Master's Programme in Economic Growth, Population and Development.

Single currency implications

Evidence from the North-South Italian divide,

1870-1914

by

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The thesis investigates the effects of the Italian Monetary Union on the North and South Italian development from 1870 to 1914. Through a quantitative analysis of the Italian Lira's exchange rate and regional export prices, the work observes a loss in competitiveness of Southern export-oriented entities compared to the Northern ones. However, under the thesis perspective, the impact of the single currency on the North-South regional development is marginal.

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1   Introduction

North and South of Italy present significant differences, to the extent that they may have presided as two nations in one state. Their dualism dates back in time, and it is visible in many areas. Regional differences are present in lifestyle, taste, food, language, education, income, and longevity. The North-South Italian divide is a source of discussions among many economic historians. The two primary debates are centred around: the presence of a regional gap before or after the national unification (in 1861), while the second one regards the forces generating the Italian dualism. Regarding the first debate – considering the timing in the formation of the Italian regional gap – on one side, Malanima and Daniele (2011, 2014, 2017) argue for the formation of the Italian regional divide after 1861; while Felice (2013), Foreman-Peck (2005), and Zamagni (1990, 2019), among others, sustain the presence of the North-South gap before the unification. Instead, the second debate seeks to explain the reasons behind the North-South gap and the factors contributing to its overtime widening. Economic historians advanced some arguments attempting to describe the reasons favouring the regional divide. The more relevant ones refer to different geographic conditions between the two regions[1] (Zamagni, 2019), diverse institutional attitude (Felice & Vasta, 2015), and distinct developments in education (Cappelli, 2015), among others.

Besides some ideologist positions, the debates on the North-South divide are relevant for economic historians, policymakers, and economists, since it includes some critical factors that our current knowledge still lacks to explain. Intrinsic into the North-South debate, it highly possible to find the notions explaining the sources of Modern Economic Growth and the understating of policies' efficacy and their long-term effects on development.

The thesis positions itself in the North and South debate by embracing the idea of a regional gap before the Italian unification. Regarding the sources behind the Italian regional divide, the research considers appealing the arguments supporting regional differences in the geographic characteristics, institutional attitude and human capital formation as potential explanations of the regional divide. The purpose of this thesis is to contribute to the existing debate seeking to explain the reasons behind the enforcement of the North-South divide by focusing on the financial perspective. Investigated by scholars, such as A'Hearn (2005), Foreman-Peck (2005), and Chiaruttini (2018, 2020), the approach generally supports the idea that the establishment of the Italian Monetary Union (IMU) represented a potential threat to the equal development of North and South Italy – especially in the short-term. By developing the thesis' arguments on the monetary approach – as a potential factor contributing to the North-South divide – this research analyses the role of the exchange rate between the Italian currency (Lira Italiana[2]) and

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[1] The thesis refers to North and South of Italy as the two regions or the two macro-regions. For specifications on the definition of North and South see the following chapter.
[2] The text refers to the Lita Italiana simply as lira, or lire if plural.

the currencies of the ten closest Italian trading partners[3] in shaping the differences in the North-South development.

The research question advanced by the thesis is: did the Italian monetary union, through the effects of its monetary policies, have a powerful impact in shaping the North-South Italian divide? With "powerful impact", the research intends: affecting on the regional development in a way relevant enough to be accounted as such. Regarding the process of answering the research question instead, the work embraces a quantitative approach. The adopted method consists of analysing the exchange rate and regional prices in shaping the losses (or gains) of regional export-oriented entities. Subsequentially, the analysis investigates the impact of regional export-oriented entities on the development of North and South Italy. The analysed period goes from 1870 to 1914. The time choice refers to the availability of the data and the outbreak of War World I (WW1).

In answering the research question, the work considers the exchange rate between the lira and the currencies of its ten closest trading partners. The exchange rate represents the main product of the monetary policies implemented by the IMU. It is the case since a large part of the financial stimulus – like the increase or reduction of the money supply – directly affect the exchange rate. By adopting this approach, the work expects to find the effects of the monetary policies on the diverging regional development between North and South Italy. Additionally, the research employs regional export-oriented entities as the subjects affected by the exchange rate variations. Export-oriented entities are those entities performing some trade activities with the Italian trading partners. They refer to private companies, corporations, or institutions, among others. The analysis considers export-oriented entities since the exchange rate and international prices directly affect their incomes. Through this setting, the research wishes to capture the effects of exchange rate variations on regional development. Finally, the research carefully generalises the effect of the exchange rate on the regional export-oriented entities on the development of North and South Italy.

The work adopts diverse data sources: observations regarding the regional trade and prices are from Federico, Natoli, Tattara and Vasta (2011); information about the North-South economic specialisation refer to Zamagni (2019); data on the Italian exchange rates are from Ljungberg (2019); and estimations regarding the regional trade shares of Gross Domestic Product (GDP) are calculated on the data of Baffigi (2011 cited in Missiaia, 2014) and MAIC (1874, 1883, 1902, 1914 cited in Missiaia, 2014). Regarding the research contributions, the work is relevant to the North-South debate since it proposes an additional argument to the discussion. It is also significant to the broader field of economic history since it offers a further investigation on the economic development of monetary union's members.

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[3] The ten closest Italian trading partners in terms of traded values are Austria-Hungary, France, Germany, Switzerland, Britain, United States of America (US), Belgium, Netherlands, Argentine, and Russia.

The remaining part of the research is structured as follow: chapter two presents the background and theoretical framework of the research. This chapter provides the literature review of the North-South differences before and after the Italian unification, the monetary perspective of the introduction of the IMU, and an overview of the North-South debates; it follows the theoretical approach of the research. Chapter three offers a description of the adopted data and method. Chapter four focuses on the results, discussion, contributions and limitations of the analysis. Chapter five concludes.

2   Background and Theoretical framework

This chapter offers two sections: background and theoretical framework. The background section (2.1) is divided into four sub-sections: sub-section 2.1.1 addresses the differences between North and South Italy ante-unification, while sub-section 2.1.2 presents the effects of unification on the two Italian regions. By addressing topics like education, trade, finance, infrastructures and economic specialisation, these two initial sub-sections offer the economic-historical background of the two Italian macro-regions. It follows sub-section 2.1.3, which focuses on the monetary implications of the Italian unification, and then sub-section 2.1.4 reviews the debate addressing the causes of the Italian regional divide. After this economic-historian presentation of the context and current frontier of the field, the thesis moves to the theoretical framework (section 2.2). This section provides the structure of the analysis. Before moving to the single sections, the work clarifies the North-South regional partition of Italy.

The definitions of North and South Italy may differ depending on the borders used in the division. Common approaches adopt the regional division of Italy according to the borders of the Italian regions; to the other, they may consider the borders of pre-unitary Italian states. This work follows Felice (2018) approach, and it adopts the division of Italy according to the 1870 regional borders. In this division, North Italy comprises Piedmont, Liguria, Lombardy, Venetia, Emilia-Romagna, Tuscany, Marches, Umbria, Latium, and the South of Italy the regions of Abruzzi, Campania, Apulia, Basilicata, Calabria, Sicily, and Sardinia.

It is worth noting that the macro-regional division of Italy in North and South, according to the two methods, do not entirely match. For example, the island of Sardinia plays a substantial difference in the North-South division of Italy between pre-unitary state borders and regional ones. According to the pre-unitary state borders' approach, Sardinia accounted as North Italy since the island belonging to the Kingdom of Sardinia; differently, the regional borders' approach allocates Sardinia to the South since, after unification, the island shares many similarities with the Southern part of the country. Figure 2.1 clarifies the subdivision. The map on the left depicts the regions of North and South of Italy according to pre-unitary Italian state borders, while the map on the right represents the North-South division based on the Italian regional borders. The pre-unitary states located in the Italian peninsula were: the Duchy of Modena, Duchy of Parma, Grand Duchy of Tuscany, Kingdom of Lombardy–Venetia, Kingdom of Sardinia and Papal State belonging to the Northern part of Italy; while the Southern part comprehends the Kingdom of the Two Sicilies.

Figure A Wikipedia (2012).
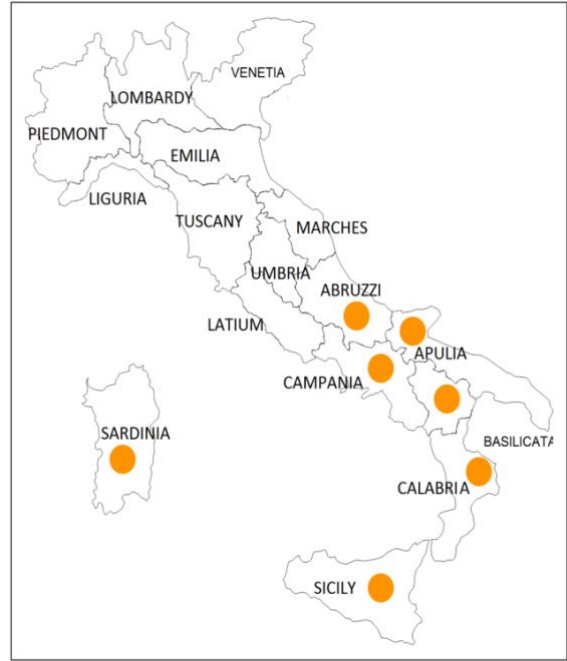
Figure B Missiaia (2014).

Figure 2.1 North-South Italian divide (A-B).

Figure A represents Italy according to pre-unitary states borders (1843), while figure B shows Italian regional division according to 1870 borders. The colour orange indicates South of Italy. For further specifications see text.

2.1   Context and Previous Research

2.1.1   North and South Italian differences ante unification

This sub-section introduces the regional Italian differences by addressing the unique characteristics of pre-unitary Italian states. In the period ante-unification, North and South Italy were composed of many different states. These states presented singular jurisdictions: the Kingdom of Sardinia and the Kingdom of the Two Sicilies were independent states, the Kingdom of Lombardy–Venetia belonged to the Austrian Empire, and the Papal State was an independent state protected by France and Hapsburg Empire (Missiaia, 2014). She sustains that the different political spheres of influence among pre-unitary states affected the North-South political lines of thought. The North was under the influence of France and the Austrian Empire, while Britain protected the more independent South (Vicquéry, 2017). After the unification, the different political ideologies translated into a pro-Europe and liberal North and a more conservative and protectionist South.

North and South presented differences in population and educational levels. As reported in Table 2.1, the Kingdom of the Two Sicilies population was the larger of the whole country with 9.2 million people; it followed the Kingdom of Lombardy–Venetia and the Kingdom of Sardinia with 5.6 and 4.2 million people respectively. The levels of illiteracy and primary

school enrolment rate, provided by Zamagni (2019), show regional distinctions. The Kingdom of Lombardy–Venetia and the continental part of the Kingdom of Sardinia were the country's areas with the higher enrolment rate (93 and 90 per cent) and lower levels of illiteracy (54.2 and 53.7 per cent respectively). The opposite is true for the Kingdom of the Two Sicilies, which reported an enrolment rate of 18 per cent, and an illiteracy rate equal to 87 per cent – exceeded only by the island of Sardinia (89.7 per cent).

Under the trade perspective, Federico and Tena-Junguito (2014) and Foreman-Peck (2005) suggest that at the time of the unification, the North-South trade relationship was minimal. As was true for the political alliances, each state adopted its economic policies. Missiaia (2014) sustains that the Kingdom of Lombardy–Venetia and the Kingdom of Sardinia exported most of their manufactured goods, while they imported almost exclusively raw materials necessary for the industry. She also supports that the Grand Duchy of Tuscany adopted a laissez-faire attitude, favouring the opening of its market to the imports of foreign goods (mainly French and British ones) at local production expenses. On the other hand, the Kingdom of the Two Sicilies imposed relatively higher protectionist measures, encouraging local production.

From a financial viewpoint, the different Italian states had their independent monetary systems subordinated to the necessities of their economies. On the one hand, the Northern states opted for general taxation and government spending in infrastructures, namely railroads, streets, and hydraulic facilities. Consequentially the North constructed a relatively good infrastructure network at the expenses of a relatively high national debt. On the other hand, the ruling class of the Kingdom of the Two Sicilies played a limited role in the redistribution of resources – primarily due to its reluctance and inability to collect taxes (Chiaruttini, 2020). Furthermore, she advances that access to credit was limited in the South – almost inexistent in its rural areas. She suggests that the inefficient and fragmented financial system of the Kingdom of the Two Sicilies, together with the declining credibility of its financial market, constituted an obstacle to the region's economic development. Contrarily, the North enjoyed a relatively better international trustworthiness, which translated into Foreign Direct Investments (FDI) necessary to finance its projects.

Regarding the transportation network, North and South presented remarkable differences. As Table 2.1 reports, Northern states, like the Kingdom of Sardinia and the Kingdom of Lombardy–Venetia, developed most railways. In 1861, the Kingdom of Sardinia had 40 per cent of the Italian railroad, and 70 per cent of those was present in the area that today corresponds to Liguria, Lombardy and Piedmont. The South, instead, represented by the Kingdom of the Two Sicilies, did not possess the necessary capital and willingness of the ruling class for the development of the transport network. In 1859, the South disposed of only 99 km of railways, mainly constructed with foreign capital. Differences were also present on the road network. The South experienced a lower level of infrastructures and the worst connections between urban and rural areas than the North (Chiaruttini, 2020).

Table 2.1 Regional economic and social indicators, at the time of the unification.

	Population	Silk	Cotton	Wool
	Millions, 1861	No. Basins[4], 1857	No. spindles, 1857	No. looms, 1866
Piedmont - Liguria	3.6	25,000	197,000	3,050
Sardinia	0.6	-	-	-
Lombardy	3.3	34,627	123,046	550
Venetia	2.3	20,000	30,000	850
Parma-Modena	0.9	2,500	-	-
Papal State	3.2	5,000	30,000	400
Tuscany	1.9	3,300	3,000	600
Kingdom of the Two Sicilies	9.2	14,400	70,000	1,640
North	15.2	90,427	383,046	5,450
South	9.8	14,400	70,000	1,640
Italy	25	104,827	453,000	7,100

	Railways	Streets	Illiteracy	Enrolment in primacy education
	Km, 1859	Km, 1863	Percent of pop., 1861	Percent of net, 1861
Piedmont - Liguria	850	16,500	54.2	93
Sardinia	-	986	89.7	29
Lombardy	{522	20,901	53.7	90
Venetia			75	-
Parma-Modena	-	{25,766	78	36
Papal State	101		80	25-35
Tuscany	257	12,381	74	32
Kingdom of the Two Sicilies	99	13,787	87	18
North	1,730	75,548	69.2	46
South	99	14,773	88.4	23.5
Italy	1,829	90,321	75	43

Source: Zamagni (2019).
"-" is equal to zero. "pop." is population Differences between the parts and the whole are due to rounding. For further specifications see text.

The work presents now the economic condition of the diverse Italian states from north to south. The Kingdom of Sardinia presented two distinct realities in its territory: the Northern part – referred to Liguria and Piedmont – held the economic leadership of the country, while,

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[4] Silk basins are used in the production of silk and are adopted by economic historians as a proximate estimation of the silk production

separated by geographical constraints, the island-region of Sardinia was one of the least developed areas of Italy. This dualism is potentially grounded in the diverse geographic conditions and trade integrations between the two areas (Missiaia, 2014; Zamagni, 2019). In the Northern part of the kingdom, corn, potatoes, and livestock constitute most of the agricultural production. The economy of Sardinia was much more rural, even if it was rich in natural resources like lead, coal and iron, among others. Sardinia agriculture focused on transhumance[5], which offered lower productivity than the more private-oriented ownership of the Northern part of the kingdom (Zamagni, 2019). The strong distribution of wealth and the inflow of FDI, together with relatively flat terrain and an abundant water supply, permitted the Kingdom of Sardinia to develop hydraulic infrastructures that boosted the productivity of its agriculture. In this northwest part of Italy, characterised by a productive agriculture, industry development took place. Textile, manufacture and metallurgical industries were present before the unification.

The Kingdom of Lombardy–Venetia, located in the northeast part of Italy, presented an internal dualism similar to the Kingdom of Sardinia. The region of Lombardy represented the more economically developed area of the kingdom. In this area, the strong presence of hydraulic infrastructures permitted high agriculture productivity specialised in mulberry and rice cultivation. However, the production of silk exceeded all the others. To give an idea about the diffusion of silk production in Lombardy, it is worth mentioning Glaizer (1966 cited in Zamagni, 2019), which sustains that, in the years before the unification, the raw silk constituted 86 per cent of Lombardy exports. Additionally, Maestri (1858 cited in Zamagni, 2019) reports that one-third of the silk produced in Italy, and 40 per cent of silk cocoons, came from the region of Lombardy. If the region exported a large part of the produced silk to other European countries, the remaining part gave birth to the spinning and textile industry. Along with these industries, the mechanic and metallurgic sectors developed in the area (Missiaia, 2014). The relatively less developed area of the Kingdom of Lombardy–Venetia is denoted in the historical region of Venetia. Venetia suffered from lower agricultural productivity than its counterpart and a non-well established industrial sector. Corn and potatoes constituted the main agricultural products. The relatively economic underdevelopment of the area coincided with the decline of the Republic of Venice in 1797 (Zamagni, 2019).

Duchies of Modena and Parma share similar economic conditions with the Kingdom of Sardinia and Lombardy–Venetia. Differences are due to their limited size (Zamagni, 2019).

The Grand Duchy of Tuscany and the Papal State ruled central Italy. The Grand Duchy of Tuscany presented the typical hilly landscape of Tuscany, which did not offer the possibility to apply the modern hydraulic technologies implemented in the Northern states. For this reason, its agricultural production was lower than the Kingdom of Sardinia and Lombardy–Venetia (Zamagni, 2019). According to the author, the drivers of its economy were financial and handcrafted activities. She describes that even with the availability of metallurgic raw materials and marble, this nation-state did not develop a strong industry; instead, it exported the majority of its raw materials in an unfinished format. Missiaia (2014) advances that the missing industry

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[5] Transhumance is a form of pastoralism that moves the livestock from one pasture to another in a continuous seasonal cycle.

consolidation may be due to the free-market orientation of the region, which allowed the import of cheaper manufactured goods that prevented the realisation of the same products in the territory. The Papal State, instead, presented an agricultural-oriented economy in the inland, while the city of Rome survived thanks to Vatican related activities – like pilgrimages. As a result, agricultural productivity was low, and industries were absent.

The economy of the Kingdom of the Two Sicilies mainly offered agricultural products like wheat and highly value-added fruits and derivates, such as citrus, oily fruits, olives and wine (Missiaia, 2014). The geographic conditions, together with the labour force organisation, prevented the development of agricultural technologies, resulting in land productivity not even one-third of Lombardy one (Zamagni, 2019). She sustains that the social and labour organisation of the kingdom led to the concentration of wealth in the hands of few families. The phenomenon led to a population not too far from the subsistence levels and a conservative ruling class opposing any form of innovation. The low quality of infrastructures increased the cost of transportation, which undermined the export capacity of the area. Zamagni (2019) sustains that the protectionist economic policies and some government investments, adopted by the Kingdom of the Two Sicilies in the 1820s, brought to the development of small textile and metallurgical industries on the Neapolitan coasts. She continues affirming that most employed skilled workers were foreign, and the industrial products were sold exclusively in the internal market where the buyer was often the state. Besides agriculture and small industries, the economy revolved around small handcraft activities and few noble merchants. The protectionist and conservative attitude of the Southern elite brought the state into decline to the point in which a thousand men could conquer it – as it happened during the Italian unification.

To summarise, this picture captures a clear distinction between the North and South of Italy. In agriculture, the North developed corn, silk and rice while the South focused on the farming of wheat, olives and citrus. Differences were also present in the development of industries. In the North, a widespread network of factories focused on textile, mechanic and metallurgic goods. On the other hand, the South was not able to fully diversify its economy toward the more profitable industrial sector, and consequentially, it focused on agricultural production. Thus, the behaviour of the ruling class and the geographical characteristics shaped the economy of pre-unitary Italian states. The previously mentioned Table 2.1 reports the estimations of industrial development among the different states. The values of silk, cotton and wool, representing the three pillars of the textile industry, confirm the leading industrial position of the North in respect to the South at the time of unification. As the following sub-section will present, pre-unitary states' initial economic and social conditions reinforced with the national unification.

2.1.2 Unification's effects

This sub-section briefly presents the historical steps leading to the Italian unification, the country's economic condition from an international perspective, and the implications of the national unification on North and South Italy.

From a historical perspective, the Italian unification was a process more than an event. To establish the country's unity took more than a decade, several wars of independence and many revolts. Among the pre-unitary states, the Kingdom of Sardinia had a central role in forming Italian unification. After a war of independence, the Kingdom of Sardinia obtained the region of Lombardy in 1859. The year after, with the approval of Britain and France, the central Italian states, corresponding to the Duchy of Modena, Duchy of Parma and Grand Duchy of Tuscany, joined the Kingdom of Sardinia in this embryonal Italy. In 1861, Garibaldi's Military Expedition of the Thousand annexed the Kingdom of the Two Sicilies to the previous group of states, and he gave birth to the Italian unification. The Kingdom of Italy obtained Venetia in 1866 and the Papal State in 1870. The formation of Italy according to these borders lasted until WW1.

From an international perspective at the time of the unification, the role of Italy was marginal. The industrialisation of the country was a backlog in respect to the other European powers. The differences between Italy and the other west-European countries were remarkable in the textile and metallurgical industry. As previously reported in Table 2.1, Italy in 1857 produced around half a million cotton spindles, while Great Britain and France produce 30 and 5.5 million, respectively (Zamagni, 2019). The author suggests that in the production of steel, Italy produced 30000 tons of cast iron versus the 3.8 million and 1 million tons of Great Brittan and France. An improvement relative to the economic conditions of its trading partners happens only in the decade before WW1.

Considering the national income, Foreman-Peck (2005) indicates that, in the 1860s, around 70 per cent of the family income was spent on food and drink, leaving the population not too far from the subsistence level. Federico, Vasta and Nuvolari (2019) confirms this picture. The authors report that in 1862 the average Italian real wages for an unskilled worker were a fourth of those reported in London and half of those in Amsterdam and Leipzig. Italian real wages did not change much over time. Before WW1, Italian real wages were still a fourth of the London ones, and they became a third of those in Amsterdam and Leipzig. The three authors report differences in real wages between North and South Italy that lasted until the XX century. They found evidence that in terms of real wages, the northwest and northeast part of the country performed above the national average for most of the period, while the Centre and South performed relatively poorly. Foreman-Peck (2005) supports this interpretation by suggesting that the relatively lower Southern agricultural productivity, together with the low industrial development and the higher population, translated into a relatively lower income per capita. Eckaus (1961 cited in Foreman-Peck, 2005) estimates a regional difference in income per capita between 15 and 25 per cent before unification[6]. According to Federico, Vasta and Nuvolari

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[6] Estimations of the regional income gap between North and South at the time of the unification is a source of debate. For the opposite view – sustaining the income parities between North and South – see Malanima and Daniele (2011, 2014, 2017).

(2019), this "sizeable" divergence in the levels of real wages was present before the unification for strengthening with the development of industrialisation in the North.

Italy differs from the other European countries also in terms of heights. Peracchi (2008) sustains that Italy performed more poorly than the other European countries. As it is valid for income, the author reports a great diversity between North and South Italian heights. He suggests a difference between 3 to 5 cm in the average height of young men at age 20 between the two regions. Internal fluctuations of height were present. Peracchi (2008) found evidence that Northern people heights varied over time. They shortened around 1880 due to early industrialisation and the significant deteriorations of living standards. Then, Northern heights modestly raised in the following decades, thanks to the fruits of this modernisation. The work now considers the unification's effects on North and South Italy.

Following the Italian unification, the new country adopted economic policies following France and Britain laisse-fair political orientation. Italy promotion of free-market policies saw several governmental investments to incentivise the construction of infrastructures serving the industry (Missiaia, 2014). The Italian government also adopted public policies to overcome the dualistic orientation of the country, but their effect was limited. Guided by the ideas of a liberal elite, public policies consisted in the creation of investment banks, reform of the fiscal system and taxation, privatisation of proprieties, nationalisation of railroads, reorganisation of the banking system and education (Zamagni, 2019). The fruits of most of these investments are in the numbers. From 1861 to 1876, the author reports that the length of railways increased from 1829 to 7686 km, telegraphic lines passed from 9860 to 21437 km, and post offices expanded from 2200 to 2907. Most fiscal policies were in deficit, which brought the country into debt for the last two decades of the XIX century. Finally, these investments paid back at the beginning of the XX century with substantial economic growth and the extinction of the sovereign debt.

A significant implication of the Italian unification was the strengthening of the economic divide between the North and South. Besides the directions of fiscal policies, the trajectories of the two regions did not change. The North industrialised at a higher speed, while the South remained rural. The substantial divergence between the two regions started in the 1880s when the northwest part of the country undertook a substantial growth in industrialisation. Missiaia (2014) analysed the regional development in terms of GDP by comparing it to industrialisation. The similarity in their trends is striking. The Northern rise of industrialisation matches with its development in income, while the stagnant, and to some extent recessionary, industrial development of the South pairs with the persistent low levels of regional revenue. As the author reports, the national unification reduced the internal barriers and consequentially transport costs. This widening of the market led to an increase in the degree of specialisation of the two regions, translating in a Northern orientation toward the profitable metallurgic and manufactured industries, while the South found its comparative advantage in agricultural production. In terms of education, the benefits of a national union have been remarkable in the two regions. As it was true for other sectors, the mismanagement of the Kingdom of the Two Sicilies also prevented the development of the educational system. Cappelli (2015) underlines the positive effects that the unification has had on the two regions' human capital development. Remarkable policies restructured the redistribution of resources, administration and surveillance by the adoption of a centralised system.

2.1.3 Monetary implications

This sub-chapter analyses the monetary implications of the national unification. The work firstly presents an overview of the Italian monetary system; then, it focuses on the regional effects of the common currency.

In 1861, along with the Italian unification, the Italian Monetary Union was established by melting under the same currency the different pre-unitary Italian states. As it was true for the Italian unification, also the financial union took place in several years. At the dawn of the unification, the initial monetary conditions saw the Italian peninsula inhabited with roughly 270 types of legal-tender coins composed of different weight, metal content and numeric system (Toniolo, Conte & Vecchi, 2003). The Lira Italiana, or simply lira, became the legal tender of Italy in 1862. The new bimetallic currency – in gold and silver coins – was inspired by the Kingdom of Sardinia's one, which in turn refracted the France monetary system.

The establishment of the national currency was not straightforward. The lira found several obstacles in front of its establishment: regional resistance to the new unified state, a slow transaction between old and new coins, and technical-logistic problems. Toniolo, Conte and Vecchi (2003) suggest that it is only in the mid-1870s, after withdrawing the majority of the old coins and implementing the circulation of paper money – from roughly 10 per cent of the total circulation in 1862 to 70 per cent in the mid-1870s – that the lira became the sole and recognised legal tender of Italy. At that moment, the IMU was established.

From an international perspective, the period between 1870 to 1890 saw many European countries adopting the gold standard. The gold standard consists of an international monetary system based on a fixed exchange rate between member states and currency convertibility in gold. Italy discontinuously belonged to the system since it could not maintain a stable and continuous convertibility of its currency. In the years 1866 and 1893, Italy temporarily removed the convertibility of its currency due to financial distress and abandoned the system, for then returning to the gold standard once the convertibility of its currency has been restored (Baffigi et al. 2015). The gold standard allowed Italy to boost its economic growth thanks to the fixed exchange rate that allowed many capital inflows from France, Britain, and Germany (Fenoaltea, 1988).

Along with the gold standard, in 1865, Italy, France, Belgium and Switzerland formed the Latin Monetary Union. The union provided a first attempt for international monetary cooperation. By belonging to the union, the member state pegged their currencies to each other to increase their monetary stability. This method was effective since it reduced the currency volatility, but it implied an enormous effort from the single states to maintain the accorded exchange rate. The agreement weakened in 1866 when Italy removed the convertibility of its currency and subsequentially when France lost the Franco-Prussian war. This first attempt for international monetary cooperation ended in 1927.

Regarding the regional implications of the lira, it is relevant to keep in mind the initial monetary differences between the two regions. Among the dissimilarities between the two regions, the adoption of silver coins was abundantly present in the South of Italy, while the North preferred gold and paper money (Chiaruttini, 2018). Additionally, the returns of investments were

positive in the North and negative in the South (Foreman-Peck, 2005), mainly due to the higher Southern currency volatility (Vicquéry, 2017). Banking differences were also present, with the North developing a banking network able to offer credit from the urban spaces to the countryside, while in the South, the access to credit was mainly limited in the major cities (Chiaruttini, 2020).

Along with introducing the lira, the monetary union's advantages and disadvantages materialised in the two regions. Among the advantages, the common currency allowed an easier comparison of prices in the peninsula. This pattern also strengthened with the accession to the gold standard and the Latin Monetary Union. Furthermore, these memberships facilitated trade at the international level, and thanks to the increase in investments' confidence, they translated in a higher degree of capital inflows in the country (Fenoaltea, 1988). Additionally, Chiaruttini (2020) underlies how the enlargement of the regional banking sector to a national one contributed to its development. Besides the initial difficulties deriving from adopting a disruptive innovation, she suggests that the new and broader system resulted more efficient and able to reach the previously forgotten rural areas.

Among the disadvantages, instead, Foreman-Peck (2005) sustains that the IMU was a sub-optimal solution for Italy since the two Italian regions did not compose an Optimal Currency Area (OCA). The concept of OCA represents a situation in which a territory with economic commonalities is favoured by the introduction of a single currency – by boosting its economic development. According to Mundell (1961 cited in Investopedia, 2021), an OCA is an optimal solution if a territory possesses labour and capital mobility, price and wages flexibility, a risk-sharing mechanism and similar business cycles. In North and South Italy at the time of the unification, these conditions were not present, mainly due to the scarce trade between the two regions (Foreman-Peck, 2005). On the same perspective, Vicquéry (2017) suggests that the trade flow between the two regions was minimal. The scholar also affirms that if the initial trading conditions of North and South Italy did not support a currency unification, its establishment would imply an economic specialisation of the two regions according to their comparative advantages. The result would, and had been, a regional dualism in economic production compounded by a single currency – which usually prevents monetary accommodations in the interest of a specific region. An additional disadvantage of the single currency lays in its introduction. As previously highlighted, the shifting from the regional currency to the national one did not complete until 1875, leaving a substantial part of Italy in an unstable situation (Chiaruttini, 2018; De Mattia, 1959).

2.1.4 Debate on the North-South divide

This section addresses the main explanations that economic historians attribute to the North-South gap. The current frontier of knowledge identifies the causes of the North-South Italian gap in different geographic conditions (Zamagni, 2019), a diverse institutional attitude (Felice & Vasta, 2015), the presence of organised crime (Ciocca, 2013; Felice, 2018), to the role of public policies in shaping education (Cappelli, 2015), and in the industrialisation of the two regions (Zamagni, 1990; Federico, Nuvolari & Vasta, 2019). A complementary factor contributing to the divergence is the diverse pre-unitary financial and banking conditions of North and South Italy (Chiaruttini, 2020).

According to Zamagni (2019), the reason behind the North-South gap lays in the different geographical conditions that characterised the two regions. From one side, there is the North: a region with a large and flat fertile terrain and abundant in freshwater. Its soil permitted the high farming cultivation – consisting of the most efficient method, organisations and products. To the other side, there is the South: a hilly territory marked by the scarce presence of freshwater where modern agricultural techniques of cultivation hardly apply. Additionally, the geographical advantage of the North consists in its proximity to other states, which may have promoted trade. It is also true that the sea surrounds South Italy. This factor may facilitate trade through maritime transportations, but it is relevant to mention that the trading routes shifted from the Mediterranean Sea to the Atlantic Ocean around the XVI century. According to Zamagni (2019), these geographical differences settle the path for creating the North-South gap. However, she is also aware that the geographic conditions per se do not translate into economic development and well-being. The scholar recognises the Northern ability to implement its geographic advantage through the adoption of public policies to redistribute wealth.

Cafagna (1988) suggests that the fundamental ability for the development of a region results from its attitude to modernise itself according to the required needs of the time. The author distinguishes between "active" and "passive" modernisation. With "active" modernisation, he implies the actions of "one or more political or social actors [that] take up the challenge and engage in "modernising" a country" (Cafagna, 1988 cited in Felice & Vasta, 2015, p. 45). Instead, a "passive" modernisation sees a country – not led by any precise actor – that do not overcome the presented challenges with any particular type of action. Cafagna (1988) sustains that North and South of Italy respectively embodied the two types of modernisations.

Felice and Vasta (2015) further develop Cafagna's (1988) idea of "active" and "passive" modernisation by applying the concept to the regional and local level. They identified two distinct types of institutions that may have shaped the Italian regional gap. The authors found in the North an abundant presence of "inclusive" institutions acting for the common good of the people, while they noted that the South created "extractive" institutions – "where the elites have the interest to pursue some modernisation in order to grasp the resulting extra output, yet preventing the rest of the population from taking any advantage of it" (Felice & Vasta, 2015, p. 45). Felice (2018) accords with this line of reasoning, underlying that the regional differences in institutions were also present in the unified country.

A further supporting argument for the regional divide is the higher presence of organised crime in the South compared to the North. Operating from the XIX century in Southern Italy, Mafia, Camorra and 'Ndrangheta constitute those types of social institutions that prevent an area's development. Their actions favourite monopolies, higher costs and discourage free-market competition (Felice, 2018). In his article, Ciocca (2013) reports how the organised crime in the South contributed to the widening of the North-South divergence during the first decade after unification. According to the author, the Southern discontent, rising from the overcoming of traditional centres of power, found its existence in a constant war against the state.

The regional differences in human capital give another possible explanation in explaining the North-South divide. The work of Cappelli (2015) shows how different institutional policies shape the level of human capital in an area. Cappelli (2015) found evidence that more

prosperous and inclusive institutions, abundantly located in the North of the country, developed the necessary policies for a well-functioning educational system, while Southern institutions, generally poorer and with a more extractive attitude than the Northern one, were not able to provide the same quality education. The author found evidence that centralised policies – implemented in 1911 to redistribute resources and overcome the administration of extractive institutions – played a significant role in increasing the Southern level of human capital. However, the impact of a centralised reform arrives late, and its limited power did not reshape the ancient regional levels of human capital.

Industrialisation also plays an important role. Zamagni (1990) notes the affinity between Northern industrialisation and its specialised skilled labour deriving from human capital. In support of this argument, Missiaia (2014) suggests that industrialisation took place in the North thanks to endowments conditions, like human capital, while access to foreign markets, given by geographic proximity, only played a relatively smaller role. If from one side the fundamental determinants of industrialisation are still unclear, to the other, its benefits and effects are known. Federico, Nuvolari and Vasta (2019) sustain that industrialisation – through the realization of high-value products – strengthened to real wage disparity between North and South, leading to a widening regional gap.

A complementary fact to consider in the North and South divergence is represented by the financial sector. Chiaruttini (2020) suggests that the differences in the financial development between the two regions played a relevant role in generating the North-South. The author found evidence that the diverse regional conditions – in terms of financial stability, access to credits and attractiveness of FDI – are possible explanations for the greater development of the North compared to the South. However, she also advances that adopting new financial institutions and practices – deriving from the national unification – had positive (narrowing) effect on the regional gap. The purpose of this thesis is to contribute to the North-South debate by focusing on the financial perspective. In particular, the paper analyses the role of the exchange rates between the lira and the currencies of the ten closest Italian trading partners in shaping the regional income disparities. The following section clarifies the approach of the analysis.

2.2   Theoretical Approach

This section offers an overview of the research approach and theoretical notions adopted in the research. In particular, the section presents the steps addressed in the analysis, and for each of them, the work provides connections with the existing theoretical knowledge.

The time frame considered in the analysis – between 1870 and 1914 – corresponds to a period of increasing globalisation, which led to a reduction of transport costs. O'Rourke and Williamson (1994) suggest that an intranational convergence of commodity prices characterises the period. According to this research, the international price convergence may have generated diverse financial distresses between North and South Italy, a threat for the IMU, and possible regional differences in economic development. As presented in the literature review, North and South Italy specialise in the industrial and agricultural sectors. The economic dualism between

the two regions – bounded into a single currency – potentially created asymmetries in the type of financial policies needed to contrast possible external shocks. Their heterogeneous economic structure has potentially generated various and distinct economic cycles, which are complex to be jointly accommodated by common monetary policies. In the eventually of a financial distress, regions belonging to the same currency only have access to the effects of one type of monetary policies while their necessities may be plural and distinct. The results imply that the application of financial policies might have favoured one region but not the other.

By investigating the export and import side of the development of an area, the research considers the effects of exchange rate on shaping exports and imports of North and South Italy, and consequentially, contributing to the respective regional development. In the analysis, the exchange rate between Italy and its trading partners captures the effects of monetary policies. This assumption bases on the fact that the exchange rate directly reflects the outcome of the majority of financial instruments employed by the monetary authorities.

For answering the research question, four are the major steps adopted in the analysis: firstly, the work inspects the exchange rate fluctuations between the lira and the currencies of the ten closest Italian trading partners. Currency fluctuations might have changed the Italian competitiveness at the international level, and since North and South Italy shared the same currency but had different economic specialisations, exchange rate fluctuations may have generated potentially critical conditions in the two regions. For analysing the effects of exchange rate fluctuations, the research calculates the Nominal Effective Exchange Rate (NEER) between Italy and its main trading partners. NEER is a better indicator than the exchange rate itself since it accounts for the trade weight between the parties (sub-section 3.1.3 present additional specifications). From a theoretical perspective, during a financial distress, such as wars, economic crisis or fall in prices, monetary policies are applied to stabilise the currency or reduce unemployment. The effects of financial policies – like the increase or decrease of the money supply – influence the exchange rate. Fluctuations of the exchange rate translate into an appreciation or depreciation of the national currency compared to the foreign ones. Changes in currency values – where appreciation is an increase in the home currency's value compared to the foreign ones, and depreciation is a decrease in the home currency's value – affect the state competitiveness at the international level. In particular, an appreciation of the exchange rate makes a country's exports less competitive in the international market and imports less expensive. In this perspective, an appreciation positively affects entities closely related to imports since they experience a relative advantage in buying foreign goods. Remarkably among them are those sectors strongly linked to the imports of raw materials. In the Italian case – where raw materials are generally scarce – a stronger exchange rate might have offered a relative advantage to the industrialised North – requiring more raw materials for its industries than the relatively agrarian South. Contrary, among the losers of an appreciated lira, export-oriented entities experience a relatively lower income from their exports. Since their incomes partially relate to the exchange rate level, a stronger exchange rate translates in fewer lire for the same amount of exports. The opposite is valid for a depreciated currency. [7]

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[7] An additional threat to export-oriented entities' incomes, deriving from an appreciation of the exchange, lays in a potential reduction of export volumes in the medium-long term. This aspect is not considered in the analysis.

Secondly, in the eventuality that the research finds some fluctuations in the exchange rate, the study proceeds with calculating the incomes of regional export-oriented entities. This passage aims to capture potential changes in the incomes of these entities caused by fluctuations in the exchange rate. Along with the actual income values, the research estimates other two hypothetical incomes deriving from the application of two counterfactual exchange rates. The research considers export-oriented entities since the exchange rate strongly affects their incomes. Section 3.2 provides further explanations on the method, while section 4.1 reports the results of this passage. In a theoretical framework, the calculation of income and its counterfactuals offers an overview of export-oriented entities' potential income losses (or gains). In the eventuality that the currency has appreciated (depreciated), the incomes of export-oriented entities would result lower (higher). This passage reflects the income implications on the export-oriented entities of the two regions, but for capturing the effects of the exchange rate on the regional development, the research investigates the fluctuations of regional prices.

This step captures the fall (or rise) in prices between North and South Italy; section 3.2 provides further explanations, while section 4.1 reports the results. According to theory, in a monetary system, regional asymmetric fluctuations of prices cannot be mutually accommodated through the manipulation of the national exchange rate. The preclusion of financial accommodations in the mitigation of regional necessities may affect the competitiveness of export-oriented entities between two regions. From an export perspective, if prices fall relatively sharper on one region than the other, monetary policies cannot devaluate the exchange rate to artificially boost the competitiveness of the regional products without harming the development of the other region. Similarly, if the prices of one region rise compared to the other, financial policies cannot appreciate the currency to contain the effect of inflation without undermining the development of the other region. Through the analysis of regional prices, the research aims to capture potential threats to the development of export-oriented entities between the two regions.

The last step in the analysis (covered in section 4.2) generalises regional export-oriented entities' losses (or gains) to the whole regional development. For performing the passage, the research considers the export and import shares to GDP. If the trade shares to GDP are substantial, export-oriented entities play a relevant role in shaping the regional development, and thus, the effects of the exchange rate might have also affected the development of the two regions.

3   Data and Method

3.1   Data

This chapter is divided into two sections: Data and Methodology. The Data section reports the data sources, assumptions and possible limitations. The major types of data adopted in the analysis are four: observations regarding North-South exports and imports in terms of volumes and regional product prices (sub-section 3.1.1 and 3.1.2); year-based nominal exchange rates between the lira and the currencies of the ten closest Italian trading partners (sub-section 3.1.3); and the regional trade shares to GDP (sub-section 3.1.4). The second section – Methodology – offers an overview of the method used in the analysis. The research moves now in the presentation of the distinct types of data.

3.1.1   Trade balance

The research retrieves national export data from Federico et al. (2011), and it adopts them to study regional income fluctuations. In particular, the research utilises them in calculating the income losses (or gains) of regional export-oriented entities deriving from a variation of the exchange rate.

If from one side, economic historians reconstructed the national estimations of the Italian trade flows up to the national unification; to the other, regional balance of payments are still missing. Zamagni (2019) offers the closest observations of regional trade balance by suggesting the estimations of imports and exports of pre-unitary Italian states. Table 3.1 reports the author's values. Ante-unification, the North accounted for 83 per cent of the Italian imports and 78 per cent of the national exports. The South-Islands' balance of payments represented 17 per cent of the national imports and 22 per cent of the exports. Her estimations report that the North – composed by Piedmont, Liguria, Lombardy, Venetia, Parma-Modena, Papal State, and Tuscany – was running a trade deficit; while the South – constituted by the states of Kingdom of the Two Sicilies and Sardinia – was in a timid trade surplus.

Table 3.1 Trade balance of pre-unitary Italian states in current lire, 1858.

| | Imports | Exports | Imports | Exports |
	Thousands of lire	Thousands of lire	Percent of Italy, (Italy = 100)	Percent of Italy, (Italy = 100)
Piedmont - Liguria	303000	217000	37	30.8
Sardinia	18000	20000	2.2	2.8
Lombardy	86000	127000	10.5	18
Venetia	90000	60000	11	8.5
Parma-Modena	44000	33000	5.4	4.7
Papal State	72000	63000	8.8	8.9
Tuscany	79000	45000	9.6	6.4
Kingdom of the Two Sicilies	128000	139000	15.6	19.7
North	674000	545000	83	78
South	146000	159000	17	22
Italy	820000	703000	100	100

Source: Zamagni (2019).

As previously highlighted, the North is composed of Piedmont-Liguria, Lombardy, Venetia, Parma-Modena, Papal state and Tuscany; the South is composed of the Kingdom of the Two Sicilies and Sardinia. Differences between the parts and the whole are due to rounding. For further specifications see text.

This paper adopts some assumptions to overcome the gap in the literature referred to the regional imports and exports estimations. Starting from Zamagni's picture representing the diverse situations of pre-unitary Italian states and attributing the production and trade of distinct product-categories to one of the two regions, the work estimates the regional trade balance. This assumption lays in the regional differences in economic specialisation and geographical constraints that characterised the North and South of Italy (Zamagni 2019). During the first decades after unification, the two regions undertook different directions in developing their economy. The Southern part of the country specialised in agriculture, while the Northern one developed an industry-related economy.

In assigning specific product-categories to one of the two regions, the work self-imposes three guidelines to respect: firstly, to create categories that represent a distinct division among typical regional products mirroring the economic differences between North and South. For fulfilling this point, the research initially adopts a literature review based on the works of Zamagni (2019), A'Hearn and Venables (2011), Felice (2018), and Foreman-Peck (2005), among others – which offers a general understanding of the regional productions; then, the study creates the product-categories by associating the notions of regional productions to national import-export data retrieved from Federico et al. (2011). The authors' data reconstruct the Italian trade balance from 1861 to 1950 by analysing the goods transited through Italian customs. Their work reports yearly trade observations of imports and exports for 6000 product-categories classified by SITC (Standard International Trade Classification). In addition, the authors reconstructed the quantities and prices of imports and exports between Italy and its ten closest trading partners.

The second objective for the realisation of the product-categories is to consider an export and import share large enough to give robustness to the future results. For achieving this result, the research focuses on the trade of the most traded goods (in terms of value) estimated by Federico et al. (2011). Lastly, the work expects the Northern and Southern trade values – deriving from the trade of considered product-categories – to be in line with the initial regional trade values advanced by Zamagni (2019). Nevertheless, some differences are present since the estimations may variate over time, and also because this analysis only considers exports and imports of goods, while Zamagni's estimations (2019) detect the movements of capitals and reserves.

Based on the regional differences and the imposed guidelines, the research defined the regional product-categories. Table 3.2 reports the export and import categories of goods attributed to the North and South of Italy. The work attributes to the South the production and export of most agricultural products that require a warm climate – typical of the South of Italy. Silk and rice are excluded from Southern production since they represent a Northern activity. Additionally, coral, sulphur and aromatic essences are also attributed to the South since they represent typical Southern commerce. The research attributes to the relatively more industrialised North the realisation and commerce of the majority of manufactured goods. As sources of Northern exports, the work distinguishes between the categories of raw silk, diverse types of manufactures and fabrics – typical of industrial fabrication. The food-and-drink category contains regional foodstuff such as Gorgonzola, Grana and Vermouth. Rice is also a Northern production since its cultivation requires a source of abundant water supply.

This work adopts the same reasoning to allocate specific product-categories to the imports of a unique region – based on its relative abundance. This simplification of the model assumes a clear distinction of imported goods between the two regions. Since, in reality, this may not have always been the case, section 4.3 will address the limitations of this assumption. The study assumes that the relatively poor industrialised South imported the necessary finite manufactured goods, categorised as manufactured goods and fabrics. The research accredits to the Southern imports the inputs needed for agricultural production, such as fertiliser, livestock, and agricultural inputs like hay, seeds, and agricultural machinery. The category rice refers to a Southern import since its production was absent in the region. The Northern imports are raw materials and half-processed manufactured goods necessary for the functioning of the industry, such as coal and oil, raw materials, yarns and other industrial inputs. Wheat is also a Northern import.

Table 3.2 Goods categories of regional exports and imports.

Exports			
South		North	
Wheat	Wine	Rice	Food and Drink
Olive oil	Coral	Raw Silk	Cotton fabric
Citrus	Sulphur	Silk manufacture	Other fabric
Dry Fruits	Aromatic essences	Silk fabric	Other manufactured goods

Imports			
South		North	
Rice	Manufactured goods	Wheat	Other raw materials
Fertilizer	Silk fabric	Coal and oil	Cotton yarn
Livestock	Cotton fabric	Raw silk	Other yarn
Agricultural inputs	Other fabric	Raw cotton	Industrial inputs

Source: own elaboration based on the Sitc product classification of Federico et al. (2011), and Zamagni (2019) notions.

Each category corresponds to a variety of related goods and products. For example, the Southern category "Citrus" corresponds to goods like oranges, lemons, citrons, citrus juice and peel. For further specification about the products of each category, see Federico et al. (2011). For further specifications see text.

Figure 3.1 reports the regional export and import estimations based on the above product-categories. The figure shows that North and South Italy imported at an almost constant rate until the 1890s. After that, the Northern part of the country increased exports and imports – emphasising its persistent higher foreign trade compared to the South. To note is also that from 1870 to 1885, the two regions had an overall trade balance in equilibrium. However, after 1885, the North mainly ran a trade deficit, importing more goods than those exported, while the South experienced an overall positive balance of trade. To note is that the reported export and import estimations differentiate from the actual national trade since the research only considers the trade of defined product-categories. A more detailed explanation follows.
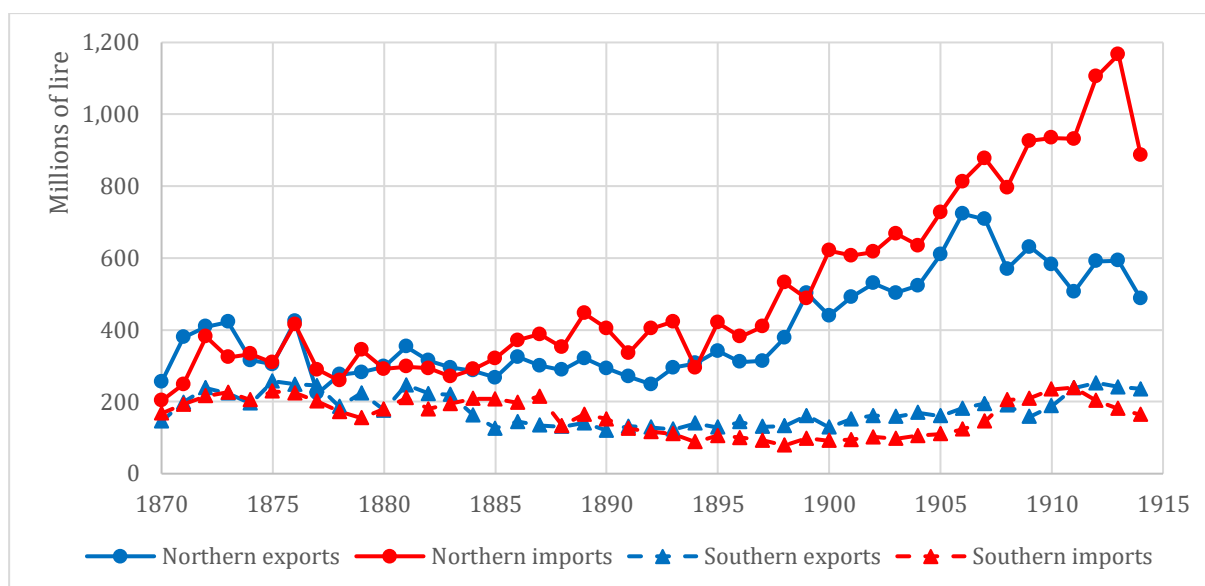
Figure 3.1 Considered regional imports and exports in current lire, 1870-1914.

Source: own elaboration from Federico et al. (2011) data.
For specification see text. For actual values see appendix.

Table 3.3 reports the considered regional shares of imports and exports (for the actual values, see Tables A.1 and A.2, appendix). North and South export estimations – based on the above product-categories – are added to obtain the considered exports. The table reports the shares of considered exports to the actual national values. Since the research only considers a limited number of goods, the considered exports result a fraction of the actual ones. For example, if a considered export value is equal to 75 per cent, it signifies that the sum of North and South exports considered in the research represent three-quarters of the actual national exports. In this case, the missing quarter – not considered in the analysis – is composed of products that are not exclusively attributable to one of the two Italian regions. Some examples of products excluded from the analysis are foodstuff, coffee, sugar, and tobacco. The other two columns – North and South – describe the regional shares of exports to the considered one. The same reasoning applies to imports.

The estimations depict North of Italy exporting between 80 to 48 per cent of the considered products, while the South possibly experienced a relatively higher internal market orientation. In the initial part of the period, the Southern exports were almost as relevant as the Northern ones. According to the data, the considered Southern exports exceeded the Northern ones in 1877. However, the Southern export declined over time if compared with the Northern one. Missiaia (2014) also report this tendency. She sustains that the South, through the exportation of high value-added agricultural products, experienced a high export demand between the 1870s to 1880s, while in the decades before WW1, the region suffered from the increasing US competition. The estimations of the regional imports present North of Italy importing at an increasing rate and with a regional share higher than 55 per cent compared to the South. Regarding the considered export estimations, the research considers between 57 to 32 per cent of the national exports, while the import estimations are slightly less representative: considering between 50 to 34 per cent of the national imports.

Table 3.3 Considered trade and regional trade balance, 1870-1914.

	Exports			Imports		
	Considered	North	South	Considered	North	South
	(Per cent of national exports)	(Per cent of considered exports)		(Per cent of national imports)	(Per cent of considered imports)	
1870	53	64	36	41	55	45
1871	53	66	34	46	56	44
1872	56	63	37	50	64	36
1873	57	65	35	43	59	41
1874	52	62	38	41	62	38
1875	54	54	46	44	57	43
1876	55	63	37	48	65	35
1877	49	48	52	42	59	41
1878	44	60	40	40	60	40
1879	46	56	44	40	69	31
1880	42	63	37	38	62	38
1881	50	59	41	38	59	41
1882	46	59	41	35	62	38
1883	43	57	43	34	58	42
1884	41	64	36	37	58	42
1885	35	68	32	34	61	39
1886	44	69	31	38	65	35
1887	39	69	31	36	64	36
1888	43	69	31	39	72	28
1889	46	70	30	42	73	27
1890	43	71	29	40	73	27
1891	43	67	33	39	73	27
1892	37	66	34	43	78	22
1893	39	71	29	43	79	21
1894	42	69	31	32	77	23
1895	44	73	27	44	80	20
1896	42	68	32	40	79	21
1897	40	71	29	42	81	19
1898	42	74	26	43	87	13
1899	46	76	24	39	83	17
1900	42	77	23	42	87	13
1901	46	76	24	41	87	13
1902	47	77	23	40	86	14
1903	43	76	24	38	87	13
1904	43	76	24	38	86	14
1905	44	79	21	37	87	13
1906	47	80	20	35	87	13
1907	46	78	22	34	86	14
1908	44	75	25	34	80	20
					Continues …	

	Exports			Imports		
	Considered	North	South	Considered	North	South
	(Per cent of national exports)	(Per cent of considered exports)		(Per cent of national exports)	(Per cent of considered exports)	
1909	41	80	20	36	82	18
1910	36	76	24	36	80	20
1911	33	68	32	34	80	20
1912	34	70	30	35	84	16
1913	32	71	29	37	87	13
1914	32	67	33	36	84	16

Source: own's elaboration from Federico et al. (2011) data.

The national imports and exports exclude used products and temporary exchanges of goods. For specification see text.

3.1.2 Regional prices

The research also adopts products prices and quantities from Federico et al. (2011). The work assumes no differences between the Italian regional prices and the international ones. The assumption is motivated by the need to simplify the model since the research of international prices for each good in the product-categories is unsuitable in the given amount of time. In Federico et al.'s (2011) data, imported or exported goods prices are the same among the Italian trading partners, but they variate over time. The research converts the different unit of measurements in quintals[8] and all prices are in current lire per quintal. Only the category "Livestock" contains prices in lire per unit.

The research calculates the weighted average price of each product-category for any given year. The weighted average price corresponds to the average of traded good prices belonging to a specific category, weighted for their relative traded quantity. The process is repeated for each category, trade flow and region. The results capture the overtime prices fluctuations of goods belonging to a defined category. Figures 3.2, 3.3, 3.4 and 3.5 report the different exports and imports product-category price fluctuations of North and South Italy – while estimations of distinct product-category prices are reported in the appendix. Figures 3.2 and 3.3 report North and South export prices, while Figures 3.4 and 3.5 report the regional import ones. Prices are in current lire, and the reference year – to facilitate the comparison among the values – is 1881. For further simplifying the interpretation, the work decides to adopt the same scale among the four figures. To note, the missing observations for some initial years in the category "wheat" and "industrial inputs" in Figure 3.4. Additionally, the Northern category "Food and drink" and the Southern "Wine" are excluded from the graphic representations since their data are available only from 1898. Regarding the trends, it is possible to see a high variation in prices in all four figures before 1881 and a more stable pattern following the reference year.

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[8] The research mainly considers quintals as a unit. All bottles are approximated to contain one litre, and all litre weigh one kilogram.
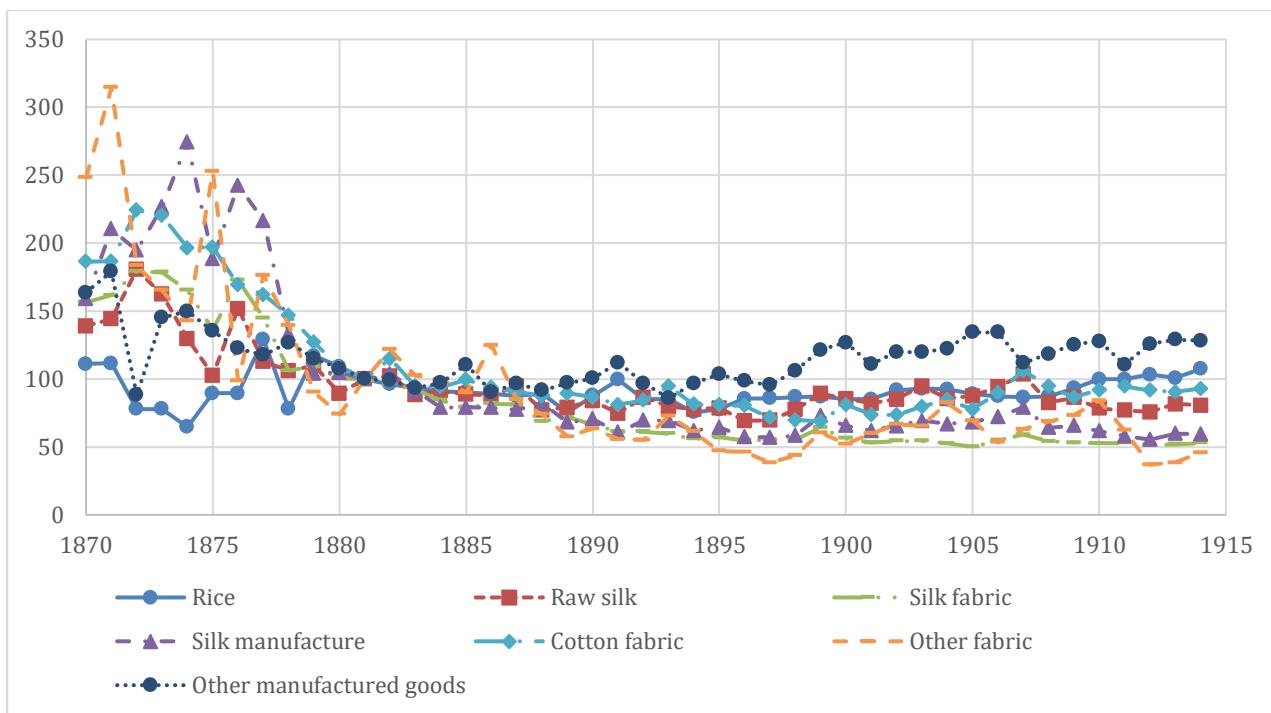
Figure 3.2 Northern export prices of product-categories in current lire per quintal, 1870-1914.

Source: own's elaboration from Federico et al. (2011) data.
1881=100. For specification see text. For actual values see appendix.
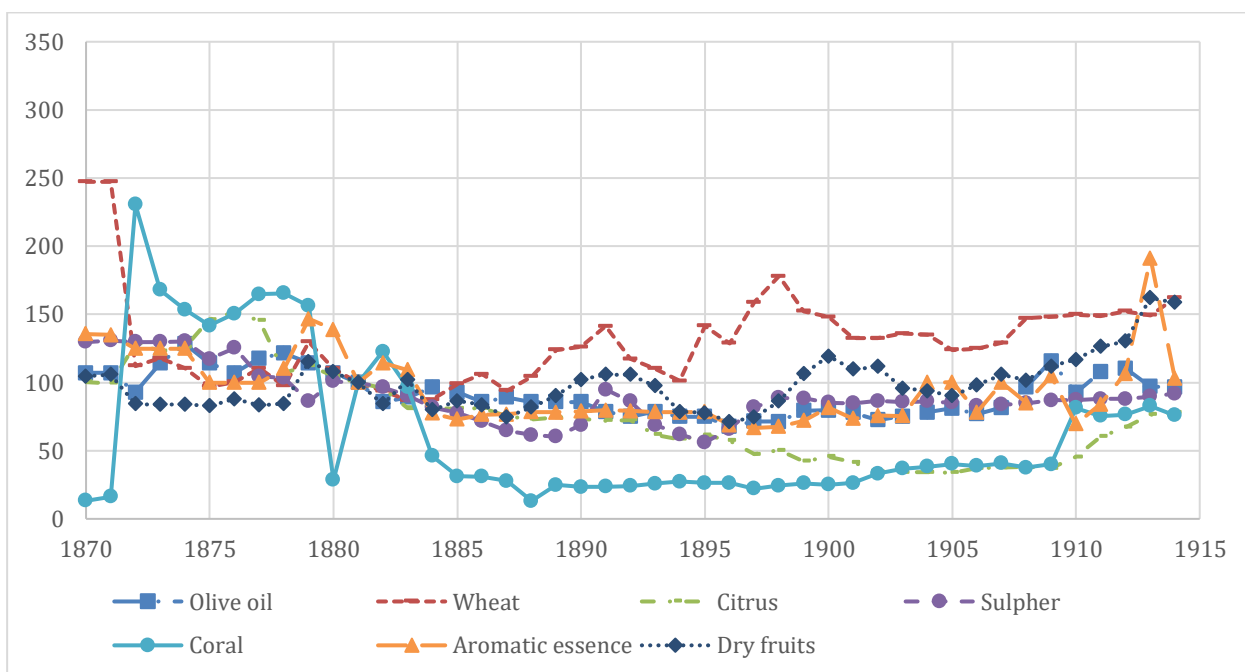
Figure 3.3 Southern export prices of product-categories in current lire per quintal, 1870-1914.

Source: own's elaboration from Federico et al. (2011) data.
1881=100. For specification see text. For actual values see appendix.
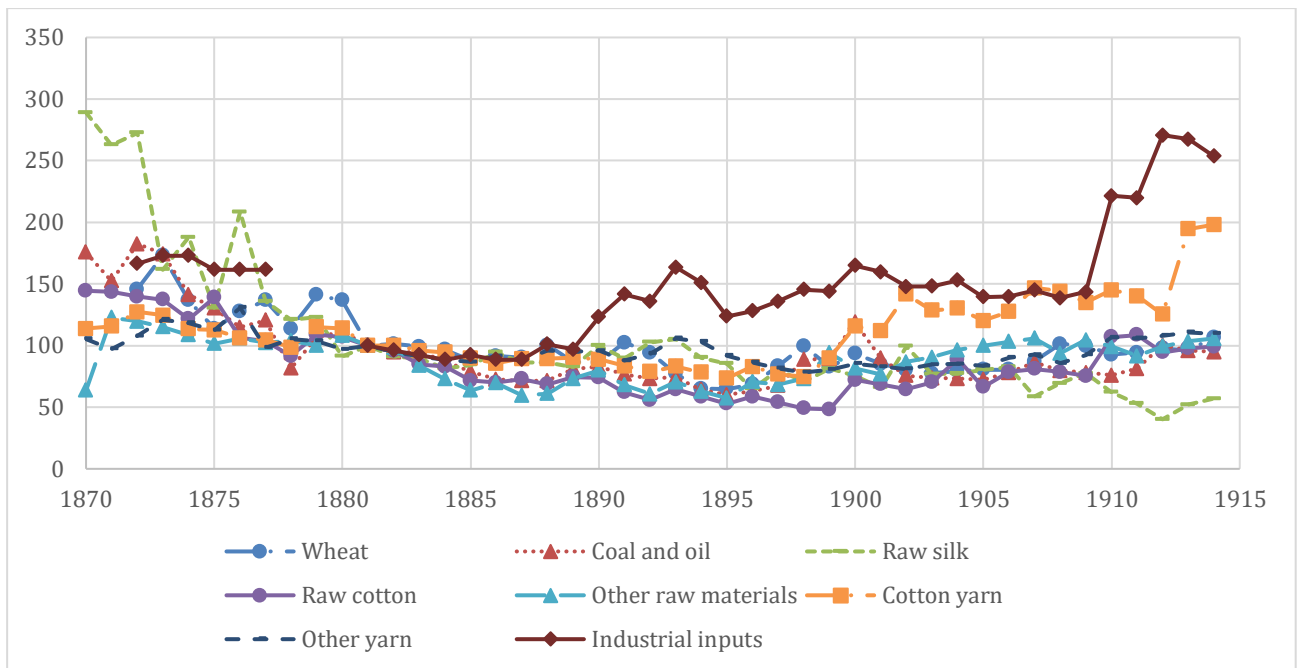
Figure 3.4 Northern import prices of product-categories in current lire per quintal, 1870-1914.

Source: own's elaboration from Federico et al. (2011) data.
1881=100. For specification see text. For actual values see appendix.
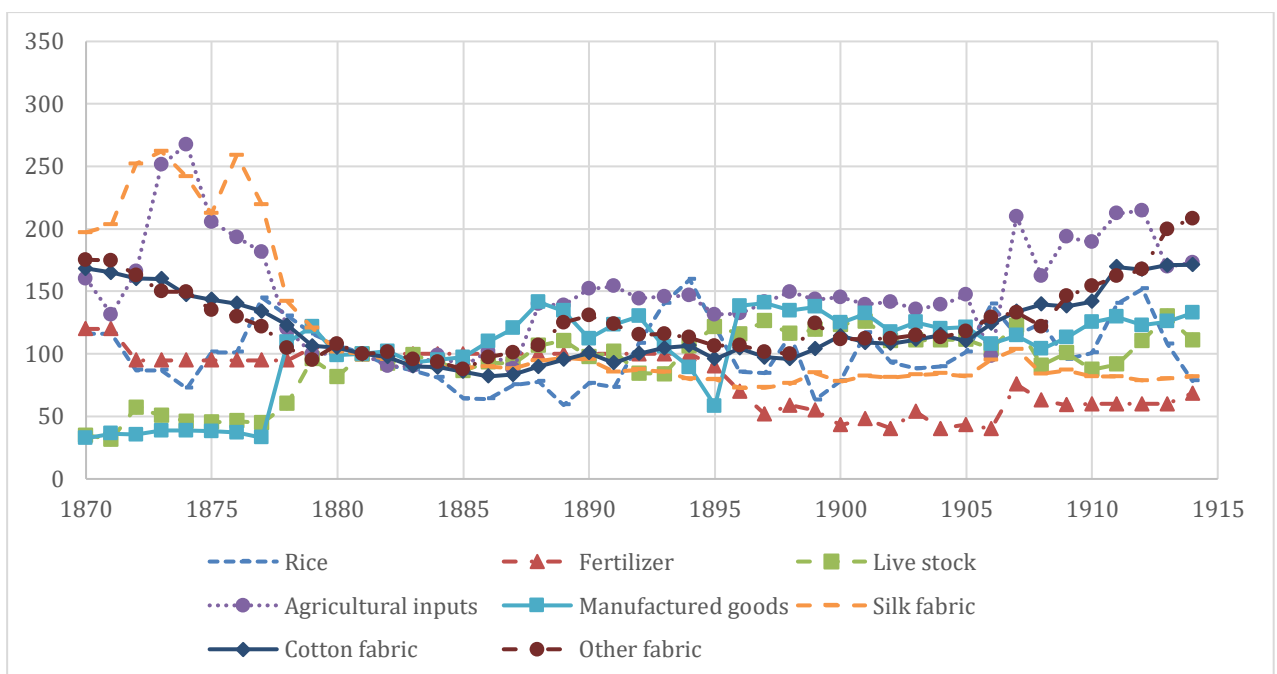
Figure 3.5 Southern import prices of product-categories in current lire per quintal, 1870-1914.

Source: own's elaboration from Federico et al. (2011) data.
1881=100. For specification see text. For actual values see appendix.

3.1.3   Lira exchange rate

The third major type of data used in the analysis is the nominal exchange rates between the lira and the currencies of the ten closest Italian trading partners. The research adopts the actual exchange rates to construct two alternative counterfactual ones. From them, the work calculates two hypothetical incomes. Data on the exchange rates are on a year-base, and they are retrieved from Ljungberg (2019).

What follows is an analysis of the exchange rates between Italy and its trading partners. The research analyses the lira competitiveness compared to the currencies of the considered Italian trading partners: the presence of fluctuations of the Italian currency may imply possible losses (or gains) for the Italian export-oriented entities. For capturing the lira competitiveness compared to the currencies of the Italian trading partners, the research calculates the Nominal Effective Exchange Rate. NEER is "an unadjusted weighted average rate at which one country's currency exchanges for a basket of multiple foreign currencies" (Investopedia, 2019, n.p.). This work adopts single-weighted NEER meaning that the research weighted the currencies in the basket according to the imports and exports between Italy and the considered trading partner. By calculating the NEER for the lira, the research captures the weakening or strengthening of the Italian currency compared to the trading partners' ones. For calculating the NEER in a given year, the research adopted the following approach (Ljungberg, 2019):

$$\text{NEER} = \Sigma \left[(e_j * m_j) + (e_j * x_j) \right] \tag{1}$$

Where "j" is one of the Italian trading partners considered in the research; "ej" reports the annual change in exchange rate measured as the units of lire for one unit of foreign currency of country "j"; "m" denotes the share of Italian imports coming from country "j" in a given year; "x" is the share of Italian exports going to country "j" in a given year. This expression is repeated for each considered trading partner and each year from 1870 to 1914. Following Ljungberg (2019) approach, by expressing the exchange rate in units of lire for one unit of the Italian trading partner's currency, the figure reports a rise in NEER as a depreciation of the currency, while a fall corresponds to an appreciation. In practical terms, if the NEER for the lira rose from 100 in 1881 to 101.65 in 1884, it translates that the currency depreciated by 1.65 per cent leading to a gain in competitiveness for the Italian export-oriented entities.

Figure 3.6 reports the results. The figure shows NEER as a chain index of Paasche type – with the trade weights referred to the current year. The research adopts the Paasche chain index type since it attributes the weights of imports and exports directly to the current year and not on the base year as in the Laspeyres' chain index (Ljungberg, 2019). This choice is motivated by the desire to consider the trading patterns changes of each year rather than referring to the year-base ones. The figure also reports the periods in which Italy was on the gold standard (formally or de facto). To note there is the overall stability of the NEER during the periods in which Italy was on gold (Baffigi et al. 2015). Only in 1893, mainly due to the financial distress caused by the increase in exports of land-abundant countries, NEER fluctuations occurred during the Italian gold standard period for then forcing the country to exit the monetary system.
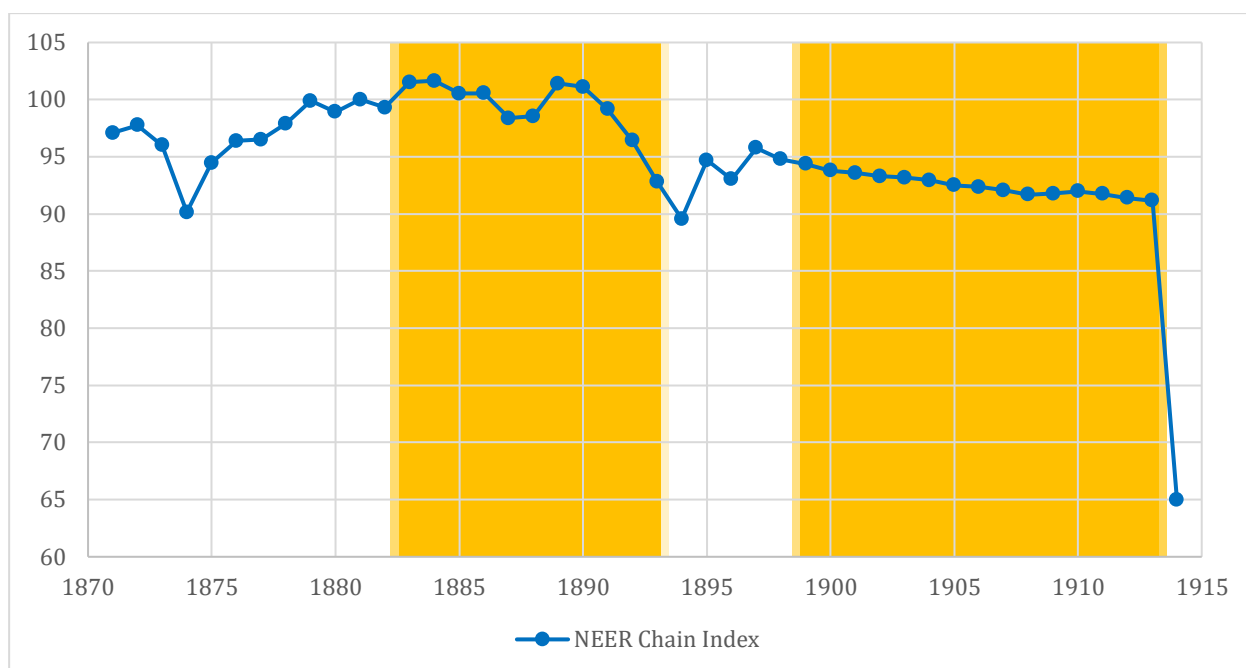
Figure 3.6 NEER estimations for Italy, 1870-1914.

Source: own realisation from Ljungberg (2019) data.

Nominal effective exchange rate of the Italian lira against the currencies of the ten closest Italian trading partners. In orange are reported the period in which Italy was on the gold standard. NEER do not have a unit of measurement. 1881=100. For more specifications see text. For actual values see appendix.

It is possible to divide the fluctuation of the NEER for Italy between 1870 and 1914 into two main periods: the first one depicting a rising NEER from 1870 to 1884; and the second one, from 1884 to the end of the period, reporting a fall in the NEER. In particular, the NEER raised by roughly 11 per cent in the period from 1874 to 1884, and then it fell by roughly 12 per cent in the following decade. In the three years after 1894, the lira raised by roughly 6 per cent for then coming back to the 1894 level at the dawn of WW1. In 1914, the enormous fall of the NEER was due to the upcoming war, which disrupted the ordinary exchanges between countries. To conclude the argument, this passage reported a strengthening Italian NEER after 1884, which translates into an appreciation of the lira. Given these conditions, the research will analyse the potential losses in the incomes of Italian export-oriented entities (Section 4.1) and the presence of potential differences in regional development (Section 4.2).

3.1.4 Trade shares of GDP

The last types of data presented are regional export and import shares of GDP. Their role in the analysis is to capture the impact of export-oriented entities income variations on the overall regional development. Unfortunately, these regional estimations on a year-based between 1870-1914 are hard to retrieve. For overcoming the gap, the research calculates the estimation by combining data from different sources and adopting some assumptions. In particular, the work uses data from Baffigi (2011 cited in Missiaia, 2014) reporting the regional GDP per capita and estimations of the Italian regional population from MAIC (1874, 1883, 1902, 1914 cited in Missiaia, 2014). Both data sources report observations for only four years (1871,1881,1901,1911). Estimations are in 1911 prices, and they adopts 1870 Italian regional borders. To obtain the GDP estimations, the study multiples GDP per capita times population. According to the subdivision presented above, the research allocates the regional GDP calculated on 1870 Italian regional borders to the North and South Italian partition. Table 3.4 reports GDP estimations, while data depicting GDP per capita and population are present in the appendix (Table A.9).

Table 3.4 Regional and national GDP estimations in 1911 lire.

	GDP (1911 prices)			
	1871	1881	1901	1911
Piedmont	1,226,515,572	1,504,422,500	1,987,123,199	2,489,575,150
Liguria	479,285,216	474,742,436	722,984,383	1,161,314,070
Lombardy	1,571,214,096	1,586,345,065	2,522,526,792	3,602,435,696
Venetia	1,094,126,238	942,747,955	1,350,955,277	1,918,883,840
Emilia	822,279,092	849,339,099	1,112,490,925	1,823,216,680
Tuscany	921,285,750	989,573,312	1,136,917,332	1,654,549,484
Marches	307,580,784	325,929,813	422,180,490	558,652,283
Umbria	223,687,607	253,994,640	303,580,550	399,598,872
Latium	501,185,696	631,526,928	831,851,755	1,225,580,043
Abruzzi	419,535,114	435,998,165	448,322,361	613,772,874
Campania	1,209,265,888	1,164,423,954	1,377,955,328	1,967,325,624
Apulia	518,625,580	705,544,416	901,447,280	1,143,891,087
Basilicata	139,888,782	157,875,704	178,616,620	219,471,723
Calabria	341,383,466	416,359,273	453,538,848	619,750,742
Sicily	994,878,115	1,226,790,519	1,471,926,183	1,972,002,546
Sardinia	203,094,540	245,520,720	337,287,204	493,543,653
North	7,147,160,051	7,558,621,748	10,390,610,703	14,833,806,118
South	3,826,671,485	4,352,512,751	5,169,093,824	7,029,758,249
Italy	10,973,831,536	11,911,134,499	15,559,704,527	21,863,564,367

Source: own realisation based on Baffigi (2011 cited in Missiaia, 2014) and MAIC (1874, 1883, 1902, 1914 cited in Missiaia, 2014) data.

Before estimating the regional export and import shares of GDP, the research converts the previously estimated regional trade values from lire in current price into lire in 1911 prices. This passage aims to allow the comparison between trade and GDP estimations. For calculating the regional trade estimations in 1911 prices in a given year, the work multiplies the regional trade average volume of each product-category in a given year for the weighted average 1911 price of the same category. Then, the research adds together the product-category trade values of the same year to obtain the regional export and import values in a given year. The work repeats the process for the whole period. For allowing the construction of regional trade values in 1911 prices, the research assumes an equal development of prices among the different Italian regions.

The regional export and import estimations in 1911 prices are estimated using the average price and quantity of the product-category and not the price of the single products belonging to a specific category – as it was the case of the values of exports and imports estimated at current prices. The research adopted this method since not all the commodities are equally present in their respective product-category for the entire period – changes in the Sitc classification and missing observations may be present. To have an idea of the differences between the two approaches, Table 3.5 reports the regional trade estimations for the year 1911. Since 1911 is the base year in this last calculation, the research can compare two estimations (lire in current prices and 1911 ones). The differences between the two approaches are merely attributable to the diverse methods (single product price and quantity or the product-category ones). As indicated, the difference between the two approaches is marginal, and in this case, it applies only to exports.

Finally, the work calculates the regional export and import shares of GDP. Outputs are reported in Table 3.6. The table reports the regional import and export shares of GDP and two estimations of the national trade share of GDP – the research ones (Italy Own) and those from Pistoresi and Rinaldi (2012) (Italy P&R). Regional and national trade shares of GDP adopt the GDP of the respective area. The results depict exports and imports playing only a marginal role in the overall GDP. Regional trade shares do not have a uniform pattern, and their relevance fluctuates between 2.1 and 6.8 per cent during the analysed period. Regarding the national estimations, a clear distinction is present between the work's estimations and those of Pistoresi and Rinaldi (2012). The values calculated by this research fluctuate between 3.4 and 5.4 per cent, while Pistoresi and Rinaldi (2012) found the trade shares of GDP between 6 and 15.8 per cent. It is possible to conclude that the estimations of this work are underestimated since the research only considers the imports and exports exclusively attributable to one of the regions (considered trade). The same applies to the regional values by construction. Even if underestimated in comparison to the national estimations of Pistoresi and Rinaldi (2012), the estimations of this work have the advantage of depicting regional trends. The research considers this limitation in the discussion section.

Table 3.5 Differences between trade estimations approaches, 1911.

	North export	North imports	South export	South imports
Current prices	505,557,336	931,869,449	238,287,233	239,630,745
1911 prices	505,623,114	931,869,449	239,258,299	239,630,745

Source: own realisation from Federico et al. (2011) data.
For more specifications see text. The complete regional import and export estimations in 1911 prices are reported in the appendix.

Table 3.6 Regional export and import shares of GDP, in percent values.

	Export shares of GDP				Import shares of GDP			
	1871	1881	1901	1911	1871	1881	1901	1911
North	2.9	3.6	4.6	3.4	2.1	3.6	6.6	6.3
South	5.2	5.5	3.7	3.4	5.7	6.8	2.0	3.4
Italy Own	3.7	4.3	4.3	3.4	3.4	4.8	5.0	5.4
Italy P&R	6.3	8.2	9.8	10.4	6.0	8.8	10.8	15.8

Source: own realisation based on Baffigi (2011 cited in Missiaia, 2014), MAIC (1874, 1883, 1902, 1914 cited in Missiaia, 2014), Federico et al. (2011), and Pistoresi and Rinaldi (2012) data.
For more specifications see text.

3.2   Methodology

After presenting the data necessary to conduct the analysis and finding an appreciated Italian exchange rate, this section focuses on the methodology adopted by the research.

The remaining part of the method is the following: the first one estimates two counterfactual incomes deriving from two hypothetical exchange rates. This approach offers insights into what could have been the possible regional incomes of export-oriented entities through different monetary policies. The second part involves an overtime regional price comparison, and it captures possible losses in competitiveness among export-oriented entities belonging to the two regions. Finally, the third part of the method consists of the generalisation of the results from export-oriented entities to the regional level. Since the third part does not deserve any significant introduction, the research directly addressed it in the discussion section (4.2).

By moving now on the first part of the method, the research firstly calculates the income of regional export-oriented entities deriving from the exports of Northern and Southern products at the actual exchange rate. Then, through the application of two counterfactual exchange rates, the research estimates two hypothetical export incomes. For calculating the regional export income, the work considers the following expression:

$$XYL_{(r,t)} = ((L/FC) * X_pFC_r)_{(i1,t)} + ((L/FC) * X_pFC_r)_{(i2,t)} + ((L/FC) * X_pFC_r)_{(in,t)} \qquad (2)$$

Where $XYL_{(r,t)}$ is the income of regional export-oriented entities in lire in a given year. L/FC is the exchange rate measured as units of lire for the foreign currency of the Italian trading partners (i1, i2, in) at year "t". X_pFC_r is the value of regional exports priced in foreign currency calculated for each trading partner in a given year. By multiplying the regional exports shipped to the trading partners (X_pFC_r) times the relative exchange rate (L/FC). With this approach, the work obtains the income of regional export-oriented entities after trading with that specific partner in a given year. The sum of the incomes from the diverse trading partners results in the total regional income of export-oriented entities in a given year. The research repeats the process for all the years between 1870 to 1914.

Along with the actual exchange rate, the work also calculates the above expression by using the other two counterfactual exchange rates. The income measured with the counterfactual exchange rates represents a potential diverse earning for the export-oriented entities resulting from potentially diverse monetary policies. The counterfactual exchange rates are of two types: the first one assumes a fixed exchange rate between the lira and the currencies of the Italian trading partners equal to the 1881 levels; the second one assumes a depreciation of the lira equal to 20 per cent than the actual one. For allowing the comparison of incomes, the research adopts the actual exchange rate in the counterfactual incomes in the year before 1881.

For constructing the counterfactual exchange rates, the research adopts the following process: firstly, it divides the considered regional export values between the different trading partners depending on the products they provided to Italy. Secondly, the work transforms the export values expressed in current lire in the trading partners' currency by dividing the export values in lire by the actual exchange rate of the trading partner. The study performs the process for each product, trading partner and year. The result represents the actual export value of the trading partners expressed in foreign currency. From this outcome, the thesis calculates the counterfactuals by applying the two different exchange rates. For the first counterfactual – with fixed exchange rate – the actual exchange rate is applied until the year 1881, while for the following years is applied the 1881 exchange rate between the lira and the currency of the Italian trading partners. For the second counterfactual, after the 1881, it is applied a 20 per cent depreciation of the lira compared to the actual values. A crucial assumption adopted in this process is that export volumes do not change at different exchange rates.

By belonging to the same monetary union and sharing the same exchange rate, the export-oriented entities of North and South Italy are mutually affected by the currency fluctuation. However, regional differences in the NEER may still be present since the regional export-oriented entities traded different goods with different trading partners. Nevertheless, what mainly differ between the regional entities in terms of income and competitiveness are the overtime variations in exported and imported product prices. Suppose one region experiences a fall in prices of its exported goods, with the impossibility of accommodation from the exchange rate; the results see the export-oriented entities of that region losing in term of income and competitiveness compared to the other regions of the monetary union. For analysing this potential issue in the North-South context, the research compares the overtime product-category price fluctuations among the two regions. In the presence of different price trends among the two regions, possible losses in regional competitiveness may have raised between Northern and Southern export-oriented entities, and in turn, they may have affected the distinct economic development of the two regions.

4   Empirical Analysis

This chapter presents the outputs of the research. It is divided into three sections: the first one (4.1) presents the results of the quantitative analysis, the second one (Section 4.2) discusses their implications, while the last section (4.3) reports the contributions and limitations of the study.

4.1   Results

Figures 4.1 and 4.2 present the incomes of regional export-oriented entities (for values, see appendix). In the figures, "Actual" stands for the income calculated with the actual exchange rate. "Counterfactual fix" represents the income constructed by applying the exchange rate between the lira and the currencies of the ten closest Italian trading partners in 1881 levels on the following years. "Counterfactual 20%" uses a depreciated lira in respect to the currencies of the Italian trading partners equal to plus 20 per cent than the actual one. The three incomes coincide before 1881 by construction. After 1881, instead, the actual income results lower than the counterfactual ones. The figures show that in the years between 1881 and 1905, North and South Italy would have experienced a potential higher export-related income by adopting an exchange rate 20 per cent more depreciated than the actual one. In the years between 1905 to 1914 instead, the regional export-related incomes are higher when calculated with the fixed exchange rate equal to 1881 levels.

The overall levels of incomes for Northern export-oriented entities rise with time – especially in the second half of the 1890s – probably due to the increase in exports of industry-related goods. On the other hand, the Southern trends of export incomes follow a U shape curve, with a lower revenue between 1885 and 1905. The results support the theoretical assumptions that a relatively more depreciated exchange rate translates into a higher income for the Italian export-oriented entities. In this scenario, there are no regional income differences from adopting a depreciated exchange rate compared to the already diverse actual estimations – since the incomes of regional export-related entities rely on the same national currency. However, North and South differences may be present if the prices of regional product-categories differentiate among the two regions.
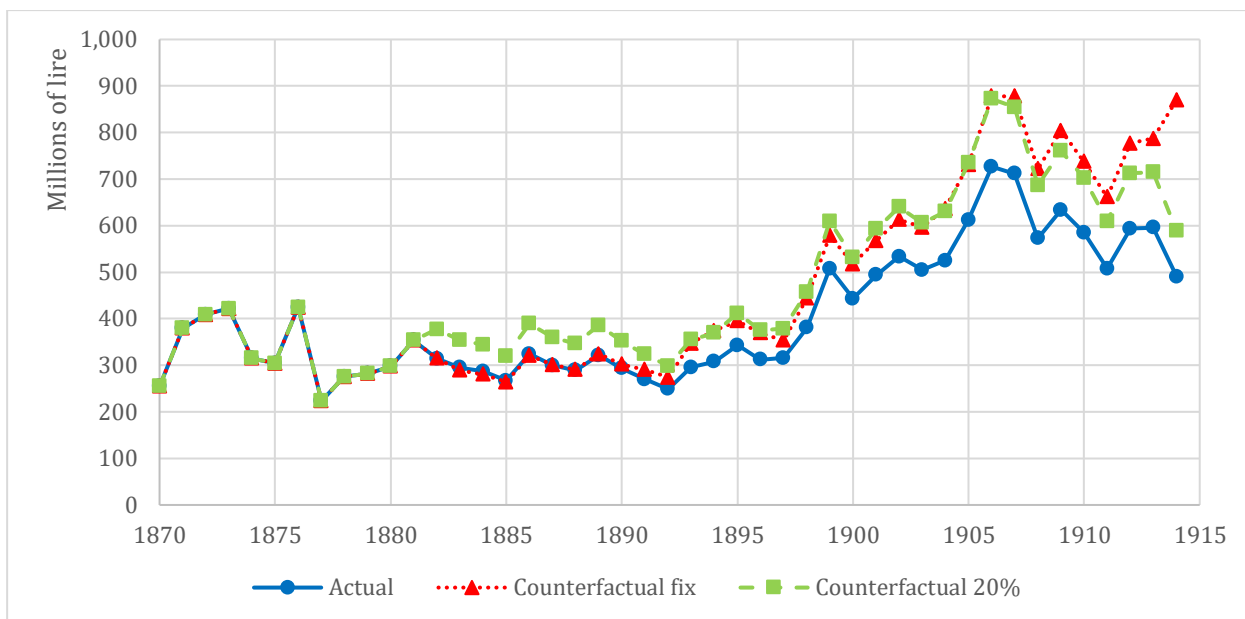
Figure 4.1 Income of Northern export-oriented entities in current lire, 1870-1914.

Source: own elaboration from Federico et al. (2011) data.
For more specifications see text. For actual values see appendix.

Figure 4.2 Income of Southern export-oriented entities in current lire, 1870-1914.

Source: own elaboration from Federico et al. (2011) data.
For more specifications see text. For actual values see appendix.

Moving now on the analysis of regional prices, Figure 4.3 reports the aggregated regional weighted prices of exported goods, while Figure 4.4 depicts the same information regarding import prices. The research calculates North-South aggregated price levels through the regional average of product-category prices. For allowing the North-South comparison, prices are in current lire per quintal and 1881 is used as the reference year. In calculating aggregated price levels, the research excludes the Northern product-category "Food and drink" and the Southern one "Wine" since their data are not available before 1898. Current values for the aggregated price levels are reported in Table A.8 (appendix).

Focusing on the trends of regional export prices, North and South Italy followed an overall decline during 1870-1914. This fall in prices mirrors the international trends. According to O'Rourke and Williamson (1994), the period under examination saw a remarkable convergence in international commodity prices led by a fall in transport costs. Additionally, Baffigi et al. (2015) suggest that the fall of the Italian and European prices was led by an increase in imports of agricultural products from land-abundant countries, namely the US. Figure 4.3 seems to support the thesis of the four authors by reporting the overall decline in prices. Moreover, the results also depict the export prices of Southern products – mainly agricultural ones – dropped to a lower level relative to the prices of Northern industrial goods.

A feature that stands out in the trend of Southern export prices is the initial low values at the beginning of the period. The coral product-category values mainly drive these low levels of prices. As reported in Table A.5 (appendix), the average export price for the product-category of the coral is around 8000 lire per quintal in the years 1870 and 1871, for then jumping to roughly 113000 lire per quintal the following year. The picture follows a similar story in the year 1880. To note is the importance of the coral for the Southern economy: by being almost exclusively retrieved in Sicily, it accounted for 3.9 per cent of the total national exports in the period from 1872 to 1876, and it ranks in the fourth place among the top exported national goods (Federico et al. 2011). Given its central role in the national exports, coral price fluctuations have a remarkable impact on the trends of Southern export prices.

Moving to import prices, Figure 4.4 reports an overall decline in the two regions, with the South importing at slightly higher prices than the North. Baffigi et al. (2015) argue that the deflationary tendency of prices has its source outside Italy. They suggest that the lowering prices were due to a combination of two main factors: from one side, the increase of international trade – resulting from a reduction of transports costs; to the other, the gold standard system – to which Italy discontinuously belonged – offered an international common currency favouring capital movements and a trade boom.
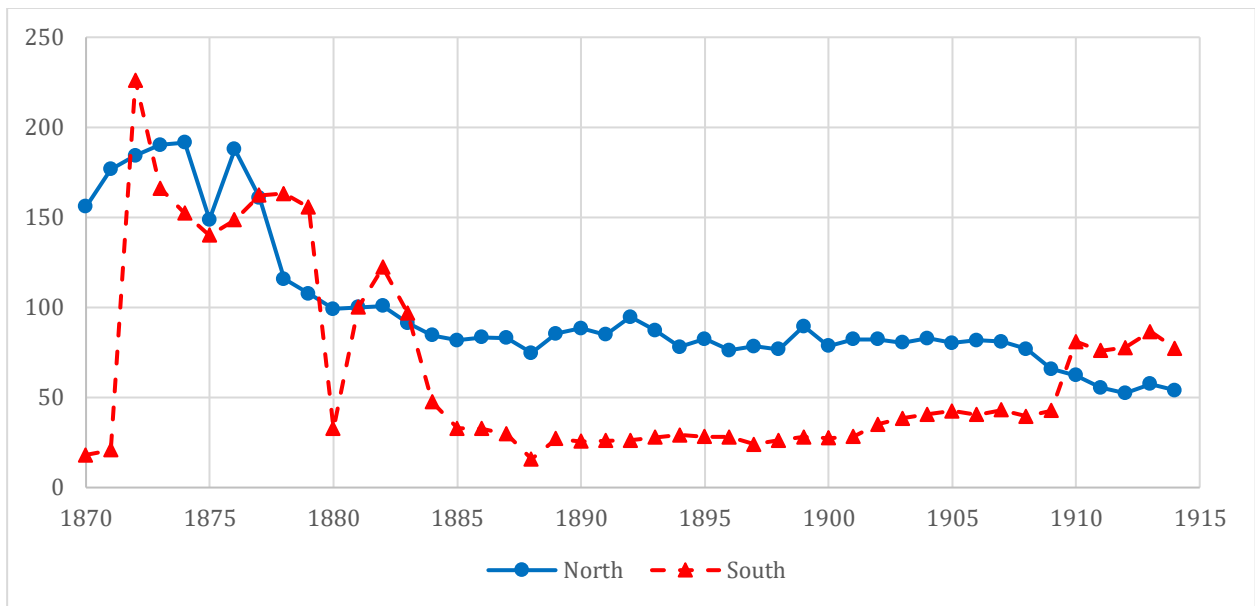
Figure 4.3. Aggregated regional weighted export prices in current lire, 1870-1914.

Source: own elaboration from Federico et al. (2011) data.
1881=100. For more specifications see text. For aggregated regional export values see appendix.
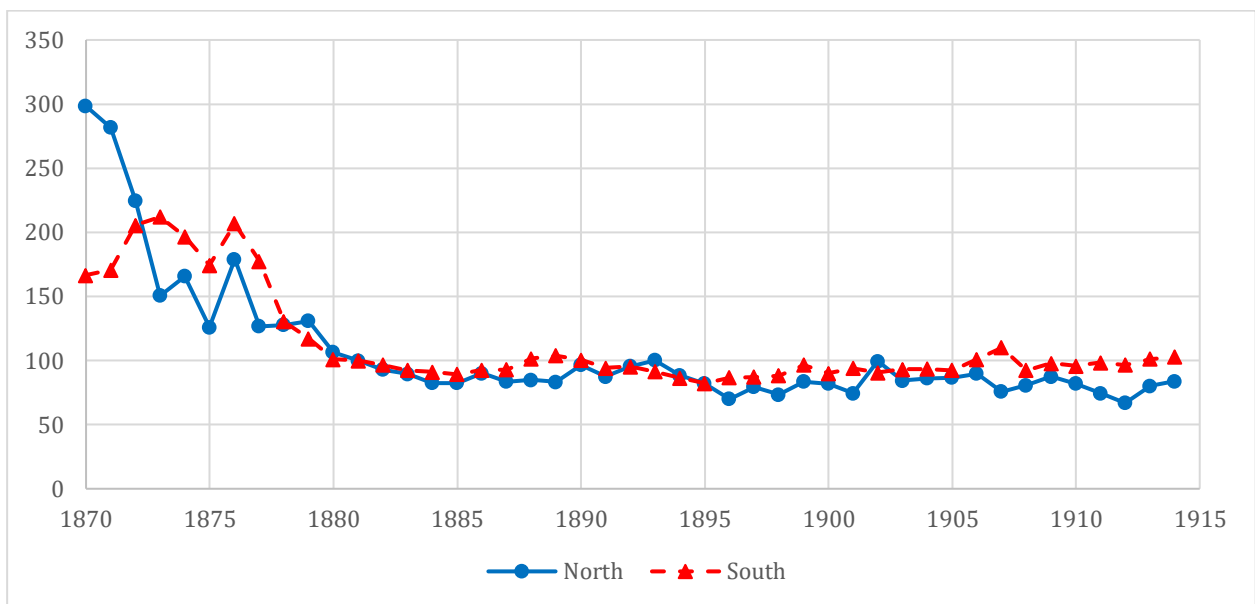
Figure 4.4 Aggregated regional weighted import prices in current lire, 1870-1914.

Source: own elaboration from Federico et al. (2011) data.
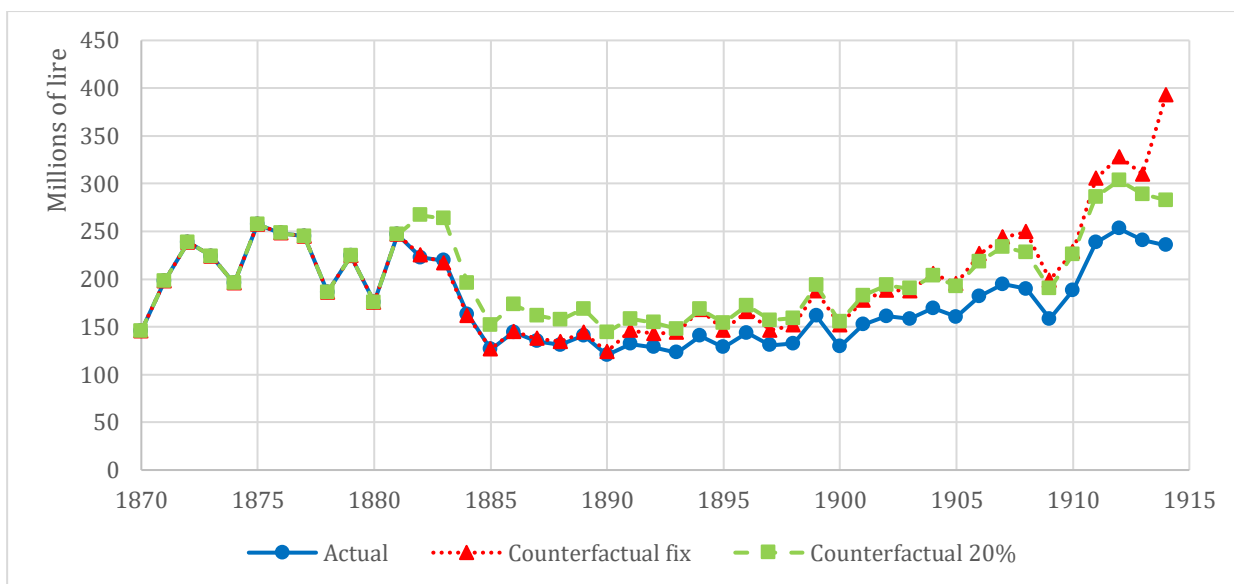1881=100. For more specifications see text. For aggregated regional import values see appendix.

4.2   Discussion

After having presented the single results of the analysis, this section recapitulates together the outputs and discusses their implications from a regional perspective.

Through the calculations of the Italian NEER, the research pointed out the increasing value of the exchange rate between the lira and the currencies of the ten closest Italian trading partners. Later, the work reported how the appreciation of the Italian currency translated into a loss of income for the export-oriented entities compared to the adoption of a counterfactual fixed or depreciated exchange rate. Subsequentially, the study indicated how this loss in competitiveness among national export-oriented entities has had different implications at the regional level. In particular, the analysis depicted the North and South differences materialising at the level of export prices: with the Southern export-oriented entities experiencing a more significant decline in prices than the Northern ones. Due to the impossibility of depreciating the regional exchange rate – since the two regions belonged to the same IMU – the relatively more significant drop of Southern prices translated in a loss of international competitiveness for the Southern export-oriented entities than the Northern ones. Given the assumptions, the research perspective and context – together with the contractionary monetary policies of the IMU, and the impossibility of adjusting the exchange rate – the Southern export-oriented entities have been harmed relatively more than the Northern ones by the adoption of the single currency.

Up to this point, the research discussed the relative income gains and losses of export-oriented entities. However, the research aims to understand the relevance of these effects on the North and South development. For analysing this aspect, the research considers the regional export and import shares of GDP as indicator depicting the import and export effects on the overall economic development of the two regions. As previously reported in Table 3.6, the shares of regional export of GDP are marginal – accounting between 2.9 and 5.5 per cent. The same negligible role applies to the regional import shares. The estimations report the Northern part of Italy experiencing an overtime increase in the trade shares of GDP, while the Southern trade shares are declining with time. At the national level, the magnitude reflects those of the regional estimations, and the overtime evolution appears positive for import shares and negative for export ones. Here, a comparison with the national estimations of Pistoresi and Rinaldi (2012) has to be made. According to the two authors, exports and imports play a greater role in the composition of the national GDP if compared to the values calculated by this research. For example, Pistoresi and Rinaldi's (2012) estimations for the year 1911 report imports and exports accounting between 15.8 and 10.4 per cent versus the 3.4 and 5.4 per cent of this research[9].

In conclusion, by adopting the underestimated values of trade shares of GDP calculated by this research, the results depict the losses of regional export-oriented entities almost influential in the overall regional development. However, if considering the more reliable national estimations of Pistoresi and Rinaldi (2012), the impact of exports and imports on GDP become relevant – around 8 to 15 per cent – and the losses in income experienced by the export-oriented

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[9] The reasons behind the differences in the national trade shares to GDP are reported in Sub-section 3.1.4.

entities has to be taken into account when considering the North-South development. Unfortunately, estimations as reliable as those of Pistoresi and Rinaldi (2012) depicting the regional context are hard to retrieve. This lack in the data led to the impossibility of precisely quantify the impact of the regional export-oriented entities on the North-South development. Nevertheless, since the national trade shares of GDP derives from the regional ones, it implies that the impact of monetary policies – thought their effects on the exchange rate – shaping regional exports and imports is likely to have affected Italy's North-South economic development.

To summarize, the relatively more significant drop in Southern products prices – uncompensated by the artificial adjustments of the exchange rate – potentially translated into a relatively more considerable damage for the economic development of the South than for the North.

4.3   Contributions and Limitations

This section presents the contributions and the limitations of the thesis. From one side, this section provides a description of the findings and the contributions to the field of study; on the other, it offers an instrument for evaluating the quality of the analysis and the results.

The output of this research contributes to the North-South Italian debate by analysing the implications of the Italian Monetary Union on the regional divide. In particular, the study focuses on the losses and gains of regional export-oriented entities, and it attempts to understand their impact on regional development. The analysis points out a relative loss in the competitiveness of Southern export-oriented entities resulting from the combination of mainly two factors: the first one is the decline in international prices of agricultural products, mainly due to the increasing exports of land-abundant countries, first among them, the US (O'Rourke & Williamson, 1994). Due to the different economic specialisations, the fall of agricultural prices harmed relatively more the agrarian South than the more industrialised North. Subsequentially, the appreciation of the exchange rate between the lira and the currencies of the ten closest Italian trading partners represents the second factor contributing to the losses of Southern entities. The appreciation of the lira represented an additional threat to the Southern development since it further lowered the international competitiveness of Southern agricultural products. Thus, under the considered perspective, Southern export-oriented entities did not benefit from the introduction of the IMU since it prevented a depreciation of the currency during a time of financial distress.

Subsequentially, the research carefully attempts to generalise the results from the losses in competitiveness of Southern export-oriented entities to losses in the economic development of the Southern region of Italy. The work computes the process through the application of export and import shares of GDP. However, the generalisation is weak since the research estimates an underestimated version of the trade shares of GDP, while those already calculated by third parties are not representative of the regional level. Nevertheless, by assuming that the national trade shares of GDP reflect the regional ones, it is possible to argue for the presence of a

Southern economic development partially braked by the income losses of Southern export-oriented entities.

The research believes that through its analysis and findings, it contributes to the debate explain the reasons behind the North-South divide. This work is aware that the effects of monetary policies may have played only a marginal role in shaping the Italian regional dualism if compared to other factors, such as geography conditions advanced by Zamagni (2019) and the role of institutions presented by Felice and Vasta (2015), or the effects of human capital accumulation for which Cappelli (2015) is one of the leading experts. However, the research trusts to have offered its tiny contribution to the field by further developing the role of monetary policies in shaping the North-South Italian divide.

If from one side, this work contributes to the North-South Italian debate, to the other, it presents some limitations. Limitations are mainly present in the data and assumptions. As a general rule for adopting any assumptions, the research prefers to underestimate rather than overestimate the values. Among the limitations of the research, data availability stands out. The limitations of regional data on trade represent a major constrain. For overcoming the lack of observations, the research adopts some assumptions that reduce the national trade to a considered part. If from one side the construction of product-categories helped to overcome the lack of data, to the other, it undermined the quality of the results. Additionally, data availability restricts the considered period (from 1870 to 1914): the lower bound is defined by the disposal of exchange rate observations between Italy and the trading partners, while the upper one by the dawn of WW1 – which changed the traditional trade patterns. The consideration of only goods gives a further restriction: the work excludes services since they are more complicated to retrieve.

Data reporting the export and import shares of GDP are limiting the generalisation of the results from export-oriented entities to the regional level. It is the case since the research adopts its own estimations of regional exports and imports – which only consider goods exclusively attributable to one of the two regions. Consequentially, the result underestimates the actual shares.

Limitations dictated by time constraints prevent the analysis from being conducted at a deeper level. In this domain belongs the choices of considering only ten Italian trading partners, to account only for newly produced goods quantifiable with a unit of mass, to take into consideration only permanent exchanges between countries, to use a single weight NEER instead of a double one, and to assume prices equal among regions and at the international level. The limitations on the process of analysis are also mainly driven by time constraints. To this extent, further research may consider additional factors influencing the regional incomes of export-oriented entities. Possible suggestions include tariff, fiscal policies, transport costs and inflation as potential determinants of growth. Other potential factors that may affect regional development are regional employment, family composition, migration, level of savings, urbanisation, among many others.

Additional limitations of the research are present in the assumptions. For overcoming the lack of regional exports and imports data, the work assumes North and South perfectly specialised in producing two distinct types of goods, namely industrial products in the North and agricultural goods in the South. If from one side this allows the realisation of regional trade

estimations, to the other, it neglects the presence of industrial production in the South and agrarian cultivation in the North. Another crucial assumption adopted in the process of analysis is that export and import volumes do not change at different exchange rates. This fact implies a non-reaction of the trading partners to a different exchange rate. For this reason, the counterfactual estimations of exports (imports) result underestimated (overestimated) since, at a favourable (unfavourable) exchange rate, the volumes of goods exchanged would have increased (decreased). Thus, besides the limitations of the research – mainly related to the scarcity of data – the work offers a reliable approach for capturing the regional losses in competitiveness deriving from the application of a single currency.

5   Conclusion

The initial research question wonders if the Italian monetary union, through its monetary policies, has had a powerful impact in shaping the North-South Italian divide. Therefore, the research analyses the effects of the exchange rate and international prices in shaping the competitiveness of regional export-oriented entities. Subsequentially, the work attempted to generalise the losses in the income of regional export-oriented entities to the development of North and South of Italy. The work concludes that in the North-South Italian context from 1870 to 1914, the quantitative evidence supports the theoretical knowledge asserting that the exchange rate fluctuations affect the incomes of export-oriented entities. Moreover, the research founds that the financial distress experienced by the South of Italy – through a relative fall in export prices compared to the Northern ones – was not accommodated by an appreciation of the exchange rate, but instead, the unfavourable depreciation of the lira further deteriorated the international competitiveness of export-oriented entities. However, mainly due to data limitations, the research is not confident to generalise the results from the relative loss in the competitiveness of Southern export-oriented entities to the relative underdevelopment of the South. To summarise, given the approach, data and related assumptions, the research suggests that Italian monetary policies have impacted the North-South divide, but its magnitude was limited.

If from one side the research approach can be considered valid, to the other, data availability weakened the quality of the results. The availability of data represents a major difficulty during the research. The work adopts some assumptions to overcome the missing observations representing regional exports and imports. These assumptions allow to overcome the gap, but they also undermine the outputs since their construction grounds in a selected fraction of the national trade. The assumed regional exports and imports estimations also prevent the possibility to confidently generalise the results. This fact precludes to obtain reliable estimations about the effective impact that the losses in competitiveness of export-oriented entities have had on the overall regional development. A significant improvement to the analysis may consider more precise estimations of regional trade data.

In considering the results in a broader perspective, it is relevant to underline that the research topic only investigates a limited portion of the monetary union disadvantages. To better understand the short- and long-term implications of a single currency, other aspects have to be considered. Along with the thesis approach, the research has space for improvement in considering the variations of trade volumes deriving from changes in the exchange rate, or the effects of an appreciated lira on the national and regional current account. The research believes that these aspects potentially strength the thesis's results by underling the adverse effects of introducing a single currency. On the opposite side, an appreciation of the currency also allows the importations of relatively cheaper goods and the attraction of FDI that may boost national and regional development. For having a complete idea of the effects of an appreciated currency, both sides have to be considered. To evaluate the effects of introducing a single currency, it is

also essential to consider its advantages. Since the research does not consider them, any final judgment on this broader perspective is inappropriate. However, the research believes that any instrument – including a single currency– is not good or bad per se, but it depends on its use.

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Appendix

Table A.1 National, considered and regional exports in current lire, 1870-1914.

	National	Considered	North	South
1870	756,765,890	400,805,821	255,104,655	145,701,166
1871	1,086,456,909	577,463,978	379,399,193	198,064,785
1872	1,166,280,350	647,565,469	408,928,497	238,636,972
1873	1,134,023,568	645,824,263	421,793,321	224,030,942
1874	984,753,355	510,862,008	315,277,970	195,584,038
1875	1,033,506,239	561,827,254	304,511,087	257,316,167
1876	1,215,409,941	672,419,461	424,244,401	248,175,060
1877	954,044,318	468,150,594	223,249,160	244,901,434
1878	1,044,044,337	461,691,680	275,315,125	186,376,555
1879	1,105,271,194	506,360,554	282,260,493	224,100,061
1880	1,132,296,292	473,576,801	297,754,861	175,821,940
1881	1,191,749,807	600,406,599	353,852,379	246,554,220
1882	1,155,918,291	536,670,192	314,155,822	222,514,370
1883	1,199,956,210	514,197,967	294,731,763	219,466,204
1884	1,096,378,616	450,162,905	286,959,041	163,203,864
1885	1,134,045,957	393,356,204	266,844,033	126,512,171
1886	1,076,169,406	468,980,990	324,544,673	144,436,317
1887	1,109,391,143	435,062,183	300,176,149	134,886,034
1888	967,413,211	419,908,931	289,039,517	130,869,414
1889	1,005,569,034	462,101,353	321,397,642	140,703,711
1890	962,579,673	413,967,949	293,591,099	120,376,850
1891	938,425,957	401,817,044	269,881,443	131,935,602
1892	1,011,939,229	377,463,047	248,761,254	128,701,793
1893	1,059,573,897	418,785,150	295,634,573	123,150,577
1894	1,057,607,345	448,331,109	307,873,541	140,457,568
1895	1,061,145,346	471,340,993	342,801,534	128,539,459
1896	1,073,490,408	455,907,511	312,403,533	143,503,977
1897	1,116,998,001	446,437,652	315,597,419	130,840,233
1898	1,222,317,354	513,592,094	381,214,469	132,377,625
1899	1,450,323,905	669,272,613	507,974,728	161,297,886
1900	1,356,766,666	572,255,137	442,983,798	129,271,339
1901	1,393,048,807	646,475,966	494,192,768	152,283,198
1902	1,485,347,618	694,405,111	533,236,398	161,168,713
1903	1,527,700,124	663,171,925	504,922,741	158,249,184
1904	1,612,901,967	694,507,120	525,201,922	169,305,198
1905	1,737,451,026	772,688,465	612,170,809	160,517,656
1906	1,942,311,603	908,666,784	726,739,392	181,927,392

Continues …

	National	Considered	North	South
1907	1,954,454,752	906,726,994	712,100,398	194,626,596
1908	1,745,379,713	762,396,288	572,525,377	189,870,911
1909	1,906,178,659	792,064,289	633,804,712	158,259,577
1910	2,133,816,313	773,646,486	585,335,284	188,311,202
1911	2,253,297,157	746,075,198	507,787,965	238,287,233
1912	2,446,735,066	846,358,973	593,593,065	252,765,908
1913	2,601,984,021	836,355,809	595,612,539	240,743,270
1914	2,239,504,656	725,884,230	490,364,589	235,519,641

Source: own elaboration from Federico et al. (2011) data.

Table A.2 National, considered and regional imports in current lire, 1870-1914.

	National	Considered	North	South
1870	895,044,065	370,583,780	202,743,556	167,840,224
1871	963,413,542	441,756,443	248,983,952	192,772,491
1872	1,190,420,457	597,243,279	381,037,800	216,205,479
1873	1,286,443,234	550,696,280	324,010,325	226,685,955
1874	1,303,773,785	537,381,737	332,611,329	204,770,408
1875	1,220,057,120	538,231,916	309,369,128	228,862,788
1876	1,325,356,293	639,716,383	415,436,635	224,279,748
1877	1,157,893,358	491,239,138	289,842,105	201,397,033
1878	1,069,474,070	430,518,635	258,392,510	172,126,125
1879	1,261,533,783	498,418,090	343,798,975	154,619,115
1880	1,225,644,117	471,818,732	291,447,167	180,371,565
1881	1,331,352,724	508,586,003	297,872,108	210,713,895
1882	1,345,400,904	473,680,890	293,506,218	180,174,672
1883	1,380,288,097	464,460,620	269,657,357	194,803,263
1884	1,343,764,674	499,185,774	290,543,071	208,642,703
1885	1,573,852,180	529,072,491	321,279,664	207,792,827
1886	1,510,944,785	569,088,517	371,515,692	197,572,825
1887	1,689,536,469	603,368,826	388,216,715	215,152,111
1888	1,241,656,137	485,093,874	351,683,762	133,410,112
1889	1,440,448,820	610,940,940	445,815,489	165,125,451
1890	1,377,614,812	556,533,318	404,117,206	152,416,112
1891	1,178,966,511	461,668,854	336,311,023	125,357,831
1892	1,214,901,062	520,256,281	403,747,424	116,508,857
1893	1,233,968,040	533,926,566	423,131,684	110,794,881
1894	1,202,241,689	382,306,699	294,103,300	88,203,399
1895	1,200,945,454	526,026,716	420,052,450	105,974,266
1896	1,189,320,886	481,608,639	381,113,337	100,495,302
1897	1,199,954,742	502,746,287	409,582,839	93,163,448
1898	1,415,162,757	610,359,223	531,876,416	78,482,806
1899	1,511,595,576	585,292,545	487,214,868	98,077,677
1900	1,706,511,205	712,278,566	620,465,146	91,813,420
1901	1,730,281,362	701,075,529	606,514,195	94,561,334
1902	1,810,252,323	719,256,012	617,260,106	101,995,906
1903	2,018,921,746	765,715,009	668,223,822	97,491,187
1904	1,955,995,465	740,901,534	634,865,455	106,036,079
1905	2,233,777,563	836,769,901	726,307,516	110,462,385
1906	2,708,416,291	936,254,971	812,699,840	123,555,131
1907	3,047,384,746	1,022,162,842	876,849,181	145,313,661

Continues …

	National	Considered	North	South
1909	3,129,475,593	1,135,215,764	925,730,487	209,485,277
1910	3,277,040,052	1,168,951,808	934,465,808	234,486,000
1911	3,418,297,423	1,171,500,194	931,869,449	239,630,745
1912	3,727,657,512	1,308,395,323	1,105,370,980	203,024,344
1913	3,666,659,879	1,347,067,482	1,166,368,350	180,699,132
1914	2,950,332,500	1,049,633,141	885,670,860	163,962,282

Source: own elaboration from Federico et al. (2011) data.

Table A.3 Counterfactual incomes of export-oriented entities in current lire, 1870-1914.

	Counterfactual fix exchange rate		Counterfactual lira depreciated (+20%)	
	North	South	North	South
1870	255,104,655	145,701,166	255,104,655	145,701,166
1871	379,392,433	198,064,785	379,392,433	198,064,785
1872	408,802,847	238,636,972	408,802,847	238,636,972
1873	421,782,101	224,030,942	421,782,101	224,030,942
1874	315,277,970	195,584,038	315,277,970	195,584,038
1875	304,511,087	257,316,167	304,511,087	257,316,167
1876	424,127,151	248,175,060	424,127,151	248,175,060
1877	223,153,260	244,901,434	223,153,260	244,901,434
1878	275,315,125	186,376,555	275,315,125	186,376,555
1879	282,260,493	224,100,061	282,260,493	224,100,061
1880	297,754,861	175,821,940	297,754,861	175,821,940
1881	353,852,379	246,554,220	353,852,379	246,554,220
1882	315,251,818	225,119,014	376,986,987	267,017,244
1883	289,404,811	216,958,698	353,678,116	263,359,445
1884	280,907,513	161,372,924	344,350,849	195,844,637
1885	264,447,688	126,789,425	320,212,840	151,814,605
1886	320,837,405	144,889,121	389,453,608	173,323,580
1887	301,461,469	137,770,308	360,211,379	161,863,241
1888	290,074,799	134,391,363	345,961,502	157,043,297
1889	324,011,630	143,898,620	385,634,691	168,844,453
1890	301,145,906	124,032,718	351,396,466	144,452,220
1891	290,284,158	146,157,385	323,528,883	158,322,722
1892	273,573,362	143,051,107	298,199,854	154,442,152
1893	346,475,598	143,776,403	354,377,744	147,780,692
1894	373,693,580	168,055,745	368,914,749	168,549,082
1895	393,560,702	146,362,410	409,536,659	154,247,351
1896	367,367,775	165,793,434	372,914,248	172,204,773
1897	350,901,173	146,314,396	375,847,149	157,008,280
1898	440,803,252	151,461,539	453,601,828	158,853,150
1899	571,609,117	187,207,630	602,357,815	193,557,463
1900	513,755,167	152,018,589	527,435,102	155,125,607
1901	564,781,770	177,416,090	589,800,526	182,739,838
1902	609,294,749	188,358,152	636,047,560	193,402,455
1903	593,302,529	187,472,299	602,904,709	189,899,021
1904	634,472,003	205,497,859	628,163,206	203,166,238
1905	728,455,696	195,286,319	731,992,139	192,621,187
1906	872,871,308	226,298,370	867,806,155	218,312,870
1907	872,737,595	243,943,138	849,212,518	233,551,915
				Continues …

	Counterfactual fix exchange rate		Counterfactual lira depreciated (+20%)	
	North	South	North	South
1908	717,851,445	249,554,798	683,395,376	227,845,093
1909	800,989,946	198,811,147	757,471,145	189,911,492
1910	734,546,899	228,815,843	699,248,306	225,973,443
1911	658,826,548	305,374,235	606,668,803	285,944,679
1912	774,185,777	328,160,662	709,471,410	303,319,090
1913	783,957,100	309,863,689	711,113,099	288,891,925
1914	865,038,908	392,587,091	584,647,487	282,623,569

Source: own elaboration from Federico et al. (2011) data.

Table A.4 Northern export prices for product-categories in current lire per quintal, 1870-1914.

	Rice	Raw silk	Silk fabric	Silk manufacture	Cotton fabric	Other fabric	Other manufactured goods	Food and drink
1870	42.8	7,717.2	18,394.1	13,119.3	773.0	1,378.8	212.4	
1871	43.0	8,004.5	18,986.8	17,377.4	773.6	1,747.7	232.5	
1872	30.0	10,022.6	21,020.0	16,080.2	930.3	1,019.1	114.4	
1873	30.0	9,011.3	20,993.5	18,707.2	912.7	919.1	188.5	
1874	24.9	7,204.2	19,437.2	22,657.4	813.9	793.3	194.6	
1875	34.5	5,704.7	16,034.1	15,548.8	816.7	1,404.2	175.7	
1876	34.5	8,425.2	20,230.7	20,036.5	701.7	548.5	159.0	
1877	49.8	6,268.0	16,954.3	17,880.0	671.8	979.8	152.7	
1878	30.0	5,898.5	12,471.4	10,969.0	608.4	775.3	164.4	
1879	45.0	6,100.8	12,826.6	8,601.5	526.2	501.2	149.3	
1880	42.0	4,963.1	11,798.1	8,652.0	448.8	411.7	139.9	
1881	38.5	5,552.1	11,750.3	8,256.4	414.4	555.6	129.8	
1882	37.0	5,669.4	11,343.1	8,558.9	476.7	675.4	128.6	
1883	36.0	4,913.1	10,815.7	7,550.0	392.2	569.6	121.3	
1884	35.0	5,056.8	9,899.8	6,520.7	389.9	554.2	126.1	
1885	34.7	4,920.2	9,271.9	6,530.7	412.6	500.1	143.5	
1886	34.3	4,902.3	9,608.9	6,515.2	389.3	692.9	117.4	
1887	33.7	5,248.3	9,526.2	6,397.2	374.6	471.0	125.4	
1888	34.4	4,274.7	7,960.0	6,770.9	362.7	411.5	118.9	
1889	29.0	4,395.0	8,425.5	9,124.5	370.5	320.1	126.1	
1890	33.8	4,647.5	7,663.0	10,427.8	358.4	352.3	130.6	
1891	38.3	4,152.1	7,143.4	10,518.6	336.2	309.3	145.4	
1892	32.9	4,807.5	7,131.9	12,546.5	349.2	305.7	125.7	
1893	32.9	4,419.8	6,972.6	10,982.6	392.4	404.4	111.4	
1894	29.1	4,311.3	6,499.6	9,174.1	336.8	340.7	125.7	
1895	29.9	4,369.5	6,549.9	10,335.4	335.2	261.0	134.2	
1896	32.9	3,850.4	6,317.0	9,420.7	333.5	257.4	128.1	
1897	33.0	3,863.1	6,307.8	10,080.7	296.9	214.0	124.1	
1898	33.4	4,304.3	6,283.5	9,191.1	288.9	242.6	137.4	1.6
1899	33.5	4,951.7	7,269.5	10,863.1	284.9	336.1	157.6	1.5
1900	32.8	4,749.8	6,485.6	8,899.2	336.5	289.9	164.5	1.5
1901	32.8	4,562.8	6,157.9	10,411.8	306.0	331.9	144.0	1.5
1902	35.3	4,716.4	6,265.4	10,122.7	304.3	370.7	155.5	1.4
1903	35.8	5,263.8	6,289.0	9,041.7	329.8	362.7	155.2	1.3
1904	35.6	4,753.8	6,112.1	10,254.2	351.4	457.9	158.9	1.1
1905	34.2	4,860.7	5,793.3	9,834.6	321.8	385.2	174.4	1.2
1906	33.6	5,227.5	6,319.7	9,406.7	371.7	296.2	174.4	1.2
1907	33.3	5,738.7	6,788.5	8,141.4	439.9	350.1	145.2	5.3

	Rice	Raw silk	Silk fabric	Silk manufacture	Cotton fabric	Other fabric	Other manufactured goods	Food and drink
1908	33.6	4,592.3	6,288.2	8,687.4	391.9	381.6	153.8	4.7
1909	35.8	4,783.2	6,183.6	5,622.7	358.1	407.1	162.6	3.9
1910	38.4	4,356.6	6,130.8	5,085.4	380.7	466.4	165.7	5.1
1911	38.4	4,270.4	6,162.9	3,444.7	392.5	346.0	143.7	5.4
1912	39.7	4,205.5	5,973.1	3,025.7	379.1	205.6	163.2	5.2
1913	38.8	4,528.2	6,029.1	3,985.3	374.4	213.8	167.3	5.2
1914	41.3	4,476.4	6,155.8	2,905.4	385.1	254.4	166.6	5.6

Source: own elaboration from Federico et al. (2011) data.

Table A.5 Southern export prices for product-categories in current lire per quintal, 1870-1914.

	Olive oil	Wheat	Citrus	Sulphur	Coral	Aromatic essence	Dry fruits	Wine
1870	149.9	70.0	25.9	15.0	7,774.2	2,711.5	185.5	
1871	149.9	70.0	25.6	15.2	9,371.2	2,700.5	187.7	
1872	129.9	31.7	33.1	15.0	133,544.0	2,500.0	149.7	
1873	159.8	33.3	31.8	15.0	97,319.3	2,500.0	148.8	
1874	179.7	31.3	32.5	15.1	88,956.7	2,500.0	149.3	
1875	159.9	27.5	37.7	13.6	82,067.2	2,000.0	146.9	
1876	149.9	28.4	39.1	14.5	87,165.0	2,000.3	155.8	
1877	164.9	31.3	37.6	12.1	95,494.3	2,000.3	147.7	
1878	170.0	27.6	27.7	12.0	95,839.9	2,205.8	149.9	
1879	160.0	36.7	29.0	10.0	90,446.8	2,931.0	204.1	
1880	150.0	31.2	27.0	11.7	16,496.9	2,775.7	191.3	
1881	140.0	28.3	25.8	11.6	57,930.4	2,000.0	177.4	
1882	120.0	26.5	24.7	11.2	71,122.2	2,287.6	149.6	
1883	125.0	24.6	21.0	10.5	55,945.4	2,186.8	180.6	
1884	135.0	24.7	21.0	9.5	26,746.9	1,547.2	141.9	
1885	130.0	28.1	20.8	9.0	18,034.2	1,460.2	153.5	
1886	120.0	30.0	20.9	8.3	17,900.4	1,528.7	148.4	
1887	125.0	26.6	19.4	7.5	16,042.9	1,533.3	132.4	
1888	120.0	29.5	18.8	7.2	7,630.6	1,570.5	145.3	
1889	120.0	35.1	19.2	7.0	14,416.4	1,565.3	160.5	
1890	120.0	35.7	18.9	8.0	13,548.9	1,579.0	181.3	
1891	110.0	40.0	18.6	11.0	13,751.8	1,591.3	187.9	
1892	105.0	33.2	18.7	10.0	13,908.4	1,582.1	187.8	
1893	110.0	31.2	15.9	8.0	14,902.1	1,568.8	172.9	
1894	105.0	28.7	15.1	7.2	15,778.0	1,563.6	139.6	
1895	105.0	40.0	15.9	6.5	15,211.4	1,569.6	137.7	
1896	95.0	36.5	14.8	7.7	15,273.1	1,376.9	126.4	
1897	100.4	45.0	12.2	9.5	12,878.0	1,333.8	132.3	
1898	99.9	50.4	13.0	10.3	14,120.1	1,353.5	152.8	3.7
1899	111.1	43.1	10.9	10.3	15,105.7	1,439.7	188.5	5.0
1900	111.5	41.9	11.8	9.9	14,570.9	1,631.4	211.5	7.1
1901	109.1	37.5	10.7	9.8	15,219.4	1,472.9	194.9	3.4
1902	101.5	37.5	8.9	10.0	19,244.5	1,516.1	198.2	4.0
1903	105.3	38.5	8.8	9.9	21,369.0	1,507.8	169.9	10.3
1904	109.3	38.2	8.8	10.0	22,214.3	2,000.7	166.6	6.5
1905	113.6	35.1	8.7	9.9	23,252.4	2,002.8	160.2	1.5
1906	107.7	35.4	9.6	9.6	22,519.8	1,562.1	174.3	2.1
1907	114.1	36.6	9.7	9.7	23,587.7	1,999.6	187.7	1.6

Continues …

	Olive oil	Wheat	Citrus	Sulphur	Coral	Aromatic essence	Dry fruits	Wine
1908	135.4	41.6	9.8	9.8	21,717.7	1,699.3	180.3	1.3
1909	162.1	42.0	9.6	10.1	23,241.6	2,094.8	198.8	1.3
1910	129.5	42.4	11.7	10.1	47,057.2	1,392.5	207.2	1.6
1911	151.0	42.2	15.5	10.2	43,692.8	1,681.6	224.0	1.7
1912	154.6	43.1	17.4	10.2	44,283.1	2,131.5	231.3	1.5
1913	135.9	42.3	19.7	10.4	47,908.5	3,822.0	287.5	1.4
1914	135.5	45.9	20.2	10.7	44,025.5	2,055.2	281.4	1.3

Source: own elaboration from Federico et al. (2011) data.

Table A.6 Northern import prices for product-categories in current lire per quintal, 1870-1914.

	Wheat	Coal and oil	Raw silk	Raw cotton	Other raw materials	Cotton yarn	Other yarn	Industry goods
1870		6.6	8,686.1	247.1	271.1	350.9	411.5	
1871		5.7	7,902.4	245.3	521.9	357.3	380.3	
1872	32.0	6.8	8,194.5	239.1	509.8	392.9	421.7	216.6
1873	38.0	6.5	4,860.5	234.7	490.3	384.5	472.6	225.0
1874	30.0	5.3	5,644.5	207.8	462.0	350.4	462.7	225.0
1875	25.0	4.9	3,921.0	237.8	432.2	348.0	439.2	210.0
1876	28.0	4.3	6,266.1	181.4	451.3	328.0	510.6	210.0
1877	30.0	4.5	4,088.8	177.4	436.2	323.0	384.2	210.0
1878	25.0	3.1	3,635.6	156.4	442.1	304.7	412.0	
1879	31.0	4.0	3,697.2	186.3	427.1	355.7	405.6	
1880	30.0	4.2	2,741.2	182.8	461.0	352.2	379.3	
1881	22.0	3.8	3,005.6	171.0	425.8	308.7	390.7	130.0
1882	22.2	3.5	2,733.0	164.2	418.3	309.5	370.1	125.0
1883	21.8	3.6	2,694.2	145.2	356.9	296.0	357.0	120.0
1884	21.2	3.3	2,447.0	141.7	310.6	291.9	345.5	115.0
1885	19.4	3.0	2,529.8	122.1	271.6	277.1	338.6	120.0
1886	20.1	2.7	2,839.5	119.4	296.5	264.0	357.8	115.0
1887	19.8	2.7	2,588.5	124.5	253.9	275.7	344.1	115.0
1888	22.0	2.7	2,595.1	117.3	259.9	276.0	374.4	131.4
1889	19.0	3.0	2,479.8	127.3	311.1	278.1	370.1	126.0
1890	18.9	3.1	3,004.5	126.3	340.1	274.1	374.4	160.3
1891	22.5	2.9	2,693.8	106.0	289.4	257.9	342.5	184.3
1892	20.7	2.7	3,088.1	95.7	258.5	243.8	365.6	176.7
1893	16.9	2.8	3,158.7	110.5	300.3	256.4	413.5	212.5
1894	14.3	2.4	2,714.1	100.3	267.6	241.6	403.2	196.2
1895	14.2	2.3	2,561.1	90.3	244.1	227.0	358.6	160.7
1896	15.1	2.4	1,947.0	100.3	300.6	255.7	337.3	166.6
1897	18.3	2.5	2,406.4	92.3	290.2	236.9	318.6	176.6
1898	21.9	3.3	2,126.6	84.2	311.1	230.9	305.6	188.9
1899	18.1	3.4	2,445.5	82.6	400.5	278.0	314.3	187.3
1900	20.5	4.5	2,260.7	123.1	346.8	356.5	333.2	214.3
1901	18.7	3.4	1,976.5	117.2	326.5	346.0	323.8	207.7
1902	17.6	2.8	2,988.7	110.2	368.7	436.9	316.7	192.0
1903	17.0	2.8	2,316.6	120.1	385.7	396.9	330.0	192.6
1904	17.4	2.7	2,324.7	152.0	411.0	401.8	332.1	199.0
1905	17.7	2.7	2,421.4	113.6	425.0	371.1	326.1	181.4
1906	17.7	2.9	2,479.9	134.3	439.4	394.0	352.7	181.5
1907	19.1	3.2	1,760.3	138.4	451.1	453.4	362.0	188.2

Continues …

	Wheat	Coal and oil	Raw silk	Raw cotton	Other raw materials	Cotton yarn	Other yarn	Industry goods
1908	22.3	3.0	2,081.2	134.2	398.7	444.6	334.3	180.2
1909	21.9	2.9	2,332.0	128.9	444.8	416.7	361.2	186.5
1910	20.3	2.8	1,868.6	182.9	422.6	447.9	416.6	287.7
1911	20.7	3.0	1,590.9	185.7	389.7	432.7	413.3	285.9
1912	21.5	3.8	1,207.3	161.8	423.3	387.2	422.4	352.0
1913	21.1	3.6	1,563.5	167.4	440.5	600.5	432.7	347.5
1914	23.4	3.6	1,714.3	169.7	449.5	611.7	428.3	329.8

Source: own elaboration from Federico et al. (2011) data.

Table A.7 Southern import prices for product-categories in current lire per quintal, 1870-1914.

	Rice	Fertilizer	Livestock	Agricultural goods	Manufactured goods	Silk fabric	Cotton fabric	Other fabric
1870	40.0	12.0	179.1	80.1	406.7	14,750.8	784.8	1,348.4
1871	40.0	12.0	161.3	65.8	452.7	15,210.2	770.1	1,342.5
1872	30.0	9.5	292.5	83.0	443.2	18,873.7	748.2	1,253.7
1873	30.0	9.5	259.2	125.6	483.6	19,618.2	746.1	1,152.4
1874	25.0	9.5	236.4	133.8	484.0	18,084.7	687.2	1,151.2
1875	35.0	9.5	231.5	102.8	475.9	15,890.0	669.7	1,036.7
1876	35.0	9.5	237.2	96.6	462.9	19,397.1	654.1	998.8
1877	50.0	9.5	229.1	90.7	412.7	16,416.7	626.3	937.9
1878	45.0	9.5	308.1	60.0	1,367.9	10,629.6	573.5	804.9
1879	40.0	10.5	491.7	50.0	1,524.2	9,050.2	495.9	732.6
1880	37.0	10.5	418.3	50.0	1,235.3	7,601.5	490.4	828.3
1881	34.5	10.0	511.5	50.0	1,250.1	7,488.0	466.7	769.0
1882	31.5	10.0	473.2	45.0	1,276.3	7,156.5	455.1	779.2
1883	30.0	10.0	507.5	45.0	1,162.7	6,870.3	420.0	736.6
1884	28.0	10.0	477.6	49.4	1,189.1	6,736.8	416.4	720.4
1885	22.1	10.0	442.7	45.0	1,217.0	6,644.0	400.1	672.7
1886	22.1	10.0	477.8	51.1	1,374.3	6,735.6	382.6	748.0
1887	25.9	10.0	470.3	44.1	1,507.3	6,615.1	389.4	776.2
1888	26.9	10.0	545.3	69.9	1,767.4	7,075.1	418.8	820.2
1889	20.4	10.0	566.7	69.5	1,680.7	7,241.8	445.4	962.6
1890	26.4	10.0	499.6	76.0	1,402.4	7,139.5	470.0	1,004.9
1891	25.3	10.0	521.3	77.1	1,544.1	6,410.4	433.4	951.4
1892	37.5	10.0	432.2	72.2	1,626.0	6,538.5	467.9	886.6
1893	48.5	10.0	430.2	72.9	1,321.6	6,400.8	488.9	892.8
1894	55.0	10.0	544.0	73.3	1,118.2	5,984.9	497.1	869.8
1895	42.1	9.0	622.7	65.7	730.4	5,971.4	448.2	817.6
1896	29.5	7.0	593.0	66.1	1,731.6	5,446.7	487.3	821.8
1897	29.1	5.2	646.7	70.7	1,760.6	5,478.5	454.1	781.5
1898	39.7	5.9	595.0	74.8	1,683.7	5,713.5	448.4	769.0
1899	21.8	5.5	611.4	71.8	1,718.8	6,347.1	484.7	955.0
1900	27.0	4.3	631.3	72.6	1,561.4	5,836.9	533.9	858.9
1901	40.3	4.8	645.6	69.8	1,654.7	6,168.1	508.6	861.5
1902	32.2	4.0	566.1	70.8	1,468.6	6,071.7	504.7	863.3
1903	30.4	5.4	567.8	67.9	1,566.2	6,221.2	520.7	882.9
1904	31.0	4.0	568.1	69.6	1,501.9	6,299.9	538.0	870.8
1905	35.0	4.4	570.2	73.6	1,515.2	6,149.7	515.0	907.3
1906	48.2	4.0	532.6	49.1	1,349.7	7,122.8	580.3	995.0
1907	39.6	7.6	629.2	105.0	1,433.5	7,772.0	624.6	1,022.3
1908	43.0	6.3	464.7	81.1	1,300.9	6,295.3	652.1	937.8

Continues …

	Rice	Fertilizer	Livestock	Agricultural goods	Manufactured goods	Silk fabric	Cotton fabric	Other fabric
1909	33.0	5.9	516.0	96.8	1,413.0	6,507.9	644.6	1,124.6
1910	34.8	6.0	447.6	94.7	1,565.6	6,135.4	662.0	1,185.7
1911	48.4	6.0	469.4	106.1	1,620.7	6,125.7	791.6	1,247.2
1912	52.4	6.0	566.2	107.3	1,535.7	5,888.7	781.5	1,287.1
1913	37.3	6.0	665.4	84.8	1,573.5	6,001.3	797.7	1,535.3
1914	27.0	6.8	567.4	86.5	1,659.3	6,127.2	799.3	1,601.4

Source: own elaboration from Federico et al. (2011) data.
Livestock is measured in current lire per units.

Table A.8 Aggregate regional export and import prices in current lire per quintal, 1870-1914.

	Export prices		Import prices	
	North	South	North	South
1870	5,948.2	1,561.7	1,662.23	2,200.22
1871	6,737.9	1,788.6	1,568.84	2,256.83
1872	7,030.9	19,486.2	1,251.66	2,716.72
1873	7,251.7	14,315.4	839.02	2,803.09
1874	7,303.7	13,123.5	923.48	2,601.49
1875	5,674.1	12,064.7	702.25	2,306.38
1876	7,162.3	12,793.3	997.48	2,736.41
1877	6,136.6	13,984.0	706.76	2,346.60
1878	4,416.7	14,061.8	711.27	1,724.81
1879	4,107.2	13,402.5	729.54	1,549.38
1880	3,779.4	2,812.0	592.96	1,333.91
1881	3,813.9	8,616.2	557.19	1,322.48
1882	3,841.3	10,534.5	518.24	1,278.36
1883	3,485.4	8,356.3	499.32	1,222.76
1884	3,226.1	4,089.5	459.52	1,203.45
1885	3,116.3	2,833.7	460.19	1,181.70
1886	3,180.0	2,822.4	501.87	1,225.19
1887	3,168.1	2,555.3	465.53	1,229.80
1888	2,847.6	1,360.3	472.35	1,341.71
1889	3,255.8	2,331.9	464.31	1,374.64
1890	3,373.3	2,213.1	537.73	1,328.60
1891	3,234.8	2,244.4	487.39	1,246.62
1892	3,614.2	2,263.6	531.49	1,258.87
1893	3,330.9	2,401.3	558.95	1,208.22
1894	2,973.9	2,519.6	492.48	1,144.03
1895	3,145.0	2,440.9	457.28	1,088.41
1896	2,905.7	2,418.6	390.62	1,147.88
1897	2,988.5	2,073.0	442.71	1,153.30
1898	2,925.9	2,257.1	409.05	1,166.25
1899	3,413.8	2,415.6	466.20	1,277.01
1900	2,994.0	2,369.8	457.47	1,190.80
1901	3,135.3	2,436.3	414.97	1,244.18
1902	3,138.6	3,016.7	554.21	1,197.68
1903	3,068.3	3,315.6	470.21	1,232.81
1904	3,160.6	3,506.8	480.10	1,235.42
1905	3,057.8	3,654.7	482.36	1,221.32
1906	3,118.5	3,488.4	500.30	1,335.22
1907	3,091.0	3,706.4	421.96	1,454.22

Continues …

	Export prices		Import prices	
	North	South	North	South
1908	2,932.7	3,399.1	449.82	1,222.65
1909	2,507.6	3,679.8	486.85	1,292.72
1910	2,374.9	6,978.7	456.18	1,266.46
1911	2,114.1	6,545.3	415.24	1,301.89
1912	1,998.9	6,695.9	372.41	1,278.11
1913	2,191.0	7,460.9	447.11	1,337.65
1914	2,055.0	6,653.5	466.30	1,359.37

Source: own elaboration from Federico et al. (2011) data.

To calculate the aggregate level of prices, lire per units are assumed equal as lire per quintal. This assumption is motivated by the idea that a large part of the considered livestock imported by the South was in young age and would have weighted close to one quintal.

Table A.9 Regional and national GDP per capita and population estimations.

	GDP per capita (1911 prices)				Population			
	1871	1881	1901	1911	1871	1881	1901	1911
Piedmont	423	490	599	727	2,899,564	3,070,250	3,317,401	3,424,450
Liguria	568	532	671	970	843,812	892,373	1,077,473	1,197,231
Lombardy	454	431	589	752	3,460,824	3,680,615	4,282,728	4,790,473
Venetia	414	335	431	544	2,642,817	2,814,173	3,134,467	3,527,360
Emilia	389	389	455	680	2,113,828	2,183,391	2,445,035	2,681,201
Tuscany	430	448	446	614	2,142,525	2,208,869	2,549,142	2,694,706
Marches	336	347	398	511	915,419	939,279	1,060,755	1,093,253
Umbria	407	444	455	582	549,601	572,060	667,210	686,596
Latium	599	699	695	941	836,704	903,472	1,196,909	1,302,423
Abruzzi	327	331	311	429	1,282,982	1,317,215	1,441,551	1,430,706
Campania	439	402	436	594	2,754,592	2,896,577	3,160,448	3,311,996
Apulia	365	444	460	537	1,420,892	1,589,064	1,959,668	2,130,151
Basilicata	274	301	364	463	510,543	524,504	490,705	474,021
Calabria	283	331	331	442	1,206,302	1,257,883	1,370,208	1,402,151
Sicily	385	419	417	537	2,584,099	2,927,901	3,529,799	3,672,258
Sardinia	319	360	426	579	636,660	682,002	791,754	852,407
North	4,020	4,115	4,739	6,321	16,405,094	17,264,482	19,731,120	21,397,693
South	2,392	2,588	2,745	3,581	10,396,070	11,195,146	12,744,133	13,273,690
Italy	410	419	479	630	26,801,164	28,459,628	32,475,253	34,671,383

Source: Baffigi (2011 cited in Missiaia, 2014) for GDP per capita estimations, and MAIC (1874, 1883, 1902, 1914 cited in Missiaia, 2014) for data on the regional population.

Table A.10 Regional trade estimations in 1911 prices, 1870-1914.

	Northern exports	Southern exports	Northern imports	Southern imports
1870	147,852,351	132,771,924	126,826,147	200,942,045
1871	207,741,473	199,818,630	152,179,512	218,379,343
1872	189,689,538	202,351,963	207,335,789	248,741,161
1873	211,480,793	192,373,260	206,614,435	254,050,920
1874	194,874,213	150,743,162	224,455,569	246,765,786
1875	229,399,499	220,541,709	237,029,613	292,827,040
1876	222,421,895	225,091,543	268,124,985	287,318,165
1877	148,776,092	192,573,735	234,903,886	273,444,624
1878	203,234,721	167,004,702	222,074,153	230,529,300
1879	199,806,791	192,692,431	249,789,897	220,050,324
1880	254,458,426	214,062,054	226,726,598	255,766,476
1881	274,446,539	238,449,192	271,639,901	297,824,593
1882	239,871,663	233,190,348	274,900,034	260,310,382
1883	256,895,092	237,273,409	258,639,061	295,959,574
1884	243,552,674	183,842,434	293,068,804	315,803,371
1885	233,342,528	148,182,069	358,042,606	326,822,719
1886	283,528,925	178,423,251	392,957,642	300,220,015
1887	247,227,087	180,194,808	439,286,095	323,204,318
1888	285,035,421	175,799,159	383,200,608	175,086,207
1889	287,431,831	177,718,548	471,125,479	203,941,875
1890	251,928,652	141,671,820	422,747,782	188,563,818
1891	265,664,251	160,981,131	360,768,348	166,241,842
1892	220,068,733	162,046,008	426,973,744	153,207,165
1893	266,704,857	159,059,666	468,493,657	145,982,990
1894	299,914,964	197,714,239	367,433,404	114,017,426
1895	325,206,306	182,584,742	565,973,430	143,908,712
1896	330,653,217	210,576,649	531,440,267	118,229,067
1897	334,675,705	186,169,719	516,831,549	111,452,076
1898	391,694,293	172,542,067	620,972,520	98,039,554
1899	439,529,867	205,755,725	569,716,115	107,003,277
1900	414,063,928	152,982,540	604,243,755	103,256,065
1901	482,315,630	192,208,964	681,045,431	104,643,942
1902	497,294,268	221,950,972	722,176,037	118,536,569
1903	445,892,907	210,504,711	779,670,867	113,427,932
1904	494,722,282	221,998,998	701,683,514	122,119,652
1905	570,836,763	214,452,418	851,300,060	127,554,848
1906	637,602,365	245,127,210	907,285,381	142,512,833
1907	560,600,052	247,572,506	949,669,398	151,267,251

Continues …

	Northern exports	Southern exports	Northern imports	Southern imports
1908	541,834,853	228,531,406	878,665,914	232,184,839
1909	596,080,300	179,944,644	992,289,908	215,692,854
1910	568,221,195	208,400,067	947,982,509	248,787,572
1911	505,623,114	239,258,299	931,869,449	239,630,745
1912	614,038,138	239,215,021	1,063,872,664	196,666,319
1913	590,342,367	208,192,070	1,111,923,692	171,706,449
1914	476,686,746	203,455,617	819,279,335	152,492,085

Source: own elaboration from Federico et al. (2011) data.