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The ripples of the industrial revolution: exports, economic growth, and regional integration in Italy in the early nineteenth century

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The conventional wisdom about the early stages of modern economic growth in Italy is still heavily influenced by Cafagna in his book *Dualismo e sviluppo nella storia d'Italia* (Padova: Marsilio 1989). He argued that the exports of primary products to industrializing North Western countries were the main source of growth and that exports of silk stimulated the industrialization of the North West (the “industrial triangle”). However, the benefits did not extend to the rest of the country. In this paper, we argue that this view is not supported by the trade data. Italian exports grew slowly relative to European and world trade, and exports from the North grew less than the total. This view tallies well with some recent estimates of GDP per capita, which show no increase before the Unification of Italy (1861).

1. Introduction

On 17 March 1861, the Italian Parliament assembled for the first time in Turin and proclaimed the king of Piedmont and Sardinia, Vittorio Emanuele II (Victor Emmanuel II), the King of Italy. The ceremony marked the official end of a political division which dated back to the end of the Roman Empire. Since the Congress of Vienna, Italy had been divided into five major polities, namely the Kingdom of Sardinia (including Piedmont and Liguria), the Papal States, the Grand-Duchy of Tuscany, the Kingdom of Two Sicilies (i.e., the Continental South and Sicily proper, which remained divided by a trade barrier), and Lombardo-Veneto (Lombardy and Venetia), formally an independent kingdom belonging to the Austrian emperor, and three minor ones, namely the Duchies of Parma-Piacenza, of Modena-Reggio, and of Lucca (annexed to Tuscany in 1847).

The Unification of Italy was undoubtedly an epoch-making event both for Italian and for European politics, but was it similarly important for the Italian economy? How did it affect modern economic growth (or the lack of it)? These questions were central in the literature of the 1950s and 1960s (Federico 2001) but, since then, have largely been neglected by economic historians (Cohen and Federico 2001). The standard reference works dedicate only a few pages to the decades before the Unification of Italy (Toniolo 1990; Zamagni 1993; Battilossi 1998; Ciocca 2007). However, Malanima (2010) has recently published a new series of GDP *per capita* of the Centre-North from 1310. In figure 1, we show its final part, from 1750 onwards (left-hand scale, 1911 constant lire). The modest gains to the mid-1830s were lost in the 1840s and in the early 1850s – so that the rate of change from

Figure 1. *Italian GDP per capita. Sources: see text.*

Waterloo (1815) to Unification was negative (−0.076 percent per annum).¹ After the Unification, the GDP per capita grew, although not very fast (1.45 percent). Two alternative estimates (figure 1, right-hand scale) confirm the growth although at a somewhat lower rate – 1.00 percent according to Fenoaltea (2005) or 1.02 percent according to Baffigi (2011). A skeptical reader may call into question the stagnation before unification, and thus the very existence of a discontinuity after 1861, with two arguments. First Malanima’s series refer to the Centre-North before 1861 and to the whole country thereafter. Second, he estimates the value added in industry and services by assuming that their productivity remained constantly 25 percent higher than the productivity in agriculture until 1861. In theory, the nation-wide GDP *per capita* could have grown *before* 1861 as much as after 1861 (at 1 percent per annum) if the value added *per capita* in the South or in non-agricultural production sectors had been growing fast enough – around 4 and around 3 percent, respectively.² These rates seem implausibly high, given the available evidence on the performance of the South and on the growth of industry before 1861.

A scholar not familiar with the literature might interpret the coincidence in timing as causation. He would look for some radical changes in economic policy after the Unification of Italy, which could explain the start of modern economic growth and would find ample

¹ A Quandt-Andrews test singles out 1867 as the most likely date for discontinuity, but we prefer to use 1861 as the dividing point for its political meaning. If not stated otherwise, following Razzaque et al. (2007), we compute growth rates (b) for a generic series X as $b = -\beta/\psi$, where β and ψ are obtained from a regression $\Delta \ln X_t = \alpha + \beta \text{ TIME} + \psi \ln X_{t-1} + \varphi \ln \Delta \ln X_{t-1} + u$. The estimated yearly rates of change with the Malanima series are −0.076 for 1713–1861 and 1.45 for 1861–1913 (both significantly different from zero and between themselves), while the rates for Fenoaltea (2005) and Baffigi (2011) series are almost identical – 1.00 and 1.02 percent.

² In 1861, industry and services accounted for about half (Baffigi 2011) and the Kingdom of the Two Sicilies for about 40 percent (Brunetti et al. 2011) of Italian GDP.

evidence of this. Indeed, the new kingdom immediately abolished all barriers to domestic trade and adopted the free trade Sardinian tariff (with further cuts in a treaty with France in 1863). It started a massive program of investment in public works, most notably long-range railways lines. These measures explicitly aimed at fostering the development of a national market and at improving the allocation of resources via domestic and international specialization. Until the late 1950s, the consensus was that these policies had been effective and this view tallied well with the then prevailing interpretation of the *Risorgimento* (the fight for the Unification of Italy) as largely inspired by economic motivations (Candeloro 1958, pp. 334–348). The seminal works by Ciasca (1916) and Greenfield (1934) stressed how much the *patrioti* (the people who fought for a unified Italy) were aware of the benefits of free trade and market integration. Count Camillo Cavour, the prime minister of the Kingdom of Sardinia and the engineer of the Unification, was an ardent supporter of free trade (Romeo 1977–1984). This interpretation was not supported by any quantitative evidence: only very recently Ciccarelli and Fenoaltea (2013) have tentatively related the good economic performance of some Southern provinces in the 1870s to the policies of the unified Italy.

The conventional wisdom has greatly changed greatly since the 1950s. The *Risorgimento* is considered a purely political and ideological movement (Riall 1994; Banti 2000 2004) and the gains of unification are deemed to be negligible or very small. This change owes a lot to the publication, in the 1960s, of a number of papers by L. Cafagna, later collected in a single publication (Cafagna 1989).³ He argued that the Unification changed very little because the political division before 1861 had not been a major hindrance to development. There was no potential for a fruitful division of labor among Italian states as they were all similarly poor and backward. They had to specialize in production of primary commodities for the industrializing countries of Northern Europe. The three regions of the “industrial triangle” in North-West Italy (Piedmont, Lombardy, and Liguria) were more successful than the rest of the country in exploiting this opportunity, and their early growth opened a gap with the rest of the peninsula (“dualism”). It seems fair to say that, in spite of some dissenting voices, Cafagna’s ideas are still part and parcel of the conventional wisdom about nineteenth-century Italian economic growth. However, this conventional wisdom is based on quite thin empirical evidence. Cafagna never tried to prove his hypotheses, and his reluctance is understandable: the task would have been impossible with the data and the technical means of the 1960s. Fifty years later, as a short review of the literature in the next section shows, we know much more. However, many pieces of the jigsaw, and most notably the role of interactions with world markets, are still missing. This paper aims at filling this gap. In Section 3 and 4 we compare exports, for the whole peninsula and separately for the seven states, with trends in world trade and demand. Section 5 deals with capital imports which Fenoaltea (1988a) claims to have played an essential role in the Italian growth after unification. Section 6 focuses on commerce within Italy, and Section 7 concludes.

2. What do we know and what should we know about economic growth in Italy

Cafagna’s narrative starts from a fact that is hardly controversial: early nineteenth century Italy was a poor and backward country. Most of the population were employed in agriculture and

³ See also for his theoretical framework, Cafagna (1994). Some of the ideas have been elaborated and refined by Bonelli (1979) so that this narrative is often associated to both authors. See, for further details, Cohen and Federico (2001) and the critical review by Fenoaltea (2011).

most manufacturing still used traditional, quasi-artisanal techniques. The few modern factories were shielded from foreign competition by high customs duties. Thus, Italy, like other peripheral countries, was bound to stagnate, and growth and the accumulation of capital could come only from exports. In his Keynesian model, the ebb and flow in demand from the industrializing countries of Northern Europe caused parallel fluctuations in Italian exports, and thus in the whole Italian economy. The peninsula exported a wide range of products, but by far the most important among them was silk. According to Cafagna, silk production fostered Italian economic growth thanks to its unique features. The silk thread is secreted by an insect, the silkworm, to protect itself themselves in a cocoon during their transformation into a moth (Federico 1997). Silkworms are raised by peasants by feeding them on mulberry tree leaves and then cocoons are spun (reeled) to extract the thread. Reeling was deeply changed by the introduction of steam-powered machinery, which produced a better silk at a lower cost. Steam reeling-mills were for Italy, and later for China and Japan, what cotton mills had been for Lancashire during the Industrial Revolution. They trained industrial manpower, stimulated the development of financial institutions to provide credit, and created a demand for both the production and the maintenance of highly specialized machinery. The income from silk increased the consumption of manufactures and the accumulation of capital, which was then invested in other industrial activities.

Although silk was produced throughout Italy, the industry concentrated in the sub-alpine region of Northern Italy. Jointly with the abundance of water, an essential source of power in a country without coal (Bardini 1997), the location of the silk industry explained the early industrialization of the “industrial triangle.” The growth in the North did not create much demand for Southern products. The South did not produce cotton or other raw materials for Northern industries, while olive oil and citrus fruit were still luxury goods for Northern consumers. On the other hand, Southern demand for manufactures was limited, and, before Unification, Northern firms had to compete with heavily protected domestic producers, and afterwards, with British or French products. This lack of complementarity limited the interregional commerce, and the abolition of trade barriers and the construction of railways after unification were of little help. The “industrial triangle,” in Cafagna’s felicitous expression, was a “small country,” not unlike Switzerland or Wallonie, tucked into a much bigger polity. Its economic growth widened the income gap with the still agricultural South.

Cafagna’s complex narrative can be summed up in six propositions, which are a mixture of stylized facts and causal hypotheses:

1. Italy specialized in primary products, most notably silk, for consumption in the industrializing countries of North-Western Europe;
2. exports were main the source of growth for Italy until at least the 1880s;
3. modern economic growth featured a succession of waves of increase in GDP *per capita* and periods of stagnation, rather than a single discontinuity from stagnation to steady-state growth;
4. silk was an exception among primary products for its unique combination of agricultural production and industrial processing;
5. the silk-producing areas, most notably Lombardy, spearheaded industrialization and growth, while the rest of the country lagged behind; and
6. long-distance trade within Italy was modest until the late nineteenth century because the North and the South were too similar in terms of their levels of development and resource endowment to benefit from commerce.

How well have these propositions stood the test of time?

- (a) A recent book (Federico et al. 2011) confirms the two main stylized facts about Italian trade after the Unification. Italy exported mainly products, although their share declined from over 85 percent in the 1860s to about a third on the eve of World War I. Silk was always the main staple: its share fluctuated around a quarter of total exports until the mid-1900s and then quickly declined, down to about one-sixth.
- (b) The waves of growth after 1861 coincided with periods of openness to world markets (Rossi and Toniolo 1992). The export/GDP ratio increased from about 7.5 percent after unification to over 11 percent in the early 1880s and, after a decline in the next decade, it bounced back to 10.5 percent on the eve of World War I (Federico and Wolf 2013). However, coincidence in timing does not prove causation: according to Pistoreshi and Rinaldi (2012) from 1861 to 1913, GDP caused exports rather than vice-versa. Furthermore, Fenoaltea (1988a) suggests an alternative channel of transmission of world cycle to the Italian economy via flows of capital rather than via flows of goods. The world supply of capital fluctuated according to the autonomous decisions by British and French investors. When capital was abundant, Italy, as other peripheral countries could invest more (mainly in construction), and thus grow faster.
- (c) Two recent papers (Ciccarelli and Fenoaltea 2007; Sella and Marchionatti 2012) confirm the existence of a cycle since the Unification, with a strong acceleration in the late 1890s. Both papers use the Fenoaltea (2005) series, but similar exercises with the Malanima (2010) or Baffigi (2011) series are likely to yield similar results. The results are not inconsistent with the interpretation by Cafagna, who posits the existence of waves of growth, but does not affirm that the rates of growth were equal among them.
- (d) Federico (2005) has investigated the role of silk production in Northern industrialization, as far as possible given the fuzzy nature of the claim and the incompleteness of the available evidence. He argues that some of the alleged microeconomic benefits do not stand scrutiny. Silk reeling needed very specific skills, which were useless in other textile branches. Most of the profits of silk reeling were ploughed back into the mills, as technical progress of the equipment was very fast. On the other hand, the steam-reeling companies needed huge short-term funding to purchase cocoons after the harvest, and this requirement stimulated the development of banking and financial system. Furthermore, there is strong evidence of a beneficial effect on engineering, especially in the second half of the century. Since the 1840s, Italy had gained world leadership in the production of silk-reeling machinery, which it was to maintain until the 1920s. The engineering industry benefitted from the big wave of investment in steam-reeling powered machinery in the 1860s and 1870s. Since the 1850s, production of cocoons had collapsed because of a disease, the *pébrine* (Federico 1997). Prices of cocoons reached levels which only steam-powered mills could afford to pay. Indeed, the growth in Total Factor Productivity in silk-reeling was 3.5 times faster than in the rest of the economy from the 1870s to World War I.⁴
- (e) The income gaps among regions has been widening in the twentieth century. In 1891, the GDP per capita in the three regions of the “small country” was about 15 percent higher than the national average, and about 30 percent higher than in the Southern region (Felice 2011). Over the next 60 years, the inter-regional gap grew steadily, up to a peak of 151 percent (52 percent relative to the nationwide average) in 1951. In contrast, scholars

⁴ From 1876 to 1911, the annual rate of growth of TFP in reeling was 2.2 percent (Federico 1994, Supplementary material, Appendix G), while for the economy as a whole it was only 0.6 percent, from 1881 to 1911 (Broadberry et al. 2013, Tables 6 and 7).

disagree on the size of income differentials at the time of unification and on the changes in the first 30 years of the new kingdom (Zamagni 2012). Daniele and Malanima (2007), extrapolating backwards Felice's estimate for 1891, calculate that, in 1861, the GDP of the South was equal to the Centre-North, and that a significant gap opened only in the 1870s. In contrast, Brunetti et al. (2011) find a gap between the "industrial triangle" and the South almost as large in 1871 as it was in 1891. This latter view is buttressed by the provincial-level estimates of industrial GDP by Ciccarelli and Fenoaltea (2013) and by the evidence about social indicators. At the time of the Unification, the South lagged behind in all of them with the exception of infant mortality (Vecchi 2011), and, in 1870, the Human Development Index in the "industrial triangle" was 60 percent higher than in the South (Felice and Vasta 2012, table 3).

- (f) The available data show that transportation by sea and rail grew much faster than total GDP from 1862–1864 to 1911–1913. Traffic on coastal shipping increased by 6.2 times (ISTAT, on-line data-base) and by railways by 13 times (Fenoaltea 1984, table 3), while GDP only grew by 2.4 times (Baffigi 2011).⁵ Unfortunately, these data lump together long-distance North-South trade with local or medium-range traffic (for example, from the ports to their hinterland). According to estimates by Zamagni (1983, p. 1648) as late as 1911, "exchanges were intensive in the industrial triangle and there was a sizeable trade between it and the North-East and Central regions, while trade between the South and the rest of the country, and within the South was extremely modest". However, Cafagna's demand-side explanation is not the only available one. Fenoaltea (1982) argues that traffic was lower than in France or Germany because threats were very high. The railways were private, but rates were set by the government, which received about a third of the gross revenue. However, one can quote some additional evidence to buttress Cafagna's view. First, the records of Lombardy cotton companies (Romano 1992) show that they started to sell in the Southern markets only in the 1880s.⁶ This fact is not so surprising, as most of the potential market for industrial products was in the "small country" or in its close neighborhood (A'Hearn and Venables 2013). Ciccarelli et al. (2010) find that, until World War I, the timing of regional business cycles in private construction diverged, as though the North and the South did not belong to a unified economy. Last, but not least, prices of agricultural products started to converge in the 1830s, and interregional gaps were already small in the late 1850s (Federico 2007). This result implies that trade costs per se were not an insurmountable obstacle to inter-regional commerce. Nor could tariffs have been, as imports from other Italian states were not subject to differential duties.

To sum up, the research has confirmed most (but not all) of Cafagna's hypotheses for the period after unification. He assumed these hypotheses to have held also before 1861 and his view is widely shared. However, Malanima's estimates (figure 1) cast some doubts on his assumption. Italy before the unification may have been different and thus it has to be studied on its own.

⁵ The figure for rail is computed from a series of value added in maintenance, which is based on an (unpublished) series of total traffic (passengers and goods) per axle/ton/km.

⁶ This evidence contrasts with the view by Capecelatro and Carlo (1982), who argue that the Southern markets had been essential for the development of the Northern industry, and that Italian government, dominated by Northern interests, aimed at destroying the budding Southern industry. This thesis is supported by very little or no evidence and it has been largely ignored in the debate. However, it is now enjoying a revival in a non scholarly audience.

Figure 2. Trends in exports, Italy, Europe and the world (1851 = 1). Source: Federico and Tena-Junguito (2013a).

3. “Italian” exports in the first half of the nineteenth century: a comparative view

“Italian” exports diverged quite markedly from world trade before the Unification (figure 2).⁷

World trade had been growing fairly steadily since the 1820s, with a clear acceleration around 1850. In contrast, Italian exports increased very slowly before the outbreak of First War of Independence (1847), boomed in the early 1850s, and stagnated in the second half of the decade.⁸ Indeed, Italy’s share on world exports decreased from 4.8 percent in the early 1830s to a minimum of 3.2 percent in 1848–1850, and then remained constant, but for a short-lived and modest recovery in the early 1850s. This decline contrasts starkly with the performance after unification. The Italian share of world trade increased by two-fifths from the mid-1860s to the early 1880s, and, in spite of a decline, on the eve of World War I was still higher than 50 years earlier.

One might argue that the series of world exports are not the right yardstick to assess the performance of a peripheral country, as most of them originated from big developed countries, such as France, Zollverein, the United States and the UK. However, Italy’s performance remains disappointing when compared with other peripheral countries (table 1).⁹ The long-run rate (last column on the left) is significantly lower than any other group, with the

⁷ See, for all details on sources and methods of estimation of the Italian series, Supplementary material, Appendix A and for the world series see Federico and Tena (2013a).

⁸ A Quandt Andrews tests single out 1851 (for Italy) or 1852 (for world total) as the most likely structural breaks in the series.

⁹ The rates for 1824–1831, 1831–1851, and 1851–1857 are computed as log change between 3 years moving averages (e.g., 1824 is the average for 1823–1825).

Table 1. *Growth of exports and openness: Italy in comparative perspective*

	Export per capita (1,913\$)			Rates of growth							
	1831	1850	1858	1824	1831	1831	1851	1851	1857	1830	1858
Italy	2.0	2.7	3.4	0.0		2.1		4.3		2.77 ^a	
United Kingdom	4.9	12.9	18.1	4.1		5.5		6.1		5.69 ^a	
United States	6.6	9.0	10.2	5.0		4.5		5.3		5.17 ^a	
European Core	2.5	4.7	6.7	1.8		3.8		6.7		4.50 ^a	
European Periphery	1.3	1.9	2.3	3.8		2.6		4.8		2.85 ^a	
Western Settlement	17.8	21.5	29.2	2.2		4.4		8.8		5.81 ^a	
Asia	0.2	0.5	0.6	6.9		3.8		2.8		5.03 ^a	
Latin America	4.7	5.4	6.8	3.3		2.0		4.9		2.15 ^b	
Caribbean	21.2	15.8	13.7	4.0		0.3		0.6		0.63 ^a	
Africa	0.4	1.4	2.4			6.6		10.3		5.21 ^a	
World	1.0	1.8	2.5	1.7		3.7		5.7		4.34 ^a	

Source: Federico and Tena (2013a).

^aSignificantly different from zero at 1 percent.

^bSignificantly different from zero at 5 percent.

exception of the European periphery, Latin America, and the Caribbean whose exports actually declined after the emancipation of the slaves (Federico and Tena 2013b). In the 1830s and 1840s, the rate of growth of Italian exports was the forty-ninth out of sixty-nine polities, above Portugal, Austria-Hungary, Mexico, and many small Caribbean countries. During the export boom of the 1850s, Italy went up to the 31st position, above the median but still below most major trading polities. Consequently, Italian exports *per capita*, a crude index of openness, declined from being two times greater than the world average (including China and India) in 1831 to being only a third higher in 1858.¹⁰

Before concluding that Italy exploited the opportunities of the early globalization poorly, we have to discuss two distinct objections. First, total exports might undervalue the growth of exports to core countries if Italy was re-directing its wares away from slow-growing Mediterranean countries towards Northern Europe. Second, exports from core countries may not measure their demand for imports accurately. Figure 3 tackles this latter objection by computing the shares of Italy and other peripheral countries on imports (3a), or the GDP (3b) of five countries (the UK, France, Belgium, the Netherlands, and the United States). We normalize the series with 1851 = 1 to make levels more comparable across groups of polities.

The series fluctuate a lot, but the message is fairly clear. Extra-European countries performed better than the European periphery, in spite of the slow growth of exports from South America and the Caribbean, and the European periphery performed better than Italy, especially in the 1840s.

The lack of data on the destination(s) of Italian exports makes it difficult to reject the first objection conclusively. Indeed, the proportion of exports from the Kingdom of the Two Sicilies to core countries did increase.¹¹ On the other hand, the trade statistics of importing

¹⁰ Population data for Italy Romani (1982, p. 395), for other countries Federico and Tena (2013a).

¹¹ The UK, France, the Netherlands, and the United States absorbed 38 percent of exports from the continental South in 1838–1840 and 48 percent in 1856–1858 (Graziani 1960). Adding half of the exports to Austria (the rest went to Lombardo Veneto) the shares rise to 48 and 58 percent. The total share of the UK, United States, and France on exports from Sicily rose from 59 percent in 1841 to 74 percent in 1853 (Battaglia 1983).

Figure 3. (a) Share of exports from periphery on imports of core countries. Source: Federico and Tena-Junguito (2013a). (b) Share of exports from periphery on GDP of core countries (1851 = 1). Source: Federico and Tena-Junguito (2013a).

Table 2. *Share of Italy on the imports of core countries (percent)*

	France	Belgium	UK	USA
1823 25	28.0		2.8	1.8
1831 33	16.3	0.4	2.1	1.7
1850 52	14.0	0.7	1.9	1.2
1856 58	10.7	0.6	1.0	1.4

Source: World Bilateral Trade Data Base from MCI: ECO2011 25713.

countries show a clear decline in the share of Italy (table 2). The table omits exports from Lombardo-Veneto, which British and French statistics classified as coming from Austria to Hungary. However, it seems implausible that their addition could change the results. In fact, the area exported almost exclusively silk (table 3), and Italian silk was losing ground on the British and French markets.

This discussion so far has considered Italy as a unit, but, at that time, Italy was, as the Austrian chancellor von Metternich once famously stated, a mere “geographical expression.” The level of openness and the rate of the growth of exports might have differed between states. In particular, conventional wisdom emphasizes the difference between the progressive and modernizing “small country,” and the backward, stagnating rest of the peninsula. But does the evidence support this distinction?

4. Exports in the first half of nineteenth century: a regional analysis

We start with a snapshot for the 1850s, when data are more abundant and more reliable (table 3).¹²

The table highlights three main points:

- (a) The level of openness was, as expected, higher in the Centre-North than in the Papal States and in the (mainland) South, when measured by exports *per capita*. The Lombardo-Veneto exported almost as much as France (5.6%) and substantially more than the Zollverein (3.95) in the same years, while the mainland South exported less than Russia (1.20). However, a crude estimate suggests that the dispersion in exports/GDP ratios was somewhat smaller.¹³ The most open polity was Tuscany (9.2 percent), the least open the Papal States (3.0 percent), and the mainland South (2.0 percent), while all other polities clustered around 7 percent (Sicily, the Duchies, and Sardinia 7.0 percent, Lombardo-Veneto/Lombardy-Venetia 6.8 percent).
- (b) The total trade balance was in deficit, largely because Sardinia and Tuscany imported much more than they exported. These were the two most free-trade states in Italy.

¹² The political divisions do not tally perfectly with the economic ones. Piedmont and Liguria accounted for 85 percent of the population and 89 percent of the GDP of the Kingdom of Sardinia in 1871, while Lombardy accounted for 61 and 64 percent of Lombardo-Veneto in the same year. Thus Cafagna’s “small country” accounted for 75 percent of GDP and for 72 percent of the combined population of the two polities.

¹³ We estimate the export/GDP by country as $(T_i/T_{IT}) \times (GDP_{IT}/GDP_i) \times R$, where T trade, R the Italy wide ratio export/GDP and subscripts refer, respectively, to the i th polity and to Italy. We compute estimate GDP by polity at 1858 borders as GDP per capita (Brunetti et al. 2011) in 1871 times the population in 1858 (Romani 1982). We thus assume that the regional differences in GDP had remained constant from 1858 to 1871.

Table 3. *The trade of the Italian states, 1850–1858*

	Total (millions 1,913 \$)	Per capita (1,913\$)	% Italy	% Primary	% Manufactures	% Silk
(A) Imports						
Sardinia	31.8	7.17	34.6	61.5	23.2	15.3
Lombardo Veneto	22.4	4.38	24.4	42.9	52.9	4.1
Duchies	5.4	4.95	5.9			
Tuscany	11.9	6.72	12.9	50.6	48.0	1.4
Papal States	5.9	1.91	6.5	20.0	79.6	0.4
South	8.7	1.26	9.4	12.4	87.6	0.0
Sicily	5.8	2.61	6.3			
Italy	91.9	3.74	100			
(B) Exports						
Sardinia	17.5	3.94	21.8	51.8	7.6	40.5
Lombardo Veneto	27.0	5.29	33.7	7.7	14.3	78.0
Duchies	4.5	4.16	5.7			
Tuscany	8.2	4.62	10.2	30.8	61.3	7.9
Papal States	6.1	1.97	7.6	51.0	37.4	11.6
South	7.8	1.14	9.8	30.3	47.3	22.4
Sicily	9.0	4.03	11.2			
Italy	80.2	3.27	100			

Source: Supplementary material, Appendix A and table A1.

Tuscany had a long tradition of free trade, whereas Sardinia was a recent convert (Di Gianfrancesco 1974). It slashed duties on manufactures from 42.2 percent in 1846 to 17.3 percent in 1853, and to 12.6 percent in 1859 (Tena et al. 2012, Supplementary material, Appendix, un-weighted average) and abolished duties on wheat altogether after 1854 (Federico 2012). Other countries were either exporters of agricultural products or allowed them to enter duty-free, with the partial exception of wheat, while they continued to protect their industry heavily. In 1859, the average duty on manufactures was 29.3 percent in Austria and 23.2 percent in the Papal States.

- (c) Silk accounted for most of the exports from the Lombardo-Veneto, was the main item for Sardinia, and the second largest in all other states (table 4).¹⁴ However, exports were, as a rule, fairly diversified in all countries but the Lombardo-Veneto. The four main products, including silk, accounted for two-thirds of exports from the South and for about a half for all other countries.¹⁵ The surprisingly high shares of manufactures for the South and the Papal States among the exports of some countries are largely spurious. In fact, Graziani (1960) and Bonelli (1961) classify processed agricultural products such as wine among manufactures, according to the Italian trade statistics of the 1950s, rather than among primary products.

¹⁴ There are no data on the distribution by products of exports from Sicily and the Duchies in the 1850s. The shares for Sardinia refer to 1857–1859. The original data (Romeo 1975, table 3) cover 64 percent of total exports only.

¹⁵ The share was 46.7 percent for Tuscany (straw hats, silk, chemicals, and paper products), 53.7 percent for the Papal States (hemp, silk and by products, wheat and cattle), 54.5 percent for Piedmont (silk and by products, rice, wheat, and cattle) and 65.1 percent for the South (olive oil, silk, wheat, and oilseeds).

Table 4. *Growth of exports and openness: Italian States*

	Export per capita (1,913\$)				Growth rates							
	1823	1831	1,50	1858	1824	1832	1832	1851	1851	1857	1832	1857
Sardinia	2.04	2.61	2.58	4.85	2.23		0.55		10.74		3.00	
Lombardo Veneto	3.65	3.33	3.23	5.18	1.78		2.36		0.07		1.77	
Duchies			2.55	4.59					4.24			
Tuscany			2.98	6.09					12.20			
Papal States	1.14	1.74	1.87	2.21	3.76		1.31		1.18		1.28	
South		0.83 ^a	1.17	1.25			1.80		0.35		1.45	
Sicily	1.72	1.43	3.26	4.58	4.21		3.97		3.42		3.84	
Italy	1.88	1.98	2.32	3.64	0.62		2.14		4.30		2.66	

^a1832.

Summing up, by and large, the situation of the 1850s tallies with the conventional wisdom. However, table 4 shows that this statement does not hold for changes in time. Contrary to Cafagna's hypothesis, the performance of the "small country," and especially of the Lombardo-Veneto, was not particularly good. Its exports fell in the second half of the 1820s, increased (not so fast from a comparative perspective) in the 1830s and 1840s, and fell again in the 1850s. Their growth over the whole period barely exceeded the increase in exports from the South or the Papal States, which nobody has ever regarded as powerhouses of Italian development. Sardinia fared better, but its impressive growth of exports in the 1850s might be partially spurious (see Supplementary material, Appendix A). A conservative estimate suggests that about a tenth of the recorded Sardinian exports in 1857–59 consisted of transit trade. Such a mis-labeling of transit was much less likely in the 1840s, when imports were subject to high duties.

The performance of Lombardy-Venetia and Sardinia (before 1850) reflects the sluggish growth in their silk exports (figure 4). Until the 1850s, exports of silk from Piedmont grew quite smoothly, at little less than 2 percent per year.¹⁶ The long-run rate of growth of exports from Lombardo-Veneto was a tad higher, but trends were far from smooth: exports boomed from 1815–17 to 1829–31 (increasing by 1.5 times, at a yearly rate of 6.5 percent) and then slowed down markedly to 2.15 percent. Overall, silk exports doubled in 35 years. This may seem to be a good performance, but it pales relative to the growth of demand by core countries.¹⁷ Italian silk accounted for 82 percent of French imports in 1831–33 and for 50 percent of British consumption in 1825–30: these shares fell, respectively, to 56 percent in 1849–53, and to 13.7 percent in 1850–54 (Federico 1994, table XXXV). Italian silk exports undoubtedly suffered from the growing competition both from India (Ray 2011, pp. 88–132)

¹⁶ This smooth growth contrasts with the conventional wisdom about the effect of the liberalization of exports of raw silk in 1834 (Romani 1982, pp. 119–120). Earlier, Piedmontese silk had to be exported only after a further processing (throwing). It is widely assumed that large quantities of raw silk were smuggled out of the country. If this were the case, the lifting of the ban should have boosted total exports, but there is no such growth.

¹⁷ In 1853–1855, Lombardo Veneto and Sardinia accounted for 68.5 and 18 percent of total Italian exports of silk (excluding Sicily). However, other countries did not fare better: silk exports from Papal States increased at 1.75 percent per annum from 1822–1824 to 1852–1854 (Bonelli 1961, pp. 180–181) and exports from the mainland South fluctuated without a clear trend. The only exception may have been Sicily. According to Battaglia (1983), its silk exports jumped from 27 tons in 1834–1839 to 178 tons in 1850.

Figure 4. *Exports of silk, Lombardo-Veneto and Sardinia (quintals)*. Source: see note 18.

and China but they were hampered by supply-side problems. In fact, exports grew from two-thirds of the Italian output in the late eighteenth century to three-quarters in the early 1850s.¹⁸ We speculate that the growth of silk production before 1850 was constrained by the shortage of land to plant mulberry trees. In contrast, there is no doubt that the *pébrine* explains the collapse of silk exports in the 1850s.

The stagnation of the exports of silk and olive oil explains the poor growth of total exports from the South, in spite of the massive increase in the exportation of minor products, such as madder, dried fruit, wool and hemp (Graziani 1956–57, 1960). If exports of silk and oil from the Continental South had grown as much as all other exports from 1838 to 1855, total exports would have grown as much as the exports of Sicily. Sicily exported a number of agricultural products (sumac, citrus fruits, olive oil), but its main staple was sulfur, which accounted for between a third and a half of total exports. Exports of all products grew fast in that period: the exported quantity of sulfur doubled from 1832 to 1850, and then doubled again up to a peak in 1859 (Squarzina 1963, table 1).¹⁹

One might argue that any growth in exports, although slow, could be useful when the rest of the economy is stagnating. Actually, even an export boom would have had limited effects on overall growth, because exports accounted for a small proportion of total GDP in Italy. In the mid-1820s, the exports/GDP ratio was around 4 percent for the Centre-North, and possibly about 3 percent for the whole peninsula.²⁰ It barely changed until the early 1850s, and then rose up to a peak of 7.2 percent in 1855 for the Centre-North (6 percent in 1856 for the whole

¹⁸ At the end of the eighteenth century, Italy produced 2,480 tons of silk and exported 1,680 tons (Battisini 2003, table A1), while in the early 1850, it produced 3,700–3,800 and exported about 2,800 tons (Federico 1994, table Xa).

¹⁹ Battaglia (1983) provides series of exported quantities for 1821–1839 and for 1850. The share of sulfur is computed by multiplying exports by the price of sulfur in London (Gayer et al. 1953).

²⁰ We convert the Malanima (2010) series from 1911 constant lire into 1913 dollars, with the market exchange rate, and we assume that the GDP of the Kingdom of Two Sicilies was 40 percent of the Italian total as in 1871. Malanima (2002, pp. 318–319) tentatively estimates that exports had accounted for 5 percent of Italian GDP in the early modern period, from the fifteenth century onwards.

country). Thus, even during the 1850s, the growth in exports could have added at most 0.3–0.5 points to the yearly growth rate of GDP (or perhaps prevented a similar fall). Furthermore, this figure is an upper bound, as it assumes that the increase in exports translated into an equivalent growth in GDP, i.e., that the production of exportables did not need any inputs from other sectors, and that it used factors which would have been unproductive elsewhere (the so-called vent for surplus growth). These conditions did not seem realistic for a densely populated country such as pre-unification Italy. In an alternative neo-classical world of full employment of factors, an increase in exports would augment the GDP only by the difference between the total factor productivity (TFP) in the production of exportables and in the domestic market, times the initial share of exports on value added. It is doubtful that the differential in productivity growth between production of silk and the rest of the economy had been as large before 1850 as since the 1870s. Even in this case, however, its contribution to overall growth would have been very small, as the silk industry accounted for about 0.5 percent of total Italian GDP in the 1860s.²¹ There is no comparable estimate of TFP growth for any other production export, before or after unification. However, the anecdotal evidence seems to rule out any major technical progress in the production of exportable goods. For instance, the exports of Sicilian sulfur boomed because the island enjoyed a world monopoly. In short, the evidence, albeit incomplete, suggests that the macroeconomic stimulus from exports was negligible in all Italian states.

5. A digression: imports of capital and economic growth

The market for European sovereign bonds developed from the 1820s (Flandreau and Flores 2009), and the demand was particularly strong in the 1820s and in the late 1840s and early 1850s (Kaminsky 2009). Following her, in figure 5 we proxy the total imports of capital in Italy with the amount of bonds issued by Italian states in Paris and London (Conti and Schisani 2011).²² The series show massive imports in the 1820s and in the 1850s, when the Italian economy was in deep crisis. However, total issues may not be a good measure of capital imports. On the one hand, they undervalue the total investment because they omit Lombardo-Veneto and all private foreign investments (Gille 1968). On the other hand, they overvalue the inflows of capital, because they neglect the purchases of bonds by Italian investors, both from foreign banks on the emission and on the secondary market. In 1861, Italian investors owned four-fifths of Italian public debt (Zamagni 1998, table L), although the share had been, in all likelihood, lower 3 years before.²³

We thus report another proxy of imports of capital, the *per capita* difference between imports and exports at constant prices (figure 6).²⁴ It would measure inflows exactly if the cumulated

²¹ The figure is the share of value added in reeling, throwing, and weaving from Fenoaltea (1988b) on total GDP from Baffigi (2011). Most of the value of silk came from the production of cocoons which is included in VA of agriculture.

²² When necessary, we estimate the missing issue price for a bond according to the current market prices of comparable bonds on the Paris stock exchange (Gille 1968, pp. 35 and 117–119).

²³ The Italian states, including, pro quota, the Lombardo Veneto, owed 1.3 million in 1858 (Corbino 1931, I p. 309). However, they borrowed heavily to fund the war and the expenditures to organize the new state so that the total debt more than doubled in the next three years (Francese and Pace 2008). It is likely, given the political turmoil and the uncertainty surrounding the new state, that most of this new debt was subscribed in Italy.

²⁴ We omit Tuscany because we have trade data only for 1850–1858 and we consider trade according to homogeneous monetary areas. The series for the Kingdom of Two Sicilies are the sum of trade of mainland South and Sicily and those for Lombardo Veneto omit trade with other regions of the Empire.

Figure 5. *Imports of capital and per capita GDP, 1821–1858. Source: see text.*

sum of all other items in the balance of payments (trade in services, emigrant remittances, and so on) was 0. As a first approximation, there is not much evidence of a positive correlation between trade balance and GDP per capita as suggested by Fenoaltea (1988a). The coefficient is positive but low for Lombardo-Veneto (0.32) and the Kingdom of Two Sicilies (0.08) and negative for the Papal States (−0.10) and Sardinia (−0.81). Indeed, the sign of trade balance, and thus the direction of capital flows, differed substantially between states. The Lombardo-Veneto and the Kingdom of the Two Sicilies ran modest trade surpluses for most years of the period. The latter had borrowed heavily in 1821–24 (up to a third of the total issue of bonds of the Italian states), using the proceeds re-fund earlier loans from Austria and to pay for the maintenance of the Austrian troops who had helped to suppress the 1821 uprising (Ostuni 1992). In contrast, the Papal States and the Kingdom of Sardinia, and probably Tuscany, were net importers of capital. However, the loans of the Papal States were comparatively modest and were used to fund current expenditure (Felisini 1990). In contrast, the Kingdom of Sardinia borrowed huge sums, especially in the late 1840s and 1850s (about 2–3 percent of the GDP each year) in order to fund its wars against Austria, but also the construction of railways.²⁵ These imports might have caused an economic boom in Piedmont and possibly Tuscany, but the Malanima (2010) series cannot show it as they refer to the whole Centre-North.

6. Inter-regional trade in the 1850s

Our estimate of interregional trade in the 1850s (table 5) confirms the conventional wisdom.

²⁵ We estimate the share of imports of capital on GDP in 1850–1858 in two different ways. We compute the ratio of total loans to GDP, both expressed in 1911 *lire*, or we multiply the average deficit/export ratio in the same years (about 0.5) by the average export/GDP ratio. The first method yields a yearly import around 2.1 percent of GDP, the second around 3.2 percent.

Figure 6. *Net import per capita (1,913\$)*. (a) *Kingdom of the Two Sicilies and Lombardo-Veneto*. (b) *Papal States and Sardinia*. Source: *Supplementary material, Appendix A*.

This figure tallies well with the estimate by Correnti and Maestri (1864), as re-worked by Zamagni (1983, table 3), for 1858. Trade with other Italian polities accounted for 18.9 percent of imports and for 17.6 percent of exports. The two estimates differ for some polities, notably the Lombardo-Veneto, but the coefficient of correlation in 1858 is 0.87 for exports and a still re-assuring 0.71 for imports.

With some approximation, we have been able to estimate a full table of bilateral trade flows among Italian polities (table 6). Short-range trade between Lombardo-Veneto and other polities in the North accounted for over a half of the total inter-regional trade. Such a geographical concentration is not really surprising. It is widely assumed that costs for long-range trade in

Table 5. *Shares of inter-regional trade on total trade*

	Percent Imports						Percent Exports					
	1850	1852	1856	1858	1850	1858	1850	1852	1856	1858	1850	1858
Sardinia	14.4		21.1		18.1		13.4		12.9		12.9	
Lombardo Veneto	18.1		17.5		17.7		13.0		22.4		15.9	
Duchies	47.6		30.9		37.3		46.3		52.3		46.8	
Tuscany	8.2		8.3		8.7		23.7		22.7		23.6	
Papal States	18.1		15.1		16.1		15.7		22.7		18.8	
South	15.9		14.6		15.1		31.2		24.7		27.0	
Sicily	8.9		8.9		8.9		4.6		4.6		4.6	
Italy	16.5		17.5		17.0		17.5		20.6		18.4	

Source: Supplementary material, Appendix A.

Table 6. *Bilateral trade: per capita imports, average 1850–1858 (1913\$)*

	Sardinia	Lombardo Veneto	Duchies	Tuscany	Papal States	South	Sicily
Sardinia		0.43	0.27	0.27	0.08	0.14	0.10
Lombardo Veneto	0.26		0.12	0.08	0.08	0.18	0.04
Duchies	0.26	1.34		0.08	0.08	0.05	0.04
Tuscany	0.18	0.17	0.04		0.08	0.08	0.04
Papal States	0.03	0.04	0.04	0.04		0.11	0.04
South	0.08	0.05	0.10	0.02	0.02		
Sicily	0.05	0.10	0.02	0.07	0.04		

Source: Supplementary material, Appendix A.

pre-Unitary trade were very high because of the combination of lack of railways, poor state of the roads, and the high tariffs of the South. We test this hypothesis with a very basic gravity model, which explains bilateral trade with distance by sea (DISTANCE) and the combined economic size, proxied by the average population in the decade (POPULATION) or by GDP in 1871.²⁶ Without data on total tariffs, and *a fortiori* on bilateral ones, we try to capture the effect of duties by adding a dummy for the pairs including the Kingdom of Two Sicilies. We expect the dummy to be positive and significant and the coefficient of DISTANCE to be rather high.

The results are quite good (table 7). The R² are high enough and the residuals exceed the 95 percent confidence band only in three cases: the model under-predicts trade between Sardinia and the Duchies and between Lombardo-Veneto and Tuscany, and over-predicts trade between the Duchies and the South. Elasticities are correctly signed, highly significant, and the values are plausible. The coefficient of distance in the baseline specification (eq. 1 and 2) is almost identical to the average of contemporary estimates (0.91), as reviewed by Disdier and Head (2008). The Southern dummy (eq. 3 and 4) is negative as expected, and its addition

²⁶ See, for the estimate of GDP by state at 1858 borders, footnote 15. We measure sea distance from <http://sea-distances.com>, last accessed August 2012. We select one main port for Sardinia (Genoa), Lombardo Veneto (Venice), Tuscany (Leghorn), and Sicily (Palermo), while, for Papal states and the South, we average distances with ports West coast (Civitavecchia and Naples respectively) and on the East coast (Ancona and Bari). The distance between Sardinia and Lombardo Veneto, which shared an overland border, is the distance between Turin and Milan as the crow flies. The distance of Duchies to nonlandlocked states is the sum of overland distance to Genoa and then the sea distance. Results are very similar if we weight overland distance with a coefficient up to 4.

Table 7. *Determinants of bilateral trade*

	(1)	(2)	(3)	(4)
Const	8.75 (2.65)**	0.16 (0.12)	11.21 (4.56)***	0.65 (0.60)
LnDistance	0.92 (4.68)***	0.915 (5.21)***	0.74 (4.61)***	0.76 (4.92)***
LnPopulation	1.56 (4.56)***		1.75 (6.49)***	
LnGDP		1.86 (5.45)***		1.93 (6.80)***
Two Sicilies			0.78 (3.61)***	0.62 (2.96)***
R ²	0.65	0.72	0.79	0.81
Fstat	18.3	25.1	25.1	27.3

Significant at * 10 percent; ** 5 percent; *** 1 percent.

N = 20; t stat between brackets.

shifts the coefficient of distance towards the lower bound of the range of contemporary estimates. The low cost of sea-borne transport must have compensated the high cost of overland trade.

7. Conclusions: what did start modern economic growth in Italy

In Section 1, we set ourselves the task of testing three hypotheses about the economy before the Unification of Italy, i.e., that exports and/or capital imports were its main (or sole) source of growth, and that inter-regional trade was limited due to lack of complementarity. Our empirical analysis confirms that the trade between Italian polities before 1858 was modest and very concentrated in the Po valley. The results of our gravity model downplay the negative impact of trade costs on long-range trade. They support Cafagna's hypothesis of the lack of complementarity as the cause of the low level of trade, but they do not prove it. In fact, the Italian market might have been segmented by other cultural and institutional barriers, as the German and Austrian ones towards the end of the nineteenth century (Schulze and Wolf 2009; Wolf 2009; Wolf et al. 2011).

In contrast, our analysis has found only very limited support for a growth-fostering role of capital imports, no support for the hypothesis of an export-led growth, and, above all, of an export-led growth in the "small country" before unification. Imports of capital may have fostered investment and growth only in Piedmont and Tuscany in the 1850s. For most of this period, Italian exports grew slowly and not much faster than the population. They accelerated in the early 1850s, but the spurt was soon truncated by the outbreak of *pébrine*. Given the very low ratio to GDP, the macroeconomic effects of exports of goods must have been negligible. There is no evidence of growth-fostering microeconomic effects from exports other than silk, and those from silk were much stronger during the investment boom of the 1860s and 1870s than before unification. These results rule out a major external pull to modern economic growth and thus indirectly buttress Malanima's view of a stagnant economy. Our comparative analysis shows that Italy largely missed the opportunities offered by the growth of demand by the industrializing countries of North Europe. Thus, the roots of Italian stagnation have to be searched at home.

Supplementary material

Supplementary material is available at *EREH* online.

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