BILATERAL TRADE OF CULTURAL GOODS♦

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ABSTRACT

International trade flows of cultural goods have grown rapidly over the last decades and their liberalization will be an important issue of future multilateral trade negotiations. In this paper, we focus on bilateral trade in cultural goods and investigate its determinants. Furthermore, we use trade in cultural goods as a proxy for countries' cultural proximity and study if countries with proximate cultural tastes have more intense bilateral exchanges. Our estimations show a positive and significant influence of cultural flows on overall trade, suggesting that regulations fostering domestic cultural creation might have impacts going beyond what is generally expected.

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1. Introduction

In most countries, household expenditures on recreation and culture[1] account for around 5% of GDP. In 2005, this share was 6.4% in the United States, 5.5% in Canada, 7.7% in the United Kingdom and 5.2% in France. In 1970, those were 4.5% in the United States, 4.9% in Canada, 5.1% in the United Kingdom and 4.3% in France (OECD, 2007). Apart from the increase in income per capita, a frequent and presumably important explanation of this growth of cultural expenditures over the last decades is the emergence of the information society, combined with the development of leisure and of cultural tourism. This growth in consumption is associated with an impressive rise in trade. Between 1980 and 1998, world imports of cultural goods[2] have increased by 347% going from 47.8 to 213.7 billion of US dollars (UNESCO 2000). According to United Nations Comtrade data, world imports of all commodities increased by 189% between 1980 and 1998. An unexpected outcome is that in 1996, cultural products became the largest export industry of the United States, surpassing, for the first time, traditional manufacturing industries.[3] An interesting characteristic of these cultural trade flows is their high concentration: most of world trade in cultural goods is the fact of a remarkably small number of countries. In 2002, the United States, the United Kingdom, China (including Hong Kong and Macao), Germany and France accounted for 55.5% of total exports and 53.5% of total imports (UNESCO 2005). For global trade, these percentages were 39.7% for exports and 45.3% for imports.

Furthermore, trade liberalization of these flows was one of the most sensitive issues of recent -and current- multilateral negotiation rounds. Discussions set the partisans of free trade in cultural goods against the advocates of a "cultural exception". The latter consider that cultural goods and services reflect countries' identities and individuals' diversity and as such should not be submitted to GATT/WTO general principles, for fear of generating a worldwide standardization of tastes and behaviours.[4] Cultural goods trade is therefore an empirically important phenomenon, and politically sensitive topic. In addition, there has been a recent surge of academic interest in "cultural economics", understood as the quest for cultural origins of various economic outcomes such as regional development (Tabellini 2008),

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[1] Household expenditures on recreation and culture include purchases of audio-visual, photographic and computer equipment; CDs and DVDs; musical instruments; camper vans; caravans; sports equipment; toys; domestic pets and related products; gardening tools and plants; newspapers; tickets to sporting matches, cinemas and theatres; and spending on gambling (including lottery tickets) less any winnings.

[2] Cultural goods included in this (UNESCO) definition are printed matter, literature, music, visual arts, cinema, photography, radio, television, games and sporting goods.

[3] http://portal.unesco.org/culture/

[4] François and van Ypersele (2002) provide academic justification for this view.

diffusion of innovations (Spolaore and Wacziarg 2009) or labour market performance (Algan and Cahuc 2007).

It is therefore somehow surprising that despite this wide interest in the topic, this type of exchanges has not been much studied in the literature. In this paper, we investigate the determinants and the influence of bilateral trade in cultural goods. We first focus on the sensitivity of cultural flows to usual spatial friction and cultural proximity variables. Next, we use bilateral trade in cultural goods as a measure of countries' cultural proximity. Used as a proxy for bilateral preferences, these data help shed light on the spatial spread of cultures and their impact on trade flows.

The impact of bilateral cultural "affinity" on trade patterns has been recently analyzed in details in several papers (e.g. Guiso et al. (2008) on bilateral trust or Disdier and Mayer (2007) on bilateral opinions). Also related to this literature are the issues of linguistic proximity (Boisso and Ferrantino 1997; Melitz 2008), and past colonial links (Rose 2000; Eichengreen and Irwin 1998) or the link between immigration and trade (Wagner et al. 2002). However, these papers have to rely on proxies that often cover a low number of countries, and/or do not exhibit time variance. Trade in cultural goods has the advantage of world coverage and large changes over time.[5] An additional contribution of our paper is to provide up-to-date estimates in terms of gravity equation estimation technology. Our results first show that cultural goods are traded over shorter distances than non-cultural ones. Besides, common language fosters trade of cultural goods with a written support, while past colonial relationships influence consumers' preferences for cultural heritage goods and visual arts. Current cultural flows are also strongly influenced by past ones, which suggests the presence of what has been analyzed as addictive behaviour in the literature. Finally, we show that cultural flows have a positive and significant influence on overall trade and capture countries' cultural proximity better than traditional measures do. This last result differs from the one obtained for genetic distance, a measure of cultural proximity recently used in the literature. Giuliano et al. (2006) suggest that genetic distance between countries captures the impact of transportation costs and not of cultural differences in trade flows.

The paper proceeds as follows: the related literature is briefly surveyed in Section 2. Section 3 describes our data and specifies the gravity model. In Section 4, we provide results

[5] Close to our approach is the work by Dreher et al. (2008). The authors use trade in books as a measure of countries' cultural proximity and investigate the effects of several dimensions of globalization on economics in a time-series cross-section context. Felbermayr and Toubal (2009) is another very recent paper using bilateral votes in the Eurovision song contest to measure changes in bilateral cultural affinity over time.

for the determinants of trade in cultural goods and for its influence on flows of other commodities. Section 5 concludes.

2. Related literature

2.1 Trade in cultural goods

Few trade economists have investigated trade in cultural goods.[6] Schulze (1999) asks whether new trade theory can be applied to trade in art. His analysis suggests that this theory is a good candidate to explain exchanges in reproducible art (e.g. recorded music, books, movies), which are characterized by scale economies and product differentiation. However, it seems to be a less likely explanation for unique art (like paintings and sculptures), which is dominated by exchanges between consumers. Schulze (1999) also emphasizes that trade patterns are influenced by a second characteristic of art products, namely the addictive character of their consumption.[7] As a first consequence, trade between very dissimilar countries will be limited, since there is not enough accumulation of "cultural consumption capital" to raise reciprocal appreciation in terms of art. Second, trade in cultural goods should exhibit a strong hysteresis effect, reinforcing the position of countries that currently dominate exports of cultural goods.

Schulze's (1999) empirical application focuses on non-reproducible art products only. His data come from the DOTS database and are averaged over the 1990-1994 period. He estimates a naive gravity equation with a sample that covers the 49 largest importing countries. Marvasti and Canterbery (2005) investigate the determinants of US motion pictures exports to 33 countries. The estimation of a gravity equation over the period 1991-1995 reveals a positive impact of language, education and religion on exports. Interestingly, their analysis shows that protection and trade barriers applied by importing countries are endogenous and grow up as US exports rise. Recent studies on cultural goods have also focused on the welfare impact of trade policy. Francois and van Ypersele (2002) show that barriers to trade could raise welfare in both countries when cultural goods are characterized by fixed costs in production and heterogeneity in consumers' tastes. In the same way, Janeba (2007) who models cultural identity as the result of the interaction of individual consumption decisions, suggests that - under certain conditions - free trade does not Pareto-dominate autarky. Olivier et al. (2008) build up a simple model where microfounded dynamics of

[6] For a very detailed analysis of production and consumption of arts, see Throsby (1994). Here, we focus only on international trade in cultural goods.

[7] This habit formation effect is obviously not specific to cultural goods but can also be observed for goods such as alcohol, tobacco, etc., as well as for goods that may have some origin-country feature (such as wine from Tuscany, French cheese, …).

cultural identity are endogenous and interact with an international trade equilibrium. They show that social integration causes cultural convergence and can counterbalance the effects of goods market integration.

2.2 Cultural proximity, transaction costs and tastes

Our study is also related to the recent literature on the impact of cultural proximity on economics. Different papers[8] have focused on cultural proximity between countries and found it to have a positive influence on trade. Linguistic similarity, past colonial links, migrants, bilateral trust, and opinions have all been shown to be trade-enhancing. The main explanation provided by this literature for this positive effect is the reduction of trade costs induced by cultural proximity.

Our paper provides two contributions to this literature. First, we use trade in cultural goods as a proxy for cultural preferences. This new measure of countries' cultural proximity presents two main advantages: it varies over time (which is not the case for traditional measures based on common language or colonial links, or for genetic distance used more recently) and does not suffer from a problem of availability and coverage (like migrations or bilateral trust and opinions). The drawback of this new proximity measure is however its potential endogeneity, which could bias the estimation results. However, to date, no exogenous measure of cultural proximity with a large time and country coverage has been proposed in the literature. The construction of such a measure represents a promising area of research. Maystre et al. (2008) develop an index of countries' cultural proximity based on data from the World Economic Survey, for which endogeneity seems at first sight less severe. However, the coverage in terms of years of their index is rather small. More important, Maystre et al. (2008) show that globalization *does* impact the index of cultural proximity between countries over time, casting serious doubt on how exogenous that variable would be for our purpose.

Second, using this measure, we make use of most recent advances in gravity equation estimation. In particular, we follow the recommendations of Baldwin and Taglioni (2006), and try to avoid most usual mis-specifications and other mistakes made by authors using the traditional simplest gravity framework. This involves in particular controlling for prices. Several methods have been suggested in the literature (simulation techniques as in Anderson and van Wincoop (2003), normalization with some anchor country, etc.). Here, we introduce

[8] See, e.g. Boisso and Ferrantino (1997), Melitz (2008), Rose (2000), Eichengreen and Irwin (1998), Wagner et al. (2002), Guiso et al. (2009) and for a review of this literature Disdier and Mayer (2007).

importer and exporter fixed effects. Baldwin and Taglioni (2006) show, however, that in the case of panel data, time-invariant country fixed effects are not sufficient to remove all the "omitted price bias": the cross-section bias will be removed but not the time-series bias. To remove the latter, we interact our country fixed effects with year dummies. We also use the Poisson estimator suggested by Santos Silva and Tenreyro (2006). The authors show that in the presence of heteroskedasticity, ordinary least squares (OLS) method can yield biased estimates and argue that the most robust estimation method for multiplicative equations like gravity is Poisson pseudo-maximum likelihood (PPML). In their specification, the dependent variable is measured in levels, although it provides estimates that are comparable to elasticity estimates from the standard linear-in-logs specification.

Contrary to the recent findings on genetic distance (Giuliano et al. 2006), our results suggest that trade in cultural goods is an appropriate measure of countries' cultural proximity.[9]

3. Data and econometric specification

3.1 Data

Our main variable of interest is bilateral trade in cultural goods. One of the major difficulties of our study is the absence of a consensus about the definition of cultural products. Consequently, these products are often defined by what they are not, rather than what they are. In 2005, the UNESCO proposed a new classification, which distinguished between core cultural products (such as books, recorded media, visual arts) and related ones (such as blank CDs or television receivers) using the notion of cultural content. Table 1 presents the UNESCO classification for cultural goods.[10] Core cultural goods are essentially produced by "cultural" industries, while related ones are made by "creative" industries. According to UNESCO, creative industries take into account a wider view of the creative process than cultural ones and include areas such as software, advertising, architecture and business intelligence services. Our study will be restricted to core goods.

Insert table 1 here

[9] The debate on whether genetic distance is a legitimate proxy for cultural distance is still open. Focusing on the diffusion of development, Spolaore and Wacziarg (2009) argue that genetic distance provides an ideal summary of divergence in slowly changing genealogically transmitted characteristics, including culturally transmitted traits (habits, customs, etc.) and find a positive and significant relationship between measures of genetic distance and cross-country income differences. Guiso et al. (2009) also dispute the critique of genetic distance by Giuliano et al. (2006).

[10] Our analysis focuses only on goods and does not study cultural services.

UNESCO (2005, p.12) also provides a clear definition of trade in cultural goods. Trade is defined "as the exports and imports of tangibles and intangibles conveying cultural content that might take either the form of a good or a service". It also includes "the goods and services which are required to produce and disseminate such content [...] as well as ancillary services even if they are only partly cultural in their content". The aim of such a definition is to take into account the large changes that have occurred over the last decade in the Information and Communication Technologies.

Different statistical sources offer data on international flows of core cultural goods. In our paper, we mainly use the BACI database developed by CEPII[11]. This database uses original procedures to harmonize the United Nations COMTRADE data (evaluation of the quality of country declarations to average mirror flows, evaluation of cost, insurance and freight (CIF) rates to reconcile import and export declarations) (Gaulier and Zignago 2008). It covers 239 countries over the period 1989-2005 and all cultural goods mentioned in the UNESCO 2005 report. Due to technical constraints, our estimations will use three years moving average data between 1989 and 2005.

A closer look at cultural flows included in this database however suggests the likely presence of large scale outsourcing from the United States to mainly Canada and the United Kingdom. In particular, in 1991-1992, 1995-1997, 2000-2003, and 2005, American imports of cultural goods from the United Kingdom are reported to be bigger than the ones of the United Kingdom from the United States. The common official language and other similarities in the structure of the motion picture industry in these three countries can naturally explain this outsourcing phenomenon. The privileged commercial access of the United Kingdom to the European market and the geographical proximity of Canada (together with preferential trading relationships under NAFTA) can also be part of the explanation. This phenomenon could bias our results. For example, a movie with an American scenario and American actors will be perceived in the rest of the world as an American movie although it is included in the statistics as an export from the United Kingdom or Canada. We will therefore check the robustness of our results by using two alternative statistical sources: the UNESCO and Eurostat-AUVIS databases (cf. Section 4.3). The main weakness of those alternative databases is their low coverage. The UNESCO database focuses only on movies. The Eurostat-AUVIS data do not report flows of cultural goods in the traditional sense but the number of cinema entries in each

[11] http://www.cepii.fr/anglaisgraph/bdd/baci.htm

country disaggregated by nationality of films. For this latter data set, only a few countries and years are available.

3.2 Econometric specification

Our theoretical foundation for trade patterns is the standard monopolistic competition-CES demand-Iceberg trade costs model first introduced by Krugman (1980).[12] Producers operating under increasing returns in each country produce differentiated varieties that they ship, with a cost, to consumers in all countries. The parameter ϕ_{ijt} measures the bilateral "free-ness" of trade between country *i* and country *j* in year *t*, involving both actual price-raising trade impediments and the sensitivity of consumers to an increase in price ($\phi_{ijt} \equiv \tau_{ijt}^{1-\sigma}$ where τ_{ijt} is the ad valorem trade cost). The utility function used here contains a preference term of consumers in *j* for varieties produced in *i* (a_{ijt}). The total value of exports from *i* to *j* in *t* can be written in logs as (see Redding and Venables (2004) for instance):

$$\ln x_{ijt} = \ln(n_{it} p_{it}^{1-\sigma}) + \ln \phi_{ijt} + (\sigma - 1) \ln a_{ijt} + \ln(Y_{jt} P_{jt}^{\sigma - 1}), \qquad (1)$$

with n_{it} and p_{it} representing respectively the number of varieties and prices in country *i* in *t*, and Y_{jt} and P_{jt} representing the expenditure and price index of the importer in *t*.

Different specifications of this equation have been estimated. The usual practice consists in proxying $n_{it} p_{it}^{1-\sigma}$ and $Y_{jt} P_{jt}^{\sigma-1}$ with the GDPs and GDPs per capita of both countries before estimating (1) with OLS. However, the relevance of this specification has been recently questioned for its distance to theory. Therefore, we follow Hummels (1999) and Redding and Venables (2004), and include importer and exporter fixed effects interacted with year dummies. These fixed effects incorporate the size effects, but also the price and number of varieties of the exporting country and the size of demand and the price index of the importing country. We also use the Poisson estimator suggested by Santos Silva and Tenreyro (2006).

[12] Alternative theoretical foundations of the gravity equations include very different assumptions: perfect competition with technology differences as in Eaton and Kortum (2002), monopolistic competition with different functional forms as in Melitz and Ottaviano (2008), or heterogenous firms operating in a Dixit–Stiglitz environment as in Chaney (2008). All of those however yield a strictly equivalent estimable specification for our purposes.

The next step is to specify "free-ness" of trade (ϕ_{ijt}) and bilateral preferences (a_{ijt}). Transaction costs that reduce ϕ_{ijt} are assumed to include two different elements: transport costs and information costs. Bilateral distance (d_{ij}) and common border (cbord_{ij}) are standard proxies for transport costs. Common language (clang_{ij}) and colonial links (colony_{ij}) are used to proxy for information channels about profitable trade opportunities between the two countries.

$$\ln \phi_{ijt} = \varsigma \ln d_{ij} + \lambda_{\phi} \text{cbord}_{ij} + \mu_{\phi} \text{clang}_{ij} + \nu_{\phi} \text{colony}_{ij}. \qquad (2)$$

Bilateral distances are calculated as the sum of the distances between the biggest cities of both countries, weighted by the share of the population living in each city. The dummy variable cbord_{ij} is set to 1 for pairs of countries that share a border. Similarly, clang_{ij} and colony_{ij} are dummies equal to 1 if both partners share a language or have had a colonial relationship. Data for these variables are extracted from the CEPII database on distance and geographical variables.[13]

Bilateral preferences are a function of countries' cultural proximity. In addition to an unobservable random term, we assume that these preferences are influenced by adjacency, common language, and colonial links but also, for overall trade, by exports of cultural goods.

$$\ln a_{ijt} = \lambda_a \text{cbord}_{ij} + \mu_a \text{clang}_{ij} + \nu_a \text{colony}_{ij} + \xi \ln x^c_{ijt} + \varepsilon_{ijt}. \qquad (3)$$

Our preferred equation for estimating the determinants of overall trade is therefore[14]:

$$\ln x_{ijt} = fe_{it} + fe_{jt} + \zeta \ln d_{ij} + \lambda \text{cbord}_{ij} + \mu \text{clang}_{ij} + \nu \text{colony}_{ij} + \xi \ln x^c_{ijt} + \in_{ijt}, \qquad (4)$$

where $\in_{ijt} = (\sigma - 1)\varepsilon_{ijt}$, and $x = x_{\phi} + (\sigma - 1)x_a$, for x=λ, μ and ν. The specification for trade in cultural goods is parallel:

$$\ln x^c_{ijt} = fe^c_{it} + fe^c_{jt} + \zeta^c \ln d_{ij} + \lambda^c \text{cbord}_{ij} + \mu^c \text{clang}_{ij} + \nu^c \text{colony}_{ij} + \in^c_{ijt}. \qquad (5)$$

[13] http://www.cepii.fr/anglaisgraph/bdd/distances.htm

[14] When this equation is estimated by a PPML estimator, the left-hand-side term is taken in levels.

In all regressions, the correlation of errors across years for a same country-pair is taken into account by appropriate clustering and heteroscedasticity is corrected with White's (1980) method.

Fieler (2008) criticizes standard gravity models, which do not account for non-homothetic preferences. One way to deal with this issue is to include population and GDP per capita of both partners in the estimations. As suggested by Fieler (2008), this allows for the elasticities of trade with respect to these variables to diverge. Unfortunately, following the introduction of country fixed effects interacted with time dummies, these variables are dropped from the estimations. To test for the non-homotheticity of preferences, we therefore run estimations including income per capita, population, country fixed effects and time dummies separately. The main results of the paper remain unchanged. Due to space constraints, these results are not reported in the paper but are available from the authors upon request.

4. Results

4.1 Determinants of trade in cultural goods

We first estimate the determinants of bilateral flows of cultural goods. Table 2 presents the results. Importer and exporter fixed effects interacted with year dummies are included in all our regressions. The first column reports the linear in logs fixed effects estimation, while all other columns use the PPML estimator. The first two columns report results pooling all cultural goods, whereas columns (3)–(9) detail results for each core cultural good identified by the UNESCO (2005) (see Table 1). In the first two columns, cultural goods specific fixed effects are included and set relative to cultural heritage goods.

Our results in column (1) are in line with the gravity literature. Distance has a negative and significant impact on trade flows, while contiguity, common language and past colonial links foster bilateral trade. The PPML estimation causes changes in the results (column 2). The magnitude of the coefficients on distance and past colonial links is significantly reduced. Furthermore, the magnitude of the coefficient on common border slightly increases.

Our results for each cultural good (columns (3)–(9) show some differences, which suggests the existence of good-specific characteristics. Distance coefficients are ranging between -0.23 and –1.04 (always significant at the 1 percent level, except for visual arts: significant at the 5 percent level). Besides, common language fosters exchanges of cultural goods with a written support. For example, it raises flows of books by a factor of exp(1.61) = 5.0 and flows of newspapers and periodicals by a factor of exp(1.68) = 5.4, everything else

equal. On the other hand, past colonial relationships seem to influence consumers' preferences for cultural heritage goods and visual arts. Having had past colonial links makes countries' bilateral trade in cultural heritage goods exp(1.35)-1 = 286% larger (120% larger for trade in visual arts). These results are quite expected if trade in cultural goods reflects similarity in cultural tastes and this tends to make us confident for our later use of cultural trade as a proxy for cultural proximity.

Insert table 2 here

As an illustration of differences across different goods, we computed the average distance between partners. If we consider all cultural goods simultaneously, this distance is equal to 6085 kilometers. If we take each good separately, the average distances are as follows: cultural heritage goods (6450 km), books (6207 km), newspapers and periodicals (5335 km), other printed matter (6056 km), recorded media (5392 km), visual arts (6548 km), and audiovisual media (5915 km). By comparison, for overall trade, the average distance is 7429 kilometers. Two conclusions can be derived from these findings: first, non-cultural goods are traded over longer distances than cultural ones. Next, among cultural goods, the average distance is the highest for heritage goods and visual arts. Interestingly, one can note that cultural heritage goods and visual arts essentially include non-reproducible goods.

As emphasized in the literature review, the consumption of cultural goods can be thought to be addictive. The most common approach in the empirical trade literature to test for such a hysteresis effect consists in simply adding lagged imports to the specification (see for example Eichengreen and Irwin (1998)). Results, available upon request, show positive and significant estimated coefficients on the lagged variable, which confirm the presence of an addictive behaviour.

To test for the hysteresis effect, one can also refer more directly to the literature on addiction and introduce the addictive stock of past consumption in the estimation. Our calculation is based on Chaloupka (1991). The author uses Becker and Murphy's (1988) model of rational addiction to derive and estimate cigarette demand equations that explicitly account for the addictive nature of cigarette smoking. In his model, a stock consumption variable is elaborated considering a yearly depreciation of past consumption by a factor δ (see the Appendix for a detailed presentation). The choice of the depreciation rate depends on the expected influence of past consumption. For Chaloupka (1991), high depreciation rates do not

mean a lower addiction but rather a faster decline of the addiction after the end of the consumption. In our study, we use a depreciation rate of 0.7. As shown in the Appendix, this choice does not affect significantly the results of our estimations. Results are presented in Table 3. When applied to cultural trade, estimated coefficients on the stock variable are weaker than the ones previously obtained on lagged imports but remain positive and significant. Put together, those results validate the presence of an hysteresis effect in cultural goods consumption. Such a hysteresis effect is important since it will tend to reinforce strong and long-established market positions in cultural exports. Furthermore, those self-reinforcing patterns have larger consequences than just trade in cultural goods, since those actually impact more general trade flows as we will see in the next section.

Insert table 3 here

4.2 The impact of cultural proximity on overall trade

This section analyses the influence of cultural proximity on overall trade. In addition to the traditional measures of cultural proximity considered in the literature (shared language, colonial links, etc.), we use trade in cultural goods as a proxy for proximity in cultural tastes. We study if bilateral trade is more important when both countries have proximate cultural tastes. The existing literature (Giuliano et al. 2006; Guiso et al. 2009) uses the level of bilateral trust, genetic or linguistic distances, and historical variables such as the number of wars fought as proxies and/or instruments for cultural proximity. While there is a lot of debate in this literature about the adequacy of each of those variables, a common feature is that they rely on the cross-sectional variance only to measure their impact. Our variable has the advantage of allowing for both bilateral and time variances in the measurement of cultural proximity.

Results are reported in Table 4. As previously, we rely on the seven categories of cultural goods defined by the UNESCO (2005). Our dependent variable is the total value of bilateral imports minus bilateral imports of cultural goods. Trade data are extracted from the BACI database. Trade in cultural goods represents on average 0.7% of overall trade between 1989 and 2005.

Estimations use three years moving average data between 1989 and 2005. To control for the representativeness of our sample, we first estimate a simple gravity equation including only traditional proxies of cultural proximity (column 1). To allow comparisons of results, we restrict our sample to observations for which there is trade in cultural goods. The results are

very similar to the ones usually found in the literature: coefficient on distance is negative and statistically significant; adjacency and common language have a positive impact on trade; and as in Santos Silva and Tenreyro's study (2006), the estimated coefficient on colonial links is not significantly different from 0.

In column (2), we test for the potential influence of cultural tastes on trade in goods by introducing the total value of cultural goods' imports. This inclusion causes several changes: the impact of distance and common border is reduced, and common language is no longer significant. The estimated coefficient on the log of cultural goods imports is significant at the 1% level and positive, suggesting that cultural flows influence all trade relationships. A 10% increase in cultural exchanges raises overall trade by 2.8%.

The comparison of columns (1) and (2) shows that the inclusion of cultural flows significantly affects the estimated coefficients on the other proximity variables (common language and colonial links) as well as on the distance and contiguity variables. All these results indicate the existence of collinearity between distance, traditional proximity variables and trade in cultural goods. This collinearity was expected and means, first, that cultural flows are partially determined by countries' cultural proximity. Furthermore, it also suggests that traditional measures do not fully capture country's cultural proximity. One advantage of the use of trade in cultural goods is to capture the proximity not captured by traditional measures.

Instead of using total imports of cultural goods, column (3) of Table 4 uses the residual of the estimate of cultural imports on traditional proximity variables (distance, common border, common language and colonial links) and country-time fixed effects. The coefficients estimated on common language and colonial links are now positive and significant. Furthermore, the coefficient on the residual is significantly positive - although slightly smaller than the one on the total imports of cultural goods (column 2)-, suggesting that cultural proximity not captured by traditional measures but captured by cultural trade flows has an effect on overall trade flows.

In columns (4) and (5), we exploit the panel dimension of our data and perform pooled cross-section time-series regressions. Both regressions include country-pair fixed effects in addition to the exporter-time and importer-time individual effects. Coefficient estimates on total imports of cultural goods are smaller than the one obtained in column (2) but remain positive and significant at the one percent level. These results suggest that countries' cultural proximity is partially captured by an unobservable time-invariant component. However, the time variance of cultural proximity also explains overall trade. This last result confirms the relevance of using a time-varying variable for measuring countries' cultural proximity.

A question arising with the latter estimations is the potential endogeneity of trade in cultural flows. Whether this variable is correlated with an unobserved variable is the key issue here. We are rather confident in the specification used however, since country fixed effects interacted with time dummies are included in all specifications. Also, column (3) uses the residual of the estimate of cultural imports on traditional proximity variables and thus largely avoids the collinearity problem of column (2). Furthermore, columns (4) and (5) of Table 4 include, in addition to the exporter and importer individual effects interacted with time, a country-pair fixed effects.

Insert table 4 here

4.3 Robustness checks

In this section we test the robustness of our results. To do so, we consider two alternative data sources: the UNESCO and Eurostat-AUVIS databases. Both databases provide the production place of the cultural content rather than the export place of the cultural good and thus are not affected by the outsourcing phenomenon mentioned above. However, their coverage is more restrictive. Comparisons with results from the previous sections should be made carefully, because of differences in the coverage of samples.

The UNESCO database focuses on trade in movies. It provides for about 135 countries the number of produced films and the number of films imported by country of origin. However, disaggregated statistics are available only for main countries of origin that is the United States, France, Germany, Russia, Japan, India, Hong-Kong, the United Kingdom, and Italy. Other exporters are aggregated in a group "other countries". Data cover the years 1970-1977, 1980, 1985, and 1990-1999.[15] The analysis of countries' exports share shows a strong increase of the American share in the expense of all other major producers of movies. Some exporting countries like France seem to resist to this trend; others (the United Kingdom and India) have succeeded to reinforce their position after several years of deep crisis. Italy and Russia lost most of their initially large market shares. The second alternative source we use is the Eurostat-AUVIS database. Data do not concern the international flows of movies but the number of movie theatre entries in each country disaggregated by nationality of origin. The coverage is low both in terms of countries and years available. Our sample includes entries for films made in various EU-15 countries and in the United States, and viewed in Denmark,

[15] Recent years are available on the web: http://www.uis.unesco.org/. Previous years are taken from the statistical yearbooks of UNESCO.

Finland, France, Italy, the Netherlands, Portugal, Spain and Sweden over the period 1980-2001.

We first investigate the determinants of cultural flows. Results are reported in the two first columns of Table 5. Data in column (1) come from the UNESCO. The dependent variable is the share of movies imports coming from the main producers (the United States, France, Germany, Russia, Japan, India, Hong-Kong, the United Kingdom and Italy). Regressions use the PPML estimator. The estimated coefficient on distance is relatively close, but slightly lower, than the ones obtained with the BACI database (-0.52, see Table 2). Furthermore, cultural and historical proximity strongly influences movies imports. The colonial relationship raises the share of bilateral imports by a factor of exp(0.47) = 1.60, while sharing a language makes bilateral trade exp(0.68)-1 = 97% larger. Countries like France and the United Kingdom benefit from the links created by historical movements of population, similarity of institutions, close cultural tastes. On average, their movies' exports to one of their former colonies with which they share a language are three times larger than their exports to a similar country but with which they have neither colonial nor linguistic links.

Column (2) reports the results using the Eurostat-AUVIS database. The dependent variable is the number of entries by movie's nationality. The distance coefficient is not significant. But this could result from our sample, which mainly includes European countries and the United States.

The last four columns study the effect of cultural proximity on overall trade. Imports of cultural goods have been subtracted from overall trade. Columns (3) and (5) include only traditional measures of countries' cultural proximity (common language, colonial links). The samples are restricted respectively to observations for which data on the share of imported movies (column 3) and the cinema entries (column 5) are available. In column (4), we include the share of imported movies as an explanatory variable. In column (6), we add the log of cinema entries. Both coefficients on the share of imported movies and the log of cinema entries are statistically significant and positive, suggesting the existence of a positive effect of cinema imports on overall trade. The magnitude of both coefficients is smaller than the one obtained with the BACI data (Table 4). This result might be explained by the lower representativeness of the UNESCO and Eurostat data, which do not cover all cultural goods.

Insert table 5 here

5. Conclusion

There is considerable concern in the civil society as well as among policy makers with regards to (free) trade in cultural goods and services. We ask here whether there is something special about trade in cultural goods, using various databases and applying modern trade theory to our empirical work.

Using BACI data for the period 1989-2005, covering a wide range of importing and exporting countries, and a number of reproducible cultural goods, we estimate a large set of gravity equations. Beyond the traditional results (negative impact of distance), trade in cultural goods presents some specificity: common language fosters bilateral flows, in particular of books and newspapers. Besides, having had past colonial links reinforces bilateral trade in cultural heritage. Last, the consumption of cultural goods is shown to be addictive. The robustness of these results is tentatively addressed using two alternative data sources (UNESCO and Eurostat-AUVIS) on international exchange of movies. Both databases provide information on the production place of the cultural content and thus get rid of the outsourcing problem present in BACI for trade in cultural goods. Results are overall robust, despite more limited samples.

While trade flows of cultural goods seem overall impacted by the same factors than goods in general, we might however argue that the specificity of cultural trade is to impact deeply values, perceptions, etc. of the importing country, as often stressed out by politicians (and as Maystre et al. (2008) very recently showed). From an economic point of view, an empirical validation of such a hypothesis implies that cultural trade has a facilitating impact on non-cultural trade. This hypothesis is considered empirically here by adding to the traditional measures of cultural proximity (shared language, colonial links, etc.), trade in cultural goods as a proxy for proximity in cultural tastes. Bilateral trade is more important when both countries have close cultural tastes and trade more in cultural goods. The issue of causality between trade in cultural goods and the proximity of tastes remains however an open question left for future research.

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Appendix: Depreciation of the past consumption stock of cultural goods

The addictive stock of past consumption is defined as follows (Chaloupka 1991):

$$A(t) = \sum_{i=0}^{t-1} (1-\delta)^{t-1-i} C(i),$$

where δ is the constant rate of depreciation of the addictive stock over time and *C(t)* the consumption in year *t*. This equation can be rewritten as:

$$A(t) = \sum_{i=0}^{t-1} C(i)D(i) = t\overline{CD} + t\,\mathrm{cov}(C(i)D(i)),$$

where $D(i) = (1-\delta)^{t-1-i}$ and $\overline{CD}$ is the product of the mean value of *D* and the mean consumption. The covariance is assumed to be relatively small and is ignored.

Following Chaloupka (1991), we assume high depreciation rates considering that withdrawal effects shortly disappear after consumption cessation. If rates of depreciation are between 60% and 90%, remaining consumption effects last between 2 and 5 years. By comparison if δ = 20%, remaining consumption effects last more than 20 years. Results are described in Table 6. In this table, we normalize initial consumption to 1 and consider that the effects persist until remaining consumption represents only 1% of the initial one. Moreover, past consumption stock tends to stabilize after some years. We consider that the stock is stabilized if its variation from one year to another is less than 5%. If δ is set to 60%, the stock variation is equal to 4.1% between the third and fourth years. Therefore in such case, the number of years before stabilization is 4. Similarly, if δ = 70%, the stock variation is 1.9% between the third and fourth years and the number of years before stabilization is 4. If δ = 80%, the variation is 3.3% between the second and third years and we conclude that the stock is stabilized after 3 years. In our study, we set δ to 0.7.

Insert table 6 here

Using these depreciation rates, we estimate gravity equations for the aggregate value of cultural goods imports. The stock of past imports is included among explanatory variables. Coefficient estimates on this stock are reported in Table 6. These estimates are not significantly affected by the value of the depreciation rate. Thus, the choice of a depreciation rate depends essentially on the expected time of influence of past consumption.

Table 1: *Core and related cultural goods (UNESCO classification)*

Core cultural goods	**Related cultural goods**
Cultural heritage - Collections and collectors' pieces - Antiques of an age exceeding 100 years **Books** - Books, brochures, leaflets, etc. - Children's pictures, drawing/coloring books **Newspapers and periodicals** **Other printed matter** - Printed music - Maps - Postcards - Pictures, designs and photographs **Recorded media** - Gramophone records - Discs for laser-reading systems for reproducing sound only - Magnetic tape (recorded) - Other recorded media for sound **Visual arts** - Paintings - Other visual arts (statuettes, sculptures, lithographs, etc.) **Audiovisual media** - Video games used with a television receiver - Photographic and cinematograph films, exposed and developed	**Equipment/support material** - Musical instruments - Sound player recorder and recorded sound media - Cinematog. and photographic supplies - Television and radio receivers **Architecture plans and drawing trade and trade advertisement material**

Source: UNESCO (2005, p.15).

Table 2: *Determinants of trade in cultural goods*

Dep. var. & specification	Ln(imports), FE	Imports, PPML						
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cultural goods	Pooled	Pooled	Cultural heritage	Books	Newspapers, period.	Printed matter	Recorded media	Visual arts	Audiov. media
Ln distance	-0.91***	-0.52***	-0.31**	-0.53***	-1.04***	-0.62***	-0.58***	-0.23**	-0.68***
	(0.02)	(0.05)	(0.07)	(0.05)	(0.07)	(0.06)	(0.09)	(0.08)	(0.10)
Common border	0.63***	0.70***	0.33*	0.77***	0.71***	1.14***	0.31*	0.36*	0.63***
	(0.07)	(0.13)	(0.18)	(0.14)	(0.15)	(0.15)	(0.18)	(0.20)	(0.23)
Common language	0.82***	0.81***	0.26*	1.61***	1.68***	0.65***	0.66***	0.26	0.22
	(0.04)	(0.16)	(0.14)	(0.12)	(0.16)	(0.13)	(0.16)	(0.18)	(0.20)
Colonial links	0.76***	0.48***	1.35***	0.12	0.52***	0.22*	-0.05	0.79***	-0.55*
	(0.06)	(0.12)	(0.11)	(0.13)	(0.17)	(0.13)	(0.20)	(0.13)	(0.31)
Cultural heritage goods	-	-							
Books	1.28***	1.49***							
	(0.03)	(0.21)							
Newspapers and period.	0.09**	0.70***							
	(0.04)	(0.27)							
Other printed matter	0.20***	-0.04							
	(0.03)	(0.23)							
Recorded media	-1.56***	-2.20***							
	(0.04)	(0.23)							
Visual arts	1.11***	1.43***							
	(0.03)	(0.16)							
Audiovisual media	-0.11***	0.80***							
	(0.03)	(0.29)							
No. of obs.	172,176	172,176	14,013	41,272	19,662	30,772	8,926	38,314	19,217

Note: Country x time fixed effects in all estimations. Standard errors (country-pair clustered) in parentheses with ***, ** and * denoting significance at the 1%, 5% and 10% level.

Table 3: *Test of the hysteresis effect (using the addictive stock of past consumption)*

Dep. var. & specification	Ln(imports), FE	Imports, PPML							
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cultural goods	Pooled	Pooled	Cultural heritage	Books	Newspapers, period.	Printed matter	Recorded media	Visual arts	Audiov. media
Ln distance	-0.48***	-0.24***	-0.21***	-0.39***	-0.74***	-0.46***	-0.50***	-0.16***	-0.37***
	(0.01)	(0.03)	(0.05)	(0.04)	(0.06)	(0.05)	(0.09)	(0.06)	(0.06)
Common border	0.47***	0.30***	0.25	0.55***	0.51***	0.92***	0.22	0.19	0.28*
	(0.06)	(0.10)	(0.16)	(0.13)	(0.12)	(0.13)	(0.16)	(0.18)	(0.16)
Common language	0.40***	0.37***	0.31***	1.13***	1.22***	0.51***	0.61***	0.21	0.16
	(0.03)	(0.11)	(0.11)	(0.14)	(0.13)	(0.11)	(0.16)	(0.13)	(0.14)
Colonial links	0.40***	0.30***	1.11***	0.09	0.34***	0.18*	-0.04	0.65***	-0.37*
	(0.05)	(0.08)	(0.11)	(0.09)	(0.11)	(0.10)	(0.19)	(0.10)	(0.20)
Ln addict. stock past imports	0.31***	0.55***	0.22***	0.30***	0.27***	0.24***	0.13***	0.28***	0.43***
	(0.01)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.02)	(0.06)	(0.04)
Cultural heritage goods	-	-							
Books	0.59***	0.70***							
	(0.03)	(0.15)							
Newspapers and period.	-0.04	0.45***							
	(0.03)	(0.15)							
Other printed matter	-0.08***	-0.07							
	(0.02)	(0.13)							
Recorded media	-1.06***	-1.29***							
	(0.03)	(0.15)							
Visual arts	0.50***	0.63***							
	(0.02)	(0.13)							
Audiovisual media	-0.20***	0.60***							
	(0.03)	(0.16)							
No. of obs.	172,176	172,176	14,013	41,272	19,662	30,772	8,926	38,314	19,217

Note: Country x time fixed effects in all estimations. Standard errors (country-pair clustered) in parentheses with ***, ** and * denoting significance at the 1%, 5% and 10% level.

Table 4: *Impact of cultural proximity on overall trade*[a]

Dep. var. & specification	Total imports, PPML	Total imports, PPML		Ln(total imports), FE	Total imports, PPML
Model	(1)	(2)	(3)	(4)	(5)
Ln distance	-0.70***	-0.50***	-1.38***		
	(0.02)	(0.02)	(0.02)		
Common border	0.56***	0.38***	0.60***		
	(0.09)	(0.06)	(0.08)		
Common language	0.19**	-0.08	0.58***		
	(0.08)	(0.06)	(0.04)		
Colonial links	0.02	-0.16*	1.09***		
	(0.11)	(0.09)	(0.07)		
Ln total imports of cultural goods		0.28***		0.11***	0.21***
		(0.02)		(0.01)	(0.01)
Residual of the estimate of cultural imports on traditional variables			0.18***		
			(0.01)		
No. of. obs.	55,336	55,336	55,336	55,336	51,151

[a] Imports of cultural goods not included.

Note: Columns (1) and (2) include country x time fixed effects. Columns (3) and (4) include country x time fixed effects and country-pair fixed effects. Std. errors (country-pair clustered) in parentheses with ***, ** and * denoting significance at the 1%, 5% and 10% level.

Table 5: *Robustness checks (alternative cultural trade data sets)*

Dependent variable	% imported movies	Cinema entries	Imports[a]			
Source (for the dep. variable)	UNESCO	Eurostat-AUVIS	BACI			
Specification	PPML	PPML	PPML			
Model	(1)	(2)	(3)	(4)	(5)	(6)
Ln distance	-0.42***	-0.06	-0.66***	-0.65***	-0.32**	-0.29**
	(0.06)	(0.20)	(0.06)	(0.06)	(0.15)	(0.12)
Common border	-0.21	-0.11	0.53***	0.54***	0.34***	0.33***
	(0.14)	(0.27)	(0.13)	(0.13)	(0.11)	(0.11)
Common language	0.68***	-0.19	0.18	0.08	0.30	0.28
	(0.13)	(0.22)	(0.18)	(0.17)	(0.22)	(0.19)
Colonial links	0.47***	1.84***	0.05	0.10	0.19	0.14
	(0.12)	(0.28)	(0.19)	(0.19)	(0.24)	(0.22)
Share of imported movies (UNESCO)				0.09***		
				(0.02)		
Ln cinema entries (Eurostat-AUVIS)						0.09**
						(0.04)
No. of obs.	7,418	645	3,205	3,205	451	451

[a] Imports of cultural goods not included.

Note: Country x time fixed effects in all estimations. Standard errors (country-pair clustered) in parentheses with ***, ** and * denoting significance at the 1%, 5% and 10% level

Table 6: *Depreciation rate and consumption effects*

Depreciation rate (δ)	0.6	0.7	0.8	0.9
Remaining consumption effects (no. of years) $t = \ln(y)/\ln(1-\delta)$ with *y*: remaining consumption (y = 0.01)	5	3.8	2.9	2
Years of consumption before stock stabilization	4	4	3	2
Coefficient estimate on the stock of past consumption	0.572 (0.037)	0.573 (0.037)	0.574 (0.037)	0.574 (0.037)