by the fact that the population of the destination country loses its significance once institutions of the host country are included (column 2 in Tables 3-5). The reason may be that institutions are a good predictor of per capita GDP and the effect of per capita GDP is the only reason why the population of the host country turns

[14] Note that the Schwartzian understanding of cultural values of which we use embeddedness, egalitarianism and mastery conceptualizes them as external and unalterable conditions on humans, as mentioned above.

out to be a significant factor. Total nominal GDP does not lose its significance, perhaps because it is not only real per capita GDP through which it affects FDI.

The coefficients of all the bilateral “traditional” variables have the sign which could be expected: being closer to each other geographically, being contiguous, having a common official language, and having been in a colonial relationship predict that the origin country will send more FDI to the partner country. All these results are perfectly in line with the findings of the papers analyzing the role of institutions in a gravity model (e.g., Daude and Stein 2007). In addition, with all methods the explanatory power of the model is very high (the R^2 is between 66.2 and 68.2 for the second columns), and all statistical significances are at the 1 percent level.

	OLS	OLS	OLS	IV	OLS	IV	OLS	IV
			embeddedness		**egalitarianism**		**mastery**	
ln(NGDP)_origin	2.106 [a]	2.321 [a]	2.969 [a]	2.977 [a]	3.003 [a]	3.003 [a]	2.980 [a]	2.985
	(0.168)	(0.174)	(0.200)	(0.199)	(0.201)	(0.203)	(0.199)	(0.200)
ln(NGDP)_dest	0.943 [a]	0.780 [a]	0.945 [a]	0.740 [a]	0.732 [a]	0.161	0.823 [a]	0.422
	(0.031)	(0.052)	(0.079)	(0.179)	(0.075)	(0.281)	(0.080)	(0.230)
ln(pop)_origin	-1.636 [a]	-1.575 [a]	-1.917 [a]	-1.914 [a]	-1.915 [a]	-1.887 [a]	-1.918 [a]	-1.902 [a]
	(0.228)	(0.228)	(0.255)	(0.252)	(0.253)	(0.254)	(0.252)	(0.251)
ln(pop)_dest	-0.317 [a]	-0.035	-0.099	-0.129	0.117	0.733 [a]	-0.049	0.380
	(0.035)	(0.056)	(0.087)	(0.190)	(0.084)	(0.291)	(0.092)	(0.237)
ln(distance)	-0.777 [a]	-0.830 [a]	-0.897 [a]	-0.900 [a]	-0.874 [a]	-0.868 [a]	-0.869 [a]	-0.864 [a]
	(0.043)	(0.042)	(0.050)	(0.049)	(0.048)	(0.048)	(0.051)	(0.051)
contiguity	1.003 [a]	0.857 [a]	0.511 [a]	0.538 [b]	0.471 [b]	0.533 [b]	0.518 [b]	0.565 [b]
	(0.212)	(0.224)	(0.223)	(0.220)	(0.231)	(0.233)	(0.227)	(0.226)
common official language	1.098 [a]	1.033 [a]	1.085 [a]	1.025 [a]	1.036 [a]	0.887 [a]	1.050 [a]	0.942 [a]
	(0.148)	(0.149)	(0.179)	(0.185)	(0.179)	(0.198)	(0.184)	(0.195)
colonial relations	0.897 [a]	0.920 [a]	0.744 [a]	0.744 [a]	0.828 [a]	0.851 [a]	0.831 [a]	0.848 [a]
	(0.166)	(0.173)	(0.204)	(0.205)	(0.201)	(0.210)	(0.211)	(0.216)
openness_dest	0.003 [a]	0.004 [a]	0.002 [b]	0.002	0.006 [a]	0.004 [a]	0.004 [a]	0.002 [c]
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
institutions_dest		0.013 [a]	0.017 [a]	0.031 [a]	0.014 [a]	0.048[a]	0.013 [a]	0.038 [a]
		(0.003)	(0.004)	(0.012)	(0.004)	(0.016)	(0.004)	(0.014)
ncd×culture_dest			0.569 [a]	0.639 [a]	1.093 [a]	1.124 [a]	0.623 [a]	0.670 [a]
			(0.137)	(0.399)	(0.178)	(0.180)	(0.201)	(0.202)
pcd×culture_dest			0.653 [a]	0.723 [a]	1.055 [a]	1.095 [a]	0.624 [a]	0.670 [a]
			(0.118)	(0.342)	(0.159)	(0.162)	(0.178)	(0.180)
R^2	0.638	0.682	0.745	0.743	0.744	0.730	0.739	0.732
Number of observations	2940	2563	1420	1420	1420	1420	1420	1420
p values of the Durbin–Wu–Hausman test				0.322		0.013		0.024
first stage F statistic				104.33		66.25		94.88
p values of $\beta_5=\beta_6$			0.041	0.039	0.186	0.339	0.978	0.996
p values of $\beta_5 \leq \beta_6$			0.980	0.981	0.093	0.170	0.511	0.502

Table 3: Cross-section regressions

Notes: The dependent variable is the natural logarithm of outward FDI stocks from the origin country to the destination country. Standard errors are in parentheses and are robust. Letters in the upper index refer to significance: a: significance at 1%, b: significance at 5%. c: significance at 10%.

	OLS	OLS	OLS	IV	OLS	IV	OLS	IV
			embeddedness		**egalitarianism**		**mastery**	
ln(NGDP)_origin	1.414 [a]	1.270 [a]	1.212 [a]	1.218 [a]	1.224 [a]	1.250 [a]	1.224 [a]	1.136 [a]
	(0.145)	(0.172)	(0.190)	(0.190)	(0.192)	(0.195)	(0.191)	(0.164)
ln(NGDP)_dest	0.996 [a]	0.866 [a]	1.014 [a]	0.892 [a]	0.804 [a]	0.273	0.888 [a]	0.492 [b]
	(0.028)	(0.050)	(0.064)	(0.138)	(0.062)	(0.242)	(0.064)	(0.196)
ln(pop)_origin	-3.005 [a]	-3.159 [a]	-4.332 [a]	-4.404 [a]	-4.084 [a]	-4.351 [a]	-4.172 [a]	-0.863
	(0.860)	(1.169)	(1.302)	(1.302)	(1.304)	(1.326)	(1.304)	(1.139)
ln(pop)_dest	-0.291 [a]	-0.072	-0.127 [c]	0.012	0.081	0.668 [a]	-0.081	0.357 [c]
	(0.033)	(0.056)	(0.073)	(0.150)	(0.071)	(0.255)	(0.077)	(0.207)
ln(distance)	-0.709 [a]	-0.858 [a]	-0.956 [a]	-0.962 [a]	-0.921 [a]	-0.930 [a]	-0.916 [a]	-0.921 [a]
	(0.039)	(0.040)	(0.048)	(0.048)	(0.047)	(0.047)	(0.049)	(0.049)
contiguity	0.798 [a]	0.760 [a]	0.408 [c]	0.420 [b]	0.376 [c]	0.417 [c]	0.414 [c]	0.448 [b]
	(0.183)	(0.216)	(0.209)	(0.209)	(0.220)	(0.225)	(0.215)	(0.219)
common official language	0.941 [a]	0.784 [a]	0.914 [a]	0.877 [a]	0.857 [a]	0.710 [a]	0.880 [a]	0.761 [a]
	(0.139)	(0.146)	(0.174)	(0.176)	(0.176)	(0.190)	(0.181)	(0.189)
colonial relations	0.906 [a]	0.996 [a]	0.725 [a]	0.723 [a]	0.836 [a]	0.852 [a]	0.842 [a]	0.852 [a]
	(0.156)	(0.170)	(0.202)	(0.203)	(0.202)	(0.210)	(0.209)	(0.215)
openness_dest	0.005 [a]	0.004 [a]	0.003 [a]	0.003 [a]	0.006 [a]	0.005 [a]	0.004 [a]	0.003 [a]
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
institutions_dest		0.013 [a]	0.017 [a]	0.026 [a]	0.012 [a]	0.048 [a]	0.012 [a]	0.040 [a]
		(0.003)	(0.003)	(0.010)	(0.003)	(0.015)	(0.003)	(0.013)
ncd×culture_dest			0.516 [a]	0.558 [a]	1.144 [a]	1.149 [a]	0.724 [a]	0.779 [b]
			(0.132)	(0.147)	(0.175)	(0.179)	(0.192)	(0.195)
pcd×culture_dest			0.631 [a]	0.672 [a]	1.095 [a]	1.112 [a]	0.687 [a]	0.742 [a]
			(0.112)	(0.129)	(0.157)	(0.161)	(0.170)	(0.172)
R^2	0.637	0.665	0.722	0.721	0.721	0.708	0.715	0.705
Number of observations	32462	20149	12770	12770	12770	12770	12770	12770
Number of country-pairs	2938	2489	1398	1398	1398	1398	1398	1398
p values of the Durbin–Wu–Hausman test				0.358		0.016		0.028
first stage F statistic				132.97		78.23		114.27
p values of $\beta_5=\beta_6$			0.005	0.005	0.007	0.191	0.363	0.367
p values of $\beta_5 \leq \beta_6$			0.998	0.998	0.037	0.095	0.181	0.184

Table 4: Pooled regressions

Notes: The dependent variable is the natural logarithm of outward FDI stocks from the origin country to the destination country. Standard errors are in parentheses and are robust. Letters in the upper index refer to significance: a: significance at 1%, b: significance at 5%. c: significance at 10%.

	RE	RE	RE	RE IV	RE	RE IV	RE	RE IV
			embeddedness		**egalitarianism**		**mastery**	
ln(NGDP)_origin	1.457 [a]	1.369 [a]	1.349 [a]	1.351 [a]	1.352 [a]	1.363 [a]	1.351 [a]	1.356 [a]
	(0.115)	(0.143)	(0.172)	(0.172)	(0.172)	(0.173)	(0.172)	(0.173)
ln(NGDP)_dest	0.965 [a]	0.770 [a]	0.824 [a]	0.696 [a]	0.789 [a]	0.429 [b]	0.797 [a]	0.585 [a]
	(0.033)	(0.049)	(0.073)	(0.111)	(0.070)	(0.189)	(0.072)	(0.127)
ln(pop)_origin	-3.957 [a]	-5.415 [a]	-5.251 [a]	-5.284 [a]	-5.247 [a]	-5.334 [a]	-5.250 [a]	-5.299 [a]
	(0.696)	(0.990)	(1.167)	(1.167)	(1.166)	(1.171)	(1.166)	(1.167)
ln(pop)_dest	-0.373 [a]	0.023	0.011	0.203	0.063	0.520 [b]	0.007	0.277 [b]
	(0.037)	(0.056)	(0.077)	(0.129)	(0.076)	(0.219)	(0.080)	(0.142)
ln(distance)	-0.816 [a]	-0.940 [a]	-0.979 [a]	-0.995 [a]	-0.969 [a]	-0.941 [a]	-0.959 [a]	-0.962 [a]
	(0.044)	(0.043)	(0.051)	(0.051)	(0.049)	(0.052)	(0.052)	(0.052)
contiguity	1.179 [a]	0.891 [a]	0.424 [c]	0.442 [c]	0.401 [c]	0.428 [c]	0.423 [c]	0.454 [b]
	(0.214)	(0.231)	(0.226)	(0.228)	(0.234)	(0.248)	(0.230)	(0.237)
common official language	1.096 [a]	0.945 [a]	1.040 [a]	0.969 [a]	1.024 [a]	0.908 [a]	1.054 [a]	0.939 [a]
	(0.150)	(0.155)	(0.187)	(0.190)	(0.184)	(0.198)	(0.190)	(0.198)
colonial relations	0.955 [a]	1.009 [a]	0.889 [a]	0.869 [a]	0.910 [a]	0.929 [a]	0.929 [a]	0.934 [a]
	(0.170)	(0.179)	(0.214)	(0.218)	(0.211)	(0.224)	(0.219)	(0.228)
openness_dest	0.004 [a]	0.003 [a]	0.004 [a]	0.003 [b]	0.004 [a]	0.003 [b]	0.004 [a]	0.003 [b]
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
institutions_dest		0.018 [a]	0.016 [a]	0.034 [a]	0.013 [a]	0.047 [a]	0.014 [a]	0.036 [a]
		(0.003)	(0.004)	(0.010)	(0.004)	(0.016)	(0.004)	(0.011)
ncd×culture_dest			0.136	0.361 [b]	0.943 [a]	0.987 [a]	0.358 [c]	0.588 [b]
			(0.148)	(0.329)	(0.184)	(0.189)	(0.216)	(0.228)
pcd×culture_dest			0.234 [c]	0.460 [a]	0.893 [a]	0.942 [a]	0.344 [c]	0.574 [a]
			(0.129)	(0.280)	(0.165)	(0.444)	(0.193)	(0.207)
R^2	0.6238	0.662	0.717	0.717	0.718	0.707	0.712	0.708
Number of observations	32462	20149	12770	12770	12770	12770	12770	12770
Number of country-pairs	2938	2489	1398	1398	1398	1398	1398	1398
p values of the Durbin–Wu–Hausman test				0.062		0.032		0.027
first stage χ^2-test of the instrument				195.44		81.90		212.86
p values of $\beta_5=\beta_6$			0.021	0.020	0.094	0.143	0.742	0.751
p values of $\beta_5 \leq \beta_6$			0.990	0.990	0.047	0.072	0.371	0.375

Table 5: Random effects panel regressions

Notes: The dependent variable is the natural logarithm of outward FDI stocks from the origin country to the destination country. Standard errors are in parentheses and are robust. Letters in the upper index refer to significance: a: significance at 1%, b: significance at 5%. c: significance at 10%.

4.2. Results with the cultural variables

Our focus in analyzing the results concerning the cultural variables as interacted with the *ncd* and *pcd* dummies is first of all the size of the coefficients and their statistical significance. Second, in accordance with what has been explained in section 3 we are interested in the relation between β_5 and β_6. As a formal test we included the p values of the null hypothesis of their equality as well as their inequality in the last two rows of Tables 3-5. In what follows we will discuss the results from the application of cross-section, pooled and random effects regressions, including the ones in which the variable for formal institutions is instrumented. To indicate the reasonableness of instrumenting, we also insert the p values of the Durbin-Watson-Hausman test, which shows that except for the regressions with embeddedness, the formal institution variable is indeed endogenous. F- and khi-squared statistics of the instrument in the first stage regression are also reported to show that the instrument is not weak.

4.2.1. Cross-section regressions

Table 3 shows the result for simple OLS and instrumental variables regressions as run on our cross-section of country-pairs. It seems that the three cultural variables do not behave in exactly the same way. In the case of embeddedness it seems clear from the simple OLS estimation that $\beta_5<\beta_6$, since their equality can be rejected at the five-percent level whereas the hypothesis that $\beta_5\leq\beta_6$ cannot be rejected at all (but its opposite can). This case corresponds to case 4 in Table 1. The IV regression confirms this conclusion, too. We can then use Table 1 to conclude that the level of embeddedness in the destination country matters in a positive way as does the distance in embeddedness. Since the difference of β_5 and β_6 is still small compared to the absolute values of the coefficients, the distance effect seems to be much less significant economically.

The case of egalitarianism is different. The equality of the two betas cannot be rejected at the ten-percent level in either case, and the estimated value of β_5 is indeed not much different from that of β_6. However, the inequality $\beta_5\leq\beta_6$ can be rejected at the ten-percent level in the OLS case but not in the IV case. This corresponds to case 1 in Table 1. The conclusion, therefore, is that it is only the level, and not the distance, that matters.

Results with mastery are similar to those with egalitarianism. The estimated values of the coefficients are close to each other and the formal test cannot reject their equality at the

usually accepted significance level, no matter whether one looks at the OLS or IV estimations (case 1 in Table 1). This allows us to conclude that it is only the level of mastery that matters for FDI; the distance in mastery does not.

4.2.2. Pooled regressions

The pooled OLS estimation results with embeddedness in Table 4 make it clearer that in the case of embeddedness $\beta_5<\beta_6$. The equality can be rejected at the five-percent level in both (OLS and IV) cases and the inequality cannot be rejected at all. Our conclusion does not therefore change (case 4 in Table 1), including the same guess as in the cross-section case, namely that the distance effect does not seem to be significant economically.

In the case of egalitarianism, the pooled OLS results are less unequivocal than those drawn from the cross-section regressions. When it comes to the hypothesis about the equality of the coefficients, the OLS approach allows us to reject it but the IV does not. Considering that the Durbin-Watson-Hausman test indicates endogeneity, we had better rely on the results of the IV estimation saying that the coefficients are equal and, again, there is no distance effect.

The pooled OLS and the pooled IV estimations do not change the conclusion regarding the effect of the mastery at all: no effect of cultural distance can statistically be detected, but the effect of level of mastery is estimated to be positive.

4.2.3. Random effects regressions

The random effects model's results can be found in Table 5, which indicates that the main messages from the previous regressions remain. For embeddedness the results are not as convincing as in the pooled OLS case but the best hypothesis still seems to be $\beta_5<\beta_6$. β_5 is not found to be significantly different from zero in the simple RE case but in the IV case it is so, and β_6 is found to be positive at the ten-percent (RE) and at the one-percent level (RE IV). The formal test of coefficients from the IV estimation is able to reject the equality of the two coefficients, though. Thus our RE regression results are, albeit somewhat more doubtfully, still supportive of the hypothesis that $\beta_5<\beta_6$ (case 4 of Table 1), implying that both effects of culture – level and distance – matter positively.

For egalitarianism, the RE and especially the RE IV estimations are in line with what has been concluded previously, which is the equality of β_5 and β_6. In neither the RE nor the RE IV

case can this hypothesis be rejected at the 5-percent significance level (case 1 in Table 1). Thus the results indicate a missing distance effect but a positive level effect.

In the case of mastery the lack of an effect of cultural distance is confirmed again. Mastery has a positive effect but in the simple case it is now only the ten-percent level at which it is statistically significant. Since the equality of the coefficients would be very difficult to reject, it would also be very difficult to say that cultural distance measured alongside the mastery dimension has an economically or statistically significant effect on FDI, contrary to the level of mastery. The IV estimation does not change this conclusion, either.

4.3. Summary and interpretation of the results

Our results based on the cross-section (OLS and IV), pooled (OLS and IV), and RE and RE IV regressions are summarized in Table 6, from which we can draw three conclusions. First, the three cultural dimensions work in a similar way as regards the effect of the level of culture: a higher level of embeddedness in the destination country has been shown to attract more FDI as has a higher level of egalitarianism as well as of mastery, independently of the culture of the origin country. This is because a higher level of all the three cultural dimensions makes foreign investors feel more comfortable when cooperating with the stakeholders of the company in the destination country, and this cooperation comes at lower cost. It seems that what we have hypothesized in Section 4.1 as regards why these cultural values will have a positive impact on FDI is working.

cultural dimension	**estimation method**	**relation between the coefficients**	**conclusion on cultural distance**	**level**
embeddedness	cross-section OLS	$\beta_6 > \beta_5 > 0$	+	+
	cross-section IV	$\beta_6 > \beta_5 > 0$	+	+
	pooled OLS	$\beta_6 > \beta_5 > 0$	+	+
	pooled IV	$\beta_6 > \beta_5 > 0$	+	+
	RE	$\beta_6 > \beta_5 = 0$	+	+
	RE IV	$\beta_6 > \beta_5 > 0$	+	+
egalitarianism	cross-section OLS	$\beta_5 = \beta_6 > 0$	0	+
	cross-section IV	$\beta_5 = \beta_6 > 0$	0	+
	pooled OLS	$\beta_5 > \beta_6 > 0$	-	+
	pooled IV	$\beta_5 = \beta_6 > 0$	0	+
	RE	$\beta_5 = \beta_6 > 0$	0	+
	RE IV	$\beta_5 = \beta_6 > 0$	0	+
mastery	cross-section OLS	$\beta_5 = \beta_6 > 0$	0	+

cross-section IV	$\beta_5 = \beta_6 > 0$	0	+
pooled OLS	$\beta_5 = \beta_6 > 0$	0	+
pooled IV	$\beta_5 = \beta_6 > 0$	0	+
RE	$\beta_5 = \beta_6 > 0$	0	+
RE IV	$\beta_5 = \beta_6 > 0$	0	+

Table 6: Summary of the regression results

Second, the three cultural dimensions work differently as regards the impact of cultural distance. A higher distance in embeddedness has a positive effect on FDI. This suggests that foreign investors are attracted to a greater extent to invest abroad if the level of embeddedness in the destination country is further from its level in their home country. This implies that embeddedness, that is, the willingness of people to behave in accordance with the group (company) interest is of great importance for investors since it is not only its level in the destination country that matters, but a higher level of this cultural value in the destination country as compared to that in the origin country is an additional affecting factor, too. However, when it comes to egalitarianism and to mastery, the distance does not matter.

Third, in general, while the level effect seems to be very strong, the distance effect is very weak, if not missing. This is shown by the fact that there is no distance effect in the case of egalitarianism and mastery, but what is more, even in the case of embeddedness in which we could detect the distance effect as statistically significant, it does not seem to be economically significant.[15]

To make the above arguments clearer as a next step, we will calculate the size of the level and the distance effect, by relying on the results of the random effects and the cross-section estimations. Since the Durbin-Watson-Hausman tests indicate that the IV estimations are the consistent ones, we rely on them in both cases. The cross-section estimations are seen as the default in the literature, therefore we consider them robustness checks for our results, by preferring the RE method because it makes use of the panel structure of the data. When it comes to its comparison with the pooled OLS regressions, we have three reasons to prefer the RE method. First, the main results are in line with those of the cross-section regressions. Second, the Breusch-Pagan test allows us in every case to reject the hypothesis that a pooled OLS may be appropriate. Third, as Plümper and Troeger (2007:217) show, an RE model is, under broad conditions, more efficient than the pooled OLS model.

[15] It is because the difference of β_5 and β_6 is small compared to the absolute values of the coefficients.

Standardized level and distance effects for our three cultural values are summarized in Table 7. As shown by the RE columns of the table, one standard deviation change[16] in embeddedness (roughly the difference between Singapore (4.62) and Brazil (4.01)) is predicted to increase FDI by 22.1 or 28.2 percent depending on the sign of the cultural distance. Making use of equation (14), this implies a level effect of 25.2 percent and a distance effect of 3 percent. As for egalitarianism, one standard deviation increase in egalitarianism (about the difference between the USA (5.110) and Taiwan (4.776)) is associated with a 32.5 percent increase in FDI as a result of an increase in its level and a 0.8 percent – although statistically insignificant – increase in FDI as a result of the decrease in egalitarianism distance between the two countries. In the case of mastery one standard deviation increase in mastery (roughly equivalent to the difference between the USA (4.234) and New Zealand (3.825)) is predicted to attract 22.5 percent more FDI resulting from a higher level of mastery and to attract 0.3 percent (statistically insignificant) more FDI as result of a decrease in the distance.

The cross-section estimates do not tell us a radically different story; even the sizes of the effects are in line with the RE estimates. It is only embeddedness whose effects seem to be significantly larger in the cross-section results. The fact remains, however, that the distance effect is dwarfed by the level effect.

cultural value	**standardized betas**				**level effect**		**distance effect**	
	β_5		**β_6**		**β_{lev}**		**β_{dist}**	
	cross-s.	**RE**	**cross-s.**	**RE**	**cross-s.**	**RE**	**cross-s.**	**RE**
embeddedness	0.392	0.221	0.443	0.282	0.447	0.252	0.026	0.030
egalitarianism	0.379	0.333	0.369	0.317	0.374	0.325	-0.005	-0.008
mastery	0.259	0.228	0.259	0.222	0.259	0.225	0.00	-0.003
	without contiguity and common official language							
	β_5		**β_6**		**β_{lev}**		**β_{dist}**	
	cross-s.	**RE**	**cross-s.**	**RE**	**cross-s.**	**RE**	**cross-s.**	**RE**
embeddedness	0.429	0.296	0.492	0.367	0.460	0.331	0.032	0.036
egalitarianism	0.404	0.355	0.396	0.341	0.400	0.348	-0.004	-0.007
mastery	0.297	0.289	0.302	0.290	0.299	0.290	0.003	0.000

Table 7. Standardized level and distance effects from the random effects and cross-section regressions with instrumental variables

Note: Standardized betas (the coefficients divided by the standard deviation of the cultural variable in question) are calculated from Table 3 and 5; β_{lev} and β_{dist} are calculated by using equation (14) in section 3 and rounded to three decimals.

[16] Of course, the measure of culture we use is time-invariant, that is, it can neither increase nor decrease. It is more convenient, however, to talk about the regression results in terms of its "change" than in terms of positive or negative difference between two pairs of countries. We always mean the latter when we use the terms "change", "increase" or "decrease" with regard to culture.

So, our results evidence a very “weak” distance effect, if any: it is statistically significant only for embeddedness, but even in this case, the size of this effect (3%) is negligible as compared to the level effect (25.2%), meaning that the cultural distance does not have an economically meaningful impact on FDI flows.

One concern that may arise about these results, especially as regards the missing distance effect, is that it proves to be small because a large part of it is already accounted for by the common official language and contiguity variables. To check this possibility we re-ran the regressions in Tables 3 and 5 without these two explanatory variables. The lower panel of Table 7 shows the standardized betas and the two effects calculated from these regressions. The main conclusion remains unchanged: the distance effect is dwarfed by the level effect.

5. Conclusions

In this paper we have shown new evidence on how culture affects FDI. Our most important concerns have centered on the question of whether investors from a given country invest more or less in another country with a more different culture compared to that with a less different one. Is the difference in FDI a result of the fact that the two destination countries have different cultures or the fact that one of them is more distant culturally from the origin country than the other? We have argued that answering this question requires disentangling the impact of culture, which consists of separating two effects: the level (the former) and the distance effect (the latter), which are mixed in the literature, leading in this way to biased conclusions in relation to how cultural distance matters for FDI.

Most importantly, we have proposed an econometric method to separate the two effects of culture, in which the key is that cultural distance does not depend on the origin country’s culture as required by the principle of measurement equivalence in cultural distance laid down by van Hoorn and Maseland (2014). In this way, our procedure may have applications in related research areas as well, such as MNEs entry modes research.

The results of regressions using different methods, first of all, have evidenced that culture matters for FDI inflows on its own, meaning that it affects foreign investments beyond formal institutions. Secondly, we have found that the level effect of culture, i.e., the effect arising from a higher level of culture in the destination country, irrespective of the level of culture in the origin country, is very “strong” in the sense that it is in effect in the case of all the three cultural values and its size is economically significant, as well. However, the distance effect is proved to be very “weak”, if not missing, in the sense that it is in effect only in the case of

embeddedness, but even in this case, its size is negligible as compared to the size of the level effect. So, in an economic sense we can argue that “deep” cultural values affect FDI in practically the same way.

So, our results for the OECD countries as origin countries have demonstrated that once we correctly separate the level and the distance effects of the culture, the distance effect becomes economically insignificant. Put differently, the cultural distance between the origin and the destination country exercises a negligible impact on FDI; what really matters is the level of culture in the destination country, irrespective of the level of culture in the origin country. Clearly, the literature has “overemphasized” the impact of cultural distance due to the biased empirical results arising from the lack of measurement equivalence as identified by van Hoorn and Maseland (2014). But we do not intend to generalize our findings. Firstly, because our origin countries include only OECD countries, and secondly, because our concern here has been on the impact of the “deep” cultural values, and the fact that cultural distance does not matter in these cases does not necessarily imply that it does not matter at all (for different cultural dimensions for instance). We think however that further work on this field of inquiry should be based on the separation of the two effects of culture.

Literature

Bhardwaj, A. – Dietz, J. – Beamish, P. W. (2007) Host Country Cultural Influences on Foreign Direct Investment. Management International Review 47. 1:29-50.

Boettke, P. J. – Coyne, C. J. – Leeson, P. T. (2008) Institutional Stickiness and the New Development Economics. American Journal of Economics and Sociology 67. 2:331-358.

Du, J. – Lu, Y. –Tao, Z. (2012) Institutions and FDI Location Choice: The Role of Cultural Distances. Journal of Asian Economics 23:210-223.

Grosse, R. – Trevino, L. J. (1996) Foreign Direct Investment in the United States: An Analysis by Country of Origin. Journal of International Business Studies 27. 1:139-155.

Gwartney, J. – Lawson, R. – Hall, J. (2017) Economic Freedom of the World 2017 Annual Report. Vancouver: The Fraser Institute

Hofstede, G. (1980) Culture's Consequences: International Differences in Work-Related Values. Beverly Hills, CA: Sage Publications.

Hofstede, G. (2001) Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations. Beverly Hills, CA: Sage Publications, Beverly Hills.

Holmes, R. M. – Miller, T. – Hitt, M. A. – Salmador, M. P. (2013) The Interrelationships Among Informal Institutions, Formal Institutions, and Inward Foreign Direct Investment. Journal of Management, 39: 531-566.

Kogut, B. – Singh, H. (1988) The Effect of National Culture on the Choice of Entry Mode. Journal of International Business Studies 19. 3:411-432.

La Porta, R. – Lopez-de-Silanes, F. – Shleifer, A. (2008) The Economic Consequences of Legal Origin. Journal of Economic Literature 46. 2:258-332.

Lucke, N. – Eichler, S. (2016) Foreign Direct Investment: The Role of Institutional and Cultural Determinants. Applied Economics 48. 11:935-956.

Mayer, T. and Zignago, S. (2011) Notes on CEPII's distances measures: the GeoDist Database. CEPII Working Paper 2011-25.

OECD (2017) FDI positions by partner country. Available at: http://stats.oecd.org/index.aspx?DataSetCode=FDI_POSITION_PARTNER

Plümper, T. – Troeger, V. E. (2007) Efficient Estimation of Time-Invariant and Rarely Changing Variables in Finite Sample Panel Analyses with Unit Fixed Effects. Political Analysis 15:124-139.

PRS Group (2017) International Country Risk Guide: Researcher's Dataset.

Sethi, D. – Guisinger, S. E. – Phelan S. E. – Berg D. M. (2003) Trends in Foreign Direct Investment Flows: A Theoretical and Empirical Analysis Journal of International Business Studies 34. 4:315-32.

Schwartz, S. H. (1999) A Theory of Cultural Values and Some Implications for Work. Applied Psychology: An International Review 48. 1:23-47.

Schwartz, S. H. (2006) A Theory of Cultural Value Orientations: Explication and Applications. Comparative Sociology 5. 2-3:137-182.

Siegel, J. I. – Licht, A. N. – Schwartz, S. H. (2012) Egalitarianism, Cultural Distance, and Foreign Direct Investment: A New Approach. Organization Science 24.4:1174-1194.

Slangen, A. H. L. – Beugelsdijk, S. (2010) The impact of institutional hazards on foreign multinational activity: A contingency perspective. Journal of International Business Studies 41. 6:980-995.

Tang, L. (2012) The Direction of Cultural Distance on FDI: Attractiveness or Incongruity? Cross Cultural Management: An International Journal 19. 2:233-256.

van Hoorn, A. – Maseland, R. (2014) Is Distance the Same Across Cultures? A Measurement-Equivalence Perspective on the Cultural Distance Paradox. In: Verbeke, A., van Tulder, R., Lundan, S. (eds.), Multinational Enterprises, Markets and Institutional Diversity. Progress in International Business Research, Volume 9. Emerald Group Publishing Limited, Bingley, UK. pp. 207-227.

van Hoorn, A. – Maseland, R. (2016) How Institutions Matter for International Business: Institutional Distance Effects vs Institutional Profile Effects. Journal of International Business Studies 47. 3:374-381.

Williamson, O. E. (2000) The New Institutional Economics: Taking Stock, Looking Ahead. Journal of Economic Literature XXXVIII. Sep:595-613.

World Bank (2017a) World Development Indicators.

World Bank (2017b) The Worldwide Governance Indicators. http://info.worldbank.org/governance/wgi/index.aspx#home