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The Performances of Italian Vertical Intra-Industry Trade in Cultural vs ICT Goods

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Abstract

We assess if systematic differences arise in Italian vertical intra-industry trade in ICT and cultural products. We study the factors leading to increasing levels of VIIT since vertical two-way trade flows are prevalent and (in opposition to those of the horizontal type) result in complementary rather than competitive production and trading patterns. We decompose Italian bilateral flows in ICT and cultural goods (2000-2009) into three trade types: inter-industry, horizontal and vertical intra-industry trade, then provide a top-10 list of the Italian partners in terms of percentage of VIIT and finally analyze the Italian performances in terms of products relative quality.

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1. Introduction

The globalization dynamics of international trade patterns are involving both developed and emerging countries in a competition process fuelled by comparative advantages. Intra-Industry trade has always been a mark and a symbol of the European integration process. This has been theoretically understood and interpreted through the lens of the new approaches emerging in international trade literature, based on imperfect competition and differentiated products. Within this scenario, the Information and Communication Technology (ICT) sectors firstly and the cultural sectors secondly have rapidly gained importance in fostering international development strategies, not only at the European level but also at the global level. ICT represent one of the most dynamic and up-to-date macro-sector, always at the forefront of innovation and modernization, and often at the core of economic strategies for growth (both at the aggregate and at the firm level) as well as of policies, when competitiveness and dynamism are concerned. Cultural sectors represent a rapidly evolving phenomenon, which is far from fully understood and exploited from an economic point of view. The main goal of our paper is to focus on an issue still not much debated, as that of international trade flows in ICT and cultural goods. Even if relevant reports both at E.U. level (Eurostat, 2011) and at a global level (UNCTAD, 2010; World Bank, 2012; OECD, 2010) provide a measurement of world trends in cultural goods and services and in ICT, a thorough analysis on the bilateral trade patterns and on the

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characteristics of these bilateral flows in terms of products differentiation is still missing (to our knowledge). In this work, we assess if systematic differences can be found in the performances of cultural products (UNESCO classification) and ICT products (UNCTAD classification) in Italian vertical intra-industry trade (VIIT). We are interested in understanding the factors leading to increasing levels of VIIT since two-way trade flows of the vertical type are prevalent and (in opposition to those of the horizontal type) result in complementary rather than competitive production and trading patterns.

To that purpose, we first isolate Italian bilateral flows for both the categories of goods with very detailed data at the product level (6-digit-codes of the Harmonized System) during the decade 2000-2009. Then we conduct a systematic decomposition of these Italian flows with each world partner into three trade types: inter-industry, intra-industry in horizontally (HIIT) versus intra-industry in vertically differentiated products (VIIT). For both the categories of goods, we provide a top-10 list of the Italian partners in terms of percentage of VIIT (as a mean value over the analyzed decade). Our methodology (original, to our knowledge) works out the share of VIIT between Italy and each trade partner (for both categories for products) not as a simple ratio of the two-way traded goods over the total number of goods exchanged with that given country, but also taking into account how large is the share of ICT/cultural products actually traded (either as unilateral or as bilateral trade) over the total of products classified as ICT/cultural. Given this methodology, the percentages of Italian VIIT in ICT and cultural goods are not overestimated nor distorted among trade partners, and the results allow to correctly evaluate the degree of vertical specialization.

We show that the Italian trade both in ICT products and in cultural goods is significantly characterized by two-way trade of vertically differentiated products. However, cultural and creative sectors still lay behind in terms of trade integration, showing a perhaps more old-fashioned specialization of production and trade occurring in horizontal lines. Not surprisingly, we find that the most important bilateral IIT intensities in cultural products are observed in Europe.

Finally, with reference to the relative quality of Italian ICT and cultural products, we find that the Italian performances are good relative to those of some emerging countries, but not as much if compared to other OECD countries and that Italian quality is lower, on average, in ICT products than in cultural products.

2. Methodology and data for disentangling vertical from horizontal IIT in cultural and ICT goods

2.1. Quality differentiation and vertical intra-industry trade

Since the 1960s, two-way trade flows within the same industries between countries with similar technological levels and with similar endowments has become both one of the most important empirical findings and one of the most theoretically investigated issue in international trade studies. As for the empirics, the significant incidence of intra-industry trade (IIT), originally identified within the European Economic Community by scholars such as Verdoorn (1960), Balassa (1966) and Grubel (1967), has then become the most distinctive feature of the European integration process. The first longitudinal multi-country study on horizontal and vertical IIT was done by the CEPII (1997) within the European Commission's ex post appraisal of the impact of the completion of the Single European market on trade patterns in Europe.

The main novelty with respect to this original conceptual and empirical framework is the awareness that the original opposition between specialization and IIT has been contradicted by data (see Fontagné, Freudenberg and Gaulier, 2005, for an interesting insight on this issue). The main point of this debate is that, as Helpman and Krugman (1985) stated, monopolistic competition and internal economies of scale lead to IIT in horizontally differentiated products, whereas dissimilarities in factor endowments and technological development drive trade patterns in inter-industry trade, as in the old comparative advantage theory. However, as Feenstra and Kee (2004) points out, such an interpretation of IIT, relying on the idea of a connection between IIT and full specialization, completely misses the analysis of the vertical differentiation of products, which, on the contrary, entails the idea of IIT as an exchange of "different" goods. This new key for interpreting IIT imposes to rely on the price mechanism

in order to discern between horizontal IIT (two-way trade in homogeneous products) and vertical IIT (two-way trade of qualitatively differentiated products), as well analyzed by Abd-el Rahman (1991).

2.2. Disentangling vertical from horizontal IIT in ICT and cultural goods

There are two main methods (see Greenaway, Hine and Milner, 1994; Fontagné and Freudenberg, 1997) among others) for disentangling vertical from horizontal intra-industry trade, both relying on the same assumption that differences in prices within one product category mirror differences in quality (see Affortunato et al., forthcoming, for related comments). The main limitation of this assumption is that it is only acceptable when one uses the most detailed trade data, where aggregation of different products within one product category is minimised, that is using HS 6-digit trade data, which are the most disaggregated and the closest to the idea of “product” available at the international level.

Accordingly, for our analysis we use the database developed by CEPII based on COMTRADE (BACI), which stores a harmonized world trade matrix for values as well as for quantities at the 6-digit level of the Harmonized System (HS). Thanks to this very detailed database, it is possible to compute the unit values of worldwide bilateral flows at the product level and to carry out our analysis based on the calculation of unit values as a proxy of goods average prices (see Affortunato and Mattosco, 2012).

Our procedure is the following:

- First we select data of Italian trade in cultural codes and ICT codes (separately) at the product level for each year over the decade 2000-2009. As already said, we use the UNCTAD classification of ICT goods[†] and the UNESCO classification for cultural goods (UNESCO, 2009).
- Since we focus on Italian bilateral flows with each of its world trade partners, our second step is to categorize whether each flow is inter-industrial or intra-industrial, depending on the degree of overlapping: when the value of the minority flow is at least 10% of the majority flow (see Fontagné and Freudenberg, 1997), the total trade in this product is considered to be intra-industry trade (IIT).
- Thirdly, for each of the selected codes representing elementary flows, we work out the product unit value as the ratio between value and quantity, and then we check whether, for any given product and any given Italian trade partner, the export unit value and the import unit value are significantly different (that is, whether the ratio of export unit value to import unit value is external to the interval), using the following formula:

$$1 - \alpha \leq \frac{UVX_{ij}^k}{UVM_{ij}^k} \leq 1 + \alpha \quad (1)$$

where k, i, j respectively represent the product, the export and the importer and α is a dispersion factor, arbitrarily fixed, that literature assumes to be equal to 0.15. Traded products are considered to be vertically differentiated when this ratio, representing a relative unit value of export to import, lies outside this range.

- The next step is to calculate the percentage of VIIT, using the following equation:

$$\%_{VIIT} = \left\{ 1 - \left[\frac{N_{TOT} - N_{TR}}{N_{TOT} - (N_{TR} - N_{EXT})} \right] \right\} \times 100 \quad (2)$$

where N_{TOT} is the total number of products traded between Italy and any given partners, N_{TR} represents the number of products bilaterally traded and N_{EXT} is the number of products two-way traded which are external to the side interval.

- We calculate the percentage of HVIIT (bilateral flows for which Italy shows high quality exports relative to imports) over the total of VIIT for any given trade partner both for ICT sectors and for cultural sectors.
- Finally we repeat these steps for each year over the decade 2000-2009 and we work out average values for VIIT and HIIT percentages. According to the percentage of two-way trade, we sort all Italian world partners and provide a top-ten list of countries with which there are the largest flows of VIIT. For each of these countries, we specify the share of VIIT characterized by higher performances in terms of quality for Italian products.

[†] <http://unctadstat.unctad.org/UnctadStatMetadata/Classifications/Methodology&Classifications.html>

3. Results

Our results show two top-ten lists of Italian world partners, sorted in terms of shares of VIIT flows for ICT products and cultural products separately, calculated as average values over the decade 2000-2009. Our methodology (original, to our knowledge) works out the share of VIIT between Italy and each trade partner (for both categories for products) not as a simple ratio of the two-way traded goods over the total number of goods exchanged with that given country, but also taking into account how large is the share of ICT/cultural products actually traded (either as unilateral or as bilateral trade) over the total of products classified as ICT/cultural. Given this methodology, the percentages of Italian VIIT in ICT and cultural goods are not overestimated nor distorted among trade partners, and the results allow to correctly evaluate the degree of vertical specialization.

Table 1. VIIT and H-VIIT shares

ICT Sector			Cultural Sector		
Partners	Vertical Trade	High quality	Partners	Vertical Trade	High quality
France	50,29	42,41	France	45,01	38,27
Switzerland	45,70	17,71	Germany	43,18	45,44
USA	42,25	10,94	USA	37,92	26,19
UK	40,08	32,93	UK	37,56	40,11
Austria	37,15	37,27	Austria	34,27	41,16
Belgium-Luxembourg	33,62	44,20	Switzerland	33,32	22,90
Spain	33,05	42,18	Spain	32,76	50,46
Germany	32,54	36,88	Belgium-Luxembourg	27,42	45,98
Hong Kong	30,91	60,85	Netherlands	25,28	44,84
Norway	29,78	15,78	Hong Kong	24,57	60,29

Not surprisingly, we find here that the most important bilateral IIT intensities are observed with other E.U. member states. The absence of huge emerging countries, such as China or India (the last one being present only in the cultural top-ten), highlights that a great potential in terms of trade integration is still to be exploited if Italy succeeds in finding strategies for a vertical specialization in production and trade, in particular investing in innovations which could foster high-quality flows of Italian products towards developing countries. The reason why we are interested in investigating Italian results in terms of VIIT shares is that two-way trade flows of the vertical type are prevalent and (in opposition to those of the horizontal type) result in complementary rather than competitive production and trading patterns.

Italian trade, both in ICT products and in cultural goods, is significantly characterized by two-way trade of vertically differentiated products. However, cultural and creative sectors still lay behind in terms of trade integration, showing a perhaps more old-fashioned specialization of production and trade occurring in horizontal lines.

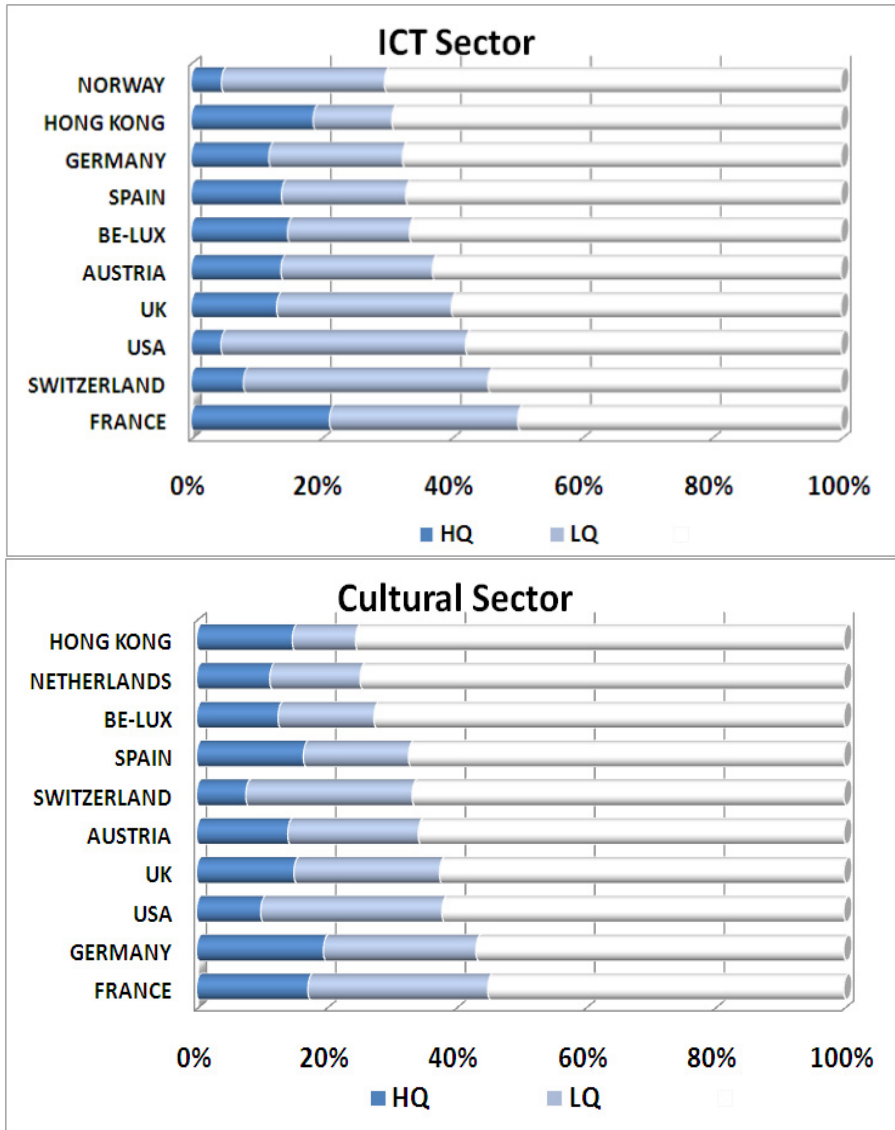


Figure 1. HQ in VIIT Trade in ICT and Cultural Sectors

Finally, with reference to the relative quality of Italian ICT and cultural products, we find that the Italian performances are good relative to those of some emerging countries, but not as much if compared to other OECD countries and that Italian quality is lower, on average, in ICT products than in cultural products.

4. Conclusions

ICT are one of the most dynamic and innovative economic activity, always at the core of growth strategies and policies when competitiveness and efficiency are concerned. Cultural sectors represent a rapidly evolving phenomenon, which is far from fully understood and exploited from an economic point of view. The main goal of

our paper is to focus on an issue still not much debated, as that of international trade flows in ICT and cultural goods. In particular, we are interested in finding vertical intra-industry shares over the total Italian IIT flows: the reason for focusing in vertical two-way flows is that, in opposition to those of the horizontal type, they result in complementary rather than competitive production and trading patterns, allowing a mutual exploitation of the gains from increasing levels of trade integration.

Accordingly, we conduct an analysis aiming at disentangling vertical from horizontal IIT in the Italian world bilateral trade (2000-2009) of “cultural goods” (UNESCO classification) and ICT goods (UNCTAD classification), to highlight possible systematic differences in the Italian patterns of intra-industrial trade in the two sectors.

The most important bilateral IIT intensities are observed with other E.U. members, highlighting that a great potential in terms of trade integration is still to be exploited both in ICT and cultural two-way trade, in particular by fostering high-quality flows of Italian products towards developing countries.

Cultural and creative goods show a somewhat poorer performance if compared with ICT products in terms of trade integration, showing a perhaps more old-fashioned specialization of production and trade occurring in horizontal rather than vertical lines. Finally, with reference to the relative quality of Italian ICT and cultural products, we find that the Italian performances are good relative to those of some emerging countries, but not as much if compared to other OECD countries and that Italian quality is lower, on average, in ICT products than in cultural products.

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