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# New Evidence on Development and Cultural Trade: Diversification, Reconcentration and Domination

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**Abstract:** International trade of cultural goods has gained considerable importance over the last decade and has been dominated by rich countries. Meanwhile, trade in cultural goods is considered as a potential threat to cultural diversity, and development process is accused of being a disguised westernization process. One question arises: how does development impact on the cultural diversity of developing countries? This paper investigates the relationship between economic development and cultural diversity, measured here as the geographical diversity of cultural imports. Building on the recent literature about cultural diversity, a multi-dimensional approach is applied, taking into account the variety and the balance of cinema and music trade. The results evidence a nonlinear impact of development on the diversity of cultural imports. First, an increase in income leads to a diversification of the varieties consumed. Second, there exists a nonlinear relationship that translates into a reconcentration on a smaller number of partners in latter stage. Third, the reconcentration pattern favours the share of American products in total cultural imports.

**Keywords:** Cultural diversity, Economic development, Audio-visual trade

**JEL Classification Numbers:** O11, F19, Z10.

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# 1 Introduction

The cultural sector has gained considerable importance in the world economy and international trade in the last decades. According to UNCTADs Report on Creative Economy, trade in creative goods has increased by 14.4% per year between 2002 and 2008. Meanwhile, developing countries shares remained desperately low, accounting for only 22% of world exports, excluding China (UNCTAD, 2010). Cultural exports are indeed highly concentrated on a small number of exporting countries: the International Federation of the Phonographic Industry (IFPI, 2005) estimated that three countries (USA, United Kingdom and Japan) accounted for 71.7% of world retail music sales. In the cinema industry, American movies dominate the world markets; a UNESCO survey (2012) revealed that the global top 10 movies were all American. Unsurprisingly, cultural trade has become a sensitive issue in international agreements: in 2007, 121 countries, but the United States, ratified the UNESCO convention on the promotion and protection of cultural expressions according to which cultural goods and services deserve a specific treatment due to their dual “economic and cultural nature, because they convey identities, values and meanings, and must therefore not be treated as solely having commercial value” (UNESCO, 2007).

Two main reasons justify the investigation of the link between development and cultural diversity in developing countries. First, the imbalance of world cultural exports coupled with the existence of often weak cultural industries in developing countries make them particularly vulnerable vis--vis the protection of cultural diversity. To what extent does economic development reverse or reinforce the preeminence of developed countries exports? In addition, two recent studies (Thoenig and al., 2009; Disdier and al., 2009) evidenced the “Trojan horse effect” of foreign cultural goods that would eventually lead to a convergence of cultural values and tastes. The second justification can be found in a number of development criticism analyses: capitalism and/or globalization would lead to the creation of a unified “global cultural marketplace” (Fu, 2006) and ultimately to the “westernization of the world” (Latouche, 1996). To confront these claims, we suggest investigating whether economic de-

velopment leads to a homogenization of cultural imports in favor of certain rich countries. Relying on the recent definitional and technical improvements in the related literature, we develop some new stylized facts about the relationship between economic development and diversity in cultural imports. Our basic results are as follows: first, income leads to a diversification of imports sources consistent with the predictions of trade models that assume the non-homotheticity of demand (Sauré, 2012, Hepenstrick and Tarasov, 2012, Fieler, 2011). Second, there exists a nonlinear relationship that translates into a reconcentration on a smaller number of partners in latter stage. This second stylized fact might provide empirical evidence for the extension of the learning by consuming theory (Lévy-Garboua and Montmarquette, 1996; Lévy-Garboua, 2002) and possibly the strategy of conquest of emerging markets by the big players. Third, this reconcentration is in favour of rich countries and more specifically benefits American productions, whose dominance in cultural goods has been theoretically explained by the existence of a home market effect (Rauch and Trindade, 2009).

The paper is organized as follows. The theoretical framework is developed in section 2. The multi-dimensional approach of cultural diversity and data used are presented in section 3. The relationship between economic development and diversity in cultural trade is investigated in section 4 while section 5 reports evidence on the dominance effect (re-concentration on a small number of large exporters). Section 6 concludes.

## **2 Survey of the literature about the impact of per capita income on the diversity of imports**

The role of per capita income on the composition of demand is established (Deaton, 1975, Jackson, 1984): consumers with different level of income tend to consume different bundles of goods. Jackson (1984) empirically evidenced that income is positively correlated with the “extensive margins of consumption”. In other words: the higher the income, the higher the

demand for new goods (different or of higher quality). Though the non-homotheticity of demand has been extensively evidenced in the empirical literature, this feature is ignored in standard trade models. Linder (1961) was the first to (verbally) relate per-capita income with the trade patterns. Recently, a number of trade models have incorporated this feature whether in a Ricardian setting (Fieler, 2011, Hopenstrick and Tarasov, 2012), in a Heckscher-Olin model (Markusen, 2012) or in a Krugman framework (Sauré, 2012). According to these models, an increase in per capita income translates into an increase in the extensive margin of trade (the number of partners or the number of traded goods) and an increase in the intensive margin of trade (the amount of bilateral trade flow). More related to our approach, is the model developed by Sauré (2012) where the non-homotheticity of demand is introduced through a modification of the utility function in the monopolistic competition model (Krugman, 1980). The inclusion of a bounded marginal utility function allows to describe the evolution of the demand of the consumers with income: they first consume the cheapest goods, that tend to be produced locally with substantial trade cost, and as the marginal utility derived from these goods decreases with income, the consumers progressively expand their consumption toward more expensive foreign varieties (country-level extensive margin). Accordingly, from this literature, we should expect a higher diversification of cultural imports with economic development contradicting the fear exposed above.

### **3 Assessing the diversity of trade in cultural goods**

#### **3.1 Measuring diversity of cultural imports: the extensive and the intensive margins**

As stated above, the diversity of cultural trade is a sensitive topic due to the fear of the dominance of a few countries, or cultural models, that might threaten the cultural identities of the importing countries. Corroborating this fear, a study (Head and Disdier, 2009) evidenced the “Trojan horse effect” of foreign cultural goods that would eventually

lead to a convergence of cultural values and tastes. The authors provide empirical evidence that the consumption of foreign television program in France leads to significant changes in symbolical behavior: they show that baby naming is influenced by media exposure, and as a consequence the predominance of American television programs significantly influence this highly symbolic cultural traits. This example is an illustration of the relevance of considering the *geographical* diversity of cultural imports. To evaluate the diversity of foreign cultural goods, we focus on a two dimensional definition of diversity : considering the variety and the balance of cultural imports where :

- The variety is defined as the number of origin countries, or partners. We assume here that each country produces a cultural-specific movie, or song, that is different from a work created in another country. <sup>1</sup> This dimension will simply be measured through the number of partners for each importing country across periods. In traditional trade analysis, this dimension corresponds to the extensive margin (based on a supply-wised definition compared to the traditional product-wise);
- The balance refers to the distribution of imports among the different origins. If cultural imports are diversified in that dimension then the portfolio of imports should be equally balanced among each partner. This dimension is measured using traditional concentration index such as Herfindahl-Hirschman and Shannon Index. This component of diversity corresponds to the intensive margin of trade (based on a supply-wised definition compared to the traditional product-wise).

In order to analyze these two components comprehensively, we rely on the additive decomposability property of the Theil index to assess the respective roles of the different dimensions <sup>2</sup>. Following Cadot et al (2010), we decompose this index into two components to explain concentration: a between component (extensive margin) that measures the number

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<sup>1</sup>Due to the impossibility of measuring the variation in the content of the traded cultural goods, this approach appears to be the most appropriate to measure the variety of the traded good.

<sup>2</sup>We also use alternative measures: Herfindahl, Shannon and the number of partners, that emphasize different elements of the distribution, to test for the robustness of our results.

of active categories, thus reflecting the variety of the imports and a within element (intensive margin) that measures the distribution of elements shares among different categories. Omitting time and sector subscript, the Theil index is computed as follows:

$$T_i = \frac{1}{n} \sum_{j=1}^n \frac{x_{ij}}{z_i} \ln\left(\frac{x_{ij}}{z_i}\right) \quad (1)$$

Where,

$$z_i = \frac{\sum_j^n x_{ij}}{n}$$

$i$  refers to the importer,  $j$  to the exporter,  $x_{ij}$  is the bilateral trade flow of the cultural good and  $n$  is the number of potential (country of) origin of the imported goods<sup>3</sup>. Concentration at the intensive margin implies a more unequal distribution of shares among the cultural partners and concentration at the extensive margin can be interpreted as a decrease of active origins or decreasing variety. This can be depicted through the partition of our sample into two sub-groups  $n^g$ : active ( $g = 1$ ) and inactive cultural trade relationship ( $g = 0$ ) (per year and cultural good) that are considered respectively as within and between group. We can show that the evolution in the within group (active partnerships) reflects changes at the intensive margin and evolution in the between group (inactive partnerships) signifies changes at the extensive margin.

The between-group component of the Theil index is calculated as follows:

$$T_i^B = \sum_{g=0}^1 \frac{n_i^g z_i^g}{n z_i} \ln \frac{z_i^g}{z_i}$$

Where  $z_i$  is the average import value,  $z_i^g$  the average import value in group  $g$ . With some simplification the Theil between component can be written as:

$$T_i^B = \ln\left(\frac{n}{n_i^1}\right)$$

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<sup>3</sup>In this case, we simply define the number of potential exporter as the number of country that have exported over the sample period. We have tried different definition of potential exporter and they all yield comparable results.

And as  $n$  is time invariant, the evolution of the Theil between is simply the percentage change in the number of partners across periods:

$$\Delta T_{i,t}^B = T_{i,t}^B - T_{i,t-1}^B = -\ln\left(\frac{n_{i,t}^1}{n_{i,t-1}^1}\right)$$

The within-group component of the Theil index is calculated as follows:

$$T_i^W = \sum_{g=0}^1 \frac{n_i^g z_i^g}{n z_i} T_i^g$$

As the Theil index is equal to zero when all countries have the same share, then the Theil index for the inactive group ( $j = 0$ ) is equal to 0, and the Theil index for the active group is :

$$T_i^1 = \frac{1}{n^1} \sum_{j \in G1} \frac{x_{ij}^g}{z_i^1} \ln\left(\frac{x_{ij}^g}{z_i^1}\right)$$

Theil within can be written:

$$T_i^W = \sum_{g=0}^1 \frac{n_i^1 z_i^1}{n z_i} T_i^1$$

From this, Theil within simply reduces to a concentration index among the active partner group.

With this partition, the between and within components add up to the total Theil index describing the extensive and the intensive margins.

## 3.2 Data about cultural trade

The study of trade in cultural goods faces two major challenges: the definition of a cultural good and the measurement of trade flows.

### 3.2.1 Definition of the selected cultural goods

In the framework of this paper, we rely on the widely accepted definition of UNESCO (2005) of audiovisual and recorded media products. The audiovisual category, hereafter

termed cinema, comprises cinematograph films, exposed and developed, and photographic plates and film, exposed and developed. We choose to exclude the videogames from the audiovisual category since the structure of videogames trade flows differ significantly from the rest of the audiovisual products. The recorded media category, hereafter termed music, comprises: gramophone records, discs for laser reading systems for reproducing sound only, magnetic tape and other recorded media for sound <sup>4</sup>. Yet, within these categories, it is possible to distinguish the core cultural goods and related cultural products. For instance: the DVD “Lord of the Rings” would be labeled as a core cultural product while a writable CD would be classified as a related one. We will focus on the core cultural goods since we infer that cultural diversity is affected by the content rather than the support of traded cultural products.

### 3.2.2 Data sources

Another challenge of such analysis, not the least, is the measurement of the total amount of traded cultural products. Because of the importance of the informal sector (notably piracy) in developing countries and the growing digitization of contents in the cinema and music industries, the existing international trade data underestimates the total amount of cultural trade flows. Yet, there is no comprehensive database on trade in cultural services. So far, the existing studies about cultural exchanges have relied on three main data sources:

- Survey and national charts: the monthly top 20 songs (Ferreira and al., 2010);
- Private sector: US box office receipts (Hanson 2008);
- International organizations: Comtrade database (Disdier and al., 2010) or UNESCO statistics (Fu, 2006).

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<sup>4</sup>Within the HS 1992 classification, cinema products are grouped in the following categories : 370600; 370690; 370610 ; 370590. Music goods are comprised in 852410 ; 852490 ; 852421 ; 852422 ; 852423 ; 852490 ; 490400.

The first two datasets have the benefit of providing comprehensive information in regards of the relative importance dedicated to selected foreign cultural products in a country. Yet, these procedures suffer from unrecorded cultural consumption (due to piracy for instance) and can be difficult, or impossible to collect for a large number of developing countries.

To date, Comtrade database is the most comprehensive existing dataset about trade and cultural trade particularly. Recent papers about trade in cultural goods have relied on this dataset (Disdier and al., 2010; Thoenig and al., 2009, Lionetti, 2010). It nevertheless has some shortcomings, among which the incomplete coverage of coproduction transactions and the absence of information about trade in cultural services. In spite of these limitations, also encountered with the alternative datasets<sup>5</sup>, it is the most reliable data source about trade flows. More specifically, we use the BACI version of the Comtrade database that is more suited to the analysis of developing countries trade since it reconciles import and export data records based on the method known as “mirror data” and takes into account the quality of countries declarations, the average mirror flows, the evaluation of cost insurance and freight rates (Gaulier and Zignago 2008). Though, this dataset necessarily underestimate the total amount of bilateral trade, it nevertheless provide crucial and relevant information about the two dimensions of diversity under consideration: the evolution of the number of trading partners<sup>6</sup> and the relative importance of each partner in the total amount of cultural imports.

Following these different arguments, we choose to perform our analysis using the BACI database, that is an improved version of the Comtrade database.

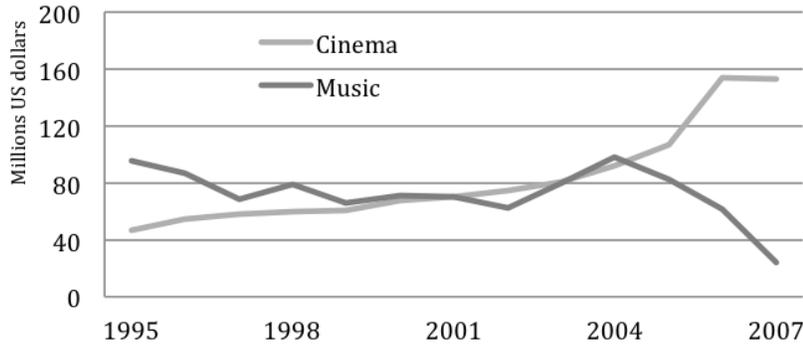
According to BACI database, the value of developing countries' imports of cinema products has more than tripled between 1995 and 2007. However, the picture is different when we look at the evolution of music trade that has been divided by 4 during the same period. This fall is likely to be explained by the collapse of music physical imports from 2005, with

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<sup>5</sup>Alternatively, UNESCO provides a database only about film imports and its coverage is very low, excluding most developing countries.

<sup>6</sup>Here, we assume that piracy and immaterial trade would not affect the existence of an active bilateral trade but rather impact on the intensity of the bilateral flow

Figure 1: Evolution of developing countries imports from BACI database, 1995-2007



Note: : Authors calculations from BACI database.

a decrease of imports from 98 to 23 millions of US dollars, most probably due to the rise of immaterial trade. To minimize the bias that might arise because of these evolutions in the music sector, we will focus on the pre-2005 period of our dataset. Our sample covers 124 developing countries imports over the 1995-2007 period for the cinema trade and 1995-2004 for the music trade.

## 4 Empirical investigation: what impact of income on the diversity of cultural exchanges ?

### 4.1 Descriptive statistics

We consider the number of partners as an indicator of the variety of cultural exchanges: assuming that each and every partner has specific cultural traits that translate into differentiated cultural goods.

Table 1: Descriptive statistics: Number of partners

Sector	Developing countries		Developed countries	
	Cinema	Music	Cinema	Music
Average	6.35	6.77	21.1	22.56
Standard deviation	6.86	6.31	15.42	15.12
Minimum	0	0	0	0
Maximum	36	34	67	75

Note: Authors calculations from BACI database

Table 2: Descriptive statistics: Concentration indices

	Developing countries				Developed countries			
	Theil			HHI	Theil			HHI
	Total	Between	Within		Total	Between	Within	
Cinema	3.79	3.21	0.58	0.54	3.33	2.04	1.29	0.39
Music	3.73	3.12	0.6	0.52	3.14	1.91	1.23	0.35

Note: Authors calculations from BACI database

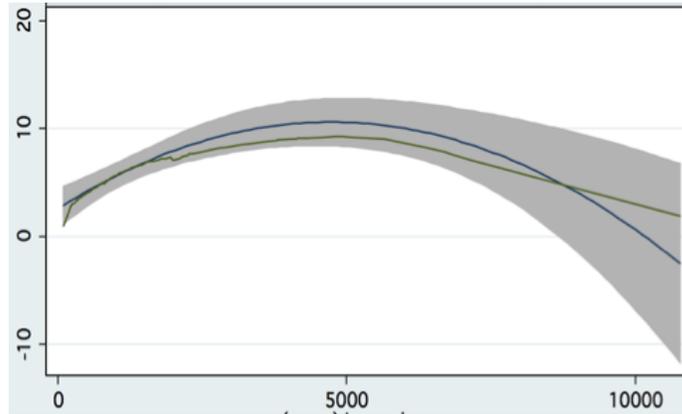
From Table 1, developing countries import portfolio appears less diversified than developed countries where the number of cultural partners is thrice as large as developing countries portfolio. In addition, overall concentration of cultural imports sources (Table 2) is greater for developing countries over the sample period. Indeed, the overall Theil and the Herfindhal-Hirshmann index are smaller in both sectors for developed countries, reflecting higher diversification of import sources compared to developing countries. Yet, the decomposition of the Theil index reveals that in developing countries the concentration is mainly explained by the between component, in other words the concentration of imports derives from the (low) proportion of active partners over the total number.

## 4.2 An agnostic approach: a non parametric analysis

Before implementing our estimation strategy, we test the link between income and cultural trade diversity without making any assumption on the form of the relationship through the use of a nonparametric procedure: the locally weighted smoothing scatter (lowess) method (Cleveland, 1994). Lowess procedure yields a smoothed curve that results from the estimation of a low degree polynomial for each point of the dataset. This approach is particularly convenient in the exploratory stage for assessing the direction and the form of a relationship between two variables as it “lets the data speak”. In addition, we compute a quadratic function that estimates the relationship between two variables allowing for the existence of a nonlinear relationship.

The estimation of these non-parametric equations indicates the existence of a nonlinear relationship between economic development and the number of partners for both sectors.

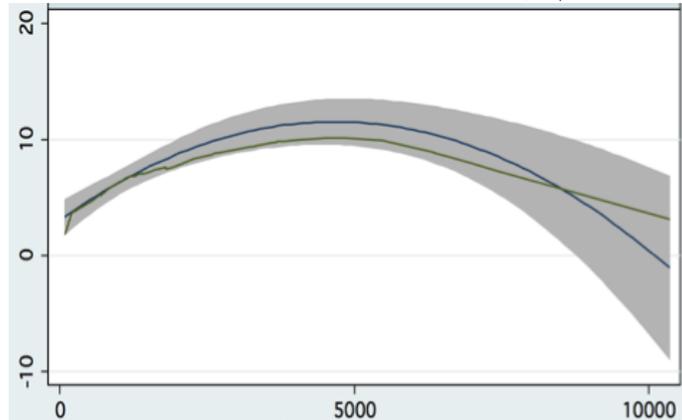
Figure 2: Cinema –impact of income on the variety (number of partners)



*Note: Authors calculations from BACI database*

*The green line corresponds to the lowest estimation and the blue line represents the quadratic function associated with the corresponding 95% confidence intervals.*

Figure 3: Music –impact of income on the variety (number of partners)



*Note: Authors calculations from BACI database*

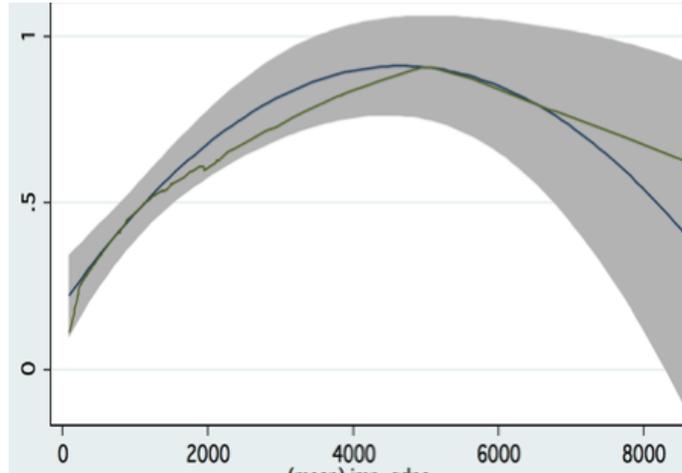
*The green line corresponds to the lowest estimation and the blue line represents the quadratic function associated with the corresponding 95% confidence intervals.*

Regarding the balance of imports share among partners, income appears to have a potential non-linear impact: a higher concentration is followed by diversification process in the cinema and music sector<sup>7</sup>. However, the confidence intervals being relatively large in Figure 4 and Figure 5, the significance of the relationship is unsure. Ensuing these preliminary steps, we investigate the hump shaped relationship between economic development and cultural diversity in the following section.

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<sup>7</sup>Note that with the Theil index, higher concentration translates into an increase of the index, while diversification decreases the value of the Theil.

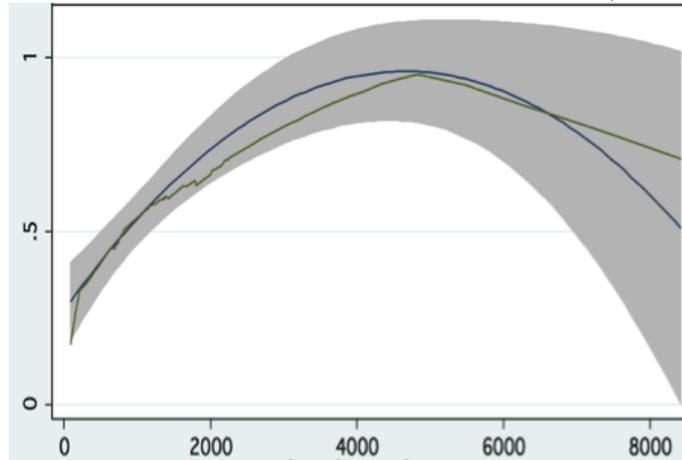
Figure 4: Cinema –impact of income on the balance (Theil within)



*Note: Authors calculations from BACI database*

*The green line corresponds to the lowess estimation and the blue line represents the quadratic function associated with the corresponding 95% confidence intervals.*

Figure 5: Music –impact of income on the balance (Theil within)



*Note: Authors calculations from BACI database*

*The green line corresponds to the lowess estimation and the blue line represents the quadratic function associated with the corresponding 95% confidence intervals.*

### 4.3 Estimation of the relationship between income and the diversity of cultural imports

This section is based on the estimation of the following equation:

$$y_{it} = gdp_{it} + gdp_{it}^2 + \delta_i + \gamma_t + \epsilon_{it} \quad (2)$$

Where  $y_{it}$  is a measure of cultural trade diversity for country  $i$  at time  $t$ , and  $gdp_c$  its gross domestic product per capita. Our dependent variable is the decomposition of the Theil index into a variety component (Theil between) and a balance component (Theil within). By construction, the overall Theil is the sum of these two components. As a consequence, to measure the different dimensions of diversity, we have three different dependent variables:

- Between component of the Theil: measure the variety of import sources;
- Within component: measure the balance of the import portfolio;
- Overall Theil: the sum of the between and within components.

Thanks to the panel structure of our variable, we can introduce time and individual fixed effects to capture the heterogeneity of the sample.  $\delta_i$  represents the importer fixed effect in order to capture time invariant specific characteristics that may have an impact on the concentration of imports (for instance the relative distance from the majors' market, language and other cultural characteristics).  $\gamma_t$  captures year specific effect so as to remove any shock that might affect all countries in a specific period and impact our dependent variable. Following the hump shaped of the non-parametric curve, we add a quadratic term among our explanatory variables in order to test the existence of a nonlinear impact of economic development on cultural imports concentration. To our knowledge, it is the first study that allows and tests the nonlinear impact of economic development on cultural diversity.

According to Lind and Melhum (2007), the significance of the quadratic term is not a sufficient condition to establish the existence of a nonlinear impact: "this criteria is too weak" and leads to a misinterpretation of a convex but yet monotone relationship. Adapting Sasabuchi procedure, they test the significance of the turning point by considering two additional conditions: i) the estimated threshold must be contained in the data range, ii) slopes on each side of the turning point should correspond to a hump shaped curve. We

report the Sasabushi-Lind-Melhum test (named Sasabuchi test henceforth) for all quadratic estimations to confirm the significance of the non-linear relationship.

Table 3: Impact of income per capita on the decomposition of the Theil index

Dependent variable: Decomposition of the Theil index						
Estimation technique	Fixed Effect regression					
Sector	Cinema			Music		
Dependent variables	Theil	Theil between	Theil within	Theil	Theil between	Theil within
GDPc	-0.0310 (-0.240)	-0.391*** (-2.750)	0.359** (2.357)	-0.504*** (-2.909)	-0.397 ** (-2.383)	-0.107 (-0.791)
GDPc squared	0.0126 (1.261)	0.0364** (2.272)	-0.0237 (-1.430)	0.0477*** (3.111)	0.0372* (1.901)	0.0105 (0.600)
Constant	3.805*** (23.19)	3.743*** (24.86)	0.0613 (0.362)	4.296*** (21.33)	3.495*** (19.87)	0.801*** (5.744)
Observations	1,392	1,392	1,392	1,153	1,153	1,153
R-squared	0.026	0.045	0.044	0.017	0.013	0.017
Sasabuchi test	-	2.23**	1.35*	2.9***	1.85**	-
Turning point	-	5,367	7,569	5,28	5,332	-
Importer FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	Yes

Clustered Robust t-statistics in parentheses  
 \*\*\*, \*\* and \* denoting significance at the 1%, 5% and 10% level

These results confirm the existence of the nonlinear impact of economic development on the variety of cultural imports (suggested in the non parametric estimation): income leads first to diversification but is then correlated with a reduction in the number of partners. In the cinema sector, one unit increase in income (reported in thousands dollars) leads to a decrease in the Theil between component of 0.391 points. The impact is lower in the music industry where a one unit increase reduces the between component by 0.397 points. Note that replacing Theil between by the number of partners as the dependent variable yields similar results, the results are reported in appendix (Table 9). This nonlinear relationship is confirmed by the Sasabushi test for both sectors. However, the impact on the balance of import sources is mixed <sup>8</sup> : it has no significant impact in the music sector and is correlated

<sup>8</sup>The within component of the Theil index is the component that might be most affected by the quality of the data. Indeed, we assume that unrecorded trade influences the importance of trade flows rather than the existence of an active trade relationship. If we look at the two main reasons why trade is unreported: piracy and digitization, we can reasonably assume that these factors should not lead (at least, for now) to the end of physical trade flow but rather explain the decrease of amounts exchanged (Lionetti and al., 2010).

with a negative influence on the diversity of cinema import sources. Though the quadratic income term suggests the existence of a nonlinear impact on the balance of cinema imports, Sasabuchi test rejects the significance of the turning point. In the cinema sector, the two contrasting effects compete and lead to the non-significance of the total index. Overall, income appears to have a nonlinear impact on the diversity of cultural imports, explained by the variety component. We provide tentative explanation of this non-linear relationship in section 5.

Table 4: Impact of income per capita on the Shannon and HHI indices

Dependent variable: Concentration indices				
Estimation technique	Fixed effect regressions			
Sector	Cinema		Music	
Dependent variable	HHI	Shannon	HHI	Shannon
GDPc	-0.0039 (-0.0609)	0.0303 (0.234)	-0.241*** (-3.178)	0.502*** (2.901)
GDPc squared	0.00419 (0.796)	-0.0126 (-1.256)	0.022*** (3.127)	-0.048*** (-3.105)
Constant	0.552*** (6.927)	0.927*** (5.654)	0.795*** (8.930)	0.454** (2.254)
Observations	1,392	1,392	1,153	1,153
R squared	0.011	0.011	0.018	0.016
Turning point	-	-	5,488	5,277
Sasabuchi test	-	-	3.08 **	2.9***
Country FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes

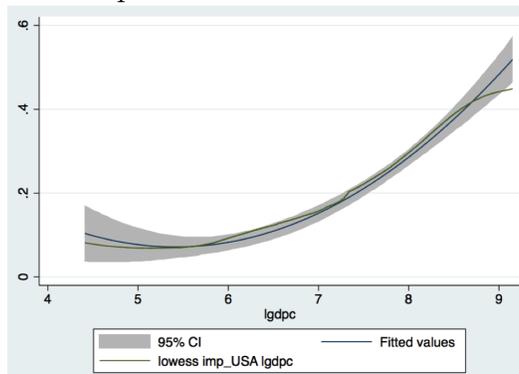
Clustered Robust t-statistics in parentheses

\*\*\*, \*\* and \* denoting significance at the 1%, 5% and 10% level

The two other balance indices confirm our Theil results (note that the Shannon index has an opposite sign compared to Theil and HHI indices: the more diversified, the larger the Shannon index). Alone, this table can be misleading, since income appears to have a non-significant impact on the concentration of cinema imports. Yet, the decomposition of the Theil index above informs us that this insignificant result is explained by the contradictory impact of income on the two dimensions of diversity: it first favors variety while deteriorating the balance of import shares.

## 5 Survival of the fittest

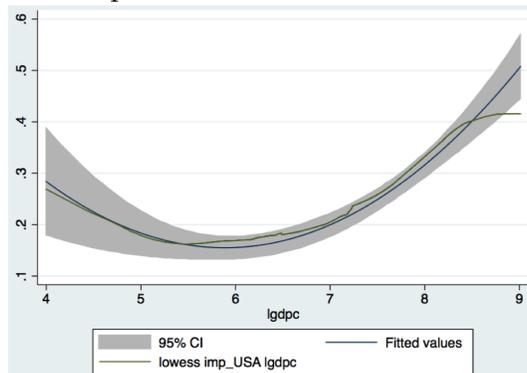
Figure 6: Cinema –impact of income on the share of USA imports



*Note: Authors calculations from BACI database*

*The green line corresponds to the lowess estimation and the blue line represents the quadratic function associated with the corresponding 95% confidence intervals.*

Figure 7: Music –impact of income on the share of USA imports



*Note: Authors calculations from BACI database*

*The green line corresponds to the lowess estimation and the blue line represents the quadratic function associated with the corresponding 95% confidence intervals.*

We now turn to the impact on the share of cultural products from individual countries. All the regressions performed yielded non-significant coefficients except for cultural goods originating from the USA. The related regression is based on the following dependent variable:

$$\text{share of USA products}_{itk} = \frac{\text{import from USA}_{itk}}{\text{total imports}_{itk}}$$

When considering the American share in total cultural imports, it clearly appears that

Table 5: Testing the reconcentration process on American imports

Estimation technique	Fixed effects	
	Cinema	Music
Sector		
Dependent variable	USA import share	
lnGDPc	0.0860*	-0.108
	(0.0494)	(0.0752)
Constant	-0.371	0.987*
	(0.335)	(0.512)
Observations	1392	1153
R-squared	0.017	0.020
Importer FE	yes	yes
Year FE	yes	yes

Clustered standard errors in parentheses

\*\*\*, \*\* and \* denoting significance at the 1%, 5% and 10% level

reconcentration benefits the American product exports in both sector, whilst it has no impact on other countries share. These results extend Fus findings (2006) about American dominance in cultural goods to developing countries and confirm the predictions of Rauch and Trindades theoretical model (2009).

## 6 Robustness checks

### 6.1 Are we mistakenly measuring trade openness?

To sustain our basic assumption that income has a significant impact on the diversity of cultural imports, we first test in this section if the effect of economic development is commanded by trade integration. Hence, we introduce an openness index in the equation. For this purpose, we apply two widely used openness index: first, from the Penn World Tables, which is calculated as an annual percentage of the sum of trade flows (imports and exports) on real GDP. The second measure of trade openness is computed using the average tariff on all goods imposed by the importing countries (!!In both regressions, the estimated coefficients reveal that the inclusion of openness does not have any effect on the diversity of cultural imports.

Table 6: Robustness check: testing the effect of openness using import-export ratio

Dependent variable: Decomposition of the Theil index						
Estimation technique		Fixed Effect regression				
Sector	Cinema			Music		
Dependent variables	Theil	Theil between	Theil within	Theil	Theil between	Theil within
openk	-0.00166 (0.00308)	-0.00419 (0.00308)	0.00253 (0.00265)	-0.00246 (0.00211)	-0.00260 (0.00247)	0.000147 (0.00169)
openk2	8.27e-06 (1.51e-05) (0.0555)	1.49e-05 (1.52e-05) (0.0712)	-6.61e-06 (1.36e-05) (0.0467)	3.32e-06 (5.17e-06)	1.73e-06 (6.23e-06)	1.59e-06 (4.13e-06)
'Iyear'2007	-0.0459 (0.0584)	-0.124* (0.0739)	0.0785* (0.0460)			
Constant	3.932*** (0.132)	3.570*** (0.134)	0.362*** (0.112)	3.953*** (0.126)	3.284*** (0.141)	0.669*** (0.0986)
Observations	1,393	1,393	1,393	1,147	1,147	1,147
R-squared	0.007	0.021	0.019	0.009	0.021	0.017
Number of i	121	121	121	123	123	123

Clustered Robust standard-errors (at the country level) in parentheses  
 \*\*\*, \*\* and \* denoting significance at the 1%, 5% and 10% level

Table 7: Robustness check: testing the effect of openness using average tariff

Dependent variable: Decomposition of the Theil index						
Estimation technique	Fixed Effect regression					
Sector	Cinema			Music		
Dependent variables	Theil	Theil between	Theil within	Theil	Theil between	Theil within
averageT	0.00513 (0.00929)	0.00642 (0.0122)	-0.00129 (0.00665)	0.00217 (0.0105)	-0.00256 (0.00924)	0.00473 (0.00855)
average2	-0.000129 (0.000194)	-0.000177 (0.000284)	4.88e-05 (0.000148)	-5.07e-05 (0.000186)	-4.00e-06 (0.000157)	-4.67e-05 (0.000147)
Constant	3.794*** (0.114)	3.243*** (0.133)	0.551*** (0.0801)	3.713*** (0.138)	3.043*** (0.132)	0.670*** (0.107)
Observations	1,074	1,074	1,074	884	884	884
R-squared	0.009	0.016	0.119	0.004	0.016	0.018
Number of i	119	119	0.018	118	118	118

Clustered Robust standard-errors (at the country level) in parentheses  
 \*\*\*, \*\* and \* denoting significance at the 1%, 5% and 10% level

## 6.2 Estimation with an alternative dataset for music sector

In order to check the robustness of our conclusion in the music sector, for which the data appear to be even more affected by the collapse of physical sales, we perform the main regression using an alternative dataset. Relying on data provided by the Industrial Federation of the Phonographic Industry (IFPI) and its national branches, Ranaivoson (2010) computed the Shannon concentration indices for music import origins of 72 countries (including 32 developing countries) from 1992 to 2005.

The results obtained with this alternative dataset are consistent with the previous ones (obtained with BACI database): economic development first leads to a diversification of import sources and then to a concentration phase. The turning point is set at 5,846 US dollars (against 5,335 US dollars according to BACI regression), and 3 countries are above the threshold in the sample: Mexico, Uruguay and Argentina.

Table 8: Robustness check: using an alternative dataset for the music sector

Dependent variable : Shannon index for import sources	
Estimation technique	Fixed Effect regression
Sector	Music
GDPc	0.229** (2.088)
GDPc squared	-0.0196* (-1.981)
Constant	0.246 (1.265)
Observations	258
R-squared	0.095
Number of importers	32
Sasabuchi test	1.96**
Country FE	yes
Year FE	yes

Clustered Robust t-statistics (at the country level) in parentheses  
 \*\*\*, \*\* and \* denoting significance at the 1%, 5% and 10% level

## 7 Concluding remarks

Economic development could influence the diversity of cultural import sources in different ways. In this study, we tested the impact of income on the diversity of cultural imports defined as the variety and the balance of the geographical origin of foreign movies and music imported. We find robust evidence that income is positively correlated with the number of cultural partners in both music and cinema sector. This results is in line with the hypothesis of non-homothetic demand: an increase in income is positively correlated with the extensive margin of trade. However, our analysis revealed the existence of a nonlinear relationship between per capita income and the variety of foreign cultural goods consumed: indeed, passed a certain threshold, countries restrict their cultural imports on a smaller number of partners. This result is robust to the use of an alternative dataset and to the inclusion of openness index. To my knowledge, it is the first study that allows and tests the nonlinear impact of economic development on cultural diversity. In the last part of this study, I analyze the reconcentration patterns and evidence the domination of American productions in developing

countries imports. These results are consistent with the conclusions of empirical papers focusing on developed countries imports (Fu, 2006) and corroborate theoretical predictions about American cultural dominance in world cultural trade (Rauch and Trindade, 2006).

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## 9 Data Appendix

### 9.1 Descriptive statistics

### 9.2 List of developing countries