Cultural Change and the Migration Choice

Mauro Lanati[1], Alessandra Venturini[2]

Abstract
Cultural differences play an important role in shaping migration patterns. The conventional proxies for cross country cultural differences - such as common language, ethnicity, genetic traits or religion - implicitly assume that cultural proximity between two countries is constant over time and symmetric, which is far from realistic. This paper proposes a gravity model for international migration which explicitly allows for the time varying and asymmetric dimensions of cultural proximity. Similarly to Disdier et al (2010) we assume that the evolution of bilateral cultural affinity over time is reflected in the intensity of bilateral trade in cultural goods. Our empirical framework includes a comprehensive set of high dimensional fixed effects which enables for the identification of the impact of cultural proximity on migration over and beyond the effect of pre-existing cultural and historical ties. The results are robust across different econometric techniques and suggest that positive changes in cultural relationships over time foster bilateral migration.

Key words*: Migration, Trade in Cultural Goods, Gravity Model*

JEL codes*: F16, F22, Z10*

We would like to thank Michele Belot for insightful and interesting discussions and all the participants of the 2nd International Conference *''Understanding Voluntary and Forced Migration''* in Lille, the participants of the Jean Monnet conference Migration in Europe and the Migration Working Group seminar Series at the EUI for helpful suggestions. We are also grateful to three anonymous referees, Michel Beine, Hillel Rapoport, Rainer Thiele, Enrico Bertacchini, Simone Bertoli, Gianluca Santoni, Francois Bourguignon, Pier Luigi Conzo, Roberto Zanola, Matteo Fiorini, Giovanna Segre, Maurizio Ferrera, Bernard Hoeckman, Caglar Ozden, Christopher Parsons, Nicola Setari and the New Narrative of Europe research project, Caterina Seia and the participants at the project Cultural Base for their comments and support.
[1] Research Fellow, Migration Policy Centre (MPC) European University Institute, e-mail: mauro.lanati@eui.eu
[2] Professor at the University of Turin, and EUI, e-mail: alessandra.venturini@eui.eu

1 Introduction

Harris Todaro's (1970) interpretation of migration flows in terms of the wage differential between sending and destination countries and the associated cost of the journey has been shown to be insufficient in explaining migration patterns. Indeed, the presence of fairly small migration flows – both within and between countries – despite very strong economic drivers such as unemployment and wage differentials (see Barro and Sala-i-Martin 1995) has shifted the focus of the literature away from economic factors. More attention is now given to non-pecuniary determinants of migration decisions such as cultural relationships.

Earlier empirical research has shown that measures of cultural proximity – e.g. bilateral linguistic, religious and genetic distance as well as colonial links – are often more important determinants of migration patterns than traditional economic variables.[3] The work of Belot and Ederveen (2012), in particular, provides sound empirical evidence on the central role of cultural distance in shaping migration patterns. They analysed the impact of several dimensions of cross-country cultural barriers using a set of indicators describing bilateral religious and linguistic distance, as well as survey-based composite measures of cultural distance such as the Hofstede or the Inglehart and Baker indexes, all of them fostering bilateral emigration rates. Similar proxies of cultural proximity have been found by Belot and Hatton (2012) to be more important determinants of educational selectivity in immigration than wage incentives or a selective immigration policy.

All these measures, however, have been challenged in their capacity to effectively capture some important dimensions of cultural relationships (see Shenkar 2001, Li et al 2017, Felbermayr and Toubal 2010 and Tung and Verbeke 2010), which we take as being particularly relevant for international migration. More specifically, they are unlikely to be able to fully capture a broader notion of cultural proximity which hinges on the acknowledgement that cultural relationships are *subject to variation over time*.[4] Measured at a single point in time existing measures of cultural proximity are considered to be constant: but this is not realistic as culture measured at the time of the migration decision may have changed by the time the culture is measured. Recent macro indexes of cultural distance based on Hofstede's cultural dimensions do not account for the time dimension (see Kaasa et al 2017) and they are mostly confined to European countries that are more culturally alike.[5] The assumption of *stability* is particularly unrealistic when we look at the last two decades characterized by growing exposure of citizens to foreign cultures through cross-border information flows, the globalization of mass communication and the role of social media. All these (and many other) channels may have contributed to reshaping national values/identities, as well as trust and affinity towards foreign cultures (see Tabellini 2008).[6] Of course, those changes in bilateral cultural proximity may or may not be reciprocated. The *symmetric nature* of cultural proximity is obviously very difficult to support, especially in the context of international migration. Symmetry in cultural proximity would imply, for instance, that the cultural barriers faced by

[3] Although the notion of cultural distance has been explicitly defined by scholars, especially in the international business literature (see for instance Shenkar (2001)), for simplicity in this paper the terms cultural proximity, cultural affinity and cultural distance will be used interchangeably

[4] When introducing the dyadic determinants of international migration, Beine et al (2015) explicitly state *''the dyadic factors that influence migration costs can be both time-invariant, such as linguistic and cultural proximity, and time-varying factors.''* (Beine et al 2015, p.508)

[5] Also Micro proxies of cultural distance within the World Value Survey and European Value Survey provide a limited time variation.

[6] In this regard, Rapoport *et al*. (2017) found evidence of cross-country cultural convergence which is clearly at odds with the assumption of stability, but more in line with a convergence thesis, where cultural proximity increases over time as a consequence of citizens' exposure to foreign cultures (Webber 1969). In Rapoport *et al*. (2017) cultural convergence has been shown to be even more prominent after controlling for economic incentives for migration and for culturally-diverse countries.

Moroccans willing to move to France would be the same as for French migrants going to Morocco. As Shenkar (2001) pointed out there are no studies showing symmetry in bilateral cultural proximity, nor is there a reason to assume symmetry. The use of the standard proxies of cultural proximity clearly fails to account for these dimensions of cultural relationships and their consequences for the migration decision. This calls for further investigation on the role of culture as a determinant of migration patterns.

In this paper we propose an enriched notion of cultural proximity (Time-Varying and Asymmetric Cultural Proximity - henceforth VACP), which accounts for changes in cultural relationships that may or may not depend on the historical or pre-existing cultural ties. In this conceptual framework, the transfer of norms, practices, identities and social capital through social remittances as well as exposure to foreign values and behavior may change how attractive would-be migrants find foreign cultures, regardless of pre-existing bilateral cultural ties (see for instance Levitt Lamba-Nieves 2011). These "*shocks"* to bilateral cultural proximity affect the migration choice as – for any given country of origin – they alter the distribution of relative cultural affinity towards potential destinations.

To date this is the first analysis that explores the relationship between cultural proximity and migration, fully accounting for the time varying and asymmetric nature of cultural proximity (VACP). True to our conceptual framework, we assume that the value of the bilateral exports of cultural goods reflects affinity towards the destination's (exporter's) culture for the citizens in the country of origin (importer). As shown by Disdier *et al*. (2010), bilateral cultural trade (as defined by UNESCO) is highly correlated with standard, time-invariant and symmetric measures of cultural proximity. These indicate the capacity of this proxy to capture a broader notion of cultural proximity. Our proxy of cultural proximity enters a tractable model of international migration which allows for cultural affinity to vary over time.[7] Theoretically, we model the asymmetric bilateral moving costs as being mitigated by the time varying cultural proximity between origin and destination.

On the empirical level, relaxing the assumption of stability of cultural proximity implies that migration could in principle affect the evolution of cultural affinity over time and that current levels of cultural proximity are likely to be strongly related to historical cultural ties and previous migration flows, introducing some endogeneity concerns. Our identification strategy addresses potential issues deriving from multiple sources of endogeneity by first instrumenting exports of cultural goods with average bilateral tariffs in the manufacturing sector and the imputed tariff revenues, which are plausibly exogenous with respect to migration. To the best of our knowledge our identification strategy is the first which utilizes a comprehensive set of fixed effects – namely origin*time, destination*time and origin*destination FEs – within a gravity model applied to international migration, which enables us to estimate the impact of time varying cultural proximity on emigration over and beyond the effect of pre-existing cultural and historical ties. Lastly, in our gravity specification we separately identify the impact of existing diasporas as they simultaneously affect the decision to migrate both through cultural proximity via the effect of cultural remittances as well as by lowering migration costs through network effects and visa costs or by increasing the probability of non-economic migration through family reunification programs (see Beine et al 2011).

The results suggest a positive impact on the time variance of cultural proximity on migration choice. In other words, positive changes in cultural proximity foster migration. This finding is robust across different econometric techniques and alternative classifications of cultural products.

[7] A similar theoretical framework was included in a very early version of this paper (see Lanati Venturini 2017)

We also show that a shock in terms of changing cultural proximity has a much stronger effect on culturally distant country pairs. This suggests a non-linear effect of cultural proximity on migration over pre-existing cultural ties and the potential role of trade in cultural products in promoting cultural convergence.

The rest of the paper is organized as follows. Section 2 presents a short overview of the related literature, while Section 3 introduces our enriched definition of cultural proximity. Section 4 outlines the theoretical framework, derives the econometric specification and describes the data utilized in the empirical analysis. Section 5 presents the main statistical results. Section 6 concludes.

2. Related Literature

Our contribution adds to the extensive literature on the determinants of international migration, which uses gravity models as the main empirical workhorse to identify the effect of those origin, destination and dyadic factors affecting migration decisions. Gravity regressions have first become very popular in analyzing international trade: they predict bilateral trade between two countries as a function of the respective economic sizes and distance between them. While the theoretical foundations of gravity models of trade are widely explored in the literature (see Head & Mayer 2014), the interest towards gravity models applied to international migration "*has only recently regained momentum because of an enhanced availability of migration data*" (Beine et al 2015). Within this strand of literature, our empirical framework is similar to the one proposed by Ortega and Peri (2013), who employ a comprehensive set of fixed effects and find that international migration flows are highly sensitive to income *per capita* at destination and to bilateral migration policies. As stressed by Bertoli and Moraga (2013), the inclusion of fixed effects into the gravity setup accounts for the so-called multilateral resistance to migration. After all, the choice of a potential migrant to move to a given destination country does not, depend only on the attractiveness of the destination relative to the country of origin, "*but also on how this relates to the opportunities to move to other destinations"* (Bertoli and Moraga, 2013, p.79). Closer to the subject matter of this paper, Belot and Hatton (2012) show that cultural similarities and physical distance are more relevant drivers of educational selectivity in immigration than wage incentives or bilateral migration policies. A common feature of this strand of literature is that the causal effect of cultural distance on migration is mostly captured by dummies for common language (official or spoken) and former colonial ties (see Beine *et al*., 2015). A notable exception is Belot and Ederveen (2012) who capture different aspects of cultural similarities through the use of composite indicators for cultural proximity, along with more standard measures of cultural barriers such as religious and linguistic affinity. Similarly, Guiso *et al*. (2009) include, among the proxies of cultural similarities, measures of religious, linguistic, genetic and somatic distance. Among these proxies – which are however static and summetric - linguistic distance has attracted particular attention. In particular, Adserà and Pytlikovà (2015) constructed elaborate indexes of linguistic distance and they find that migration rates are higher between countries whose main official languages are closer and that linguistic proximity matters less when local linguistic networks are larger.

Even though all these measures aim at capturing multiple dimensions of cultural similarities – an approach which is more in line with a comprehensive notion of "culture" (see Straubhaar, 2002) - they implicitly assume that cultural proximity is constant over time and symmetric. To stress this argument even further, in reviewing the literature on gravity models for international migration, Beine et al (2015) explicitly stated that cultural proximity is one of the most important "*time invariant"* dyadic components of bilateral migration costs. This definition of cultural proximity limits the capacity to capture all the important dimensions of cultural affinity which have already been questioned in the international business and economics literature (see Shenkar (2001), Li et al

(2017), Felbermayr and Toubal (2010), Fiorini et al (2017) and Tung Verbeke (2010)). In this regard, Felbermayr and Toubal (2010) used the Eurovision Song Contest (ESC) voting results as a proxy for cultural proximity and found a significant time variation in the awarded ESC scores, as well as a sometimes low degree of reciprocity even between countries with seemingly similar cultural attributes. Disdier *et al.* (2010) were the first to utilize trade in cultural products as a proxy for countries' cultural proximity; they found that countries with similar cultural tastes have more intense trade relationships. Fiorini *et al*. (2017) combine these two contributions by applying cultural trade as a proxy for asymmetric and time varying cultural proximity to study its impact on FDI. Our analysis employs a similar conceptual framework to study the impact of the time variation of cultural affinity on international migration using exports in cultural goods as a proxy for variation in cultural proximity.

3. Cultural proximity and Trade in Cultural Goods

Numerous empirical studies employed proxies of cultural affinity which overlook its time varying and asymmetric dimensions. For instance, the pioneering work of Belot and Ederveen (2012) employed several refined measures of cultural distance – including a composite index based on the four Hofstede's cultural dimensions, along with measures of linguistic and religious proximity – to estimate the impact of cultural barriers on international migration. The drawbacks associated with the definition of cultural distance have already been brought to the fore in economics and even more prominently in international business literature.[8] In particular, two limitations of this approach stand out, namely the assumption of *stability* and *symmetry*, relabelled by Shenkar (2001) as, respectively, the "*illusion of stability"* and the "*illusion of symmetry"*. In what follows we briefly discuss each of these limitations in the context of international migration and provide an alternative and willingly broader definition of cultural proximity which allows for both *time variation* and *asymmetry* in cross country cultural relationships.

Stability: The four dimensions identified by Hofstede (2001) measure how far apart two cultures are, as well as other standard proxies of bilateral cultural proximity such as religious and linguistic proximity. These are measured, though, at a single point in time and they are assumed to be constant. However, cultural proximity evolves over time: the cultural affinity towards a specific destination measured at the moment of the decision to migrate may have changed by the time cultures are measured. In other words, the distribution of the destination culture's attractiveness across foreign countries changes over time; it is a function of several factors, including ideas and practices transferred to countries of origin. This variation in cultural proximity affects the migration choice as – for any country of origin – it alters the relative cultural affinity towards potential destinations.

Symmetry: The construct of cultural distance obviously requires symmetry: the distance from A to B must be identical to the one from B to A. But this assumption has found no support in the literature. As highlighted by Shenkar (2001), Tung and Verbeke (2010) and Li et al. (2017) cultural relationships, which are relevant in the context of international economic exchanges, are far from being symmetric. Further, Fiorini *et al*. (2017) and Felbermayr and Toubal (2010) found evidence of cultural asymmetry between country pairs. Their evidence points to an important role in the asymmetric dimension of cultural affinity in determining cross-country economic interactions and calls for a broader notion of cultural proximity capable of reflecting asymmetric affinity between two countries. Quantifying and analyzing the implications of the asymmetric nature of cultural proximity in the context of international migration is beyond the scope of this paper: our study provides a conceptual framework that allows for asymmetry in cultural relationships, but our

[8] See Shenkar (2001), Fiorini et al. (2017), Li et al. (2017), Tung and Verbeke (2010) and Felbermayr and Toubal (2010)

empirical analysis is confined to one direction of cultural proximity, i.e. the affinity towards the destination's culture for citizens in the country of origin.

Our Definition: In line with these approaches, we depart from the construct of cultural distance and propose a workable definition of cultural proximity that relaxes both these assumptions. We assume that members of the same national culture share common cultural traits and have a fairly homogeneous view on the attractiveness of other cultures (Li et al, 2017, Brewer and Brown, 1998).

(Figure 1 here)

We define cultural proximity as:

$$VACP_{in,t} = f(G_{in}, A_{in,t}) \quad (1)$$

where f is an increasing function of cultural proximity. G_{in} denotes the *time invariant* component of cultural proximity. It stands for pre-existing or historical cultural ties, whose proxies – such as past colonial relationships, linguistic, religious and genetic distance – have been extensively used in the literature to capture the impact of cultural barriers on migration (see Beine *et al*. 2015). Contrary to the model proposed by Fiorini *et al*. (2017), G_{in} may or may not be symmetric. The key assumption here is that the parameter G_{in} is time invariant, so that $G_{in} = G_{in,t}$. $A_{in,t}$ denotes the attractiveness of *n*'s culture for the population in country *i*. $A_{in,t}$ is time varying and asymmetric, i.e. the identity $A_{in} = A_{ni}$ may not be verified at any time *t*. The evolution of cultural proximity over time for any country pair depends on the $A_{in,t}$ term, which may or may not be related to pre-existing cultural ties, i.e. $A_{in,t}$ could potentially not depend on G_{in}. Indeed, individuals in country *i* can, in principle, attribute desirable characteristics to the culture of country *n* independently of actual similarity between the two cultures.[9]

Building on Disdier et al (2010) we argue that bilateral trade in cultural goods can be used as a valid proxy for cultural proximity. Figure 1 plots the relationship between bilateral emigration rate from the importer country and the share of cultural exports from the country of destination. Our conjecture is that the correlation between migration and cultural exports is stronger because cultural preferences plausibly affect the utility derived from the purchase of cultural goods relatively more than their non-cultural counterparts. In other words, cultural preferences are better reflected in the purchase of cultural goods. In line with our hypothesis, Figure 1 shows a positive relationship: we impute this descriptive finding to the better capacity of cultural products in capturing cross country cultural attractiveness.

Furthermore, the time-varying and asymmetric nature of trade flows allows for the capture of these dimensions in bilateral cultural proximity. Given the purpose of this paper we are interested in cultural exports from destination *n* to country of origin *i* which proxies for $A_{in,}$ i.e. the attractiveness of *n*'s culture for individuals in *i* at time *t*. In Appendix A1 we show that there is an empirical relationship between trade in cultural goods and the symmetric-time-invariant proxies of G_{in}, indicating that attractiveness is strongly correlated with similarity.[10]

[9] We are well aware that both dimensions of cultural proximity can be affected by factors that may be relatable to migration. Diasporas, for instance, can, in principle, be associated to both dimensions of cultural proximity and simultaneously affect the migration choice through a network effect. These endogeneity issues will be addressed in our empirical specification presented in the next section.

[10] However, investigating the link between the dynamic and the static component of cultural affinity is beyond the purpose of this paper: the scope of our contribution is to add a time-varying and asymmetric dimension to bilateral

4. Model and Econometric Specification

4.1 The Gravity Equation

The gravity specification builds on the simple theoretical model of international migration proposed by Adserà and Pytlikovà (2015) where the probability of migrating depends on key economic factors – such as a dyadic moving cost parameter and the income differential – and whose resulting econometric specification is particularly suitable for our research question.[11]

We assume that a potential immigrant chooses a particular destination country if his or her utility is the highest with respect to all available destinations. The utility attained by migrant k from moving to n from country i is logarithmic and given by:

$$U_{kin} = (y_{kn} - c_{kin})^{\theta} exp(\varepsilon_{kin}) \quad (2)$$

Where the term $(y_{kn} - c_{kin})$ stands for the net gain measured as the difference between income in destination n, y_{kn}, and the cost of migrating from country i to country n, c_{kin} , while ε_{kin} is the individual specific stochastic term. The variable c_{kin} includes moving costs, namely psychological and direct out-of-pocket costs and those associated with imperfect skill transferability. The probability of individual k from country i choosing a country n among N possible destinations can be written as:

$$\Pr\left(\frac{n_k}{i_k}\right) = Pr\left[U_{ink} = \max(U_{ki1}, U_{ki2}, \dots U_{kif})\right] \quad (3)$$

By assuming that ε_{kin} follows an i.i.d. extreme value distribution and $k > 0$ and exploiting the approximation that $ln(y_{n,t} - c_{in,t}) \approx ln(y_{n,t}) - \left(\frac{c_{in,t}}{y_{n,t}}\right)$, we apply the results in McFadden (1974) and write the log odds of migrating to destination country n versus staying in the origin country i as follows:

$$ln\left(\frac{M_{in,t}}{P_{i,t}}\right) = ln(m_{in,t}) \approx \theta(lny_{n,t} - lny_{i,t}) - \theta C_{in,t} \quad (4)$$

where $M_{in,t}$ represents flows of individuals from i to n at time t; $P_{i,t}$ are the stayers; $m_{in,t}$ is the emigration rate from i to n which is a function of the income differential between destination and origin and the migration costs $C_{in,t}$ expressed as a proportion of destination income, $C_{in,t} = (c_{in,t}/y_{n,t})$. Departing from the structure of the cost function adopted in Adserà and Pytlikovà (2015) we model $c_{in,t}$ as a decreasing function of $CP_{in,t}$ and the migration networks $Q_{in,t}$, so that:

$$c_{in,t} = f(G_{in}, A_{in,t}, Q_{in,t}) \quad (5)$$

where $A_{in,t}$ denotes the time-variant, asymmetric component of cultural proximity, which is proxied by the exports of cultural goods from country *n* to *i* at time *t*. Consistent with (1) we assume that $c_{in,t}$ is non-symmetric, so that $c_{in,t} \neq c_{ni,t}$, hence also $C_{in,t} \neq C_{ni,t}$. Note that the symmetric

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cultural affinity and to test to what extent cultural proximity towards a destination affects the migration choice over and above pre-existing cultural ties.

[11] The model follows the "*human capital investment*" theoretical framework first introduced by Sjastaad (1962) and recently applied to model migration movements in Grogger and Hanson (2011) among others.

time invariant component of cultural proximity, G_{in}, is captured by the same dyadic factors commonly used in the literature to control for moving costs (see for instance Beine *et al*. 2015 and Ortega & Peri 2013). The time varying variable $Q_{in,t}$ is included as the networks of immigrants may affect moving costs through the information channel, attracting immigrant flows, predominantly in the form of family reunification. Networks may also be an indicator of cultural proximity, since larger immigrant communities are likely to be associated with common cultural characteristics between hosting and origin countries.[12]

4.2 Econometric Specification

Plugging (4) into (5) the econometric model can be expressed as:

$$ln(M_{in,t}) = S_{i,t} + S_{n,t} + S_{in} + ln(Xcult_{ni,t}) + ln(Q_{in,t}) + u_{\mathrm{in,t}} \quad (6)$$

where $Xcult_{ni,t}$ is the bilateral exports of cultural goods from the destination country *n* to the country of origin *i* at time *t*. The assumption behind the model of Adserà and Pytlikovà (2015) implies that the relative probabilities of two alternative locations only depend on the characteristics of those two alternatives. However, our econometric specification is rich enough to be consistent with more general distributional assumptions of the error term $u_{\mathrm{in,t}}$ (see Beine et al. 2015). The inclusion of $S_{\mathrm{i,t}}$ and $S_{\mathrm{n,t}}$ - which are respectively, origin-year and destination-year fixed effects - allows us to capture the "*multilateral resistance to migration*" for bilateral migration flows. Put in other terms it is possible to capture the impact of the influence that the attractiveness of possible destinations exerts on the decision to migrate to a given destination.[13] In particular, the variable $S_{\mathrm{n,t}}$ absorbs the average time-varying tightness of migration entry laws in every destination, which was found to have a significantly negative impact on immigration flows by Ortega and Peri (2013).
In order to better isolate the time varying impact of cultural affinity on emigration we also include asymmetric origin-destination fixed effects S_{in} which absorb all bilateral specific factors affecting migration.[14] For the purpose of this paper the inclusion of S_{in} is important for two main reasons:

- S_{in} allows us to identify the effect of *cultural proximity* over and above the symmetric and pre-determined bilateral cultural ties. The current level of cultural proximity between country-pairs is likely to be related to the "historical" component of their cultural relationship (see Appendix A1), which may not be entirely captured by the time invariant proxies of G_{in} commonly included in the literature, such as colonial ties or linguistic, religious and geographical distance. This implies that not accounting for initial conditions may lead to biased estimates due to omitted variable bias (see Baier and Bergstrand, 2007).

[12] As Beine *et al*. (2015) pointed out a failure to account for the networks effect can lead to an omitted variable bias. For instance, Belot and Ederveen (2012) found that the effect of their proxies for cultural proximity – with the exception of linguistic and religious distance – became statistically insignificant as the network variable was included in the specification.
[13] This strategy allows the monadic components of the gravity specification in the denominators to be absorbed by the origin*time fixed effects, making the inclusion of denominators in the specification derived from Equation (4) redundant. These components include, for instance, the population of the country of origin in the dependent variable $P_{i,t}$. Hence, using migration rates and migration flows as dependent variable with origin time fixed effects will leave the results unaffected. Other monadic components that are controlled away are the income of country of destination $y_{n,t}$, the expectations about the evolution of the economic conditions in the countries of origin and destination (Bertoli et al. (2013)), country specific migration policies (Ortega and Peri (2013)) and environmental factors (Beine and Parsons (2015)).
[14] This is a very demanding specification, but it can be simply estimated using the *reghdfe* STATA command introduced by Sergio Correia which employs an iterative method to solve the two-way Fixed Effect (FE) problem with unbalanced data and very large numbers of fixed effects. It also allows for clustered standard errors (for any information on the reghdfe command see Correia 2017).

- The inclusion of dyadic fixed effects restores the cross-sectional independence of the error terms (see Bertoli and Moraga (2015)). Indeed, if we define $b(i)$ as a nest of countries i characterized by similar levels of cultural proximity with n, a bilateral shock between n and i may introduce a correlation in the stochastic component of Equation (6). For instance, the impact of a more restrictive visa policy in the UK towards Moroccans will affect the relative attractiveness of other potential destinations which we realistically assume as being highly dependent on the cultural proximity between Morocco and third countries (i.e. on whether or not they belong to the same nest $b(i)$). In other words, if the unobserved components that create interdependencies across cross-sections within nests are correlated with the included regressors, the OLS estimator will be biased and inconsistent. Bertoli and Moraga (2015) restored the cross-sectional independence of the error terms through the inclusion of origin-nest dummies. Similarly, this paper proposes a richer analysis in which we generate a nest for each country-pair through S_{in}, alleviating potential estimation problems deriving from an incorrect specification.

(Figure 2 here)

4.3 Endogeneity Concerns

An issue arising when estimating Equation (6) is the potential endogeneity of trade in cultural goods. Whether this covariate is correlated with an unobserved component is the main concern. In addition, since migration and trade are likely to be closely connected the correlation between the two variables might be due to – other than the omitted variables we do not control for – reverse causality: migrants may promote trade with their country of origin as well as cultural convergence (see for instance Gould 1994 and Rapoport et al. 2017).[15]

Our analysis aims to address the endogeneity issue in four ways:

- We include a comprehensive set of fixed effects to control for unobserved dyadic time-invariant factors and unobserved time-varying country-specific factors that drive both cultural proximity and migration flows. We are able to properly identify the causal mechanism between cultural exports and emigration through the inclusion of country-pair fixed effects. To the best of our knowledge, this is the first contribution to apply a gravity model to international migration combining a full set of destination*year, origin*year and destination*origin FEs in the spirit of Baier and Bergstrand (2007) and Disdier *et al*. (2010). Finally, to do more to alleviate the problems associated with omitted variable bias we include in the specification total aggregate bilateral imports which partially control for time varying bilateral contacts between destination and origin.
- Similarly to Aleksynska and Peri (2014), we use the fact that the value of bilateral trade labeled as "*cultural"* according to UNCTAD classification, $Xcult_{\mathrm{ni,t}}$, is equal to the aggregate bilateral trade $X_{\mathrm{ni,t}}$ multiplied by the correspondent share of bilateral cultural flows $\alpha_{\mathrm{ni,t}}$. Specifically, $Xcult_{\mathrm{ni,t}}$= $\alpha_{\mathrm{ni,t}}$*$X_{\mathrm{ni,t}}$. Hence, by taking logs and using log properties, we can separate the effect into two terms: $ln(Xcult_{\mathrm{ni,t}}) = ln(X_{\mathrm{ni,t}}) + \ln(\alpha_{\mathrm{ni,t}})$. The advantage of this type of specification is that it builds on previous studies examining the trade-migration nexus, which normally included the log of aggregate trade as a dependent variable or a dyadic control in a gravity setup, depending on the direction of causation[16]. Second, in our pooled OLS setting, aggregate bilateral trade absorbs common factors that affect aggregate trade and migration, allowing us to isolate and disentangle the extra impact of the cultural products on migration flows within the same specification.

[15]Another potential source of endogeneity is measurement error which is addressed in Section 5.2.

[16] See Campaniello (2014), for the export effect on migration; see Aleksynska and Peri (2014), Girma and Yu (2002) and Gould (1994) for the other direction of causation

- The variable of interest – namely exports of cultural goods – is predetermined with respect to emigration flows, which is likely to (at least) attenuate the issue of reverse causality. The same "*lagged approach"* applies to the other controls such as the impact of immigrant stocks $(Q_{in,t})$, in line with the analysis of Beine and Parsons (2015).[17]
- We propose an IV strategy where we instrument the flows of exports in cultural goods with the average bilateral tariffs in the manufacturing sector (source WITS, World Bank), applied by the importer and the corresponding imputed tariff revenues. To the best of our knowledge, this is the first contribution that utilizes an IV strategy to study the causal relationship between cultural proximity and migration flows.[18] Tariffs are plausibly unrelated to the emigration flows and highly correlated to trade flows. Similarly to Campaniello (2014), the identification strategy in this paper hinges upon the assumption that bilateral tariffs do not depend on migratory flows. In other words, we assume that governments set the level of tariffs to affect only trade flows, but not migration inflows. Figure 2 provide a rough indication about the validity of average tariffs in the manufacturing as a strong instrument for our econometric analysis. Figures 2a and 2b combined indicate a clear negative correlation of tariffs with trade in cultural products, while there's a very small negative correlation of bilateral tariffs with the corresponding bilateral migration flows. The pairwise correlation is indeed quite low (-0.1) even when we consider lagged average migration flows (Figures 2c, 2d), indicating that (i) only a small proportion of variance of bilateral flows of migrants can be explained by tariffs and (ii) that higher tariffs doesn't seem to be a response to increasing migration pressures. Hence, we assume the relationship between tariffs and migration as *indirect* i.e. running from the instrument through the endogenous variable. The under identification, the reduced form and weak identification tests conducted and presented in Table 3 confirm the strength of the instrument.

4.4 Data

The analysis uses data for 30 OECD countries of destination and for 185 countries of origin in the period 2004-2013.[19] The sample composition is similar to the work of Adserà and Pytlikovà (2015) and more comprehensive than other contributions that focus on the impact of cultural proximity on migration decisions, such as Belot and Ederveen (2012) and White (2013). The complete list, along with a short description of the variables employed in the statistical analysis, is presented in Appendix A2, while the summary statistics of the main variables (including instruments) are outlined in Table 1.

Our main variable of interest is trade in cultural goods. Trade data are from the BACI dataset of CEPII, which provides the bilateral values of exports in the HS 6-digit product disaggregation, for more than 200 countries since 1995. A crucial issue for our analysis concerns the definition of "*cultural goods*". In line with the definitions provided by UNESCO and UNCTAD we define cultural products as those goods "*conveying ideas, symbols and ways of life to those who consume them (some of which may be subject to copyrights), and whose production requires some input of human creativity*" (UNESCO 2009, UNCTAD 2010). At the empirical level, we use the classification of cultural/creative products proposed by UNCTAD. Appendix A3 provides the

[17]As pointed out by Beine and Parsons (2015) another econometric issue in this gravity setup is the potential endogeneity of the network effect, which is proxied by the stocks of migrants born in *i* and resident in *n*. The network effect is predetermined with respect to migration flows, so the reverse causality argument should not be an important issue here. In support of our econometric setup, Beine *et al*. (2011) find that the network coefficient is robust to reverse causality using an IV strategy. Lastly, Beine and Parsons (2015) augment their gravity specification with the aim of capturing at least part of the omitted variables, which are both correlated with the error term and with the stocks of migrants. Their findings confirm the exogeneity of their predetermined network effect.

[18] Average Tariffs applied by EU countries have already been used as an instrument to address the potential endogeneity of bilateral aggregate trade flows in its relationship with migrants' stocks by Campaniello (2014).

[19] The sample refers to the specification with the full set of fixed effects (Column 3 in Table 2).

motivations of why we prefer this classification as the main workhorse for our empirical analysis, while in Appendix A4 we list all the domains and product codes labelled as cultural/creative according to both UNCTAD and UNESCO classification.
In the IV analysis we instrument exports of cultural products with the average bilateral tariffs applied in the manufacturing sector and the imputed tariff revenues from cultural trade. The average of bilateral tariffs is obtained as the simple mean across EORA manufacturing sectors.[20] As for the rest of the variables employed in the statistical analysis, the migration flows and migration stocks are from the OECD's International Migration database.[21] Since we are interested in the determinants of migration decisions we use the inflows of foreign population by nationality in a given year as the dependent variable. This definition implies that we are including "*all foreign-born (or in some cases foreign nationals) who come to the country to reside there and not for temporary tourism, study, or business reasons*" (Ortega Peri, 2013). We include the stocks of bilateral immigrants resident in the countries of destination among the covariates, since they capture the role of networks in shaping international migration flows (see Beine *et al*., 2015). Standard Proxies for migration costs, such as *weighted distance*, *common* language, former colonial *relationships*, *common legal origin,* are from CEPII, while GDP *per capita* in PPP Constant US dollars are from the World Bank. More refined measures of pre-determined cultural proximity such as *linguistic* and *genetic distance* are from Adserà and Pytlikovà (2015) and Melitz and Toubal (2014).

5. Results

5.1 Benchmark Estimates

The estimates of Equation (6) are presented in Table 2. Across specifications we progressively allow for lower degrees of variability in our identification data by gradually augmenting the number of fixed effects. Column (1) includes a reduced set of origin-year and destination dummies which capture time-varying factors at origin and time-invariant factors at destination, including unobserved heterogeneity in cultural traits between migrants and non-migrants. This specification is very close to the predictions of the model proposed by Ortega and Peri (2013). Our parameter of interest, the coefficient of $\ln(Xcult_{\mathrm{ni,t-1}})$, suggests a significantly positive relationship between proximity of country *i* towards country *n*'s culture and bilateral emigration from origin *i* to destination *n.* All the gravity controls are significant and have the expected sign. Income *per capita* at destination is confirmed as an important driver of migration flows, while the network effect is positive and its magnitude is in line with previous studies (see Beine et al. 2011; Beine and Parsons 2015; Bertoli and Fernandez-Huertas Moraga 2015). This result corroborates the large consensus in the literature on diasporas as the most important dyadic determinants of migration flows. Controlling for heterogeneity at destination-year level leaves our results substantially unaffected. The inclusion of destination-year fixed effects in Column (2), meanwhile, does not alter the coefficients of any of the dyadic explanatory variables.

These two specifications, however, do not tell us whether the effect of cultural proximity on the migration choice is only driven by historical and pre-existing *cultural similarities*. In other words, we cannot detect whether the evolution of cultural relationships over time plays a role in affecting

[20] The list of EORA manufacturing sectors include: *Electrical and Machinery, Food & Beverages, Metal Products, Other Manufacturing, Petroleum, Chemical and Non-Metallic, Textiles and Wearing Apparel, Transport Equipment, Wood and Paper*.

[21] We are well aware of the limitations of the OECD International Migration Database regarding the comparability across OECD destinations (see Ortega and Peri (2013) and Mayda (2010) for a discussion). While these inconsistencies can make a pure cross-country comparison inaccurate, it is reasonable to think that changes over time can be compared.

migration decisions, as the time invariant component of cultural proximity, G_{in} , may act as confounding factor for the impact of $A_{in,t}$. To address this issue, we include dyadic fixed effects S_{in} which control for all time invariant bilateral factors, such as geographic barriers and pre-existing cultural ties. The results reported in Column (3) suggest that – despite the loss of identification power due to the large number of fixed effects introduced – the time-varying determinants of migration remain significant. In particular, the network coefficient retains the positive sign but it lowers considerably in terms of magnitude, with a semi-elasticity of approximately 0.09 and statistically significance at the 1% level. More importantly for our purposes, the evolution of bilateral cultural proximity over time emerges as a significant driver of international migration: a "positive shock" in cultural proximity represented by an increase in cultural exports by 10% leads to a 0.13% increase in the bilateral migration rate after controlling for all the dyadic and time invariant factors affecting migration decisions. In other words, *cultural attractiveness* affects the migration choice over and above the pre-existing *cultural similarities*. This sheds some light on the importance of accounting for the evolution of cross country cultural relationships and their linkages with recent migration phenomena. For instance, the dramatic 41% increase in international migrants from 2000 to 2014 may at least partially be explained by a trend of cultural convergence associated with globalization.[22] Our results are consistent with such an interpretation. The last two Columns of Table 2 enrich the gravity specification by, respectively, adding total bilateral imports as an additional control (Column 4) and by decomposing exports in cultural products into the share of cultural products and total bilateral exports (Column 5). The findings suggest that only exports are positively associated with the migration choice, with cultural exports having an impact above and beyond the correspondent aggregate flows.

The results hold when estimating the gravity equation with PPML (Table 3), which provides consistent estimates in the presence of heteroscedasticity and performs well when the dependent variable has a relatively large share of zeros (Santos Silva and Tenreyro (2006, 2011) and Bertoli Moraga (2015)). In our sample the share of zeros is rather small, it represents only 6% of the observations. Despite some discrepancies in terms of magnitude with respect to the OLS counterparts, the PPML coefficients showed in Table 3 generally have the expected sign. More importantly, in line with our hypothesis, the impact of bilateral exports on migration seems to be predominantly driven by flows of cultural products. To further test the validity of our results, we estimate the gravity model with alternative econometric techniques such as Gamma PML and EK Tobit (Columns 6-7) which accounts for the zero migration flows. Although we cannot compare the performance of these estimators with high dimensional fixed effects, the estimates are in line with the results presented in Table 2 which we find as reassuring.[23]

The results presented in Table 2 and 3 are consistent with different sets of fixed effects and across econometric techniques. However, the reported estimates may still be biased because of reverse causality. To further address the potential endogeneity of trade in cultural goods we instrument $ln(Xcult_{ni,t})$ with the average bilateral tariffs in the manufacturing sector applied by the importer and the correspondent imputed tariff revenues (Table 4). Our hypothesis is that governments set the level of tariffs to affect only trade flows, but not migration inflows. Figure 2 provides some empirical support to this statement, as the average bilateral tariffs in manufacturing appear very weakly correlated to average migration flows. Hence, we assume that both tariff-related

[22] Source: UN data

[23] The Tobit approach (EK Tobit) suggested by Eaton and Kortum (2001), in particular, according to Head and Mayer's (2014) Monte-Carlo simulations provides consistent estimates in the presence of a fairly substantial share of zeros. However, to the best of our knowledge there is currently no STATA (or any other statistical package) command which allows for Tobit estimations with HD fixed effects. The STATA commands - *reghdfe* and *ppml_panel_sg* – enable faster computation of the many fixed effects required only for PPML and OLS structural gravity estimations, respectively.

instruments affect migration *indirectly* i.e. only through their direct causal effect on the endogenous variable.
The sample size for this IV exercise is reduced due to the tariffs dataset which does not provide information on all the country pairs included in our OLS sample.[24] The first column of Table (4) replicates the OLS results with the reduced IV sample for comparison. Column (2) shows the first stage results. Both the average bilateral tariffs and the imputed tariff revenues have the expected sign and are strong predictor of exports of cultural products. The Kleibergen-Paap F statistic of the excluded instruments is way above the conventional level and indicate that the instruments are well identified. The reduced form in Column (3) suggests a direct relationship between the instruments and the dependent variable. By combining the first stage with the reduced form results (Columns 2-3) we can cautiously conclude that the causal effect of both instruments on the dependent variable runs through the endogenous variable. Finally, the IV results (Column 4 and 5) are very close to the OLS estimates (Column 1) as well as to the benchmark coefficients reported in Table 2. This holds for different sets of fixed effects and adds evidence and consistency to our predictions on the importance of cultural changes on migration decision.

5.2 Further Addressing the Measurement Error Bias

Measurement error can bias the estimated impact of our parameters of interest. While the use of trade in cultural goods as proxy for cultural proximity has many advantages (time variation and asymmetry) for the purpose of this analysis, there are potential concerns regarding its validity in reflecting national cultural contents.

For instance, American music labels might export *records* with non-American cultural content, so the imports of music from the US in some cases doesn't necessarily affect the attractiveness towards the US culture. By the same token, French exports of *fashion products* (included in the UNCTAD classification of ''*optional*'' cultural goods) may not only reflect French cultural content, but also some third country's cultural content embedded in the fashion design performed in that country before actual manufacturing happening in France (see Fiorini et al 2017). Further, custom data does not include digital transactions (i-tunes, Netflix) that accounted for a relevant share of transactions of several ''*core*'' cultural goods such as *DVDs*, *Music* and *Books*. However, digital transactions have been increasing dramatically over the last 5-6 years, a period that falls outside our sample's time coverage, so the latter source of measurement error is unlikely to largely influence our results.[25]

To address the issues associated with measurement error in Table 5 we first compare the benchmark findings reported in Table 2 (Column 1) with the correspondent estimates obtained with the "*core*" UNESCO classification of cultural products (Column 4-5). The products identified by UNESCO as cultural goods are arguably characterized by a larger cultural content compared to the classification proposed by UNCTAD and therefore are likely to better capture proximity in cultural tastes. However, as noted in Section 3.4, UNESCO's classification implies the use of a more limited time span and is less representative of the cultural products traded by the South. Given the shorter time coverage we are not including our full set of FEs since the more limited information in the UNESCO sample would create problems in terms of identification power. Hence, we compare the two classifications only with country-year fixed effects. The results indicate that using a different classification does not alter our benchmark estimates and our main conclusions remain unchanged. Lastly, in Column (2-3) we propose trade in *newspapers* and *other printed matter* as a more

[24] The IV sample reduces the numbers to 22 countries of destination (exporter) and 148 countries of origin (importer).
[25] Netflix more than doubled the number of Subscribers from 2013 till 2018, see https://www.theguardian.com/media/2017/apr/15/netflix-nudges-100m-subscribers-but-what-next-for-the-streaming-giantv

refined/accurate alternative measure of cultural proximity (see Appendix A4 for more details on these product categories). The idea behind is that newspapers are less subject to the global value chain bias described above, as their production is not dislocated to foreign countries and therefore minimizes the potential concerns regarding the measurement error introduced by the gross nature of cultural trade. The results indicate a positive effect which supports our main conclusions.

5.3 Extensions

This section proposes two extensions to the analysis conducted so far. We test whether the role of the time varying component of cultural proximity changes (a) at different levels of pre-existing cultural similarities and (b) when we account for the long-lasting effect of cultural goods in favoring cross-cultural convergence.

Table 6 explores the variation of the role of exports of cultural goods on emigration for different levels of pre-determined cultural affinity. We divide our sample according to the degree of cross-country cultural affinity based on linguistic and genetic distance. In order to preserve enough identification power and to attenuate the selection bias we split the sample into, respectively, two almost identical subgroups using the median *fst_distance_dominant* from Adsera Pytlikova (2015) and *lp2* from Melitz Toubal (2014).[26] The results suggest that time contingent shocks to cultural proximity only play a role when historical cultural similarities between country pairs are relatively weak. In line with Collier and Hoeffler (2018) also diasporas in culturally distant countries appear to be particularly useful in overcoming the cost of migration. This finding suggests a non-linear effect for cultural proximity on migration over pre-existing cultural ties and a potential role for trade in cultural products in promoting cultural convergence.[27] In particular, the evidence is consistent with a relationship of substitutability between the time-contingent, asymmetric and time-invariant, symmetric dimensions of cultural proximity in triggering migration, with the former operating as a bridgehead between otherwise culturally distant countries. A plausible explanation is that the cultural content embodied in these types of products enhances bilateral cultural affinity through what Tabellini (2008) defines as the *horizontal transmission of values*. The consumption and diffusion of cultural goods in countries of origin can contribute to transferring exporter's cultural traits, making the culture at destination better known, more attractive and more widely accepted.

In Table 7 we explore more closely this potential long-lasting role of trade of cultural goods in favoring cross-country cultural convergence and its indirect impact on the decision to migrate. More specifically, we test whether the intensity of long-lasting bilateral cultural relationships have a stronger effect on migration. We are well aware that the transmission of values which shapes the utility of would-be migrants takes time (see Cavalli Sforza, 2001). We are also aware that the potential resulting effect induced by cultural exports – along with other factors – on the decision to migrate is not immediate.[28] For instance, the effect of traded movies on cross-country cultural pervasiveness is neither instantaneous or brief; rather, movies can be repeatedly watched and broadcast once purchased. Hence, our empirical strategy accounts for the recent history of bilateral

[26] The choice of *MaxPAll* as a measure of linguistic proximity is due to the relatively larger number of observations available compared to other similar proxies included in Adsera Pytlikova (2015). Lp2 is considered to be better founded by Melitz and Toubal (2014) and a better basis for reasoning and their experiments among other similar proxies.

[27] Our strategy is similar to the one adopted in Krieger et al (2018) who found that migrant selection and genetic distance follow a nonlinear J-shaped pattern. Since OECD data on migration flows are not disaggregated by skill level we cannot test their hypothesis on skill selection in our sample.

[28] Of course, cross-country cultural transmission of values takes place in a variety of ways, including the use of social networks and the internet. However, within the time coverage of our broad sample the use of the internet was rather limited and much less developed worldwide than one could think. Indeed, in 2005, only 16% of the entire world population used the internet, the same figure only increased to 40% by 2014 (Source: International Telecommunications Union).

trade relationships between n and i by simply considering the impact of the cumulative exports of cultural products from destination n, so that:

$$CumXcult_{ni,t} = \sum_{t-1}^{t-s} Xcult_{ni,t} \quad (7)$$

This strategy allows for us, at the same time, to attenuate the distortion due to business cycle factors and measurement error associated to trade data. We initially set s = 5 while the third column reports the correspondent estimates with s = 9. Interestingly, as s goes up the impact of cultural exports tends to increase. In other words, when we add past bilateral cultural exported goods to $Xcult_{ni,t-1}$ the impact of our variable of interest on the decision to migrate at time t gets larger and larger. This finding is consistent with the hypothesis of a long-lasting effect of cultural products on bilateral cultural affinity.

6. Conclusions

Cultural barriers have been identified as one of the main drivers of international migration. They explain patterns of international migration which cannot be explained by merely looking at differences in terms of economic indicators. In other words, cultural factors help to address the so-called "immobility puzzle", which we can define – paraphrasing Trefler (1995) – as "*the case of missing migration*", i.e. very low migratory responses to large unemployment and wage differentials. In this context, proxies for cultural proximity such as linguistic and religious distance, along with more refined indicators, capturing (at least partially) the cultural orientation of countries, were found to have a positive impact on migration flows, after controlling for income differentials.

However, the common characteristics of these proxies – and, more generally, one of the implicit assumptions associated with international migration gravity models – is that cultural proximity is assumed to be time invariant and symmetric. These assumptions appear particularly strong and unrealistic when looking at the migratory patterns of the last two decades, given the growing exposure of citizens to foreign cultures through cross-border information flows, the globalization of mass communications and the rise of social media. All these channels may have affected the degree of cultural affinity of citizens towards potential destinations, without this affinity being necessarily reciprocated.

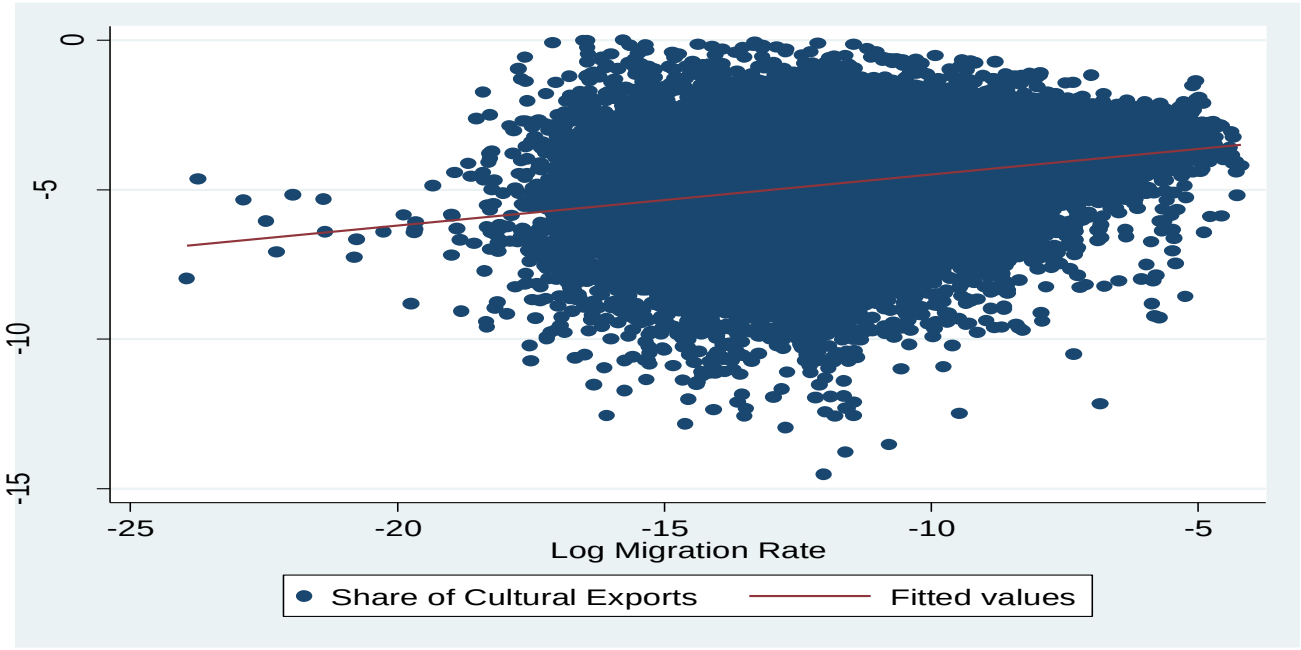
In this paper we relax these assumptions and we propose a broader definition of cultural proximity which explicitly accounts for the asymmetric evolution of cross-cultural relationships over time. In line with Disdier *et al*. (2010), we use bilateral trade in cultural goods as a proxy for time-dependent and asymmetric cultural proximity. More precisely, we assume that the value of the bilateral exports of cultural goods reflects affinity towards the destination's (exporter's) culture for the citizens in the country of origin (importer). Our analysis contributes to the literature as the impact of the time-varying and asymmetric dimension of cultural proximity was too little studied in the literature on migration. The few existing studies on the impact of cultural barriers on migration choices were, meanwhile, predominantly focused on OECD countries as the point of origin of migrants, leaving out the whole spectrum of developing countries where the impact of cultural proximity on the decision to migrate might be particularly relevant.

Relying on a comprehensive set of high dimensional fixed effects and controlling for the size of diaspora, we find that the time variance of cultural proximity helps explain international migration. More specifically, when accounting for pre-existing bilateral cultural ties, an increase of cultural affinity towards a potential destination enhances bilateral migration flows towards that destination.

The results are robust across several robustness checks, including an IV strategy where exports of cultural goods are instrumented with tariff-related measures. The positive impact of cultural proximity is found to be even stronger for culturally diverse country pairs and when the long-lasting effect of cultural goods in favoring cross-cultural convergence is taken into account.

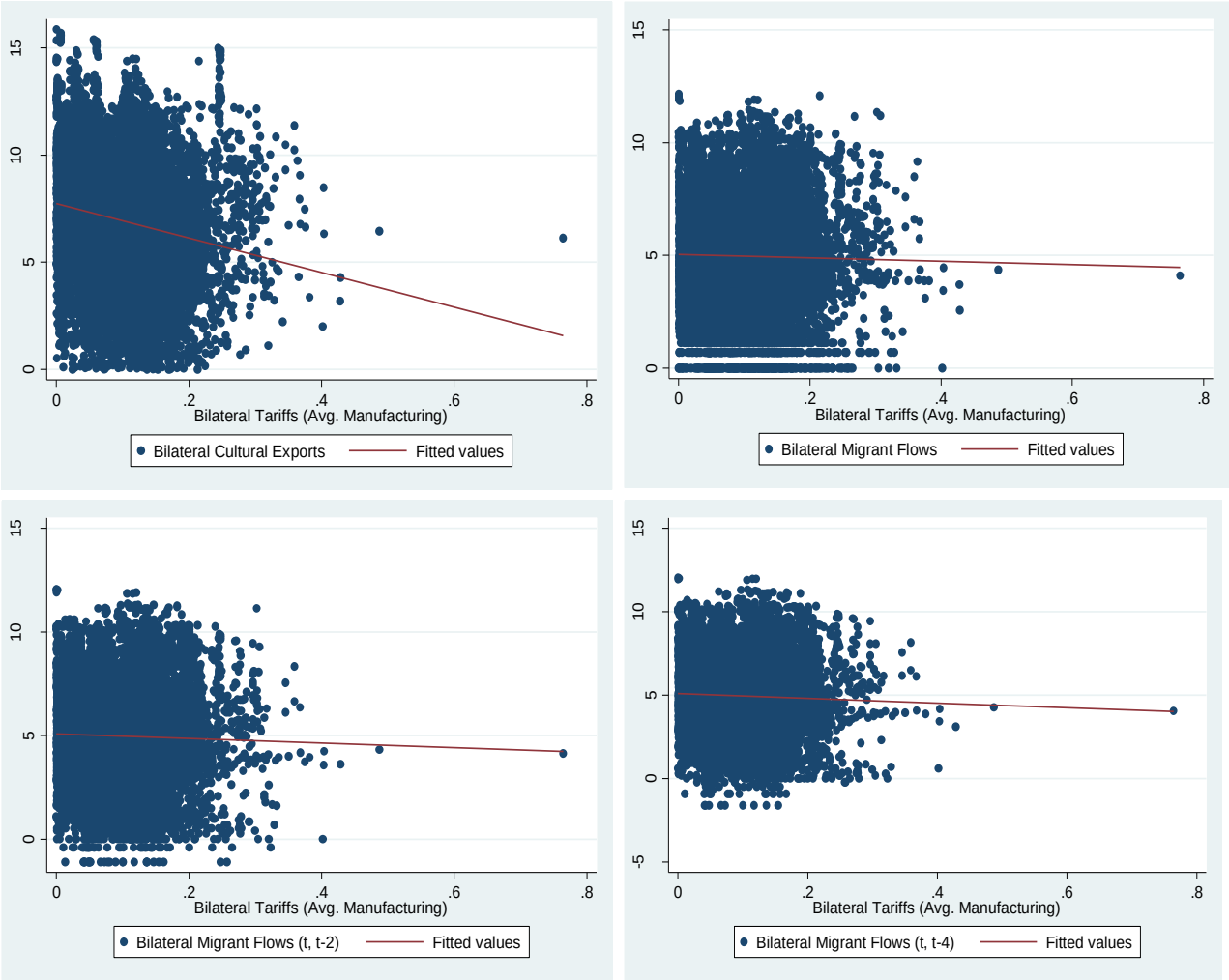
This paper leaves at least three interesting avenues for future research. First, our analysis sheds new light on the time varying impact of cultural proximity from the side of the origin of migrants. Further investigation can be done to analyse the destination side mechanisms of cultural proximity in relation to migration choices, namely the potential impact of affinity towards the culture of the country of origin on the decision to migrate. Second, a parallel interesting avenue for further research may be to investigate the role of cultural proximity on the integration of migrants in destination countries. Third, our findings suggest a stronger positive impact from exports of cultural goods when historical cultural similarities between country pairs are relatively weak. The evidence is consistent with a relationship of substitutability between time-contingent and time-invariant dimensions of cultural proximity in triggering migration, with the former operating as a bridgehead between otherwise culturally distant countries. Further research can be conducted to study the role of the trade in cultural goods in shaping cultural values/identities and triggering cultural convergence.

Figure 1: Relationship Between Migration Rate and Share of Cultural Exports



Notes: Log-Log relationship between the bilateral share of cultural exports at t-1 from the country of destination and the migration rate from the country of origin. The share is constructed as bilateral cultural exports over aggregate bilateral exports. 31362 observations, pairwise Pearson correlation coefficient =0.25, statistically significant at 1%.

Figure 2: Correlation of Average Tariffs with Cultural Exports and Migrant Flows



Notes: Correlation between average bilateral tariffs in the manufacturing (in %) at t-1 and (a) log of cultural exports at t-1 (upper left) , (b) log of bilateral migration outflows at time t (upper right), (c) log of the average bilateral migrant outflows between t and t-2 (bottom left), and (d) t and t-2 (bottom right) The correlations refer to the smaller IV sample which includes 148 countries of origin and 22 countries of destination for the period 2004-2013.

Table 1 – Summary Statistics

Sample		Full			IV	
Variable	Mean	Median	St. Dev.	Mean	Median	St. Dev.
$\ln(EM_{in,t})$	5.077	5.056	2.492	4.967	4.905	2.503
$\ln(Xcult_{ni,t-1})$	7.210	7.304	3.180	6.902	6.953	2.984
$\ln(Q_{in,t-1})$	7.824	7.773	2.622	7.799	7.679	2.642
$\ln(dist_{in})$	8.433	8.674	0.912	8.694	8.910	0.732
$Colony_{in}$	0.047	0	0.212	0.054	0	0.226
$Lang_{ni}$	0.120	0	0.325	0.129	0	0.336
$Comleg_{in}$	0.222	0	0.415	0.224	0	0.417
$AvgTariffs_{in,t-1}$	-	-	-	0.104	0.101	0.066
$\ln(TariffsRev_{ni,t-1})$	-	-	-	4.284	4.322	2.967
Obs	15062	15062	15062	10369	10369	10369

Notes: Data on Bilateral Trade are expressed in thousands of US Current Dollars. Data on average tariffs are expressed in % and calculated as sample mean over the EORA manufacturing sectors.

Table 2 – Benchmark Results: Impact of Cultural Exports on the Emigration Rate

	(1)	(2)	(3)	(4)	(5)
Estimator	OLS	OLS	OLS	OLS	OLS
Dependent Var.	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$
$\ln(Xcult_{ni,t-1})$	0.072***	0.072***	0.013**	0.013**	
	(6.56)	(6.56)	(2.26)	(2.26)	
$\ln(\alpha_{ni,t-1})$					0.012**
					(2.16)
$\ln(X_{ni,t-1})$					0.028**
					(2.01)
$\ln(X_{in,t-1})$				-0.000	
				(-0.10)	
$\ln(Q_{in,t-1})$	0.553***	0.553***	0.092***	0.094***	0.098***
	(13.01)	(12.86)	(3.26)	(3.24)	(3.28)
$\ln(dist_{in})$	-0.484***	-0.489***			
	(-9.67)	(-9.72)			
$Colony_{in}$	0.369***	0.356***			
	(2.90)	(2.77)			
$Lang_{ni}$	0.391***	0.399**			
	(4.79)	(4.64)			
$Comleg_{in}$	0.094*	0.091			
	(1.67)	(1.62)			
$\ln(GDPpc_{n,t})$	1.103***				
	(2.87)				
$S_{i,n}$			X	X	X
$S_{n,t}$		X	X	X	X
$S_{i,t}$	X	X	X	X	X
S_n	X				
S_t	X				
N	15062	15062	15062	14909	15062
R-sq	0.90	0.90	0.98	0.98	0.98

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard Errors are clustered by country pair. The model includes the intercept.

From the third to the sixth columns the model includes also country-pair FEs and all the covariates that are time invariant are automatically dropped. The OLS estimates are obtained with the STATA command *reghdfe* provided by Sergio Correia which allows for the inclusion of high dimensional fixed effects. The dependent variable in the OLS specification is the log of the bilateral

emigration rate; Cultural products are defined according to the HS02 classification of creative goods provided by UNCTAD.

Table 3 – Robustness Check: Alternative Estimators

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Estimator	PPML	PPML	PPML	PPML	PPML	EK Tobit	GPML
Dependent Var.	$EM_{in,t}$	$EM_{in,t}$	$EM_{in,t}$	$EM_{in,t}$	$EM_{in,t}$	$\ln(EM_{in,t})$	$EM_{in,t}$
$\ln(Xcult_{ni,t-1})$	0.037 (1.53)	0.038 (1.58)	0.044*** (2.62)	0.048*** (2.74)		0.095*** (6.12)	0.0874*** (8.66)
$\ln(\alpha_{ni,t-1})$					0.049** (2.84)		
$\ln(X_{ni,t-1})$					-0.008 (-0.24)		
$\ln(X_{in,t-1})$				-0.006 (-0.53)			
$\ln(Q_{in,t-1})$	0.663*** (13.37)	0.669*** (16.26)	0.073* (1.74)	0.069* (1.66)	0.072* (1.74)	0.569*** (13.37)	0.528*** (19.49)
$\ln(dist_{in})$	-0.405*** (-5.31)	-0.396*** (-5.40)				-0.396*** (-6.67)	-0.508*** (-11.45)
$Colony_{in}$	0.196* (1.74)	0.186* (1.69)				0.596** (2.54)	0.535*** (4.72)
$Lang_{ni}$	0.127 (1.21)	0.132 (1.23)				0.360*** (3.26)	0.404*** (5.21)
$Comleg_{in}$	0.245** (2.28)	0.234** (2.33)				0.164** (2.10)	0.218*** (4.50)
$\ln(GDPpc_{n,t})$	8.129*** (11.29)					1.157*** (16.77)	1.389*** (3.89)
$S_{i,n}$		X	X	X	X		
$S_{n,t}$		X	X	X	X		
$S_{i,t}$	X		X	X	X	X	X
S_n	X					X	X
S_t	X					X	X
N	16732	16360	16360	16142	16360	16732	16732
Adj. R-sq	0.90	0.94	0.98	0.98	0.99	0.90	0.91

t statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard Errors are clustered by country pair. The model includes the intercept.The PPML estimates are obtained with the STATA command *ppml_panel_sg* provided by Thomas Zylkin (see Larch et al 2017 for more information on this STATA command) The observations which belong to groups with all zeros or missing values are automatically dropped.

Table 4 – Robustness Check: 2SLS Results

Estimator	(1) OLS	(2) First Stage	(3) Reduced Form	(4) HDFE IV (2SLS)	(5) HDFE IV (2SLS)
Dependent Var.	$\ln(EM_{in,t})$	$\ln(Xcult_{ni,t-1})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$
$\ln(Xcult_{ni,t-1})$	0.063***			0.057***	0.017**
	(5.44)			(4.77)	(2.66)
$\ln(Q_{in,t-1})$	0.590***	-0.001	0.591***	0.591***	0.113***
	(11.86)	(-0.14)	(11.86)	(11.87)	(3.42)
$\ln(dist_{in})$	-0.512***	-0.339***	-0.536***	-0.521***	
	(-8.79)	(-7.12)	(-9.21)	(-8.80)	
$Colony_{in}$	0.424***	0.48	0.436***	0.430***	
	(3.00)	(0.98)	(3.05)	(3.04)	
$Lang_{ni}$	0.418**	0.147***	0.427***	0.421**	
	(4.13)	(3.49)	(4.18)	(4.15)	
$Comleg_{in}$	0.124**	0.072**	0.124**	0.126**	
	(2.05)	(2.66)	(2.14)	(2.08)	
$\ln(TarRev_{ni,t-1})$		0.901***	0.051***		
		(66.55)	(4.78)		
$AvgTariff_{ni,t-1}$		-11.239***	-1.059*		
		(-10.05)	(-1.81)		
$S_{i,n}$					X
$S_{n,t}$	X	X	X	X	X
$S_{i,t}$	X	X	X	X	X
N	10369	10369	10369	10369	10369

First Stage Statistics

	No Country-Pair FEs	*Fully Specified*
Underidentification Test		
Kleibergen-Paap LM Stat, Chi-Sq(2)	2219.09	502.78
Weak Identification Test		
Cragg-Donald, Wald F Stat	38303.72	41744.97
Kleibergen-Paap Wald F Stat	2219.09	1755.24
Weak Instrument-Robust Inference		
Anderson Rubin Wald Test, Chi-sq(2)	27.48	8.74
Stock-Wright LM Stat, Chi-sq(2)	26.79	8.62
Over Identification Test		
Hansen J Stat	0.646	0.535

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard Errors are clustered by country pair. The model includes the intercept.
The 2SLS estimates are obtained with the STATA command *reghdfe* provided by Sergio Correia which allows for the inclusion of high dimensional fixed effects.The instruments are the average bilateral tariffs in the manufacturing sector $AvgTariff_{ni,t-1}$ (values obtained from WITS World Bank data) and the log of the imputed value of tariff revenues of imported cultural products $\ln(TarRev_{ni,t-1})$.
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Table 5 – Robustness Check: UNCTAD vs UNESCO Classification

	(1)	(2)	(2)	(4)	(5)
Estimator	OLS	OLS	OLS	OLS	OLS
Classification	UNCTAD 2003-2013 *Core+Optional*	UNCTAD 2003-2013 *Newspaper*	UNCTAD 2003-2013 *Newspaper*	UNESCO 2008-2013 *Core*	UNESCO 2008-2013 *Core*
	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$
$\ln(Xcult_{ni,t-1})$	0.072***	0.029**	0.009*	0.068***	
	(6.56)	(3.31)	(1.97)	(7.11)	
$\ln(\alpha_{ni,t-1})$					0.057***
					(6.06)
$\ln(X_{ni,t-1})$					0.121***
					(5.23)
$\ln(Q_{in,t-1})$	0.553***	0.546***	0.073*	0.574***	0.569***
	(12.86)	(11.28)	(2.23)	(13.20)	(12.97)
$\ln(dist_{in})$	-0.489***	-0.502***		-0.456***	-0.382***
	(-9.72)	(-8.78)		(-8.90)	(-7.66)
$Colony_{in}$	0.356**	0.356**		0.217	0.165
	(2.77)	(2.77)		(1.86)	(1.46)
$Lang_{ni}$	0.399**	0.386**		0.332***	0.368***
	(4.64)	(2.92)		(4.09)	(4.67)
$Comleg_{in}$	0.091	0.092		0.090	0.078
	(1.62)	(1.62)		(1.77)	(1.45)
$S_{i,n}$			X		
$S_{n,t}$	X	X	X	X	X
$S_{i,t}$	X	X	X	X	X
N	15062	12366	11798	8315	8268
R-sq	0.90	0.90	0.98	0.90	0.90

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Standard Errors are clustered by country pair. The model includes the intercept. The parameter of interest in column (2-3) is the effect of exports of *newspapers* and *other printed matter* on migration, while in columns (4-5) cultural goods are classified according to the core UNESCO classification.

Table 6 – Extension: Impact of Cultural Exports on samples characterized by different values of Pre-Determined (time invariant) Cultural Proximity

Estimator	(1) OLS	(2) OLS	(3) OLS	(4) OLS
Pre-determined Cultural Distance	Linguistic	Linguistic	Genetic	Genetic
Source:	MT (2014)	MT (2014)	AP (2015)	AP (2015)
Class	0-50th	51st100^{h}	0-50th	51st-100th
$\ln(Xcult_{ni,t-1})$	0.008 (1.11)	0.022** (2.76)	0.007 (0.89)	0.017** (2.33)
$\ln(Q_{in,t-1})$	0.087** (2.43)	0.096** (2.80)	0.092*** (2.41)	0.103** (2.45)
$S_{i,n}$	X	X	X	X
$S_{n,t}$	X	X	X	X
$S_{i,t}$	X	X	X	X
N	6837	6965	7371	6831
R-sq	0.98	0.98	0.98	0.98

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard Errors are clustered by country pair. The model includes the intercept.
The model is estimated for different values of pre-determined cultural proximity based on linguistic distance. Samples are defined according to the median value of pre-determined genetic distance (based on fst_distance_dominant) from Adsera Pytlikova (2015) and linguisticl proximity (based on lp2) from Melitz and Toubal (2014): below the median (0-50th) and above the median (51st - 100th), respectively. The median values are 820 and 0.747948 for fst_distance_dominant and lp2 respectively. The model is estimated with OLS and includes country-pair FEs. Cultural products are defined according to the HS02 classification of creative goods provided by UNCTAD

Table 7 – Impact of ''Cumulative'' Cultural Exports on the Emigration Rate

	(1)	(2)	(3)
Estimator	OLS	OLS	OLS
Dependent Var.	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$
$\ln(\sum_{t-1}^{t-s} Xcult_{ni,t-1})$	0.073***	0.028**	0.038**
	(5.11)	(2.45)	(2.40)
$\ln(X_{in,t-1})$	0.044***	-0.000	-0.000
	(4.15)	(-0.13)	(-0.16)
$\ln(Q_{in,t-1})$	0.544***	0.093***	0.093***
	(12.47)	(3.24)	(3.22)
$\ln(dist_{in})$	-0.450***		
	(-9.02)		
$Colony_{in}$	0.340***		
	(2.70)		
$Lang_{ni}$	0.409**		
	(4.82)		
$Comleg_{in}$	0.065		
	(1.11)		
Cumulative Exports	$s = 5$	$s = 5$	$s = 9$
$S_{i,n}$		X	X
$S_{n,t}$	X	X	X
$S_{i,t}$	X	X	X
N	14909	14909	14909
R-sq	0.90	0.98	0.98

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard Errors are clustered by country pair. The model includes the intercept.

The first column includes country*year Fes; the second and the third columns the model includes also country pair FEs and all the covariates that are time invariant are automatically dropped. The estimates are obtained with the STATA command *reghdfe* provided by Sergio Correia which allows for the inclusion of high dimensional fixed effects. Exports are calculated as the cumulative bilateral inflows in the 5 years period between t-5 and t-1. Trade flows are transformed from Current to 2010 Constant US Dollars using US 2010 Consumer Price Index. In the third column, exports are cumulated from t-9 and t-1. The dependent variable in the OLS specification is the log of the bilateral emigration rate. Cultural products are defined according to the HS02 classification of creative goods provided by UNCTAD.

References

Adsera, Alicia, and Mariola Pytlikova. "The role of language in shaping international migration." *The Economic Journal* 125.586 (2015): F49-F81.

Aleksynska, M. and G. Peri (2014). "Isolating the network effect of immigrants on trade".*The World Economy* 37(3), 434–435.

Alesina, Alberto and Paola Giuliano, "Culture and Institutions," Journal of Economic Literature, December 2015, 53 (4), 898–944.

Baier, Scott L., and Jeffrey H. Bergstrand. "Do free trade agreements actually increase members' international trade?." *Journal of international Economics* 71.1 (2007): 72-95.

Barro R, Sala-i-Martin X (1995) *Economic growth*. McGraw-Hill,

Beine, Michel, and Christopher Parsons. "Climatic factors as determinants of international migration." *The Scandinavian Journal of Economics* 117.2 (2015): 723-767.

Beine, M., F. Docquier, and C. Ozden (2011), 'Diasporas,' *Journal of Development Economics*, 95, 1,30–41.

Belot, M., and T. Hatton (2012), 'Skill Selection and Immigration in OECD Countries,' *Scandinavian Journal of Economics*, 114, 4, 1105–28.

Belot, M., and S. Ederveen (2012), 'Cultural Barriers in Migration between OECD Countries,' *Journal of Population Economics*, 25, 3, 1077–105.

Bertoli, S., and J. Fernandez-Huertas Moraga (2015), 'The Size of the Cliff at the Border,' *Regional Science and Urban Economics*, 51, March, 1–6.

Bertoli, S., and J. Fernandez-Huertas Moraga (2013), 'Multilateral Resistance to Migration,' *Journal of Development Economics*, 102, May, 79–100.

Beine, Michel, Simone Bertoli, and Jesús Fernández-Huertas Moraga (2015). "A practitioners' guide to gravity models of international migration." *The World Economy* (2015).

Brewer MB, Brown RJ. 1998. Intergroup relations. In *The Handbook of Social Psychology* (Volume 1&2), Gilbert DT, Fiske ST, Lindzey G (eds). 554–594, McGraw-Hill: New York, NY.

Bertoli, S., H. Brucker, and J. Fernandez-Huertas Moraga (2013a), 'The European Crisis and Migration to Germany: Expectations and the Diversion of Migration Flows,' Working Paper No. 2013/21 (Clermont-Ferrand: CERDI, University of Auvergne).

Campaniello, N. (2014). "The causal effect of trade on migration: Evidence from countries of the euro-mediterranean partnership" *Labour Economics.Vol. 30, October 2014, pp. 223–233*

Cavalli-Sforza, Luigi (2001), Genes, People and Languages. University of California Press.

Collier, Paul, and Anke Hoeffler. "Migration, Diasporas and Culture: An Empirical Investigation." *Kyklos* 71.1 (2018): 86-109.

Correia, Sergio. 2017. "Linear Models with High-Dimensional Fixed Effects: An Efficient and Feasible Estimator" Working Paper. http://scorreia.com/research/hdfe.pdf

Disdier, A. C., Tai, S. H., Fontagné, L., & Mayer, T. (2010). Bilateral trade of cultural goods. *Review of World Economics*, 145(4), 575-595.

Eaton, J., and S. Kortum (2001). Trade in capital goods. *European Economic Review* 45 (7): 1195–1235.

Felbermayr, Gabriel J. and Farid Toubal, "Cultural proximity and trade," *European Economic Review*, 2010, 54 (2), 279 – 293.

Fiorini, M., Giovannetti, G., Lanati, M., & Santi, F. (2017). Asymmetric Cultural proximity and Greenfield FDI. Working Paper EUI RSCAS; 2017/56; Global Governance Programme-284; Global Economics

Girma, Sourafel, and Zhihao Yu. "The link between immigration and trade: Evidence from the United Kingdom." *Review of World Economics* 138.1 (2002): 115-130.

Gould, D. M. (1994). "Immigrant links to the home country: Empirical implications for US bilateral trade flows" *The Review of Economics and Statistics* 76(2), 302–316.

Grogger, J., and G. H. Hanson (2011), "Income Maximization and the Selection and Sorting of International Migrants" *Journal of Development Economics*, 95, 1, 42–57.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, "Does Culture Affect Economic Outcomes?," *Journal of Economic Perspectives*, June 2006, 20 (2), 23–48.

Guiso L., Sapenza P., Zingales L., (2009) Cultural Biases in economic exchange, *Quarterly Journal of Economics*, 124 (3), 1095-1131.

Hofstede G (2001) Culture's consequences: comparing values, behaviors, institutions, and organi- zations across nations, 2nd edn. Sage, London

Hicks, John. *The theory of wages*. Springer, 1963.

Head and Thierry Mayer, "Gravity Equations: Workhorse, Toolkit, and Cookbook," in Gita Gopinath, Elhanan Helpman, and Kenneth S. Rogoff, eds., Handbook of International Economics,Vol. 4, Elsevier, 2014, chapter 3.

Kaasa, A.; Vadi, M.; Varblane, U. (2016) A new dataset of cultural distances for European countries and regions. Research in International Business and Finance, 37: 231 – 241

Krieger, Tim, Laura Renner, and Jens Ruhose. "Long-Term Relatedness between Countries and International Migrant Selection." *Journal of International Economics* (2018).

Lanati, Mauro; Venturini, Alessandra. The Import of' Cultural Goods' and Emigration: An Unexplored Relation. 2017.

Larch, Mario, Wanner, Joschka, Yotov, Yoto V., & Zylkin, Thomas (2017), "The Currency Union Effect: A PPML Re-assessment with High-dimensional Fixed Effects", Drexel University School of Economics Working Paper 2017-07.

Levitt, Peggy, and Deepak Lamba-Nieves. "Social remittances revisited." *Journal of Ethnic and Migration Studies* 37.1 (2011): 1-22

Li, Chengguang, Felix C. Brodbeck, Oded Shenkar, Leonard J. Ponzi, and Jan HendrikFisch, "Embracing the foreign: Cultural attractiveness and international strategy," *Strategic Management Journal*, 2017, 38 (4), 950–971.

McFadden, D. (1974), "Conditional Logit Analysis of Qualitative Choice Behavior," in P. Zarembka(ed.), *Frontiers in Econometrics* (New York: Academic Press), 105–42.

Melitz, Jacques and Farid Toubal, "Native language, spoken language, translation and trade," *Journal of International Economics*, 2014, 93 (2), 351–363.

Ortega, F. and G. Peri (2013). The role of income and immigration policies in attracting international migrants. *Migration Studies*1(1), 47-74.

Straubhaar, J., 2002. (Re)asserting national television and national identity against the global, regional and local levels of world television. In: Chan, J.M., McIntyre, B.T. (Eds.), In Search of Boundaries. Communication Nation-States and Cultural Identities. Ablex Publishing, Westport, Connecticut.

Sjaastad, L. A. (1962), "The Costs and Returns of Human Migration" *Journal of Political Economy*, 70,1, 80–93.

Shenkar, Oded, "Cultural distance revisited: Towards a more rigorous conceptualization and measurement of cultural differences" *Journal of international business studies*, 2001, 32 (3), 519–535.

Santos Silva, João M C and Silvana Tenreyro, "The log of gravity," *The Review of Economics and statistics*, 2006, 88 (4), 641–658.

Santos Silva, João M C and Silvana Tenreyro "Further simulation evidence on the performance of the Poisson pseudo-maximum likelihood estimator," *Economics Letters*, 2011, 112 (2), 220–222.

Tabellini G. (2008), "Institutions and culture", *Journal of the European Economic association*, 6 (2-3), 255-294.

Trefler, Daniel. "The case of the missing trade and other mysteries" *The American Economic Review* (1995): 1029-1046.

Tung, Rosalie L and Alain Verbeke, "Beyond Hofstede and GLOBE: Improving the quality of cross-cultural research," *Journal of International Business Studies*, Oct 2010, 41 (8), 1259–1274.

UNCTAD (2010) Creative Economy Report, available at http://unctad.org/en/Docs/ditctab20103_en.pdf

UNESCO (2009) Pessoa, José, Lydia Deloumeaux, and Simon Ellis. *The 2009 Unesco Framework for Cultural Statistics (FCS)*. Unesco Institute for Statistics, 2009.

White, Roger. "Is cultural distance a determinant of international migration flows? Evidence from Denmark, Germany, and the Netherlands." *Economics Bulletin* 33.3 (2013): 2156-2168.