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Asymmetric cultural proximity and greenfield foreign direct investment

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1 | INTRODUCTION

The role of foreign direct investment (*FDI*) in generating net gains for both origin and destination countries is well-documented. The growth-enhancing potential of *FDI* has spurred an in-depth analysis of its determinants. Besides the usual and relatively well-explored determinants of *FDI* (such as geographic factors and institutional setting), recent research has pointed out the role of cultural proximity between the investing and the receiving country. Investments from origin to destination are relatively higher if the two countries share similar cultural traits, such as those embedded in language, religion, ethnicity or genetics (see, for instance, Blonigen & Piger, 2014).

However, economically relevant dimensions of cultural proximity go well beyond the symmetric (and largely time-invariant) nature of the proxies capturing the extent to which individuals in two countries speak the same language or share similar genetic traits (Felbermayr & Toubal, 2010; Shenkar, 2001; Tung & Verbeke, 2010). One such dimension is bilateral trust, an asymmetric (one can trust without being trusted and vice versa) cultural variable that can vary over time and that can have important implications for bilateral economic interactions (Guiso et al., 2009). In what follows, we

focus on a less investigated asymmetric and time-varying dimension in cultural proximity, that is, the preferences of individuals in a country for the culture of individuals in economic partner countries (i.e., the appreciation of each other's culture). Take as an example the case of the so-called Korean Wave (Hallyu) in Latin American countries. Despite the absence of either a common cultural, religious or linguistic background, the year 2000s experienced an unprecedented penetration (and appreciation) of Korean soap operas and pop music (K-pop) in countries such as Argentina, Chile and Peru. Yet, there is no evidence of neither a contemporaneous nor subsequent symmetric rise in popularity of Latin American culture (or music) in South Korea. Observers (including trade economists) have started to identify a connection between the Korean Wave's success in Latin America and more intense economic relationships (Chang & Lee, 2018).[1]

While the impact of culture on trade has been studied extensively, we address the question of how asymmetric and time-dependent dimensions of cultural proximity, such as bilateral trust or preferences towards cultural systems, impact investment patterns. The existing literature in this sense only delivers half of the answer. As for trust, Guiso et al. (2009) showed that investment increases if individuals in the investing country trust the citizens in the receiving economy. However, the potential role of the opposite direction of trust is left unexplored. To the best of our knowledge, there exists no study investigating the effect of both directions of cultural preferences on investment patterns. So, ultimately, we lack a comprehensive assessment of the asymmetric dimensions in bilateral cultural relationships as determinants of *FDI*.

The present paper attempts to fill this gap. Let us consider again the example of South Korea and Latin American countries. Does the popularity of the Korean Wave in, let's say, Peru affect investment patterns between the two countries? Is this cultural link more relevant as a determinant of Korean investment in Peru or of Peruvian *FDI* in South Korea? Or is the impact (if any) the same in both countries? In other words, given an origin country *i* and a destination *n*, we ask whether and how *i*'s preferences for *n*'s culture and *n*'s preferences for *i*'s culture both play a role in shaping the investment pattern from *i* to *n*. More generally, this paper assesses the effect of cultural proximity on *FDI*, explicitly accounting for the asymmetric and time-dependent dimensions embedded in bilateral cultural preferences.

We first provide a simple framework for the notion of cultural proximity (henceforth *CP*). Building on contributions from both international business scholars and economists, we present a workable definition of *CP*, accounting for multiple dimensions in the cultural relationship between two countries. These include symmetric sharing of (relatively) stable common cultural traits and asymmetric cultural preferences, which are instead allowed to vary over time.[2] In line with Disdier et al. (2010), we use bilateral trade in cultural goods as a proxy for *CP*, as it allows us to highlight its asymmetric and time-dependent dimensions. The value of imports of cultural goods reflects the importer's preferences for the exporter's culture. We provide some suggestive evidence of the asymmetry embedded in bilateral cultural relationships with a descriptive exercise, conducted on a broad sample of countries.

The perspective on cultural asymmetry embedded in cultural trade data differs from and complements (Guiso et al., 2009), which analysed the impact of bilateral trust among European countries. While we consider both trust and cultural preferences as asymmetric and time-varying dimensions of *CP*, we maintain that they do not capture the same phenomena. Trust mainly affects an individual's

[1]Further information can be found on the KOFICE website, available at http://eng.kofice.or.kr

[2]The symmetrically shared cultural traits can vary over time, but generally need a long time before they can produce significant effects on bilateral economic relationships. On the contrary, preferences are allowed to change sharply in a relatively limited time span. Given the limited number of years for which bilateral investment data are available, our assumption appears to be reasonable.

expectations with respect to the actions of other individuals, while preferences reflected in cultural trade ultimately determine the utility of being exposed to (some aspects of) a different cultural system. One might strongly prefer to be exposed to the cuisine, music or art of country A, and at the same time systematically trust more individuals from country B. Moreover, from an empirical perspective of data availability, the variation in cultural relationships that can be captured with trade in cultural goods encompasses both developed and developing countries. This is particularly relevant for greenfield *FDI*, as the scale and scope of South–South greenfield *FDI* are growing at fast pace (Gold et al., 2017; UNCTAD, 2017) and North–South and South–North greenfield has increased their size and relevance.

Equipped with a definition and an empirical measure of *CP* that allows us to account for asymmetry and time variation, we investigate the linkages between *CP* and greenfield *FDI*. The paper revisits the theories underlying gravity equations of greenfield *FDI*. These are partial-equilibrium, supply-side models that subsume all gravity forces into monitoring and transaction costs, which ultimately determine the investment decisions of the multinational enterprise (MNE). In this context, we discuss the role played as determinants of investment decisions by both directions of the asymmetric component of *CP*, that is, cultural preferences. On the one hand, we argue that the cultural attractiveness of the destination country plausibly (and exhaustively) operates via the monitoring-transaction cost channel. On the other hand, the preference of the destination for the culture in the origin country is likely to play a role also through other channels. If an *FDI* aims at serving consumers' demand in the destination country (i.e., horizontal *FDI*), the attractiveness of the origin country's culture for (destination) consumers positively affects the value they put on the output of the origin's MNE and therefore increases the investment payoff. We call this mechanism 'destination market' channel. Also, the realisation of an *FDI* project can be facilitated (or opposed) by political pressures in the destination country. Under the assumption of political accountability, politicians in the destination country will allocate pressures to facilitate *FDI* projects also according to the degree by which the culture of the origin countries is attractive for the individuals (voters) in the destination (we call this the 'destination political economy' channel). All in all, the monitoring-transaction costs channels together with the 'destination-side' mechanisms unambiguously imply a positive role of both directions of cultural preferences in determining greenfield *FDI* from the origin to the destination country. Nonetheless, the assessment of the relative importance of one direction over the other is an empirical matter.

Using a global sample of more than 170 countries over the 2003–2014 period, we estimate a theory-consistent, reduced-form gravity equation of *FDI* by means of Poisson pseudo-maximum likelihood (PPML). Our baseline results confirm the relevance of our extended definition of *CP* for greenfield *FDI*. As for the relative importance of each direction of the asymmetric component of *CP*, our findings suggest that the number of investment projects tends to increase more the stronger the preferences of the destination economy for the culture in the investing country.[3] The patterns identified hold across a number of alternative specifications, including the addition of source–destination dyadic fixed effects and instrumentation of cultural trade, as well as alternative estimation methods. Moreover, results are robust to the use of total and average value of greenfield *FDI* as dependent variables and to different definitions of cultural trade.

Our findings complement the recent debate on the cultural determinants of economic exchanges and shed new light on the mechanisms linking asymmetric *CP* and greenfield investment. In particular, they suggest a stronger role for the 'destination-side' mechanisms. We extend the core analysis of the paper by conducting an empirical test of the 'destination market' and the 'destination political

[3]More precisely, the elasticities of the number of greenfield investment projects amount to 0.30 and 0.07 for origin to destination cultural exports and (origin from destination) cultural imports, respectively.

economy' channels. This exercise offers supportive evidence for these two mechanisms. We then investigate whether and how the effect of the asymmetric and time-dependent dimension of *CP* varies at different levels of its symmetric and time-invariant component. We find that time-contingent positive shocks in the asymmetric component of *CP* increase greenfield *FDI* only at low levels of the time-invariant, symmetric dimension of *CP*. This is consistent with a relationship of substitutability between (a) time-contingent, asymmetric and (b) time-invariant, symmetric dimensions of *CP* in triggering *FDI*, with the former operating as a bridgehead between otherwise culturally distant countries.

1.1 | Related literature

Our paper speaks to the growing literature that considers culture as an important determinant of economic outcomes (see among others Alesina & Giuliano, 2015; Fernández, 2008, 2011; Guiso et al., 2006). We contribute to the debate on whether and how the relationship between cultures affects exchanges and investment patterns across countries (Giuliano et al., 2014; Head & Mayer, 2014). To the best of our knowledge, this is the first analysis to explore the relationship between *CP* and *FDI*, fully accounting for the asymmetric nature of *CP*.[4] Guiso et al. (2009) studied the impact of trust on international transactions. While trust is inherently asymmetric, the authors only focused on how much individuals in the investing/exporting country trust on average individuals in the destination country. Our results suggest that *FDI* could also positively respond to the trust of citizens in the destination country for those in the investing one. This result and our focus on asymmetric determinants of *FDI* are in line with the findings of Cuadros et al. (2019), who studied the effect of high-skilled migration on *FDI*, showing that investment from an origin country *i* to a destination country *n* responds to high-skilled migration from both countries.

Our paper is closely related to studies on the relationship between asymmetric *CP* and international trade and in particular to Disdier et al. (2010) and Felbermayr and Toubal (2010). While Disdier and co-authors introduced for the first time cultural trade as a proxy for asymmetric and time-dependent *CP*, Felbermayr and Toubal used the Eurovision Song Contest voting scores for such a purpose. Both studies found that *CP* enlarges trade patterns, but neither of the two addressed the issue of its impact on *FDI*. We link this evidence to the international business literature, the first to criticise the symmetric and time-invariant concept (and measures) of *CP* (Shenkar, 2001). For instance, Li et al. (2017) focused on the role of cultural preferences on *FDI*-related outcomes, but limited their analysis to the investor's side alone, for which they detected a strong and positive impact. We extend and complement their study, finding a strong role of the origin's culture attractiveness for the destination country (i.e., destination's preferences towards the origin's culture).

Recently, Chang and Lee (2018) exploited the Korean Wave cultural shock to show how higher exports of Korean TV shows are associated with an increase in Korean exports of clothes and cosmetics targeting consumers more exposed to Korean cultural content. The authors also find that higher exports of Korean TV shows increase the value of Korean *FDI* including Korean restaurants, grocery stores, aesthetic and medical clinics, and language institutes. This study is particularly relevant as the pro-trade and pro-investment impact of the Hallyu for Korean outward flows did not appear to be

[4]There exist empirical studies of bilateral *FDI* that, while not centring their research question on the link between *CP* and *FDI*, include a symmetric (and often time-invariant) regressor to capture *CP* in an *FDI* gravity equation. These include Javorcik et al. (2011), Blonigen and Piger (2014) and Burchardi et al. (2018). They all found a positive relationship between *CP* and *FDI*. Similarly symmetric and often time-invariant measures of *CP* have been used extensively in gravity equations for trade (see among others Anderson and Van Wincoop, 2003; Head and Mayer, 2014; Feenstra, 2015) and migration flows (Bertoli and Moraga, 2013; Beine et al., 2016).

matched by a simultaneous positive impact on inward exchanges. Our results confirm the positive role of destination's preferences beyond the specific case of South Korea.

The conceptual framework introduced in our paper speaks to the theoretical literature that provides micro-foundations to a structural gravity equation for *FDI*, notably Head and Ries (2008) and de Sousa and Lochard (2011). The 'destination-side' channels that explain the role of destination's preferences for the origin's culture bring novel forces in the existing supply/origin-side gravity models, providing a rationale for the introduction of an additional term in the gravity equation to capture multilateral resistance from the side of the destination country. Our results suggest that these forces are empirically relevant.

The rest of the paper is organised as follows. Section 2 builds a conceptual framework that explicitly accounts for the asymmetric and time-varying dimension of *CP* and presents our empirical strategy. Section 3 discusses the econometric framework. The baseline estimation results and the robustness checks are reported and commented in Section 4 and Section 5, respectively, while Section 6 discusses some extensions. Section 7 concludes.

2 | A BROAD NOTION OF CULTURAL PROXIMITY

Economists and international business scholars have successfully used the concept of culture to identify factors that, in their cross-country variation, explain international economic interactions.[5] The notion of *CP* between two countries *i* and *n*—intended as the degree by which the shared ideas and practices of one country tend to be similar to the ones of the other—suffers from important limitations, which have been highlighted in both the international business and the economic literature. Several studies show how cultural relationships that are relevant in the context of international investments are far from being symmetric. For instance, Shenkar (2001) cultural refers to the 'illusion of symmetry'. A key element is that 'symmetry between (a) the distance perceived by country *n* economic actors vis-à-vis country *i* and (b) the distance perceived by country *i* economic actors vis-à-vis country *n*, is often not warranted' (Tung & Verbeke, 2010). According to this view, the way economic agents de facto respond to similarity in cultural traits is likely to be affected by their reciprocal perceptions. A more accurate construct of *CP* should therefore be able to account for both the symmetric similarity between countries and the related perceptions affecting bilateral relationships. Consistently with this view, Li et al. (2017) find evidence of asymmetry in *CP* once cultural practices of a target country are mapped with values of an observer country. Felbermayr and Toubal (2010) reach a similar conclusion, stating that '[a] country's citizens can display respect and sympathy for the cultural, societal, and technological achievements of another country without this feeling necessarily being reciprocal'. They argue that such asymmetric assessment is relevant in determining bilateral economic interactions among countries and therefore call for a broad notion of *CP* capable of reflecting asymmetric affinity between two countries.

Consistent with these approaches, we assume cultural relationships to be asymmetric and we adopt a definition of *CP* that accounts for that, by introducing cultural preferences as an element of *CP*. Cultural preferences are indeed asymmetric and time-varying: as shown by the Korean Wave example discussed in the introduction, individuals in a country can attribute desirable properties to a foreign culture

[5]While not departing from this approach, we acknowledge that it is not uniformly adopted across social sciences. Indeed, many anthropologists tend to refuse the notion of cultures as bounded, essentialised and internally homogenous entities that can be used to classify, differentiate and compare groups of individuals (see, for instance, Abu-Lughod, 1996; Appadurai, 1996). The definition of culture used in this paper is willingly broad and accounts for ideas (values, beliefs, norms) and practices (behavioural patterns) prevailing among respective groups of agents (Leung et al., 2005).

independently on the actual similarity between each other.[6] Moreover, the popularity of K-pop and Korean TV shows is not routed in ancestral cultural traits. Rather, it can be associated with a cultural shock.

Asymmetric *CP* between two countries i and n has two directions: from i to n and from n to i. Formally, we define *CP* directed from i to n and from n to i, respectively as.

$$CP_{ni,t} = f\left(S_{ni}; A_{ni,t}\right) \text{ and } CP_{in,t} = f\left(S_{in}; A_{in,t}\right) \quad (1)$$

where f is an increasing function taking value within an unspecified co-domain. S_{ni} is the symmetric component of *CP*: by construction, it is equal to the term S_{in} in $CP_{in,t}$. The symmetric component S_{ni} reflects the actual similarity between i's and n's culture. $A_{ni,t}$ represents the asymmetric component of *CP*, which reflects the preferences of country i for n's culture. In other words, $A_{ni,t}$ represents the attractiveness of the n's culture for individuals in i. We maintain that the identity $A_{ni,t} = A_{in,t}$ does not necessarily hold and that both the asymmetric terms are allowed to vary over time.[7]

Most of the existing studies on the impacts of *CP* on bilateral exchanges focus on the symmetric and (relatively) time-invariant component of *CP*, S_{ni}. The importance of language (Melitz & Toubal, 2014), ethnic and somatic distance (Melitz & Toubal, 2018), religion (Helble, 2007), past colonial ties (Burchardi et al., 2018; Head et al., 2010), etc., has been extensively studied. These measures, however, fail to capture the often sharp fluctuations in bilateral appreciation across countries, which still depend on cultural transmission. As a matter of fact, S_{ni} can be subject to time variation too. Patterns of migration or geo-political design of national entities are just two potential factors shaping religious, ethnic and somatic ties, and linguistic similarity between two countries over time. We neglect this dimension for two reasons. First, changes in S_{ni} tend to take place in the long run, while variations in the asymmetric component of *CP* can be relatively quick. This is because attractiveness might respond to a much broader set of contingent shocks: from the adoption of new communication technologies capable of better transmitting/accessing cultural contents across countries (for instance, the development of machine learning translation algorithms) to government programmes that promote national culture abroad. Second, a symmetric component of *CP*, which is also time-invariant, represents the exact conceptual counterpart of the standard symmetric and time-invariant empirical measures of *CP*. This allows us for a more direct mapping between the theoretical constructs defined here and the empirical measures used in the following analysis (see Section 6.2).[8]

Hence, any empirical effort to measure *CP* should not only provide adequate proxies for S_{in} but also offer a valid strategy to measure $A_{ni,t}$ and $A_{in,t}$.

2.1 | A proxy for the asymmetric dimension of *CP*

Following Disdier et al. (2010), we use bilateral trade flows in cultural goods as a proxy for the asymmetric dimensions of *CP*. In particular, the value of i's imports of cultural goods from n at time

[6]Li et al. (2017) derive an analogous construct of cultural preferences from the interpersonal attraction framework introduced by the social psychology and sociology literature. The analysis in the present paper complements that conceptualisation.

[7]This definition and the subsequent analysis do not rest on the assumption that cultures and perceptions are fixed over time and therefore avoid the 'illusion of stability' (Shenkar, 2001).

[8]The definition given in (1) is silent on the potential relationships between S_{ni} and $A_{ni,t}$. The theoretical discussion of these links remains to a large extent outside the scope of the current paper. However, on an empirical ground there exists a positive correlation between S_{ni} and $A_{ni,t}$ (see Appendix 2). Moreover, the subsequent empirical exercise allows us to assess the qualitative nature of the relationship between S_{ni} and $A_{ni,t}$ (whether they are complements or substitutes) as *FDI* determinants.

TABLE 1 Categories of goods with cultural content (UNCTAD, 2010)

Core cultural goods	Optional cultural goods
Arts (Performing and Visual)	*Heritage (Arts Crafts)*
Music (CD, Tapes), Printed Music, Painting, Photography, Sculpture and Antiques	Carpets, Celebration, Paperware, Wicker ware, Yarn and Other
Media (Publishing and Audio-Visual)	*Functional Creations (Design and New Media)*
Books, Newspaper, Other Printed Matter, Film	Architecture, Fashion, Interior, Glassware, Jewellery, Toys, Recorded Media and Video Games

Note: This table replicates Table 4.2, p. 112, of economy feasible.

t—$CulIMP_{ni,t}$—is taken as empirical counterpart for the term $A_{ni,t}$ in Equation (1). $CulIMP_{ni,t}$ directly and intuitively accounts for n's culture attractiveness for individuals in i. Similarly, the value of i's exports of cultural goods imported by n—$CulEXP_{ni,t}$—is used as proxy for $A_{in,t}$.

Bilateral cultural trade flows are constructed from the BACI data set by CEPII following the classification proposed by UNCTAD (2010).[9] Table 1 reports the products, which are classified as cultural goods, divided into 'core' and 'optional'. Core cultural goods generally embed a higher cultural content and are listed across other available classification schemes such as the one developed by UNESCO.

The cultural trade data set covers 176 countries over the period 2003–2014. On average, across countries and over time trade in cultural goods accounts for 2.7% of total trade in this sample. As noted by Disdier et al. (2010), cultural trade tends to be highly concentrated. Summing cultural trade flows across importers and over time, the top five exporters—China, Germany, the United States, Italy and France—account for 55% of the total. On the other hand, the top 5 aggregate exporters—China, Germany, the United States, Japan and France—account for 37% of the total.

2.2 | On the relevance of asymmetric cultural preferences

As all proxies, cultural trade has potential limitations in measuring cultural preferences. These issues are discussed and accounted for in the following empirical analysis. However, we believe that—beyond a strong absolute advantage in terms of data availability with respect to alternative measures—cultural trade does a good job in capturing the key variation in asymmetric cultural preferences. Indeed, the patterns of asymmetric cultural preferences as reflected in the bilateral exchanges of cultural goods are meaningful and substantial.

We follow the two-step exercised proposed by Felbermayr and Toubal (2010), to show how trade in cultural goods is able to capture the asymmetric relationship between two countries. In the first step, we isolate the relative cultural premia assigned by country i to a given country n by estimating the equation $CulIMP_{ni,t} = \psi_{nt} + \xi_{ni} + u_{ijt}$ with OLS. Country-pair fixed effects ξ_{ni} subsume time-invariant features of the bilateral relationship between each pair of countries that might have an impact on the bilateral patters of cultural trade beyond cultural preferences. This is the case in particular for the fixed quality gap between average produced in the two countries. Controlling for that allows for a sharper interpretation of the estimate $\widehat{\psi}_{nt}$ as the preference premium assigned by country i to the culture of

[9]See http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=1 and Appendix 1 for a detailed discussion of the data. The choice of the UNCTAD classification to define the relevant set of cultural goods serves the purpose of maximising the country coverage of the resulting estimation sample. In this respect, we adopt a different scheme with respect to Disdier et al. (2010). The implications due to the adoption of a different classification scheme are discussed in Appendix 1.

TABLE 2 Asymmetric *CP* and the 'Korean Wave'

Country *n*	Country *i*	Preference premium of *i* for *n* ($\hat{\gamma}_{ni}$)	Preference premium of *n* for *i* ($\hat{\gamma}_{in}$)	Asymmetry ($\lvert\hat{\gamma}_{ni} - \hat{\gamma}_{in}\rvert$)
South Korea	Chile	2.470	−2.212	4.682
South Korea	Peru	3.312	−1.189	4.502
South Korea	Argentina	2.606	−1.415	4.021

country *n*, relatively to *i*'s preferences for its average trading partner. In a second step, we compute the absolute value of the difference between $\hat{\psi}_{nt}$ and $\hat{\psi}_{it}$. We interpret such difference as a proxy for the degree of asymmetry in the *CP* between two countries.[10]

Country pairs with very low asymmetry values (difference between $\hat{\psi}_{nt}$ and $\hat{\psi}_{it}$ close to 0) include not only those with almost exactly reciprocated positive preference premia such as Latvia and Estonia (asymmetry 0.003) or Ireland and the Netherlands (0.02), but also those pairs with closely reciprocated negative premia such as Argentina and Slovakia (0.005) or Norway and Colombia (0.018). Around the sample median asymmetry value of 2.614, we find Spain and Argentina (2.616), with the latter responding to the positive preference premium of Spain with a stronger one. Country pairs with high asymmetry usually—but not necessarily—include one of the top 5 cultural exporter paired with a developing country.[11] As an example, consider France and Chad (9.516), where the similarity in *CP* implied by language proximity is combined with a strong asymmetry component, given by the high positive preference premium of Chad for France to which corresponds an even larger but negative preference premium of France.

The measure of asymmetry derived from the bilateral trade data and presented above can be tested to reflect real-world phenomena pertaining to bilateral cultural relationships, such as the 'Korean Wave' to Latin America. Given the extension of the *Hallyu* in terms of spread and duration, we take it as a potentially interesting phenomenon to be interpreted through the lens of our empirical measure of asymmetry in cultural preferences. Table 2 shows the asymmetry premia of South Korea and a number of South American partners.

On the one hand, the culture of South Korea appears to be much more attractive for Peru, Argentina and Chile relatively to the average exporter of cultural goods. On the other hand, the attractiveness of the cultures of these three countries in Latin America is lower than the attractiveness of the average cultural exporter for South Korea. In order to get a more concrete understanding of such patterns, one can look at the actual value of the relevant cultural trade flows in the whole sample of 176 countries over the period 2003–2014. The average value—across years and exporters—of Peru's imports of cultural goods is USD 3,367,559 while on average across years Peru imports from South Korea amount to USD 7,737,602 (more than double of the cross-country average). On the other hand, the average Korean imports of cultural goods (across years and exporting countries) amount to USD 23,269,729,

[10]Such an empirical measure of asymmetry covering a sample of more than 4,000 country pairs has mean $\mu = 2.932$ and a standard deviation $\sigma = 2.050$. Unfortunately, despite the data—covering bilateral cultural trade for 176 countries—would in principle allow to estimate this measure for 15,400 country pairs, we are only able to derive both $\hat{\psi}_{nt}$ and $\hat{\psi}_{it}$ for 4,137 pairs (due to the high number of null flows). Even though they account for just less than one third of all potential combinations of trading partners in our data set, these 4,137 pairs account for 49.1% and 55.8% of total trade and total trade in cultural goods, respectively.

[11]This observation seems to be suggestive of a potential correlation between asymmetry in export capacity and high asymmetry in cultural relationships. Indeed, this pattern finds support in the data. See Appendix S1 on the authors' webpage for a simple assessment of this correlation. A comprehensive investigation of the determinants of asymmetry in *CP* goes beyond the scope of the preset paper.

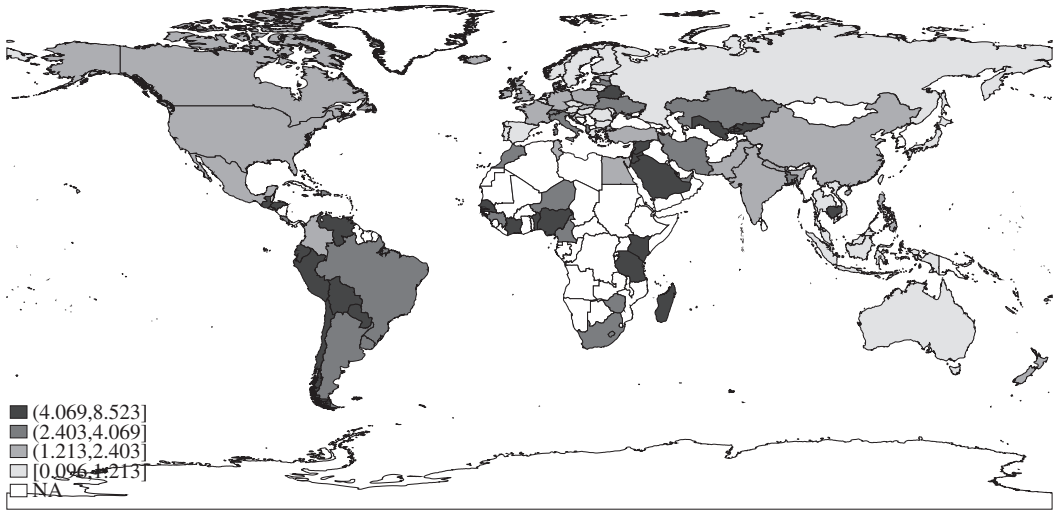

FIGURE 1 Asymmetry in *CP* with respect to South Korea

while its average yearly imports from Peru only reach USD 123,024 (0.53% of the average trade across exporters). These numbers highlight a clear asymmetric relationship.

Let us further explore the cross-country distribution of asymmetry with respect to South Korea, which we take as the reference country. Figure 1 provides a graphical representation of the distribution of the asymmetry premia in the 102 available bilateral relations between South Korea and the rest of the World. The grading reports the four quartiles of the distribution of the asymmetry premia over such 102 observations (darker tones indicate higher asymmetry, either positive or negative).

The map shows that contiguity with South Korea implies a lower degree of asymmetry.[12] Also, sharing common ancestral ties (either ethnic or linguistic) has a similar effect: the relatively small asymmetric patterns with respect to countries such as the Pacific nations, Japan and China clearly show this point. Conversely, a much larger degree of asymmetry in the reciprocal attractiveness premia can be found in Central Asia, Africa and the American continent.[13]

3 | ASYMMETRIC *CP* AND *FDI*: THEORETICAL MECHANISMS AND EMPIRICAL FRAMEWORK

Equipped with a broad notion of *CP* and with an empirical proxy for cultural preferences (a key asymmetric and time-varying dimension of *CP*), we now turn to the main research questions of our paper: What is the impact of cultural preferences on *FDI*? Do the preferences of investing countries

[12]The only notable exception is represented by the Scandinavian Region.

[13]For further discussion of the Korean Wave seen through the lenses of our asymmetry measure, see Appendix S1 or the working paper version (Fiorini et al., 2017), where we conducted a similar exercise using a different reference country. For instance, taking the United Kingdom as reference allows to identify the major differences between our proxy of EP and the earlier works by Guiso et al. (2009) and Felbermayr and Toubal (2010). While these studies document the existence of a significant degree of asymmetry in terms of trust and affinity patterns among European countries (by using data on a relatively narrow and homogeneous set of countries), our analysis suggests that intra-Europe bilateral cultural relationships appear relatively more symmetric when studied in the context of a global framework.

for recipients' culture play a different role than recipients' preferences for the culture in the investing economies?

We frame our answer on the theoretical underpinnings of the structural gravity equation for *FDI*. In particular, we build on the partial-equilibrium model developed by Head and Ries (2008) and readapted by de Sousa and Lochard (2011) to the specific case of greenfield *FDI*. Investments are modelled as inspection games between the manager of a MNE and that of a potential foreign subsidiary. The decision to invest in a given firm depends on the costs associated to monitor the action of the subsidiary and prevent shirking behaviour on its side. These include both inspection and transaction costs, which are functions of a vector of formal investment policies and of geographic and cultural factors. In a multi-country framework with stochastic MNE's payoff functions, a manager chooses to invest in the country where the highest value of a project is higher than the highest value of projects in all other countries.

Formally, the model allows to represent the overall number (or value) of *FDI* from origin country i into destination country n with a formal gravity equation:

$$FDI_{ni,t} = K_{i,t} O_{i,t}^{-1} M_{n,t} T_{ni,t} \tag{2}$$

The term $K_{i,t}$ is a function of the origin country-specific parameters, such as the total number of investment projects that can be financed (i.e., the total capital stock). $O_{i,t}^{-1}$ is a multilateral resistance component, capturing the attractiveness of alternative locations for investors in country i. $M_{n,t}$ captures the country-specific parameters of a potential recipient: it accounts for the total number of potential investment projects and the average contribution of the subsidiary across projects. Finally, $T_{ni,t}$ is the bilateral attractor, a decreasing function of both monitoring and transaction costs. The qualitative relationship between these costs and formal investment policies as well as geographical factors has been thoroughly discussed by the existing literature. Similarly, the relationship between these costs and the symmetric component of *CP* has also been extensively explored. What remains largely unaddressed is that monitoring and transaction costs might react to the asymmetric component of *CP* as well. In what follows, we explore this hypothesis by discussing how *FDI* from origin i to destination n depends upon both $CP_{ni,t}$ and $CP_{in,t}$.

3.1 | The role of origin's cultural preferences

Higher $CP_{ni,t}$ reduces the costs that the parent MNE should pay to monitor the activities of its foreign subsidiary. This is intuitive if higher $CP_{ni,t}$ reflects higher values of S_{ni}. Indeed, many symmetric dimensions of *CP* (common language, similar legal practices and contracting behaviour) clearly facilitate monitoring activities. However, the asymmetric component $A_{ni,t}$—reflecting the preferences of i for the n's culture—is also a determinant of lower monitoring costs. For instance, it can minimise assessment errors and facilitate the assessment processes themselves, potentially making it easier for i's individuals (that have to evaluate the effort exerted by the subsidiary located in n) to establish an effective interaction with n's agents, beyond a common language framework. As for transactions costs, both S_{ni} and $A_{ni,t}$ minimise the costs to cope with different accounting/legal/corporate standards that might differ across the investing and the host country. Finally, from the point of view of country i parent personnel, if an inspection activity or the work needed to harmonise different corporate-related standards involves interaction with n's individuals and/or business trips to country n, higher appreciation by country i's individuals of the culture of country n

reduces the costs associated with these activities.[14] From an empirical perspective, these mechanisms altogether unambiguously predict a positive effect of $CulIMP_{ni,t}$—our proxy for $A_{ni,t}$—on investment from i to n.

3.2 | The role of destination's cultural preferences

Let us now consider the role of the other direction of CP ($CP_{in,t}$), that is, the role of n's preferences for i's culture ($A_{in,t}$).[15] From the point of view of the subsidiary personnel in a destination country n, the appreciation of i's culture results in a good attitude towards interactions with the parent's personnel. Smoother interactions would reduce both inspection and transaction costs. However, $A_{in,t}$ can be relevant for i's investment in n beyond its effect on i's MNE monitoring and transaction costs. First, it might be that the value consumers in n assign to the output of i's MNE increases the average payoff from i's investment in country n. This preference value is likely to be a positive function of how much individuals (consumers) in n prefer i's culture relative to the cultures of other potential investors. Under these conditions, $A_{in,t}$ has a positive effect on investment from i to n. Such a 'destination market' channel is particularly relevant when the investment is designed to target consumers directly in the destination market, that is, (a) when the outcome of the *FDI* project is a final consumption good; or (b) in sectors where *FDI* is the prevailing mode of international provision, as it is still the case for many services sectors. Second, the realisation of an *FDI* can be facilitated or opposed by political pressures in the destination country.[16] A plausible assumption is that the degree by which individuals (voters) in n appreciate i's culture with respect to those of other potential investors could facilitate inward foreign investment from that country. Such a 'destination political economy' channel is expected to be more effective in countries with higher political accountability, that is, where politicians tend to be less independent from voters' preferences in their political and economic decisions. Considering both the direct impact of $A_{in,t}$ on c and τ and its indirect effects through the destination-side mechanisms discussed above, we expect a positive effect of $CulEXP_{ni,t}$ on investment from i to n.

Consistent with these considerations, the term T_{ni} in (2) should be taken as a function of S_{ni}, $A_{ni,t}$ and $A_{in,t}$. With respect to the original model of de Sousa and Lochard (2011), the destination-side mechanisms discussed above also define a second set of destination-side multilateral frictions. For this reason, we rewrite Equation (2) as.

$$FDI_{ni,t} = K_{i,t} O_{i,t}^{-1} M_{n,t} D_{n,t}^{-1} T_{ni,t} \tag{3}$$

where the vector D_n^{-1} captures the destination-side multilateral resistance as a function of the attractiveness of alternative investors for n's consumers and/or voters.

The formal micro-foundation of the destination-side mechanisms goes beyond the scope of the current paper. The discussed mechanisms, however, unambiguously imply a positive effect of $CP_{in,t}$ on greenfield investment from i to n.

[14]For a detailed review of the mechanisms that make destination's cultural preference for the origin country a relevant driver MNEs' *FDI* decisions, see Li et al. (2017).

[15]This is the case since our arguments on the role of S_{ni} apply to S_{in} and due to the symmetric nature of S.

[16]UNCTAD (2016) lists a few examples of strategic barriers to foreign acquisitions and investments in developed countries.

3.3 | Econometric specification and data

We estimate Equation (3) using Poisson pseudo-maximum likelihood (hereafter PPML; see Santos Silva & Tenreyro, 2006, 2011). This estimator has several advantages: not only it retains the multiplicative form of the original gravity equation (thus offering a natural way to deal with null flows), but it is also robust to the incidental parameter problem, which affects most non-linear panel data estimators (Machado & Silva, 2019). This last issue is particularly relevant in our analysis, given the large set of fixed effects required to control for multilateral resistance. The origin- and destination-specific components $K_{i,t}$ and $M_{n,t}$, as well as the multilateral resistances $O_{i,t}^{-1}$ and $D_{n,t}^{-1}$, are accounted for through country × year fixed effects.[17]

The elements of the bilateral component $T_{ni,t}$ are captured through (a) the log of the distance between origin and destination ($\ln dist_{ni}$); (b) a dummy for geographical contiguity ($contig_{ni}$) as proxies for transportation costs; and (c) the number of FTAs and BITs involving i and n, which are in force at time t ($FTA_{ni,t}$ and $BIT_{ni,t}$) as measures of formal investment policy. The symmetric component of *CP*—S_{ni}—is controlled for by a former colony dummy ($colony_{ni}$), a dummy for linguistic proximity ($lang_{ni}$), a measure of religious similarity ($comrelig_{ni}$) and a dummy for institutional proximity ($comleg_{ni}$). Finally, we use the two directions of cultural trade between i and n—$CulIMP_{ni,t}$ and $CulEXP_{ni,t}$—to capture the asymmetric components of *CP* ($A_{ni,t}$ and $A_{in,t}$, respectively).[18]

FDI data come from the *fDi* Markets Database (Financial Times), and cover all *FDI* transactions occurred between January 2003 and December 2014 at world level. This data set offers three major advantages with respect to BoP data. First, it identifies the ultimate owner of the investing company, rather than the immediate investor. This is crucial for identifying the cultural determinants underlying the investing decision. BoP statistics often fail to account for ownership structure, a fact that might harm our identification strategy (see, for instance, Casella, 2019). Second, transaction-level data offer the possibility of using the number of *FDI* rather than their value. This is an important feature, which relates to the true nature of the mechanisms we are going to explore. It is reasonable to assume that *CP* affects the decision to invest in a destination rather than the size of the investment (which is likely to depend on many considerations and conditions, not last the sector and activity of the new plant at destination).[19] Third, it allows us to discriminate *FDI* based on the main economic activity that is carried on by the affiliate company at destination. We exploit this feature excluding *FDI* in the primary sector, whose location depends on the availability of specific resources rather than on cultural preferences; and *FDI* in the retail sector, whose profitability depends crucially on the market preference for their brand. This allows us to focus on the cultural determinants of *FDI*, reducing the threats hidden in aggregate *FDI* statistics.

[17]We test the robustness of our estimates against several alternative estimators: EK-Tobit (Eaton and Kortum, 2001), negative binomial, gamma pseudo-maximum likelihood and pooled OLS. All coefficients are consistent across different estimators, with the discrepancies to be attributed to the different assumptions over the data generating process and to the exposition to the incidental parameter problem: indeed, the inclusion of many dimensions of fixed effects could easily bias the result of an estimator based on a different non-linear distribution (such as the gamma and the negative binomial).

[18]A similar empirical framework is employed in Cuadros et al. (2019) where the authors' empirical strategy captures investment effects of migration both from origin to destination and from destination to origin.

[19]This does not mean that *CP* cannot affect the value of an investment: retail *FDI* (excluded from our analysis not to exacerbate endogeneity concerns) would add a clear cultural motivation to the value of the investment, as such appreciation might translate into larger commitments (ceteris paribus). Focusing on the decision rather than the value invested allows to draw a much cleaner estimate of the true impact of *CP* on *FDI*.

TABLE 3 Summary statistics from the baseline estimation sample

Variable	Mean	Median	*SD*	Min	Max
$C_{ni,t}$	1.551	0	8.897	0	400
ln $dist_{ni}$	8.482	8.747	0.910	4.107	9.892
$colony_{ni}$	0.032	0	0.177	0	1
$lang_{ni}$	0.157	0	0.364	0	1
$comrelig_{ni}$	0.173	0.033	0.266	0	0.989
$contig_{ni}$	0.038	0	0.190	0	1
$comleg_{ni}$	0.293	0	0.455	0	1
$FTA_{ni,t}$	0.269	0	0.444	0	1
$BIT_{ni,t}$	0.393	0	0.488	0	1
ln $CultIMP_{ni,t}$	−0.454	−0.429	3.273	−6.908	10.644
ln $CultEXP_{ni,t}$	−0.145	−0.086	3.114	−6.908	10.644

Note: This table reports summary statistics for the variables used in the baseline estimation exercise (see Table 4). The related estimation sample consists of 87,448 observations and exclude tax havens (as listed by the European Union Black List), and all flows from (to) countries that did not record any positive investment flow (respectively, out- or inward) in the period considered.

Cultural trade data come from the BACI data set. Measures of linguistic proximity are taken from Melitz and Toubal (2014) and Adsera and Pytlikova (2015), while data on bilateral investment treaties come from the UNCTAD Investment Policy Hub. All remaining gravity and distance-related variables used throughout the empirical analysis come from the CEPII's *geodist* and *gravdata* data sets. Data collection and processing are thoroughly described in Appendix 1. The resulting data set consists of an unbalanced panel of 87,448 observations. It features 144 origin and 178 destination countries. Table 3 reports the main summary statistics for the variables included in the baseline exercise.

4 | BASELINE RESULTS

Table 4 presents the estimates of the baseline specification. We first estimate separately the impact of imports and exports of cultural goods on *FDI* (Columns (1) and (2)), which proxy for the investing-side (i) preferences for the destination's (n) culture and vice versa. In Column (3), we include both directions of *CP* in the same model. Taken together, the results suggest that the destination-side preferences appear to matter more than its origin-side counterpart in determining bilateral *FDI* flows—that is, the preference of the individuals in n for the cultural production in i has a larger effect on the number of investments from i to n than the relative preferences of the people in the investing countries for a potential destination's culture. More generally, the evidence indicates that the asymmetric component of *CP* matters, with both directions of *CP* being positive and statistically significant. Quantitatively speaking, the elasticities of the number of greenfield investment projects with respect to both directions of cultural trade flows reported in Column (3) of Table 4 amount to 0.30 and 0.07 for (source to destination) exports and (source from destination) imports, respectively. The value of the Wald test χ^2 statistic (Test 2 in Table 4) also confirms that the two coefficients are statistically different from each other.

The results suggest two orders of considerations: fist, they confirm the idea that the decision of a manager to invest in a specific country *is* driven by her perceptions in terms of affinity towards a potential destination: in fact, it is plausible that a greater appreciation translates into expectations of lower (monitoring and transaction) costs. This idea is implicit in the decision to focus on the investing/

TABLE 4 Impact of *CP* on greenfield *FDI* (number of projects)

	Count $C_{ni,t}$		
Dependent variable	**(1)**	**(2)**	**(3)**
ln $CultIMP_{ni,t}$	0.165***		0.0690***
	(11.87)		(5.90)
ln $CultEXP_{ni,t}$		0.330***	0.305***
		(23.71)	(21.91)
ln$dist_{ni}$	−0.407***	−0.214***	−0.179***
	(−11.60)	(−6.19)	(−5.13)
$colony_{ni}$	0.478***	0.387***	0.366***
	(7.89)	(6.95)	(6.85)
$lang_{ni}$	0.254***	0.189***	0.181**
	(4.20)	(3.73)	(3.53)
$comrelig_{ni}$	1.002***	0.893***	0.883***
	(9.47)	(9.51)	(9.21)
$contig_{ni}$	−0.114	0.0752	−0.0977
	(−1.71)	(−1.21)	(−1.61)
$comleg_{ni}$	0.253***	0.170***	0.153***
	(6.01)	(4.59)	(4.06)
$FTA_{ni,t}$	0.172**	0.135*	0.118*
	(3.02)	(2.49)	(2.19)
$BIT_{ni,t}$	0.0398	0.0119	0.0115
	(0.93)	(0.29)	(0.29)
Origin × time FE	√	√	√
Destination × time FE	√	√	√
Controls	√	√	√
Obs	87,448	87,448	87,448
% Zeros	0.749	0.749	0.749
R^2	0.9056	0.9216	0.9221
Test 1	–	–	585.19
Test 2	–	–	141.81
Estimator	PPML	PPML	PPML

Note: z-statistics in parentheses. Standard errors are clustered by trading pair. The dependent variable 'Count' $C_{ni,t}$ is the bilateral number of greenfield *FDI* projects from country *i* to country *n*. It includes the zero flows. All estimates in this and the following tables (except Table 5) have been obtained using the STATA *ppmlhdfe* command (Correia et al., 2019). Results are consistent with the removal of large financial hubs (such as the United States or the UK), a fact that we interpret as a sign of the robustness of our baseline estimates. *Test 1* reports the Wald test χ^2 statistic for joint significance of both directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} = \ln CultEXP_{ni,t} = 0$). *Test 2* reports the Wald test χ^2 statistic for statistical equivalence between the coefficients of the directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} - \ln CultEXP_{ni,t} = 0$).

*$p < .05$; **$p < .01$; ***$p < .001$.

exporting-side cultural and trust perceptions (Disdier et al., 2010; Guiso et al., 2009). And second, they suggest that the managers might value even more how positively a potential destination would welcome their investments. This second finding is consistent with the conceptual framework outlined in Section 3, powered by a manager's expectations for lower monitoring and transaction costs, and brought in by the plausibly smoother interaction with those agents that appreciate the national culture represented by the MNE. In addition, other destination-specific mechanisms might concur to explain

such results. For instance, high appreciation at destination might convert into a higher propensity of individuals to buy the output of a controlled affiliate located in their country ('destination market' channel). Alternatively, a relatively larger preference might facilitate (or even push for) a government approval of political (and economic) support towards the *FDI* from that specific country (a 'destination political economy' channel). Both mechanisms might well increase bilateral greenfield investment and are discussed and tested in Section 6.

5 | ROBUSTNESS CHECKS

The results offer some interesting insights on the way the asymmetric and time-varying components of *CP* affect bilateral *FDI* flows. Trade in cultural goods, however, may be endogenously determined with *FDI*, with consequences for the consistency of the estimates. Let us discuss and address three potential sources endogeneity—*omitted variables*, *reverse causality* and *measurement error*.

5.1 | Controlling for time-invariant unobserved factors and reverse causality

So far, we assumed the error term from Equation (3) to be uncorrelated from the regressors. This assumption might not hold if omitted unobserved pair-specific factors influence bilateral *FDI* (Disdier et al., 2010; Felbermayr & Toubal, 2010). Such unobserved factors are often related to bilateral initial conditions: as a consequence, the mutual learning due to strong pre-existing ties may favour convergence of cultural characteristics, which could in turn trigger even more intense *FDI* flows. Also, the presence of reverse causality could lead to a bias in Equation (3)'s estimates: positive *FDI* shocks may increase the interactions with foreign partners, which could lead to mutual learning and further cultural appreciation. We deal with these two forms of endogeneity (omitted variable bias and reverse causality) through the inclusion of asymmetric dyadic fixed effects and via an instrumental variable (IV) approach, respectively. The results are reported in Table 5.[20]

5.1.1 | Controlling for time-invariant unobserved factors

The first two columns of Table 5 allow to compare our benchmark model (with only country × year fixed effects) with a more parsimonious specification, which includes dyadic fixed effects (in Columns 1 and 2, respectively).

On one hand, the estimates from the benchmark model remains stable and are not significantly altered by the sharp reduction in the sample size brought in by the inclusion of country-pair fixed effects (cfr. model (3) in Table 4 with Column (1), where the same model is computed on the reduced sample).[21] On

[20]In this section, we focus on the threats posed by the omission of unobservable pair-related characteristics. Nonetheless, other factors might still be considered in our equations, the most relevant of all represented by bilateral migration. In Appendix 3, we further test the consistency of our benchmark results by augmenting the specification with the inclusion of observable variables that belong to the *nit* dimension, which might capture (part) of the unobserved time-varying dyadic factors.

[21]Since fixed effects rely on within-group variation, channels that take non-null values in just one year are dropped, insofar the deviation from the mean of the dependent variable is zero too. In addition, a higher the number of grouping variables (FE) demands for a higher the number of degrees of freedom to be consumed to estimate such deviations.

TABLE 5 Impact of Cultural Proximity on Greenfield *FDI*: Addressing OV Bias and Endogeneity

	Count $C_{ni,t}$			
	Baseline	**Pair FE**	**IV**	
Dependent variable	**(1)**	**(2)**	**(3)**	**(4)**
ln $CultIMP_{ni,t}$	0.0522***	0.00677	0.0658**	0.0196
	(4.43)	(0.78)	(2.96)	(0.33)
ln $CultEXP_{ni,t}$	0.295***	0.0499***	0.247***	0.124*
	(21.04)	(3.72)	(9.43)	(2.04)
Origin × time FE	√	√	√	√
Destination × time FE	√	√	√	√
Country-Pair FE		√		
Controls	√	√	√	√
Obs	49,702	49,027	10,596	11,546
% Zeros	55.99	55.99	0.62	0.65
R^2	0.9224	0.9686	0.91	-
Test 1	526.13	14.85	126.0	4.770
Test 2	146.33	6.92	21.47	2.220
Estimator	PPML	PPML	PPML	IVPPML

Note: z-statistics in parentheses. Standard errors are clustered by trading pair. The dependent variable 'Count' $C_{ni,t}$ is the bilateral number of greenfield *FDI* projects from country i to country n. It includes the zero flows. Column (1) replicates the results of the baseline model from Table 4 and is included for comparison. Column (2) replicates the same model as in Column (1), but including trading pair FE. Column (4) reports the results of the IV analysis, computed via STATA's *ivpoisson* command. A drawback of the *ivpoisson* command is that it cannot handle high-dimensional FE. To allow convergence of estimation in Column (4), the sample has been reduced to the subset of countries as in Felbermayr and Toubal (2010). Column (3) therefore replicates the model from Column (1) with the reduced sample. The results from the third column are not statistically different from those computed for the full sample (cfr. Column (1)), while the results from Column (4) are also comparable with IV results computed on the full sample but applying a reduced set of fixed effects (estimates available upon request). *Test 1* reports the Wald test χ^2 statistic for joint significance of both directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} = \ln CultEXP_{ni,t} = 0$). *Test 2* reports the Wald test χ^2 statistic for statistical equivalence between the coefficients of the directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} - \ln CultEXP_{ni,t} = 0$).

*$p < .05$; **$p < .01$; ***$p < .001$.

the other hand, the inclusion of dyadic fixed effects in Column (2) substantially affects our parameters of interest, similarly to other related studies (such as Disdier et al., 2010; Felbermayr & Toubal, 2010). Despite the coefficient for trade in cultural goods retains a positive impact on *FDI*, the magnitude of the elasticity of both cultural imports and exports is much lower with respect to the benchmark equation. Moreover, only the impact of exports remains statistically significant. This set of results implies two orders of findings: first, the impact of cultural preferences seems to be partly captured by an unobservable time-invariant component; and second, restricting the analysis to the time variation within country pairs causes only the destination's preferences for the origin's culture to play a role as determinant of *FDI*.[22]

[22]Focusing only on the model with asymmetric dyadic fixed effects would completely absorb all the fixed bilateral components of *CP* that are constant over time (such as historical/colonial linkages or linguistic affinity). This would leave the time variation of cultural proximity as the only driver/predictor of greenfield *FDI* flows. Nonetheless, the definition of *CP* provided in Equation (1) encompasses both time and cross-sectional dimensions. For this reason, we keep the statistics in Table 4 as our benchmark estimates, despite the fully specified model to be less prone to omitted variable bias.

5.1.2 | Addressing reverse causality

We address reverse causality by instrumenting *CP* with the deviations of the observed flow of cultural trade with respect to its predictions obtained from an ad hoc structural gravity model.[23] We took inspiration from the strategy originally proposed by Frankel and Romer (1999) for the analysis of trade's growth effect (also see Do & Levchenko, 2007; di Giovanni & Levchenko, 2009, for some extensions to the original idea). Using deviations from a country's 'Natural Openness' to cultural trade as an instrument hinges on the idea that, assuming cultural preferences to be properly identified and the gravity model fitting adequately the data, every deviation between actual and structural flows reflects the premium assigned to a country's cultural production by an economic partner.

The last two columns of Table 5 compare the second stage IV estimates with their respective PPML coefficients. In Column (4), cultural trade coefficients are instrumented using their deviation from the structural equilibrium. The smaller sample size in Columns (3) and (4) is due to convergence issues, which put us in front of a trade-off. On the one hand, we could preserve sample integrity, reducing the set of fixed effects. On the other hand, we could reduce the sample, preserving the structure of the FE, to account for time-varying importer and exporter heterogeneity. We adopted the second alternative, limiting the sample to the one considered by Felbermayr and Toubal (2010), even though the results are robust to the adoption of the other alternative. Column (3) shows how reducing the sample does not alter significantly the relative importance of the two directions of cultural preferences, though the coefficient for the destination-side appreciation is significantly lower than in the full sample. Once cultural preferences are instrumented with their deviation from their gravity estimates, only the preferences of a potential destination for the investor's culture appear to significantly affect greenfield investment. Nonetheless, the instrumented exports' elasticity is halved with respect to our baseline. This evidence suggests a potential upward bias in the estimated impact of exports of cultural goods in our baseline specification. However, the resulting bias is substantially smaller compared with previous trade-related studies, and goes in the opposite direction.[24]

5.2 | Possible sources of measurement error

Finally, the accuracy of our results may be biased by two forms of measurement issues, related, respectively, to our proxy for the asymmetric components of *CP*, and to our preferred definition of the dependent variable.

5.2.1 | Measuring cultural trade

There might be some specific characteristics of cultural goods, which might fail to adequately represent cultural identity. For instance, in a world trading system where global supply chains prevail, Chinese exports of fashion products or pottery [both considered optional cultural goods. See UNCTAD, 2010] may not necessarily reflect any Chinese cultural content, but might be associated with the country where they have been designed. Being concerned about the relevance of foreign

[23]See, for instance, Felbermayr and Toubal (2010) and Chu-Shore (2010).

[24]In Felbermayr and Toubal (2010), the impact of cultural proximity on trade is more than ten times higher when instrumented. The gap between OLS and 2SLS estimates is even higher in the analysis of Guiso et al. (2009) when the dependent variable is *FDI*.

value-added (FVA) in cultural exports is legitimate, as long as the production of certain goods might be disproportionally concentrated in few places. Intuitively, the high concentration of production might imply a downward bias of the impact of *CP* estimated in our baseline analysis, as the error in measuring actual *CP* is likely to be positively associated with both the extensive and intensive margins of cultural trade.[25] As a result, the mere intensity of aggregate trade in cultural goods may not appropriately reflect the actual patterns of cultural preferences.

To better capture cultural preferences, we separate core and optional cultural goods. This distinction hinges on the variable amount of cultural content embodied in different products.[26] It is reasonable to expect the impact of asymmetric components of *CP* to be mostly driven by trade of core cultural goods. However, optional cultural goods represent the lion's share of cultural trade from (and between) developing countries. Hence, failing to account for these flows would substantially limit the scope of our study.[27] Results are reported in Table 6. The coefficients remain similar across different types of goods: this suggests that both categories of cultural trade reflect the same underlying forces. It also suggests that the concentration of large shares of FVA in few countries is not affecting our estimates.[28]

To rule out the possibility that measurement error drives our findings, we perform two additional tests. First, we restrict our parameters of interest to *Newspapers* trade alone. This category is arguably less subject to GVC bias, since papers are produced locally and reflect more strongly the cultural identity of the country. The estimates in Column (3) confirm the asymmetric nature of *CP* and the predominant role of $\ln CultEXP_{ni,t}$ on greenfield *FDI*. Two main issues might from this exercise. On the one hand, foreign newspapers might be acquired by immigrants/emigrants rather than by local readers: the omission of migrants' networks from the equation might therefore introduce a bias. On the other hand, most of news readings and purchases take place digitally and are excluded from traditional trade data. While we have no solution for the latter issue, the inclusion of migrants networks in either direction does not affect the sign nor the conclusion on the asymmetric impacts of *CP* captured using trade in newspapers.[29]

Second, we test the robustness of our analysis to a different cultural construct, which can also be associated with the asymmetric components of cultural proximity ($A_{ni,t}$ and $A_{in,t}$). In line with Guiso et al. (2009) and Spring and Grossmann (2016), we compute the average level of bilateral trust among selected EU countries, using Eurobarometer survey data. Using trust data has the main advantage of not being subject to the aforementioned measurement issues. Nonetheless, questions on trust were only included in selected rounds of Eurobarometer, and not later than 1996. In this exercise, we collapse bilateral *FDI* data and regress them on our usual set of controls using their value in 2003,

[25]This conjecture is also supported theoretically (see Kukush et al., 2004, among others). Nonetheless, to the best of our knowledge, their conclusions have not been extended neither to models with multiple regressors, nor to non-classical measurement error cases.

[26]The distinction between core and optional cultural goods is described in detail in Appendix 1.

[27]In addition, over the last 15 years the share of *FDI* originating from developing countries over total flows has increased from 8% to 26%, while recent research showed that much of the new investments take place between developing economies (Gold et al., 2017).

[28]A better test of the implications of relying on gross cultural trade would require the use of value-added trade data. Unfortunately, available sources such as the OECD/WTO TiVA database fail to match the country coverage and product desegregation required by the research design of the present study.

[29]Indeed, the inclusion of migrants' networks does not alter the conclusions of either of the specifications included in Table 6. Nonetheless, following the substantial loss of observations discussed in Section 5.1 and in Appendix 3, we prefer to leave the specification including migrants' network as a robustness test. Results are available upon request to the corresponding author.

TABLE 6 Sensitivity of asymmetry to different specifications of *CP*

	Count $C_{ni,t}$			$\ln C_{ni,t}$
	Core	Optional	Newspapers	Trust
Dependent variable	(1)	(2)	(3)	(4)
$\ln CultIMP_{ni,t}$	0.0925***	0.0525***	0.0468***	
	(8.22)	(4.34)	(5.59)	
$\ln CultEXP_{ni,t}$	0.285***	0.249***	0.112***	
	(20.18)	(19.43)	(10.23)	
$\ln trust_{ni,t}$				0.975
				(1.74)
$\ln trust_{in,t}$				1.379*
				(2.48)
Origin × time FE	√	√	√	
Destination × time FE	√	√	√	
Origin FE				√
Destination FE				√
Controls	√	√	√	
Obs	67,192	76,951	19,022	172
% Zeros	53%	64%	8%	–
R^2	0.920	0.913	0.925	0.949
Test 1	535.97	443.73	165.19	5.77
Test 2	90.63	93.18	17.64	0.21
Estimator	PPML	PPML	PPML	OLS

Note: z-statistics in parentheses. Standard errors are clustered by trading pair. The dependent variable in the first three columns ('Count' $C_{ni,t}$) represents the bilateral number of *FDI* projects from country i to country n. It includes the zero flows. In Column (4), the sample is reduced and collapsed to a single cross-section. Given the limited number of null flows, bilateral *FDI* (in logs) is regressed over our usual set of controls and on lagged bilateral trust instead of cultural preferences. Since neither zero-inflation nor overdispersion is an issue in the resulting collapsed sample, estimates are obtained via OLS. The absence of a coefficient estimate for contiguity, FTA, BIT and colony in the last column is due to multicollinearity, which arise in the very small sample of countries for which the Eurobarometer surveys were available. *Test 1* reports the Wald test χ^2 statistic for joint significance of both directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} = \ln CultEXP_{ni,t} = 0$). *Test 2* reports the Wald test χ^2 statistic for statistical equivalence between the coefficients of the directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} - \ln CultEXP_{ni,t} = 0$).

*$p < .05$; **$p < .01$; ***$p < .001$.

controlling for bilateral trust as a lagged measure of *CP*. The coefficients reported in Column (4) suggest that destination's trust for the origin ($trust_{ni,t}$) is a stronger determinant of greenfield *FDI* than origin's trust for destination ($trust_{in,t}$), confirming our baseline results.[30]

[30]It is worth specifying that trust and cultural preferences do not capture the same phenomenon. As a matter of fact, despite both dimensions are deeply affected by their long-term symmetric cultural counterparts, the preference of a country for a potential economic partner does not necessarily translate into higher trust. This could explain why we cannot reject the null hypothesis of the coefficients of the two directions of trust being statistically different from each other (reported in Test 2 at the bottom of Table 6). Thus, results reported in Column (4) are not at odds with those derived using cultural trade. In facts, they do not contradict our conclusions on the stronger investment effect of the destination's preferences for the origin's culture, while at the same time they substantiate the validity of cultural trade as a valid proxy for *CP*.

5.2.2 | The intensive and the extensive margin of *FDI*

The intensive and the extensive margin of the investment flows may be driven by different processes and could respond differently to the same set of stimuli. While it is reasonable to assume that *CP* (and its asymmetric counterparts) is more effective in driving the decision of whether to invest rather than the amount to be invested (see Section 2), the decision to focus on the intensive margin of *FDI* does not allow to quantitatively discriminate between projects of different size, whose potential for the recipient economy may be substantially different. We tested the robustness of our results to alternative definitions of bilateral *FDI*, including total and average value of the bilateral flow. The results confirm that the decision on whether to invest or not is more sensitive to the asymmetric components of *CP* than the decision of how much should be invested in a country. All in all, the asymmetric impact of *CP* is still detectable and statistically significant, no matter the dependent variable chosen.[31]

6 | EXTENSIONS

Let us now extend the model: first, by testing the two 'destination-side' theoretical mechanisms, introduced in Section 3 to explain the role of destination's preferences in affecting inward *FDI* from an origin country; and second, by exploring how the role of the asymmetric and time-dependent component of *CP* varies at different levels of cultural similarity.

6.1 | Why destinations' preferences matter?

The relative importance of either direction of cultural preferences has important policy implications. Our finding that destination-side preferences for the investing country (*n* towards *i*) appear to be more relevant for bilateral investments then origin-side preferences confirms that the supply-side mechanisms in the standard gravity theories of bilateral *FDI* might not be the only force at work. We now test the two destination-side mechanisms introduced in Section 3 that help explaining and interpreting our findings.

According to the 'destination market' mechanism, if an *FDI* project aims at serving consumers' demand in the destination country (i.e., horizontal *FDI*), the destination consumers' preferences for the origin's culture can affect the payoff from investment. Other things being equal, a subsidiary will be more profitable if consumers in the destination country appreciate the investor's culture. The 'destination political economy' channel instead predicts that, under political accountability, politicians in the destination country will allocate pressures to facilitate *FDI* projects also according to voters' preferences over the culture of competing origin countries.

6.1.1 | The 'destination market' mechanism

Not all *FDI* target the market of the recipient economy. A MNE might decide to invest in a specific country to reduce costs or exploit that country strategic position (creating, for instance, an export platform). Yet, we can expect destination's preferences ($A_{in,t}$) to play a stronger role than origin's ones ($A_{ni,t}$) in affecting *FDI* when investments are intended to target consumer demand in the destination country (demand-seeking

[31]Results are available upon request or in the working paper version (Fiorini et al., 2017).

TABLE 7 Testing the Destination-Side Mechanisms

	Market channel (*FDI* targeting consumers in *n*)		Political economy channel (accountability in *n*)	
	More likely	Less likely	Low	High
	(1)	(2)	(3)	(4)
ln $CultIMP_{ni,t}$	0.0768***	0.0731***	0.107***	0.0526
	(5.85)	(4.12)	(6.03)	(1.36)
ln $CultEXP_{ni,t}$	0.317***	0.255***	0.294***	0.498***
	(20.12)	(14.70)	(13.91)	(9.35)
Origin × time FE	√	√	√	√
Destination × time FE	√	√	√	√
Controls	√	√	√	√
Obs	78,697	62,989	9,817	2,376
% Zeros	0.82	0.83	0.76	0.68
R^2	0.90	0.88	0.85	0.99
Test 1	5,389.02	2,310.47	755.34	270.38
Test 2	874.19	331.26	90.93	107.60
Estimator	PPML	PPML	PPML	PPML

Note: *z*-statistics in parentheses. Standard errors are clustered by trading pair. The comparison between Columns (1) and (2) test the *destination market's mechanism*. Columns (3) and (4) test the *destination political economy mechanism*. In all columns, the dependent variable 'Count' $C_{ni,t}$ represents the total number of greenfield *FDI* projects from country i to country n and includes null flows. *Test 1* reports the Wald test χ^2 statistic for joint significance of both directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} = \ln CultEXP_{ni,t} = 0$). *Test 2* reports the Wald test χ^2 statistic for statistical equivalence between the coefficients of the directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} - \ln CultEXP_{ni,t} = 0$).

*$p < .05$; **$p < .01$; ***$p < .001$.

FDI) rather than to serve a global supply chain type of production (efficiency-seeking *FDI*). To test this hypothesis, we break down aggregate *FDI* by industrial activity of the subsidiary, separating those activities that are more likely to target the destinations' home market from those who are typically characterised by a greater integration in GVC. We then run our benchmark model to the two samples.[32]

6.1.2 | The 'destination political economy' mechanism

This mechanism implies a stronger relative importance of the destination's preferences for the origin's culture ($A_{in,t}$) when politicians in the destination country are subject to a higher degree of accountability with respect to their citizens, that is, when their allocation of support across projects coming from different sources is likely to reflect more closely voters' preferences. Similarly to how we test the

[32]The set of 'domestic' activities includes all *FDI* projects classified in the following sectors: beverages, consumer electronics, consumer product, financial services, food and tobacco, software and ICT devices, and transportation. The set of 'intermediate' activities includes instead the following sectors: automotive components, biotech, building and construction material, ceramics, glasses, chemical, electronic component, engines and turbines, industrial machinery, metals, plastic, rubber and semiconductors.

TABLE 8 Heterogeneous impact of the asymmetric and time-dependent dimension of *CP*

	Count $C_{ni,t}$					
	Religion		CSL		AP index	
	(1–50 pct)	(51–100 pct)	(1–50 pct)	(51–100 pct)	(1–50 pct)	(51–100 pct)
Dependent variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
$\ln CultIMP_{ni,t}$	0.00639	−0.000994	0.00920	−0.0151	−0.00908	−0.0434
	(0.53)	(−0.07)	(0.82)	(−1.03)	(−0.57)	(−0.92)
$\ln CultEXP_{ni,t}$	0.0554***	0.0122	0.0604***	0.00995	0.0713***	−0.0779
	(3.34)	(0.75)	(3.59)	(0.66)	(3.51)	(−1.26)
Origin × time FE	√	√	√	√	√	√
Destination × time FE	√	√	√	√	√	√
Country-Pair FE	√	√	√	√	√	√
Controls (Dyadic)	√	√	√	√	√	√
Obs	23,209	23,916	22,657	23,465	12,487	23,465
% Zeros	0.60	0.55	0.64	0.51	0.46	0.04
R^2	0.9687	0.9770	0.9721	0.9791	0.9730	0.9895
Test 1	11.52	0.56	14.59	1.39	12.43	2.46
Test 2	5.53	0.35	5.71	1.31	9.09	0.19
Estimator	PPML	PPML	PPML	PPML	PPML	PPML

Note: z-statistics in parentheses. Standard errors are clustered by trading pair. The dependent variable 'Count' $C_{ni,t}$ is the bilateral number of greenfield *FDI* projects from country i to country n. It includes the zero flows. *Test 1* reports the Wald test χ^2 statistic for joint significance of both directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} = \ln CultEXP_{ni,t} = 0$). *Test 2* reports the Wald test χ^2 statistic for statistical equivalence between the coefficients of the directions of cultural preferences (H_0: $\ln CultIMP_{ni,t} - \ln CultEXP_{ni,t} = 0$).

*$p < .05$; **$p < .01$; ***$p < .001$.

destination market mechanism, we split our sample between destination countries with an accountability score below and above the sample median.[33]

Table 7 reports the results of the test for both the 'destination market' and the 'destination political economy' channels (reported in Columns 1–2 and 3–4, respectively). Focusing on the first mechanism, we find that, while the coefficient for $CultIMP_{ni,t}$ remains stable across the two samples, the estimate for $CultEXP_{ni,t}$ is 25% larger for those activities that are more likely to target the market at destination (Column 1). This suggests a stronger role of the destination's cultural preferences for demand-seeking *FDI*. In addition, the statistical comparison of the two coefficients of interest from Column (1) against their counterpart from Column (2) only rejects the null hypothesis of equality for $CultEXP_{ni,t}$ ($\chi^2 = 13.49$). We take this as a suggestive evidence of the existence of a 'destination market' mechanism, which might be at the origin of the benchmark results from Table 4. Columns (3) and (4) in Table 7 refer to the second mechanism: in this case, the estimate for $\ln CultEXP_{ni,t}$ is 70% higher going from low to high accountability. Similarly to above, we cannot reject the null hypothesis of coefficients equality between investors' preferences at different levels of political accountability. As for $\ln CultEXP_{ni,t}$, the test ($\chi^2 = 11.23$) rejects the null hypothesis of coefficients cross-specification

[33]Accountability is measured with the accountability index, from the World Bank CPIA indicators on corruption, accountability and transparency perception.

equality. These findings suggest a relative higher importance of $A_{in,t}$ when politicians in the destination country are more accountable vis-à-vis their citizens, and therefore provide supporting evidence for the hypothesised 'destination political economy' channel.

6.2 | Heterogeneous impact of the asymmetric and time-dependent dimension of *CP*

Finally, it might be that the asymmetric and time-dependent component of *CP* affects bilateral *FDI heterogeneously*, conditioned on the degree of cultural similarity (symmetric and time-invariant, such as common language or religion). First, we split the sample according to three time-invariant and symmetric proxies of *CP*.[34] This allows us to compare the relative importance of cultural preferences at different levels of observable similarity (below and above the median of the distribution). Then, in order to identify the impact of time-contingent shocks in *CP* (and to focus on the time-varying dimension of cultural preferences as captured by cultural trade) we include dyadic fixed effects, absorbing the remaining cross-sectional variability.

The estimates in Table 8 are consistent with those in Table 5. The results suggest that time-contingent shocks are associated with higher investment, but only when the shocks involve the destination's preferences for the origin's culture. Most importantly, the heterogeneity sharply emerges from the data, as the time variability in cultural preferences appears to be relevant at low level of time-invariant and symmetric *CP* only—that is, when the level of pre-existing or historical–cultural ties is relatively weak. This is consistent with a relationship of substitutability between time-contingent, asymmetric cultural preferences and the time-invariant, symmetric dimensions of cultural similarity in triggering *FDI*, with the former operating as a bridgehead between otherwise culturally distant countries.

7 | CONCLUSIONS

Cultural proximity is an important determinant of *FDI*. This paper shows that restricting to symmetric and time-invariant proxies of *CP* does not allow to fully disentangle its impact on investment patterns. We adopt a broad notion of *CP* that explicitly includes bilateral cultural preferences as an asymmetric and time-variant dimension. Using trade in cultural goods to measure cultural preferences in an empirical gravity framework for greenfield *FDI*, we find a significant difference in the investment effect of the two asymmetric directions of *CP*. In particular, destination's preferences for the culture of the investing economy appear to be a much stronger determinant of *FDI* than the preferences of the investing country for the destination's culture.

This result sheds new light on the mechanisms linking culture and investment. While the role of origins' cultural preferences can be fully accounted for by the theoretical underpinnings of the standard, supply-side gravity models of *FDI*, our analysis proposes new channels to rationalise the effect of the destinations' cultural preferences. First, they matter via consumers in the destination country, whose demand for a subsidiary final good's production can increase with a higher appreciation of the culture in the investing country. Moreover, they matter through a political economy channel, leading

[34]The three measures are religious proximity (religion), the 'Common Spoken Language' (CSL) measure of linguistic similarity built by Melitz and Toubal (2014) and the composite index of linguistic proximity (AP Index) developed by Adsera and Pytlikova (2015). The choice of the measures to be used is constrained by our intention to split the estimation sample. As a matter of fact, the majority of the usual measures of *CP* used in the existing literature have a binary structure. Thus, they are not suitable for effectively splitting the sample.

accountable politicians to favour investment from those origins whose cultural system is relatively more appreciated by their voters. Overall, our analysis suggests that higher relevance should be attributed to the cultural preferences of the individuals in the destination country, both as consumers potentially buying the outcome produced by the subsidiary and as voters affecting the allocation of political pressures across competing investment projects.

This study also has important implications for investment promotion, as it demonstrates how the advocacy of a country's culture can be potentially more effective in triggering investment *from*, rather than *in*, the country. Favouring the diffusion and appreciation of the investor's culture can be used as a strategy to promote FDI, especially to those destinations where cultural similarity with the investing country is the lowest.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from Financial Times ltd. Restrictions apply to the availability of these data, which were used under license for this study. Data are available at https://www.fdimarkets.com with licence from Financial Times ltd.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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APPENDIX 1

Data sources, estimation issues and proposed solutions

The data used throughout the paper come from multiple sources, which are reported in Table 9.

TABLE 9 Main Data Sources

Variables	Dataset/Source/Website/Reference and Accessibility
FDI Variables	FDIMarket/FDI Intelligence Unit, The Financial Times/http://www.fdiintelligence.com// FDI Market License
Trade Variables	BACI/CEPII/http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=1/UN COMTRADE access required
Gravity Variables	Gravdata/CEPII/http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=8/Free
Bilateral Distance	Geodist/CEPII/http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=6/Free
Migrant Stock	WB Global Bilateral Migration Dataset/The World Bank/http://data.worldbank.org/data-catalog/global-bilateral-migration-database/Artuç et al. (2015)/Free
Language I	Lingweb/CEPII/http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=19/Melitz and Toubal (2014)/Free
Language II	Data S1/The Economic Journal/http://onlinelibrary.wiley.com/doi/10.1111/ecoj.12231/abstract/Adsera and Pytlikova (2015)/Free
Cultural Distance	Hofstede Index/The Journal of Population Economics/https://link.springer.com/article/10.1007/s00148-011-0356-x/Belot and Ederveen (2012)/Free
BITs	UNCTAD Investment Policy Hub/http://investmentpolicyhub.unctad.org/IIA/Free
CPIA	Country Policy and Institutional Assessment/The World Bank/https://data.worldbank.org/data-catalog/CPIA/Free

Note: This table lists the main sources in the data used throughout the data set. Additional information is available upon request to the corresponding author.

Data on trade in cultural goods

There are several alternative classification schemes defining what kind of products could be considered as culturally valuable. These schemes reflect the value judgement and the structure of the dominant production system. This point can be made clearer by comparing the two broader schemes yet available: the one proposed by the UNCTAD (2010) (the one adopted here) and the one proposed by the UNCTAD (and adopted by Disdier et al., 2010, in their original contribution). Developed countries dominate the production of what both schemes define as *core* cultural goods (including products whose cultural content is acknowledged universally—e.g., Music and Paintings). Yet, core cultural goods do not extinguish the set of products bearing cultural content: those goods that are not considered in the previous group are classified as *optional* cultural goods.[35] The main distinction in the two schemes considered relates to the balance between the relevance attributed to core cultural goods and that to the 'residual' optional category, that is larger for UNESCOs. A comparison between UNCTAD's and UNESCO's schemes suggests that 'core' goods account for 60% of total cultural goods in the second, around 20% in the first. For this reason, '[...]the UNESCO classification is better at capturing

[35]These include those products which are not considered as culturally valuable by the majority of the existing national classification schemes.

the experience of countries in the global North, while UNCTAD's better reflects opportunities for countries in the South.[...]' (UNCTAD, 2010, p. 111). Given the global perspective of this paper, we adopt the classification that weighs relatively more of those goods whose production is more evenly distributed across developed, developing and least developed economies.[36]

Greenfield FDI data

There are two issues worth specifying, concerning the way we aggregate the data set and the reliability of the information provided by it.

The dependent *FDI* variables are constructed from *fDIMarket*, a transaction-based data set, containing more than 169,000 investment projects for the period 2003–2014. Not to exacerbate endogeneity issues, we exclude from our data all those investments in the retail sector, whose relationship with cultural proximity could introduce a bias in our estimates. We also excluded *FDI* in the primary/extractive sector, since their location depends on the availability of specific resources, which have nothing to do with cultural appreciation. This left us with 130,000+ transactions, which we aggregated at investing-recipient-year level. The main issue was then represented by the high sparsity of the data: not all countries record at least one incoming/outgoing *FDI* in every year in our window, and not possible bilateral channels record positive *FDI* flows ever. Differently from the procedure proposed by Paniagua (2016), we re-elaborate the aggregate data as follows. For every year in our sample, we filter out all directed pairs that record no positive *FDI* flows. Then, we aggregate all yearly waves and fill in the missing *origin* × *destination* combinations. This procedure leaves out all directed pairs that recorded no positive flow, as well as all pairs of countries that recorded no flow at all (no matter the direction) during the period of analysis. This strategy reduces the incidence of zeroes in our data set, well below the share of null values used in previous simulations (see, for instance, Santos Silva & Tenreyro, 2011). Table 10 lists the countries that have been excluded by the decision to eliminate inactive countries and tax havens from the sample.

TABLE 10 List of countries excluded from the analysis

In both direction: no flows of greenfield *FDI* (in or out) over the period of interest
Anguilla, Netherland Antilles, Cocos and Keeling Islands, Cook Islands, Christmas Islands, Western Sahara, Falkland Islands, Faeroe Islands, Gibraltar, French Guiana, Kiribati, Marshall Islands, Northern Mariana Islands, Montserrat, Norfolk Islands, Niue, Nauru, Pitcairn, Palau, Saint Helena and Tristan da Cunha, San Marino, Saint Pierre et Miquelon, Tokelau, Tonga, Tuvalu, British Virgin Islands, Vanuatu, Wallis and Futuna
No outward flows over the whole period (excluded as source countries)
Aruba, Benin, Bhutan, Cape Verde, Central African Republic, Chad, Comoros, Republic of the Congo, Dominica, Eritrea, Grenada, Guinea, Guinea-Bissau, PRD Korea, Liberia, Maldives, Mauritania, New Caledonia, Niger, Paraguay, Sao Tome and Principe, Seychelles, Sierra Leone, Somalia, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Timor Leste and Turkmenistan
Countries excluded or aggregated for inconsistencies between CEPII and fDIMarket
Serbia and Montenegro, Belgium and Luxembourg (both excluded)
Sudan and South Sudan (South Sudan is excluded)
Switzerland and Liechtenstein, France and Monaco (aggregated)

Note: The result of the exclusion of these countries is a rectangular data set of $n \times m$ countries. In addition to these countries—excluded for data inconsistencies—other dyadic flows are excluded when no investment occurs between two countries during the period analysed. This explains the discrepancy between the size of the data set and the number of observations used in the estimation.

[36]This issue was not relevant for Disdier_etal_ROWE_2010, who focused on a relatively homogeneous sample (restricted to OECD only countries).

Section 3 provides a theoretical justification for the use of count instead of the value of *FDI* flows as dependent variable. The data set used in this paper adds an additional technical limitation to the use of capital expenditure information. In short, *fDIMarket* collects information on all existing *projects* as they are officially disclosed by the investing companies. The CAPEX is then imputed whenever its true value is not officially revealed. Such imputation process is likely to introduce non-trivial distortions in the data, the more relevant (a) the higher the percentage of estimated projects is, with respect to the total number of projects in a given corridor; and (b) the lower the number of projects from an investing country towards a given recipient economy. Table 11 reports the incidence of imputed CAPEX figures in the data set: the large number of imputed values requests caution when using value of *FDI* flows as the dependent variable.

TABLE 11 Incidence of imputed valued by year—disaggregated data set

Year	Imputed	Real value	Observations	Incidence (%)
2003	6,325	3,182	9,507	67
2004	7,270	3,143	10,413	70
2005	7,849	2,883	10,732	73
2006	9,534	3,301	12,835	74
2007	8,968	4,006	12,974	69
2008	13,416	3,794	17,210	78
2009	12,063	2,723	14,786	82
2010	12,843	2,629	15,472	83
2011	14,101	2,757	16,858	84
2012	13,088	2,181	15,269	86
2013	14,319	2,399	16,718	86
2014	13,044	2,344	15,388	85
Total	132,820	35,342	168,162	79

Note: The table report the percentage of estimated capital investment. The number of observations refers to the number of single projects collected by FDIMarket for the period 2003–2014. The large incidence of estimated values makes the estimates obtained using values as dependent variables not fully reliable: as a matter of fact, in addition to the lack of clarity in the imputation technique, imputation brings in a component of uncertainty per se.

APPENDIX 2

Cultural trade as a proxy of the asymmetric component of cultural proximity

Table 12 shows how trade in cultural goods strongly relates to the symmetric component of *CP* as defined in Section 2. We regress cultural trade on various conventional symmetric (and time-invariant) proxies for cultural distance: a dummy for contiguity ($contig_{ni}$); geographic distance ($\ln dist_{ni}$); religious similarity ($relig_{ni}$); the presence of a regional trade agreement (rta_{ni}); a dummy for common legal origin ($comleg_{ni}$); and an indicator for past colonial relationship ($colony_{ni}$). To control for linguistic proximity, we include three different measures from Melitz Toubal (2014), which take into account common official, common spoken and common national language (COL_{ni}, CSL_{ni} and CNL_{ni}),

respectively. The regression also includes the stock of bilateral immigrants resident in the exporting country ($\ln mig_{ni,t}$) as the sole time-varying component.[37] In the last column, we also include $Hofstede_{ni}$ as a comprehensive measure of cultural distance (Belot & Ederveen, 2012; Du et al., 2012; Hofstede, 1991), which brings in several interesting cultural dimensions (though at the

TABLE 12 Testing the validity of cultural trade as a proxy of *CP*

	$\ln CultIMP_{ni,t}$	$\ln CultIMP_{ni,t}$	$\ln CultIMP_{ni,t}$
Dependent variable	**(1)**	**(2)**	**(3)**
$\ln mig_{ni,t}$	0.115***	0.0761***	0.0880**
	(20.83)	(4.30)	(2.89)
$\ln dist_{ni}$	−1.225***	−0.695***	−0.921***
	(−49.15)	(−10.61)	(−6.77)
$contig_{ni}$	0.317***	0.260**	0.440*
	(3.74)	(2.86)	(2.34)
$FTA_{ni,t}$	0.266***	0.0807	0.683**
	(6.24)	(0.77)	(2.96)
$comrelig_{ni}$	0.236***	0.440*	0.235
	(3.55)	(2.28)	(1.26)
$comleg_{ni}$	0.281***	0.303***	0.411**
	(8.66)	(4.43)	(2.68)
$colony_{ni}$	0.500***	0.383***	0.763***
	(5.67)	(3.65)	(3.45)
COL_{ni}	0.374***	0.0786	−0.0000199
	(6.13)	(0.55)	(−0.00)
CSL_{ni}	0.683***	−0.350	−0.394
	(6.52)	(−1.45)	(−0.74)
CNL_{ni}	0.0691	0.209	−0.402
	(0.48)	(0.71)	(−0.92)
$Hofstede_{ni}$			−1.034***
			(−4.01)
Imp × Year FE	√	√	√
Exp × year FE	√	√	√
Sample	Full	Full	Reduced
Obs	24,620	54,525	684
% Zeros	–	0.5485	–
R^2	0.7476	0.8993	0.9118
Estimator	OLS	PPML	OLS

Note: t (*z*)-statistics in parentheses. Standard errors are clustered by trading pair. The model includes importer × time and exporter × time FEs. The first and third columns' estimates are estimated with OLS. The sample size in this table reflects the way the different estimators deal with null flows and the sample size. The information that belongs to groups with all zeros or missing values is automatically dropped by the estimator as FEs cannot be computed. The sample in the third column is reduced due to those countries for which the Hofstede Index of Cultural Proximity is available (see Belot & Ederveen, 2012).

*$p < .05$; **$p < .01$; ***$p < .001$.

[37]Because global migration data are only available every 10 years (with the notable exception of the year 2013), our empirical exercise is a pooled regression for the years 2010 and 2013 only, which still guarantees a reasonably high number of observations.

expense of a reduced sample availability). The estimates are consistent across different estimators and indicate that trade in cultural goods is consistently correlated with almost all the dimensions related to *CP*.

APPENDIX 3

Further addressing the omitted variable bias

Endogeneity may potentially arise because of the omission of unobserved factors that might be correlated both with the error term (and thus *FDI*) and with trade in cultural goods. In the paper, the results from both the IV analysis and the inclusion of dyadic FEs confirm our main conclusions. Here, we further test the consistency of our benchmark results by including observable variables of dimension ni, t that might capture (part) of these unobserved time-varying dyadic factors: the size of the bilateral migrant network and the volume of bilateral aggregate trade. The results of this exercise, reported in Tables 13 and 14, respectively, further support the evidence reported throughout the

TABLE 13 Addressing omitted variable bias: including migration

	Count $C_{ni,t}$		
Dependent variable	**(1)**	**(2)**	**(3)**
ln $migstock_{ni,t}$	0.0810***		0.0579**
	(5.13)		(2.63)
ln $migstock_{in,t}$		0.0788***	0.0293
		(4.29)	(1.33)
ln $CultIMP_{ni,t}$	0.0507**	0.0368	0.0204
	(3.27)	(1.90)	(0.93)
ln $CultEXP_{ni,t}$	0.290***	0.296***	0.290***
	(15.12)	(12.94)	(11.37)
Imp × Year FE	√	√	√
Exp × year FE	√	√	√
Obs	9,619	8,756	5,853
% Zeros	67%	67%	60%
R^2	0.91	0.92	0.92
Test 1	278.59	179.89	140.92
Test 2	76.53	66.75	53.26
Estimator	PPML	PPML	PPML

Note: *z*-statistics in parentheses. Standard errors are clustered by trading pair. The dependent variable 'Count' $C_{ni,t}$ is the bilateral number of greenfield *FDI* projects from country i to country n. It includes the zero flows. This table replicates the baseline specification adding the bilateral stock of migrants from n to i as additional regressors. The reduced number of observations is due to the availability of the migration data that allow to use only two points in time (2010 and 2013) for the period covered in the analysis (Source: The World Bank). All columns include the usual set of bilateral controls included in Table 4. TESTS: *Test 1* refers to the joint significance χ^2 test over the two coefficients for explicit preferences (H_0: ln $CultIMP_{ni,t}$ = ln $CultIMP_{ni,t}$ = 0). *Test 2* reports instead the $\chi * 2$ test inherent to the statistical difference between ln $CultIMP_{ni,t}$ and ln $CultIMP_{ni,t}$ (H_0: ln $CultIMP_{ni,t}$ − ln $CultIMP_{ni,t}$ = 0).

*$p < .05$; **$p < .01$; ***$p < .001$.

paper. The point addressed with Table 13 is of particular concern. The economic literature agrees on the positive impact of migrants' networks on both *FDI* and international trade (see, for instance, Giovannetti & Lanati, 2016; Gould, 1994; Javorcik et al., 2011). Such effect is predominantly imputed to the 'insider knowledge' provided by migrants, which reduces the costs for gathering information (which might be substantial for international transactions). As the time-varying impact of migrants' networks on *FDI* cannot be entirely absorbed through our comprehensive set of fixed effects, their exclusion from the list of regressors may introduce an omitted variable bias. Their inclusion, however, reduces the explanatory power of our econometric exercise, as data on bilateral migrants' stocks with a global country coverage are generally only available with a 10-year interval between observations (Özden et al., 2011). For this reason, we only include the migrants' stock as a robustness check. Table 13 replicates Table 4, but including bilateral stocks of immigrants from both *n* to *i* and *i* to *n* as additional regressors. Controlling for the size of migrants' networks does not alter our overall conclusions: the destination-side mechanisms driving *FDI* seem to be independent from the network channel.

TABLE 14 Addressing Omitted Variable Bias: Share of Non-Cultural Trade

	Count $C_{ni,t}$		
Dependent variable	**(1)**	**(2)**	**(3)**
ln $Aggr\_IMP_{ni,t}$	0.242***		0.176***
	(11.29)		(9.80)
ln $Sh\_CultIMP_{ni,t}$	0.0285		0.0207
	(1.93)		(1.85)
ln $Aggr\_EXP_{ni,t}$		0.481***	0.415***
		(21.25)	(18.03)
ln $Sh\_CultIMP_{ni,t}$		0.178***	0.203***
		(14.31)	(15.52)
Origin × time FE	√	√	√
Destination × time FE	√	√	√
Controls	√	√	√
Obs	87,445	87,445	87,445
% Zeros	0.79	0.8	0.75
R^2	0.9056	0.9216	0.9221
Test 1	–	–	250.63
Test 2	–	–	103.71
Estimator	PPML	PPML	PPML

Note: *z*-statistics in parentheses. Standard errors are clustered by trading pair. The dependent variable 'Count' $C_{ni,t}$ is the bilateral number of greenfield *FDI* projects from country *i* to country *n*. It includes the zero flows. The benchmark proxy for *CP* is replaced by the share of cultural trade over aggregate trade in either direction.

*$p < .05$; **$p < .01$; ***$p < .001$.