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(Economic History Working Papers)

## Comparative Advantages in Italy: A Long-run Perspective

by Giovanni Federico and Nikolaus Wolf

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# Comparative Advantage: A Long-Run Perspective

Giovanni Federico\* and Nikolaus Wolf\*\*

## Abstract

The history of Italy since her unification in 1861 reflects the two-way relationship between foreign trade and economic development. Its growth was accompanied by a dramatic increase in the country's integration with European and global commodity markets: foreign trade in the long run grew on average faster than the overall economy. Behind the dynamics of aggregate trade, Italy's comparative advantage changed fundamentally over the last 150 years. The composition of trade, in terms of both commodities imported and exported and in terms of trading partners, developed from a high concentration of a few trading partners and a handful of rather simple commodities into a wide diversification of trading partners and more sophisticated commodities. In this chapter we use a new long-term database on Italian foreign trade at a high level of disaggregation to document and analyze these changes. We will conclude with an assessment of Italy's prospects from a historical perspective.

**JEL Classification:** F14, N73, N74

**Keywords:** international trade, 19<sup>th</sup>-20<sup>th</sup> century, Italy

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## **1. Introduction**

Richard Cobden famously suggested that Italy's ideal specialization was to grow oranges and produce silk; however, in its 150 years of history as a unified country, Italy has proved him wrong. Although Cobden was correct at the time, he did not expect the situation to change in the future. Since the 1930s, Italy has exported more manufactures than primary products and currently it is the third largest exporter of manufactures in the European Union and sixth in the world. Exports of industrial products have arguably been the most dynamic sector of its ailing economy in the last few decades. This paper details this long-run change in trade and specialization from 1862 to the present, with the same analytical framework and a comparable data set.

We start with a brief survey of the (scientific) literature on Italian trade, stressing how the debate featured alternate waves of optimism and pessimism, which tally well with the cyclical fluctuations of the Italian economy. Section 3 describes the main macroeconomic trends (degree of openness, trade balances, share of Italian exports on world market, etc.), and outlines the long-term changes in composition of products and destinations. Whenever possible, we compare Italy with other European countries. Section 4 deals with the changes in Italy's comparative advantages, measured with the index as set forth by Lafay (1992). Unlike the conventional indices of Revealed Comparative Advantage (RCA) in the wake of Balassa (1965), the Lafay index takes into account exports as well as imports. We show that, contrary to the conventional wisdom, Italy already enjoyed a comparative advantage in manufactures in the 1920s. Section 5 then explores, with a simple "shift-share" analysis, the relation between the relative growth in exports of manufactures, both total and divided by technological level, and their destination. The last section very briefly sums up the results, puts forward some speculative ideas about the relation between long-term change and overall economic growth, and concludes with an assessment of Italy's trade position in the modern world economy.

## **2. Exports and Economic Growth in Italy**

The nexus between trade and growth has been a prominent topic in Italian economic thinking and policy over the last 150 years. Throughout the period, Italian scholars and policy-makers have shown limited optimism about the role of exports as an engine of economic growth. For most of the first one hundred years of Italy's history as a unified country, Italian elites nurtured a sort of ideological antipathy for trade. It was typically admitted that exports were necessary to pay for the essential imports of raw materials, but little more than this. Exports were deemed to have spurred growth only in the 1860s and 1870s, and to some extent during the "boom giolittiano" – the 20 years before the outbreak of World War I (Einaudi 1900). This hostility to trade peaked during the 1930s when the fascist regime regarded independence from foreign trade (autarky) as one of its key economic goals. Optimism gained ground again during the golden years of the European economy after World War II when Italy achieved unprecedented rates of GDP growth. Exports were regarded as an essential source of aggregate demand and as a strong stimulus to increase the competitiveness of Italian industry (Ciocca 2007). The change in the composition of Italian exports was heralded as evidence of convergence with the more "advanced" European countries such as Germany and France (Cao Pinna 1965; Miurin and Santini 1971; Conti 1973; Onida 1978). Since the late 1970s, however, growth has slowed

and pessimism has returned. Few asked for protectionism and many still continued to consider exports as a main catalyst for growth. Regardless, several scholars argued that Italy's long-term prospects for trade-led growth were poor. In fact, the country still exported mainly low-tech, "traditional" goods, which were subject to increasing competition from emerging markets (Conti 1978; Guerrieri and Milana 1990). Indeed, in the 1980s and 1990s, Italy's specialization changed fairly little and thus the difference with the advanced European countries persisted (Bugamelli 2001; De Benedictis 2005; Di Maio and Tamagni 2005). An alternative, more positive, view of Italy's export performance in the 1980s and 1990s argues that the aggregate data is misleading. In fact, Italy succeeded in positioning itself on the top of the market for "traditional" goods, exporting high quality and high value added traditional goods, and enjoyed some degree of market power in these goods (Fortis 2005; De Nardis and Traù 2005; Lanza and Quintieri 2007). Given Italy's rather poor economic performance since 2000, export pessimism has again emerged as an important component of the prevailing narrative about Italy's long-term stagnation and relative decline.

This literature suffers from a two-fold problem. First, most analyses focus on short- to medium-term trends. Many of the works on the post-war period consider only benchmark years rather than yearly series and none extend the analysis beyond periods of 23 years. There is only one exception: a very recent article by Vasta (2010) who covers the whole period 1862-2010, but has to rely on a survey of the literature for the post-war years. Second, the quantitative evidence is insufficient for the interpretation. The works on more recent years, which can rely on the United Nations data on world trade, use an array of different measures with different levels of product disaggregation. The historical literature on the pre-1939 period is based on anecdotal evidence, with very few data and almost no international comparisons, even though Italy has published fairly reliable trade statistics since its unification (*Movimento Commerciale*). However, the sheer size of these statistics - up to 3000 products in the 1930s - and the repeated changes in classification of products have so far prevented any systematic exploitation of this source.

This paper addresses both these shortcomings. It provides a long-term view of Italian trade and specialization from unification to the present, with a consistent analytical framework. For the period before 1939, we rely on the results of a massive research project, funded by the Banca d'Italia (Federico *et al.*, forthcoming), which has copied the whole set of Italian trade statistics from 1862 to 1949 and reclassified them according to the SITC classification (Rev. 2) - the data will soon be available on the Banca website. From 1950 onwards, we use the United Nations data as published in their annual Yearbook of Trade Statistics. For the period through 1961 we have to rely on printed summaries (United Nations), while afterwards the data is available in a number of databases. We use the NBER-UN world trade data for the period 1962 - 2000 (see Feenstra *et al.* 2005 for a description of the data set) and complement this with the UN Comtrade data for the period 2000-2009.

### **3. A First Look at Macro-Trends: 1862-2009**

Let us start with the degree of trade openness, the ratio of total merchandise trade (imports plus exports) to GDP. Graph 1a compares Italy with the two powerhouses of the

European continent and Italy's main trading partners (Germany and France), as well as with Spain, a smaller and, for most of the period, more backward country than Italy.<sup>1</sup>

Before the Great Depression, differences between countries were substantial. Italy remained less open than France and Germany - although not less than Spain - throughout all its first 50 years as a unified state. The degree of openness remained roughly constant around 0.20 until the 1890s and then increased to 0.25 on the eve of the war – five points less than France and almost 13 less than Germany. It remained on that level during the 1920s and, as everywhere, collapsed during the Great Depression. Since the 1950s, the degree of openness has continuously increased in all four countries. In Italy, the growth was fairly steady until the early 1980s, exceeding the 1913 level around 1970, stalled in the 1980s, and then resumed up to a maximum around 0.55 in the mid-2000s. Nowadays, the Italian economy is as open as France's and Spain's, but still less than the German economy. This growing openness is a key factor that has shaped the economic history of the Italian (and European) economy.

Italy has almost always exported less than it imported (see Graph 1b). The trade balance was heavily negative after the unification and improved in the 1870s, but stayed negative for over a century with wide fluctuations between 1% and 8% of GDP. Exports only exceeded imports during the “economic miracle” of the late 1950s and early 1960s and for a few years in the early 1990s. The balance turned negative again in recent years.

When compared with the three other countries, Italy's share in world markets at current prices was remarkably stable over this period (see Graph 2a).<sup>2</sup> It declined in the late 1880s, from around 3-3.5% to about 2.5%, and remained at this level until the early 1950s. Then it began to rise, as Italy, as well as other European countries, benefitted from its membership in the European Union and from trade liberalization under the GATT and successor agreements, which did not extend to countries still under socialist regimes. The share peaked around 1990, well above 4.5%, before it came down to 3.5% in the 2000s as new competitors, most notably China, entered the world market. This fall has raised some concern about Italy's competitiveness, but it can be viewed more optimistically as a return to its long-run average.

Before 1939, trends of the share in world markets differ remarkably between Italy and the other countries, most notably France, whose share plummeted from 15% in the 1860s to less than 5% during the Great Depression. Since 1950, however, the movements are very similar: the coefficient of correlation is 0.75 for France and 0.78 for Germany. One can object that a comparison between economies of widely different size is misleading. Thus, in Graph 2b we correct by normalizing with the country's share of world GDP, as measured by

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<sup>1</sup> The data on trade at current prices for France, Germany, and Spain for 1862-1939 are from *Annuaire Statistique* (1951), Hoffmann (1965, tab. 125) and Tena (2007, tab. 3), for 1945-1961 from United Nations (1962), for 1972-2000 from Feenstra *et al.* (2005), and for 2001-2009 from the Comtrade database. Italian GDP at current prices for 1862-2009 has been kindly provided by Alberto Baffigi. For French and German GDP through 1939 we used the series by Toutain (1991, series V41) and Hoffman (1965, tab. 248), for Spain through 1969 we used Prados de la Escosura (2004, cuadros A.6.6 and A.12.1). The data for 1950-2002 are from Mitchell (2005) and 2003-2010 from the OECD.

<sup>2</sup> For the sources of country data cf. footnote 1. The series of world trade in current dollars for 1862-1913 is obtained by linking the data from Lewis (1981) for 1862-1913, from the United Nations (1962) for 1913-1939 and from the IMF for 1948-2009. The country data, in national currencies, have been converted into dollars with exchange rates from [www.globalfinance.com](http://www.globalfinance.com).



Maddison (2009). His estimates are available for 1870, 1900, 1913 and 1940, and continuously since 1950.

The Italian ratio remained below one until the 1950s, with a clear downward trend in the first half of the 20<sup>th</sup> century (0.76 in 1870, 0.82 in 1900, 0.74 in 1913 and 0.70 in 1939). In other words, Italy exported substantially less than it should have, given its GDP. With this metric, its performance is decidedly disappointing. The ratio for France and Germany declined before 1939, but their starting point was much higher (1.75 and 1.5, respectively). Spain's normalized share was lower than the Italian one in 1870, but much higher in 1900 and 1913. As expected, the post-war trade boom featured a sharp increase in the ratios. By 2008, in all four countries, the ratios were at their post-war maximum: the Italian ratio was at 1.6, as high as France's and Spain's, but well below the German one (2.15). In other words, Germany was the outlier and Italy was in the European norm. Furthermore, the recent fall in the Italian share in world trade (Graph 2a) reflects the relative decline of its economy rather than a pure loss of competitiveness.

### **3.1 *Italy's Foreign Trade***

Let us now turn to the structure of Italy's foreign trade. To start with, we can distinguish between primary products and manufactures. As they sum up to 100, Graph 3 reports only the share of the latter, defined as the sum of SITC (Rev. 2) 1-digit categories 5 to 9, excluding raw silk before 1939.<sup>3</sup>

Trends on the import side do not tally with the view of a typical backward country that imported mostly manufactures. Its poor resource endowment forced Italy to import a lot of primary products in the 1860s and 1870s: manufactures accounted for almost 40% of imports and their share on total imports fluctuated around this level for more than a century, which clearly contributed early on to the country's negative trade balance. It started to rise in the 1980s to about three quarters as a consequence of a significant increase in intra-industry trade. As expected, given its (low) level of development, after its unification, Italy exported very few industrial products. The differences with France and Germany were huge, especially on the export side. Manufactures accounted for 50-60% of all French exports in the 1860s and for 70% of German exports in the 1880s, and for 10% and 30% of imports, respectively.<sup>4</sup> Italy was closer to Spain, where industrial products accounted for about half the imports and a mere 12% of exports in 1877 (Tena 2007). However, while the composition of Spanish trade did not change much until 1951, Italian exports of manufactures grew decidedly faster than total trade. On the eve of World War I, their share on exports rose to almost 40% and increased further in the 1920s. In fact, during the war, exports of primary products declined steadily to about one third of their pre-war maximum in 1918. In contrast, exports of manufactures increased in the early years of the war and

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<sup>3</sup> Silk (raw and thrown) is classified in SITC 2 alongside cotton and other industrial yarns. Yet, most of its value (around 80-85% for the raw silk and about 70-75% for the thrown one) consisted in cocoons – a purely agricultural raw material – and for a number of technical reasons processing of cocoons settled close to the production areas. The case is thus more similar to wine production or smelting of copper than to cotton production. The classification of silk is very important, as it was Italy's main export from the unification to the 1920s: considering it as an industrial product would give the misleading impression that Italy exported manufactures. Category 9 ("commodities and transactions not elsewhere included") is added to manufactures as it consists mostly of gold and weapons.

<sup>4</sup> See footnote 1 for sources. The figures after 1950 include East Germany.

collapsed only in 1917-1918. The divergence continued even after 1918. The exports of primary products recovered slowly and they only exceeded their pre-war levels briefly in the late 1920s by less than a fifth. In contrast, exports of industrial products grew fairly fast in the 1920s. Before the Great Depression, they exceeded their pre-war level by about 80% and Italy's share on world exports of manufactures reached 3% for the first time. The Depression hit all exports to the same extent, but exports of manufactures were boosted by the conquest of Ethiopia in 1936. In fact, in 1936-1939, industrial products accounted for 49.6% of total exports including colonial trade and only 43.7% without it. Thus, on the eve of World War II, in spite of its progress, Italy still had not yet caught up with France and Germany. After the war, the change in composition of exports resumed, and continued steadily up to the early years of the 21<sup>st</sup> century, when manufactures exceeded nine-tenths of total exports. This share is roughly as high as in Germany and decidedly above that of Spain and France.

### 3.2 *Composition of Italian Exports*

The change in composition came along with a significant increase in the level of diversification of Italian exports. Consider a Herfindahl index of product shares of (4-digit SITC Rev 2), defined as

$$HFI_t = \sum a_{i,t}^2$$

where  $a_{it}$  is the share of 4-digit SITC (Rev 2) product  $i$  in total exports at  $t$ . In the 1860s, this index was above 0.15, because the five most important products (silk, olive oil, sulphur, silk cocoons and wine) accounted for 65% of total exports. Italy's dependence on a handful of products steadily declined to the mid-1900s, when the index was about 0.08 (the five most important products, including cotton and silk cloth, accounted for no more than 39% of total exports). Then the Herfindahl index collapsed to about 0.03 in the last years before the World War I and declined further to 0.016 in the late 1930s, when the five top products accounted for just 18.3% of exports. The index declined further after the war, down to a minimum around the 1980s. In spite of a small rebound in the late 1990s, export concentration remained low at around 0.013. The five most important (4-digit) products, all industrial, accounted for 16% of total exports.

While the overall performance of manufacturing exports and their diversification suggests a strengthening position on world markets, most of the doubts about the long-term prospects of Italian exports, in the past and also currently, are related to an allegedly excessive share of "traditional" manufactures. Are these concerns justified? As Graph 4 shows, the 1-digit SITC groups 6 ("Manufactured goods classified chiefly by material") and 8 ("Miscellaneous manufactured articles") together account for about 40% of total exports of manufactures, while the share of chemicals (group 5) hovers around 10%. The most "traditional" four industries, textiles and yarns (65 in the 2-digit SITC classification), clothing and apparel (84), footwear (85), and furniture (82) still supply between a sixth and a fifth of Italian industrial exports. However, the key change is the rise of the share of SITC group 7 ("Machinery and transport equipment"). It became the second largest group, after textiles, in the 1930s, although largely thanks to exports to the colonial captive market, and the largest group in the 1960s. In the last fifty years, this group has contributed about two-fifths to total Italian exports.

On a more general issue, one could question whether aggregate data at the 1- or 2-digit SITC category level are adequately representative, as most of them hide large differences in terms of sophistication and skill-content of exports. Scholars have put forward a number of alternative classifications of goods along these lines, using 3- or 4-digit categories (Peneder 2003). Pavitt (1984) has suggested distinguishing between science-based, scale-intensive, supplier-oriented, and traditional industries, while the OECD (1996) and Lall (2000) classify goods according to their technology level. Here, we follow the classification scheme of Lall (2000) and distinguish between low, medium, and high technology industrial products.<sup>5</sup> The classification, as all the others, is tailored to the situation of the late 20<sup>th</sup> century and thus is less suitable to capture the earlier technological levels. For this reason, Graph 5 covers the period only from the 1920s onwards.

For the period through 1939 we report series of low technology manufactures both with (LTS) and without (LTNS) raw silk, but we deem the latter more representative for the nature of that product (cf. footnote 3). The share of low technology manufactures in total Italian exports has remained fairly stable in the long run at around a third, with a hump in the 1980s. In contrast, the share of medium technology goods has been rising throughout the entirety of the period. The growth has been very fast during the interwar years, but it has continued also after 1950, increasing to 40% in 2009. The share of high-tech products was very low in the 1920s, which is of little surprise given that most of the relevant technologies were only in an early stage. However, the share of these products in all Italian exports has increased fairly little in the last decades. As we will detail in the following section, the differences between these groups extend from their shares of exports to the trade balance.

### **3.3 *Geographical Reorientation of Trade***

The change in composition towards manufactures and to ever more diverse and sophisticated manufactures was associated with some quite dramatic geographical reorientation of trade (see Graph 6).

At the beginning of the period, about 90% of Italian exports headed towards Europe – one-third of these went to France, one-sixth each to the United Kingdom and Switzerland (probably including a lot of disguised exports to Central Europe), and the rest to other countries. The overall share of Europe declined steadily thereafter, and on the eve of World War I, European countries accounted for about 60% and the EU-15 (plus Switzerland) for about a half. However, this movement conceals a massive shock caused by the outbreak of the trade war with France in 1888. Until 1887, France had absorbed almost a half of Italian exports and afterwards its share dropped to less than a fifth. Germany became Italy's best client and is still the main single destination for Italian exports. The trend towards a greater geographical diversification continued into the 1920s and was boosted in the latter years of the 1930s by the conquest of Ethiopia. Colonies, which previously had been almost

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<sup>5</sup> Low technology products are characterized by stable, well-diffused technologies, mostly embodied in capital equipment. These include leather and textile products such as cotton fabrics, footwear, glassware, or furniture. Medium technology products encompass most capital goods and the production of intermediate goods and are typically based on complex technologies such as cars and engines, but also most products of the chemical industries. The production of high technology goods require high R&D investments, interaction with research institutions, and highly specialized technical skills, such as optical instruments, and electrical and electronic equipment such as computers, aircraft, or medical products.

irrelevant, accounted for about one-quarter of Italian exports on the eve of World War II. This situation was indeed exceptional, and after the war and the subsequent loss of the colonial empire, the share of Europe rebounded to about two-thirds, and remained by and large constant until today. Trade with non-European OECD countries (i.e. the USA and Japan) only once reached 15% and has recently declined to below 10%, while trade with developing and emerging markets recently increased above 25% of total exports.

#### 4. Italy's Comparative Advantage

There are many ways to measure comparative advantages (Laursen 1998), but the workhorse of the empirical work is still the index of Revealed Comparative Advantage (RCA) by Balassa (1965) and various modifications thereof. Here, we propose to use a (simplified) version of the index suggested by Lafay (1992), which uses commodity-specific net exports as a measure of comparative advantage. In a nutshell, the index is the difference between the normalized net-balance for the  $i^{th}$  product and the total normalized net-balance weighted with the share of the product on total trade. Formally, this can be written as

$$LFI_i = 100 \times \left[ \left( \frac{x - m}{x + m} \right) - \left( \frac{X - M}{X + M} \right) \right] \times \left( \frac{x + m}{X + M} \right),$$

where  $x$  refers to exports and  $m$  to imports. Lower case letters denote commodity-specific trade, while capital letters denote total trade (i.e.,  $X = \sum x$ ).<sup>6</sup> Thus, a positive value implies a specialization in the  $i^{th}$  good. All indexes sum up to zero, with a maximum range from 200 to -200 in the extreme case of complete specialization of both exports and imports in one single good with balanced trade.<sup>7</sup> The Lafay index offers three distinct advantages over the traditional RCA:

a) It controls for distortions from an overall net deficit (which was the most common case in Italy) and, above all, it takes the level of imports into account. This is a particularly appealing feature for the analysis of recent trends when outsourcing and intra-industry trade have become increasingly relevant. As a general rule, the distortion from neglect of the import side is potentially greater the higher the level of aggregation. For instance, Italy in 1998 was a net importer of iron and steel products (a two-digit category), but its RCA was 1.05 (De Benedictis 2005) – i.e., Italy would appear to be specialized in these goods.

b) It needs only national trade statistics. This is particularly helpful for an historical work, as data on world exports with a suitable disaggregation are available only after 1962. The figures by Tyzynski (1951) and Yates (1959) are highly aggregated and the implicit classification is quite idiosyncratic and differs markedly from the SITC classification we use for other data.

c) It measures the contribution of different products to changes in total comparative advantage. From this point of view, the RCA can be seriously misleading, especially for minor products. Assume that a country with a 1% share of world exports has a monopoly on a product accounting for 0.01% of world trade; the

<sup>6</sup> The original Lafay index also includes an adjustment for the size of the economy (as proxied by the current GDP), which has been omitted, following Bugamelli (2001) and Zaghini (2003).

<sup>7</sup> This appealing property comes with a price, as the index can be falsely positive if  $(x-m) < (X-M)$ .

RCA for that good would be misleading 100, but the product would still account for only 1% of the country's exports.

The data in Graph 7a shows the changes in Lafay indices for manufactures (defined again as SITC 1-digit categories from 5 to 9). Note that Italy was typically running a trade deficit. The index turns out to be positive throughout the period (except for a few years in the 1860s) only if raw silk is included. If it is excluded, as we believe it should, the picture is rather different: Italy apparently had no comparative advantage in manufacturing products before the turn of the century. The Lafay index was heavily negative after Italian unification but started to grow after the mid-1880s, and reached a positive value for the first time in 1898. It remained around zero until World War I, but with a short dip around 1907. Italy remained a net importer of industrial products until 1910. The index jumped upwards during the war and afterwards, peaking in 1921 when German firms were hampered by defeat and hyperinflation. The return of world markets to more normal conditions caused the index to decline, but it remained positive and high throughout the interwar period. The spike of the late 1930s is, as argued before, largely spurious because it reflects manufacturing exports to colonies. Regardless, even when we omit these years, the index remains well above zero and fairly high (8.3 for the period 1923-1936). During the golden years of the post-war period and also in the bleak 1970s, the index continued to grow, increasing to values around or even above 20 until the mid-1980s. Then it started a long decline. In the 2000s, the strong increase in imports of industrial products (Graph 3) drove the aggregate index down to five or below, a level it had not reached since World War I.

Graph 7b decomposes the Lafay index by type of manufacturing products at the 1-digit level. Before 1939, the indices for chemicals (5), engineering (7), and miscellaneous manufactures (8) were low in absolute values and changes were fairly modest in spite of the on-going industrialization process. The index for engineering remained almost constantly negative. Indeed, Italy was a net importer for most engineering products (if measured at the 2-digit level) throughout the 1920s and early 1930s. Only road vehicles (group 78) have remained significantly positive from the early 1900s to World War II. Chemicals are an interesting case. Italy had a sizeable positive balance in the 1870s and 1880s, mostly thanks to exports of traditional tanning materials, soap, and perfumes. The overall balance deteriorated during the "boom giolittiano" and remained slightly negative after the war. Thus, the observed dramatic reversal of Italy's comparative advantage towards manufacturing products reflects changes in group 6 – or more precisely in textiles (65), which here excludes silk. Their index shifted from heavily negative values (around or below -7) until the 1890s into positive ones. On the eve of World War I, textiles, most notably cotton cloth, were already the third largest contribution to net exports, after raw silk and fruits. They became the main Italian export after the late 1920s with index values over 7, but they lost this position after World War II. Their index declined steadily throughout the 1950s, down to 1.5–2 in the 1960s. Meanwhile, Italian exports had diversified with substantial net balances in non-metallic mineral manufactures (66) – i.e., marble, stones, and tiles –, clothing (84), footwear (85), and to a lesser extent furniture (82). But the defining trend during the economic miracle was the boom in engineering products. At the end of the 1960s, all 2-digit SITC categories of engineering products were positive and five out of ten categories were in the top 11, if ranked by the Lafay coefficients. "Road vehicles" (78) had the highest index of all sectors at the 2-digit level (2.88), ahead of clothing (2.85). This was

the moment when Italy came closest to the “European” (i.e. German) pattern in the whole period covered in this paper. However, this was short lived. Textiles enjoyed a revival in the late 1970s and 1980s and the competitive position in the so-called “made in Italy” products (clothing, footwear, furniture) remained quite strong until the late 1980s. Then, their index started to decline, as exports stagnated while imports were growing quite fast. The decline was driven by a combination of factors, including a considerable increase in manufacturing imports of road vehicles from Germany and imports of products such as articles of apparel and clothing from France, jointly with difficulties in exporting these goods. Thus, by the late 1990s specialized machinery for industries (72 and 74) sat at the top of manufactures if ranked according to the Lafay index. In contrast, the trade balance for road vehicles was negative from 1982 onwards, and in the late 1990s, their Lafay index was the second lowest of all 2-digit categories, after oil products.

This short description provides some hints about the technological level of Italian comparative advantages, but Lall’s (2000) classification scheme adds some precision. As Graph 7c shows, Italy has always been very competitive in Low-Tech products, and it has managed to consolidate a fairly strong position in Medium-Tech products in the 1960s and 1970s, which it partially lost in the 1990s and 2000s. In contrast, Italy has never been a significant net exporter of High-Tech goods, and its competitive position has been markedly deteriorating since the late 1980s when a rise in exports in these products was more than offset by an increase in imports (also compare graph 5). In terms of Low-Tech products, Italy’s relative strength is driven by textiles and leather products, such as footwear (group 851), which have diminished over the last two decades. The development in Medium- and High-Tech industries is deeply related to Italy’s position in intra-industry trade. The country’s position as a car manufacturer (group 781) weakened in the 1970s but recently started to improve again. However, the country is increasingly exporting intermediate goods for the car industry (group 784), but also other highly-specialized machinery and parts thereof (728), as well as electrical equipment, which keeps the international position in Medium-Tech industries relatively stable at a Lafay index value around 5. Finally, the difficulties in improving Italy’s international position in High-Tech products was driven by a significant decline in the export of office machinery accompanied by a massive rise in imports (group 751), in part offset by a rise in exports of telecommunication equipment and parts thereof (groups 764, 776). Also, exports of medicinal and pharmaceutical products (541) performed quite well, preventing the Lafay index in High-Tech products from falling more sharply.

## **5. Manufacturing Exports and Geography: Where Did Italy Succeed?**

In the previous sections, we highlighted two major trends: first, the increase in the shares of manufacturing exports, which broadly reflect the industrial transformation of Italy, and second, the growing geographical diversification of exports. To what extent are these two trends related? Did exports of industrial products increase across the board, or was their success only concentrated in a few markets? In particular, to what extent did Italy manage to penetrate markets for manufacturing goods in advanced economies such as France, Germany, or other OECD countries, and to what extent was this success in manufacturing exports limited to an expansion into more backward regions of the world? To address this issue, in this section we decompose the change in the share of manufactures in Italian exports between (1) changes in the destination of exports by country and (2) changes in the

share of manufactures on exports to different countries. For example, in 1862 nearly one-third of all Italian exports went to France but only below 1% to Germany (Zollverein). In the same year, manufactures (without silk) accounted for 30% of exports to Germany, for 18% of exports to France, and for 14% of total exports. Put differently, France was the larger market, but in the early 1860s Italy was relatively more successful in exporting manufactures to Germany than to France. This changed in the next 25 five years – the period before the outbreak of the trade war with France. Total exports to France grew to 41% in 1887 and exports of manufactures grew more than the total (from 14% to about 25%). In the same period, exports to Germany increased from 1% to 10% of the total. Exports of manufactures did increase in absolute value, but their share on Italian exports to Germany declined to about 20%. Hence, Italy successfully penetrated the French market with manufacturing products, but less so the German market, which was becoming rapidly more important for Italian exports at the time.

In more formal notation, we calculate the contribution of country  $j$  to the change in Italy's manufacturing share in total exports between  $t$  and  $t+1$  as  $CCC_{j,\Delta t}$ :

$$C_{j,\Delta t} = 100 \times \left[ \frac{(CS_{j,t+1}MS_{j,t+1} - CS_{j,t}MS_{j,t})}{MS_t} \right] / \left[ \frac{(MS_{t+1} - MS_t)}{MS_t} \right],$$

where  $CS_j$  denotes the share of country  $j$  in total exports of Italy and  $MS_j$  the share of manufactures in total exports to this country. This gives us the percentage contribution of each destination to the observed change in the total share of manufactures on Italian exports. As mentioned earlier, the latter increased from unification through 2000; hence, in all of these periods a positive sign in Table 1 implies that the exports to the  $j^{th}$  country contributed to the overall increase. It thus can be read as a success in market penetration. The interpretation of the results is opposite in the last period (2000-2009) when the share of manufactures on exports declined slightly. In those years, a positive sign reflects a failure and a negative sign a success of Italian exports. Our geographical disaggregation is constrained by the information available in the pre-1939 database. We thus report data on four major countries, the rest of Europe (defined here as sum of Austria-Hungary, Belgium, the Netherlands and Switzerland) and the “Rest of the World”, obtained as a residual.

**Table 1: Percentage contribution of various countries to the change in the share of manufactures (excluding silk) on total exports**

	Share of manufactures (initial year)	Total Period Change (in %)	Percentage-Contribution to Total Change by...					
			France	Germany	UK	"Rest of Europe"	USA	Rest of the World
1862-1887	0.17	53	75.5	14.8	-24.6	12.3	10.0	11.8
1887-1913	0.27	52	-65.3	12.2	21.8	14.4	2.8	113.8
1913-1929	0.40	22	2.9	-15.1	6.2	-34.4	27.6	112.7
1929-1938	0.49	4	-97.9	43.0	-160.3	-45.9	-67.7	429.0
1938-1962	0.51	41	29.0	42.9	7.4	34.2	22.6	-36.1
1962-1973	0.74	12	64.3	71.1	1.9	17.1	-11.0	-43.4
1973-1986	0.83	7	23.6	-36.1	39.1	-4.1	57.7	19.8
1986-2000	0.88	2	-138.7	-147.1	-23.7	-23.9	2.7	430.7
2000-2009	0.92	-3	54.3	110.4	181.7	-28.7	83	-300.7
1862-2009		420	7.8	14.3	0.4	9.7	5.1	63.1

Source: own calculations.

Before World War I, Italian industry was successful in all countries but the United Kingdom (1862-1913) and France (1887-1913) in all likelihood because of the negative effects of the trade war. The interwar years give a mixed picture: the 1920s were still a good period, while in 1938 Italian manufactures were only successful in the German market. The total share of industrial products grew only thanks to the boom of exports to colonies, which in the table belongs to the rest of the world. Unsurprisingly, the export boom during the golden age of the European economy (i.e., the periods 1938-1962 and 1962-1973) was mostly driven by the European market. Italian products fared well in the American market in the 1950s, but not in the 1960s when both the share of the country in total manufacturing exports and the share of manufacturing exports in trade with the US remained stable. The period 1973-1986 is characterised by stagnation, with a poor performance in German as well as other European markets that could only be partly offset by gains elsewhere. In contrast, from 1986 onwards we observe large differences between Italy's performance in Europe, the US, and the rest of the world; Italy failed to expand its position as a manufacturing exporter in these traditional and advanced markets. While the share of manufactures in total exports to these markets remained unchanged, their share in total Italian manufacturing exports tended to decline. By implication, Italy managed to recoup some of the losses in other parts of the world, notably emerging economies that were growing faster than the old OECD. The last line of Table 1 considers the contribution of the various geographical areas to the evolution for the whole period. The message is clear: most of the increase of the share of manufactures in total exports was driven by Italy's success as a manufacturing exporter in overseas markets. From this point-of-view, the relative increase of manufacturing exports to Europe during the golden age is an exception rather than the rule.

We can repeat this exercise with a look at Italy's success in exporting goods with various content of technology similar to what we have done in Graph 5, distinguishing between low- (again excluding silk), medium-, and high-technology goods. As in Graph 5, we limit our attention to the period after World War I.



**Table 2: Contribution of various countries to the change in the share of low-, medium- and high-tech goods on total exports**

Technology Classification (following Lall, 2000)	Period	Share of technology-class in total exports (initial year)	Total Change (in %)	Percentage-Contribution to Total Change by...					
				France	Germany	UK	“Rest of Europe”	“Rest of OECD”	Rest of the World
Low technology (excl. Silk)	1913-1929	0.23	42	7.3	-4.1	8.3	-6.2	24.6	70.2
	1929-1938	0.33	-18	19.4	2.4	42.5	11	21.4	3.3
	1962-1973	0.30	2.2	329	485.8	-140.9	-2.2	-91.5	-480.2
	1973-1986	0.31	22	29.9	-13.9	21.7	18.9	28.1	15.1
	1986-2000	0.38	-17.4	41.4	51.1	12.9	9	13.8	-28.2
	2000-2009	0.32	-15.4	5.4	35.3	50.7	19.5	22.9	-33.8
	<b>1913-2009</b>		<b>14.7</b>	<b>79.5</b>	<b>63.9</b>	<b>-52.1</b>	<b>77.6</b>	<b>92.2</b>	<b>-161.1</b>
Medium technology	1913-1929	0.02	346	2	10.7	-0.9	6.6	5	76.6
	1929-1938	0.11	52	-2.6	20.6	-0.9	3.7	5.1	74.2
	1962-1973	0.32	11.4	64	37.8	24.4	40.2	27.3	-93.8
	1973-1986	0.36	-2	21.3	93.5	-77.4	52.9	-109.7	119.2
	1986-2000	0.35	10.6	-10.1	8.8	-2.1	36.3	13.2	53.9
	2000-2009	0.39	3.4	-62.5	-49.6	-53.7	-107.1	-73	445
	<b>1913-2009</b>		<b>1551</b>	<b>10.4</b>	<b>12.5</b>	<b>4.5</b>	<b>17.5</b>	<b>12.4</b>	<b>42.7</b>
High technology	1913-1929	0.01	9	-71.9	-17.1	21.5	-53.8	-8.8	230
	1929-1938	0.01	239	5.4	2.7	0.1	3.5	0	88.4
	1962-1973	0.06	18.3	24.8	21.6	17.9	47.1	-13.1	1.7
	1973-1986	0.07	18.9	6.7	20.1	13.9	-7.2	42.5	23.9
	1986-2000	0.09	29.8	2.4	-9.3	12.5	32.3	17.4	44.7
	2000-2009	0.11	-10.8	40.5	14.6	54.6	22.2	-23.4	-8.5
	<b>1913-2009</b>		<b>951</b>	<b>10.8</b>	<b>12.5</b>	<b>8.9</b>	<b>23</b>	<b>20.4</b>	<b>24.4</b>

Source: own calculations. Rest of Europe pre-1945 is limited to Austria-Hungary, Belgium, the Netherlands and Switzerland. After 1945 this is the EU15 without France, Germany, and the UK. “Rest of OECD” pre-1945 is the USA only, after 1945 it is the OECD as of 1974 excluding Europe.

Table 2 shows to what extent Italy succeeded in exporting low-, medium-, and high-technology goods to different markets over time, reflecting the geography of Italy’s comparative advantage and changes thereof. Italy established its trade position in medium-technology products in the interwar period and proceeded to defend this. In the more recent period, the main driver of this success was exports to emerging economies (captured in the “Rest of the World”), while trade with OECD countries actually made a negative contribution. The same holds for trade in high-technology goods, where the share in total exports stagnated and even slightly declined (from 2001 onwards) – hence, a success in market penetration is reflected by a negative sign on the contribution. Trade with emerging economies helped to prevent that share from falling in the recent period, while trade with Europe apparently accelerated the decline. The three lines in bold show the changes in the share of various technology classes in total trade since 1913. The long-run expansion of medium- and high-technology exports was initially facilitated by trade with Europe, especially during the “Golden Age of Growth” through 1973. After this we observe that the “Rest of the World” starts to become significantly more important for Italy’s success in exporting medium- to high-technology products.

## 6. Conclusion

By and large, the results confirm the conventional wisdom about the change in Italy's specialization, with two important qualifications. First, they highlight the key role of the shock of World War I for the transformation of Italy from a supplier of primary products to an exporter of manufactures, although mostly to "poor" markets of the European periphery and the LDCs (including its colonies after 1936). Second, they show a major discontinuity around 1980. The "economic miracle" had featured a re-orientation of exports towards Europe, and a shift in specialization from traditional textiles and low-tech goods towards medium-technology, most notably engineering products (although definitely not towards high-tech goods). For a while, Italy seemed poised to converge to the German model. Since the 1980s, Italy returned to its pre-war model, although in the context of a much more globalized world. In relative terms, it lost competitiveness in (many) medium-tech products and in European markets, relying on exports of low-tech "made in Italy" products (plus some specialized engineering goods) towards non-European countries. The performance was not bad until the mid-1990s, but the last decade has been even more difficult. Italy's comparative advantage has declined, the share on world markets has stagnated, and the trade balance has been consistently negative.

This brief sketch raises three questions: (1) What caused the long-run change in trade patterns? (2) How much can trade explain the long-term growth in the past (or the lack thereof)? (3) What does the past experience tell us about the future?

Understanding the causes of specialization is fascinating and rewarding work, but it is well beyond the scope of this paper. We can only make some very general remarks. The long-run trends in trade are bound to reflect growth at home and abroad and the height of barriers to trade, as determined by transport technology and policies. Empirical studies have found that the income elasticity of exports as well as the (absolute value of the) elasticity of exports to trade costs are typically just below unity (Anderson and van Wincoop 2004). The long-run structure of a country's trade is shaped by its fundamentals in terms of comparative advantage (driven by differences in endowments and productivity, which in turn depends also on institutions) relative to her accessible neighbours. Comparative advantage tends to be "local": competition is more intense the closer the trading partners and hence the relevant comparison group for an assessment of comparative advantage are a country's accessible neighbours rather than the world economy (Deardorff 2004; Harrigan-Deng 2008).

Our sketch of long-term trends shows a strong coincidence between periods of economic growth, both at home and abroad, and of good export performance, most notably during the "boom giolittiano" and the "economic miracle". Such a coincidence is not really surprising, but the causation is more difficult to establish. Most economists believe that an increase in openness seems to be generally beneficial for economic growth (Krueger 1998; Berg and Krueger 2003; Frankel and Romer 1999; Irwin and Tervio 2002; Yanikkawa 2003; Alcalá and Ciccone 2004; Feyrer 2009). However, the mechanisms at work, welfare effects of trade, and policy implications are still under discussion (e.g. Rodríguez and Rodrik 2000). In the case of Italy, nobody seriously argues that openness has not been beneficial, but there are some doubts about the country's capacity to extract all possible benefits from its openness because of its comparative advantage. Economists in the 1950s and 1960s, regarded a specialization in primary products as a dead end, to be abandoned as soon as possible. This argument has been revived more recently as a "curse of primary products"

(Sachs and Warner 2001). As mentioned earlier, Italy succeeded to move away from specialization in primary products at a relatively early stage in its modern economic growth. A recent paper has suggested that this change did not much affect trends and/or volatility of the terms of trade – i.e., that the “curse” was not that great when Italy specialized in primary products (Federico and Vasta 2010). However, much of the Italian debate deals with its comparative advantages in manufacturing. One can relate the composition of exports, rather than their aggregate level, which mattered for economic growth, to the theory of biased technical change (e.g. Matsuyama 1993; Acemoglu 2002). An opening to trade can clearly affect the incentives to invest in capital-intensive or research-intensive sectors with possibly large dynamic effects. Recently, Hausman *et al.* (2007) provided a simple framework where factor endowments (most notably of capital and human capital) interact with development costs for new products, such that a country’s specialization pattern might be incompletely determined. Empirically they found a positive relation between an index of export sophistication, which captures the quality of exported goods, and the rate of GDP growth. Along this line, one can decry Italy’s specialization in low-tech goods as a major problem for long-term growth. As mentioned in Section 2, this view was widely held in the 1970s and early 1980s. Thus, Italy tried to foster the growth of allegedly advanced sectors, but it ended in a string of expensive failures (Roccas 1977; Federico 1999). This is not the spirit of the Hausmann *et al.* (2007) work, which would suggest investments in human capital to change the country competitive advantages. Similar concerns have resurfaced in the last years, although with little appetite for a pro-active industrial policy.

The past performance of Italian exports shows that so much pessimism may not be justified. While it has been worse than the German performance, it is still in line with the European average. In the long run, Italy has succeeded to prove pessimists wrong time and again. It may well succeed this time as well, in spite of the competition by China and other emerging countries.

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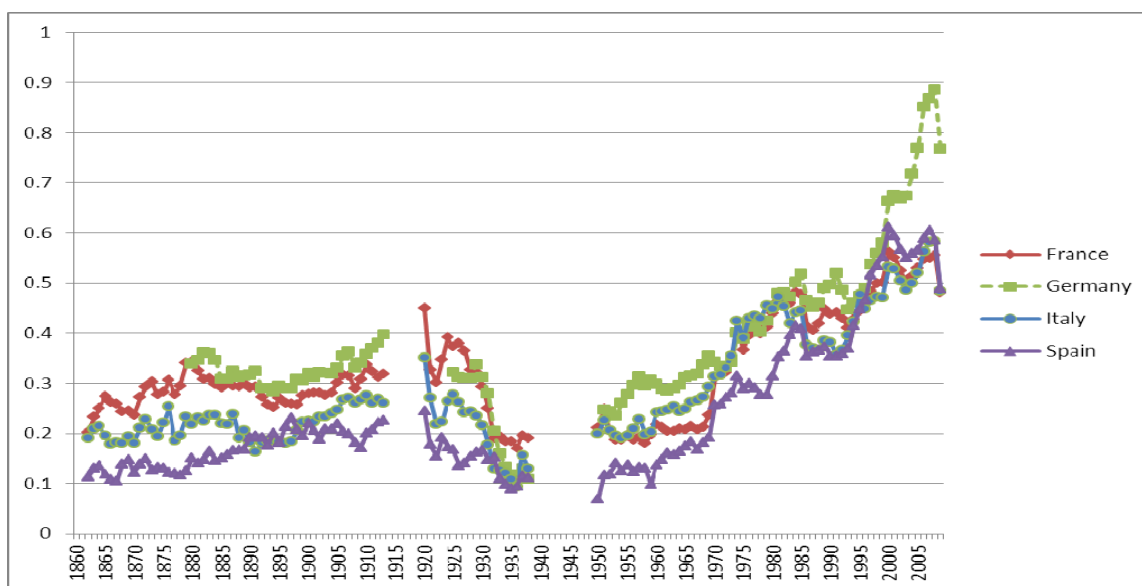
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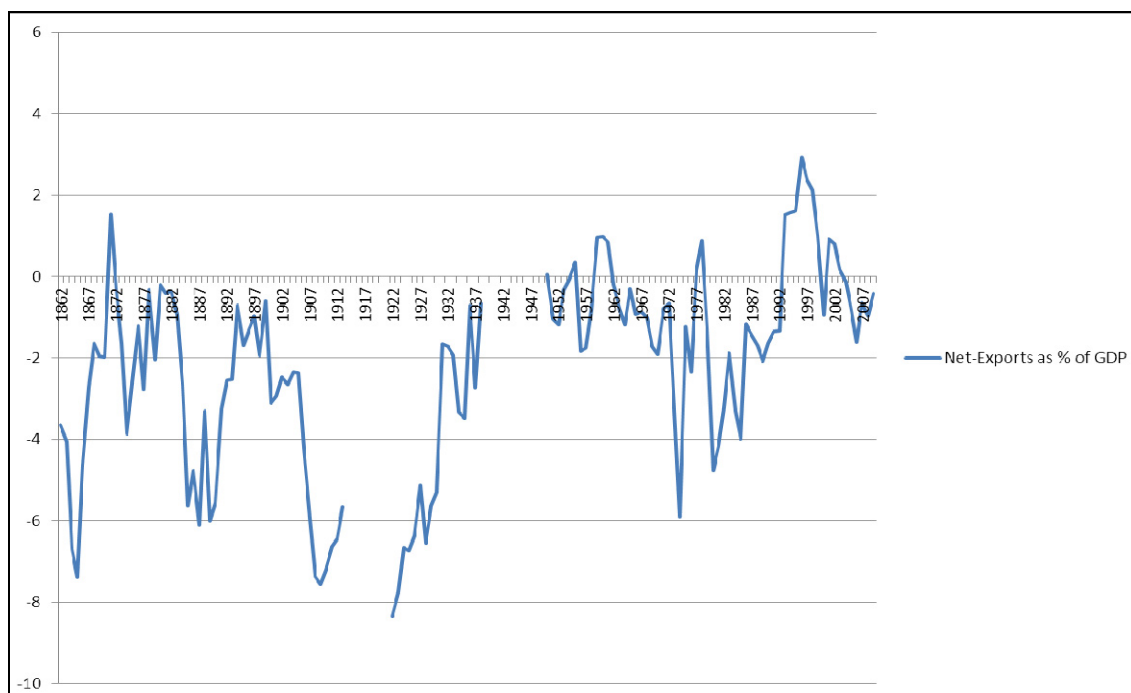
**Graph 1a**

**Openness Ratios (Trade/ GDP), Italy, France, Germany and Spain, 1862-2009**



**Graph 1b**

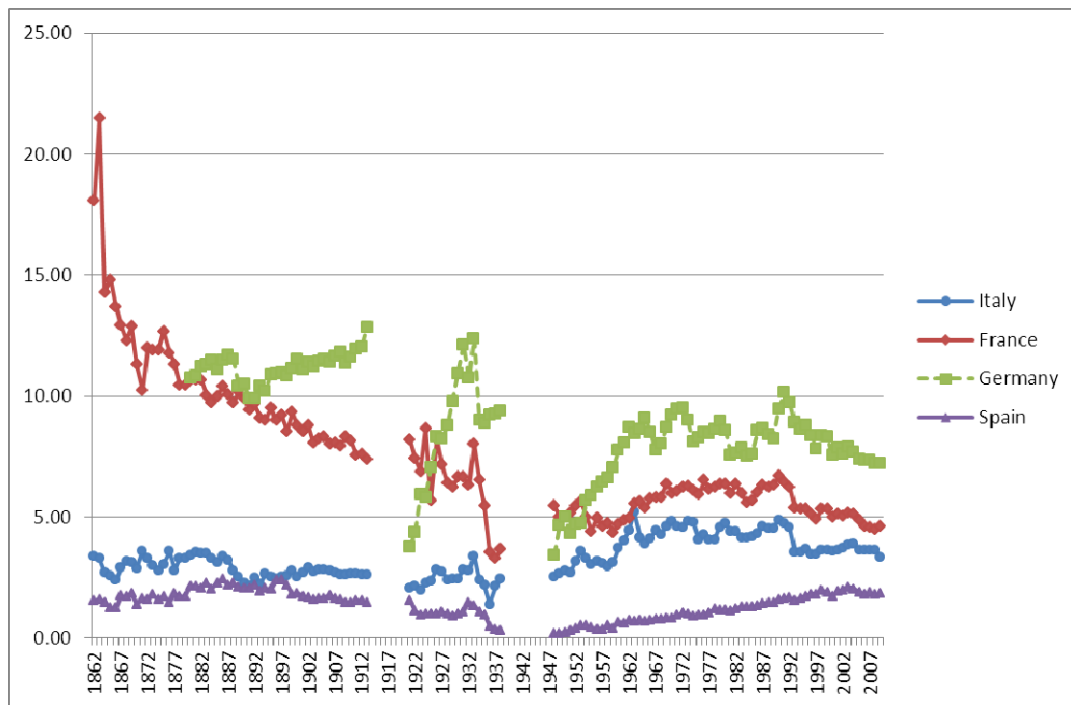
**Italian Balance of Trade as % of GDP, 1862-2009**





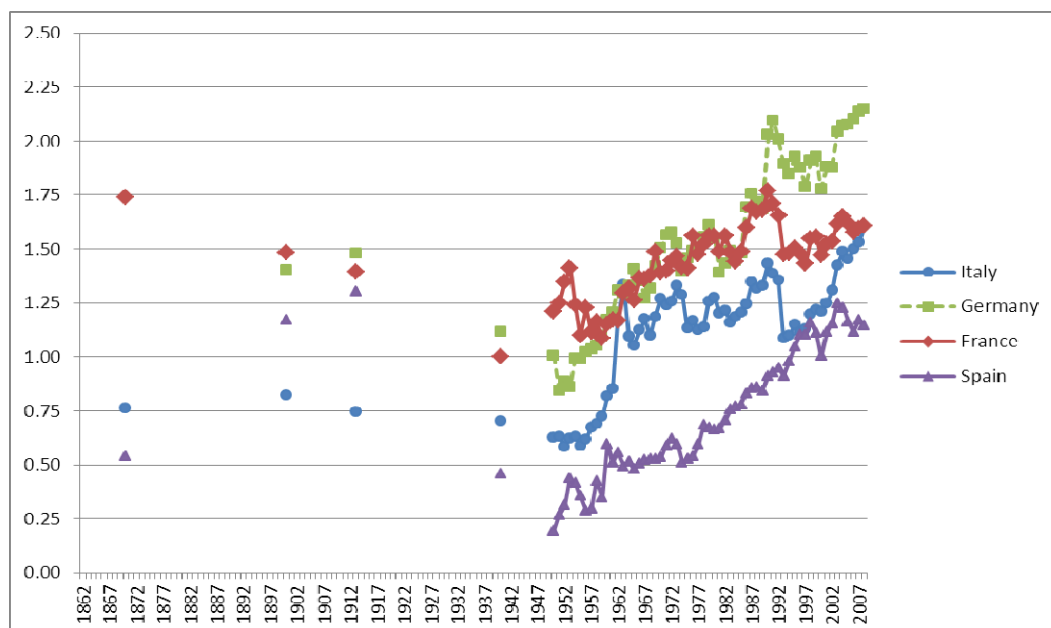
**Graph 2a**

**Shares in World Trade, Italy, France, Germany and Spain, 1862-2009**



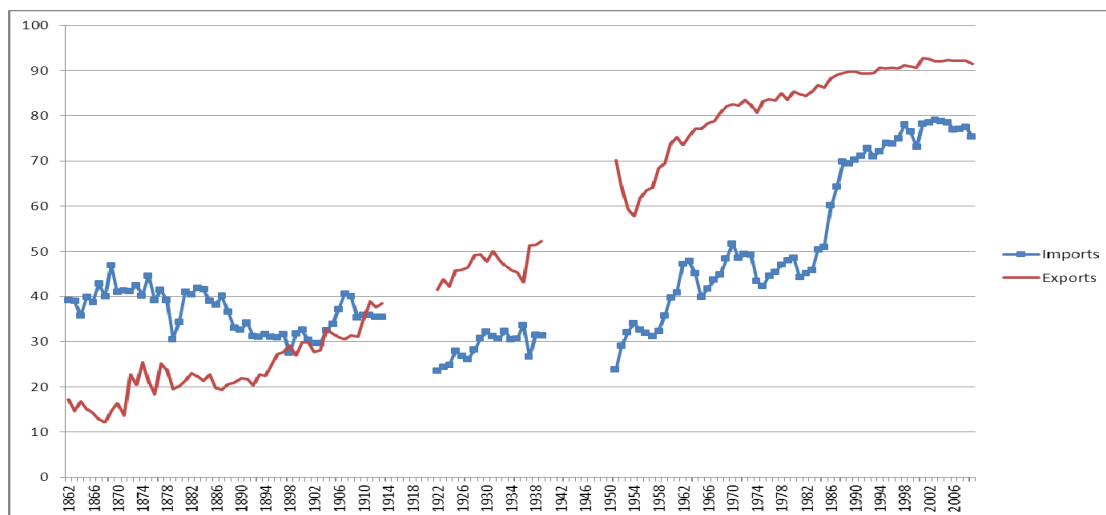
**Graph 2b**

**Share in World Trade relative to share in World GDP, Italy, France, Germany and Spain, 1862-2009**



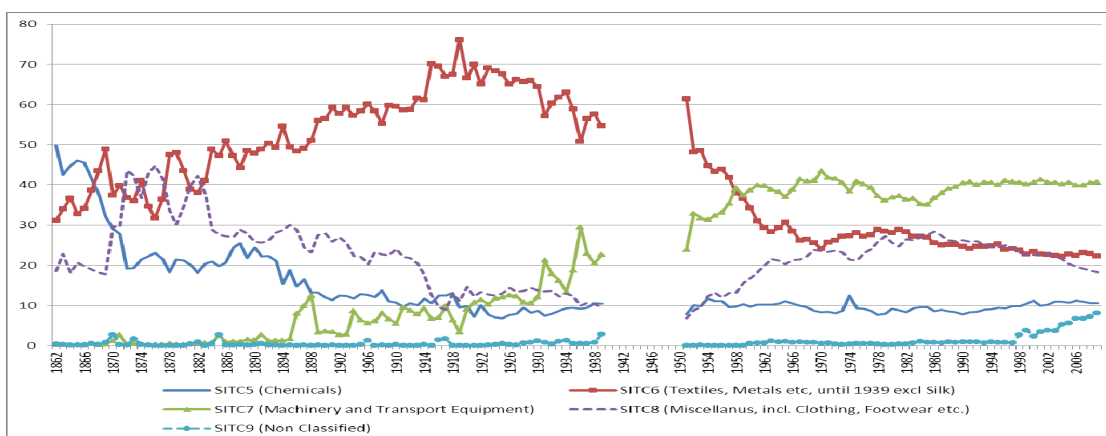
**Graph 3a**

**The composition of Italian Trade: Manufactures as a share of Imports and Exports,  
1862-2009**



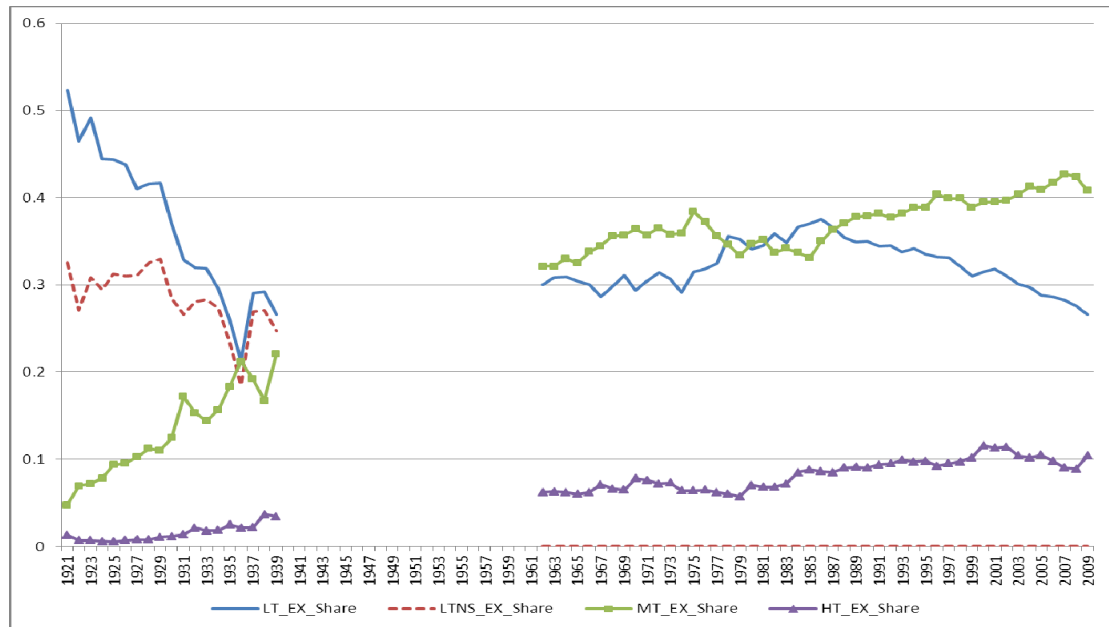
**Graph 4**

**The composition of Italian Manufacturing Exports (% shares of SITC Rev 2, 1 digit),  
1862-2009**



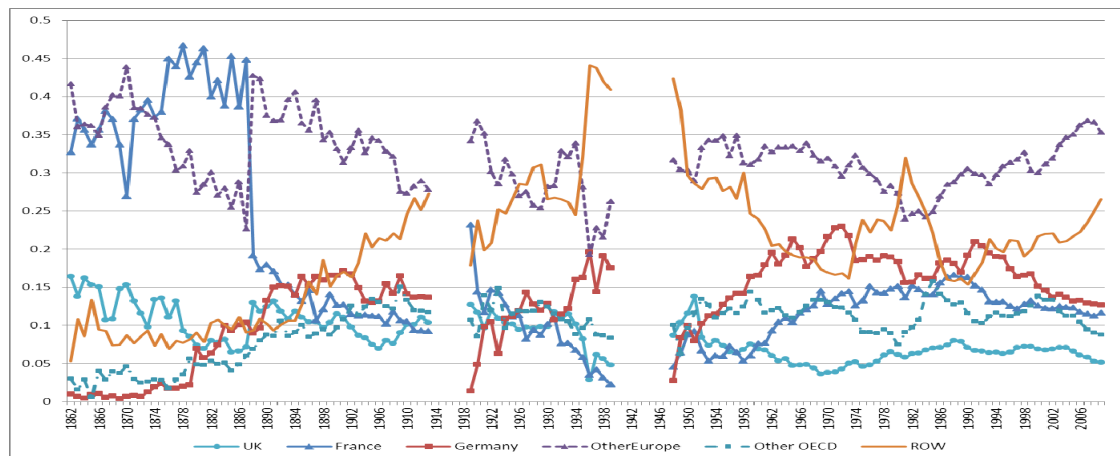
**Graph 5**

**Export Shares of Low-Tech (dotted line excl. Silk), Medium-Tech and High-Tech goods,  
1921-2009**



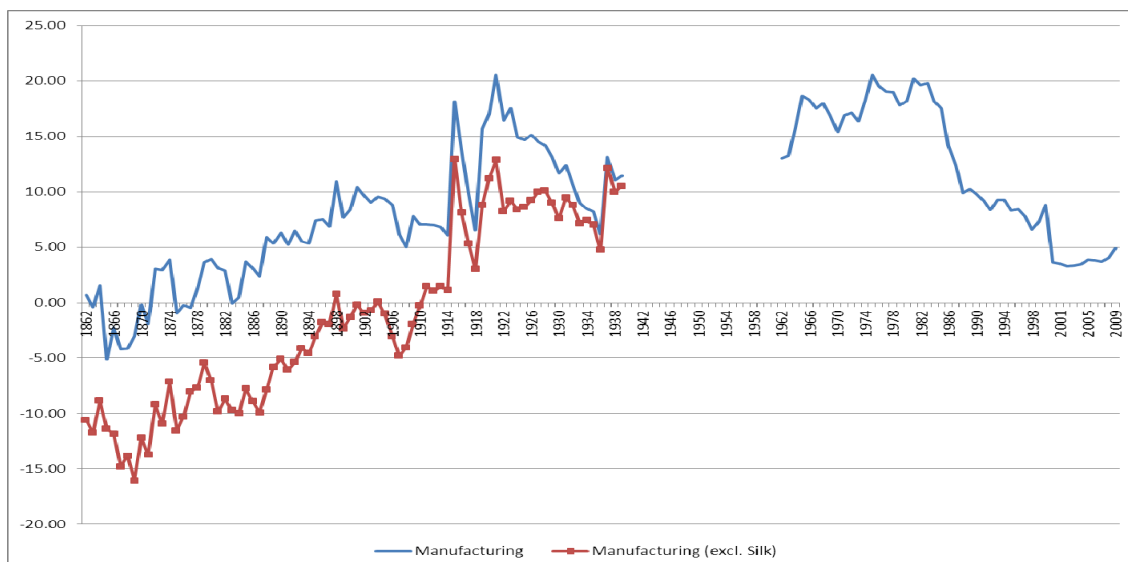
**Graph 6**

**The Geography of Italian Exports, 1862-2009**



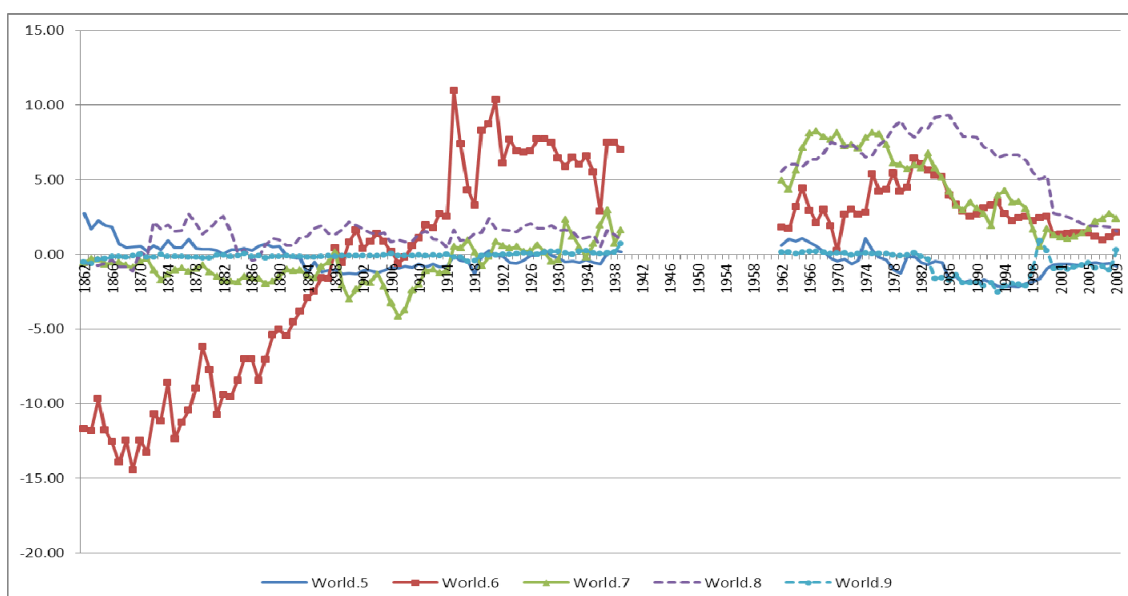
**Graph 7a**

**Lafay-index for Manufacturing Exports (sum over SITC 1-digit categories 5-9),  
1862-2009**



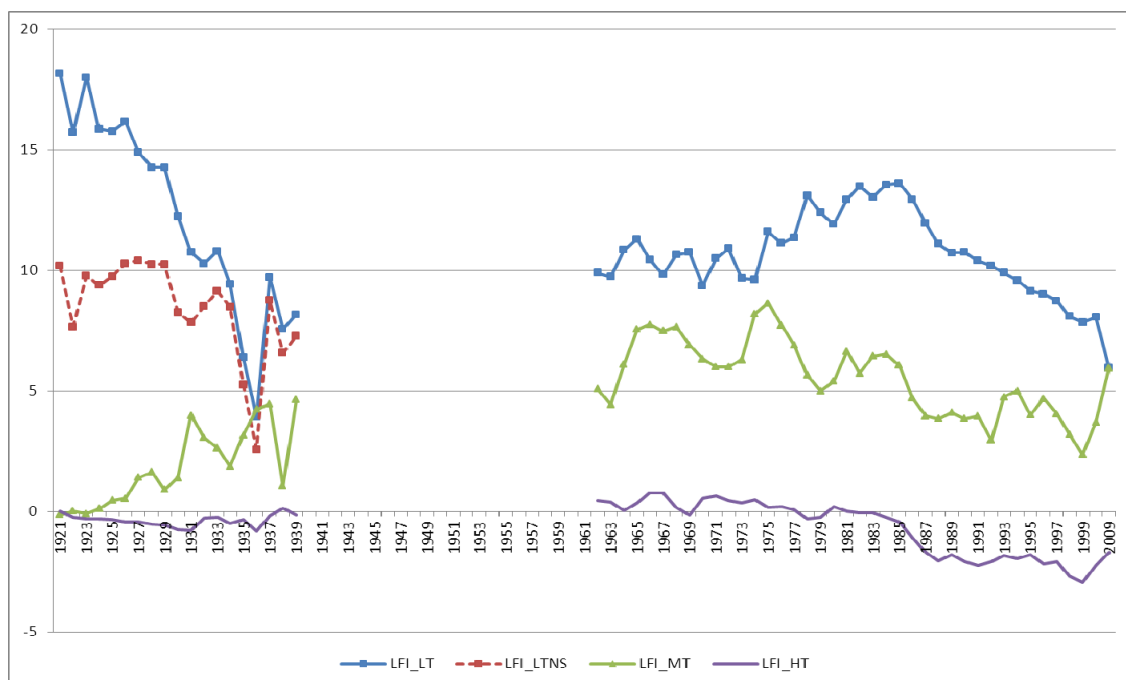
**Graph 7b**

**Lafay-index for Manufacturing Exports (SITC 1-digit categories 5-9), 1862-2009;  
(for 1862-1939 category 6 excl. silk)**



Graph 7c

Lafay-index for different technology-classifications, 1921-2009 (LTNS excludes silk)



# Appendix

## Table A1 Macro-data

	Openness	Total trade (million current dollars)		Share world trade	Ratio shares trade/GDP	Herfindahl Index
		Imports	Exports			
1862	0.190	210	146	3.36	-	0.2089
1863	0.210	257	181	3.29	-	0.2116
1864	0.214	186	107	2.71	-	0.1803
1865	0.195	183	105	2.58	-	0.1459
1866	0.178	154	108	2.38	-	0.1411
1867	0.183	153	124	2.90	-	0.1498
1868	0.180	159	139	3.16	-	0.1405
1869	0.194	169	144	3.10	-	0.1468
1870	0.181	161	136	2.87	0.76	0.1346
1871	0.211	172	192	3.61	-	0.1473
1872	0.227	202	197	3.29	-	0.1398
1873	0.208	207	186	3.01	-	0.1452
1874	0.194	224	169	2.79	-	0.1035
1875	0.222	215	181	3.05	-	0.1073
1876	0.254	226	209	3.58	-	0.1351
1877	0.186	200	163	2.79	-	0.0756
1878	0.196	198	194	3.30	-	0.1014
1879	0.234	222	197	3.31	-	0.1273
1880	0.218	224	221	3.43	-	0.1197
1881	0.232	243	237	3.56	-	0.1388
1882	0.225	246	240	3.50	-	0.1220
1883	0.236	257	241	3.51	-	0.0960
1884	0.237	261	218	3.30	-	0.1068
1885	0.220	287	193	3.13	-	0.0974
1886	0.218	288	208	3.39	-	0.1226
1887	0.238	314	205	3.21	-	0.1224
1888	0.192	233	185	2.77	-	0.1211
1889	0.205	279	184	2.54	-	0.1014
1890	0.182	254	170	2.26	-	0.0941
1891	0.163	207	164	2.16	-	0.0804
1892	0.182	217	179	2.50	-	0.0986
1893	0.186	195	159	2.24	-	0.0767
1894	0.186	194	183	2.63	-	0.0735
1895	0.184	210	184	2.54	-	0.0849
1896	0.180	210	189	2.44	-	0.0706
1897	0.184	214	198	2.51	-	0.0673
1898	0.206	247	211	2.57	-	0.0761
1899	0.223	262	251	2.79	-	0.0904
1900	0.225	301	238	2.50	0.82	0.0771
1901	0.224	322	259	2.71	-	0.0906
1902	0.234	341	284	2.89	-	0.0990
1903	0.233	356	291	2.75	-	0.0852
1904	0.239	366	308	2.81	-	0.0805
1905	0.248	396	336	2.83	-	0.0851
1906	0.267	488	370	2.80	-	0.0989
1907	0.271	558	376	2.69	-	0.0888

**Table A1, cont.**

	Openness	Total trade (million current dollars)		Share world trade	Ratio shares trade/GDP	Herfindahl Index
		Imports	Exports			
1908	0.260	565	334	2.59	-	0.0675
1909	0.268	608	362	2.61	-	0.0711
1910	0.276	635	406	2.65	-	0.0493
1911	0.260	660	429	2.66	-	0.0366
1912	0.269	714	464	2.61	-	0.0350
1913	0.260	707	488	2.61	0.75	0.0342
1914	0.229	559	424	-	-	0.0309
1915	0.289	721	388	-	-	0.0349
1916	0.322	1235	455	-	-	0.0463
1917	0.338	1697	404	-	-	0.0472
1918	0.275	2543	531	-	-	0.0545
1919	0.293	1275	465	-	-	0.0571
1920	0.351	961	413	-	-	0.0469
1921	0.271	937	407	2.07	-	0.0538
1922	0.217	843	469	2.16	-	0.0544
1923	0.222	771	483	1.97	-	0.0550
1924	0.264	883	619	2.26	-	0.0425
1925	0.277	1084	744	2.37	-	0.0400
1926	0.263	1199	845	2.84	-	0.0358
1927	0.242	1149	859	2.73	-	0.0290
1928	0.243	1197	787	2.41	-	0.0264
1929	0.236	1157	804	2.44	-	0.0252
1930	0.216	940	645	2.45	-	0.0229
1931	0.178	604	527	2.82	-	0.0206
1932	0.130	423	351	2.77	-	0.0184
1933	0.126	611	497	3.38	-	0.0174
1934	0.121	656	450	2.39	-	0.0175
1935	0.110	628	423	2.17	-	0.0163
1936	0.094	318	292	1.38	-	0.0181
1937	0.157	732	549	2.13	-	0.0170
1938	0.129	593	552	2.43	-	0.0156
1939	-	277	291	-	-	0.0147
1940	-	-	-	-	-	-
1941	-	-	-	-	-	-
1942	-	-	-	-	-	-
1943	-	-	-	-	-	-
1944	-	-	-	-	-	-
1945	-	-	-	-	-	-
1946	-	-	-	-	-	-
1947	-	-	-	-	-	-
1948	-	-	-	2.53	-	-
1949	-	-	-	2.65	-	-
1950	0.199	-	-	2.78	0.63	-
1951	0.227	-	-	2.70	0.63	-
1952	0.206	-	-	3.15	0.58	-
1953	0.196	-	-	3.59	0.62	-

**Table A1, cont.**

	Openness	Total trade (million current dollars)		Share world trade	Ratio shares trade/GDP	Herfindahl Index
		Imports	Exports			
1954	0.192	-	-	3.30	0.63	-
1955	0.196	-	-	3.04	0.59	-
1956	0.209	-	-	3.17	0.62	-
1957	0.229	-	-	3.09	0.67	-
1958	0.198	-	-	2.96	0.69	-
1959	0.202	-	-	3.14	0.72	-
1960	0.241	-	-	3.72	0.82	-
1961	0.243	-	-	4.03	0.85	-
1962	0.247	6056	4706	4.42	1.16	0.0113
1963	0.254	7539	5120	5.21	1.34	0.0104
1964	0.243	7244	5883	4.15	1.10	0.0100
1965	0.249	7361	7055	3.87	1.05	0.0104
1966	0.262	8571	8104	4.12	1.12	0.0112
1967	0.266	9697	8733	4.45	1.18	0.0108
1968	0.272	10252	10282	4.27	1.10	0.0113
1969	0.292	12450	11794	4.62	1.19	0.0096
1970	0.314	14939	13205	4.82	1.27	0.0096
1971	0.317	15968	15199	4.59	1.24	0.0097
1972	0.331	19282	18496	4.58	1.26	0.0073
1973	0.355	27793	22935	4.83	1.33	0.0073
1974	0.425	40682	30743	4.80	1.29	0.0073
1975	0.390	37928	35460	4.06	1.13	0.0073
1976	0.429	42793	38012	4.25	1.17	0.0083
1977	0.436	46683	47014	4.05	1.12	0.0077
1978	0.430	55115	57602	4.08	1.14	0.0070
1979	0.455	76158	71522	4.59	1.26	0.0070
1980	0.448	98119	78990	4.72	1.27	0.0068
1981	0.472	88996	74341	4.38	1.20	0.0064
1982	0.453	83834	72889	4.41	1.22	0.0066
1983	0.419	78322	72200	4.14	1.16	0.0069
1984	0.442	83914	73163	4.15	1.19	0.0091
1985	0.444	90408	76450	4.20	1.21	0.0098
1986	0.377	101709	96132	4.30	1.24	0.0101
1987	0.370	124644	116280	4.63	1.35	0.0098
1988	0.366	138117	127351	4.51	1.32	0.0096
1989	0.386	152450	138917	4.53	1.33	0.0150
1990	0.383	179486	166537	4.88	1.43	0.0158
1991	0.357	181788	170933	4.72	1.38	0.0136



**Table A1, cont.**

	Openness	Total trade (million current dollars)		Share world trade	Ratio shares trade/GDP	Herfindahl Index
		Imports	Exports			
1992	0.367	187892	176551	4.56	1.35	0.0126
1993	0.395	147186	158393	3.55	1.09	0.0121
1994	0.423	167251	180029	3.54	1.10	0.0128
1995	0.477	203421	218734	3.66	1.15	0.0118
1996	0.448	207409	236352	3.46	1.11	0.0117
1997	0.466	207553	229039	3.45	1.13	0.0107
1998	0.473	214907	233962	3.64	1.20	0.0110
1999	0.471	219707	228698	3.65	1.22	0.0090
2000	0.532	238069	239932	3.58	1.21	0.0091
2001	0.528	236127	244252	3.65	1.25	0.0087
2002	0.505	246609	254216	3.71	1.31	0.0088
2003	0.486	297403	299466	3.86	1.42	0.0097
2004	0.500	355267	353543	3.88	1.49	0.0096
2005	0.520	384836	372957	3.65	1.45	0.0106
2006	0.563	442565	417153	3.65	1.50	0.0105
2007	0.582	511823	500203	3.62	1.53	0.0110
2008	0.583	560960	541786	3.65	1.61	0.0117
2009	0.483	412340	405179	3.32	-	0.0106

Table A2a

## Composition imports, SITC 1-digit

	0	1	2	3	4	5	6	Silk	7	8	9	Manufactures	Primary products
1862	27.2	4.3	13.7	2.2	1.2	2.9	29.6	12.5	1.2	4.3	1.1	39.1	60.9
1863	29.4	3.6	13.3	1.7	1.1	2.7	29.4	12.0	0.6	4.8	1.3	38.9	61.1
1864	35.4	4.1	11.8	2.4	1.1	2.6	27.1	9.4	0.7	4.7	0.7	35.8	64.2
1865	29.7	3.9	12.6	2.9	1.1	2.9	30.5	10.1	1.4	4.4	0.7	39.8	60.2
1866	26.4	3.7	21.1	4.1	1.0	2.8	30.8	4.9	1.2	3.6	0.4	38.7	61.3
1867	24.4	5.1	15.2	3.8	2.2	3.9	33.2	6.6	1.2	4.2	0.4	42.8	57.2
1868	23.5	4.6	15.9	5.4	2.4	3.7	30.4	8.2	1.5	3.9	0.4	39.9	60.1
1869	24.5	4.2	14.9	5.0	2.2	3.7	36.3	2.2	1.8	4.8	0.3	47.0	53.0
1870	24.3	4.9	16.5	7.2	2.2	3.6	31.3	3.9	1.2	4.5	0.4	41.0	59.0
1871	24.0	3.1	19.4	4.9	1.3	3.4	32.1	6.0	0.9	4.4	0.4	41.3	58.7
1872	23.2	2.8	20.2	6.3	1.0	3.2	29.8	5.5	2.2	5.5	0.4	41.1	58.9
1873	23.4	4.6	19.6	5.2	1.4	3.4	29.8	3.4	3.6	5.3	0.4	42.4	57.6
1874	24.2	4.6	21.7	4.4	1.9	3.6	28.0	3.1	2.8	5.3	0.4	40.1	59.9
1875	20.8	4.1	21.0	4.4	2.1	3.8	32.3	3.0	2.1	6.0	0.4	44.6	55.4
1876	21.6	3.6	19.7	4.9	1.3	3.4	28.4	9.8	1.9	5.1	0.3	39.1	60.9
1877	22.5	3.6	21.1	5.5	2.4	3.4	30.3	3.7	2.4	5.0	0.4	41.4	58.6
1878	25.1	2.5	18.2	4.9	2.1	3.5	29.2	8.1	2.1	3.8	0.4	39.1	60.9
1879	31.6	2.2	18.9	4.8	1.9	3.5	21.8	10.1	1.5	3.2	0.5	30.5	69.5
1880	25.5	2.6	22.1	6.0	2.1	3.6	24.3	7.3	2.4	3.6	0.5	34.3	65.7
1881	19.7	2.2	22.7	6.1	2.3	3.8	29.8	6.0	3.1	4.0	0.2	41.0	59.0
1882	19.5	3.1	23.3	6.0	0.9	4.2	27.6	6.7	3.7	4.6	0.3	40.4	59.6
1883	20.6	2.4	21.5	6.3	1.7	4.0	28.3	5.6	3.7	5.4	0.3	41.8	58.2
1884	21.2	2.3	20.7	6.4	1.9	3.9	27.5	6.0	3.9	5.9	0.3	41.5	58.5
1885	25.8	3.3	19.3	6.0	2.7	3.7	25.4	4.1	3.7	5.7	0.5	38.9	61.1
1886	25.5	3.3	19.7	5.3	1.4	3.6	24.5	6.7	3.4	6.2	0.4	38.1	61.9
1887	25.8	2.1	20.0	5.8	1.1	3.6	26.8	5.2	3.6	5.8	0.3	40.1	59.9
1888	25.7	1.9	20.9	8.5	1.1	3.9	23.4	5.3	4.1	4.6	0.6	36.6	63.4
1889	27.4	1.9	21.3	8.4	0.9	3.6	21.4	7.1	4.2	3.6	0.3	33.0	67.0
1890	25.3	1.9	23.6	10.1	0.9	4.2	21.0	5.8	3.4	3.6	0.3	32.6	67.4
1891	25.4	2.0	23.8	10.1	0.8	5.0	21.7	3.8	2.7	4.4	0.3	34.1	65.9
1892	27.3	2.0	23.5	9.2	0.4	4.9	19.4	6.4	2.4	4.1	0.4	31.3	68.7
1893	25.9	2.0	25.4	8.9	0.7	5.3	18.9	6.2	2.4	4.0	0.3	31.0	69.0
1894	19.4	2.2	28.5	11.3	1.1	6.1	18.1	5.9	3.1	4.0	0.3	31.7	68.3
1895	23.1	2.8	26.6	8.5	0.8	5.7	17.3	7.3	3.6	4.0	0.4	31.0	69.0
1896	24.4	2.6	27.4	8.6	0.5	6.4	16.3	5.6	3.8	4.0	0.3	30.9	69.1
1897	20.9	2.8	27.6	9.5	0.7	6.7	16.9	6.8	3.8	4.0	0.3	31.6	68.4
1898	29.1	1.7	23.5	10.9	1.7	5.9	14.0	5.7	3.3	4.0	0.3	27.5	72.5
1899	18.5	1.9	25.9	11.5	1.4	6.2	16.2	9.0	5.0	4.0	0.2	31.7	68.3
1900	18.4	1.9	25.6	13.7	1.6	6.1	15.2	6.2	7.1	3.9	0.2	32.5	67.5
1901	22.6	2.3	26.3	10.1	1.3	6.0	14.5	7.1	5.8	3.8	0.2	30.3	69.7
1902	22.3	2.0	27.2	9.2	1.0	5.6	15.2	8.6	4.5	4.1	0.2	29.6	70.4
1903	22.3	1.9	28.5	8.9	1.1	5.7	14.9	7.6	4.6	4.2	0.2	29.6	70.4
1904	17.9	1.4	31.1	9.2	0.9	6.3	15.9	6.9	5.5	4.6	0.2	32.5	67.5
1905	19.5	1.1	27.9	9.2	1.1	6.2	16.9	7.2	6.4	4.2	0.2	33.9	66.1
1906	17.7	1.4	28.0	9.4	0.3	5.7	18.2	6.0	8.4	4.6	0.3	37.2	62.8
1907	13.1	1.3	29.1	10.0	0.3	5.6	19.1	5.7	10.5	5.1	0.2	40.5	59.5
1908	16.7	1.2	27.1	9.3	0.8	6.1	17.8	4.9	10.6	5.4	0.3	40.0	60.0
1909	21.0	1.3	26.8	9.4	1.6	5.3	17.4	4.6	7.2	5.1	0.2	35.2	64.8
1910	20.9	1.1	27.7	8.9	1.3	5.2	18.6	4.4	6.2	5.6	0.2	35.8	64.2
1911	20.3	1.3	28.4	9.5	1.1	5.5	18.7	3.6	6.0	5.4	0.2	35.8	64.2
1912	21.7	1.2	26.1	11.3	1.1	5.4	18.4	3.2	5.4	6.1	0.2	35.4	64.6
1913	19.7	1.4	26.5	11.9	1.2	5.6	18.1	3.8	5.6	5.9	0.2	35.5	64.5
1914	16.6	1.4	27.8	13.7	1.9	6.0	17.8	3.3	5.7	5.6	0.2	35.3	64.7
1915	29.2	0.8	25.6	17.1	1.2	5.7	12.7	2.0	2.3	3.0	0.4	24.1	75.9

Table A2a, cont.

	0	1	2	3	4	5	6	Silk	7	8	9	Manufactures	Primary products
1916	24.0	0.5	20.5	19.7	1.1	7.6	18.0	1.8	2.6	2.7	1.3	32.3	67.7
1917	29.7	0.7	17.7	10.1	0.6	8.7	24.3	1.2	2.5	1.8	2.5	39.9	60.1
1918	31.7	0.5	16.9	13.6	0.6	10.7	19.8	1.1	2.4	1.1	1.6	35.6	64.4
1919	36.5	1.1	20.8	12.1	1.0	5.1	16.6	1.2	3.7	1.8	0.2	27.3	72.7
1920	27.1	3.4	21.6	16.0	2.0	4.8	15.7	1.6	5.3	2.3	0.1	28.2	71.8
1921	38.7	1.6	18.7	17.6	2.3	3.8	11.0	0.6	3.4	2.1	0.1	20.4	79.6
1922	32.8	1.8	23.3	15.3	1.2	4.5	13.6	1.9	3.5	2.0	0.0	23.6	76.4
1923	29.8	1.7	28.5	14.1	0.5	4.5	14.0	1.0	3.6	2.2	0.1	24.4	75.6
1924	24.3	1.1	31.5	15.8	1.0	4.2	14.5	1.6	3.9	2.2	0.1	24.8	75.2
1925	25.2	0.9	32.7	11.2	1.4	3.9	16.8	0.7	5.1	2.0	0.0	27.9	72.1
1926	24.0	0.5	31.6	14.0	2.3	3.7	15.5	0.7	5.3	2.3	0.0	26.8	73.2
1927	26.2	0.6	27.9	16.2	2.3	3.9	15.0	0.7	4.4	2.7	0.1	26.1	73.9
1928	27.4	0.6	29.6	11.1	2.4	3.9	16.2	0.7	5.0	3.1	0.0	28.2	71.8
1929	21.8	0.8	31.3	13.1	1.8	4.2	17.1	0.5	6.2	3.1	0.1	30.8	69.2
1930	23.0	0.7	26.1	14.4	3.4	4.7	17.5	0.3	6.6	3.3	0.1	32.1	67.9
1931	23.6	0.6	24.5	16.3	3.5	4.7	16.8	0.4	6.0	3.4	0.2	31.1	68.9
1932	23.4	1.0	29.0	13.5	2.2	4.8	16.0	0.3	6.2	3.5	0.2	30.6	69.4
1933	15.3	0.7	34.9	14.4	2.2	5.2	16.8	0.2	6.6	3.7	0.1	32.3	67.7
1934	14.8	0.7	35.7	16.1	1.9	5.1	15.3	0.2	6.5	3.6	0.1	30.5	69.5
1935	15.1	0.6	32.5	19.0	1.9	5.4	15.3	0.1	7.0	2.9	0.1	30.6	69.4
1936	15.9	0.3	28.8	19.7	1.5	5.2	16.2	0.1	8.8	3.3	0.2	33.6	66.4
1937	20.0	0.4	31.7	19.1	1.9	4.8	13.7	0.1	5.8	2.2	0.1	26.6	73.4
1938	11.6	0.8	30.3	23.3	2.4	4.9	14.7	0.1	9.1	2.7	0.1	31.5	68.5
1939	14.8	0.6	27.4	23.6	2.1	5.2	14.5	0.1	8.6	3.0	0.0	31.3	68.7
1940	-	-	-	-	-	-	-	-	-	-	-	-	-
1941	-	-	-	-	-	-	-	-	-	-	-	-	-
1942	-	-	-	-	-	-	-	-	-	-	-	-	-
1943	-	-	-	-	-	-	-	-	-	-	-	-	-
1944	-	-	-	-	-	-	-	-	-	-	-	-	-
1945	-	-	-	-	-	-	-	-	-	-	-	-	-
1946	-	-	-	-	-	-	-	-	-	-	-	-	-
1947	-	-	-	-	-	-	-	-	-	-	-	-	-
1948	-	-	-	-	-	-	-	-	-	-	-	-	-
1949	-	-	-	-	-	-	-	-	-	-	-	-	-
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	17.9	0.3	35.9	19.3	2.8	4.2	10.3	-	7.5	1.6	0.2	23.8	76.2
1952	16.9	0.2	32.4	19.2	2.2	3.7	12.3	-	10.6	2.2	0.3	29.1	70.9
1953	16.8	0.4	29.4	19.0	2.2	4.1	12.9	-	12.3	2.5	0.2	32.1	67.9
1954	13.9	0.5	29.8	19.6	2.1	5.0	13.8	-	12.6	2.7	0.0	34.1	65.9
1955	15.8	0.8	28.8	19.7	2.3	5.2	13.6	-	11.1	2.7	0.0	32.6	67.4
1956	14.5	0.5	29.8	19.7	3.7	5.5	13.3	-	10.5	2.5	0.0	31.8	68.2
1957	13.5	0.5	31.0	20.8	3.0	5.0	12.7	-	11.2	2.2	0.0	31.1	68.9
1958	16.8	0.6	28.4	19.7	2.2	6.2	12.6	-	10.8	2.6	0.1	32.4	67.6
1959	16.3	0.4	27.5	17.5	2.5	6.9	14.4	-	11.3	3.0	0.1	35.7	64.3
1960	15.3	0.5	27.6	14.1	2.8	7.3	16.3	-	13.4	2.7	0.1	39.7	60.3
1961	15.5	0.5	26.7	14.5	2.0	7.4	18.8	-	11.4	3.1	0.1	40.8	59.2
1962	12.9	1.0	23.4	13.4	1.8	6.3	18.1	-	19.3	3.5	0.2	47.5	52.5
1963	16.8	0.8	19.9	12.3	2.0	5.7	18.0	-	20.4	3.7	0.5	48.3	51.7
1964	18.0	0.7	20.6	14.1	1.0	6.3	16.3	-	18.3	4.0	0.6	45.5	54.5
1965	21.4	0.5	21.2	15.8	1.0	6.5	15.0	-	14.4	3.8	0.5	40.2	59.8
1966	20.1	0.6	21.4	14.9	1.2	6.7	16.7	-	14.4	3.9	0.3	42.0	58.0
1967	17.7	0.7	19.8	16.5	1.4	6.8	16.6	-	16.2	4.0	0.3	44.0	56.0
1968	18.1	0.7	18.6	16.4	1.0	7.4	15.6	-	17.5	4.2	0.4	45.2	54.8
1969	17.0	0.8	17.7	14.6	1.1	7.8	17.4	-	18.6	4.4	0.6	48.8	51.2
1970	16.0	0.7	16.0	14.1	1.1	7.9	19.7	-	19.9	4.5	0.2	52.1	47.9

Table A2a, cont.

	0	1	2	3	4	5	6	Silk	7	8	9	Manufactures	Primary products
1971	18.2	0.8	13.9	16.9	1.3	7.7	16.1	-	20.3	4.6	0.4	49.0	51.0
1972	19.5	0.9	13.7	15.1	0.9	8.1	16.1	-	20.4	4.8	0.4	49.8	50.2
1973	19.1	1.1	14.8	14.1	1.1	8.1	17.3	-	19.5	4.7	0.2	49.8	50.2
1974	13.7	0.8	13.5	26.7	1.6	8.0	16.5	-	15.4	3.7	0.2	43.8	56.2
1975	16.3	1.0	11.9	27.1	1.0	7.3	12.8	-	18.0	4.1	0.4	42.6	57.4
1976	14.9	0.9	12.7	25.9	0.7	8.2	14.6	-	17.7	4.1	0.3	44.9	55.1
1977	15.1	0.8	11.8	25.8	0.8	8.0	14.7	-	18.3	4.4	0.3	45.6	54.4
1978	15.2	0.8	11.6	24.3	0.7	8.7	14.0	-	19.6	4.7	0.5	47.4	52.6
1979	13.3	0.9	12.4	24.2	0.8	9.3	15.7	-	18.5	4.6	0.4	48.4	51.6
1980	11.2	0.8	10.4	28.0	0.6	8.2	15.3	-	20.2	4.9	0.3	49.0	51.0
1981	10.7	0.7	8.9	34.7	0.3	8.0	11.8	-	19.7	5.0	0.1	44.6	55.4
1982	12.1	0.8	8.8	32.5	0.5	8.3	12.1	-	19.1	5.2	0.7	45.3	54.7
1983	12.2	0.9	8.6	31.5	0.7	9.4	12.2	-	17.8	5.3	1.2	46.1	53.9
1984	10.8	0.8	9.8	27.7	0.6	9.3	12.9	-	19.0	5.0	4.1	50.3	49.7
1985	11.7	1.0	9.2	26.4	0.8	9.4	12.7	-	19.9	5.2	3.8	51.0	49.0
1986	12.6	1.0	8.4	17.1	0.7	10.8	14.7	-	24.0	6.4	4.2	60.1	39.9
1987	12.2	1.0	8.1	13.7	0.8	11.0	15.5	-	27.2	7.3	3.4	64.2	35.8
1988	11.6	1.1	8.6	8.5	0.6	11.4	16.8	-	28.9	7.8	4.8	69.7	30.3
1989	11.0	1.0	8.5	9.6	0.6	11.0	17.5	-	28.5	7.6	4.6	69.3	30.7
1990	10.0	1.0	7.5	10.5	0.7	10.9	16.7	-	30.1	7.9	4.6	70.2	29.8
1991	10.8	1.1	6.8	9.4	0.9	10.8	15.4	-	31.0	8.8	5.0	71.0	29.0
1992	10.7	1.1	6.5	8.5	0.6	11.3	15.4	-	31.9	9.4	4.7	72.6	27.4
1993	11.0	1.0	7.0	9.4	0.7	12.2	15.0	-	28.4	9.6	5.6	70.8	29.2
1994	10.3	1.1	7.7	8.2	0.8	12.5	16.9	-	28.2	9.3	5.1	71.9	28.1
1995	9.5	0.9	7.6	7.4	0.7	12.7	18.2	-	29.3	8.9	4.7	73.9	26.1
1996	9.5	1.0	6.5	8.4	0.9	12.8	16.7	-	30.1	9.4	4.7	73.7	26.3
1997	8.8	1.0	6.4	8.0	0.9	12.8	16.8	-	30.9	9.7	4.8	75.0	25.0
1998	8.7	1.0	6.0	5.6	0.7	12.7	17.2	-	33.7	10.0	4.4	78.0	22.0
1999	8.3	1.0	5.4	8.2	0.7	12.8	15.9	-	35.5	10.5	1.7	76.5	23.5
2000	7.0	0.9	5.5	8.0	0.5	12.0	16.0	-	33.2	9.8	7.1	78.1	21.9
2001	7.1	0.9	5.1	7.8	0.6	12.1	15.7	-	33.1	10.2	7.2	78.5	21.5
2002	7.2	1.0	4.8	7.4	0.7	12.8	15.0	-	33.2	10.6	7.5	79.0	21.0
2003	7.5	1.0	4.5	7.7	0.7	12.9	14.6	-	32.3	10.6	8.3	78.7	21.3
2004	7.1	1.0	4.4	8.3	0.7	12.9	15.3	-	31.8	10.5	7.9	78.5	21.5
2005	6.8	1.0	4.2	10.5	0.7	12.8	15.0	-	30.0	10.5	8.6	76.8	23.2
2006	6.4	0.9	4.3	10.6	0.7	12.3	16.6	-	28.0	10.2	9.9	77.1	22.9
2007	6.5	0.9	4.2	10.4	0.6	12.5	17.3	-	27.9	9.7	10.0	77.4	22.6
2008	6.6	0.9	4.1	12.3	0.7	12.1	15.8	-	26.3	9.5	11.7	75.4	24.6
2009	8.0	1.1	3.3	16.0	0.8	14.0	12.7	-	26.9	11.3	5.9	70.8	29.2

**Table A2b**  
**Composition of exports, SITC 1-digit**

	0	1	2	3	4	5	6	Silk	7	8	9	Manufatti*	Prodotti primari**
1862	16.5	2.3	16.8	0.0	11.4	8.6	5.3	35.8	0.0	3.2	0.1	17.2	82.8
1863	21.4	3.9	16.6	0.0	8.1	6.2	5.0	35.5	0.0	3.3	0.0	14.7	85.3
1864	20.2	2.5	18.0	0.0	10.8	7.5	6.2	31.7	0.0	3.1	0.0	16.8	83.2
1865	21.5	2.8	20.2	0.0	16.6	7.0	5.0	23.7	0.0	3.2	0.0	15.2	84.8
1866	19.1	2.0	22.9	0.0	17.0	6.5	4.9	24.6	0.0	2.8	0.0	14.3	85.7
1867	30.7	2.4	18.1	0.0	7.9	5.3	5.0	28.1	0.1	2.4	0.1	12.9	87.1
1868	29.9	1.8	18.3	0.0	10.2	4.6	5.3	27.6	0.0	2.2	0.0	12.2	87.8
1869	23.3	2.2	16.8	0.0	14.7	4.7	7.2	28.4	0.1	2.6	0.1	14.7	85.3
1870	23.8	1.9	18.2	0.1	11.5	4.8	6.1	28.1	0.2	4.9	0.4	16.4	83.6
1871	21.8	1.4	21.7	0.0	11.8	3.8	5.5	29.7	0.4	4.0	0.0	13.7	86.3
1872	19.1	2.4	18.2	0.0	7.6	4.4	8.4	29.9	0.1	9.9	0.0	22.7	77.3
1873	18.8	2.2	18.6	0.0	8.6	4.0	7.4	31.2	0.1	8.7	0.4	20.5	79.5
1874	16.0	2.0	22.0	0.0	8.8	5.5	10.5	25.6	0.1	9.4	0.1	25.5	74.5
1875	18.8	2.1	18.9	0.0	14.6	4.7	7.4	24.4	0.0	9.1	0.0	21.3	78.7
1876	19.5	2.3	19.5	0.0	10.2	4.3	5.9	29.9	0.0	8.3	0.0	18.5	81.5
1877	26.4	1.4	17.2	0.0	10.8	5.4	9.2	19.1	0.1	10.5	0.0	25.1	74.9
1878	22.9	1.3	17.9	0.0	8.3	4.3	11.3	25.9	0.1	8.0	0.0	23.7	76.3
1879	20.1	2.6	17.2	0.0	12.3	4.2	9.4	28.2	0.1	5.9	0.0	19.6	80.4
1880	20.0	5.8	17.6	0.0	7.1	4.3	8.8	29.3	0.1	7.1	0.0	20.3	79.7
1881	18.2	5.2	15.8	0.0	7.6	4.3	8.3	31.9	0.1	8.5	0.1	21.3	78.7
1882	20.7	3.8	14.7	0.0	7.8	4.2	8.8	29.9	0.1	9.7	0.2	23.1	76.9
1883	21.3	6.6	16.4	0.0	8.2	4.6	9.2	25.0	0.1	8.4	0.0	22.4	77.6
1884	21.3	7.4	16.4	0.0	6.5	4.5	10.5	27.1	0.2	6.2	0.1	21.4	78.6
1885	21.6	6.1	16.8	0.0	4.8	4.5	10.8	27.9	0.6	6.3	0.6	22.8	77.2
1886	17.2	8.2	16.2	0.0	7.1	4.1	10.1	31.4	0.2	5.4	0.0	19.9	80.1
1887	18.1	10.4	13.8	0.0	7.4	4.8	9.2	30.9	0.2	5.2	0.0	19.4	80.6
1888	16.3	6.3	17.1	0.0	6.5	5.3	9.1	33.3	0.2	6.0	0.1	20.6	79.4
1889	17.8	5.7	18.3	0.0	6.8	4.6	10.1	30.5	0.3	5.8	0.0	20.9	79.1
1890	20.0	4.5	19.1	0.0	5.0	5.4	10.5	29.5	0.3	5.7	0.1	22.0	78.0
1891	20.7	4.6	19.2	0.0	7.0	4.8	10.7	26.7	0.6	5.6	0.1	21.8	78.2
1892	18.1	6.4	18.5	0.0	6.3	4.5	10.3	30.3	0.2	5.3	0.0	20.4	79.6
1893	20.3	6.3	20.0	0.0	5.0	4.8	11.2	25.6	0.3	6.4	0.0	22.7	77.3
1894	22.0	4.9	18.6	0.0	6.3	3.5	12.3	25.7	0.3	6.5	0.0	22.5	77.5
1895	20.9	4.9	16.4	0.0	4.5	4.7	12.3	28.2	0.4	7.5	0.0	25.0	75.0
1896	20.6	5.2	17.3	0.0	5.3	4.0	13.2	24.3	2.2	7.9	0.0	27.2	72.8
1897	19.3	6.3	16.8	0.1	5.3	4.6	13.6	24.5	2.7	6.8	0.0	27.8	72.2
1898	19.0	6.3	16.0	0.0	3.4	3.8	14.8	26.1	3.6	6.8	0.0	29.1	70.9
1899	18.5	5.4	16.0	0.0	4.0	3.6	15.1	29.1	0.9	7.4	0.0	27.0	73.0
1900	19.7	5.1	17.0	0.1	2.5	3.6	16.8	25.9	1.1	8.3	0.0	29.8	70.2
1901	19.9	3.5	14.7	0.1	3.4	3.4	17.7	28.6	1.0	7.7	0.0	29.9	70.1
1902	19.2	3.3	16.1	0.1	3.5	3.5	16.0	30.0	0.8	7.5	0.0	27.7	72.3
1903	20.3	5.2	16.2	0.1	2.7	3.5	16.7	27.4	0.8	7.2	0.0	28.1	71.9
1904	19.0	2.8	16.0	0.1	3.4	3.8	18.7	26.0	2.8	7.3	0.0	32.7	67.3
1905	20.3	2.5	14.6	0.1	2.4	4.1	18.6	28.1	2.0	7.1	0.1	31.9	68.1
1906	18.8	2.3	13.9	0.1	3.7	3.9	18.6	30.2	1.8	6.3	0.4	31.0	69.0
1907	21.8	2.6	13.5	0.1	3.0	3.7	17.8	28.4	1.8	7.1	0.0	30.5	69.5
1908	22.8	3.3	14.7	0.1	3.6	4.3	17.3	24.2	2.5	7.1	0.1	31.4	68.6
1909	22.4	3.3	15.6	0.1	2.1	3.5	18.6	25.4	2.1	7.0	0.0	31.1	68.9
1910	22.3	5.1	14.4	0.1	3.2	3.8	21.0	19.8	1.9	8.5	0.1	35.2	64.8

Table A2b, cont.

	0	1	2	3	4	5	6	Silk	7	8	9	Manufatti*	Prodotti primari**
1911	24.4	3.9	14.9	0.1	2.6	3.8	22.8	15.2	3.7	8.6	0.0	38.9	61.1
1912	25.0	4.1	15.1	0.1	2.4	4.0	22.1	15.7	3.3	8.2	0.0	37.6	62.4
1913	25.8	4.1	14.7	0.3	1.7	3.9	23.7	14.9	3.0	7.9	0.0	38.5	61.5
1914	28.4	4.1	14.9	0.1	1.5	4.4	23.0	13.4	3.5	6.6	0.1	37.5	62.5
1915	18.0	3.2	9.8	0.3	2.7	5.5	36.8	13.4	3.5	6.6	0.0	52.6	47.4
1916	13.9	3.0	12.7	0.6	0.6	6.6	36.8	16.2	3.7	5.1	0.8	52.9	47.1
1917	9.4	4.6	12.0	0.5	0.6	7.1	38.2	15.9	5.7	5.1	0.9	57.0	43.0
1918	9.5	13.8	16.5	0.5	0.2	6.1	31.2	13.3	3.0	6.0	0.0	46.3	53.7
1919	12.9	3.5	13.6	0.4	1.0	4.7	37.8	18.9	1.7	5.5	0.0	49.7	50.3
1920	11.5	2.8	14.3	0.4	0.6	5.4	36.5	15.5	5.0	8.0	0.0	54.8	45.2
1921	14.8	2.8	10.7	1.1	1.0	3.6	35.5	18.8	5.5	6.2	0.0	50.8	49.2
1922	21.4	2.7	13.2	0.5	1.0	4.2	26.9	19.8	4.7	5.5	0.0	41.4	58.6
1923	19.9	2.3	12.9	0.3	2.3	3.4	30.2	18.6	4.5	5.6	0.1	43.7	56.3
1924	24.6	2.9	13.0	0.4	2.0	3.0	28.8	15.1	4.9	5.3	0.1	42.1	57.9
1925	23.8	2.2	12.7	0.3	2.0	3.1	30.9	13.2	5.5	5.9	0.3	45.8	54.2
1926	23.9	2.1	12.8	0.4	2.1	3.5	29.8	12.9	5.8	6.6	0.2	45.8	54.2
1927	23.1	2.3	15.1	0.4	2.7	3.7	30.7	10.0	5.7	6.2	0.1	46.5	53.5
1928	21.3	2.5	14.6	0.4	2.8	4.6	32.3	9.3	5.3	6.7	0.3	49.2	50.8
1929	22.1	2.4	13.1	0.5	3.5	4.1	32.6	9.0	5.2	7.1	0.4	49.4	50.6
1930	23.5	2.5	13.2	1.3	2.9	4.1	30.8	8.7	5.7	6.6	0.5	47.8	52.2
1931	25.5	2.9	12.0	0.7	2.4	3.7	28.6	6.3	10.6	6.7	0.4	50.1	49.9
1932	29.1	2.6	12.8	0.7	2.4	3.8	29.1	4.0	8.6	6.6	0.2	48.3	51.7
1933	30.0	3.2	13.9	0.7	1.6	4.1	28.9	3.9	7.6	5.7	0.5	46.8	53.2
1934	28.6	3.9	17.4	0.6	1.2	4.3	28.9	2.4	6.1	6.0	0.6	45.9	54.1
1935	29.6	4.3	16.5	0.5	1.2	4.3	26.7	2.6	8.5	5.6	0.2	45.2	54.8
1936	31.8	6.1	14.1	0.6	1.3	4.0	21.9	3.0	12.7	4.3	0.2	43.1	56.9
1937	25.7	4.2	14.1	0.8	1.7	4.8	29.0	2.2	11.8	5.5	0.3	51.4	48.6
1938	27.4	4.3	12.1	0.8	1.8	5.5	29.7	2.2	10.5	5.4	0.4	51.4	48.6
1939	26.3	4.6	12.4	0.8	1.5	5.5	28.6	1.9	11.8	4.9	1.5	52.4	47.6
1940	-	-	-	-	-	-	-	-	-	-	-	-	-
1941	-	-	-	-	-	-	-	-	-	-	-	-	-
1942	-	-	-	-	-	-	-	-	-	-	-	-	-
1943	-	-	-	-	-	-	-	-	-	-	-	-	-
1944	-	-	-	-	-	-	-	-	-	-	-	-	-
1945	-	-	-	-	-	-	-	-	-	-	-	-	-
1946	-	-	-	-	-	-	-	-	-	-	-	-	-
1947	-	-	-	-	-	-	-	-	-	-	-	-	-
1948	-	-	-	-	-	-	-	-	-	-	-	-	-
1949	-	-	-	-	-	-	-	-	-	-	-	-	-
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	17.5	1.5	7.5	2.7	0.5	5.5	43.1	-	16.8	4.8	0.0	70.2	29.8
1952	19.8	2.1	6.7	6.9	0.6	6.4	30.8	-	21.1	5.6	0.1	64.0	36.0
1953	21.4	2.4	6.4	9.8	0.6	5.8	28.8	-	18.9	5.8	0.1	59.4	40.6
1954	21.7	2.3	6.5	11.0	0.6	6.8	25.9	-	18.1	7.1	0.0	57.9	42.1
1955	20.1	2.0	6.6	8.9	0.4	6.9	26.8	-	20.0	8.2	0.0	61.9	38.1
1956	20.3	2.2	5.4	8.1	0.4	7.0	27.8	-	21.1	7.6	0.0	63.6	36.4
1957	21.8	2.0	4.5	7.3	0.3	6.1	26.8	-	22.7	8.4	0.0	64.1	35.9
1958	17.9	2.2	4.0	7.1	0.4	6.6	25.9	-	26.8	9.0	0.0	68.4	31.6
1959	16.5	1.9	4.5	7.3	0.3	7.1	25.5	-	26.0	10.8	0.0	69.5	30.5
1960	14.1	1.6	4.2	6.0	0.2	7.2	25.3	-	28.6	12.3	0.4	73.8	26.2

Table A2b, cont.

	0	1	2	3	4	5	6	Silk	7	8	9	Manufatti*	Prodotti primari**
1961	13.3	1.6	4.0	5.6	0.3	7.7	23.4	-	30.1	13.7	0.5	75.3	24.7
1962	14.6	2.1	3.8	5.2	0.2	7.5	21.7	-	29.4	14.8	0.5	74.0	26.0
1963	12.9	2.0	3.8	5.3	0.2	7.7	21.4	-	29.5	16.3	0.9	75.7	24.3
1964	11.6	1.7	4.0	5.1	0.2	8.0	22.6	-	29.6	16.3	0.7	77.3	22.7
1965	11.9	1.5	3.6	5.5	0.2	8.6	23.7	-	28.6	15.7	0.8	77.3	22.7
1966	10.4	1.4	3.1	6.4	0.2	8.2	22.4	-	30.6	16.8	0.6	78.6	21.4
1967	10.0	1.3	2.9	6.6	0.2	7.9	20.7	-	32.7	17.0	0.7	79.0	21.0
1968	8.2	1.3	2.9	6.5	0.2	7.8	21.4	-	33.1	17.9	0.7	80.9	19.1
1969	8.0	1.3	2.7	5.4	0.2	7.2	21.1	-	33.8	19.7	0.6	82.4	17.6
1970	7.4	1.6	2.5	5.3	0.2	6.9	20.0	-	36.0	19.5	0.4	82.9	17.1
1971	7.3	2.0	2.4	5.5	0.3	7.0	21.2	-	34.6	19.2	0.5	82.5	17.5
1972	6.9	2.2	2.2	4.7	0.2	6.8	22.0	-	34.9	19.9	0.3	83.8	16.2
1973	6.8	2.2	2.3	5.8	0.3	7.2	22.5	-	33.5	19.2	0.3	82.7	17.3
1974	6.3	1.7	2.2	8.7	0.3	10.0	22.1	-	31.0	17.4	0.3	80.9	19.1
1975	6.9	2.0	1.9	5.5	0.2	7.8	23.4	-	34.1	17.7	0.4	83.5	16.5
1976	6.4	1.9	1.9	5.5	0.4	7.7	22.8	-	33.8	19.2	0.4	83.9	16.1
1977	6.7	1.7	2.5	5.3	0.2	7.2	23.1	-	32.9	20.1	0.4	83.6	16.4
1978	5.9	1.9	1.6	5.1	0.2	6.6	24.6	-	31.8	21.9	0.4	85.2	14.8
1979	5.7	1.9	1.7	6.7	0.2	6.7	23.8	-	30.3	22.8	0.2	83.8	16.2
1980	5.8	1.7	1.7	4.9	0.2	7.8	24.0	-	31.6	21.9	0.2	85.7	14.3
1981	6.0	1.8	1.8	5.1	0.3	7.5	24.5	-	31.7	21.1	0.3	85.1	14.9
1982	5.9	1.8	1.5	5.8	0.2	7.1	24.0	-	30.8	22.4	0.4	84.7	15.3
1983	5.6	1.7	1.7	5.2	0.3	7.9	23.3	-	31.4	22.4	0.6	85.6	14.4
1984	5.5	1.6	1.7	4.0	0.3	8.3	23.6	-	30.6	23.4	0.9	86.8	13.2
1985	5.9	1.5	1.6	4.4	0.4	8.3	23.2	-	30.3	23.8	0.6	86.3	13.7
1986	5.6	1.3	1.5	2.9	0.4	7.6	22.6	-	32.5	25.1	0.7	88.5	11.5
1987	5.4	1.3	1.6	2.4	0.3	7.9	22.3	-	33.8	24.4	0.6	89.1	10.9
1988	5.3	1.2	1.6	1.9	0.3	7.6	22.6	-	34.9	23.5	0.9	89.5	10.5
1989	5.1	1.2	1.6	2.0	0.3	7.5	22.6	-	35.5	23.3	0.8	89.8	10.2
1990	4.9	1.2	1.3	2.4	0.3	7.0	22.1	-	36.3	23.5	0.8	89.8	10.2
1991	5.3	1.3	1.3	2.2	0.4	7.5	21.6	-	36.5	23.1	0.8	89.4	10.6
1992	5.4	1.3	1.3	2.2	0.4	7.6	22.1	-	35.8	23.2	0.8	89.4	10.6
1993	5.4	1.2	1.2	2.4	0.4	8.0	22.1	-	36.4	22.4	0.6	89.4	10.6
1994	5.3	1.3	1.2	1.3	0.4	8.2	22.4	-	36.7	22.5	0.8	90.6	9.4
1995	5.0	1.3	1.3	1.5	0.4	8.5	22.9	-	36.2	22.2	0.7	90.5	9.5
1996	5.0	1.4	1.2	1.3	0.5	8.4	21.6	-	37.2	22.6	0.7	90.6	9.4
1997	4.9	1.4	1.2	1.4	0.4	8.9	21.9	-	37.0	22.3	0.6	90.6	9.4
1998	4.8	1.5	1.1	0.9	0.4	8.9	21.7	-	37.1	21.0	2.5	91.2	8.8
1999	4.8	1.6	1.1	1.1	0.4	9.5	20.8	-	36.6	20.6	3.5	91.0	9.0
2000	4.3	1.3	1.0	0.2	0.4	9.2	21.1	-	38.4	20.8	3.2	92.7	7.3
2001	4.5	1.4	0.9	0.2	0.4	9.5	21.0	-	37.7	20.9	3.5	92.6	7.4
2002	4.8	1.5	1.0	0.2	0.4	10.1	20.6	-	37.3	20.6	3.5	92.1	7.9
2003	4.8	1.5	0.9	0.2	0.4	10.0	20.3	-	37.0	19.8	4.8	92.1	7.9
2004	4.5	1.5	1.0	0.3	0.5	9.9	21.1	-	37.5	18.8	5.1	92.3	7.7
2005	4.6	1.4	0.9	0.4	0.5	10.4	20.6	-	36.8	18.2	6.3	92.2	7.8
2006	4.5	1.4	1.1	0.4	0.5	10.1	21.4	-	36.8	17.7	6.2	92.2	7.8
2007	4.5	1.4	1.1	0.5	0.4	9.8	21.1	-	37.5	17.2	6.7	92.2	7.8
2008	5.0	1.4	1.0	0.7	0.4	9.7	20.4	-	37.2	16.8	7.5	91.5	8.5
2009	5.9	1.7	1.1	0.6	0.5	10.8	18.6	-	36.4	17.4	7.0	90.3	9.7

Table A3

## Composition of trade in manufactures by level of technology

Imports					Exports			
	Low Tech	Low Tech (excl Silk)	Medium Tech	High Tech	Low Tech	Low Tech (excl Silk)	Medium Tech	High Tech
1920	12.64	10.93	6.33	1.26	52.89	36.28	3.96	1.35
1921	8.83	8.18	5.10	1.32	52.37	32.58	4.75	1.29
1922	12.30	10.42	6.91	1.24	46.51	27.06	6.93	0.72
1923	11.09	10.13	7.37	1.35	49.19	30.81	7.17	0.71
1924	11.62	10.05	7.64	1.25	44.41	29.44	7.84	0.57
1925	11.73	11.08	8.39	1.29	44.39	31.28	9.32	0.54
1926	10.46	9.77	8.44	1.63	43.80	31.00	9.53	0.71
1927	10.47	9.75	7.37	1.66	40.99	31.09	10.25	0.77
1928	11.71	11.06	7.84	1.92	41.57	32.53	11.22	0.79
1929	12.25	11.79	9.18	2.28	41.70	32.94	11.02	1.08
1930	11.55	11.25	9.58	2.73	37.02	28.44	12.45	1.15
1931	11.20	10.84	9.13	2.94	32.87	26.64	17.16	1.35
1932	11.07	10.77	9.14	2.71	31.94	28.04	15.33	2.14
1933	9.72	9.53	8.99	2.30	31.92	28.32	14.39	1.81
1934	10.08	9.86	11.81	2.90	29.51	27.35	15.66	1.85
1935	12.53	12.41	11.72	3.20	25.92	23.43	18.36	2.49
1936	13.44	13.36	12.69	3.80	21.35	18.51	21.20	2.13
1937	9.00	8.87	10.01	2.56	29.05	26.93	19.22	2.18
1938	13.92	13.81	14.61	3.43	29.22	27.08	16.73	3.68
1939	10.31	10.19	12.85	3.75	26.63	24.74	22.11	3.43
1940	-	-	-	-	-	-	-	-
1941	-	-	-	-	-	-	-	-
1942	-	-	-	-	-	-	-	-
1943	-	-	-	-	-	-	-	-
1944	-	-	-	-	-	-	-	-
1945	-	-	-	-	-	-	-	-
1946	-	-	-	-	-	-	-	-
1947	-	-	-	-	-	-	-	-
1948	-	-	-	-	-	-	-	-
1949	-	-	-	-	-	-	-	-
1950	-	-	-	-	-	-	-	-
1951	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-
1954	-	-	-	-	-	-	-	-
1955	-	-	-	-	-	-	-	-
1956	-	-	-	-	-	-	-	-
1957	-	-	-	-	-	-	-	-
1958	-	-	-	-	-	-	-	-
1959	-	-	-	-	-	-	-	-
1960	-	-	-	-	-	-	-	-
1961	-	-	-	-	-	-	-	-
1962	9.90	-	21.80	5.30	30.00	-	32.10	6.20
1963	10.60	-	22.90	5.50	30.80	-	32.10	6.30
1964	9.00	-	20.70	6.10	30.90	-	33.00	6.20



**Table A3, cont.**

Imports					Exports			
	Low Tech	Low Tech (excl Silk)	Medium Tech	High Tech	Low Tech	Low Tech (excl Silk)	Medium Tech	High Tech
1965	7.80	-	17.40	5.30	30.40	-	32.50	6.00
1966	9.10	-	18.30	4.70	30.00	-	33.80	6.20
1967	8.90	-	19.50	5.60	28.60	-	34.50	7.10
1968	8.50	-	20.30	6.30	29.80	-	35.60	6.60
1969	9.60	-	21.90	6.80	31.10	-	35.70	6.50
1970	10.60	-	23.70	6.70	29.40	-	36.40	7.80
1971	9.40	-	23.70	6.30	30.40	-	35.70	7.60
1972	9.60	-	24.50	6.30	31.40	-	36.50	7.20
1973	11.20	-	23.10	6.60	30.70	-	35.80	7.30
1974	9.50	-	19.20	5.40	29.10	-	35.90	6.40
1975	8.30	-	21.10	6.10	31.50	-	38.40	6.40
1976	9.50	-	21.70	6.10	31.80	-	37.20	6.50
1977	9.80	-	21.80	6.10	32.50	-	35.60	6.20
1978	9.40	-	23.30	6.60	35.60	-	34.60	6.00
1979	10.40	-	23.40	6.20	35.20	-	33.40	5.70
1980	10.00	-	23.80	6.60	34.10	-	34.70	7.00
1981	8.40	-	21.80	6.80	34.50	-	35.20	6.80
1982	8.80	-	22.20	6.90	35.90	-	33.70	6.80
1983	8.70	-	21.30	7.30	34.80	-	34.20	7.20
1984	9.40	-	20.60	9.00	36.60	-	33.70	8.50
1985	9.60	-	20.90	9.70	37.00	-	33.10	8.80
1986	11.60	-	25.60	10.80	37.50	-	35.00	8.60
1987	12.70	-	28.40	11.90	36.60	-	36.30	8.50
1988	13.20	-	29.40	13.10	35.40	-	37.10	9.00
1989	13.40	-	29.60	12.70	34.90	-	37.80	9.10
1990	13.50	-	30.20	13.20	35.00	-	37.90	9.00
1991	13.60	-	30.30	13.90	34.40	-	38.20	9.40
1992	14.10	-	31.80	13.70	34.50	-	37.70	9.50
1993	14.00	-	28.70	13.60	33.80	-	38.20	9.90
1994	15.00	-	28.90	13.60	34.20	-	38.90	9.70
1995	15.20	-	30.90	13.40	33.50	-	38.90	9.80
1996	15.10	-	31.00	13.60	33.20	-	40.40	9.20
1997	15.60	-	31.80	13.70	33.10	-	39.90	9.50
1998	15.90	-	33.50	15.10	32.10	-	39.90	9.70
1999	15.30	-	34.20	16.10	31.00	-	38.90	10.20
2000	14.80	-	31.70	15.60	31.50	-	39.50	11.60
2001	15.30	-	32.00	15.20	31.80	-	39.50	11.30
2002	15.40	-	32.60	15.20	31.00	-	39.70	11.40
2003	15.30	-	33.10	14.10	30.10	-	40.40	10.40
2004	15.20	-	32.70	14.40	29.70	-	41.30	10.20
2005	14.90	-	31.50	13.60	28.80	-	40.90	10.50
2006	15.10	-	30.40	12.50	28.60	-	41.70	9.80
2007	15.20	-	31.60	11.40	28.20	-	42.70	9.00
2008	14.50	-	30.30	11.10	27.60	-	42.40	8.90
2009	14.70	-	28.90	13.80	26.60	-	40.80	10.40

**Table A4****Lafay index for manufactures**

	All	Excl. Silk
1862	0.70	-10.59
1863	-0.40	-11.76
1864	1.55	-8.82
1865	-5.13	-11.41
1866	-2.29	-11.82
1867	-4.18	-14.79
1868	-4.15	-13.81
1869	-3.02	-16.04
1870	-0.17	-12.21
1871	-1.95	-13.72
1872	3.05	-9.17
1873	2.97	-10.92
1874	3.87	-7.16
1875	-0.95	-11.55
1876	-0.25	-10.30
1877	-0.43	-8.05
1878	1.22	-7.68
1879	3.61	-5.43
1880	3.94	-7.04
1881	3.11	-9.83
1882	2.92	-8.68
1883	-0.03	-9.72
1884	0.44	-9.98
1885	3.68	-7.76
1886	3.12	-8.90
1887	2.38	-9.89
1888	5.89	-7.88
1889	5.37	-5.81
1890	6.30	-5.09
1891	5.25	-6.07
1892	6.46	-5.38
1893	5.53	-4.10
1894	5.32	-4.59
1895	7.39	-3.02
1896	7.50	-1.80
1897	6.87	-1.94
1898	10.93	0.78
1899	7.69	-2.35
1900	8.36	-1.36
1901	10.43	-0.19
1902	9.66	-0.96
1903	9.05	-0.74
1904	9.58	0.08

**Table A4, cont.**

	All	Excl. Silk
1905	9.40	-1.01
1906	8.82	-3.04
1907	6.14	-4.81
1908	4.99	-4.04
1909	7.79	-1.94
1910	7.04	-0.28
1911	7.04	1.48
1912	7.01	1.05
1913	6.84	1.45
1914	6.06	1.11
1915	18.15	12.95
1916	13.82	8.12
1917	9.85	5.32
1918	6.53	3.07
1919	15.71	8.78
1920	17.02	11.17
1921	20.51	12.85
1922	16.42	8.19
1923	17.50	9.16
1924	14.91	8.39
1925	14.67	8.60
1926	15.13	9.22
1927	14.51	9.99
1928	14.17	10.06
1929	13.14	9.00
1930	11.64	7.58
1931	12.41	9.46
1932	10.61	8.77
1933	8.96	7.16
1934	8.45	7.41
1935	8.21	7.02
1936	6.17	4.74
1937	13.13	12.14
1938	11.00	9.97
1939	11.41	10.50
1940	-	-
1941	-	-
1942	-	-
1943	-	-

**Table A4, cont.**

	All	Excl. Silk
1944	-	-
1945	-	-
1946	-	-
1947	-	-
1948	-	-
1949	-	-
1950	-	-
1951	22.80	6.64
1952	16.35	7.69
1953	12.91	5.40
1954	11.47	5.62
1955	14.14	7.73
1956	15.29	8.30
1957	15.96	9.13
1958	17.79	11.22
1959	16.80	11.30
1960	16.76	12.31
1961	17.17	14.89
1962	13.04	11.22
1963	13.26	11.55
1964	15.80	12.60
1965	18.62	14.18
1966	18.32	15.40
1967	17.51	15.39
1968	17.94	14.96
1969	16.88	14.95
1970	15.39	15.18
1971	16.87	14.21
1972	17.08	14.06
1973	16.39	13.70
1974	18.27	15.47
1975	20.50	15.10
1976	19.50	15.29
1977	19.05	14.73
1978	19.01	13.57
1979	17.77	13.58
1980	18.18	13.72

**Table A4, cont.**

	All	Excl. Silk
1981	20.15	13.71
1982	19.62	13.56
1985	17.50	12.30
1986	14.16	10.22
1987	12.37	9.01
1988	9.90	7.04
1989	10.22	7.68
1990	9.76	7.10
1991	9.19	6.11
1992	8.36	5.07
1993	9.24	5.76
1994	9.29	6.58
1995	8.30	6.04
1996	8.41	6.00
1997	7.80	5.28
1998	6.61	4.37
1999	7.25	4.84
2000	3.66	2.37
2001	3.54	2.22
2002	3.28	1.89
2003	3.34	1.92
2004	3.46	2.03
2005	3.84	2.43
2006	3.78	2.61
2007	3.71	2.78
2008	4.03	2.89
2009	4.88	3.39

Table A5

## Lafay indexes, SITC 1-digit

	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 6 (excl. Silk 6511)	SITC 7	SITC 8	SITC 9
1862	-5.16	-0.94	1.49	-1.02	4.93	2.75	-0.43	-11.72	-0.57	-0.54	-0.51
1863	-3.86	0.15	1.59	-0.83	3.36	1.69	-0.50	-11.86	-0.28	-0.68	-0.63
1864	-7.06	-0.74	2.86	-1.09	4.48	2.28	0.66	-9.70	-0.32	-0.75	-0.33
1865	-3.78	-0.48	3.51	-1.31	7.19	1.93	-5.53	-11.81	-0.65	-0.59	-0.29
1866	-3.55	-0.83	0.87	-1.99	7.79	1.82	-3.05	-12.58	-0.54	-0.35	-0.17
1867	3.13	-1.35	1.44	-1.87	2.84	0.71	-3.33	-13.94	-0.55	-0.86	-0.15
1868	3.20	-1.38	1.17	-2.68	3.84	0.44	-2.81	-12.47	-0.74	-0.84	-0.20
1869	-0.61	-1.02	0.92	-2.47	6.21	0.51	-1.43	-14.45	-0.88	-1.10	-0.11
1870	-0.23	-1.48	0.81	-3.56	4.63	0.56	-0.43	-12.47	-0.48	0.18	0.00
1871	-1.09	-0.85	1.14	-2.44	5.20	0.21	-1.50	-13.27	-0.29	-0.19	-0.19
1872	-2.02	-0.16	-1.02	-3.14	3.29	0.58	1.52	-10.70	-1.06	2.19	-0.18
1873	-2.30	-1.19	-0.46	-2.57	3.55	0.29	2.72	-11.17	-1.72	1.69	-0.01
1874	-3.99	-1.27	0.13	-2.14	3.40	0.93	2.44	-8.59	-1.35	2.00	-0.15
1875	-1.00	-1.00	-1.07	-2.19	6.21	0.45	-1.75	-12.35	-1.03	1.55	-0.17
1876	-1.01	-0.66	-0.08	-2.44	4.43	0.45	-1.19	-11.25	-0.93	1.58	-0.15
1877	1.93	-1.06	-1.94	-2.69	4.18	1.02	-2.84	-10.46	-1.13	2.71	-0.18
1878	-1.10	-0.62	-0.16	-2.45	3.10	0.40	-0.07	-8.98	-0.98	2.08	-0.21
1879	-5.76	0.21	-0.85	-2.38	5.17	0.36	2.85	-6.20	-0.72	1.37	-0.24
1880	-2.76	1.58	-2.28	-2.99	2.50	0.36	3.25	-7.73	-1.17	1.73	-0.22
1881	-0.78	1.49	-3.41	-3.02	2.61	0.25	2.18	-10.76	-1.48	2.24	-0.07
1882	0.58	0.33	-4.29	-3.00	3.47	0.00	2.20	-9.40	-1.79	2.55	-0.05
1883	0.39	2.11	-2.54	-3.16	3.23	0.28	0.14	-9.55	-1.80	1.50	-0.16
1884	0.05	2.52	-2.15	-3.15	2.28	0.31	1.98	-8.44	-1.86	0.13	-0.12
1885	-2.01	1.33	-1.16	-2.85	1.01	0.40	4.40	-7.03	-1.48	0.29	0.07
1886	-4.01	2.35	-1.68	-2.56	2.78	0.25	5.00	-7.02	-1.57	-0.39	-0.16
1887	-3.67	4.00	-2.95	-2.76	3.00	0.56	3.83	-8.45	-1.61	-0.29	-0.11
1888	-4.64	2.15	-1.86	-4.21	2.66	0.69	6.72	-7.05	-1.94	0.66	-0.24
1889	-4.60	1.82	-1.44	-3.99	2.84	0.47	5.79	-5.40	-1.84	1.08	-0.13
1890	-2.54	1.26	-2.16	-4.84	1.98	0.56	6.37	-5.02	-1.48	0.98	-0.13
1891	-2.33	1.25	-2.23	-4.97	3.03	-0.06	5.85	-5.46	-1.01	0.59	-0.11
1892	-4.54	2.17	-2.46	-4.53	2.89	-0.20	7.32	-4.52	-1.09	0.59	-0.16
1893	-2.75	2.16	-2.69	-4.40	2.14	-0.25	5.80	-3.83	-1.06	1.17	-0.13
1894	1.30	1.37	-4.95	-5.60	2.57	-1.31	6.99	-2.92	-1.42	1.23	-0.17
1895	-1.07	1.08	-5.08	-4.20	1.87	-0.51	7.94	-2.47	-1.59	1.73	-0.18
1896	-1.89	1.30	-5.01	-4.26	2.37	-1.18	7.72	-1.58	-0.81	1.92	-0.15
1897	-0.82	1.73	-5.38	-4.70	2.29	-1.07	7.19	-1.63	-0.54	1.40	-0.10
1898	-5.01	2.32	-3.69	-5.40	0.86	-1.02	10.57	0.42	0.14	1.36	-0.13
1899	-0.01	1.72	-4.94	-5.71	1.25	-1.33	9.48	-0.56	-2.06	1.70	-0.10
1900	0.64	1.56	-4.26	-6.71	0.41	-1.26	10.54	0.83	-2.99	2.17	-0.09
1901	-1.36	0.56	-5.74	-4.94	1.05	-1.30	12.23	1.61	-2.35	1.94	-0.10
1902	-1.54	0.66	-5.50	-4.54	1.26	-1.07	10.99	0.36	-1.85	1.69	-0.10
1903	-1.01	1.65	-6.10	-4.40	0.81	-1.08	10.66	0.88	-1.91	1.45	-0.08
1904	0.56	0.69	-7.51	-4.53	1.22	-1.23	10.88	1.38	-1.33	1.37	-0.11
1905	0.40	0.70	-6.59	-4.53	0.63	-1.07	11.26	0.85	-2.16	1.43	-0.07
1906	0.54	0.46	-6.93	-4.58	1.69	-0.88	12.07	0.20	-3.27	0.85	0.05
1907	4.19	0.65	-7.49	-4.78	1.30	-0.91	10.33	-0.62	-4.17	0.99	-0.10
1908	2.86	0.98	-5.80	-4.31	1.28	-0.81	8.82	-0.20	-3.75	0.81	-0.09
1909	0.63	0.95	-5.23	-4.38	0.24	-0.88	10.29	0.56	-2.41	0.88	-0.10

Table A5, cont.

	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 6 (excl. Silk 6511)	SITC 7	SITC 8	SITC 9
1910	0.65	1.90	-6.32	-4.18	0.92	-0.66	8.43	1.11	-2.03	1.37	-0.07
1911	1.95	1.27	-6.46	-4.48	0.67	-0.84	7.54	1.97	-1.08	1.53	-0.10
1912	1.57	1.38	-5.24	-5.34	0.62	-0.65	7.75	1.78	-1.02	1.00	-0.07
1913	2.96	1.28	-5.71	-5.63	0.26	-0.86	8.08	2.69	-1.26	0.96	-0.09
1914	5.80	1.31	-6.33	-6.65	-0.19	-0.78	7.48	2.52	-1.08	0.46	-0.02
1915	-5.10	1.11	-7.17	-7.64	0.65	-0.06	16.18	10.98	0.54	1.66	-0.17
1916	-3.99	0.97	-3.06	-7.55	-0.19	-0.41	13.10	7.40	0.42	0.92	-0.21
1917	-6.31	1.21	-1.78	-2.97	-0.01	-0.51	8.83	4.30	0.97	1.03	-0.47
1918	-6.34	3.80	-0.11	-3.75	-0.12	-1.32	6.74	3.28	0.15	1.41	-0.44
1919	-9.23	0.94	-2.82	-4.58	-0.02	-0.14	15.25	8.32	-0.78	1.47	-0.08
1920	-6.54	-0.25	-3.07	-6.55	-0.60	0.24	14.58	8.74	-0.15	2.39	-0.05
1921	-10.09	0.51	-3.38	-6.98	-0.57	-0.06	18.00	10.34	0.85	1.74	-0.03
1922	-5.27	0.43	-4.66	-6.82	-0.11	-0.14	14.34	6.11	0.59	1.65	-0.01
1923	-4.68	0.28	-7.40	-6.55	0.85	-0.55	16.03	7.69	0.43	1.61	-0.01
1924	0.15	0.88	-8.96	-7.47	0.50	-0.58	13.46	6.93	0.50	1.50	0.03
1925	-0.65	0.60	-9.67	-5.26	0.32	-0.39	12.86	6.80	0.19	1.89	0.11
1926	-0.08	0.73	-9.12	-6.59	-0.07	-0.07	12.83	6.92	0.22	2.09	0.06
1927	-1.53	0.83	-6.26	-7.74	0.19	-0.09	12.23	7.71	0.64	1.73	0.00
1928	-2.95	0.94	-7.21	-5.14	0.19	0.33	11.86	7.74	0.14	1.72	0.13
1929	0.13	0.79	-8.79	-6.08	0.81	-0.09	11.62	7.48	-0.48	1.92	0.17
1930	0.23	0.88	-6.23	-6.31	-0.20	-0.29	10.51	6.46	-0.39	1.60	0.21
1931	0.92	1.15	-6.20	-7.76	-0.52	-0.50	8.83	5.88	2.32	1.66	0.11
1932	2.86	0.79	-8.02	-6.33	0.10	-0.48	8.35	6.51	1.21	1.52	0.01
1933	7.28	1.22	-10.40	-6.77	-0.29	-0.54	7.80	5.99	0.49	1.02	0.19
1934	6.67	1.53	-8.84	-7.48	-0.33	-0.38	7.63	6.59	-0.18	1.13	0.25
1935	6.98	1.77	-7.68	-8.92	-0.35	-0.53	6.66	5.48	0.70	1.28	0.09
1936	7.94	2.88	-7.33	-9.53	-0.12	-0.63	4.28	2.85	1.97	0.51	0.03
1937	2.76	1.85	-8.62	-9.00	-0.11	0.01	8.49	7.51	2.93	1.62	0.07
1938	7.84	1.77	-9.07	-11.24	-0.30	0.28	8.51	7.48	0.73	1.32	0.16
1939	5.75	1.97	-7.47	-11.39	-0.27	0.17	7.94	7.03	1.61	0.97	0.72
1940	-	-	-	-	-	-	-	-	-	-	-
1941	-	-	-	-	-	-	-	-	-	-	-
1942	-	-	-	-	-	-	-	-	-	-	-
1943	-	-	-	-	-	-	-	-	-	-	-
1944	-	-	-	-	-	-	-	-	-	-	-
1945	-	-	-	-	-	-	-	-	-	-	-
1946	-	-	-	-	-	-	-	-	-	-	-
1947	-	-	-	-	-	-	-	-	-	-	-
1948	-	-	-	-	-	-	-	-	-	-	-
1949	-	-	-	-	-	-	-	-	-	-	-
1950	-	-	-	-	-	-	-	-	-	-	-
1951	-0.21	0.63	-13.96	-8.12	-1.14	0.62	16.16	-	4.55	1.54	-0.07
1952	1.34	0.86	-12.02	-5.77	-0.76	1.26	8.67	-	4.90	1.63	-0.09
1953	2.15	0.92	-10.85	-4.36	-0.77	0.84	7.51	-	3.08	1.55	-0.07
1954	3.77	0.87	-11.25	-4.11	-0.75	0.86	5.85	-	2.69	2.08	-0.01
1955	2.09	0.58	-10.72	-5.18	-0.91	0.80	6.40	-	4.32	2.63	-0.01
1956	2.82	0.82	-11.75	-5.59	-1.60	0.73	7.00	-	5.10	2.47	-0.01
1957	4.01	0.70	-12.85	-6.56	-1.26	0.57	6.82	-	5.57	3.01	-0.02
1958	0.56	0.83	-12.04	-6.24	-0.90	0.21	6.57	-	7.91	3.14	-0.04

**Table A5, cont.**

	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 6 (excl. Silk 6511)	SITC 7	SITC 8	SITC 9
1959	0.10	0.72	-11.46	-5.05	-1.11	0.12	5.50	-	7.31	3.91	-0.04
1960	-0.60	0.57	-11.51	-3.96	-1.27	-0.04	4.45	-	7.46	4.76	0.13
1961	-1.09	0.53	-11.31	-4.44	-0.87	0.15	2.28	-	9.30	5.26	0.18
1962	0.88	0.58	-9.67	-4.07	-0.76	0.61	1.82	-	4.94	5.54	0.14
1963	-1.82	0.57	-7.78	-3.37	-0.86	1.01	1.71	-	4.35	6.04	0.16
1964	-3.16	0.50	-8.28	-4.50	-0.37	0.88	3.21	-	5.63	6.02	0.06
1965	-4.75	0.48	-8.83	-5.13	-0.39	1.05	4.44	-	7.14	5.87	0.13
1966	-4.82	0.42	-9.17	-4.26	-0.50	0.78	2.92	-	8.10	6.35	0.17
1967	-3.83	0.34	-8.46	-4.96	-0.61	0.56	2.12	-	8.26	6.37	0.20
1968	-4.98	0.31	-7.92	-4.97	-0.39	0.19	2.98	-	7.87	6.76	0.14
1969	-4.48	0.24	-7.55	-4.61	-0.46	-0.27	1.92	-	7.69	7.51	0.03
1970	-4.30	0.48	-6.78	-4.36	-0.44	-0.47	0.21	-	8.17	7.37	0.10
1971	-5.45	0.60	-5.79	-5.72	-0.52	-0.33	2.66	-	7.27	7.20	0.07
1972	-6.37	0.67	-5.79	-5.23	-0.36	-0.65	3.03	-	7.35	7.41	-0.05
1973	-6.13	0.56	-6.22	-4.16	-0.43	-0.42	2.69	-	7.10	6.99	0.03
1974	-3.64	0.44	-5.58	-8.86	-0.64	1.05	2.80	-	7.81	6.51	0.10
1975	-4.69	0.47	-5.04	-10.84	-0.40	0.28	5.40	-	8.15	6.64	0.03
1976	-4.22	0.51	-5.40	-10.21	-0.19	-0.21	4.21	-	8.06	7.38	0.06
1977	-4.19	0.44	-4.68	-10.29	-0.33	-0.36	4.32	-	7.34	7.70	0.05
1978	-4.66	0.57	-5.02	-9.65	-0.25	-1.04	5.44	-	6.13	8.53	-0.05
1979	-3.83	0.51	-5.38	-8.78	-0.29	-1.28	4.19	-	6.00	8.94	-0.08
1980	-2.68	0.48	-4.34	-11.45	-0.19	-0.17	4.47	-	5.72	8.23	-0.06
1981	-2.32	0.54	-3.57	-14.76	-0.04	-0.19	6.45	-	5.98	7.83	0.09
1982	-3.07	0.49	-3.62	-13.31	-0.11	-0.57	6.06	-	5.77	8.49	-0.13
1983	-3.29	0.40	-3.46	-13.18	-0.23	-0.72	5.63	-	6.77	8.43	-0.33
1984	-2.61	0.41	-4.00	-11.80	-0.14	-0.48	5.30	-	5.75	9.18	-1.61
1985	-2.89	0.26	-3.75	-10.93	-0.20	-0.56	5.19	-	5.14	9.28	-1.56
1986	-3.53	0.13	-3.46	-7.11	-0.17	-1.60	3.94	-	4.22	9.33	-1.74
1987	-3.40	0.11	-3.22	-5.63	-0.23	-1.50	3.36	-	3.30	8.60	-1.38
1988	-3.12	0.08	-3.44	-3.28	-0.13	-1.88	2.86	-	2.97	7.88	-1.93
1989	-2.93	0.08	-3.44	-3.81	-0.12	-1.77	2.53	-	3.48	7.88	-1.91
1990	-2.56	0.11	-3.07	-4.03	-0.20	-1.96	2.66	-	3.09	7.86	-1.88
1991	-2.75	0.12	-2.73	-3.60	-0.23	-1.69	3.08	-	2.73	7.20	-2.12
1992	-2.67	0.12	-2.58	-3.14	-0.09	-1.88	3.29	-	1.90	6.97	-1.93
1993	-2.83	0.09	-2.86	-3.47	-0.18	-2.12	3.48	-	3.96	6.44	-2.52
1994	-2.50	0.08	-3.21	-3.43	-0.24	-2.17	2.71	-	4.23	6.64	-2.13
1995	-2.25	0.18	-3.16	-2.96	-0.11	-2.11	2.25	-	3.49	6.65	-1.98
1996	-2.24	0.16	-2.62	-3.53	-0.17	-2.17	2.41	-	3.53	6.64	-2.01
1997	-1.97	0.22	-2.56	-3.27	-0.22	-1.95	2.52	-	3.06	6.29	-2.11
1998	-1.95	0.25	-2.42	-2.35	-0.14	-1.86	2.24	-	1.69	5.52	-0.97
1999	-1.75	0.26	-2.12	-3.51	-0.13	-1.65	2.41	-	0.54	5.05	0.91
2000	-0.66	0.11	-1.12	-1.97	-0.02	-0.69	1.28	-	1.29	2.74	-0.96
2001	-0.64	0.11	-1.05	-1.91	-0.04	-0.66	1.32	-	1.14	2.66	-0.93
2002	-0.62	0.14	-0.95	-1.79	-0.06	-0.65	1.40	-	1.03	2.51	-1.00
2003	-0.67	0.14	-0.89	-1.85	-0.06	-0.71	1.42	-	1.19	2.30	-0.86
2004	-0.64	0.13	-0.87	-2.01	-0.07	-0.76	1.43	-	1.42	2.08	-0.71
2005	-0.55	0.11	-0.83	-2.53	-0.05	-0.61	1.41	-	1.71	1.92	-0.59
2006	-0.49	0.12	-0.81	-2.56	-0.05	-0.55	1.18	-	2.20	1.88	-0.93
2007	-0.49	0.11	-0.78	-2.49	-0.06	-0.67	0.93	-	2.40	1.87	-0.82
2008	-0.40	0.12	-0.76	-2.91	-0.08	-0.60	1.14	-	2.74	1.82	-1.07
2009	-0.52	0.13	-0.56	-3.85	-0.09	-0.79	1.48	-	2.36	1.53	0.29



**Table A6**  
**Lafay indexes by level of technology**

	Low Tech	Low Tech (excl Silk)	Medium Tech	High Tech
1920	16.90	10.64	-0.99	0.04
1921	18.16	10.18	-0.14	-0.01
1922	15.72	7.65	0.01	-0.24
1923	18.00	9.77	-0.10	-0.30
1924	15.85	9.38	0.10	-0.33
1925	15.76	9.75	0.45	-0.36
1926	16.15	10.28	0.53	-0.44
1927	14.89	10.41	1.40	-0.43
1928	14.26	10.25	1.62	-0.54
1929	14.27	10.25	0.89	-0.58
1930	12.24	8.26	1.38	-0.76
1931	10.74	7.83	3.98	-0.79
1932	10.28	8.51	3.05	-0.28
1933	10.78	9.13	2.62	-0.24
1934	9.42	8.48	1.87	-0.51
1935	6.37	5.24	3.16	-0.34
1936	3.92	2.55	4.21	-0.83
1937	9.71	8.75	4.46	-0.18
1938	7.56	6.56	1.05	0.12
1939	8.16	7.27	4.63	-0.16
1940	-	-	-	-
1941	-	-	-	-
1942	-	-	-	-
1943	-	-	-	-
1944	-	-	-	-
1945	-	-	-	-
1946	-	-	-	-
1947	-	-	-	-
1948	-	-	-	-
1949	-	-	-	-
1950	-	-	-	-
1951	-	-	-	-
1952	-	-	-	-
1953	-	-	-	-
1954	-	-	-	-
1955	-	-	-	-
1956	-	-	-	-
1957	-	-	-	-
1958	-	-	-	-
1959	-	-	-	-
1960	-	-	-	-
1961	-	-	-	-

**Table A6, cont.**

	Low Tech	Low Tech (excl Silk)	Medium Tech	High Tech
1962	9.89	-	5.07	0.44
1963	9.73	-	4.43	0.39
1964	10.83	-	6.08	0.05
1965	11.29	-	7.55	0.35
1966	10.44	-	7.74	0.75
1967	9.82	-	7.48	0.75
1968	10.65	-	7.65	0.15
1969	10.74	-	6.89	-0.15
1970	9.36	-	6.33	0.55
1971	10.49	-	6.00	0.65
1972	10.90	-	6.00	0.45
1973	9.66	-	6.29	0.35
1974	9.61	-	8.19	0.49
1975	11.59	-	8.64	0.15
1976	11.11	-	7.72	0.20
1977	11.35	-	6.90	0.05
1978	13.09	-	5.65	-0.30
1979	12.39	-	5.00	-0.25
1980	11.91	-	5.39	0.20
1981	12.94	-	6.65	0.00
1982	13.48	-	5.72	-0.05
1983	13.03	-	6.44	-0.05
1984	13.54	-	6.52	-0.25
1985	13.60	-	6.06	-0.45
1986	12.94	-	4.70	-1.10
1987	11.94	-	3.95	-1.70
1988	11.08	-	3.84	-2.05
1989	10.73	-	4.09	-1.80
1990	10.73	-	3.84	-2.10
1991	10.39	-	3.95	-2.25
1992	10.19	-	2.95	-2.10
1993	9.89	-	4.74	-1.85
1994	9.59	-	4.99	-1.95
1995	9.14	-	3.99	-1.80
1996	9.01	-	4.68	-2.19
1997	8.73	-	4.04	-2.09
1998	8.09	-	3.19	-2.70
1999	7.85	-	2.35	-2.95
2000	8.35	-	3.90	-2.00
2001	8.25	-	3.75	-1.95
2002	7.80	-	3.55	-1.90
2003	7.40	-	3.65	-1.85
2004	7.25	-	4.30	-2.10
2005	6.95	-	4.70	-1.55
2006	6.74	-	5.65	-1.35
2007	6.50	-	5.55	-1.20
2008	6.55	-	6.05	-1.10
2009	5.95	-	5.95	-1.70



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