Quaderni di Storia Economica

(Economic History Working Papers)

Internal Geography and External Trade:
Regional Disparities in Italy, 1861-2011

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Internal Geography and External Trade:
regional disparities in Italy, 1861-2011

Brian A'Hearn[*], Anthony J. Venables[**]

Abstract

This paper explores the interactions between external trade and regional disparities in the Italian economy since unification. It argues that the advantage of the North was initially based on natural advantage (in particular the endowment of water, intensive in silk production). From 1880 onwards the share of exports in GDP stagnated and then declined; domestic market access therefore became a key determinant of industrial location, inducing fast growing new sectors (especially engineering) to locate in regions with a large domestic market, i.e. in the North. From 1945 onwards trade growth and European integration meant that foreign market access was the decisive factor; the North had the advantage of proximity to these markets.

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1.   Introduction[*]

The location of economic activity within a country is determined by three broad factors. One is the location of *natural advantages*, such as mineral deposits, climate, or water supply. The second is *domestic market access*; how well placed a location is to meet demand from the domestic market, and also to obtain inputs from labour, capital, and intermediate goods markets. The third is *foreign market access* capturing access to international trade. Our thesis in this paper is that each of these forces has been particularly important at different stages of Italy's economic history. Italy's misfortune is that each, in the period when it was most important, has favoured the North. In many countries the changing balance between these locational factors has caused different areas of the country to prosper at different times, as with the rise and fall of industrial areas in the north of England, north of France, or North East of America. In Italy the timing and geography have combined to repeatedly favour the North.[1]

Our narrative is – in outline – as follows. The early years preceding and following reunification were those in which natural advantages played a decisive role in key sectors of the Italian economy. This is most apparent in silk production which, together with some other primary products, accounted for 65% of exports in the 1860s.[2] Silk production was concentrated in the North, principally because of the availability of water, an endowment which also benefited other agriculture based production. Ready tradability of high value silk meant that market access considerations, domestic and foreign, were not particularly important. While most of the silk was exported in raw form – so did not lead directly to the development of a domestic textile industry –it had a major impact in raising income, as well as leading to development of commercial networks and institutions. Other natural assets which played a role in new sectors in other European economies (such as coal and iron ore) were not present in Italy.

While a high proportion of silk production was exported, many of the new sectors that started to grow fast from the mid-1880s onwards did so in a relatively closed economic environment and with greater dependence on domestic markets. Import protection was imposed in 1878, gradually extended beyond the grain, textile and iron and steel sectors, and finally integrated into an autarkic development strategy in the fascist period. Furthermore, remittances meant that Italy experienced a 'Dutch disease'. Remittances peaked at 6% of GDP just before the First World War, so that the value of goods exports was just two-thirds that of imports. These factors combined to mean that Italy's exports as a share of GDP were broadly constant at around 10% for half a century, until their collapse in 1930 to 6%.[3]

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[1] We call this Italy's misfortune, although conversely Italy has not had the 'rustbelt' problem of declining regions where activity has been based on mining and associated heavy industry.

[2] Silk, silk cocoons, olive oil, sulphur and wine, Federico and Wolf (2011).

[3] They also dipped to around 6% of GDP during the First World War.

Compared to other countries, Italy's share of world trade relative to its share of world income fell from the world average (unity) in 1880 to 25% below the world average in 1914 and 30% below in 1938. In 1916 this trade share measure for Italy was just half what it was for France or Germany (Federico and Wolf 2011). At the same time as the export share was stagnating or declining, there were improvements in internal transport and considerable growth in the domestic market. These factors combined to mean that domestic market access became a key determinant of industrial location. The North had gained advantage in the size and sophistication of its markets during the earlier period, and so it was natural that during a period of more closed development it was the North that attracted the new industries.

The third phase is the boom of the 1950s and onwards, based on a combination of fast growing engineering sectors and trade within the European Communities. The North had the advantage of existing clusters of activity, although this was accompanied by the competitive disadvantage of higher wages. External opening might have been expected to reduce the advantage of an existing cluster as economic interactions outside the cluster become more important. However, the process of European integration meant that economic opening primarily meant opening to the markets of Northern and Central Europe; foreign market access became important, and once again the North of Italy was favoured over the South.

Of course, many other factors, political and cultural as well as economic, played a role in shaping Italy's regional divide. Our thesis is however, that as Italy's external trade changed – driven by both trade policy and comparative advantage – so it turned out to be the North that was repeatedly better able to grow the new booming sectors because of the changing importance of natural advantage, domestic market access, and then foreign market access.

The remainder of the paper develops these ideas more fully. The next section lays out the facts about regional economic structure, at both the aggregate and sectoral level. It also has a brief discussion of theory. Section 3 looks in greater detail at the three broad phases we have sketched above, drawing on the material of section 2 and other supporting information sources, and section 4 concludes.

2.   Data and theory: economic geography and industrial structure.

While our analysis is based on a periodisation, it is important to see the patterns in the data over the entire time period under study. We look first at the way in which regional population, income and domestic market access have evolved since unification. We then turn to sectoral detail, demonstrating the changing structure of the economy in aggregate, and in the regions. In doing this, we are interested in the geography of Italy, in particular the North-South dispersion of activity, and we display data in a manner that draws this out. Geography also features in the mechanisms that we think are important – the effects of trade on the performance of different regions – and in section 2.3 we present a brief theoretical discussion of the forces that are important.

2.1.   *Regional population, income and market access*

The starting point is the distribution of population, which has **not** become more concentrated in the North. The data by region are summarised in figure 1, in which regions,

ranked by their distance from Milano, are on the horizontal axis, and shares of Italian population on the vertical (Trentino Alto-Aldige is omitted from this and subsequent figures). Between 1891 and 2001 Lombardia increased its share of population by some 3 percentage points, while most other regions North of Lazio lost population share. Lazio was the largest gainer of population, while fortunes in the South were mixed. The summary North-South picture is given in the first three columns of table 1. While Lazio gained 6 percentage points of population share from 1891 to 2001, 3 percentage points came from regions to its north, and 3 percentage points from regions to its south.

Although population has not become more concentrated in North, income has. The right-hand three columns of table 1 give the North-South division of total value added. [4] In 1891 income in North was 72% larger than in South, and in 2001 it was 116% higher. The peak was in 1951, when income was 203% higher. The corresponding per capita figures are given, by region, in figure 2. Most Northern regions experience increases, relative to the average, of more than 20%, and Southern regions declines of more than 25%. The data are value added per capita in each region, so contain non-labour income and vary because of labour force composition and participation rates, as well as wage differences.

The spatial distributions of population and per capita income combine to give a measure of each region's domestic market access. This is defined, for each region, as the sum of income across all regions weighted by inverse distance, i.e. $DMA_i = \sum_j y_j/d_{ij}$ where y_j is region j's share of GDP, and d_{ij} is the distance between the capitals of regions i and j. We compute this using road distances, assuming that the distance from a region to itself is set at 25km, and that there is penalty to being an island equivalent to an additional 100km of road distance. North has very substantial advantage, as illustrated on figure 3; Lombardia faces a domestic market twice as large as that of each of the four southernmost regions in 1891, and three times as large in 1971. The advantage of the North, especially Lombardia, steadily increases into the post-war period, diminishing somewhat thereafter. Lazio has a large increase in domestic market access, due to both population and income growth, while most Southern regions have a large decline.

Useful summary statistics of the geographical pattern of regional differences come from regressing the log of a variable on the log of distance from Milano. The coefficient is the elasticity with respect to distance, and R^2 the percentage of variation accounted for by distance from Milano.[5] For domestic market access, DMA, these statistics are reported in table 2. The elasticity is large and negative, peaking in 1951 in which year being 10% further away from Milano reduced DMA by 5%. A full 84% of the regional variation in DMA was accounted for by distance from Milano.

A further piece of evidence links back to our discussion of population. Although the aggregate population balance between North and South did not change over the period, there were important changes in the balance of urban populations. This can be seen most clearly

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[4] Regional value added figures for 1891-1951 kindly provided by Emanuele Felice. These are updates of the estimates in Felice (2005a, 2005b, 2007). The estimates for 1961-2001 are from the CRENOS database.

[5] In this and other bivariate regressions with 16 regions the 5% significance level corresponds to an $R^2 = 0.25$.

by focusing on the largest six cities. Whereas in 1871 the combined population of Napoli and Palermo exceeded that of Milano, Torino and Genova, these three Northern cities had overtaken as early as 1901, and had total population nearly twice as large by 1961. Modern urbanisation was primarily a phenomenon of Roma and the North, rather than of the South.

2.2.   *Regional economic structure*

Sectors of the economy differ in the extent to which their location is tied to natural endowments, influenced by domestic market access, or by foreign market access. In this sub-section we draw out the structure of the Italian economy as a whole, and of the regions. Time series data on the structure of activity in the economy comes from employment data derived from two main sources: the industrial census and the population census, henceforth referred to as CI and CP respectively. In what follows we use both, the latter having the advantage of a longer time series.

The broad picture is of the structure of the economy as a whole is as would be expected. The share of agriculture continues at over 60% until 1914 then declines rapidly to less than 10% at present. Manufacturing accounted for around 17% of employment in 1880, rising rather slowly to reach 20% by 1940 and peaking at 30% in the 1970s. Within manufacturing, textiles and clothing, footwear and leather were dominant until the interwar period.[6] Engineering then becomes much the largest sector, overtaking textiles as early as 1930.

Our primary interest is the structure of different regions. We look sector-by-sector, taking as our measure of location the share of the sector in the total employment in each region. Once again, we organise the data by ranking regions according to their distance from Milano.[7] Figure 5 illustrates the location of various industries and the way they change (using CP data), and table 4 reports elasticities of employment share with respect to distance from Milano by industry (reporting results for both CP and CI).

The sectoral aggregates of agriculture and manufacturing are shown, for selected years, in Figures 5a and 5b. As is clear, the share of agriculture fell in all regions and, as it declined, so a South to North gradient emerged. Table 4 (column 1) reports the elasticity of employment share with respect to distance from Milano (ε_{CP}, ε_{CI}), indicating rather little spatial pattern in 1881, with the gradient only becoming significant in 1911. In contrast, the increasing in manufacturing's share of employment was almost entirely a Northern phenomenon. There is a significant North-South gradient throughout, and one that

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[6] The CP data are problematic in that it is occupation, rather than employment, that individuals reported. The CP data therefore include unemployed, seasonally-employed, and otherwise marginal workers. This accounts for the higher share of clothing, footwear and leather in the CP series.

[7] Figures report employment shares of each sector in each region, i.e. $e_{sit}/\Sigma_s e_{sit}$, where e_{sit} is employment in sector s in region i at date t. Regressions are on the same variable, although notice that results would be unchanged if we used the double relative measure, $R_{sit} = (e_{sit}/\Sigma_s e_{sit})/(\Sigma_i e_{sit,}/\Sigma_i\Sigma_s e_{sit,})$, since the denominator is constant in a cross-region regression.

increased steadily until the 1960s when distance from Milano explains 89% of the variance, falling back somewhat thereafter.

Within manufacturing, the two largest activities, textiles and engineering, are those with the most pronounced North-South gradient. Engineering grows from a uniformly low level, with most of the growth taking place in the North, first Liguria and then Lombardia (figure 5d); the elasticity of employment share with respect to distance from Milano increases steadily, peaking between 1951 and 1961, then falling back somewhat (table 4). In textiles, the overall employment share is falling, and the decline is spread across all regions except Veneto and Toscana (at least until 1961, figure 5c). Northern regions had a strong presence throughout the period, and a significant change is the falling employment share in the South, in particular the decline of the sector in Campania. Other manufacturing sectors are generally less concentrated in North than is manufacturing as a whole. Figures 5e and 5f illustrate the cases of clothing and furniture. Clothing does not have a significant North-South gradient, and has been in decline in most regions. Furniture has expanded slightly, and shows evidence of a cluster – all be it short-lived – in Toscana in 1911. We discuss these data further in the following sections.

2.3.   *Economic geography: analytical ingredients*

As we seek, in the following section, to explain these changing patterns, we will draw on traditional endowment based trade theory for 'natural advantages' and on economic geography for the implications of domestic and foreign market access. In this sub-section we briefly sketch how these economic geography forces operate in a model of trade and firm location. In the simplest form of such a model labour is the only factor of production and there are two sectors. One is a perfectly competitive sector operating under constant returns and free trade, which for shorthand we will call agriculture. The other is a monopolistically competitive manufacturing sector in which each firm produces a distinct variety of product which its sells in all regions. The quantities sold by a firm depend on costs of production, market size, trade costs to reach these markets, and the number of competitor firms. Increasing returns to scale mean that the total sales of each firm must reach a particular level if the firm is to cover its costs (Dixit and Stiglitz 1977). Industry equilibrium occurs when the number of firms in each region has adjusted such that all active firms have reached this scale and therefore make zero profits. The equilibrium distribution of firms generally involves activity of both sectors in all regions, implying that both intra- and inter-industry trade occur. Differences in market size or in trade costs will change the number of manufacturing firms in each location, and a region with good market access (a large local market and/or good access to other markets) will tend to have relatively more manufacturing firms and therefore be a net exporter of manufactures and importer of 'agriculture'.

Figure 6 gives an example of this designed to capture the Italian story (equations in appendix). There are three regions, North (N), South (S) and the Rest of the World (R). The market in N is assumed to be 50% larger than that in S (due e.g. to a larger population), and R has twice the market size and twice as many firms as N and S combined. Parameters of the model are set such that, in the initial situation, the distribution of firms across regions is in proportion to their market sizes. In the simulation illustrated in the figure production costs, market size, and the distribution of population and the labour force are held constant, thereby switching off several potential agglomeration forces. We simply change external

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trade costs (horizontal axis), and show how this changes the equilibrium location of manufacturing firms (and hence manufacturing output in N and S, vertical axis). In the initial situation N and S both face the same costs in trading with R (set at trade cost factor of 1.5, i.e. tariff equivalent of 50%)[8]. If external trade costs increase (by the same amount for N and S) then manufacturing outputs change according to the solid lines on the figure, with N gaining industry and S losing it. The reason is that, while the foreign market access of firms in both N and S deteriorates, the small domestic market in S means that the loss of external market is proportionately more serious for its firms. Labour for the expanding manufacturing sector in N is freed up by contraction of agriculture there, while the mirror image development takes place in S. Closing the economy therefore accentuates differences in the pattern of manufacturing location.

What if, from the new high level of external trade costs (illustrated in the example at trade cost factor of 2.5, i.e. tariff equivalent 150%) these costs now start falling, but twice as fast for N as for S? While the solid lines give industrial location as external trade costs rise equally for N and S, the dashed lines illustrate equilibrium with external trade costs falling faster for N than for S. Both N and S now have better access to R but the effect is larger for N. Since firms sell to all markets, additional firms in N crowd out firms in S. The competitive pressure reduces manufacturing output in S, driving it to zero in the case illustrated. We therefore see that both periods – rising barriers to external trade in the earlier period, and opening to Europe (R) in the later period – have the effect of increasing manufacturing in N and reducing it in S.

We stress that this is the very simplest 'economic geography' model, and point to a number of important other factors. First, relative wages of regions were held constant throughout the changes reported in figure 6. If moving manufacturing from N to S increased wages in N relative to S, then the quantity effects illustrated on figure 6 would be of smaller magnitude, although qualitatively the same. Furthermore, constant relative wages imply no changes in international comparative advantage. If, during the final phase, R lost comparative advantage in the manufacturing sector (and Italy as a whole gained a cost advantage), then the final phase changes would be larger than illustrated.

Second, while economic geography makes much of 'positive feedback' effects, they are switched off in the figure. The example assumes that relative market sizes are unchanged, although moving manufacturing to N might be expected to increase its market size; for example if workers move to N this would amplify effects, and possibly lead to full agglomeration of manufacturing in N (Krugman 1991). If there are input-output linkages between firms then moving manufacturing has both demand and cost linkage effects which amplify effects and can lead to full agglomeration (Venables 1996). In both of these cases there may be multiple equilibria and consequent path dependency (an agglomeration, once established, is hard to dislodge), again amplifying the effects illustrated (Fujita et al 1999). Furthermore, the model sketched above only captures changing locational patterns due to forces operating in the product market (and hence firms' domestic and foreign market access). Other clustering forces will also reinforce effects. These include the development

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[8] Initially N has 50% more firms than S, hence the vertical axis levels of output of 1.2 and 0.8.

of thick markets for skilled labour, urban agglomeration economies, knowledge spillovers, and the presence of sunk capital investments.

3. Causes: external trade and regional specialization

The previous section laid out the broad facts. In this section we make the case for the story outlined in the introduction, drawing upon the facts and theory established in section 2.

3.1. *1861-1890: Natural advantage*

Before political unification, neither was there economic unification. Rugged terrain, poor surface roads, and the absence of railroads meant high overland transport costs in the mid-nineteenth century. Tariff barriers between the pre-unification states were a further impediment to trade for some commodities. To be sure, maritime transport along the coasts was easy, but the sea brought foreign markets as close as Italian destinations. Moreover, the scope for trade among the Italian states was constrained by a common specialisation in agricultural production and the export of commodities and semi-processed raw materials, such as olive oil (an industrial input for soap making and textiles) from the South, or raw silk from the North. Complementarity between the regional economies was limited.

Zamagni (1983) has summarised the available evidence on trade among the Italian states on the eve of unification (Table 5). Overall, less than 20% of "foreign" trade was with other Italian states. It is also worth noting that the Northern economies were in general more trade intensive; Piemonte and Lombardia, with about a quarter of Italian population, had half of Italian trade (whether with Italian states or abroad). The South, with more than a third of the population, had only about 15% of imports, 20% of exports.[9]

Upon unification, Piemonte's low external tariffs were extended to the entire country. Internally, all tariff barriers were removed, a single currency instituted, fiscal administration unified, and rapid progress made on the construction of a national rail network. Yet it was not before the 1880s that Italian markets came to be as well integrated as those of other large European countries, as judged by the dispersion of grain prices. Federico argues that it was not so much direct trade links between Italian markets that brought about price convergence, but rather "progress in maritime transportation, which exposed all Italian markets to competition from overseas producers" (Federico 2007, p. 312; 2010). Fenoaltea has similarly argued that the high cost of rail freight in Italy meant that "… coastal locations were more cheaply reached – and, in the absence of tariff barriers, more cheaply supplied – from northern Europe by sea than from northern Italy by rail." (1983, p. 78.)

Schram's data on rail traffic confirm the impression of an Italian economy in which interregional movement of goods was still limited in the 1880s. The Italian network had levels of traffic per dollar of GDP on a par with Spain, and only a quarter to a third of the levels in Austria-Hungary, France, and Germany.[10] Outside the north, the Italian railways

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[9] Pescosolido (1998, p. 99) reports exports on a per capita basis that range from 24 lire for the mainland South to 88 lire in Piemonte in the 1850s.

[10] Traffic units are the sum of freight ton-kilometres and passenger-kilometres; data are from Schram (1997), p.

were not heavily used or very profitable in this period (Schram 1997, p. 138; Zamagni 1983, p. 1639). And of all Northern imports by rail (shipments originating at border crossings, ports, and North-South transit stations), as little as 12% came from the South.

The distribution of manufacturing employment in this period is consistent with the pattern of limited intra-Italian specialisation and exchange in the 1870s and '80s. Figure 5b shows that although the South was less industrial than the North on average in these years, Campania was the second most manufacturing-intensive region after Lombardia. Sicilia in these years was comparable to Liguria and had a greater share of employment in manufacturing than Piemonte. (These figures, for manufacturing only, exclude Sicilian sulphur mining.) The elasticities reported in Table 4 indicate that in the 1870s and '80s the elasticity of manufacturing employment share with respect to distance from Milano was only in the range -0.15 to -0.20, with R-squareds on the order of one third.

Yet the roots of future divergence can be discerned if we examine data disaggregated by industrial branch. Most manufacturing sectors were still organised on an artisanal basis in this period. These include woodworking (carpentry, furniture production, lumber working and storage, carriage making, etc.), clothing and leather goods (tailoring and dressmaking, manufacture of shoes, leather tanning, production of hats and gloves, etc.), food processing (dominated by bakers, butchers, pasta makers, and the like), and "engineering" (dominated by blacksmiths).[11] In the absence of economies of scale, we might expect such industries to locate close to their customers, which as Fenoaltea (2003, 2010) has argued, were in cities dispersed across all the pre-unification states and post-unification regions of Italy. Table 4 shows that the elasticity of employment share with respect to distance from Milano was considerably smaller than the manufacturing average in these industries; the absence of any significant geographic gradient is also evident in Figures 5

If we consider instead textiles, in which production was organised on a proto-industrial or factory basis, the distance elasticity is more than twice as great as for the manufacturing total. Figure 5c shows that although there was a Southern outpost of textile employment in Campania, Lombardia was clearly pre-eminent. More generally the industry was dominated by the three North-western regions of Lombardia, Piemonte, and Liguria, which had 45-50% of national employment in textiles in the 1870s and 80s.[12] The Northwest's share of capital was even greater: roughly 80% of spindles and of power looms in the cotton industry in

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71. GDP data are from Maddison (2001); Austria-Hungary's GDP is estimated as four times the value for Austria alone. Figures for the "mid 1880s" are averages of 1880 and 1890.

[11] Engineering is *meccanica* in Italian. The industry includes shipbuilders and manufacturers of machinery, precision instruments, armaments, and the like. And in later periods it covers automobile production, aircraft, locomotives, and household appliances. In these earliest decades, however, employment in this category was dominated by blacksmiths.

[12] Textile employment figures are affected by massive overcounting of women, especially in the South. We follow Fenoaltea (2003, 2010) and adjust female employment in textiles to be no greater than four times male employment in the region.

1876 (A'Hearn 1998). Already one of the country's most important sectors, the textile industries' development would be particularly dynamic over the coming decades, and would remain particularly concentrated in the Northwest.

The dominant textile branch by employment was the silk industry, which produced Italy's most important export. This includes raw silk which made up roughly 30% of the total value of Italian exports in the mid 1880s (Zamagni, 1990, p. 157) and explains much of the North's dominance in external trade. In medieval times silk had been produced in the South, but it was in the North that production expanded in the early modern period and grew particularly rapidly there from early in the 18th century in response to buoyant external markets. Cafagna (1989) has emphasised the importance of the North's silk industry to capital accumulation, the growth of commercial networks, and the development of a worker-peasant model of quasi industrial production, foundations on which subsequent industrialisation would build.

North-western success in silk production had multiple causes and deep historical roots, but can plausibly be linked to an advantage of natural resource endowment: abundant water. Abundant water favoured growth of the mulberry tree, the leaves of which were fed to silkworms. In the drier South, an expansion of silk production would likely have required the cultivation of irrigated mulberry groves, which would have had a high opportunity cost in displacing citrus groves or vineyards (Federico 1994a, b). In the North, mulberry trees grew "promiscuously", around the edges of arable fields. Abundant water can also be seen as permitting a labour- and livestock-intensive agricultural system supporting a dense rural population. This also favoured silk production. According to Federico the North's advantage in silkworm rearing was its peasant households; these provided low cost labour and were settled densely enough to limit transaction and transport costs, yet were not concentrated in urban places, such that adequate space to accommodate silkworms on a temporary seasonal basis was available and contagion risks for silkworm disease were minimised. The arid South's low population densities and concentration of agricultural workers in urban places were not conducive to this model of silk production. Finally, though of less relevance to the silk industry, water was important to the growing cotton and woollen industries, which in the absence of cheap coal were dependent on watercourses for motive power to drive their machinery.

Of course other Italian regions too had some degree of outward orientation and first nature advantages. Though mineral deposits did not play the role in Italy that they had in countries like Britain, Sicilia had a near world monopoly on pure sulphur deposits, the mining of which generated significant exports as well as considerable industrial employment. The climate of Southern coastal regions was especially favourable for the cultivation of citrus and olive groves, as well as vineyards, which generated another substantial flow of exports together with wheat (before the arrival of cheaper grain from Russia and America).

What made the Northwest different in this era of fragmented Italian markets was the degree of success in exploiting its advantages of climate to produce Italy's main export good, silk. Climate further contributed to greater population density and hence local market size, and silk production provided the roots of a modern textile industry. Subsequent events would magnify these initial differences.

3.2.   1890-1950: Domestic market access

Three developments beginning in the late 19th century progressively diverted the orientation of the economy toward internal markets. The first was a rise in both the size and integration of the domestic market, relative to foreign, as development raised incomes above subsistence levels and industrialisation created new markets for capital goods and intermediate inputs. A decline in the costs of transport within Italy made this relatively larger market relatively more accessible. The second was a consequence of the high level of remittances to the economy; exports were crowded out by these foreign exchange flows, through a Dutch disease mechanism. Finally, there was a change in commercial policy in the direction of protection. We treat these in reverse order.

From 1890 to 1950 Italian commercial policy was more protectionist than before or after. Following a period of near free trade after unification, tariffs were imposed on a number of products in 1878, then raised further and extended to a wider range of goods in 1887.[13] This tendency culminated in the fascist policy of autarchy in the 1930s, embracing tariffs, quotas, and foreign exchange controls. Table 6 shows the evolution of tariff rates, here measured as an unweighted average.[14]

Figure 7 shows an alternative measure for the sub-period 1864-1929: the ratio of total tariff revenue to total import values.[15] The graph shows the variations in protection caused by bilateral treaties (with Switzerland, Germany, and Austria-Hungary in the 1890s and 1900s), the impact of inflation (lowering the real incidence of tariffs in the 1900s and '10s), suspension of the tariff on wheat during World War I, and increasing protection in the 1920s.

Federico (2001; Federico and Tena 1998) argues that Italian tariffs were not especially protectionist in comparative perspective. Similar in structure and level to tariffs imposed in France or Germany in the late nineteenth century, they were much lower than those of countries pursuing import-substituting industrialisation strategies in more recent decades. And their purpose was at least partly fiscal rather than protective, in that high rates were imposed on goods without domestic substitutes like sugar, coffee, or fuels.[16] But tariff protection did help secure the domestic market for industries that became important in Italy.

In the late nineteenth century this meant textiles, especially cotton textiles.[17] Textiles were Italy's most important source of factory employment, had significant political weight, and could portray themselves as fitting the comparative advantage of a labour abundant

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[13] This provoked a trade war with France, the destination of more than 45% of Italy's exports in 1881, and resulted in a sharp drop in trade's share of GDP (Vasta, 2010, pp. 135, 147).

[14] Federico and Tena (1998), p. 93, "UNT" measure for total imports. The figure reported for 1925 actually refers to 1926. GATT estimates are from a 1953 study reported in Irwin (1993).

[15] Federico and Tena (1998), p. 79. The ratio of total tariff revenue to the total value of imports is equivalent to an average of tariff rates with weights proportional to each good's share in total imports.

[16] Sugar tariffs called into being a domestic industry based on sugar-beet cultivation and refining, which was centred in the Northeast. Imports were almost completely eliminated, driving tariff revenues near zero.

[17] Basic iron and steel products received the highest rates of protection roughly 100% for steel plates and pipes.

country. Circa 1890, textile tariff rates had reached nearly 30% on average, making the sector one of the most protected.[18] Behind tariff barriers, the textile industry boomed. Relative to 1876, the number cotton spindles nearly tripled by 1900, then doubled again by 1911 before growth decelerated in the 1910s; meanwhile, the number of power looms grew even faster (A'Hearn 1998, p. 737). Initially, sales were entirely domestic, but as the home market for inexpensive, low quality cottons came to be saturated, producers turned in part to exports, in part to higher quality segments of the market. In higher value-added products, protection remained important and Italy was still a net importer.[19] Fenoaltea's (2006, Ch. 4) estimate is that protection increased the size of the cotton textile industry by some 40% on the eve of the First World War.

In the interwar period, the sector that was becoming important was "engineering". High protection of iron and steel had initially implied low, even negative, effective protection for engineering. However, tariff increases on final output in engineering during this period at last offset those on inputs, so that between 1913 and 1926 effective protection rose from 4 to 24% for machinery, from -4 to +30% for office equipment, from 14 to 55% for vehicles, and from 17 to 37% for other equipment.[20] Nominal tariffs on imported automobiles and spare parts were as high as 122 to 212% from the late 1920s, buttressed by a quota specifying a maximum 3% market share for imports (Fauri 1996, p. 174). Having also been spurred on by the military demands of the First World War, the rapidly growing engineering industries surpassed textiles as Italy's largest sector by employment and value added during the 1920s.[21] That the engineering industries were domestically oriented in the interwar years is suggested by indices of revealed comparative advantage in 1929. These show that Italian exports were much less concentrated in engineering products than was the case for other countries.[22] More direct evidence on the relative importance of home and foreign markets is available for the end of the period. In the early 1950s, as Italy embarked on a process of European integration, exports amounted to perhaps 8-10% of production in

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[18] Federico and Tena (1998), p. 93: "RNT" figures for 1889 aggregate product-specific tariffs using as weights the shares in trade in 1877, before protection was imposed. This measure is not distorted by the strong effects of protection on the composition of production and trade in textiles.

[19] Exports may have amounted to one third of cotton textile production ca. 1913, based on a comparison of the value of yarn and cloth exports with the value of raw cotton imports plus value added, Data from Zamagni, 1990, Table 3.1, p. 157, and Felice and Carreras 2005 (underlying data kindly supplied by E. Felice).

[20] Federico and Tena's (1998b) estimates of effective protection vary widely according to the input-output matrix used to weight protection of inputs, and the scheme used to aggregate across goods within an industry. The figures presented in the text are based on the 1911 Italian input-output matrix (Table B2) and an unweighted average across the products of the engineering industries. The finding of an increase in effective protection for individual capital producing industries from 1913 to 1926 is robust.

[21] For employment, see Figure 4. On Felice and Carreras' (2010) estimates, engineering value added overtakes textiles in the early 1930s. By 1938 value added in engineering exceeds that of any other sector, including the once-dominant food processing industries (Fenoaltea and Bardini 2000).

[22] An RCA index value of 0.5 means that a given industry is only half as important for the exports of the country under study as it is for all other countries. Vasta's (2010, p. 141) estimates range from 0.04 in agricultural equipment to 0.57 for vehicles and aircraft in 1929. Vasta's figures are higher for some industries in 1937, in particular 1.53 for vehicles, but are inflated by exports to the colonies.

the engineering industries as a whole, roughly 15% in the category of vehicles. Though less inward oriented than manufacturing as a whole (for which the export share probably did not exceed 7%), the engineering industries were still dependent primarily on domestic markets.[23]

Of course, Italy's greatest export in the late nineteenth and early twentieth centuries was people. And, indirectly, this turned out to be another factor that oriented the country's industrial production towards internal markets. Esteves and Khoudour-Casteras (2011, p. 10) report emigrant remittances growing to reach as much as 5.8% of GDP ca. 1910. Together with other capital inflows, this explains the persistent balance of trade deficits documented by Federico and Wolf (2011), which exceeded 6% of GDP on either side of the First World War. Working via a "Dutch Disease" mechanism, large remittance inflows maintained the real exchange rate at levels that rendered Italian exports less competitive and so contributed to a domestic orientation. Though remittances and foreign lending diminished in the Depression, Mussolini's 1927 revaluation of the lira kept the real exchange rate high.

The third factor tending to orient important industries toward the internal market was its growing size and accessibility. While Italy's national income did not grow more rapidly than that of its export markets (Italy's share of Western European GDP fluctuated near 10% over a long period from 1870 to 1950 according to Maddison's estimates), it was instead Italy's absolute level of development that mattered for the development of markets for manufactures. At the time of unification, many Italian households were not far from subsistence levels of consumption, and at the beginning of the period now under discussion, ca. 1890, almost two thirds of private consumption expenditure was for food and drink.[24] Rising per capita income meant that Italian markets for non-food manufactures grew more rapidly than those in the country's better-off trading partners, even if Italian GDP per capita was catching up on the West European average only slowly, and only after 1900. Food's share of private consumption fell by ten points (from 60.4 to 50.6%) between 1911 and 1938, while the share of durables, transport, and communication rose by seven points (from 4 to 11%). Meanwhile, the structural change associated with modern economic growth increased demand for capital goods more than proportionately, as investment's share in GDP rose by more than five points, from values typically below 10% before 1900 to values around 15% thereafter.[25]

This larger domestic market was also becoming relatively more accessible. Exports left Italy primarily by sea or by rail. Regarding the former, we lack an index of Italian maritime

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[23] Gomellini and Pianta (2007, Tab. 4, p. 410) report ratios of export values to value added (VA), a measure which overstates the share of exports in total output. Data in the 1938 CI (Vol. 3, Tab. 15) indicate that VA was 44% of the value of output in the "*meccanica*" industries. On this basis, using a round figure of one-half, we double VA to estimate the value of output. This amounts to halving Gomellini and Pianta's figures. We apply the same coefficient to manufacturing as a whole.

[24] Vecchi and Coppola (2006) estimate that roughly 30% of individuals were malnourished and find that significant shares of incremental household income were spent on animal protein (i.e. dairy products and meat).

[25] Data on private consumption are from Rey (2002), Tab. 8, p. xxiii. See Toniolo (1998, Tab. 2.1, p. 26) for investment shares.

shipping costs, but there is no reason to believe they evolved in a fundamentally different way from the British tramp shipping rates studied by Shah and Williamson (2004). On Mediterranean routes, these freight charges fell dramatically between 1870 and 1900 (for example by more than 50% for coal shipped to Genoa) although then showed no significant decrease until as late as 1950.[26] Turning to rail transport, the important connections with the networks of neighbouring countries, notably the Fréjus tunnel with France and the St. Gotthard with Switzerland, had been made by the mid-1880s, after which improvements were limited. It is within Italy that transport costs continued to fall. To be sure, rail transport remained expensive in the years before the First World War due to a combination of high costs and inept public policy, according to Fenoaltea (1983).[27] But the 1890s saw completion of a host of minor lines in the interior that offered substantial savings relative to horse drawn road haulage, and appear to have generated a high social rate of return. (The main trunk lines, completed by the mid-1880s, mostly ran along the coasts, outside the Po Valley, and offered little advantage relative to coastal shipping.) Freight was also carried on a number of urban and extra-urban tram networks, which doubled from 2,262km in 1888 to 4,027km in 1909 (Maggi 2009, pp. 40-8).

Such improvements notwithstanding, it was not so much the railroads that lowered internal transport costs as their competition: road haulage by truck. The number of licensed trucks grew very rapidly, from a mere 200 in 1910 to 17,000 in 1920, and almost 60,000 in 1930. In the interwar years the first experiments with modern, limited access highways were undertaken in the North. Though in 1931 trucking's share of total freight traffic was only 3%, only two years later in 1933 it reached 20% according to Maggi (2009). This put so much pressure on revenue of the now state owned railroads that the government in 1935 imposed a tax on freight shipped by truck between destinations also served by rail.[28] Such measures did not stop the rise of road transport, which by 1951 was responsible for more than half of all freight shipment in Italy (18.5 billion ton-kilometres, as against 14.1 for the railroads and 3.5 for coastal shipping).[29] This heavy reliance on trucking relative to rail transport would continue to distinguish Italy from other European countries.

The combined impact of these forces can be seen in the trade data for this period. Exports as a share of GDP, after growing rapidly in the first two decades after unification and reaching 11% in the early 1880s, stagnate over the several decades to the late 1920s

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[26] The rates considered are nominal rates for coal to Genoa, grain from the Black Sea, and ore from the Western Mediterranean, commodities perhaps more representative of Italian imports than exports. Real rates on these routes show the same trends.

[27] Costs were high for exogenous reasons such as Italy's rugged terrain and lack of domestic coal, and for endogenous reasons such as inadequate traffic over which to spread fixed costs. Public policy affected prices through regulation, through profit sharing (which acted like a tax), and through subsidies given for construction of track rather than traffic.

[28] Licensed trucks on the road are from Maggi (2009), Tab. 2.2, p. 106. Estimates of trucking's share of freight are from the same source, p. 55.

[29] Pala and Pala (1978), Tab. XI.2, p. 364. These figures likely refer to transport on Italian soil or between Italian ports by Italian transport firms. They would omit, for example, shipments undertaken internally by non-transportation firms.

(Figure 8). They then decrease dramatically under the combined effects of the Depression, autarkic policy, and international sanctions. This performance appears worse when Italy is compared with other countries. Italy's share of world trade relative to its share of world income fell from the world average (unity) in 1880 to 25% below the world average in 1914, 30% below in 1938, recovering to unity only in the course of the 1950s. In 1916 this trade share measure for Italy was just half what it was for France or Germany (Federico and Wolf 2011). It is worth noting that a recent study of the link between exports and GDP finds no evidence of export led growth in the period under discussion. Prior to the First World War, GDP caused exports, while in the interwar years there was no stable relationship. Only after the Second World War is there evidence of a causal role for exports (Pistoresi and Rinaldi 2010).[30]

Figure 8 also plots the shares in GDP of exports of primary products (agriculture, food, and raw materials, SITC 0-4), textiles (SITC 65, including silk), and metallurgical and engineering products (SITC 66-69, 7).[31] Textiles and primary products are the largest export sectors throughout the period. The growing engineering industry, which overtook textiles in its employment share in the 1930s, remains a very small exporter. While engineering in 1911 has 3% of CP total employment or 15% of CI industrial employment, it generated exports amounting to less than half a per cent of GDP.

To this point we have shown that developments during this period, particularly in so far as they affect export sectors, made the Italian economy relatively more inward-oriented, especially although not only in the1930s. The implication, as outlined in section 2.3, is that industrial sectors are more likely to cluster in a few locations, as domestic markets (for both outputs are inputs) are more important in firms' location decisions. The elasticities of employment shares with respect to distance from Milano (denoted ε_{CP} and ε_{CI} for estimates from census of population and census of industry data, respectively) presented in Section 2, Table 4, show that just such a process of concentration was taking place from the 1890s to the 1950s. Textile industry employment, already predominant in the Northwest in the 1870s and '80s ($\varepsilon_{CP} \approx$ -0.5), becomes more and more concentrated there; in 1951 ε_{CP} reaches -1.6 in textiles. The CI figures indicate that although peak concentration was already reached by 1911, there was no tendency toward diffusion before 1951. Engineering employment also undergoes a pronounced process of concentration with $\varepsilon_{CP} \approx$ -0.1 in the period of relative openness and strengthening to -0.8 in 1951. From 1911 to 1951 ε_{CI} shows the same pattern, strengthening from -0.70 to -1.05. Very similar trends are evident in smaller industries such as iron and steel, or chemicals. Only clothing production and furniture making resist the pull of the North with low levels and no trend in geographic concentration.

While relatively closed development favours sectoral clustering, why should this have occurred in the North rather than the South? After all, Napoli remained the largest city in

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[30] This result depends in part on the separate deflation of nominal exports and GDP, unlike the export shares in Figure 8.

[31] The dominance of agricultural exports over much of this period would be clearer if raw silk were appropriately classified as an agricultural product; silkworm cocoons were produced in peasant households and underwent rather limited processing in Italy (reeling) before being exported.

Italy until the 1920s. One reason is superior domestic market access. The estimates presented in Section 2, Figure 3 and Table 2, indicate that already in 1891 the domestic market access of Lombardia and Piemonte was around 50% greater than that of Campania, the region with the second highest share of its labour force in manufacturing. This advantage only grew in the decades that followed; by 1938 Lombardia's market access was twice Campania's.

Another reason is linkages to existing activities. Industrialisation was generating a market for capital equipment and industrial inputs which, for reasons discussed in Section 3.1, were to some extent, concentrated in the Northwest by 1890. Furthermore, the new emerging sectors were, arguably, more prone to cluster than existing sectors, so would not be deterred by existing wage differentials. Engineering industries had both upstream linkages, e.g. to (protected) domestic iron and steel producers, and downstream linkages to Italian industrial customers. According to the 1911 input-output matrix reported in Federico and O'Rourke (2000), the share of industrial inputs in the value of output was approximately 34% in engineering, compared with only 21% in other industries, 16% in services, or 6% in agriculture.[32] An example of these linkages is the Lombard engineering firm Franco Tosi (still trading today), which started life in the 1870s as a repair workshop for textile machinery financed in part by the noted cotton industrialist Cantoni, and soon graduated to construction of boilers and steam engines. By the 1900s the firm was producing diesel motors, steam turbines, and eventually even submarines.

In addition to domestic market access, natural advantages too continued to favour the North. As noted earlier, Italy lacked coal deposits and was dependent on expensive imported fuel in heat using industries like metallurgy, or where motive power was required to drive machinery, unless water power was available. Thus, hydroelectric power was enthusiastically adopted in Italy when it became feasible. And it was the North where regular precipitation combined with mountainous terrain to yield hydro power potential – Italy's "white coal" as it was dubbed. A 1940s estimate put the North's potential at ten times that of the South.[33] In the cotton industry, the capacity of electric motors installed rose from less than 5,000 horsepower to 73,000 between 1900 and 1911. Electric power had the crucial advantage of being transmittable over distance, emancipating power users from waterside locations in mountain valleys. Fenoaltea and Ciccarelli (2010) argue that this was responsible for a growing concentration of industrial employment in urban centres within the Northwest.

While the benefits of good market access and natural advantage will (in equilibrium) be offset by higher prices of labour (and perhaps also land), such wage gaps were not large at this stage. Figure 9 displays estimates of regional mean wages in industry plotted against distance from Milano for the period 1928-38.[34] It is clear that there is a downward wage

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[32] Engineering here is an average of Federico and O'Rourke's "military industrial complex" and "other capital intensive industries" and includes metal-making. Other industries here are an average of the authors' textiles and other categories. The 6% figure for agriculture results from aggregating four sub-sectors.

[33] 36.3 billion kilowatt hours vs. 3.5, Vöchting (1951, p. 626).

[34] These data were collected by the employers' organisation Confindustria and refer to larger than average enterprises. We lack information on the size or sectoral composition of the sample at the regional level.

gradient, but the elasticities are on the order of -0.10, implying that doubling the distance from Milano (say, from Umbria to Basilicata) results in only a 6.7% fall in the wage.[35] Moreover, there are regions in the Northeast and Centre, close to the Industrial Triangle, with very low wages. Alternative wage data from the national workplace accident insurance scheme display a pattern that is not dissimilar for the years 1913-28.[36] North-western wages in industry failed to generate a significant cost disadvantage for manufacturing firms due to pools of low wage labour in the countryside in nearby regions. This is evident in the provincial data on wages for unskilled construction workers (in 1910) and agricultural labourers (in 1923) plotted in Figures 10a and 10b.[37] In both cases there are significant wage decreases as distance from Milano increases, but numerous individual provinces in the Northeast and Centre with wages as low as in the distant Southern and island regions. Emigration, which became a massive and primarily Southern phenomenon from the 1890s through the 1920s, also played a role in limiting the emergence of wage differences, indirectly linking regional labour markets via their connection with common migrant destinations.

3.3.   1950-: Foreign market access

The period since the Second World War has seen a re-orientation of the economy towards external markets, in particular those of European Economic Community partners France, Germany, and the Benelux countries. The re-orientation took time, and export growth began from a low post-war start. The ratio of exports to GDP doubled between 1948 and the early 1960s, and then doubled again by the late 1970s. However, the 1870-1930 average (10%) was not reached until the 1960s (Figure 11).

A number of forces were at work, not all in the direction of greater outward orientation. First, the Italian domestic market was growing fast during the period. Italy's share of Western European GDP grew from the 11-12% typical of the interwar years and still prevailing ca. 1950, to over 15% by 1980. Over the same years GDP per capita converged on the Western European average, rising from 75% to 100% according to Maddison's estimates. Neither did the evolution of transport costs obviously favour external markets over the period as a whole. The salient development of the first decades was the

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[35] This gives an elasticity of wages with respect to market access of 0.21 (elasticity of wage with respect to distance of -0.1, divided by elasticity of market access with respect to distance of -0.47, Table 2). This compares with recent international evidence suggesting an elasticity of real wages with respect to market access of around 0.4, (Redding and Venables 2004, Head and Mayer 2011), and evidence from national data suggesting wage elasticity of around 0.15 (e.g. Head and Mayer 2006).

[36] The accident insurance scheme (INAIL) data are daily earnings rather than wages. The industries participating in the scheme varied over time, as did the categories of workers who were insured. There is no information, at the regional level, on these matters. Earnings elasticities with respect to distance from Milan vary from near zero in 1913 to not quite -0.2 ca. 1920; in the '20s they average -0.1.

[37] The construction wages were originally published by the Ufficio del Lavoro in 1912 (Salari ed orari nell'industria edilizia in Italia negli anni 1906-1910), and were kindly furnished to the authors by Emanuele Felice. The agricultural wage data are from Arcari (1936) and refer to the hourly wages of adult male day-labourers engaged in "ordinary" work.

increasing ascendancy of road haulage by truck over rail shipment, a dominance which had already begun to emerge in the 1930s and was facilitated by investment in the Italian road system. The network of state highways nearly doubled between 1955 and 1975, from 24 to 44 thousand km, and was complemented by the new *autostrade*, which grew from 500 to 5,000 km over the same period (Maggi 2005, Tab. 2.3 p. 118).[38] But if this lowered internal transport costs, similar infrastructural development in other European countries lowered external costs as well. In Italy's export trade, too, road came to dominate rail by ten to one: 44 vs. 4% by volume, or 64 vs. 4% by value.[39] Only late in the period, with the spread of container shipping and air freight, can a change in relative transport costs in favour of distant markets be discerned.

Working more clearly to orient production towards foreign markets was the diminished importance of remittances and capital inflows, which no longer assumed such values as to generate a significant trade deficit. Remittances averaged just 0.4 per cent of GNP from 1955 to 1965. Tourism came to be considerably more important, averaging 1.4% of GNP over the same decade, but even the sum of the two was not close to the nearly 6% share of remittances just before the First World War. Capital inflows, meanwhile, were not consistently positive; when they were, they were smaller than earnings from tourism.[40] As a result, the enormous trade deficits that Italy had run from the early 1880s to the early 1930s, peaking at 6% of GDP, dwindled to about 1%, and occasionally gave way to surpluses (Federico and Wolf 2011).

The most decisive change was in commercial policy. It is difficult to be precise about timing or to generalise across industries. As late as 1950 Italy enacted a new tariff which offered significant protection to a number of industries: ca. 20% for textiles, from 8 to 45% for electrical appliances, from 20 to 45% for vehicles (Clementi 2002, p. 236). On the other hand, the tariff levels actually enforced were less than these legal maxima from the outset, averaging 14.5% rather than the 24.4% indicated in Table 6 (Fauri 2008). The record on quantitative import restrictions is similarly complex. Italy removed quota restrictions for OEEC countries on 99.7 per cent of goods by 1952; but the 0.3 per cent included automobiles, of which Italy imported only about 6,000 in 1958 – fewer than thirty years earlier, and a tiny share of the national market (Fauri 1996). In part as a result of continuing protection, Eichengreen (2006, p. 112) argues that exports were less significant and the domestic market correspondingly more important for Italian industry than for other fast growing countries in the 1950s. And a well known argument by Ciocca et al. maintains that rapid Italian growth was driven by internal demand until 1958, especially investment demand (Ciocca et al, 1975). The 1957 Treaty of Rome and resulting inauguration of the Common Market serve as a salient event to identify a turning point in the process of trade

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[38] By 1990, 72% of internal freight shipments (in ton-kilometres) in Italy were by road, 9% by rail, 15% by sea (largely bulk chemicals and petroleum) and 5% by pipeline. All numbers refer to carriage by Italian firms between Italian destinations. Italy, *Statistiche dei trasporti, anno 1999* (publ. 2002), Tab. 6.1, p. 94

[39] Ibid. Tab. 6.50, p. 125. The data refer to 1998.

[40] Data in current dollars on remittances and earnings from tourism are from Battilani and Fauri (2008, Tab. 3.12, p. 147). Balance of payments and GNP are from Masera.

liberalisation. Average nominal tariffs on manufacturing imports from EC members were halved from 18% (but as high as 30.6% for transport equipment) in 1957 to 9% in 1962, then eliminated entirely by 1968, while the remaining intra-EC quotas were also phased out (Pierucci and Ulizzi 1973).

The effects of liberalisation are evident in the foreign trade statistics. As shown in Figure 11 below, the share of exports in Italian GDP rises steadily from 7% in 1955 to 12% in 1970 – a value touched only once before in Italian history, in 1876. Discounting the anomalous rise and fall over the years 1974-86, which corresponds to the period of high oil prices, exports continued to grow more rapidly than GDP, reaching 20% in 1995. Having declined steadily from the late nineteenth century to the eve of the Second World War, the ratio of Italy's share of world trade to its share of world GDP reversed course from 1950 to 2000, growing from unity to approximately 1.5 (Federico and Wolf 2011). Though levels of export-dependence varied across industries, all shared in the increase from 1955 to 1970, with the exception of food processing. Particularly export-oriented in 1970 were motor vehicles (with exports equal to 35% of production), textiles and apparel (30%), and other engineering (26%); at the other end of the spectrum were woodworking and furniture (7%) and paper (5%).[41]

In addition to growing relative to income, exports also experienced a geographical reorientation. Formation of the Common Market had a predictable effect, causing the shares of the other founding members (France, Germany, and the Benelux countries) in Italian exports to more than double from 21.2% in 1951 to 44.8% in 1971, a share they retained two decades later.[42] Given that land carriage was the dominant mode of transport, the impact was felt more in the North than the South. We do not have direct evidence on the incidence of transport costs from different locations, but indirect evidence can be inferred from estimates of the effect of distance on Italian exports. Frattiani and Marchionne (2008) estimate a gravity model of exports from individual Italian provinces, and find that the elasticity with respect to distance exceeds unity in all specifications.[43] This means a doubling of distance – for example comparing the distance to the German market from Milano and from Bari – is associated with a 70% fall in predicted exports.[44]

Of course, opening to exports also means opening to imports, so net impact on the North is, in principle, ambiguous. The North's proximity to the EEC means that it is more vulnerable to foreign competition, while the South is protected by its remoteness. It is

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[41] These figures are again based on Gomellini and Pianta's (2007, Tab. 4, p. 410) ratios of exports to value added, and again rely on the assumption that value added was half the total value of output.

[42] Data from Vasta 2010, Tab. 8 p. 147.

[43] Frattiani and Marchionne (2008, p. 14) show that distance effects are negatively associated with a province's degree of development. The average of these province-specific elasticities ranges from -1.04 to -1.39 depending on the model.

[44] Following Frattiani and Marchionne, Berlin represents the German market. Measuring as the crow flies, and assuming he must fly through Milan on his way to Berlin, the distance from Bari is very roughly twice as great. Doubling distance increases the natural log of distance by 0.69, whence the predicted 70% fall in exports if we assume an elasticity of -1.0.

therefore important that the North was the location for the industries in which Italy had a comparative advantage, rather its import-competing industries. Circa 1951, the North's relative specialisation was strongest in textiles, iron and steel, engineering, chemicals and petroleum, and other manufactures, in all of which either ε_{CP}, ε_{CI}, or both, exceeded unity (an arbitrary threshold here) in absolute value. And in these sectors could be found most of the industries in which Italy had a revealed comparative advantage in the early post-war decades: metal products, agricultural and industrial machinery, mechanical and electromechanical equipment, electrical machinery, cars, textiles, and oil refining.[45] As Federico and Wolf (2011) note, the story of the economic miracle of the 1950s and '60s was the rise of engineering –by that time much the most important manufacturing sector by employment – in which all two-digit SITC categories showed an Italian comparative advantage, with road vehicles the outstanding example. The North's specialisation was therefore in those industries that were less vulnerable to import competition.

Specialisation along the lines of comparative advantage speeded the process of structural change, which in turn made the economy more prone to geographic concentration. In 1951, agricultural employment was still roughly twice that in manufacturing (8.3 vs. 4.5 million according to CP figures), and exceeded 50% of the labour force in almost all of regions of the South and Centre. The shift from an agricultural sector tied to immobile natural resources to a relatively footloose manufacturing sector inevitably widened the scope for the agglomeration of economic activity. Within manufacturing, the growing relative importance of engineering, cluster prone due to its strong linkages with customers, worked in the same direction. In the Industrial Triangle regions, engineering's share of CI manufacturing employment grew in the half-century after 1951 from 29 to 47% in Lombardia, from 33 to 55% in Piemonte, and from 41 to 56% in Liguria; in the Northeast the increases were 23 to 44% in Veneto and 28 to 49% in Emilia-Romagna.

While these forces all strengthened concentration in the North, there are also forces favouring deconcentration. The economic geography model (figure 6) suggests that opening to international trade weakens centripetal forces and disperses production, unless offset by asymmetric access to external markets. In Italy the balance between these forces appears to have tipped around 1960, following which some deconcentration occurred. Figure 12 summarises outcomes for manufacturing as a whole. The figure plots the elasticity of manufacturing's share of employment with respect to distance from Milano, with a larger negative number indicating greater concentration in North (data from Table 4; the dashed line is ε_{CP}, the solid line ε_{CI}). A significant North-South gradient in manufacturing specialisation is clear throughout, increasing to maximum (largest negative value) at the beginning of the period under discussion, in 1951 or '61, then beginning to flatten again in the 1960s and onwards. The same pattern is observed in almost every branch of manufacturing, the only real exceptions being woodworking and furniture, food processing, and perhaps apparel production. This finding matches the conclusions of De Robertis (2001)

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[45] A review of studies of Italian RCA can be found in Vasta (2010), from which these results are taken (Tab. 5 p. 142). Textiles, in the study cited, are aggregated together with clothing and footwear. A further sector of Italian RCA was non-metallic minerals, i.e. tiles, glass, and marble, which was not concentrated in the North.

who finds that European integration promoted dispersion of industrial employment within Italy over the period 1971-91.[46]

As a measure of the concentration of employment, distance elasticity has the advantage of explicitly accounting for geography, rather than describing the distribution of activity across units that have no spatial relation to each other. It is worth noting, though, that other measures too display the pattern shown in Figure 12. This is true of the coefficient of variation of regional employment shares, the Theil index of inequality in the size of regional manufacturing employment, and the similar Gini index. The timing of the trend reversal varies between 1951 and '61, depending on the particular index and data set, but all measures reveal a subsequent period of deconcentration lasting until 1981, followed by little further change.[47] Measures of "beta convergence", relating the change in manufacturing's share of employment to its initial level also show that less industrialised regions made more progress.[48] The overall interpretation of the period since the mid-1950s as one of partial deconcentration of economic activity is thus robust. Figure 13 provides detail on the endpoint of this process from the 2001 Census of Industry.[49] The North-South pattern of manufacturing specialisation remains strong (elasticity estimate ε_{CI} = -0.44), yet there is also some interesting evidence of deconcentration; Marche in the Centre is now the region most specialised in manufacturing, while Liguria, an original member of the Industrial Triangle, has become a service economy.

Government policy was also working to address the Southern Question. Two important policy initiatives in the South were infrastructure investment early and the siting of industrial plants later. Infrastructure investment included significant improvements in the transportation network in the 1950s and '60s. From a New Economic Geography perspective, this would be expected to have an ambiguous effect on industrial location; while it makes the South a better location from which to reach national markets in other regions, it simultaneously makes the South more vulnerable to competition from those regions. Policies enacted in the 1950s and '60s mandating a majority of new investment by state owned enterprises to be in Southern locations, and of applying both fiscal incentives and moral suasion to private enterprise to do the same, did have results. The ILVA steel complex at Taranto, the Alfasud car plant near Naples, or the petrochemical pole of ENI at Gela in Sicilia, are just a few of the better-known examples. And these efforts do leave traces in our estimates, for metallurgy, engineering, and the chemical and petroleum industries are those with the largest change in the North-South specialisation gradient. Between 1961 and 2001,

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[46] De Robertis also finds evidence for another prediction of NEG models about the effects of better access to foreign markets: increasing specialization in particular industries across the regions of a country.

[47] Maximum concentration is reached in 1951 using the CV or in 1961 using the Gini index. The peak value of the Theil index is reached in 1951 using the CP, 1961 using CI data.

[48] The R^2 of a regression of the 1951-2001 change in manufacturing's employment share on its 1951 level is 0.29; the coefficient on initial levels is estimated at -0.52 and has a p-value of 0.03. Relative to this regression's predicted growth rates, the regions of the Northeast and Centre over-perform, while those of the South grow slightly less than expected.

[49] The figure is conceptually similar to figure 5b, but uses industrial not population census data.

the elasticities of employment shares with respect to distance from Milano (ε_{CI}) weaken from -1.71 to -0.79, from -1.09 to -0.55, and from -1.12 to -0.51, respectively. (These can be compared with a smaller change from -0.72 to -0.45 for manufacturing as a whole.)

As during the inward oriented period that extended through the years of fascism, the centripetal force of higher wages in the North remained surprisingly weak. In the earlier phase, we argued that the continuing presence of low cost labour in the Northern countryside and the continuing availability of emigration as an outlet for Southern labour (until the mid-1920s, at least) contributed to this outcome. In the post Second World War era, migration played a similar role, though it was now internal migration from South to North that was dramatic. Net South-North migration peaked at over 1% per annum in the early 1960s and remained significant through the 1970s (Brunello et al. 2001, Daveri and Faini 1998). So the movement of Southern workers to Northern factories was as important as the mirror image process of industrial relocation. Already in the 1960s there was substantial convergence of hourly wages in manufacturing, which received a powerful boost when unions successfully imposed the abolition of regional wage differences based on local cost of living indices in 1969. In recent studies no large or statistically significant North-South difference in manufacturing wages can be discerned in micro data on earnings and occupations (Caponi 2008, referring to the 1990s). Wage equalisation could be offset only partially by the government's policy of reducing payroll taxes for employers in the South, so that weak productivity performance meant unit labour costs every bit as high in South as in North by the late 1970s (Bodo and Sestito 1991, p. 59). From this period on, local labour market conditions in the South ceased to have much impact on local wage determination (Brunello et al. 2001).

Summarising, the changing pattern of regional economic specialisation since the Second World War has seen concentration of industrial employment in the North increasing until the mid-1950s or 1960s, and thereafter declining somewhat. This process has been affected by government policy, labour market institutions, and other historically contingent features of the Italian economy such as industrial districts and organised crime. Yet both the overall path of concentration and incomplete deconcentration are consistent with a simple new economic geography model of the effects of an outward opening that favours one region.

4.   Concluding comments

We have argued that the combination of changing external trade patterns and internal geography have combined to repeatedly favour the North of Italy, with the regional concentration of industry increasing steadily until the 1950s or 60s and declining somewhat thereafter. How does this compare with experience elsewhere? A pattern of industrial concentration increasing then decreasing with development was found by Williamson (1965) and confirmed by many authors since. For example, Kim (1995) finds that regional specialisation in the US increased from 1860 to the turn of the century, and fell steadily from 1930 onwards. Two obvious comparator countries for Italy are France and Spain, which

share this pattern, if with somewhat different timing; the period of maximum concentration may have been the 1930s in both countries, significantly earlier than was the case in Italy.[50]

Yet Italy is distinctive in several key respects. First, is the continuing dominance of one area of the country. As seen in Figure 13, the partial dispersion of manufacturing out of the Northwest led by 2001 to a compact group of contiguous industrialised regions in the North-Centre. In Spain, the initial concentration of industrial activity was in Catalonia in the late 19th century, but by the mid-20th separate, new industrial poles had emerged in the Basque Country (Guipuzcoa, Zaragoza, Biscay) and at Madrid (Paluzie et al, 2003). In France the contrast is even clearer. Combes et al (2011) show maps of France giving the distribution of manufacturing and income on a consistent basis for 1860, 1930 and 2000. The pattern that emerges is of relatively dispersed and fluid distributions. Of the 87 French departments, 26 fell in the top 3 categories for share of manufacturing value added in 1860; 16 of these were to the north of Paris and 10 to the south; in 1930 17 departments were in these categories, 8 north of Paris and 9 south; in 2000 28 departments, 14 north of Paris and 14 south. While Paris and Lyon were dominant throughout there is strong representation of Northern France (Normandy and Picardie) and other areas as dispersed as Aquitaine, Provence-Alpes-Cotes-d'Azur, Midi-Pyrenees and the south of Rhone-Alpes, with the latter two regions gaining importance by 2000. The distribution of French value added per capita shows a marked geographical shift as dominance of northern departments in 1860 is replaced by a shift south.

Italy is also distinctive in the consequences of the unequal distribution of industry for living standards. Table 7 sets out measures of the variability of the natural logarithm of GDP per capita in Italy, France and Spain in 2001.[51] Using either the standard deviation or the interquartile range (which reduces the impact of the Ile de France region in France), it is clear that Italy suffers the greatest degree of regional inequality. This variability can in turn be traced back to variation in labour force participation, employment rates, and productivity, all of which contribute to a North-South gap that has refused to close over recent decades (Iuzzolino et al 2011).

Throughout this paper we have focused on the roles of economic geography and trade policy in shaping the regional structure of the Italian economy. While not denying the importance of other factors – in particular the role of institutions – we have left them to one side of our analysis. However, institutions are themselves endogenous to economic structure

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[50] For France see Combes et al (2011), for Spain Paluzie et al (2002). Identifying the turning point in the process of concentration and dispersion is difficult due to infrequent observations in the French case. For Spain, there is a sharp drop in concentration indices bewteen 1929 and 1955. Although there is a change in data sources over the same interval, Paluzie et al (2009, p. 247) believe there was in fact a genuine and dramatic alteration in the distribution of industry in these years. After 1955 there is at first a rise and then a renewed fall in concentration, but throughout throughout these decases the level of inequality remains well below that in 1929.

[51] Data from the Eurostat website:
http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tgs00005.
The four French overseas *départements* are excluded from the calculation, as are the Spanish autonomous cities of Ceuta and Melilla.

and to trade. International trade places demands on institutions, and in many cases leads to institutional upgrading.[52]   We have shown how internal geography and external trade have systematically placed the dynamic and the export oriented sectors of the Italian economy in the North. As a consequence, the South of Italy now accounts for less than 10% of Italian exports. The legacy is that lack of international exposure weakens the competitive pressure to upgrade, in business and in the wider business environment. This is a vicious circle which there seems little prospect of breaking.

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[52] In history, this has been charted by Acemoglu et al (2005) who point to the implications of Atlantic trade from 1500 in shaping North European institutions. In the development context, Rodrik (2002) argues that many of the benefits of trade liberalization come from the institutional reform that it engenders; there is some evidence (eg Levchenko 2008) that international trade is associated with a 'race to the top' upgrading institutions.

Appendix

Final expenditure on manufactures in each region we take to be constant, E_i, $i = N, S, R$. Consumer preferences for varieties of manufactures are CES, so utility function X_i and dual expenditure function G_i, are $X_j = \sum_i n_i x_{ij}^{(\sigma-1)/\sigma}$, $G_j = \sum_i n_i \left(p_i t_{ij}\right)^{1-\sigma}$, $i, j = N,S,R$, where n_i is the number of varieties produced in region i, p_i is the price of such a variety, x_{ij} is the quantity of sales in market j of a variety produced in i, t_{ij} is the trade cost factor in shipping from i to j, $t_{ij} = t_{ij}$, and σ is the elasticity of substitution between varieties. Demand for a country i variety in market j is $x_{ij} = p_i^{-\sigma_i} t_{ij}^{1-\sigma} E_j G_j^{\sigma_i-1}$, so the total sales of a single country i variety across all markets are $p_i^{-\sigma} \sum_j t_{ij}^{1-\sigma} E_j G_j^{\sigma-1}$. Firms make zero profits if they sell $\bar{x}$ units of output. Given exogenous expenditures and prices (proportional to wages),

equilibrium values of n_i come from the equations, $\bar{x} = p_i^{-\sigma} \sum_j \left[\dfrac{t_{ij}^{1-\sigma} E_j}{\sum_i n_i \left(p_i t_{ij}\right)^{1-\sigma}} \right]$, $i, j = $

N,S,R. When these equations are satisfied firms in each region each sell the quantity required to break even.

Parameter values: $\sigma = 3$: $E_N = 1.2$, $E_S = 0.8$, $E_R = 4$: $t_{NS} = 1.25$:

$p_R = 1.0$, $p_N = 0.934$, $p_S = 0.920$, calculated such that initial values of $n_i = E_i$.

Simulations vary t_{NR}, t_{SR}, using the equation above for $i = N, S$, but holding n_R constant at its initial value (Italy small relative to rest of world).

References

Acemoglu, D.S. Johnson and J. Robinson, (2005)"The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth," *American Economic Review*, vol. 95(3), pp. 546-579.

A'Hearn, Brian (1998), "Institutions, Externalities, and Economic Growth in Southern Italy: Evidence from the Cotton Textile Industry," *Economic History Review*, vol. LI, no. 4, pp. 734-62.

Arcari, Paola Maria (1936), "La variazione dei salari agricoli in Italia dalla fondazione del Regno al 1933" *Annali di Statistica*, vol. 36.

Battilani, Patrizia and Francesca Fauri (2008). *Mezzo secolo di economia italiana, 1945-2008*. Bologna: Il Mulino.

Cafagna, Luciano (1989). *Dualismo e sviluppo nella storia d'Italia*. Venice: Marsilio.

Carreras, Albert, and Emanuele Felice (2010). "L'industria italiana dal 1911 al 1938: ricostruzione della serie del valore aggiunto e interpretazioni," *Rivista di Storia Economica*, vol. 26, no. 3: pp. 285–333.

Ciocca, P., R. Filosa, and G. Rey (1975), 'Integration and Development of the Italian Economy, 1951-1971: A Re- Examination', *Banca Nazionale del Lavoro Quarterly Review*, vol. 29, pp. 284-320.

Clementi, Sandro (2002), "Il commercio estero dell'Italia nel 1891, 1911, 1938, e 1951," in *I conti economici dell'Italia, part 3 Il conto risorse e impieghi (1891, 1911, 1938, 1951)*, Guido Rey, ed. (Bari: Laterza).

Combes, Pierre-Philippe, Miren Lafourcade, Jacques-Francois Thisse, and Jean-Claude Toutain (2011), "The Rise and Fall of Spatial Inequalities in France: A Long-Run Perspective," *Explorations in Economic History*, vol. 48, pp. 243-71.

Dixit, A. and J. Stiglitz, (1977) 'Monopolistic Competition and Optimum Product Diversity' *American Economic Review*, 67, pp. 297–308.

Eichengreen, Barry (2006). *The European Economy Since 1945: Coordinated Capitalism and Beyond*. Princeton: Princeton University Press.

Fauri, Francesca (1996), "The Role of Fiat in the Development of the Italian Car Industry in the 1950's," *Business History Review*, vol. 70, no. 2, pp. 167-206.

———————— (2008), "What Italian business disliked about a European common market," *Jahrbuch für Wirtschaftsgeschichte*, vol. 49, no. 2.

Federico, Giovanni (2007), "Market integration and market efficiency: the case of 19th century Italy," *Explorations in Economic History*, vol. 44, pp. 293-316.

———————— (2010), "When did European markets integrate?" *European Review of Economic History*, vol. 15, pp. 93-126.

———————— (1994). *Il filo d'oro: L'industria mondiale della seta dalla restaurazione alla grande crisi*. Venice: Marsilio.

———————— (1994), "Una crisi annunciata: la gelsibachicoltura," in Studi sull'agricoltura italiana: società rurale e modernizzazione, P. D'Attore and A. De Bernardi, eds. (Milano: Fondazione Giangiacomo Feltrinelli), pp. 343-372.

———————— and Antonio Tena (1998), "Was Italy a protectionist country?" *European Review of Economic History*, vol. 2, pp. 73-97.

——————— and Antonio Tena (1998b), "Did Trade Policy Foster Italian Industrialization? Evidences from the Effective Protection Rates 1870-1930," *Working Paper* 98-55, Dipto. de Historia Economica e Instituciones, Universidad Carlos III.

——————— (2001), "Protection and Italian economic development: much ado about nothing?" in *Atti di intelligenza e sviluppo economico: Saggi per il bicentenario della nascita di Carlo Cattaneo*, L. Cafagna and N. Crepax, eds. (Bologna: Il Mulino), pp. 243-81.

——————— and N. Wolf (2011) 'Comparative advantage in Italy: a long run perspective', Discussion paper, Banca d'Italia, Rome.

Felice, Emanuele (2007). *Divari regionali e intervento pubblico*. Bologna: Il Mulino.

——————— (2005a), "Il valore aggiunto regionale. Una stima per il 1891 e per il 1911 e alcune elaborazioni di lungo periodo (1891-1971)," *Rivista di storia economica*, vol.21 no. 3, pp. 83-124.

——————— (2005b), "Il reddito delle regioni italiane nel 1938 e nel 1951. Una stima basata sul costo del lavoro," Rivista di storia economica, vol. 21, no. 1.

Esteves, Rui, and David Khoudour-Casteras (2011), "Remittances, capital flows, and financial development during the mass migration period, 1870-1913" *European Review of Economic History*, vol 15, pp. 1-32.

Fenoaltea, Stefano (1983), "Italy", ch. 3 in *Railways and the Economic Development of Western Europe 1830-1914*, P. O'Brien ed. (London: Macmillan), pp. 49-109.

——————— (2003), "Peeking Backward: Regional Aspects of Industrial Growth in Post-Unification Italy," *Journal of Economic History*. vol. 63, no. 4, pp. 1059-1102.

——————— (2006). *L'economia italiana dall'unità alla grande guerra*. Bari: Laterza.

——————— and Carlo Bardini (2000), "Il valore aggiunto nell'industria," in *I conti economici dell'Italia, vol. 3, Il valore aggiunto per gli anni 1891, 1938, 1951*, Guido Rey, ed. (Bari: Laterza).

——————— and Carlo Ciccarelli (2010), "Through the Magnifying Glass: Provincial Aspects of Industrial Growth in Post-Unification Italy," Bank of Italy *Quaderni di storia economica* no. 4.

Fujita, M., P. Krugman, and A.J. Venables (1999) *The Spatial Economy: Cities, Regions and International Trade*. Cambridge, MA: MIT Press.

Gomellini, Matteo and Mario Pianta (2007), "Commercio con l'estero e tecnologia in Italia negli anni cinquanta e sessanta," in *Innovazione tecnologica e sviluppo industrial nel secondo dopoguerra*. Bari: Laterza.

Head, K. and T. Mayer (2006) "Regional Wage and Employment Responses to Market Potential in the EU" Regional Science and Urban Economics, 36.5, pp. 573-594.

Head, K. and T. Mayer (2011) "Gravity, market potential and development", *Journal of Economic Geography*, 11(2), pp. 281-294. Italy. National Institute of Statistics (Istat). *Statistiche dei trasporti*. Roma, various years.

Irwin, Douglas (1993), "The GATT's Contribution to Economic Recovery in Post-War Western Europe," *NBER working paper* no. 442.

Kim, S., 1995. Expansion of markets and the geographic distribution of economic activities: the trends in U.S. regional manufacturing structure, 1860–1987. *Quarterly Journal of Economics* 110 (4), pp. 881–908.

Krugman, Paul, (1991). "Increasing returns and economic geography" *Journal of Political Economy*, 99(3), pp. 483-99

Krugman, P. and Livas, E. (1996). "Trade Policy and the Third World Metropolis". *Journal of Development Economics* 49, pp. 137–150.

Levchenko, A. (2008) 'International trade and institutional change'. DP no 579, Ford School of Public Policy, University of Michigan

Maggi, Stefano (2009). *Storia dei trasporti in Italia* (2nd ed.). Bologna: Il Mulino.

Masera, F., ed., *Bilancia dei pagamenti dell'Italia (1947-1967),* Roma: Banca d'Italia.

Pala, Gianfranco and Maurizio Pala (1978), "Lo sviluppo dei trasporti," in *Lo sviluppo economico in Italia, vol. 3 Studi di settore e documentazione di base*, 3rd ed. Milano: Franco Angeli.

Paluzie, Elisenda, Jordi Pons, and Daniel Tirado, (2002) "The geographical concentration of industry across Spanish regions, 1856-1995," working paper, University of Barcelona.

Paluzie, Elisenda, Jordi Pons, and Daniel Tirado, (2003) "Industrial agglomerations and wage gradients: the Spanish economy in the interwar period," working paper, University of Barcelona.

Paluzie, Elisenda, Jordi Pons, Javier Silvestre, and Daniel Tirado (2009), "Migrants and market potential in Spain over the twentieth century: a test of new economic geography," Spanish Economic Review, vol. 11, pp. 243-65.

Pierucci, C.M. and A. Ulizzi (1973), "Evoluzione delle tariffe doganali italiane per i prodotti manufatti nel quadro della integrazione economica europea," *in Contributi alla ricerca economica del Servizio Studi,* no. 3. Roma: Banca d'Italia.

Pescosolido, Guido (1998). *Unità nazionale e sviluppo economico*. Bari: Laterza.

Redding S and A.J. Venables (2004)   "Economic geography and international inequality*" Journal of International Economics*, 62, pp. 53-82.

Rey, Guido (2002), "Novità e conferme nell'analisi dello sviluppo economico italiano," in *I conti economici dell'Italia, part 3 Il conto risorse e impieghi (1891, 1911, 1938, 1951)*, Guido Rey,ed. (Bari: Laterza).

Rodrik, D. (2002) "Trade Policy Reform as Institutional Reform," in B. M. Hoekman , P. English, and A. Mattoo, eds., *Development, Trade, and the WTO: A Handbook*, World Bank, Washington.

Schram, Albert (1997). *Railways and the Formation of the Italian State*. Cambridge: CUP.

Shah Mohammed, Saif and Jeffrey Williamson (2004), "Freight rates and productivity gains in British tramp shipping 1869-1950," *Explorations in Economic History*, vol. 41, pp. 172-203.

Toniolo, Gianni (1998). Storia economica dell'Italia liberale, 1850-1918. Bologna: Il Mulino.

Vasta, Michelangelo (2010), "Italian export capacity in the long-term perspective (1861-2009): a tortuous path to stay in place," Journal of Modern Italian Studies, vol. 15, no. 1, pp. 133-56.

Vecchi, Giovanni and Michele Coppola (2006), "Nutrition and growth in Italy, 1861–1911: What macroeconomic data hide," *Explorations in Economic History*, vol. 43, pp. 438-64.

Venables, A.J. (1996), 'Equilibrium locations of vertically linked industries', *International Economic Review*, 37, 341-59.

Völchting, Friedrich (1951). *Die italienische Südfrage*. Berlin: Duncker and Humboldt.

Williamson, J., 1965. Regional inequality and the process of national development: a description of the patterns. *Economic Development and Cultural Change* 13 (1), pp. 3–45.

Zamagni, Vera (1983), "Ferrovie e integrazione del mercato nazionale nell'Italia post-unitaria," in *Studi in Onore di Gino Barbieri*, vol. iii. Pisa: IPEM, pp. 1635-49.

——————— (1990). *Dalla periferia al centro: la seconda rinascita economica dell'Italia (1861-1990)*. Bologna: Il Mulino.

Figure 1

Population shares by region:
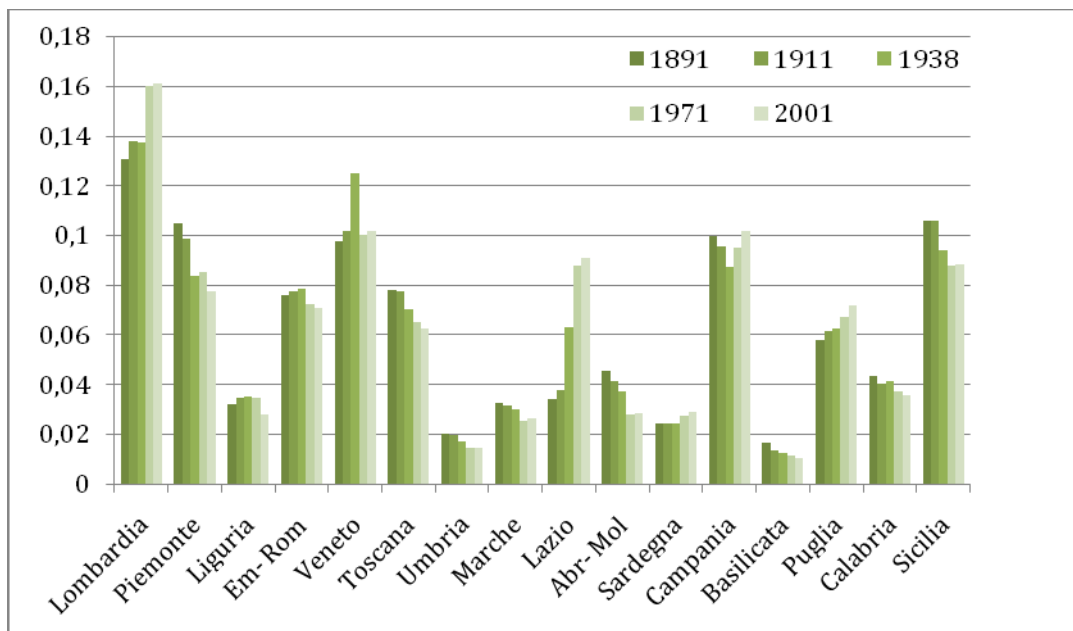
Figure 2

Value added per capita, relative to average, by region
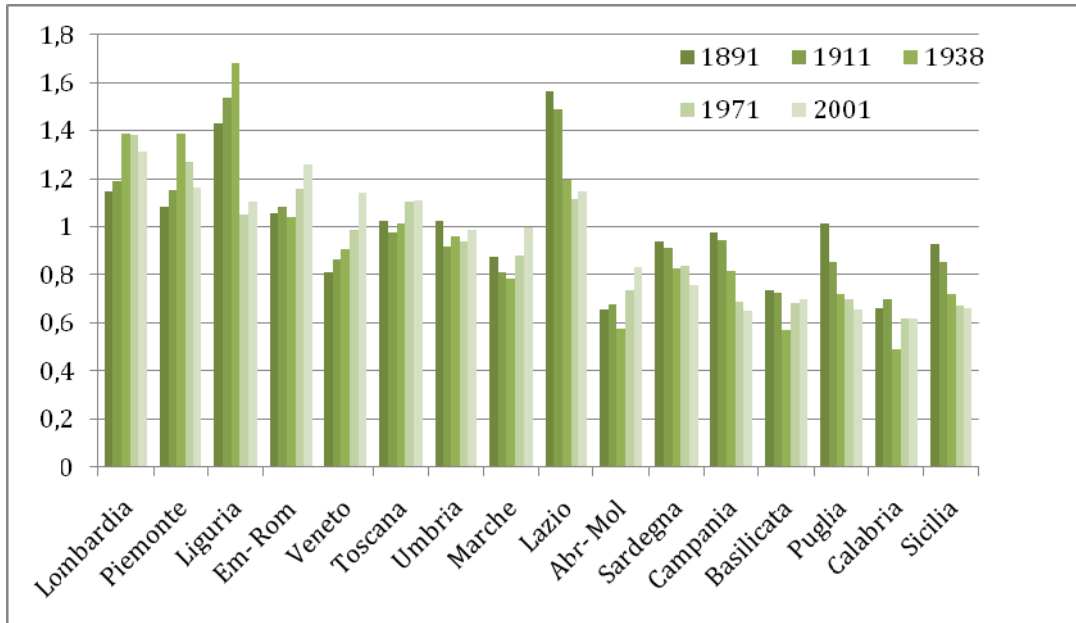
Figure 3

Domestic market access, by region
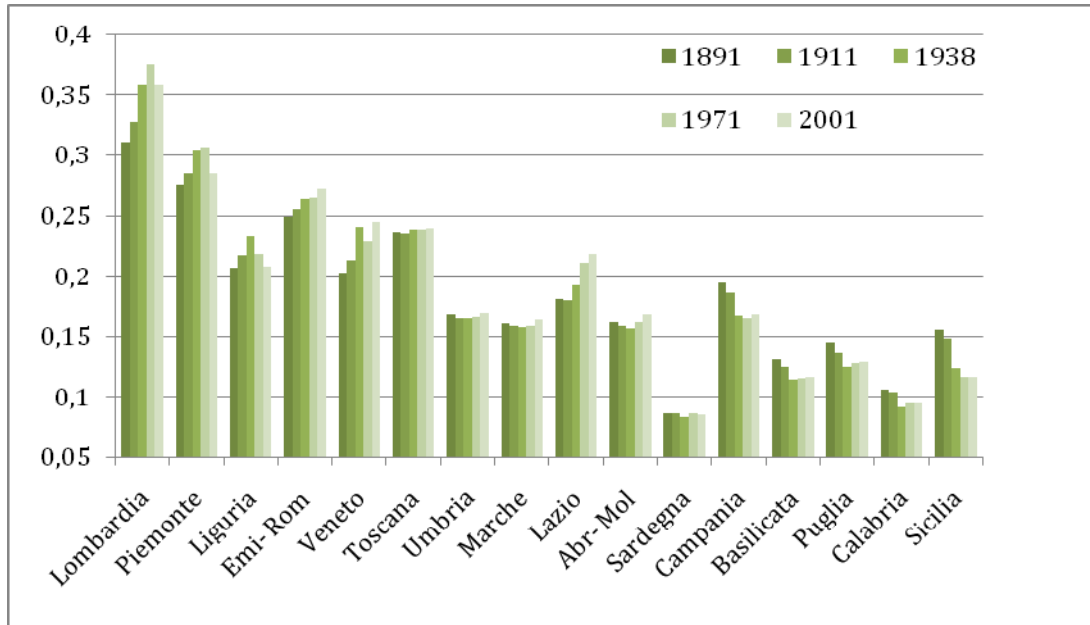
Figure 4

Shares in total employment

Population census, 1871-1961
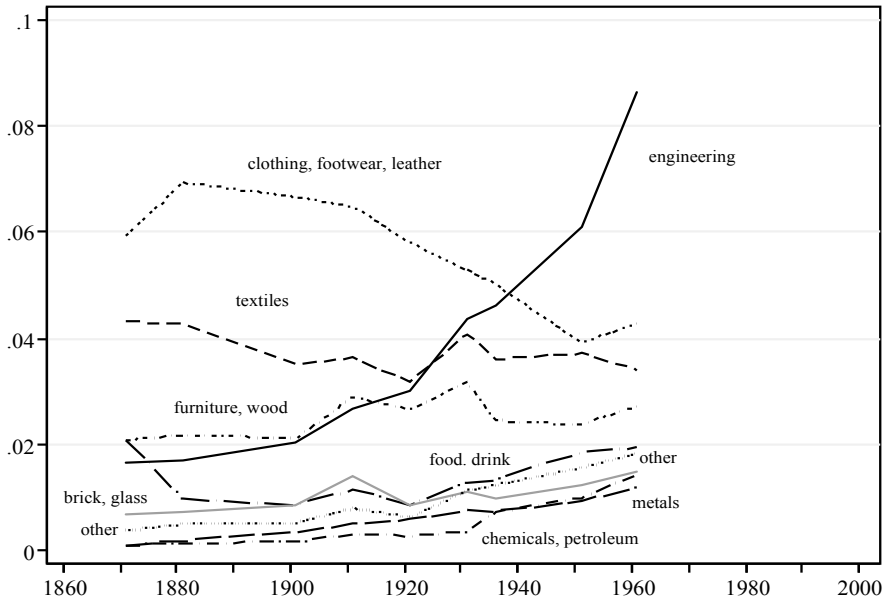
Industrial census, 1911-2001
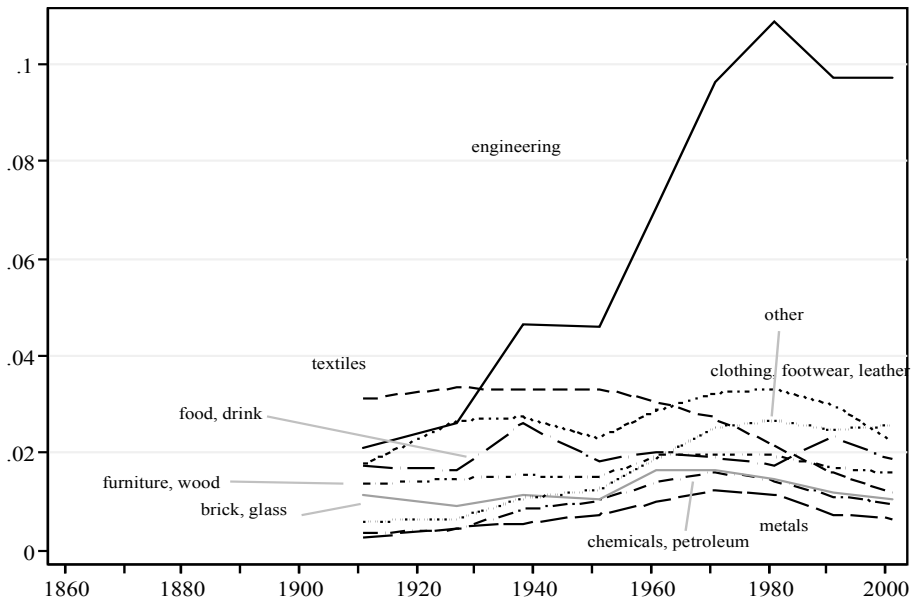
Figure 5
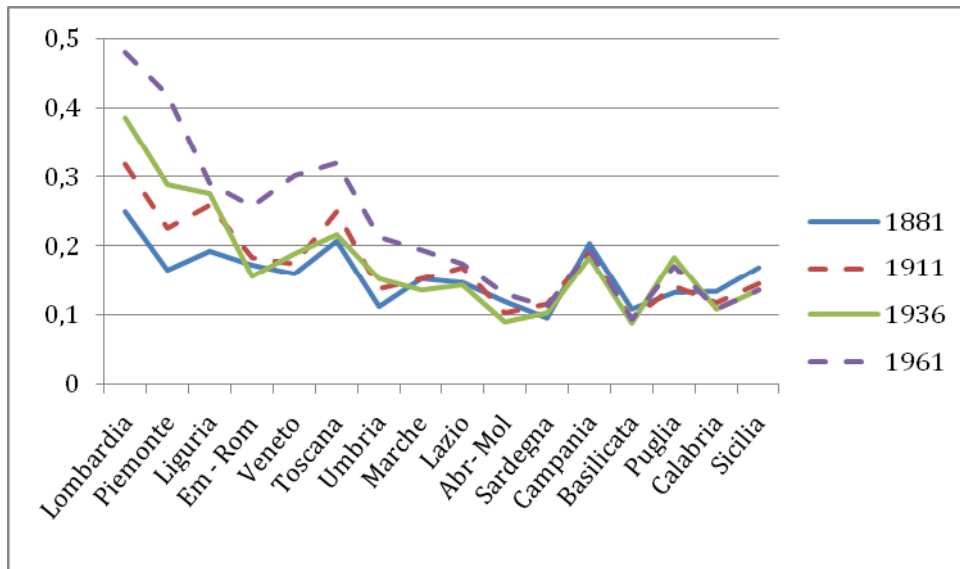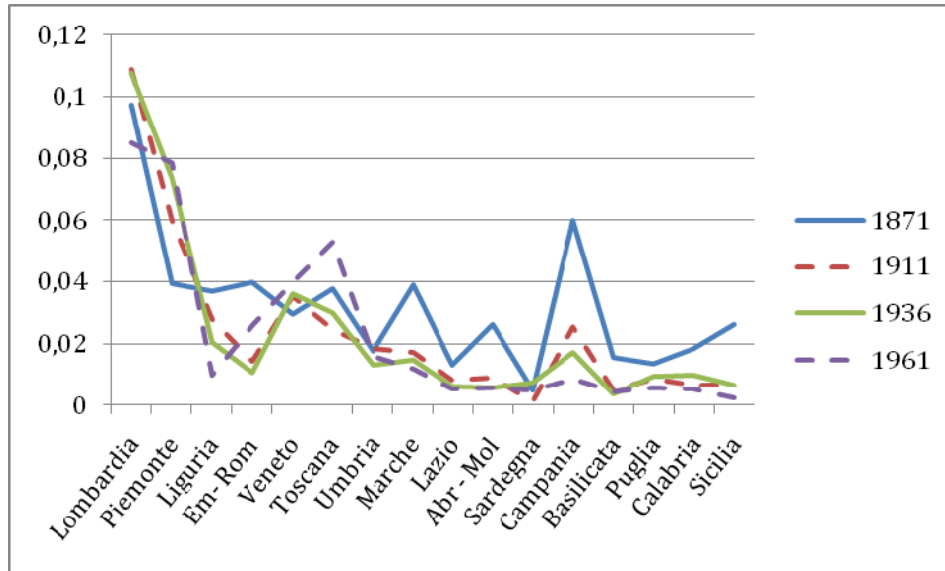
a. Agriculture
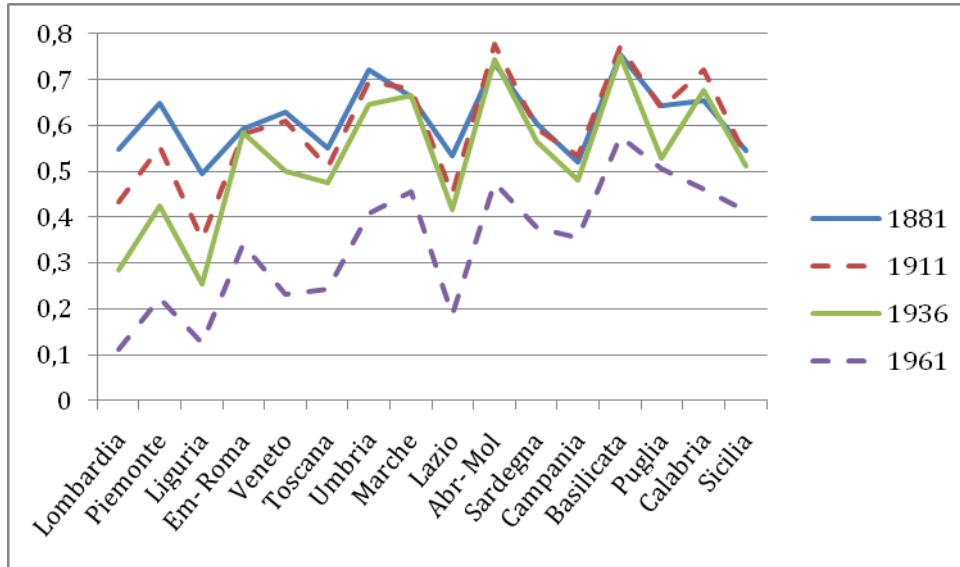
b. Manufacturing
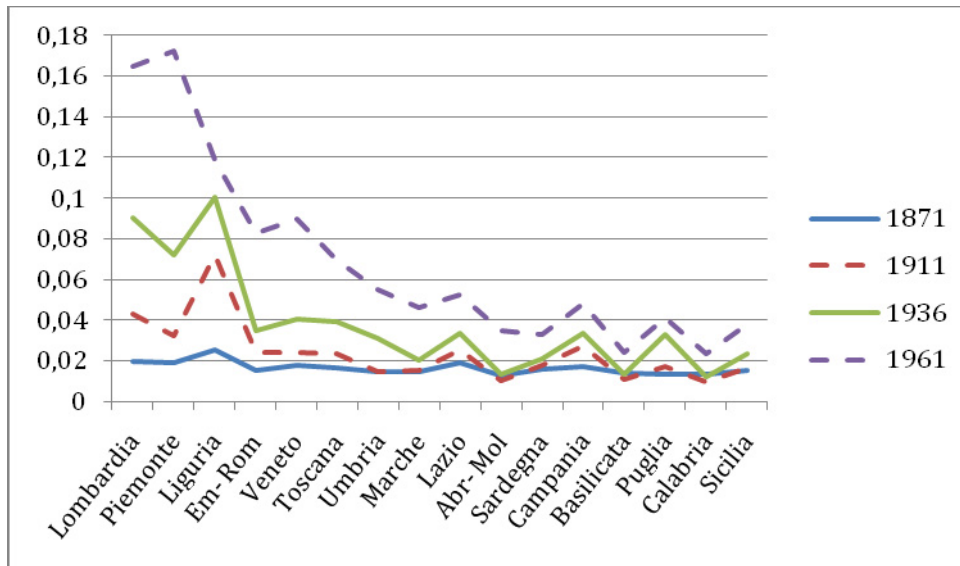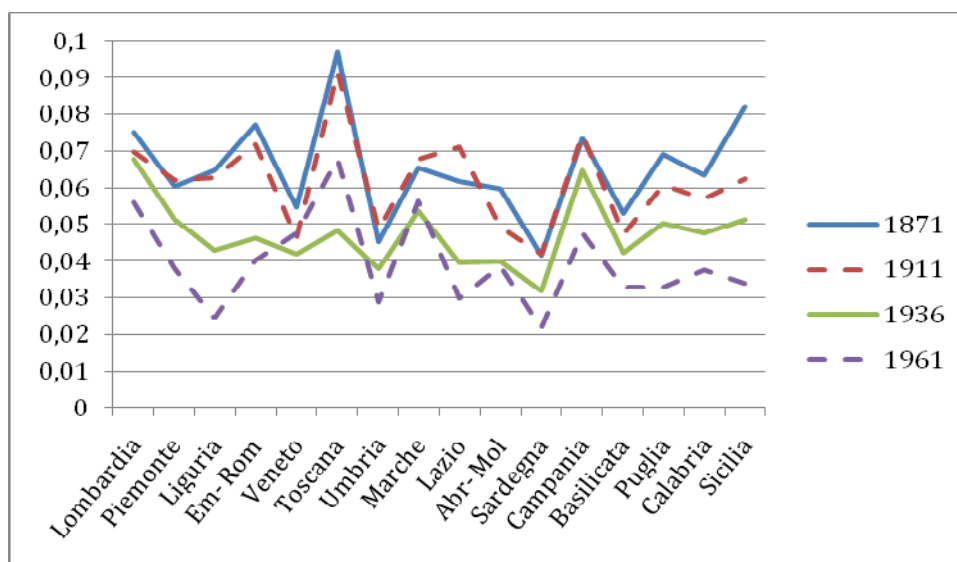
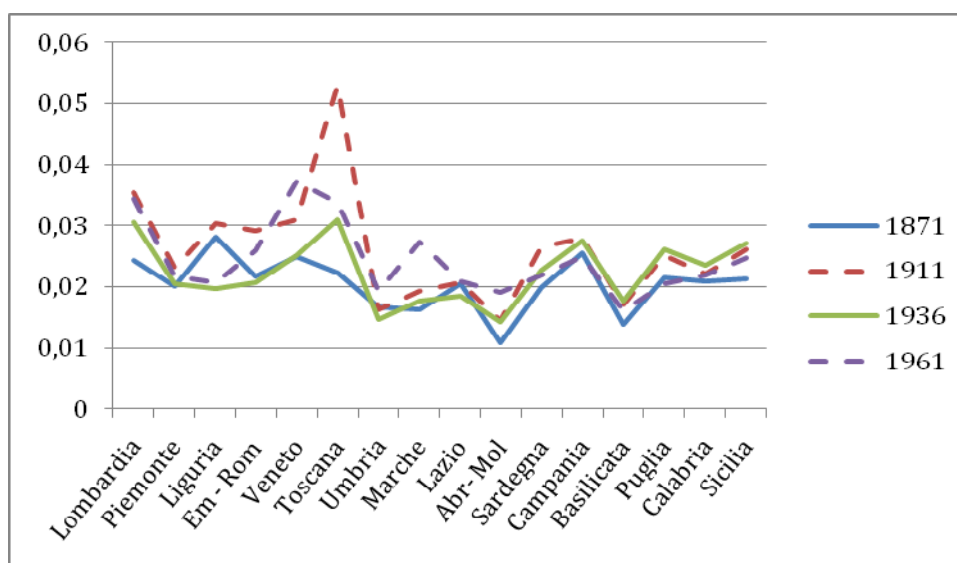**Fig 5. cont.**

c. Textiles

d. Engineering

Fig 5, cont.

e. Clothing

f. Furniture
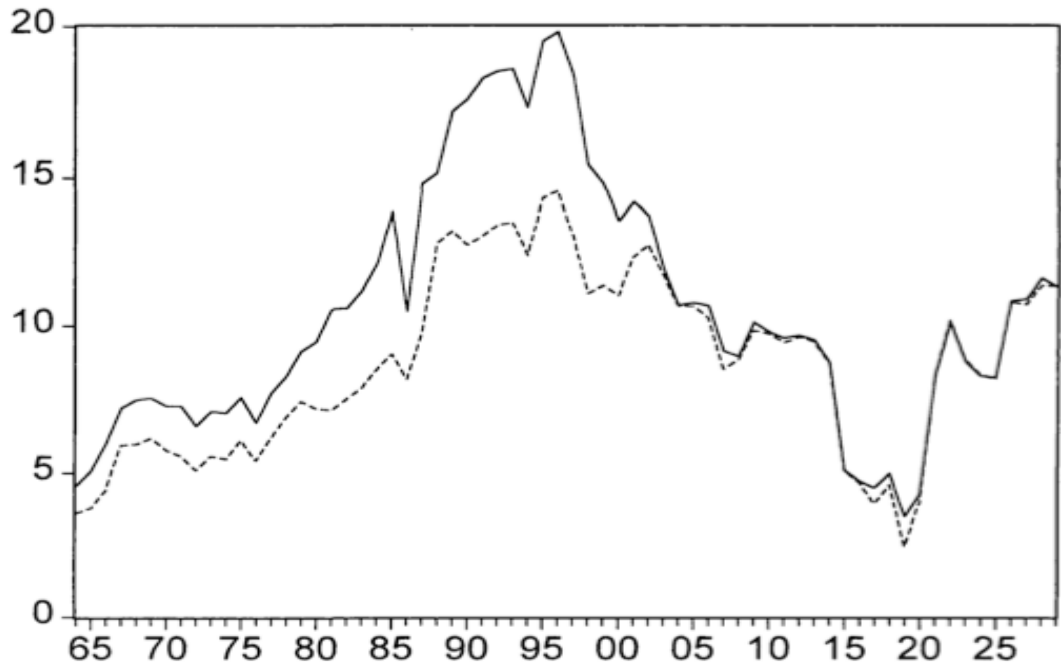
Figure 6

External trade costs and industrial location; an example

Output
in N, S

← *Opening to R*

Output in N

Initial

Closure: →

Output in S

External trade cost:
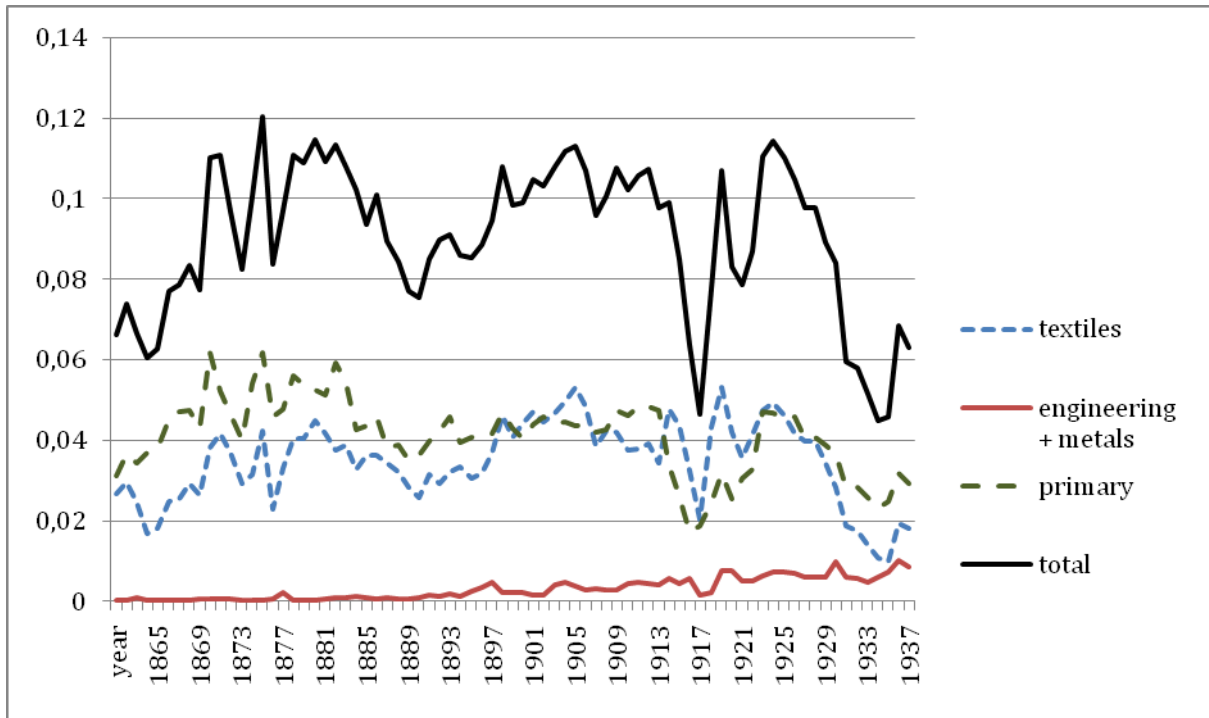cost factor of shipping to R
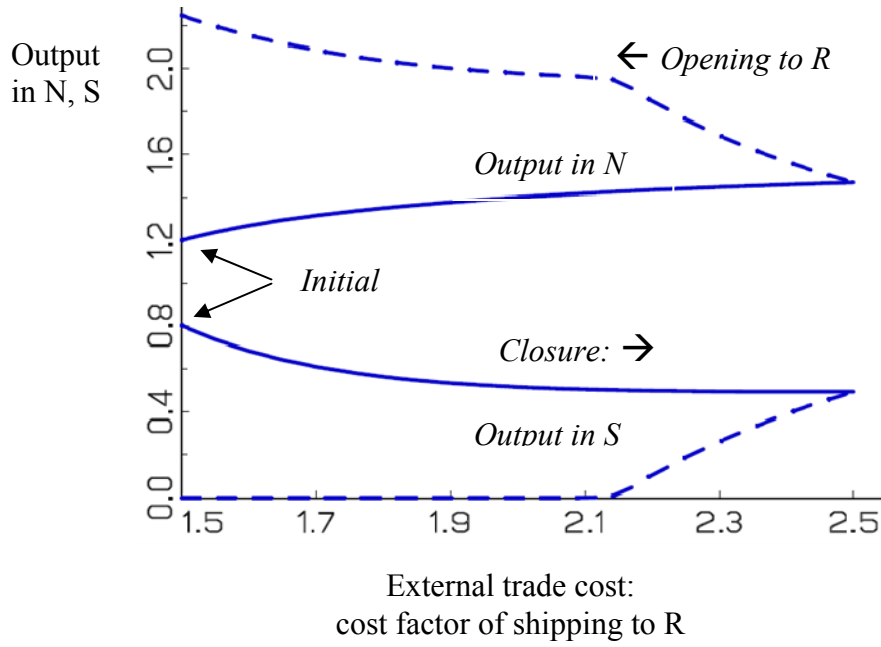
Figure 7

Tariff revenue as a share of total import value, %, 1865 – 1930

Dashed line excludes sugar.

Figure 8

Export shares in GDP, 1862-1938

Note: export share calculated using current price trade and GDP data from Bank of Italy.

Figure 9

Regional industrial wages, 1928-38.

Figure 10a

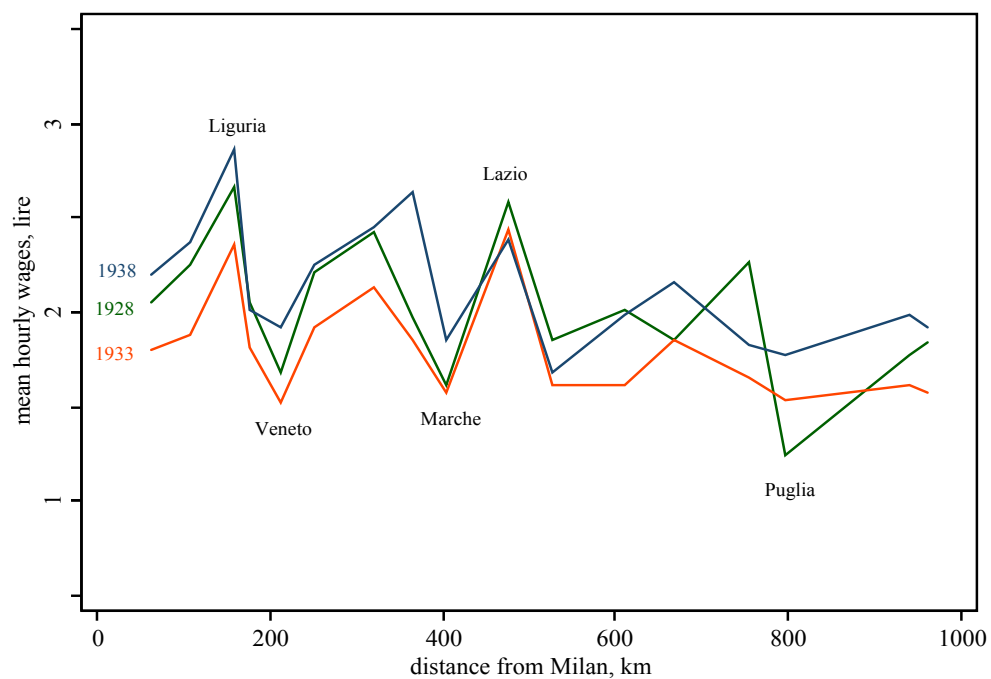## Relative wages of unskilled construction workers, 1910
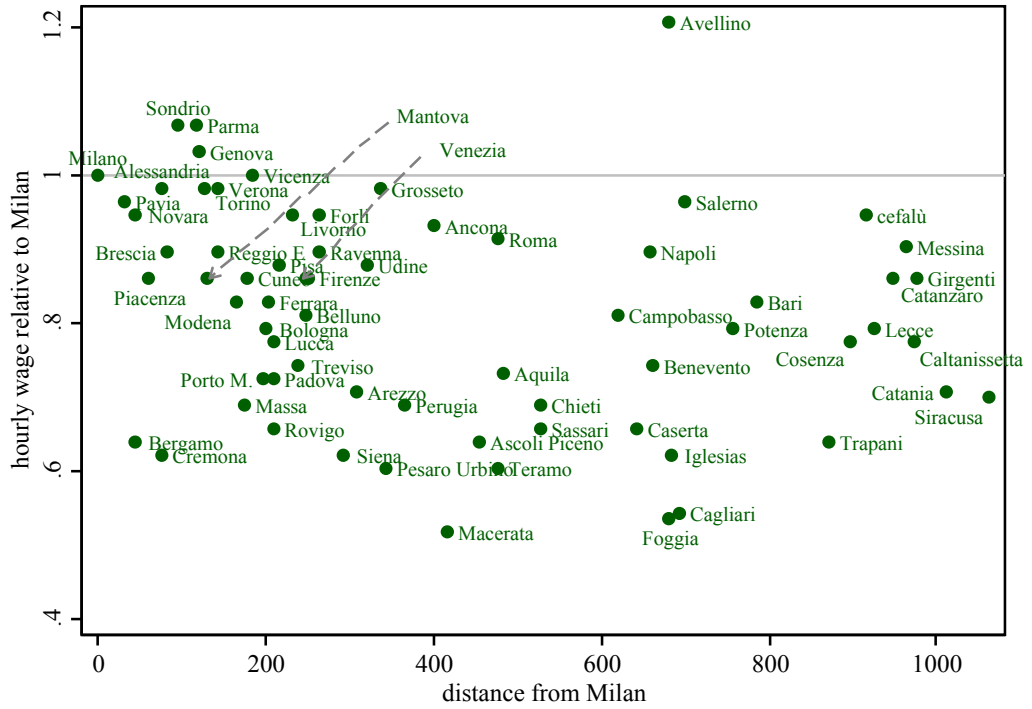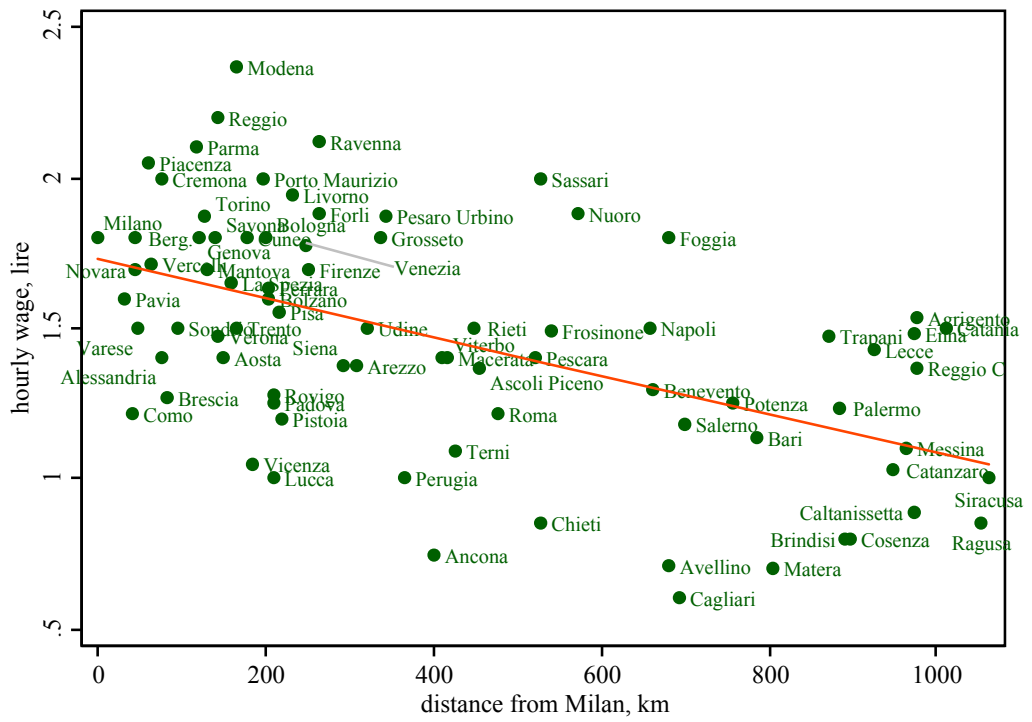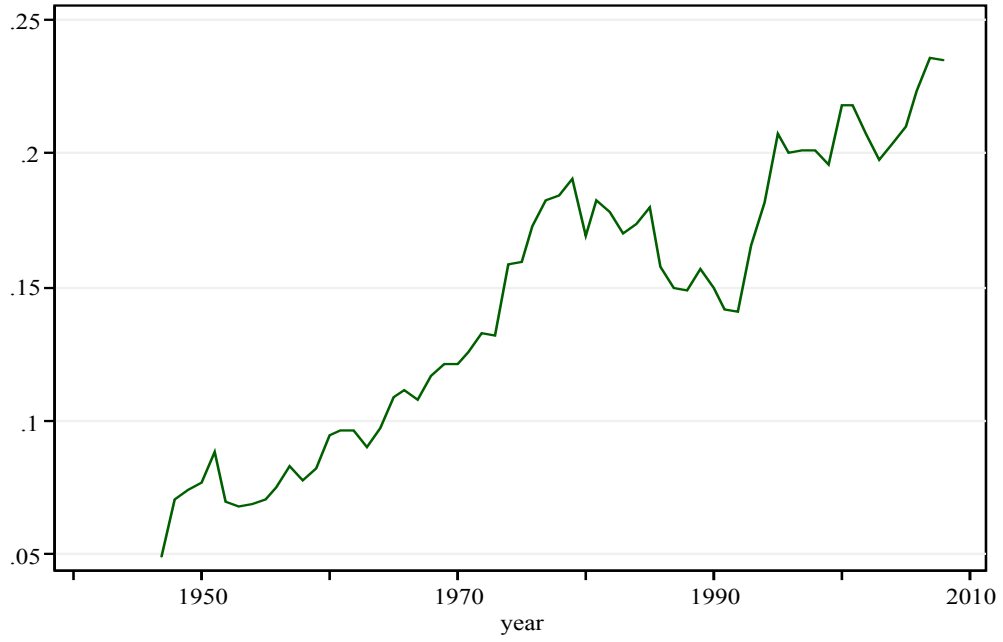
Figure 10b

Wages of agricultural day labourers, 1923

Figure 11

Export share in GDP, 1947-2008

Note: BI GDP estimates, export data from Istat, both in current prices.

Figure 12

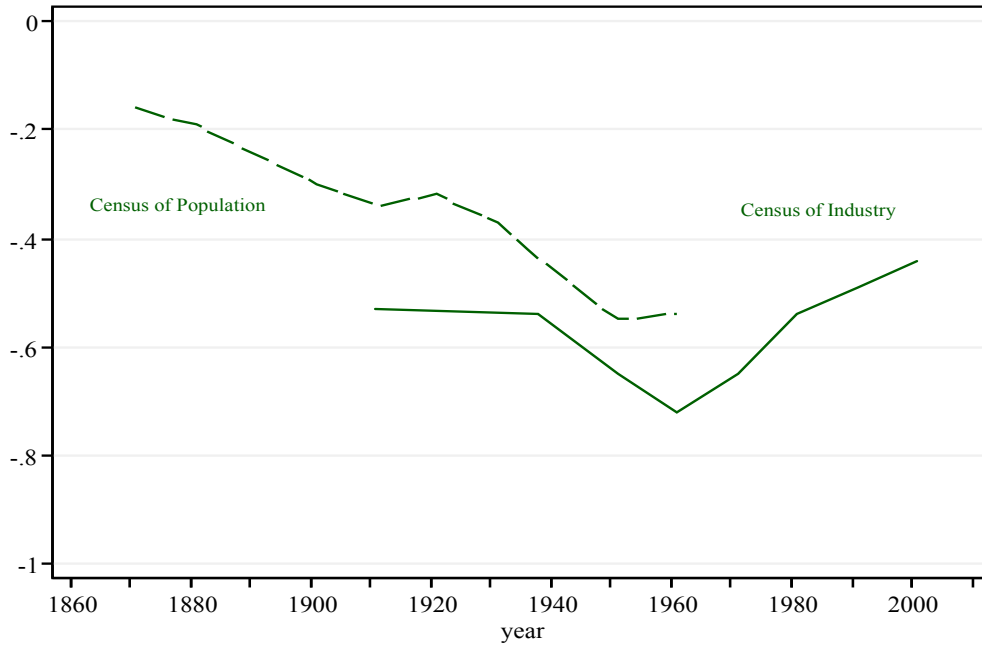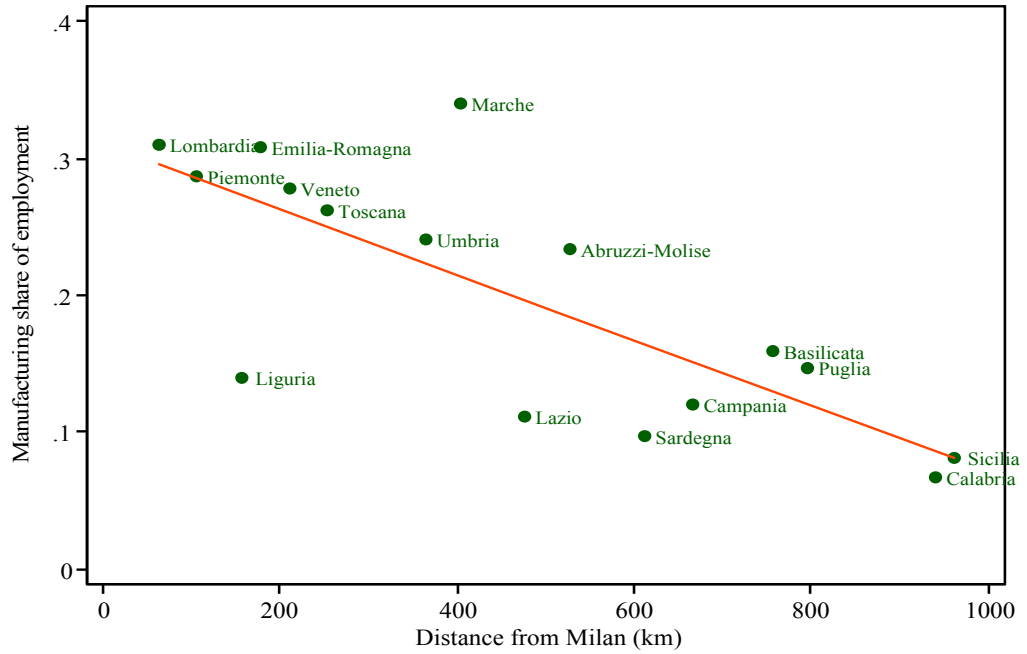**Elasticity of manufacturing employment with respect to distance from Milano**

Figure 13

Manufacturing employment share, 2001

Table 1

North South population and income shares

	Population share			Income share		
	North of Lazio	Lazio	South of Lazio	North of Lazio	Lazio	South of Lazio
1871	0.580	0.0430	0.377			
1891	0.573	0.0342	0.393	0.599	0.0536	0.348
1911	0.580	0.0376	0.383	0.622	0.0559	0.322
1938	0.577	0.0633	0.359	0.672	0.0755	0.253
1951	0.552	0.0729	0.376	0.693	0.0789	0.228
1971	0.558	0.0880	0.354	0.656	0.0983	0.246
1981	0.550	0.0898	0.360	0.657	0.0969	0.246
1991	0.540	0.0920	0.368	0.639	0.107	0.254
2001	0.543	0.0912	0.366	0.648	0.105	0.247

Table 2

Elasticity of domestic market access with respect to distance from Milano.

	1891	1911	1938	1951	1971	2001
Elasticity of DMA with respect to distance	-0.34	-0.38	-0.47	-0.50	-0.46	-0.44
R^2	0.68	0.75	0.82	0.84	0.82	0.78

Table 3

Urban population, (thousands)

	Milano	Torino	Genova	30 year growth factor.	Roma	30 year growth factor.	Napoli	Palermo	30 year growth factors.
1871	262	208	130		244		449	219	
1901	491	336	235	1.77	463	1.89	563	310	1.31
1931	992	597	608	2.07	1008	2.18	839	390	1.41
1961	1573	1032	784	1.54	2188	2.17	1183	588	1.44

http://www.populstat.info/Europe/italyt.htm

Table 4

Elasticity of employment share with respect to distance from Milano (ε_{CI}, ε_{CP}: CI, Industrial census: CP, Population census: R^2 in brackets)

	Agriculture		All Manufactures		Manufactures Food		Manufactures tobacco		Manufactures textiles		Manufactures Clothing	
	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}
1871		….	-0.16 (.33)		-0.06 (.05)		-0.14 (.02)		-0.41 (.29)		-0.06 (.05)	
1881	-0.03 (.03)		-0.19 (.36)		-0.21 (.33)		-1.10 (.26)		-0.53 (.38)		-0.04 (.03)	
1901	0.07 (.14)		-0.30 (.61)		-0.31 (.52)		-0.19 (.05)		-0.83 (.66)		-0.12 (.21)	
1911	0.13 (.26)		-0.34 (.65)	-0.53 (.74)	-0.19 (.21)	0.01 (0)	-0.87 (.11)	0.08 0.01	-1.04 (.63)	-1.72 (.53)	-0.07 (.08)	-0.22 (.39)
1921	0.18 (.34)		-0.32 (.64)		-0.25 (.32)		-0.93 (.14)		-0.75 (.47)		-0.07 (.13)	
1931	0.25 (.44)		-0.37 (.66)		-0.24 (.29)		-0.49 (.04)		-1.16 (.71)		-0.04 (.03)	
1936 *	0.24 (.42)		-0.42 (.64)	-0.54 (.80)	-0.35 (.44)	-0.05 (.02)	-0.39 (.02)	-0.35 0.03	-0.96 (.70)	-1.38 (.77)	-0.06 (.07)	-0.19 (.48)
1951	0.37 (.63)		-0.55 (.77)	-0.65 (.87)	-0.35 (.37)	0.01 (0)	-0.03 (.0)	-0.16 0.01	-1.58 (.80)	-1.64 (.81)	-0.08 (.10)	-0.23 (.59)
1961	0.48 (.63)		-0.54 (.83)	-0.72 (.89)	-0.30 (.36)	-0.12 (.15)	0.32 (.04)	-0.16 0.01	-1.21 (.79)	-1.28 (.80)	-0.12 (.10)	-0.34 (.46)
1971				-0.65 (.83)		-0.17 (.26)		0.12 0.01		-0.97 (.64)		-0.40 (.27)
1981				-0.54 (.73)		-0.13 (.16)		0.45 0.18		-0.93 (.54)		-0.46 (.17)
1991				-0.49 (.63)		-0.11 (.13)		0.45 0.07		-0.89 (.43)		-0.42 (.11)
2001				-0.44 (.48)		-0.09 (.07)		1.53 0.32		-0.85 (.33)		-0.33 (.06)

- The CI estimates refer to 1938

TABLE 4, cont.

	Manufactures furniture		Manufactures metallurgy		Manufactures Engineering		Manufactures Bricks, glass		Manufactures Chem., petrol		Manufactures Other	
	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}	ε_{CP}	ε_{CI}
1871	-0.12 (.21)		-0.58 (.31)		-0.09 (.14)		-0.21 (.16)		-0.18 (.06)		-0.81 (.44)	
1881	-0.10 (.12)		-0.39 (.24)		-0.14 (.42)		-0.20 (.14)		-0.14 (.08)		-0.62 (.33)	
1901	-0.14 (.19)		-0.34 (.32)		-0.26 (.29)		-0.31 (.23)		-0.51 (.45)		-0.71 (.40)	
1911	-0.17 (.19)	-0.31 (.43)	-0.59 (.40)	-1.18 (.33)	-0.47 (.53)	-0.70 (.61)	-0.39 (.60)	-0.63 (.65)	-0.35 (.19)	-0.45 (.24)	-0.74 (.44)	-0.89 (.50)
1921	-0.18 (.25)		-0.38 (.59)		-0.55 (.55)		-0.31 (.25)		-0.46 (.41)		-0.92 (.56)	
1931	-0.09 (.11)		-0.89 (.59)		-0.55 (.68)		-0.35 (.34)		-0.74 (.45)		-0.96 (.62)	
1936 *	-0.04 (.02)	-0.11 (.14)	-1.35 (.53)	-1.04 (.22)	-0.64 (.67)	-0.96 (.73)	-0.48 (.50)	-0.45 (.56)	-0.78 (.43)	-0.92 (.44)	-1.03 (.65)	-1.11 (.61)
1951	-0.03 (.01)	-0.20 (.47)	-1.68 (.49)	-1.59 (.37)	-0.78 (.81)	-1.05 (.86)	-0.60 (.55)	-0.53 (.59)	-1.05 (.48)	-1.19 (.52)	-1.09 (.62)	-1.11 (.62)
1961	-0.14 (.24)	-0.33 (.55)	-1.37 (.64)	-1.71 (.46)	-(.71 0.8)	-1.09 (.88)	-0.50 (.05)	-0.40 (.45)	-0.99 (.67)	-1.12 (.60)	-0.94 (.66)	-1.02 (.68)
1971		-0.37 (.34)		-1.12 (.47)		-0.88 (.87)		-0.25 (.21)		-0.55 (.45)		-0.90 (.72)
1981		-0.31 (.22)		-0.81 (.39)		-0.67 (.86)		-0.13 (.06)		-0.34 (.27)		-0.71 (.66)
1991		-0.30 (.20)		-0.74 (.45)		-0.62 (.82)		-0.12 (.06)		-0.43 (.43)		-0.67 (.72)
2001		-0.19 (.06)		-0.78 (.50)		-0.53 (.65)		-0.10 (.03)		-0.49 (.53)		-0.58 (.61)

Table 5

Foreign Trade of the Pre-unification Italian States

	Imports	*Share Italian*	*Exports*	*Share Italian*
Piemonte	321	17.1	237	10.6
Lombardia	86	30.0	127	20.0
Veneto	90	30.0	60	30.0
Parma	18	40.0	15	50.0
Modena	26	25.0	19	50.0
Toscana	79	10.0	45	40.0
Stati Pontifici	72	20.0	63	15.0
Regno due Sicilie	128	8.9	139	8.6
Totale	820	18.9	703	17.6

Import and export figures in millions of lire; Italian shares in percentage.

Table 6

Average tariff rates, %

	1877	1889	1897	1913	1925	1927	1931	1952
Federico-Tena	7	17	16	13	14			
GATT				17	16	27	48	24

Table 7

Variability of income per capita in France, Spain, and Italy

	Std. Dev.	*IQR*
Italy	0.27	0.47
France	0.15	0.11
Spain	0.22	0.37

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