



# Cultural change and the migration choice

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## 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. This 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. In accordance with Disdier, Tai, Fontagné, Mayer (Rev World Econ, 145(4):575–595, 2010) we assume that the evolution of bilateral cultural affinity over time is reflected in the intensity of bilateral trade in cultural goods. The empirical framework includes a comprehensive set of high dimensional fixed effects which enable 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.

**Keywords** Migration · Trade in cultural goods · Gravity model

**JEL Classification** F16 · F22 · Z10

## 1 Introduction

Harris and Todaro (1970) interprets migration flows in terms of the wage differential between sending and destination countries and the associated cost of the journey. This interpretation has been seen as insufficient in explaining migration patterns.

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Indeed, the presence of fairly small migration flows—both within and between countries—has shifted the focus of the literature away from economic factors, despite very strong economic drivers such as unemployment and wage differentials (see Barro & Sala-i-Martin, 1995). 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.<sup>1</sup> 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. They also included survey-based composite measures of cultural distance, such as the Hofstede or the Inglehart and Baker indexes, with 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 of 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 & Toubal 2010; Tung & Verbeke 2010), which we understand 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*.<sup>2</sup> Measured at a single point in time, existing measures of cultural proximity are considered to be constant. However, this is not realistic as culture measured when the decision to migrate was made may have changed by the time that 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., 2016) and they are mostly confined to European countries that are more culturally alike.<sup>3</sup> The assumption of *stability* is particularly unrealistic when we consider the last two decades which have been characterized by citizens' growing exposure to foreign cultures through cross-border information flows, the globalization of mass communication and the role of social media. All of 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; Giuliano & Nunn, 2020; Bazzi et al., 2020).<sup>4</sup> Of course, those changes in bilateral cultural proximity may or may

<sup>1</sup> 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.

<sup>2</sup> 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).

<sup>3</sup> Also Micro proxies of cultural distance within the World Value Survey and European Value Survey provide a limited time variation.

<sup>4</sup> In this regard, Rapoport et al. (2020) found evidence of cross-country cultural convergence which is clearly at odds with the assumption of stability, but more in line with a convergence hypothesis, where cultural proximity increases over time as a consequence of citizens' exposure to foreign cultures.

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 Moroccans willing to move to France would be the same as those experienced by French migrants going to Morocco. As pointed out by Shenkar (2001), there are no studies showing symmetry in bilateral cultural proximity, nor is there any 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 into the role of culture as a determinant of migration patterns.<sup>5</sup>

In this paper we propose an enriched notion of cultural proximity (henceforth VACP—Time-Varying and Asymmetric Cultural Proximity), 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. This is regardless of pre-existing bilateral cultural ties (see for instance Levitt, 1998). 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 exploring the relationship between cultural proximity and migration, which fully accounts for the time varying and asymmetric nature of VACP. In line with Disdier et al. (2010) and Fiorini et al. (2021), we employ cultural exports as a proxy for revealed cultural preferences. In other words, we assume that the value of bilateral exports of cultural goods reflects affinity towards the destination’s (exporter’s) culture for the citizens in the country of origin (importer). Our proxy for cultural proximity enters a gravity model of international migration which allows for cultural affinity to vary over time. Theoretically, we postulate that positive variations in cultural proximity, which are reflected by larger volumes of exports of cultural goods, lead to a rise in emigration from importing countries by lowering asymmetric bilateral moving costs 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. Furthermore, current levels of cultural proximity are likely to be strongly related to historical cultural ties (see Disdier et al., 2010) 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. Second, to the best of our knowledge our identification strategy is among the first to utilize a comprehensive set of fixed effects—namely origin\*time, destination\*time and origin\*destination Fes—within a gravity model applied to international migration. This enables us to estimate the impact of time

<sup>5</sup> Within-country cultural homogeneity is another unrealistic assumption which we do not investigate in this paper because of data limitations.

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. They also affect decisions to migrate 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. We also show that a shock in terms of changing cultural proximity has a much stronger effect on culturally distant country pairs and when the long-lasting effect of cultural goods in favoring cross-cultural convergence is accounted for. Taken together, these findings suggest a non-linear effect of cultural proximity on migration over pre-existing cultural ties and the potential (positive) role of trade integration in cultural products in promoting cultural alignment between origin and destination countries. Finally, the analysis not only supports the dynamic dimension of cultural proximity in the context of international migration, but also its asymmetric nature. Our findings reveal that only the time variation of migrant preferences for destination's culture appears to affect emigration decisions.

The rest of the paper is organized as follows. Section 2 presents an overview of the related literature, while Sect. 3 introduces our enriched definition of cultural proximity and describes the theoretical framework. Section 4 outlines the econometric specification as well as 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 first became very popular in analyzing international trade because they predict bilateral trade between two countries as a function of the respective economic sizes and distance between them. The theoretical foundations of gravity models of trade are widely explored in the literature (see Head and Mayer 2014). However, the interest in gravity models when 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 Ortega and Peri’s (2013) framework, which employs a comprehensive set of fixed effects and finds 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 an appropriate specification of origin and destination fixed effects into the gravity setup accounts for the so-called multilateral resistance to migration i.e. for the fact that the choice of a potential migrant to move to a given destination country does not only depend on

the attractiveness of the destination country relative to the country of origin, “*but also on how this relates to the opportunities to move to other destinations*” (Bertoli & 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 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 symmetric, linguistic distance has attracted particular attention. In particular, Adserà and Pytliková (2015) constructed elaborate indexes of linguistic distance and found that migration rates are higher between countries whose main official languages are closer. They also asserted that linguistic proximity matters less when local linguistic networks are larger.

Even though all of these measures aim to capture 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. In particular, the importance of the role of persistent/historical cultural traits on various political ramifications (Bazzi et al., 2020; Vertovec, 2011) and economic exchanges (Guiso et al., 2006) is well established in the literature. However, the role of the evolution of cultural proximity over time is often neglected and overlooked. 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 of the important dimensions of cultural affinity which have already been questioned in the international business, anthropological, sociological and economics literature (see Shenkar, 2001; Li et al. 2017; Felbermayr & Toubal, 2010; Giuliano & Nunn, 2020; Fiorini et al. 2021; Tung Verbeke, 2010). In this regard, Felbermayr and Toubal (2010). In this regard, Felbermayr and Toubal (2010) used the voting results of the Eurovision Song Contest (ESC) as a proxy for cultural proximity and found a significant time variation in the ESC scores that were awarded. They also evidenced 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. (2021) combine these two contributions by applying cultural trade 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 by using bilateral exports in cultural goods from OECD to sending countries (migrant origins) as a proxy cultural proximity.

This paper also sheds some light on the role of trade in cultural goods in favoring migration through a progressive cultural alignment between origin and destination countries. We postulate that bilateral cultural exports raise reverse emigration by transferring cultural values, practices, habits, and norms to importing countries, making trading-pairs culturally closer and therefore lowering moving costs of would be emigrants. To date, the literature has mostly focused on the transfer of behavioral and cultural norms as a “migration externality”—i.e. the effect of diaspora networks on cultural integration through the role of social and cultural remittances (Levitt, 1998). For instance, Spilimbergo (2009) found that foreign trained individuals promote democracy in their home countries, but only if foreign education was acquired in a democratic destination. Focusing on Moldova, a former Soviet Republic, Barsbai et al. (2017) show that emigration to democratic countries decreases the share of votes for communist parties in home districts. Rapoport et al. (2020) found that migrants act as vectors of cultural diffusion and bring about cultural convergence through the dissemination of cultural values and norms from host to home countries (i.e., cultural remittances). In this paper we take a different approach and look at the effect on migration of cultural change induced by trade integration of cultural products. This links our paper to the work of Maystre et al. (2014), who show that trade integration leads to cultural convergence, especially for trade in differentiated goods with a higher cultural content. Along similar lines, we argue that cultural exports act as a sort of cultural remittances—as they transfer knowledge and familiarity about cultural values, practices and norms of migrant destinations to importing countries. In line with our hypothesis, the results presented in one of the extensions of the baseline model (Table 7) suggest a long-lasting positive effect of cumulative cultural exports on reverse emigration, which complements previous research on trade-based cultural change and its impact on emigration decisions (e.g. Maystre et al., 2014; Campaniello, 2014).

### 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. This included 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 been brought to the fore in economics and even more prominently in other disciplines such as psychology, anthropology and the international business literature.<sup>6</sup> 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*”.

<sup>6</sup> See Shenkar (2001), Fiorini et al. (2021), Li et al. (2017), Tung and Verbeke (2010) and Felbermayr and Toubal (2010)

The roots of the dynamic or processual view of cultural relationships that allows for values and practices to be continuously reshaped by social (and economic) interactions, can be traced back to the so-called “Intergroup Contact Theory” (Allport, 1954). The rationale behind the contact hypothesis is that more frequent and intensive contacts between different groups lead to a more tolerant society and improve social relations (also) through a reciprocal transfer of knowledge and information.<sup>7</sup> The contact hypothesis implicitly relates to a pattern of cultural relationships that evolve over time, although not necessarily in a symmetric fashion. Closer to our purposes, the role played by diaspora networks through social and cultural remittances, for instance, is an example of how higher levels of cross-cultural interactions between host and origin communities can positively affect the perception and the affinity towards foreign cultures over time, through the so-called information or “acculturation” channel (Berry, 1980; Levitt, 1998). The static notion of cultural distance is also challenged by numerous anthropologists and sociologists, who propose definitions of culture that emphasize its dynamic, changing and transformative nature (Vertovec, 2011). While in these fields of research a micro-level approach is regarded as better-suited to study the evolution of cultural relationships, for the purpose of this study a notion of bilateral time-varying cultural proximity can still be introduced at the cross-country level—conditional on the assumption that national cultures share (at least to a certain extent) common cultural traits (see Guiso et al., 2009).

Hereafter, we briefly discuss each limitation in the context of international migration. We provide an alternative and purposefully 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

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<sup>7</sup> As Allport (1954) in his seminal book pointed out, these contacts can be “direct” or “indirect”: the consumption of cultural products, for instance, such as films, books, etc. can indirectly reduce prejudice and get people “closer” through the reduction of cultural distance.



Verbeke (2010) and Li et al. (2017) cultural relationships, which are relevant in the context of international economic exchanges, are far from being symmetric. Furthermore, Fiorini et al. (2021) 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 socio-economic interactions and calls for a broader notion of cultural proximity capable of reflecting asymmetric affinity between two countries. While the primary focus of this paper is on the role of a specific direction of time-varying cultural proximity—i.e. the affinity towards the destination’s culture for citizens in the country of origin—in one of the extensions we also analyze and quantify the implications of the asymmetric nature of cultural proximity in the context of international migration.

*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 & Brown 1998).

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. (2021),  $G_{in}$  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  $n$  independent of any actual similarity between the two cultures.<sup>8</sup>

Building on Disdier et al. (2010) we argue that bilateral trade in cultural goods can be used as a valid proxy for cultural proximity. More precisely, we employ the volume of cultural exports as a measure of “*revealed cultural preference*”—i.e. an increase in the demand of cultural goods from a given country of (migrant) destination reflects higher preference for the culture of that country. We postulate that positive variations in cultural proximity lead to a rise in emigration from importing

<sup>8</sup> We are well aware that both dimensions of cultural proximity can be affected by factors that may be related 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.



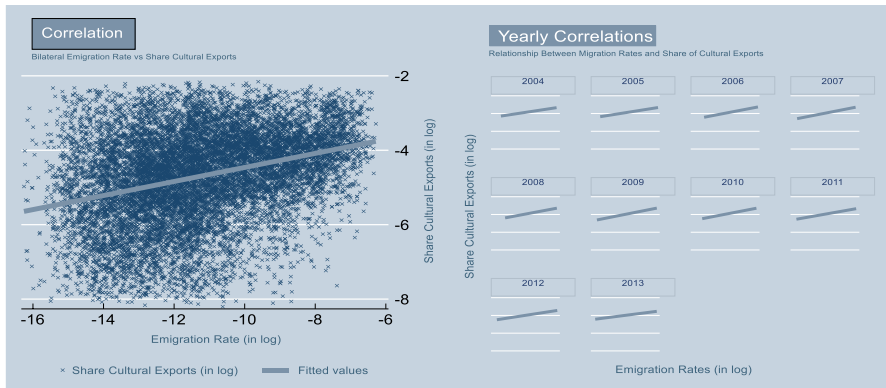
countries by lowering asymmetric bilateral moving costs between origin and destination. The positive effect of VACP on migration operates mostly through the reduction of psychological costs and all the moving costs associated with settling in and adjusting to a new cultural environment, which—according to Kennan and Walker (2011)—play a crucial role in emigration decisions.<sup>9</sup>

Figure 1 plots the relationship between bilateral emigration rates 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, Fig. 1 shows a positive relationship, which we attribute to the better capacity of cultural products to capture cross country cultural attractiveness.

The time-varying and asymmetric nature of trade flows allows us to these dimensions of bilateral cultural proximity. Specifically, given the purpose of this paper we are interested in cultural exports from destination  $n$  to origin  $i$  which proxies for  $A_{i,n,t}$ , i.e. the attractiveness of  $n$ 's culture for individuals in  $i$  at time  $t$ .<sup>10</sup> The underlying theoretical mechanism is in line with the approach of Guiso et al. (2009). This is because changes in cultural proximity over time are reflected through variation in the demand for cultural goods produced in foreign countries. The recent case of the Korean Wave (Hallyu) is a good example of how the appreciation and penetration of the Korean culture in foreign countries is reflected in the rise of exports of cultural products, such as TV soap operas and pop music records (K-pop). Interestingly, the rise in popularity of the Korean culture around the world is not rooted in ancestral cultural traits but instead can be associated with a cultural shock (Fiorini et al. 2021). Scholars have started to identify a connection between the Korean Wave and a rise in economic exchanges. Box 1 in the "Appendix" highlights the case of the Korean Wave and illustrates its relationships with emigration decisions from importing countries.

<sup>9</sup> Kennan and Walker (2011) estimate that psychological migration costs account for about two thirds of average annual income, or about 23,000\$ per year in monetary terms. Kennan and Walker (2011) do not label these costs as specifically "psychological"; rather their estimates are related to a bias in favor of the home location. This implies that, for instance, potential migrants will not move anywhere else unless they earn \$23,000 more than what they earn now. Since these estimates apply to internal migration within a large country where language, culture and political rights are broadly similar, it may be seen as the lower limit for the psychological cost of international migration.

<sup>10</sup> In "Appendix A1" we show that there is an empirical relationship between trade in cultural goods and the symmetric-time-invariant proxies of  $G_{i,n}$ , indicating that attractiveness is strongly correlated with similarity. 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 cultural affinity and to test to what extent cultural proximity towards a destination affects the migration choice over and above pre-existing cultural ties.



**Fig. 1** 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 at time  $t$ . The right panel reports yearly correlations while the left panel shows the correspondent fitted line for the pooled sample. The share is constructed as bilateral cultural exports over aggregate bilateral exports. We exclude from the sample potential outlier observations as the information that belongs to the first and the last 3 percentiles of the distributions are dropped

## 4 Model and econometric specification

### 4.1 Econometric specification

The econometric model can be expressed as: of bilateral cultural flows

$$\ln(M_{in,t}) = S_{i,t} + S_{n,t} + S_{in} + \ln(Xcult_{ni,t}) + \ln(Q_{in,t}) + u_{in,t} \quad (2)$$

where  $Xcult_{ni,t}$  is the bilateral exports of cultural goods from the destination country  $n$  to the country of origin  $i$  at time  $t$ .  $Q_{in,t}$  is the bilateral stocks of emigrants born in  $i$  and resident in  $n$  at time  $t$ ; it is included to proxy for migrant networks (diaspora) that reduce the cost of moving to destination country  $n$ . Networks may also be an indicator of cultural proximity because larger immigrant communities are likely to be associated with common cultural characteristics between hosting and origin countries. They can also be agents of change by transferring information. Our econometric specification is rich enough to be consistent with more general distributional assumptions of the error term  $u_{in,t}$  (see Beine et al., 2015). The inclusion of  $S_{i,t}$  and  $S_{n,t}$ —which are respectively, origin-year and destination-year fixed effects—completely absorbs the impact of monadic (country-specific) determinants of international migration, such as conflicts as well as demographic, socio-political and environmental factors. In addition, these fixed effects allow us to account for the so-called *multilateral resistance to migration*. Put in other terms, it is possible to capture the impact of the influence that the attractiveness of possible other destinations

exerts on the decision to migrate to a given destination.<sup>11</sup> In particular, the variable  $S_{n,t}$  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. 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 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”). This may not be entirely captured by the time invariant proxies of  $G_{in}$  commonly used in the literature to control for moving costs, such as colonial ties or linguistic, religious and geographical distance. This implies that failing to account for initial conditions may lead to biased estimates due to omitted variable bias (see Baier & Bergstrand, 2007).  $S_{in}$  completely absorbs the cross-sectional variability in our sample. Hence, we are able to focus on the impact of the time contingent cultural factors alone.
- The inclusion of dyadic fixed effects restores the cross-sectional independence of the error terms (see Bertoli & 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 Eq. (6). For instance, the impact of a more restrictive visa policy towards Moroccans in the UK will affect the relative attractiveness of other potential destinations which we realistically assume to be highly dependent upon 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.

## 4.2 Endogeneity concerns

An issue arising when estimating Eq. (2) is the potential endogeneity of trade in cultural goods. The main concern is whether this covariate is correlated with an unobserved component. 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. This means that migrants

<sup>11</sup> Using migration rates or migration flows as dependent variable in our econometric specification will leave the results unaffected. The inclusion of origin\*time fixed effects in Eq. (2) makes the distinction between flows and rates irrelevant, as the set of dummies completely absorb the effect of origin specific variables, including population at the origin—which is the denominator of bilateral migration rates.

may promote trade with their country of origin as well as cultural convergence (see for instance Gould, 1994; Rapoport et al., 2020).<sup>12</sup>

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 relationship between cultural exports and emigration through the inclusion of country-pair fixed effects. To the best of our knowledge, this is among the first contributions to apply a gravity model to international migration which combines 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 further alleviate the problems associated with omitted variable bias we include bilateral imports as well as non-cultural exports in the specification (see Table 8), which partially control for time varying bilateral contacts between destination and origin.
- In line with Aleksynska and Peri (2014), we use the fact that the value of bilateral trade labeled as “cultural” according to UNCTAD classification,  $Xcult_{ni,t}$ , is equal to the aggregate bilateral trade  $X_{ni,t}$  multiplied by the correspondent share of bilateral cultural flows  $\alpha_{ni,t}$ . Specifically,  $Xcult_{ni,t} = \alpha_{ni,t} * X_{ni,t}$ . Hence, by taking logs and using log properties, we can separate the effect into two terms:  $ln(Xcult_{ni,t}) = ln(X_{ni,t}) + ln(\alpha_{ni,t})$ . 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.<sup>13</sup> Second, in our pooled OLS setting, aggregate bilateral trade absorbs common factors that affect aggregate trade and migration. This allows us to isolate and disentangle the extra impact of cultural products on migration flows within the same specification.
- 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 other controls such as the impact of immigrant stocks ( $Q_{in,t}$ ), in line with the analysis of Beine and Parsons (2015).<sup>14</sup>

<sup>12</sup> Another potential source of endogeneity is measurement error which is addressed in Sect. 5.2.

<sup>13</sup> 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.

<sup>14</sup> 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 addition, Beine et al. (2011) and Beine and Parsons (2015) address the potential endogeneity of bilateral stocks of emigrants with an IV strategy and by augmenting the gravity specification with variables which are both correlated with the error term and with the stocks of migrants, respectively. Reassuringly, their findings confirm the exogeneity of their predetermined network effect.

- 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), which are applied by the importer and the corresponding imputed tariff revenues. As far as we know, we are the first to implement an IV strategy to study the relationship between cultural proximity and migration flows.<sup>15</sup> 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 postulate that governments set the level of tariffs to affect only trade flows, but not migration inflows. The first stage statistics along with Fig. 2 provide some empirical support to this statement, as the under identification, the reduced form and weak identification tests conducted and presented in Table 4 all point to the strength and the validity of the instruments. Hence, we plausibly assume the relationship between tariffs and migration as *indirect* i.e. running from the tariff-related instruments through the endogenous variable.

### 4.3 Data

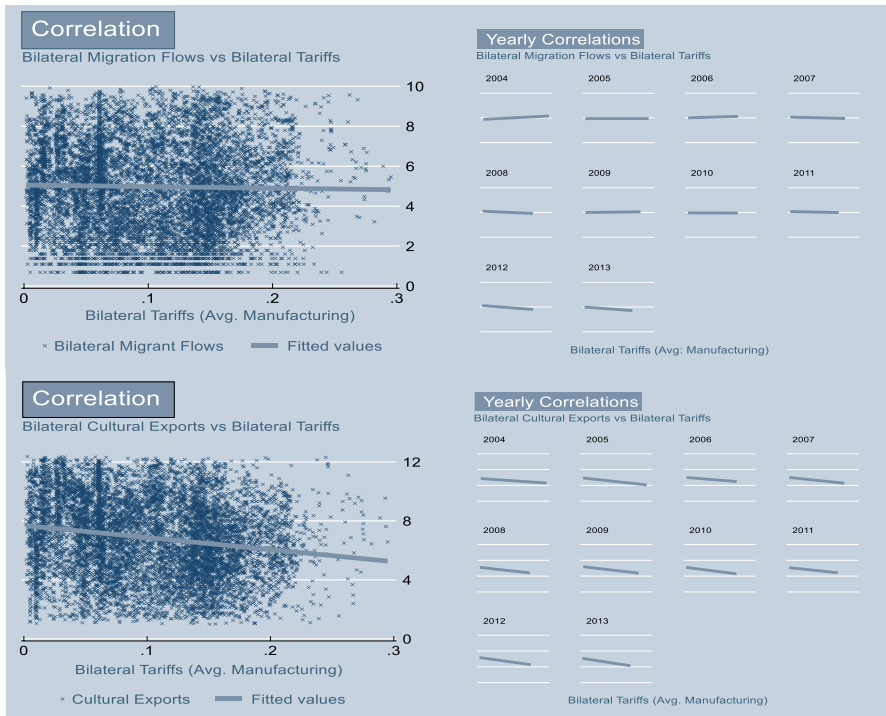
The analysis uses data on 30 OECD countries of destination and on 185 countries of origin in the period 2004–2013.<sup>16</sup> The sample composition is similar to the work of Adserà and Pytliková (2015). It is more comprehensive than other contributions that focus on the impact of cultural proximity on migration decisions, such as Belot and Ederveen (2012). 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 reasons why we prefer this classification as the main workhorse for our empirical analysis, while in Table 13 we list all of 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

<sup>15</sup> 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).

<sup>16</sup> The sample refers to the specification with the full set of fixed effects (Column 3 in Table 2).



**Fig. 2** Correlation between average bilateral tariffs at time  $t-1$  in the manufacturing (in %) and **a** log of cultural exports at time  $t-1$  (bottom panel) and **b** log of bilateral migration outflows at time  $t$  (upper panel). The right panels report yearly correlations while the left panels show the correspondent fitted line for the pooled sample. We exclude from the sample potential outlier observations as the information that belongs to the first and the last 3 percentiles of the distributions are dropped. The correlations refer to the smaller IV sample which includes 148 countries of origin and 22 countries of destination for the period 2004–2013

across EORA manufacturing sectors.<sup>17</sup> 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.<sup>18</sup> 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 who are resident

<sup>17</sup> 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.*

<sup>18</sup> 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.

**Table 1** Summary statistics

Sample Variable	Full			IV		
	Mean	Median	SD	Mean	Median	SD
$\ln(EM_{in,t})$	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	–	–	–
Colony <sub>in</sub>	0.047	0	0.212	–	–	–
Lang <sub>in</sub>	0.120	0	0.325	–	–	–
Comleg <sub>in</sub>	0.222	0	0.415	–	–	–
AvgTariffs <sub>in,t-1</sub>	–	–	–	0.104	0.101	0.066
$\ln(TariffsRev_{ni,t-1})$	–	–	–	4.284	4.322	2.967
Obs	15,062	15,062	15,062	10,369	10,369	10,369

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. The statistics reported in Columns (1–3) refer to the baseline sample of Table 2, while Columns (4–6) report the correspondent summary statistics of the IV sample (Table 4)

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 Pyliková (2015) and Melitz and Toubal (2014).

## 5 Results

### 5.1 Benchmark estimates

The estimates of Eq. (2) are presented in Table 2. We progressively allow for lower degrees of variability across specifications 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  $\ln(Xcult_{ni,t-1})$ , 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 of 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 & Parsons, 2015; Bertoli



**Table 2** Benchmark results: impact of cultural exports on the emigration rate

Estimator	(1)	(2)	(3)	(4)	(5)
	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*** (6.56)	0.072*** (6.56)	0.013** (2.26)	0.012** (2.19)	
$\ln(XNoncult_{ni,t-1})$				0.017 (1.29)	
$\ln(\alpha_{ni,t-1})$					0.012** (2.16)
$\ln(X_{ni,t-1})$					0.028** (2.01)
$\ln(Q_{in,t-1})$	0.553*** (13.01)	0.553*** (12.86)	0.092*** (3.26)	0.093*** (3.29)	0.098*** (3.28)
$\ln(dist_{in})$	-0.484*** (-9.67)	-0.489*** (-9.72)			
Colony <sub>in</sub>	0.369*** (2.90)	0.356*** (2.77)			
Lang <sub>in</sub>	0.391*** (4.79)	0.399** (4.64)			
Comleg <sub>in</sub>	0.094* (1.67)	0.091 (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				
$N$	15,062	15,062	15,062	15,062	15,062
Adj. 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.  $EM_{in}$  is the annual bilateral flows of emigrants from the importing country *i* to the exporting country *n*.  $Xcult_{ni}$  is the volume of exports of cultural goods from the migrant destination *n* (exporter) to the country of origin of migration *i* (importer). From the third to the fifth 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

& Fernandez-Huertas Moraga, 2015). This result corroborates with the 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 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 the time-varying determinants of migration remain significant despite the loss of identification power due to the large number of fixed effects introduced. 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 statistical 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 reverse 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*. The effect is not only statistically significant, but also quantitatively relevant. A simple back-of-the-envelope calculation shows that moving from the sample median to the 75th percentile of cultural exports, leads to around 165 more migrants per dyad. This roughly corresponds to an additional 29,343 international immigrants per destination, which is about 16% of the average number of migrants per destination in 2010. 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 41% increase in international migrants from 2000 to 2014 may at least partially be explained by a trend of cultural convergence associated with globalization.<sup>19</sup> Our results are consistent with such an interpretation. The last two Columns of Table 2 enrich the gravity specification by, respectively, adding non-cultural exports (Column 4) as additional control and decomposing exports in cultural products into the share of cultural products and total bilateral exports (Column 5). The findings suggest that only the time-variation of exports is positively associated with emigration flows, with the share of 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 & Tenreyro, 2006, 2011; Bertoli & Moraga 2015). In our sample the share of

<sup>19</sup> Source: UN data.

**Table 3** Robustness check: alternative estimators

Estimator	(1) PPML	(2) PPML	(3) PPML	(4) PPML	(5) EK Tobit	(6) GPML
Dependent Var.	EM <sub>in,t</sub>	EM <sub>in,t</sub>	EM <sub>in,t</sub>	EM <sub>in,t</sub>	ln(EM <sub>in,t</sub> )	EM <sub>in,t</sub>
ln( <i>Xcult</i> <sub>ni,t-1</sub> )	0.037 (1.53)	0.038 (1.58)	0.044*** (2.62)		0.095*** (6.12)	0.0874*** (8.66)
ln(α <sub>ni,t-1</sub> )				0.049** (2.84)		
ln( <i>X</i> <sub>ni,t-1</sub> )				-0.008 (-0.24)		
ln(Q <sub>in,t-1</sub> )	0.663*** (13.37)	0.669*** (16.26)	0.073* (1.74)	0.072* (1.74)	0.569*** (13.37)	0.528*** (19.47)
ln(dist <sub>in</sub> )	-0.405*** (-5.31)	-0.396*** (-5.40)			-0.396*** (-6.67)	-0.508*** (-11.45)
Colony <sub>in</sub>	0.196* (1.74)	0.186* (1.69)			0.596** (2.54)	0.535*** (4.72)
Lang <sub>in</sub>	0.127 (1.21)	0.132 (1.23)			0.360*** (3.26)	0.404*** (5.21)
Comleg <sub>in</sub>	0.245** (2.28)	0.234** (2.33)			0.164*** (2.10)	0.218*** (4.50)
ln(GDPpc <sub>n,t</sub> )	8.129*** (11.29)				1.157*** (16.77)	1.389*** (3.89)
<i>S</i> <sub>in</sub>		X	X	X		
<i>S</i> <sub>n,t</sub>		X	X	X		
<i>S</i> <sub>i,t</sub>	X		X	X	X	X
<i>S</i> <sub>n</sub>	X				X	X
<i>S</i> <sub>t</sub>	X				X	X
<i>N</i>	16,732	16,360	16,360	16,360	16,732	16,732
Adj. <i>R</i> -sq	0.90	0.94	0.98	0.99	0.990	0.91

*t* statistics in parentheses; \**p* < 0.10, \*\**p* < 0.05, \*\*\**p* < 0.01. Standard Errors are clustered by country pair. EM<sub>in,t</sub> is the annual bilateral flows of emigrants from the importing country *i* to the exporting country *n*. *Xcult*<sub>ni</sub> is the volume of exports of cultural goods from the migrant destination *n* (exporter) to the country of origin of migration *i* (importer). The PPML estimates are obtained with the STATA command *ppml\_panel\_sg* provided by Thomas Zylkin (see Larch et al. 2019 for more information on this STATA command) The observations which belong to groups with all zeros or missing values are automatically dropped.

zeros is rather small, it represents only 6% of the observations.<sup>20</sup> Despite some discrepancies in terms of magnitude with respect to the OLS counterparts, the PPML coefficients shown in Table 3 generally have the expected sign. More importantly,

<sup>20</sup> In the OECD International Migration Database missing values cannot be treated as zeros. While missing values are indicated by empty cells, zero values are indicated with 0. The missing information means data are not available (either not provided by the country, or not available at all). Zeros correspond either to actual zero flows or rather very small flows between country-pairs (see Mayda, 2010). Hence, missing observations in the migration dataset were dropped out of the sample, whereas zeroes are automatically not accounted for in the regressions when estimating the log-linear model, and included in the Poisson PML regression.

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 5–6) which accounts for the zero migration flows. Although we cannot compare the performance of these estimators with high dimensional fixed effects, we find it reassuring that the estimates are in line with the results presented in Table 2.<sup>21</sup>

The results presented in Tables 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 i.e. we assume that both tariff-related instruments affect migration indirectly i.e. only through their direct effect on the endogenous variable. Figure 2 provides some empirical support to this conjecture, as the average bilateral tariffs in manufacturing appear to be very weakly correlated to average migration flows.

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.<sup>22</sup> Table 4 reports the IV results. As expected, 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 indicates that the instruments are well identified. Then we use the Hansen J-statistic to test the exogeneity and we find a p-value equal to 0.46, which points to the validity of our set of IVs. 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 effect of both instruments on the dependent variable runs through the endogenous variable. Of course, bilateral tariffs in the manufacturing sector are also related with non-cultural trade flows. This relationship might weaken the validity of our set of instruments if non-cultural trade is related with emigration flows and not accounted for in our model (Eq. 2). To address this issue, we perform the IV analysis by including non-cultural exports as additional control in our specification (Columns 4–6). The statistics suggest that while the time-variation of non-cultural exports is correlated with cultural trade flows (Column 4), it does not significantly affect emigration from importing countries (Column 5). The latter

<sup>21</sup> The EK Tobit approach 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.

<sup>22</sup> The IV sample reduces the numbers to 22 countries of destination (exporter) and 169 countries of origin (importer).

Table 4 Robustness check: 2SLS results

Estimator	(1)	(2)	(3)	(4)	(5)	(6)
	HDFE IV (2SLS) Tariffs	First stage Tariffs	Reduced form Tariffs	HDFE IV (2SLS) Tariffs	First stage Tariffs	Reduced form Tariffs
Dependent Var.	$\ln(EM_{m,t})$	$\ln(Xcult_{m,t-1})$	$\ln(EM_{m,t})$	$\ln(EM_{m,t})$	$\ln(Xcult_{m,t-1})$	$\ln(EM_{m,t})$
$\ln(Xcult_{m,t-1})$	0.0176** (2.66)			0.0170* (2.57)		
$\ln(XNoncult_{m,t-1})$				0.0130 (0.94)	0.109* (1.91)	0.0133 (0.97)
$\ln(O_{m,t-1})$	0.113*** (3.42)	0.013 (1.39)	0.114*** (3.43)	0.113*** (3.42)	0.013 (1.39)	0.113*** (3.43)
$\ln(TarRev_{m,t-1})$		0.900*** (56.45)	0.0157** (2.65)		0.900*** (56.14)	-0.393 (-1.19)
AvgTariff <sub>m,t-1</sub>		-9.804*** (-8.885)	-0.390 (-1.18)		-9.802*** (-9.85)	0.0152* (2.56)
$S_{I,m}$	X	X	X	X	X	X
$S_{m,t}$	X	X	X	X	X	X
$S_{I,t}$	X	X	X	X	X	X
N	10,369	10,369	10,369	10,369	10,369	10,369
1st stage statistics						
Underidentification test						
Kleibergen-Paap LM Stat, Chi-Sq(2)			502.78		502.78	
Weak Identification test						
Cragg-Donald, Wald F Stat			41,744.97		41,744.97	
Kleibergen-Paap Wald F Stat			1755.24		1755.24	
Over identification test			0.535		0.535	

**Table 4** (continued)

Estimator	(1)	(2)	(3)	(4)	(5)	(6)
Set of instruments	HDFE IV (2SLS) Tariffs	First stage Tariffs	Reduced form Tariffs	HDFE IV (2SLS) Tariffs	First stage Tariffs	Reduced form Tariffs
Dependent Var.	$\ln(EM_{int})$	$\ln(Xcult_{ni,t-1})$	$\ln(EM_{int})$	$\ln(EM_{int})$	$\ln(Xcult_{ni,t-1})$	$\ln(EM_{int})$
Hansen J Stat			Chi-sq(1) $p$ -val = 0.4647			Chi-sq(1) $p$ -val = 0.4647

$t$  statistics in parentheses

$EM_{in}$  is the annual bilateral flows of emigrants from the importing country  $i$  to the exporting country  $n$ .  $Xcult_{ni}$  is the volume of exports of cultural goods from the migrant destination  $n$  (exporter) to the country of origin of migration  $i$  (importer). The 2SLS estimates are obtained with the STATA command *ivreghdfe* 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  $AvgTariff_{ni,t-1}$  (Source: WITS World Bank data) and the log of the imputed value of tariff revenues of imported cultural products  $\ln(TarRev_{ni,t-1})$ .

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . Standard Errors are clustered by country pair

finding is in line with the baseline estimates reported in Column 5 of Table 2. All in all, the IV results essentially confirm the positive relationship that emerges from our baseline estimates and add consistency to our predictions on the importance role of cultural changes in the emigration decision.<sup>23</sup>

## 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 CP has many advantages 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 perceived 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 a third country's cultural content embedded in the fashion design that is performed before manufacturing takes place in France (see Fiorini et al. 2021). 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 increased 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.<sup>24</sup>

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. They are therefore likely to better capture proximity in cultural tastes. However, as noted in "Appendix A3", 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

<sup>23</sup> To further address reverse causality, we use the premium assigned by a trading partner to a country's non-cultural production as an instrument for cultural exports. We take inspiration from the strategy originally proposed by Frankel and Romer (1999) and construct the instrument based on deviations from a country's 'Natural Openness' to trade. 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 cultural premium assigned to a country's cultural production by an economic partner (see Fiorini et al. 2021). Hence, subtracting the cultural premium from the deviations of total trade gives us a measure of the premium assigned to a country's non-cultural production. The validity of this IV hinges again on the evidence about the absence of statistically significant correlation between the time variation of non-cultural trade and emigration from importing countries. The results (available upon request) are very close our baseline findings, which we find reassuring.

<sup>24</sup> 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>



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 refined/accurate alternative measure of cultural proximity (see "Appendix A3" for more details on these product categories). The idea behind this is that newspapers are less subject to the global value chain bias described above, as their production is not dislocated to foreign countries. This therefore minimizes the potential concerns regarding the measurement error introduced by the gross nature of cultural trade. The results point to a positive relationship between cultural changes and emigration, which corroborate our baseline estimates.

### 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 cultural proximity on emigration for different levels of pre-determined cultural affinity and stages of economic development.

We first divide our sample according to the degree of cross-country cultural affinity based on linguistic and genetic distance (Columns 1–4) as well as the average volume of cultural exports (Columns 5–6). In order to preserve enough identification power and to attenuate the selection bias we split the sample into, respectively, almost identical subgroups using the median of *fst\_distance\_dominant* from Adsera and Pytlikova (2015), *lp2* from Melitz and Toubal (2014) and the average value of cultural exports over our period of interest, respectively.<sup>25</sup> Taken together, the results suggest that time contingent shocks to cultural proximity only play a role when historical cultural similarities between country pairs are relatively weak. 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.<sup>26</sup> In particular, the evidence is consistent with a relationship of

<sup>25</sup> 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.

<sup>26</sup> The use of a squared term is often suggested in the literature to detect non-linearities. However, recent econometric studies show that the use of a squared term often leads to misleading results and false conclusions (e.g. Lind and Mehlum, 2010). While we rely on sampling split as the preferred strategy to detect non-linearities, we also included the quadratic term of VACP and found a non-linear (inverted-U-shape) relationship between cultural proximity and emigration rates. The results are roughly in line with the findings presented in Table 6 i.e. while a positive relationship emerges for culturally distant country-pairs, the effect of VACP progressively dies away as countries become culturally closer. The estimates are available upon request.

**Table 5** Robustness check: UNCTAD versus UNESCO classification

Estimator	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS
Classification	UNCTAD	UNCTAD	UNCTAD	UNESCO	UNESCO
	2004–2013	2004–2013	2004–2013	2008–2013	2008–2013
	Core + optional	Newspaper	Newspaper	Core	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*** (6.56)	0.029** (3.31)	0.009* (1.97)	0.068*** (7.11)	
$\ln(\alpha_{ni,t-1})$					0.057*** (0.06)
$\ln(X_{ni,t-1})$					0.121*** (5.23)
$\ln(Q_{in,t-1})$	0.553*** (12.86)	0.546*** (11.28)	0.073* (2.23)	0.574*** (13.20)	0.569*** (12.97)
$\ln(dist_{in})$	-0.489*** (-9.72)	-0.502*** (-8.78)		-0.456*** (-8.90)	-0.382*** (-7.66)
$Colony_{in}$	0.356** (2.77)	0.356** (2.77)		0.217 (1.86)	0.165 (1.46)
$Lang_{in}$	0.399** (4.64)	0.386** (2.92)		0.332*** (4.09)	0.368*** (4.67)
$Comleg_{in}$	0.091 (1.62)	(0.092) (1.62)		0.090 (1.77)	0.078 (1.45)
$S_{i,n}$			X		
$S_{n,i}$	X	X	X	X	X
$S_{i,t}$	X	X	X	X	X
$N$	15,062	12,366	11,798	8315	8268
$R-sq$	0.90	0.90	0.98	0.90	0.90

*t* statistics in parentheses

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . Standard Errors are clustered by country pair.  $EM_{in}$  is the annual bilateral flows of emigrants from the importing country  $i$  to the exporting country  $n$ .  $Xcult_{ni}$  is the volume of exports of cultural goods from the migrant destination  $n$  (exporter) to the country of origin of migration  $i$  (importer). 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

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 Columns (7–8) we test whether positive shocks in CP influence migration between country-pairs at different stages of development. To do so, we split the sample according to what is typically classified as North–North vs South–North migration and define as North countries all the member states of the OECD included in our sample. Interestingly, the estimates suggest that the effect of the time-variation of cultural proximity comes from South–North migration. In other words, a positive shock of VACP—other factors held constant—raises emigration towards countries characterized by larger income differentials. While this finding corroborates the results reported in Columns (1–6)—as we expect that the cultural distance between OECD countries and non-OECD countries may be larger than between OECD countries—it also suggests that the role of cultural proximity in reducing moving costs appears to be particularly important in developing countries, where budgetary and credit constraints are more binding. Finally, when looking at the impact of diaspora across sub-samples, it appears to be stronger for North–North migration. This result is in line with the literature on the role of networks in micro-founded gravity models, as the elasticity of the stock of emigrants generally increases when focusing on emigration towards OECD destinations (see Beine et al. 2015). In addition, we do not consider this evidence at odds with our hypothesis—given that a larger diaspora coefficient might be explained by the skill composition of networks (Felbermayr & Jung, 2009), for which we do not have data that fully cover our sample’s time-span.<sup>27</sup>

While in this study we are employing cultural exports mainly as a proxy for “revealed cultural preferences”, we are not ruling out the cultural transmission channel of cultural trade (Maystre et al. 2014), i.e. that cultural content embodied in cultural goods can transmit and diffuse information on values, beliefs, habits and cultural traits of migrant destinations in importing countries. This process would in turn lead to a rise in emigration from importing countries through a progressive cultural alignment between origin and destination countries. In Table 7 we explore more closely this potential long-lasting role of trade in 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).<sup>28</sup> For instance, the effect of traded movies on cross-country

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<sup>27</sup> To the best of our knowledge the only dataset that provides information on bilateral stocks of emigrants at different skill levels is Brücker et al. (2013). However, that dataset is restricted to a very limited number of OECD destinations and the data are available only for 5-year intervals. Hence, it would be of limited use for the purpose of our analysis.

<sup>28</sup> 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 might think. Indeed, in 2005, only 16% of the entire world population used the internet; the figure only increased to 40% by 2014 (Source: International Telecommunications Union). Digital transactions (i-tunes, Netflix)—not accounted for in the classification of cultural goods—and the use of internet rapidly increased over the last 10 years. Hence, we believe it’s “safer” to focus on the time span covered in our sample 2004–2013—rather than relying on more recent data—as it lowers the risk of measurement error, i.e. variations in the demand of cultural goods from a given country of (migrant) destination better reflects variations on preferences/attractiveness for the culture of that country.

**Table 6** Extension: countries' development status and initial cultural similarities

Estimator	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS	(7) OLS	(8) OLS	
Pre-determined	Linguistic	Linguistic	Genetic	Genetic	Cultural exports CEPII	Cultural exports CEPII	Origin countries' development status	OECD	Non-OECD
Cultural distance									
Source	MT (2014)	MT (2014)	AP (2015)	AP (2015)					
Class	0–50th	51st–100th	0–50th	51st–100th	0–50th	51st–100th	North–north	South–north	
$\ln(X_{cult_{it,t-1}})$	0.008 (1.11)	0.022** (2.76)	0.007 (0.89)	0.017** (2.33)	–0.00762 (–0.60)	0.017* (2.40)	–0.001 (–0.09)	0.014* (2.35)	
$\ln(Q_{in,t-1})$	0.087** (2.43)	0.096** (2.80)	0.092*** (2.41)	0.103** (2.45)	0.0516 (1.37)	0.105** (2.68)	0.224** (3.02)	0.082** (2.84)	
$S_{i,n}$	X	X	X	X	X	X	X	X	X
$S_{n,i}$	X	X	X	X	X	X	X	X	X
$S_{i,i}$	X	X	X	X	X	X	X	X	X
<i>N</i>	6837	6965	7371	6950	7247	7249	3748	11,313	
<i>R</i> -sq	0.98	0.98	0.98	0.98	0.97	0.97	0.97	0.97	

$EM_{in}$  is the annual bilateral flows of emigrants from the importing country  $i$  to the exporting country  $n$ .  $X_{cult_{it}}$  is the volume of exports of cultural goods from the migrant destination  $n$  (exporter) to the country of origin of migration  $i$  (importer). In Columns (1–6) samples are defined according to the median value of pre-determined genetic distance (based on  $fst\_distance\_dominant$ ) from Adsera Pytlíkova (2015), linguistic distance (based on  $lp2$ ) from Melitz and Toubal (2014) and the average value of cultural exports over our period of interest. In Columns (7–8) we define as North countries all countries that were member states of the OECD. The models are estimated with OLS and includes country-pair FEs.

*t* statistics in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . Standard Errors are clustered by country pair

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

$$CumXcult_{ni,t} = \sum_{t-1}^{t-s} Xcult_{ni,t} \quad (3)$$

This strategy allows at the same time to attenuate the distortion due to business cycle factors and measurement error associated with 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.

Table 8 deals with the asymmetric dimension of time-contingent variations of cultural proximity in the context of international migration. To do so, we add imports of cultural goods to our gravity specification. We start with a parsimonious specification including only cultural imports in the model (Column 1), then progressively add other variables, namely imports of non-cultural goods (Column 2), exports of cultural (Column 3) and non-cultural goods (Column 4). Generally, the evidence indicates that the asymmetric component of VACP matters. Taken together, the results suggest that only the time-variation of cultural exports have a positive and significant effect on emigration from importing countries—i.e. the preference of the individuals in the importing country for the exporter’s culture appears to be the only direction of cultural proximity that influences emigration decisions from importing countries. In other words—according to our conceptual framework—while a rise of, say, cultural affinity for Mexicans towards US culture leads to higher emigration to the US, the time variation of US preferences for Mexico’s culture does not appear to affect Mexicans’ emigration decisions. Finally, when restricting the analysis to the within variation of country-pairs both directions of trade in non-cultural products do not influence emigration flows.

## 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 Treffer (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 adopted in international migration gravity models—is that cultural proximity is 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 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) and Fiorini et al. (2021), 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 context of international 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 explaining 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 instrumental variables. Interestingly, when decomposing total exports between cultural and non-cultural flows, we find that the time variation of cultural exports seems to have a much more prominent role in explaining international migration patterns. This finding not only supports the validity of cultural exports as a proxy for VACP—whose impact on reverse emigration goes over and beyond the effect of aggregate trade flows—but also complements previous research on the trade-migration link (e.g. Campaniello, 2014) by distinguishing different types of trade flows. More specifically, when restricting the analysis to the within variation of country-pairs, trade in non-cultural products does not appear to influence emigration decisions from countries of origin. Furthermore, our findings suggest that the reverse channel of VACP—proxied by cultural imports—does not explain emigration flows. In other words, only the time variation of migrant preferences for destination's culture appears to affect emigration decisions. This result supports our theoretical considerations and corroborates the findings of Fiorini et al. (2021) and Felbermayr and Toubal (2010) on the asymmetric nature of cultural proximity. Finally, the positive impact of cultural proximity is

**Table 7** Extension: impact of “Cumulative” cultural exports on the emigration rate

Estimator	(1) OLS	(2) OLS	(3) OLS
Dependent Var.	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$
$\ln\left(\sum_{t-1}^{t-s} Xcult_{ni,t-1}\right)$	0.073*** (5.11)	0.028* (2.45)	0.038** (2.40)
$\ln(X_{in,t-1})$	0.044*** (4.15)	-0.000 (-0.13)	-0.000 (-0.16)
$\ln(Q_{in,t-1})$	0.544*** (12.47)	0.093** (3.24)	0.093*** (3.22)
$\ln(dist_{in})$	-0.450*** (-9.02)		
Colony <sub>in</sub>	0.340*** (2.70)		
Lang <sub>in</sub>	0.409** (4.82)		
Comleg <sub>in</sub>	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
$N$	14,909	14,909	14,909
$R-sq$	0.90	0.98	0.98

*t* statistics in parentheses

$EM_{in}$  is the annual bilateral flows of emigrants from the importing country  $i$  to the exporting country  $n$ .  $Xcult_{ni}$  is the volume of exports of cultural goods from the migrant destination  $n$  (exporter) to the country of origin of migration  $i$  (importer). 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.

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . Standard Errors are clustered by country pair

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. The latter finding sheds some light on the positive role of trade integration



**Table 8** Extension: asymmetric cultural proximity

Estimator	(1) OLS	(2) OLS	(3) OLS	(4) OLS
Dependent Var	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$
$\ln(Xcult_{in,t-1})$	0.00876 (1.32)	0.00867 (1.29)	0.0101 (1.54)	0.0101 (1.54)
$\ln(XNoncult_{in,t-1})$		0.00772 (0.98)	- 0.000965 (- 0.12)	- 0.000965 (- 0.12)
$\ln(Xcult_{ni,t-1})$			0.0151** (2.42)	0.0151** (2.42)
$\ln(XNoncult_{ni,t-1})$			0.0181 (1.25)	0.0181 (1.25)
$\ln(Q_{in,t-1})$	0.101*** (3.11)	0.101*** (3.09)	0.0969*** (2.97)	0.0969*** (2.97)
$S_{i,n}$	X	X	X	X
$S_{n,t}$	X	X	X	X
$S_{n,t}$	X	X	X	X
$N_s$	13,636	13,590	12,907	12,907
$R-sq$	0.97	0.98	0.98	0.98

*t* statistics in parentheses

$EM_{in}$  is the annual bilateral flows of emigrants from the importing country  $i$  to the exporting country  $n$ .  $Xcult_{ni}$  is the volume of exports of cultural goods from the migrant destination  $n$  (exporter) to the country of origin of migration  $i$  (importer).  $Xcult_{in}$  is the volume of imports of cultural goods from the migrant origin  $i$  (importer) to the migrant destination (exporter)

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . Standard Errors are clustered by country pair

in cultural goods in favoring migration through a progressive cultural alignment between origin and destination countries.

This paper leaves interesting avenues for policy analyses and future research. First, more disaggregated analyses would constitute an important step towards arriving at more nuanced policy conclusions. For instance, exploring how the effect of cultural shocks on migration decisions vary with the level of importing countries' cultural heterogeneity would help providing a more detailed picture of the link between cultural proximity and migration decisions. This of course implies relaxing the assumption of within-country cultural homogeneity. Further, empirical research is also needed to better understand how positive variations of cultural proximity influence emigration at different skill levels. One would expect a larger impact on the highly skilled, those who are more used to diversity and plausibly more open to external values. Second, 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 should be conducted to understand the role of the trade in cultural goods in shaping cultural values and triggering cultural convergence. Lastly, policies and programmes aimed at promoting national cultures

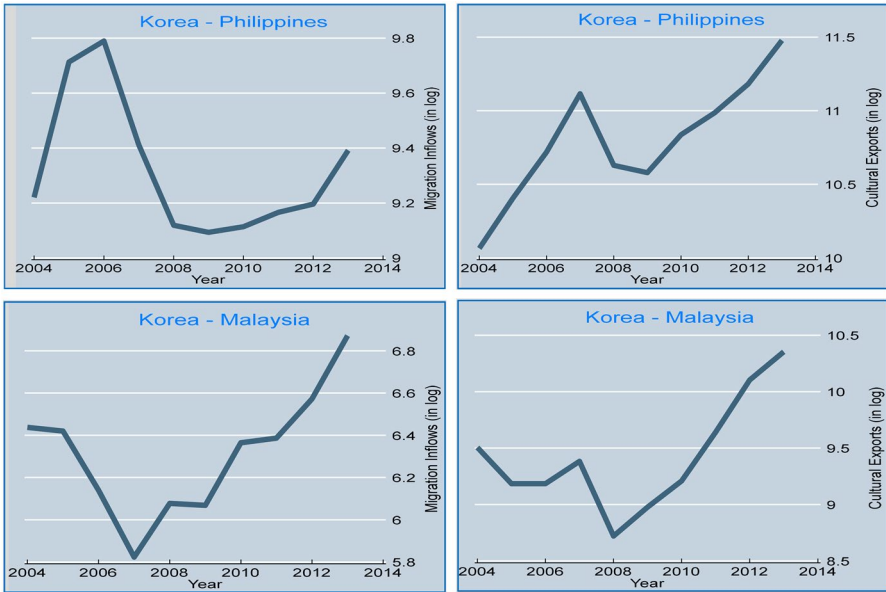
in foreign countries (e.g. Korea) may have unintended consequences on the expected costs associated with migrant integration. By lowering the psychological and moving costs associated with adjusting to a new cultural environment, these policies can potentially reduce future integration costs in destination countries as emigrants adapt more easily to the values and habits of the hosting communities (Berry, 1980).

## Appendix: Cultural change and the migration choice

See Box 1 and Fig. 3.

### Box 1 The Korean wave “Hallyu”

The case of the so-called Korean Wave (Hallyu) illustrates how positive shocks of CP, which do not depend on pre-existing cultural ties, proxied by cultural exports can lead to more intense bilateral economic exchanges and larger migration flows. Despite the absence of either a common cultural, religious, or linguistic background, the 2000s experienced an unprecedented penetration (and appreciation) of Korean soap operas and pop music (K-pop) in foreign countries. This occurred especially in South East Asia over the period 1999–2010 and more recently in South America. Observers have started to identify a connection between the Korean Wave’s success and more intense economic relationships. For instance, Chang and Lee (2018) found that exports of Korean TV shows are strongly correlated with an increase in Korean exports of clothes and cosmetics, targeting consumers more exposed to Korean cultural content. According to our hypothesis, the same mechanisms apply to international migration: the popularity (and greater appreciation) of the Korean culture in the importing country is likely to affect the selection process of emigrant destinations, resulting in larger emigration flows to Korea. Castles et al. (2015) employ the popularity of Korean culture as an alternative indicator of cultural distance using the number of views by each country of K-pop singer “Psy’s Gentleman’s” music video on YouTube. They postulate that the shorter the cultural distance, the more popular the Korean wave is in the country of origin, and the greater the possibility of international migration to Korea. They found evidence of a positive association between the popularity of the Korean culture in the sending country and emigration to Korea. We cannot include Korea in our sample, as we don’t have information on the bilateral stocks of emigrants living in Korea from the same source (OECD). However, we can still provide some evidence on the correlation between the variation of Korean cultural exports and the evolution of reverse bilateral emigration flows to Korea over time. Figure B1 illustrates this case study for selected South-East Asian countries that are both geographically as well as culturally distant from Korea, namely The Philippines and Malaysia. These Asian countries of origin were selected following the breakthrough and extreme popularity of the Korean Wave in Asia until 2010, which roughly coincide with our period of interest. The trends over time show that an increase in cultural exports to those countries is associated with a rise in reverse emigration flows. Of course, the positive relationship that emerges from these trends might be due to time and country specific factors that are not controlled for. To this matter, we regress dyadic emigration flows to Korea from all sending countries on bilateral cultural exports by including origin and year fixed effects. The model is estimated with OLS and the coefficients are reported in Table 10. The results support our hypothesis on the effect of the Korean wave on the selection process in the choice of migration destinations: the more popular the Korean wave is in the sending countries through larger volumes of cultural exports, the more emigrants choose South Korea as their preferred destination.



**Fig. 3** Korean cultural exports to selected Asian countries and immigration flows. *Notes* Correlation between Korean cultural exports to Philippines (top panel) and Malaysia (bottom panel) and the evolution of reverse bilateral emigration flows to Korea over time

**Table 10** Korean cultural exports and immigration flows

Estimator	(1) OLS	(2) OLS
Dependent Var	$\ln(EM_{in,t})$	$\ln(EM_{in,t})$
$\ln(Xcult_{in,t})$	0.0657*** (3.35)	
$\ln(X_{ni,t})$		0.166*** (4.97)
$\ln(Share_{ni,t})$		0.0436* (2.16)
<i>N</i>	1673	1673
<i>S<sub>n</sub></i>	X	X
<i>S<sub>t</sub></i>	X	X

*t* statistics in parentheses. Robust Standard Errors are included  
 \* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The table shows the effect of Korean cultural exports from reverse migration from importing countries. The share of cultural exports is defined as in Table 2

## A1 Link between cultural trade and time invariant proxies for cultural proximity

In this Section, similarly to Felbermayr and Toubal (2010) and Guiso et al. (2009), we show that imports of cultural goods reflect time-invariant components of cultural similarities. We also argue that their time and within country-pair variance are strongly associated to the broad definition of cultural proximity proposed by sociologists (see Felbermayr & Toubal, 2010).

Table 11 shows pairwise correlation coefficients between Imports of Cultural goods and standard pre-determined measures of cultural similarities. Among these measures we include the log of weighted distance, a dummy for a common colonial past (CEPII) and measures of linguistic and genetic distance from Adserà and Pytliková (2015). In addition we compute correlations with measures of the size of networks (OECD) along with the religious distance and the composite Hofstede Index from Belot and Ederveen (2012). In particular, this composite Index has been one of the main workhorses for the empirical test of the impact of cultural affinity on economic exchanges such as trade and FDI (see for instance Fiorini et al. 2021), but other than being at the same time pre-determined and symmetric, has the drawback of covering a fairly limited sample. The correlation coefficient between both cultural imports measures and the conventional proxies of cultural and geographical proximity all have the right sign and are statistically different from zero.

Table 12 reports the results of a simple regression which closely resembles to the gravity models proposed by Disdier et al. (2010) where trade in cultural goods is explained by time invariant measures of cultural similarities. Compared to Table 12 we also include imports of non-cultural goods among the explanatory variables. Interestingly, while all measures are strongly related to cultural imports in pairwise correlations, the regression analysis shows that religious and genetic distance as well

**Table 11** Correlation coefficients between different measures of static cultural proximity

	$\ln(\text{ImpCultLevel}_{ni,t})$
$\ln\text{GeoDist}_{in}$	<b>-0.499***</b>
$\text{LangProx}_{ni}$	<b>0.357***</b>
$\text{ReligionDist}_{in}$	<b>-0.195***</b>
$\ln(\text{ImmStock}_{in,t})$	<b>0.724***</b>
$\text{Hofstede}_{in}$	<b>-0.245***</b>
$\text{GeneticDist}_{in}$	<b>-0.148***</b>
$\text{Colony}_{ni}$	<b>0.165***</b>

Number of observations: 2210

The pairwise correlations are between imports of cultural goods and geographical, linguistic and genetic distance, a dummy for common colonial past (CEPII). Among the proxies for cultural proximity we also included religious distance and the Hofstede Index from Belot and Ederveen (2012). Given the relatively small country coverage of the Religious Distance and the Hofstede Index database the sample is limited to 19 OECD countries

\*\*\*Denotes that coefficient is different from zero at 1% level of significance

**Table 12** Explaining trade in cultural goods

Estimator	OLS
Dep. Variable	$\ln(\text{ImpCultLevel}_{ni,t})$
$\text{ImpNoCult}_{in,t-1}$	<b>0.584</b> <sup>***</sup> (6.84)
$\ln\text{GeoDist}_{in}$	<b>-0.659</b> <sup>***</sup> (-6.80)
$\text{LangProx}_{in}$	<b>0.556</b> <sup>***</sup> (2.73)
$\text{ReligionDist}_{in}$	-0.036 (-0.20)
$\ln(\text{ImmStock}_{in,t})$	0.051 (1.23)
$\text{Hofstede}_{in}$	<b>-0.733</b> <sup>***</sup> (-3.20)
$\text{GeneticDist}_{in}$	-0.001 (-0.67)
$\text{Colony}_{in}$	<b>0.342</b> <sup>*</sup> (1.82)
$S_{n,t}$	X
$S_{i,t}$	X
$N$	2210
$R\text{-sq}$	0.93

$t$  statistics in parentheses; \* $p < 0.05$ ; Standard Errors are clustered by country pair. The model includes the intercept and importer-year, as well as exporter-year fixed effects. The dependent variable is bilateral aggregate imports of cultural goods (BACI, CEPII) which is regressed on geographical, linguistic and genetic distance, and a dummy for common colonial past (CEPII). Among the covariates we included religious distance and the Hofstede Index from Belot and Ederveen (2012). Given the relatively small country coverage of the Religious Distance and the Hofstede Index database the sample is limited to 19 OECD countries

as the size of the network does not matter for trade in cultural products. This might be due to the large impact of the Hofstede Index which plausibly captures much of the impact of other measures of cultural similarities. The results clearly indicate that Imports of cultural goods greatly depend on pre-determined components of cultural similarities.

## A2 definition and sources

See Table 13.

**Table 13** Definition and sources of variables used in the empirical analysis

Variable	Short description	Source
<i>Dependent variable</i>		
$\ln(\text{EMrate}_{nit})$	Bilateral flows of emigrants over population of country of origin	OECD—international migration database (migrants) and world bank (population)
<i>Explanatory variables</i>		
$\ln(X\text{cult}_{nit-1})$	Cultural trade flows in current US\$ from n to i at time t-1	BACI, CEPII
$\ln(X\text{Noncult}_{nit-1})$	Non-cultural trade flows in current US\$ from n to i at time t-1	BACI, CEPII
$\ln(\alpha_{nit-1})$	Share of Cultural trade flows over total trade flows from n to i at time t-1	BACI, CEPII
$\ln(X_{nit-1})$	Total trade flows in current US\$ from n to i at time t-1	BACI, CEPII
$\ln(X\text{cult}_{nit-1})$	Cultural trade flows in current US\$ from n to i at time t-1	BACI, CEPII
$\ln(X\text{Noncult}_{nit-1})$	Non-cultural trade flows in current US\$ from n to i at time t-1	BACI, CEPII
$\ln(Q_{nit-1})$	Stock of migrants born in country n and resident in country i at time t-1	OECD—International Migration Database
$\ln(\text{dist}_{in})$	Weighted distance (var: <i>distw</i> )	CEPII
Colony <sub>in</sub>	Dummy = 1 if country pair ever in a colonial relationship, 0 otherwise (var: <i>colony</i> )	CEPII
Lang <sub>in</sub>	Dummy = 1 if country pair have the same language spoken by at least 9% of the population, 0 otherwise (var: <i>comlang_ethno</i> )	CEPII
Comleg <sub>in</sub>	Dummy = 1 if country pair have the same common legal origin before transition (comleg_pretrans)	CEPII
$\ln(\text{GDPPc}_{nit-1})$	GDP per capita at destination at t-1 expressed in PPP constant US\$ (2011 prices)	World Bank
<i>Instrumental variables</i>		
Tariffs <sub>nit</sub>	Average level of bilateral tariffs applied by the importers in the manufacturing (%)	WITS, World Bank
$\ln(\text{TarRev}_{nit})$	Imputed Tariff Revenues obtained applying average bilateral tariffs in the manufacturing to exports of cultural goods	WITS, World Bank, CEPII
<i>Proxies of time invariant CULTURAL PROXIMITY used in Table 4</i>		
Lp2	Linguistic proximity measure based on the Ethnologue classification of language trees between trees, branches and sub-branches	Melitz and Toubal (2014)
fst_distance_dominant	Fst genetic distance, weighted, current Match	Adsera Pytlikova (2015)

### A3 UNCTAD versus UNESCO classifications

A crucial issue for our analysis concerns the definition of what products can be considered as “cultural goods”. Two alternative classifications for cultural goods have been proposed by two different United Nations Organizations (UNESCO and UNCTAD), each of them based on slightly different criteria and different categories of goods to be included. As opposed to Disdier et al. (2010)—who classified cultural/creative goods according to the definition promoted by UNESCO—we rather adopt the scheme proposed by UNCTAD (2010). Our choice hinges on two main reasons: the first one—more substantial—concerns the countries’ selection; the second—more technical—is related to the different coding system adopted by the two classifications.

- Although the two frameworks apply different versions of HS codes, UNESCO and UNCTAD embrace some common underlying principles for capturing the exclusive creative/cultural goods. However, according to the data from UN COMTRADE database, the “*core*” categories provided by UNESCO are dominated by developed economies, whereas the “*optional*” domains more represented in the broader UNCTAD classification stand for the predominant share of cultural imports in the developing countries.<sup>29</sup> Since our analysis includes a very large number of developing and transition economies as countries of origin, we argue that UNCTAD classification is more adequate as it balances the cultural composition of trade flows by guaranteeing a relatively more comparable measure of cultural trade across countries at different development stages.
- The most recent and updated classification adopted by UNESCO is the 2007’s Harmonized Commodity Description and Coding System (HS 2007). The use of HS07 would imply a more limited time span as the first available year would be 2008, which would call for the adoption of conversion tables in order to extend the time coverage. One of the drawbacks of using conversion tables is that different levels of disaggregation across HS classifications may create distortions in the definition of “*cultural products*”. Conversely, UNCTAD (2010) adopts the HS02 coding system, which naturally allows for larger time series information. For the purpose of this paper the larger sample size is particularly important in terms of identification power given the important number of high dimensional fixed effects included in the specification, hence UNCTAD is preferred. In one of the extensions in Sect. 4.3 the cumulative exports are aggregated over 9 years, therefore conversion tables (HS92 to HS02) have been utilized.

Combining these two observations, the selection of cultural classification implies a trade-off between the cultural content embodied in these goods and the representation

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<sup>29</sup> For instance, the UNCTAD classification encompasses more product groups—namely *carpets*, *paperware*, *fashion*, *interior* and *toys*—and therefore more product codes (209). In comparison, the UNESCO classification emphasizes more—and puts more weight on—*Design* and *Art Crafts* categories, which encompass some three quarters of total creative product codes. We remind for a more detailed discussion to the reports UNCTAD (2010) and UNESCO (2013).

**Table 14** Classifications of cultural products

Code	Label
UNCTAD classification of creative goods	
<i>CER001</i>	<i>All creatives goods</i>
<i>CER002</i>	<i>Art crafts</i>
<i>CER009</i>	<i>Carpets</i>
570110	Carpets and other textile floor coverings, of wool or fine animal hair, knotted, whether or not made-up
570190	Carpets and other textile floor coverings, of textile materials, knotted, whether or not made-up (excl. those of wool or fine animal hair)
570210	Kelem, Schumacks, Karamanie and similar handwoven rugs, whether or not made-up
570220	Floor coverings of coconut fibres "coir", woven, whether or not made-up
570231	Carpets and other floor coverings, of wool or fine animal hair, woven, not tufted or flocked, of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs)
570232	Carpets and other floor coverings, of man-made textile materials, woven, not tufted or flocked, of pile construction (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs)
570239	Carpets and other floor coverings, of vegetable textile materials or coarse animal hair, woven, not tufted or flocked, of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs, and floor coverings of coconut fibre...)
570241	Carpets and other floor coverings, of wool or fine animal hair, woven, not tufted or flocked, of pile construction, made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs, plus Axminster and Wilton carpets)
570242	Carpets and other floor coverings, of man-made textile materials, woven, not tufted or flocked, of pile construction, made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs)
570249	Carpets and other floor coverings, of vegetable textile materials or coarse animal hair, woven, not tufted or flocked, of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs, and floor coverings of coconut fibre...)
570251	Carpets and other floor coverings, of wool or fine animal hair, woven, not tufted or flocked, not of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs)
570252	Carpets and other floor coverings, of man-made textile materials, woven, not tufted or flocked, not of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs)
570259	Carpets and other floor coverings, of vegetable textile materials or coarse animal hair, woven, not tufted or flocked, not of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs, and floor coverings of coconut f...)
570291	Carpets and other floor coverings, of wool or fine animal hair, woven, not tufted or flocked, not of pile construction, made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs)
570292	Carpets and other floor coverings, of man-made textile materials, woven, not tufted or flocked, not of pile construction, made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs)



**Table 14** (continued)

Code	Label
570299	Carpets and other floor coverings, of vegetable textile materials or coarse animal hair, woven, not tufted or flocked, not of pile construction, made-up (excl. Kelem, Schumacks, Karamanie and similar handwoven rugs, and floor coverings of coconut fibre...
570330	Carpets and other floor coverings, of man-made textile materials, tufted "needle punched", whether or not made-up (excl. those of nylon or other polyamides)
<i>CER010</i>	<i>Celebration</i>
950510	Christmas articles (excl. candles and electric lighting sets, natural Christmas trees and Christmas tree stands)
950590	Festival, carnival or other entertainment articles, incl. conjuring tricks and novelty jokes, n.e.s
950810	Travelling circuses and travelling menageries
<i>CER011</i>	<i>Other</i>
442090	Wood marquetry and inlaid wood; caskets and cases for jewellery or cutlery, and similar articles, of wood; wooden articles of furniture (excl. statuettes and other ornaments; furniture, lighting fixtures and parts thereof)
670290	Artificial flowers, foliage and fruit and parts thereof, and articles made of artificial flowers, foliage or fruit, by binding, glueing, fitting into one another or similar methods (excl. of plastics)
701890	Glass eyes (excl. prosthetic articles); articles of glass beads, or of imitation pearls, imitation precious or semi-precious stones, statuettes and other ornaments of lamp-worked glass (excl. imitation jewellery)
960110	Worked ivory and articles of ivory, n.e.s
960190	Worked bone, tortoise-shell, horn, antlers, coral, mother-of-pearl and other animal carving material, and articles of these materials, n.e.s. (excl. ivory)
960200	Worked vegetable or mineral carving material and articles of these materials n.e.s; moulded or carved articles of wax, of paraffin, of stearin, of natural gums or natural resins or of modelling pastes, and other moulded or carved articles n.e.s; worked...
<i>CER012</i>	<i>Paperware</i>
480210	Handmade paper and paperboard of any size or shape
<i>CER013</i>	<i>Wickerware</i>
460120	Mats, matting and screens of vegetable plaiting materials, flat-woven or bound together in parallel
460191	Plaits and similar products of plaiting materials, whether or not assembled into strips; plaiting materials, plaits and similar products of vegetable plaiting materials, flat-woven or bound together in parallel (excl. mats, matting and screens; wall co...
460199	Plaiting materials, plaits and similar products of non-vegetable plaiting materials, flat-woven or bound together in parallel (excl. wall coverings of heading 4814; parts of footwear or headgear)
460210	Basketwork, wickerwork and other articles, made directly to shape from plaiting materials or made-up from goods of heading 4601, and articles of loofah (excl. wall coverings of heading 4814; twine, cord and rope; footwear and headgear and parts thereof...
<i>CER014</i>	<i>Yarn</i>
580430	Hand-made lace in the piece, in strips or in motifs (excl. fabrics of heading 6002 to 6006)

**Table 14** (continued)

Code	Label
580500	Hand-woven tapestries of the type Gobelin, Flanders, Aubusson, Beauvais and the like, and needle-worked tapestries, e.g. petit point, cross-stitch, whether or not made-up (excl. Kelem, Schumacks, Karamanie and the like, and tapestries > 100 years old)
580610	Narrow woven pile fabrics, incl. terry towelling and similar terry fabrics, and chenille fabrics (excl. labels, badges and similar articles)
580620	Narrow woven fabrics of textile materials, containing $\geq 5\%$ elastomeric yarn or rubber thread by weight (excl. woven pile fabrics, incl. terry towelling and similar terry fabrics, chenille fabrics, and labels, badges and similar articles)
580631	Narrow woven fabrics of cotton, n.e.s
580632	Narrow woven fabrics of man-made fibres, n.e.s
580639	Narrow woven fabrics of textile materials other than cotton or man-made fibres, n.e.s
580640	Narrow fabrics consisting of warp without weft assembled by means of an adhesive "bolducs"
580810	Braids in the piece
580890	Ornamental trimmings of textile materials, in the piece, not embroidered, other than knitted or crocheted; tassels, pompons and similar articles of textile materials (excl. braids in the piece)
580900	Woven fabrics of metal thread and woven fabrics of metallized yarn of heading 5605, of a kind used in apparel, as furnishing fabrics or for similar purposes, n.e.s
581010	Embroidery on a textile fabric ground without visible ground, in the piece, in strips or in motifs
581091	Embroidery of cotton on a textile fabric ground, in the piece, in strips or in motifs (excl. embroidery without visible ground)
581092	Embroidery of man-made fibres on a textile fabric base, in the piece, in strips or in motifs (excl. embroidery without visible ground)
581099	Embroidery of materials other than cotton or man-made fibres, on a textile fabric base, in the piece, in strips or in motifs (excl. embroidery without visible ground)
581100	Quilted textile products in the piece, composed of one or more layers of textile materials assembled with padding by stitching or otherwise (excl. embroidery of heading 5810 and quilted fabrics for bedding and furnishings)
600240	Knitted or crocheted fabrics, of a width of $\leq 30$ cm, containing $\geq 5\%$ by weight elastomeric yarn (excl. containing rubber thread, pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or crocheted fabri...)
600290	Knitted or crocheted fabrics, of a width of $\leq 30$ cm, containing $\geq 5\%$ by weight elastomeric yarn and rubber thread or rubber thread only (excl. pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or c...)
600310	Knitted or crocheted fabrics of wool or fine animal hair, of a width of $\leq 30$ cm (excl. those containing by weight $\geq 5\%$ of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar article...)

**Table 14** (continued)

Code	Label
600320	Knitted or crocheted fabrics of cotton, of a width of $\leq 30$ cm (excl. those containing by weight $\geq 5\%$ of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or ...
600330	Knitted or crocheted fabrics of synthetic fibres, of a width of $\leq 30$ cm (excl. those containing by weight $\geq 5\%$ of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and k...
600340	Knitted or crocheted fabrics of artificial fibres, of a width of $\leq 30$ cm (excl. those containing by weight $\geq 5\%$ of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and ...
600390	Knitted or crocheted fabrics of a width of $\leq 30$ cm (excl. of cotton, artificial fibres, wool or fine animal hair, those containing by weight $\geq 5\%$ of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels,...
600410	Knitted or crocheted fabrics, of a width of $> 30$ cm, containing $\geq 5\%$ by weight elastomeric yarn (excl. containing rubber thread, pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or crocheted fabric...
600490	Knitted or crocheted fabrics, of a width of $> 30$ cm, containing $\geq 5\%$ by weight elastomeric yarn and rubber thread or rubber thread only (excl. pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or cr...
630232	Bed-linen of man-made fibres (excl. printed, knitted or crocheted)
630240	Table linen, knitted or crocheted
630411	Knitted or crocheted bedspreads (excl. bed-linen, quilts and eiderdowns)
630491	Articles for interior furnishing, knitted or crocheted (excl. blankets and travelling rugs, bed-linen, table linen, toilet linen, kitchen linen, curtains, incl. drapes, interior blinds, curtain or bed valances, bedspreads, lampshades and articles of he...
630800	Sets consisting of woven fabric and yarn, whether or not with accessories, for making up into rugs, tapestries, embroidered table cloths or serviettes, or similar textile articles, put up in packings for retail sale (excl. sets for making up into artic...
<i>CER003</i>	<i>Audio Visuals</i>
<i>CER015</i>	<i>Film</i>
370610	Cinematographic film, exposed and developed, whether or not incorporating sound track or consisting only of sound track, width $\geq 35$ mm
370690	Cinematographic film, exposed and developed, whether or not incorporating sound track or consisting only of sound track, width $< 35$ mm
<i>CER016</i>	<i>CD, DVD, Tapes</i>
852410	Gramophone records
852432	Discs, recorded, for laser reading systems, for reproducing sound only
852439	Discs, recorded, for laser reading systems, for reproducing sound and image or image only
852451	Magnetic tapes for reproducing sound or image, recorded, of a width $\leq 4$ mm

**Table 14** (continued)

Code	Label
852452	Magnetic tapes for reproducing sound or image, recorded, of a width > 4 mm but < = 6,5 mm
852453	Magnetic tapes for reproducing sound or image, recorded, of a width > 6,5 mm
CER004	<i>Design</i>
CER017	<i>Architecture</i>
490600	Plans and drawings for architectural, engineering, industrial, commercial, topographical or similar purposes, being originals drawn by hand; hand-written texts; photographic reproductions on sensitised paper and carbon copies of the foregoing
CER018	<i>Fashion</i>
420211	Trunks, suit-cases, vanity-cases, executive-cases, brief-cases, school satchels and similar containers, with outer surface of leather, composition leather or patent leather
420212	Trunks, suit-cases, vanity-cases, executive-cases, brief-cases, school satchels and similar containers, with outer surface of plastics or textile materials
420221	Handbags, whether or not with shoulder straps, incl. those without handles, with outer surface of leather, composition leather or patent leather
420222	Handbags, whether or not with shoulder straps, incl. those without handles, with outer surface of plastic sheeting or textile materials
420231	Wallets, purses, key-pouches, cigarette-cases, tobacco-pouches and similar articles carried in the pocket or handbag, with outer surface of leather, composition leather or patent leather
420232	Wallets, purses, key-pouches, cigarette-cases, tobacco-pouches and similar articles carried in the pocket or handbag, with outer surface of plastic sheeting or textile materials
420292	Travelling-bags, insulated food or beverage bags, toilet bags, rucksacks, shopping-bags, map-cases, tool bags, sports bags, jewellery boxes, cutlery cases, binocular cases, camera cases, musical instrument cases, gun cases, holsters and similar contain...
420310	Articles of apparel, of leather or composition leather (excl. clothing accessories, footwear and headgear and parts thereof, and goods of chapter 95, e.g. shin guards, fencing masks)
420329	Gloves, mittens and mitts, of leather or composition leather (excl. special sports gloves)
420330	Belts and bandoliers, of leather or composition leather
420340	Clothing accessories of leather or composition leather (excl. gloves, mittens and mitts, belts, bandoliers, footwear and headgear and parts thereof, and goods of chapter 95 [e.g. shin guards, fencing masks])
430310	Articles of apparel and clothing accessories of furskin (excl. gloves made of leather and furskin, footwear and headgear and parts thereof)
611710	Shawls, scarves, mufflers, mantillas, veils and the like, knitted or crocheted
611720	Ties, bow ties and cravats, knitted or crocheted
611780	Made up clothing accessories, knitted or crocheted, n.e.s. (excl. shawls, scarves, mufflers, mantillas, veils and the like, ties, bow ties and cravats)
611790	Parts of garments or clothing accessories, knitted or crocheted, n.e.s.
621410	Shawls, scarves, mufflers, mantillas, veils and similar articles of silk or silk waste (excl. knitted or crocheted)

**Table 14** (continued)

Code	Label
621420	Shawls, scarves, mufflers, mantillas, veils and similar articles of wool or fine animal hair (excl. knitted or crocheted)
621430	Shawls, scarves, mufflers, mantillas, veils and similar articles of synthetic fibres (excl. knitted or crocheted)
621440	Shawls, scarves, mufflers, mantillas, veils and similar articles of artificial fibres (excl. knitted or crocheted)
621490	Shawls, scarves, mufflers, mantillas, veils and similar articles of textile materials (excl. of silk, silk waste, wool, fine animal hair or man-made fibres, knitted or crocheted)
621510	Ties, bow ties and cravats of silk or silk waste (excl. knitted or crocheted)
621520	Ties, bow ties and cravats of man-made fibres (excl. knitted or crocheted)
621590	Ties, bow ties and cravats of textile materials (excl. of silk, silk waste or man-made fibres, knitted or crocheted)
621710	Made up clothing accessories, of all types of textile materials, n.e.s. (excl. knitted or crocheted)
621790	Parts of garments or clothing accessories, of all types of textile materials, n.e.s. (excl. knitted or crocheted)
650300	Felt hats and other felt headgear, made from the hat bodies, hoods or plateaux of heading 6501, whether or not lined or trimmed (excl. made by assembling strips or pieces of felt, and toy and carnival headgear)
650400	Hats and other headgear, plaited or made by assembling strips of any material, whether or not lined or trimmed (excl. headgear for animals, and toy and carnival headgear)
650590	Hats and other headgear, knitted or crocheted, or made-up from lace, felt or other textile fabric, in the piece (but not in strips), whether or not lined or trimmed (excl. hair-nets, headgear for animals, and toy and fancy-dress headgear)
650692	Headgear of furskin, whether or not lined or trimmed (excl. toy and carnival headgear)
650699	Headgear, whether or not lined or trimmed, n.e.s.
900410	Sunglasses
<i>CER019</i>	<i>Glassware</i>
701310	Glassware of glass–ceramics, of a kind used for table, kitchen, toilet, office, indoor decoration or similar purposes (excl. goods of heading 7018, cooking hobs, leaded lights and the like, lighting fittings and parts thereof, atomizers for perfume and...)
701321	Drinking glasses of lead crystal
701331	Glassware of lead crystal, of a kind used for table or kitchen purposes (excl. articles of heading 7018, drinking glasses, glass preserving jars "sterilizing jars", vacuum flasks and other vacuum vessels)
701332	Glassware for table or kitchen purposes of glass having a linear coefficient of expansion $\leq 5 \times 10^{-6}$ per kelvin within a temperature range of 0–300 °C (excl. glassware of glass–ceramics or lead crystal, articles of heading 7018, drinking glasses,...)
701391	Glassware, of lead crystal, of a kind used for toilet, office, indoor decoration or similar purposes (excl. glassware of a kind used for table or kitchen purposes, glassware of glass–ceramics or lead crystal, articles of heading 7018, mirrors, leaded l...)
<i>CER020</i>	<i>Interior</i>

**Table 14** (continued)

Code	Label
441900	Tableware and kitchenware, of wood (excl. interior fittings, ornaments, cooperage products, tableware and kitchenware components of wood, brushes, brooms and hand sieves)
481420	Wallpaper and similar wall coverings of paper, consisting of paper coated or covered, on the face side, with a grained, embossed, coloured or design-printed or otherwise decorated layer of plastics
481430	Wallpaper and similar wall coverings of paper, consisting of paper covered, on the face side, with plaiting material, whether or not bound together in parallel strands or woven
570310	Carpets and other floor coverings, of wool or fine animal hair, tufted "needle punched", whether or not made-up
570390	Carpet tiles of vegetable textile materials or coarse animal hair, tufted "needle punched", whether or not made-up
570410	Floor tiles, of felt, not tufted or flocked, with an area of $\leq 0,3 \text{ m}^2$
570500	Carpets and other textile floor coverings, whether or not made-up (excl. knotted, woven or tufted "needle punched", and of felt)
580410	Tulles and other net fabrics (excl. woven, knitted or crocheted fabrics)
580421	Mechanically made lace of man-made fibres in the piece, in strips or in motifs (excl. fabrics of heading 6002–6006)
580429	Mechanically made lace in the piece, in strips or in motifs (excl. that of man-made fibres and fabrics of heading 6002–6006)
590500	Textile wall coverings
691110	Tableware and kitchenware, of porcelain or china (excl. ornamental articles, pots, jars, carboys and similar receptacles for the conveyance or packing of goods, and coffee grinders and spice mills with receptacles made of ceramics and working parts of ...)
691200	Tableware, kitchenware, other household articles and toilet articles, of ceramics other than porcelain or china (excl. baths, bidets, sinks and similar sanitary fixtures, statuettes and other ornamental articles, pots, jars, carboys and similar recepta...)
691410	Ceramic articles of porcelain or china, n.e.s
821510	Sets of spoons, forks or other articles of heading 8215, which may also contain up to an equivalent number of knives, of base metal, containing at least one article plated with precious metal
821520	Sets of spoons, forks or other articles of heading 8215, incl. those with up to an equal number of knives, of base metal, containing no articles plated with precious metal
821591	Spoons, forks, ladles, skimmers, cake-servers, fish-knives, butter-knives, sugar tongs and similar kitchen or tableware of base metal, plated with precious metal (excl. sets of articles such as lobster cutters and poultry shears)
940320	Metal furniture (excl. for offices, seats and medical, surgical, dental or veterinary furniture)
940340	Wooden furniture for kitchens (excl. seats)
940350	Wooden furniture for bedrooms (excl. seats)
940360	Wooden furniture (excl. for offices, kitchens and bedrooms, and seats)
940380	Furniture of cane, osier, bamboo or similar materials (excl. of metal, wood and plastics)

**Table 14** (continued)

Code	Label
940510	Chandeliers and other electric ceiling or wall lighting fittings (excl. for lighting public open spaces or thoroughfares)
940530	Electric lighting sets of a kind used for Christmas trees
<i>CER021</i>	<i>Jewellery</i>
711311	Articles of jewellery and parts thereof, of silver, whether or not plated or clad with other precious metal (excl. articles > 100 years old)
711319	Articles of jewellery and parts thereof, of precious metal other than silver, whether or not plated or clad with precious metal (excl. articles > 100 years old)
711320	Articles of jewellery and parts thereof, of base metal clad with precious metal (excl. articles > 100 years old)
711411	Articles of goldsmiths' or silversmiths' wares or parts thereof, of silver, whether or not plated or clad with other precious metal (excl. jewellery, watch-and clock-makers' wares, musical instruments, weapons, perfume atomizers and heads for these, ori...
711419	Articles of goldsmiths' or silversmiths' wares or parts thereof, of precious metal other than silver, whether or not plated or clad with precious metal (excl. jewellery, watch- and clockmakers' wares, musical instruments, weapons, perfume atomizers and...
711420	Articles of goldsmiths' or silversmiths' wares and parts thereof, of base metal clad with precious metal (excl. jewellery, watch-and clockmakers' wares, musical instruments, weapons, perfume atomizers and heads for these, original sculptures or statuar...
711610	Articles of natural or cultured pearls, n.e.s
711620	Articles of precious or semi-precious stones "natural, synthetic or reconstructed", n.e.s
711711	Cuff-links and studs, of base metal, whether or not clad with silver, gold or platinum
711719	Imitation jewellery, of base metal, whether or not plated with precious metal (excl. cuff-links and studs)
<i>CER022</i>	<i>Toys</i>
950100	Wheeled toys designed to be ridden by children, e.g. tricycles, scooters, pedal cars (excl. normal bicycles with ball bearings); dolls' carriages
950210	Dolls representing only human beings, whether or not clothed
950291	Garments and accessories, footwear and headgear for dolls representing only human beings
950299	Parts and accessories for dolls representing only human beings, n.e.s
950310	Electric trains, incl. tracks, signals and other accessories therefor
950320	Scale model assembly kits, whether or not working models (excl. electric trains, incl. tracks, signals and other accessories therefor)
950330	Construction sets and constructional toys (excl. scale model assembly kits)
950341	Stuffed toys representing animals or non-human creatures
950349	Toys representing animals or non-human creatures (excl. stuffed)
950350	Toy musical instruments and apparatus
950360	Puzzles
950370	Toys, put up in sets or outfits (excl. electric trains, incl. accessories, scale model assembly kits, construction sets and constructional toys, and puzzles)

**Table 14** (continued)

Code	Label
950380	Toys and models, incorporating a motor (excl. electric trains, scale model assembly kits, and toys representing animals, human or non-human creatures)
950390	Toys, n.e.s
950420	Billiards and accessories
950440	Playing cards
950490	Tables for casino games, automatic bowling alley equipment, and other funfair, table or parlour games, incl. pintables (excl. operated by coins, banknotes "paper currency", discs or other similar articles, billiards, video games for use with a televisi...
<i>CER005</i>	<i>New media</i>
<i>CER023</i>	<i>Recorded media</i>
852460	Cards incorporating a recorded magnetic stripe
852499	Recorded media for sound or image reproducing phenomena, incl. matrices and masters for the production of records (excl. gramophone records, discs for laser reading systems, magnetic tapes, cards incorporating a magnetic stripe and goods of chapter 37)
854381	Proximity cards and tags, generally consisting of an integrated circuit with a read only memory attached to a printed antenna
<i>CER024</i>	<i>Video games</i>
950410	Video games for use with a television receiver
950430	Games with screens, flipper and other games, operated by coins, banknotes "paper currency", discs or other similar articles (excl. bowling alley equipment)
<i>CER006</i>	<i>Performing arts</i>
<i>CER025</i>	<i>Musical instruments</i>
830610	Bells, gongs and the like, non-electric, of base metal (excl. musical instruments)
920110	Upright pianos
920120	Grand pianos
920190	Harpichords and other keyboard stringed instruments (excl. pianos)
920210	Violins and other string instruments
920290	Guitars, harps and other string musical instruments (excl. with keyboard and those played with a bow)
920510	Brass-wind instruments
920590	Wind musical instruments (excl. organs and brass-wind instruments)
920600	Percussion musical instruments, e.g. drums, xylophones, cymbals, castanets, maracas
920710	Keyboard instruments, the sound of which is produced, or must be amplified, electrically (excl. accordions)
920790	Accordions and musical instruments without keyboards, the sound of which is produced, or must be amplified, electrically
920810	Musical boxes
920890	Fairground organs, mechanical street organs, mechanical singing birds, musical saws and other musical instruments not falling within any other heading in chapter 92; decoy calls of all kinds; whistles, call horns and other mouth-blown sound signalling ...
<i>CER026</i>	<i>Printed music</i>
490400	Music, printed or in manuscript, whether or not bound or illustrated



**Table 14** (continued)

Code	Label
<i>CER007</i>	<i>Publishing</i>
<i>CER027</i>	<i>Books</i>
490110	Printed books, brochures and similar printed matter, in single sheets, whether or not folded (excl. periodicals and publications which are essentially devoted to advertising)
490191	Dictionaries and encyclopaedias, and serial instalments thereof
490199	Printed books, brochures and similar printed matter (excl. those in single sheets; dictionaries, encyclopaedias, periodicals and publications which are essentially devoted to advertising)
490300	Children's picture, drawing or colouring books
<i>CER028</i>	<i>Newspaper</i>
480100	Newsprint, in rolls of a width > 36 cm or in square or rectangular sheets with one side > 36 cm and the other side > 15 cm in the unfolded state
490210	Newspapers, journals and periodicals, whether or not illustrated or containing advertising material, appearing at least four times a week
490290	Newspapers, journals and periodicals, whether or not illustrated or containing advertising material (excl. those appearing at least four times a week)
<i>CER029</i>	<i>Other printed matter</i>
490510	Globes, printed (excl. relief globes)
490591	Maps and hydrographic or similar charts of all kinds, incl. atlases and topographical plans, printed and in book form (excl. globes, and maps and plans, in relief)
490599	Maps and hydrographic or similar charts of all kinds, incl. atlases, wall maps and topographical plans, printed (excl. those in book form, and maps, plans and globes, in relief)
490810	Transfers "decalcomanias", vitrifiable
490890	Transfers "decalcomanias" (excl. vitrifiable)
490900	Printed or illustrated postcards; printed cards bearing personal greetings, messages or announcements, whether or not illustrated, with or without envelopes or trimmings
491000	Calendars of any kinds, printed, incl. calendars blocks
491110	Trade advertising material, commercial catalogues and the like
<i>CER008</i>	<i>Visual arts</i>
<i>CER030</i>	<i>Antiques</i>
970400	Postage or revenue stamps, stamp-postmarks, first-day covers, postal stationery, stamped paper and the like, used, or if unused, not of current or new issue in which they have, or will have, a recognised face value
970500	Collections and collector's pieces of zoological, botanical, mineralogical, anatomical, historical, archaeological, palaeontological, ethnographic or numismatic interest
970600	Antiques of > 100 years old
<i>CER031</i>	<i>Paintings</i>
970110	Paintings, e.g. oil paintings, watercolours and pastels, and drawings executed entirely by hand (excl. technical drawings and the like of heading 4906, and hand-painted or hand-decorated manufactured articles)
970190	Collages and similar decorative plaques
970200	Original engravings, prints and lithographs

**Table 14** (continued)

Code	Label		
<i>CER032</i>	<i>Photography</i>		
370510	Photographic plates and film, exposed and developed, for offset reproduction (excl. products made of paper, paperboard or textiles and ready-to-use plates)		
370520	Microfilm, exposed and developed (excl. microfilm for offset reproduction)		
370590	Photographic plates and film, exposed and developed (excl. products made of paper, paperboard or textiles, cinematographic film, film for offset reproduction and microfilm)		
491191	Pictures, prints and photographs, n.e.s		
<i>CER033</i>	<i>Sculpture</i>		
392640	Statuettes and other ornamental articles, of plastics		
442010	Statuettes and other ornaments, of wood (excl. wood marquetry and inlaid wood)		
691310	Statuettes and other ornamental articles of porcelain or china, n.e.s		
691390	Statuettes and other ornamental ceramic articles, n.e.s. (excl. of porcelain or china)		
830621	Statuettes and other ornaments, of base metal, plated with precious metal (excl. works of art, collectors' pieces and antiques)		
830629	Statuettes and other ornaments, of base metal, not plated with precious metal (excl. works of art, collectors' pieces and antiques)		
970300	Original sculptures and statuary, in any material		
HS07	Description	Domain	Macro category
<i>UNESCO classification of core cultural goods</i>			
970600	Antiques of an age exceeding one hundred years	Antiques	A. Cultural and natural heritage
970500	Collections and collectors' pieces of zoological, botanical, mineralogical, anatomical, historical, archaeological, palaeontological, ethnographic or numismatic interest	Antiques	A. Cultural and natural heritage
830610	Bells, gongs and the like	Musical instruments	B. Performance and celebration
920110	Upright pianos	Musical instruments	B. Performance and celebration
920120	Grand pianos	Musical instruments	B. Performance and celebration
920190	Harpsichords and other keyboard stringed instruments (excl. pianos)	Musical instruments	B. Performance and celebration
920210	Other string musical instruments (for example violins, harps) played with a bow	Musical instruments	B. Performance and celebration
920290	Guitars, harps and other string musical instruments (excl. with keyboard and those played with a bow)	Musical instruments	B. Performance and celebration
920510	Brass wind instruments (for example, clarinets, trumpets bagpipes)	Musical instruments	B. Performance and celebration
920590	Wind musical instruments (excl. brass-wind instruments)	Musical instruments	B. Performance and celebration
920600	Percussion musical instruments (for example drums, xylophones, cymbals, castanets, maracas)	Musical instruments	B. Performance and celebration

**Table 14** (continued)

HS07	Description	Domain	Macro category
920710	Keyboard instruments other than accordions	Musical instruments	B. Performance and celebration
920790	Accordions and musical instruments without keyboards, the sound of which is produced, or must be amplified, electrically	Musical instruments	B. Performance and celebration
920810	Musical boxes	Musical instruments	B. Performance and celebration
920890	Fairground organs, mechanical street organs, mechanical singing birds, musical saws and other musical instrument; decoy calls of all kinds; whistles, call horn and other mouth blown sound signalling instruments	Musical instruments	B. Performance and celebration
852321	Cards incorporating a magnetic stripe	Recorded media	B. Performance and celebration
852329	Magnetic media for the recording of sound or of other phenomena (excl. cards incorporating a magnetic stripe and goods of chapter 37)	Recorded media	B. Performance and celebration
852351	Solid-state non-volatile storage devices	Recorded media	B. Performance and celebration
852359	Semiconductor media, unrecorded, for the recording of sound or of other phenomena	Recorded media	B. Performance and celebration
852380	Gramophone records and other media for the recording of sound or of other phenomena, whether or not recorded, incl. matrices and masters for the production of discs	Recorded media	B. Performance and celebration
490400	Music, printed or in manuscript, whether or not bound or illustrated	Recorded media	B. Performance and celebration
970110	Paintings, drawings and pastels, executed entirely by hand, other than drawings of heading 4906 and other than hand-painted or hand-decorated manufactured articles, collages and similar decorative plaques	Paintings	C. Visual arts and crafts
970190	Collages and similar decorative plaques	Paintings	C. Visual arts and crafts
491191	Pictures, designs and photographs	Paintings	C. Visual arts and crafts
970200	Original engravings, prints and lithographs	Other visual arts	C. Visual arts and crafts
970300	Original sculptures and statuary, in any material	Other visual arts	C. Visual arts and crafts
392640	Statuettes and other ornamental articles in plastic	Other visual arts	C. Visual arts and crafts
442010	Statuettes and other ornaments, of wood	Other visual arts	C. Visual arts and crafts

**Table 14** (continued)

HS07	Description	Domain	Macro category
442090	Wood marquetry and inlaid wood; caskets and cases for jewellery or cutlery, and similar articles, of wood; wooden articles of furniture	Other visual arts	C. Visual arts and crafts
691310	Statuettes and other ornamental ceramic articles of porcelain or China	Other visual arts	C. Visual arts and crafts
691390	Statuettes and other ornamental ceramic articles, n.e.s. (excl. of porcelain or china)	Other visual arts	C. Visual arts and crafts
701890	Glassware articles including statuettes	Other visual arts	C. Visual arts and crafts
830621	Statuettes and other ornaments, of base metal plated with precious metal	Other visual arts	C. Visual arts and crafts
830629	Statuettes and other ornaments, of base metal, not plated with precious metal (excl. works of art, collectors' pieces and antiques)	Other visual arts	C. Visual arts and crafts
960110	Worked ivory and ivory articles	Other visual arts	C. Visual arts and crafts
960190	Bone, tortoiseshell, horn, antlers, coral, mother-of-pearl and other animal carving material, and articles of these materials (including articles obtained by moulding)	Other visual arts	C. Visual arts and crafts
580500	Hand-woven tapestries of the type Gobelins, Flanders, Aubusson, Beauvais and the like and needle-worked tapestries	Craft	C. Visual arts and crafts
580610	Narrow woven fabrics: woven pile fabrics (including terry towelling and similar terry fabrics) and chenille fabrics	Craft	C. Visual arts and crafts
580620	Narrow woven fabrics: other woven fabrics, containing by weight 5% or more of lastomeric yarn or rubber thread	Craft	C. Visual arts and crafts
580631	Narrow woven fabrics: other woven fabrics of cotton	Craft	C. Visual arts and crafts
580632	Narrow woven fabrics: other woven fabrics of man-made fibres	Craft	C. Visual arts and crafts
80639	Narrow woven fabrics: other woven fabrics of other textile materials	Craft	C. Visual arts and crafts
580640	Fabrics consisting of warp without weft assembled by means of and adhesive (bolducs)	Craft	C. Visual arts and crafts
580810	Braids in the piece; ornamental trimmings in the piece, without embroidery; other than knitted or crocheted	Craft	C. Visual arts and crafts

**Table 14** (continued)

HS07	Description	Domain	Macro category
580890	Other braids in the piece; ornamental trimmings in the piece, without embroidery; other than knitted or crocheted	Craft	C. Visual arts and crafts
80900	Woven fabrics of metal thread and woven fabrics of metallised yarn of heading 5605 of a kind used in apparels as furnishing fabrics or for similar purposes	Craft	C. Visual arts and crafts
581010	Embroidery in the piece, in strips or in motifs without visible ground	Craft	C. Visual arts and crafts
581091	Embroidery in the piece, in strips or in motifs: other embroidery of cotton	Craft	C. Visual arts and crafts
581092	Embroidery in the piece, in strips or in motifs: other embroidery of man-made fibres	Craft	C. Visual arts and crafts
581099	Embroidery in the piece, in strips or in motifs: other embroidery of other textile materials	Craft	C. Visual arts and crafts
581100	Quilted textile products in the piece	Craft	C. Visual arts and crafts
600240	Knitted or crocheted fabrics of a width not exceeding 30 cm, containing by weight 5% or more of lastomeric yarn but not containing robber thread	Craft	C. Visual arts and crafts
600290	Other knitted or crocheted fabrics of a width not exceeding 30 cm, containing by weight 5% or more of lastomeric yarn or robber thread	Craft	C. Visual arts and crafts
600310	Knitted or crocheted fabrics of a width not exceeding 30 cm of wool or fine animal hair	Craft	C. Visual arts and crafts
600320	Knitted or crocheted fabrics of a width not exceeding 30 cm of cotton	Craft	C. Visual arts and crafts
600330	Knitted or crocheted fabrics of a width not exceeding 30 cm of synthetic fibres	Craft	C. Visual arts and crafts
600340	Knitted or crocheted fabrics of a width not exceeding 30 cm of artificial fibres	Craft	C. Visual arts and crafts
600390	Other knitted or crocheted fabrics of a width not exceeding 30 cm	Craft	C. Visual arts and crafts
600410	Knitted or crocheted fabrics, of a width exceeding 30 cm containing by weight 5% or more of lastomeric yarn but not containing robber thread	Craft	C. Visual arts and crafts

**Table 14** (continued)

HS07	Description	Domain	Macro category
600490	Other knitted or crocheted fabrics, of a width exceeding 30 cm containing by weight 5% or more of lastomeric yarn or robber thread	Craft	C. Visual arts and crafts
711311	Articles of jewellery and parts thereof of silver, whether or not plated or clad with other precious metal	Jewellery	C. Visual arts and crafts
711319	Articles of jewellery and parts thereof of other precious metal, whether or not plated or clad with precious metal	Jewellery	C. Visual arts and crafts
711320	Articles of jewellery and parts thereof of base metal clad with precious metal	Jewellery	C. Visual arts and crafts
711411	Articles of goldsmiths' or silver-smiths' wares and parts thereof of silver, whether or not plated or clad with other precious metal	Jewellery	C. Visual arts and crafts
711419	Articles of goldsmiths' or silver-smiths' wares and parts thereof of other precious metal, whether or not plated or clad with precious metal	Jewellery	C. Visual arts and crafts
711420	Articles of goldsmiths' or silver-smiths' wares and parts thereof of base metal clad with precious metal	Jewellery	C. Visual arts and crafts
711610	Articles of natural or cultured pearls Jewellery	Jewellery	C. Visual arts and crafts
711620	Articles of precious or semi-precious stones (natural, synthetic or reconstructed)	Jewellery	C. Visual arts and crafts
370510	Photographic plates and film, exposed and developed, other than cinematographic film for offset reproduction	Photography	C. Visual arts and crafts
370590	Photographic plates and film, exposed and developed (excl for offset production)	Photography	C. Visual arts and crafts
490110	Printed reading books, brochures, leaflets and similar printed matter whether in single sheets whether or not folded	Books	D. Books and press
490191	Dictionaries and encyclopaedias and serial instalments thereof	Books	D. Books and press
490199	Printed books, brochures and similar printed matter	Books	D. Books and press
490210	Newspapers, journals and periodicals, whether or not illustrated or containing advertising material appearing at least four times a week	Newspaper	D. Books and press
490290	Other newspapers, journals and periodicals	Newspaper	D. Books and press

**Table 14** (continued)

HS07	Description	Domain	Macro category
490300	Children's picture, drawing or colouring books	Other printed matter	D. Books and press
490591	Maps and hydrographical or similar charts of all kinds in book form	Other printed Matter	D. Books and press
490510	Maps and hydrographical or similar charts of all kinds in globes	Other printed matter	D. Books and press
490599	Other maps and hydrographical or similar charts of all kinds	Other printed matter	D. Books and press
490900	Postcards, printed or illustrated; printed greeting cards	Other printed matter	D. Books and press
491000	Calendars of any kind, printed, including calendar blocks	Other printed matter	D. Books and press
370610	Cinematograph film, exposed and developed whether or not incorporating sound track or only consisting of sound track of a width of 35 mm or more	Film and video	E. Audio-visual and Interactive Media
370690	Cinematographic film, exposed and developed, whether or not incorporating soundtrack or consisting only of soundtrack, width < 35 mm	Film and video	E. Audio-visual and Interactive Media
950410	Video games used with a television receiver	Film and video	E. Audio-visual and Interactive Media
490600	Plans and drawings for architectural, engineering, industrial, commercial, topographical or similar purposes, being originals drawn by hand; hand-written texts; photographic reproductions on sensitised paper and carbon copies of the foregoing	Architecture and design	F. Design and Creative Services

In italic the groups (from CER001 to CER008) and the subgroups (from CER001 to CER033) defined by UNCTAD

of developing countries as well as time coverage. To address this issue, we check the robustness of our results by employing the “*core*” UNESCO classification. The product codes in both classifications are outlined in the next Table 14.

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