



HAL
open science

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

Maria Masood

► **To cite this version:**

Maria Masood. New Evidence on Development and Cultural Trade: Diversification, Reconcentration and Domination. 2012. hal-00778502v5

HAL Id: hal-00778502

<https://hal.science/hal-00778502v5>

Preprint submitted on 14 Aug 2013

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

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

Maria Masood*

University of Geneva, CEPN Paris 13

August 14, 2013

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 interpreted as a westernization process. One question arises: how does economic development impact on the cultural diversity of developing countries? This paper investigates the relationship between per capita income and 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 appears to favour the share of American products in total cultural imports.

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

JEL Classification Numbers: O11, F19, Z10.

*e-mail: maria.masood@unige.ch.

1 Introduction

The cultural sector has gained considerable importance in the world economy and international trade in the last decades. According to UNCTAD's Report on Creative Economy, trade in creative goods has increased by 14.4% per year between 2002 and 2008. Meanwhile, developing countries' share 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-à-vis the protection of cultural diversity. 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. To what extent does economic development reverse or reinforce the preeminence of developed countries exports? 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). Meanwhile, recent economic models have evidenced a positive correlation

between per capita income and the diversity of trade (Fieler, 2011, Hopenstrick and Tarasov, 2012, Markusen, 2012, Sauré, 2012, Hopenstrick and Tarasov, 2012, Fieler, 2011). To confront these claims, we suggest investigating empirically the impact of economic development on the diversity of cultural imports. 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, Hopenstrick 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. Different assumptions can be made to explain this second stylized fact: an extension of the learning by consuming theory (Lévy-Garboua and Montmarquette, 1996; Lévy-Garboua, 2002), the strategy of conquest of emerging markets by the big players or the endogeneity of cultural protectionism (Marvasti and Canterbury, 2005). Third, this reconcentration appears to favor 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 exporters). Section 6 concludes.

2 Theoretical predictions

2.1 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 margin of consumption”. In other words: the higher the income, the higher the demand for new goods (of a different type or of higher quality). Though the non-homotheticity of demand has been extensively evidenced in the empirical literature, this feature has long been ignored in standard trade models. Linder (1961) was the first to (verbally) relate per-capita income with trade patterns. Recently, a number of trade models have incorporated this feature whether in a Ricardian setting (Fieler, 2011, Hepenstrick 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 demand with income: they first consume the cheapest goods, that tend to be produced locally with the existence of substantial trade costs, and as the marginal utility derived from these goods decreases with income, consumers progressively expand their consumption basket 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.

2.2 Minor changes, major implications

Yet, this model relies on assumptions that might be too restrictive when applied to the cultural sector. Indeed, introducing minor changes in Sauré’s model produces different predictions:

[To be completed]

3 Assessing the diversity of cultural imports

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

As stated above, concentration in cultural trade is a sensitive topic due to the fear of the dominance of a few countries, or cultural models, that might threaten cultural identities of the importing countries. Corroborating it, different studies (Head and Disdier, 2009; Thoenig et al, 2009) evidenced the “Trojan horse effect” of foreign cultural goods that would eventually lead to a convergence of cultural values and tastes. For instance, Head and Disdier 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 highlights 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 :

- 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. ¹ This dimension will simply be measured through

¹Due 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.

the number of partners for each importing country across periods. This dimension corresponds to the extensive margin (based on a supply-wised definition compared to the usual product-wise classification);

- 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 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 ². Following Cadot et al (2010), we decompose this index into two components to explain concentration: a between component (extensive margin) that measures the number of active categories, thus reflecting the variety of the imports and a within element (intensive margin) that measures the distribution of imports among the different origins. 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,

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

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 origins of the imported goods³. Concentration at the intensive margin implies a more unequal distribution of shares among the cultural partners

²We also use alternative measures: Herfindahl, Shannon and the number of partners as robustness checks.

³In this case, we simply define the number of potential exporter as the number of country that have exported over the sample period. Using different definition of potential exporter, especially regarding the duration of exports, yield similar results.

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:

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

And as n is time invariant, the evolution of the Theil between reduces to 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 :

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

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.

3.2 Data about cultural trade

Analyzing 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 ⁴. Yet, within these categories, it is possible to distinguish the core cultural goods and related cultural products. For instance: the DVD “Star Wars” 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.

⁴Within 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.

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, existing international trade data underestimates the total amount of cultural trade flows. Yet, there is no comprehensive database about trade in cultural services. So far, existing studies about cultural exchanges have relied on three main data sources:

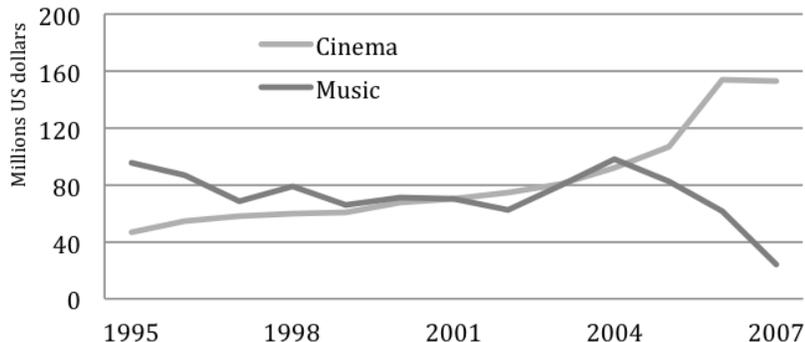
- Survey and national charts: the monthly top 20 songs (Ferreira and al., 2010);
- Private sector: US box office receipts (Hanson 2008);
- International organizations: Comtrade database (Disdier and al., 2010) or UNESCO statistics (Fu, 2006).

The first two datasets provides comprehensive information regarding the relative importance dedicated to selected foreign cultural products in a country. Yet, they 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 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 datasets⁵, 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” taking into account the quality

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

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



Note: : Author's calculations from BACI database.

of countries' declarations, the average mirror flows, the evaluation of cost insurance and freight rates (Gaulier and Zignago 2008). Though this dataset necessarily underestimates 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 partners⁶ 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 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. Our sample covers 124 developing countries imports over the 1995-2007 period for the cinema trade and 1995-2004 for the music trade.

⁶Here, 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

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: Author's 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

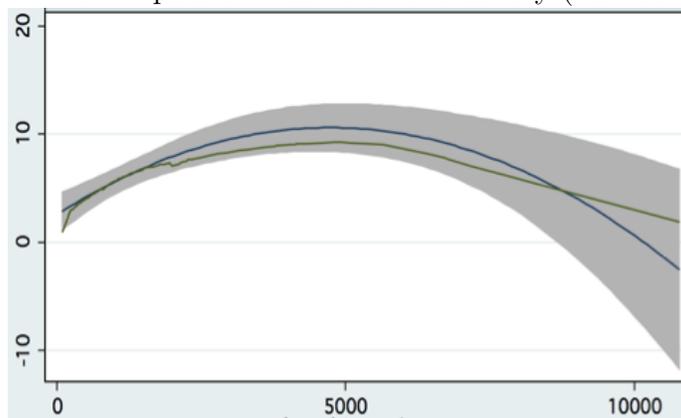
Note: Author's calculations from BACI database

From Table 1, developing countries' imports 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 (lower) proportion of active partners over the total number.

4.2 An agnostic approach: a non parametric analysis

Before implementing our estimation strategy, we investigate the link between income and the diversity of cultural imports 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 correlation.

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



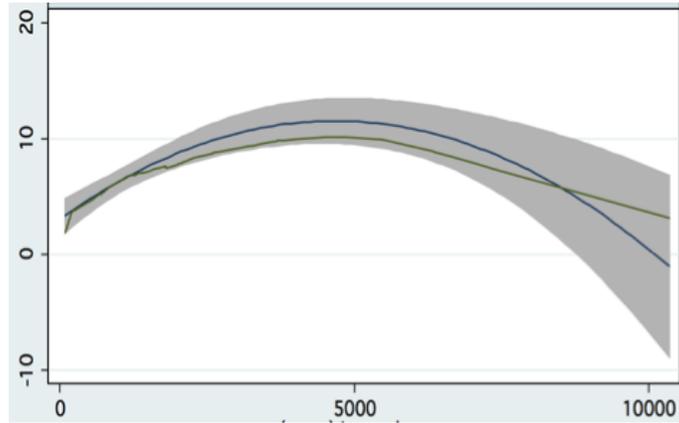
Note: Author's calculations from BACI database

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

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. Regarding the balance of imports share among partners, income appears to have a non-linear impact: a higher concentration is followed by diversification process in the cinema and music sector⁷. 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

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

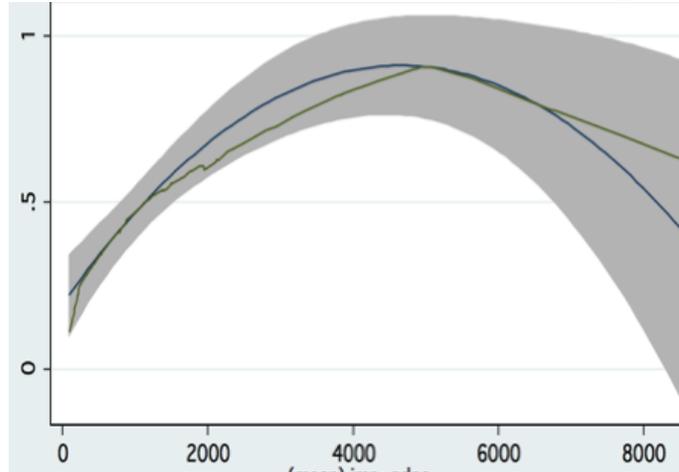
Figure 3: Music –impact of income on the variety (number of partners)



Note: Author's 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 4: Cinema –impact of income on the balance (Theil within)

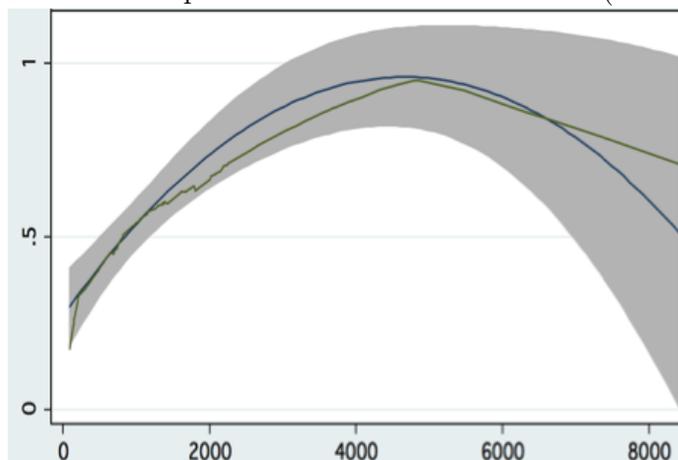


Note: Author's calculations from BACI database

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

investigate the non linear relationship between economic development and cultural diversity in the following section.

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



Note: Author's 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_{it} its gross domestic product per capita (WDI, 2011). Our dependent variable is the decomposition of the Theil index into a variety component (Theil between) and a balance component (Theil within). By construction (see the previous section), the overall Theil is the sum of these two components. Therefore, 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.

From the panel structure of our variable, we can introduce time and individual fixed

effects to capture the heterogeneity of the sample. δ_i represents the importer fixed effect in order to capture time invariant 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). γ_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 shape 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 the diversity of cultural trade.

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

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 is first correlated with a diversification and then 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 similar 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 Sasabuchi test for both sectors. However, the impact on the balance of

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	5,280	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

import sources is mixed ⁸ : it has no significant impact in the music sector and is correlated 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.

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-

⁸The 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).

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

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.

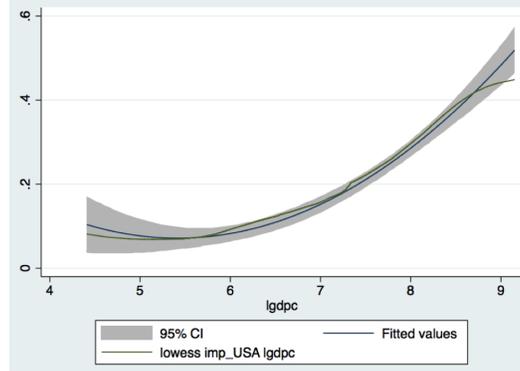
5 Survival of the fittest

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

$$share\ of\ USA\ products_{itk} = \frac{imports_{k=USA}}{\sum_k imports_{itk}} \quad (3)$$

These results confirm the increasing importance of American movies in total imports. In

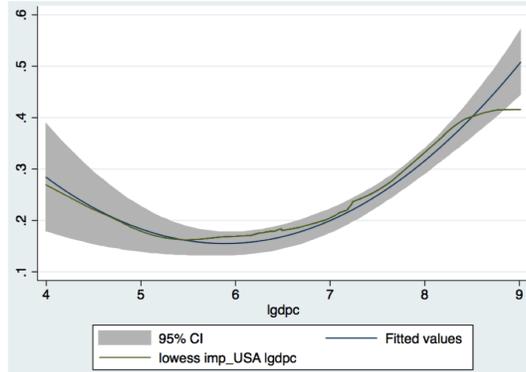
Figure 6: Cinema –impact of income on the share of USA imports



Note: Author's 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: Author's 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.

other words, the share of American movies increases significantly, or more rapidly, compared to other origins when income increases. 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). In the music sector, the coefficient is not significant most probably due to either an underestimation of data trade flows (see discussion in section 3) or to a more regionalized distribution of imports. Unfortunately, due to data constraints we are not able to conclude on this issue.

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

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 whether 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 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, 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)	1.49e-05 (1.52e-05)	-6.61e-06 (1.36e-05)	3.32e-06 (5.17e-06)	1.73e-06 (6.23e-06)	1.59e-06 (4.13e-06)
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	0.019	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 Shannon concentration indices for the origin of music imports for 72 countries, including 32 developing countries, from 1992 to 2005.

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

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.

7 Concluding remarks

Economic development could influence the diversity of cultural import sources in different ways. In this study, we tested the impact of per capita income on the diversity of cultural imports defined as the variety and the balance of the geographical origin of imported movies and music. We find robust evidence that income is first positively correlated with the number of cultural partners in both music and cinema sector. This result is in line with the hypothesis of non-homothetic demand: an increase in income is positively correlated with the extensive margin of trade. Yet, our analysis revealed the existence of a nonlinear relationship between per capita income and the variety of imported cultural goods: passed a threshold, countries restrict their cultural imports on a smaller number of partners. This result is robust to the inclusion of openness indicator and to the testing of alternative dataset. To our knowledge, it is the first study about the impact of per capita income on the diversity of cultural trade. In the last part of this study, we analyze the reconcentration patterns and evidence the domination of American productions in developing countries' imports. These results corroborate the theoretical predictions about American cultural dominance in world cultural trade (Rauch and Trindade, 2006) and would tend to confirm existing fears about cultural diversity. However, one should be careful in concluding about the homogenization of cultural consumption, as our analysis integrated neither the content of traded cultural goods, that relies on the accumulation of a globalized stock of ideas (Cowen, 2008), nor the perception of consumers who, according to cultural studies approach, appropriate the content of what they according their own cultural schemes and experiences.

8 References

Anderson, S.P., A. De Palma, J.F. Thisse (1992), “Discrete Choice Theory of Product Differentiation”. MIT press, Cambridge.

Bala, V., and N. Van-Long (2005), “International Trade and Cultural Diversity: a Model of Preference Selection”. *European Journal of Political Economy* 21, 143-162.

Benhamou, F., and S. Peltier (2009), “Diversity Analysis in Cultural Economics: Theoretical and Empirical Considerations” Granem working paper 2009.

Cadot, O., C. Carrre, V. Strauss-Khan, and V. Kukučnova (2010), “OCDE imports : Diversification and Quality Search”. Cerdi working paper 2009-09.

Cowen, T. (2002). “Creative Destruction. How Globalization is Changing the Worlds Culture”. Princeton University Press.

Deaton, A. S. (1975), “ The Measurement of Income and Price Elasticities”. *European Economic Review*, 6(3), 261-273.

Disdier, A-C., K. Head and T. Mayer (2009), “Exposure to Foreign Media and Changes in Cultural Traits: Evidence from Naming Patterns in France”. *Journal of International Economics* 80, 226-238.

Disdier, A-C., S. Tai, L. Fontagné, L. and T. Mayer (2010), “Bilateral Trade of Cultural Goods” *Review of World Economy* 145, 575-595.

Dixit, A. and J. Stiglitz (1977), “Monopolistic Competition and Optimum Product Diversity” *American Economic Review* 67, 297-308.

Farchy, J. and H. Ranaivoson (2011), “An International Comparison of the Ability of Television Channels to Provide Diverse Programming: Testing the Stirling model in France, Turkey and United Kingdom”. Montréal: UNESCO Institute of Statistics, Technical paper 6.

Ferreira, F. and J. Waldfogel (2010), “Pop Internationalism : has a Half Century of World Music Trade Displaced Local Culture?” NBER Working Paper 15964.

Fieler, A.C. (2011), “Nonhomotheticity and Bilateral Trade: Evidence and a Quantitative Explanation” *Econometrica*, 79(4), 1069-1101.

Fu, W.W. (2006), “Concentration and Homogenization of International Movie Sources: Exam-

ining Foreign Film Import Profiles”. *Journal of Communication*, 56, 813-835.

Gaulier, G. and S. Zignago (2010), “BACI: a World Database of International Trade at the Product Level: The 1994-2007 version”. CEPII working paper.

Hanania, Lilian Richieri (2009), “Diversité Culturelle et Droit International du Commerce”, Paris: La Documentation Française.

Hanson, G. (2008), “Testing the Melitz Model of Trade: an Application to U.S. Motion Picture Exports”. NBER working paper w14461.

Helpman, E. and P. Krugman (1985), “Market Structure and Foreign Trade”. Cambridge, MA: MIT.

Hepenstrick, C and A. Tarasov (2012), “Per Capita Income and the Extensive Margin of Bilateral Trade”. Munich Discussion Paper No. 2012-29.

Jackson, L. (1984), “Hierarchic Demand and the Engel Curve for Variety”. *Review of Economics and Statistics*, 66(1), 8-15.

Jaud, M., O.Cadot and A.Suwa-Eisenman (2013), “Do Food Scares explain Supplier Concentration? An Analysis of EU Agri-Food Imports”. *European Review of Agricultural Economics*, 1-18.

Krugman, P. (1980), “Scale Economies, Product Differentiation, and the Pattern of Trade”. *American Economic Review*, 70(5), 950-959.

Latouche, S. (1996), “The Westernization of the World, the Significance, Scope and Limits of the Drive Towards Global Uniformity”. Cambridge : Polity Press.

Lévy-Garboua, L. and C. Montmarquette (1996), “A Microeconomic Study of Theatre Demand” *Journal of Cultural Economics*, 20, 25-50.

Lévy-Garboua, L. and C. Montmarquette (2002), “The Demand for the Arts” Mimeo University of Paris Pantheon.

Lind, J.T. and H. Mehlum (2007), “With or Without U? The Appropriate Test for a U Shaped Relationship” Munich Personal Repec Paper 4823.

Linder, S. (1961), “An Essay on Trade and Transformation”, Uppsala: Almqvist and Wiksells.

Lionetti, S. and R. Patuelli (2010), “Trading Cultural Goods in the Era of Digital Piracy”. Working paper 40-09. The Remini centre for economic analysis.

Marvasti, A. and E.R. Canterbury (2005), “Cultural and Other barriers to Motion Pictures

Trade”. *Economic Inquiry*, 43(1), 39-54.

Moreau, F. and S. Peltier (2004), “Cultural Diversity in the Movie Industry: a Cross National Study”. *Journal of Media Economics*, 17(2) 123-143.} MPAA (2012), “Trade Barriers to Exports of US Filmed Entertainment”. Motion Picture Association of America report.

Olivier, J., M. Thoenig, and T. Verdier (2008), “Globalization and the Dynamics of Cultural Identity”. *Journal of International Economics* 76, 356-370.} Penn World Tables, 2011. Version 7.0.

Ranaivoson, H. (2010), “The Determinants of the Diversity of Cultural Expressions: An International Quantitative Analysis of Diversity of Production in the Recording Industry”, *Observatorio Journal* 4, 215-249.

Rauch, J.E. and V. Trindade (2009), “Neckties in the Tropics: a Model of International Trade and Cultural Diversity”. *Canadian Journal of Economics* 42(3), 809-843.

Sauré,P. (2012), “Bounded Love of Variety and Patterns of Trade”. *Open Economies Review*, Springer, 23(4), 645-674.

Stirling, A. (2007), “A General Framework for Analysing Diversity in Science, Technology and Society”. *Journal of the Royal Society Interface*, 4, 707-719.

Tardif, J. and J. Farchy (2011), “Les Enjeux de la Mondialisation Culturelle”. Editions le Bord de leau.

Theil, H. (1972), “Statistical Decomposition Analysis”. Amsterdam: North-Holland Publishing Company.

Thoenig, M., N. Maystre, J. Olivier and T. Verdier (2009). “Product-Based Cultural Change: is the Village Global? ”. CEPR working paper 7438.

UNCTAD (2010). “Creative Economy report 2010”. Geneva : UNCTAD.

UNESCO (2005). “International Flows of Selected Cultural Goods and Services, 1994-2003”. Montréal : UNESCO Institute for Statistics.

Watts, Duncan J. (2007) “Is Justin Timberlake a product of cumulative advantage?” *New York Times Magazine*, 15 April.

World Bank (2011), *World Development Indicators 2011*. The World Bank, Washington DC.

9 Data Appendix

9.1 Descriptive statistics

9.2 List of developing countries