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Of Finance and Trade: Three Essays on the Italian Economic History

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*A thesis submitted in fulfillment of the requirements
for the degree of Doctor of Philosophy in Economics*

at

University of Siena

Department of Economics and Statistics

January 29, 2018

Declaration of Authorship

I, Andrea INCERPI, declare that this thesis titled, “Of Finance and Trade: Three Essays on the Italian Economic History” and the work presented in it are my own. I confirm that:

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- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
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Abstract

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Department of Economics and Statistics

Doctor of Philosophy in Economics

Of Finance and Trade: Three Essays on the Italian Economic History

by Andrea INCERPI

Globalization and international dynamics have always been crucial to understand modern economic development. Balance of payments dynamics, budget deficit, current account and international trade are the common subjects analyzed in order to deepen the issue from a macroeconomic perspective. The three chapters of the thesis cover exactly these topics. The first chapter provides new and robust estimates of the Italian current account between 1861 and 1914 overcoming the lacking data context showed by previous studies. In particular, focus is on the main entries of the invisible trade balance, that are: remittances, tourism, freights and capital interests. The second chapter shed lights on the relationship between budget deficit and current account deficit testing the so-called “twin deficit hypothesis” and exploiting part of the series of the first chapter together with other dataset. The econometric analysis is applied to both the short-run and the long-run. The third paper deepen the role of freights within the Italian international trade by looking to a new unit transport cost series presented for the first time in this kind of literature. The analysis is extended also to some specific determinants of trade such as bulkiness and distance.

Acknowledgements

Three years passed since I started the tough and long route of the doctoral program. The completion of the thesis is the results of my personal work supported by comments, hints and encouragement by many people. First of all I want to thank my supervisor, Giovanni Federico, that has always been a landmark and a guidance for my academic interests and research.

Other precious contributions need to be mentioned. Among these I would like to thank Patrizia Battilani, Claudia Borghese, Leandro Conte, Giuseppe Conti, Paolo Di Martino, Giacomo Domini, Mattia Fochesato, Lorenzo Giolli, Ernesto Petrucci, Giuseppe Tattara, Roberto Tedeschi, Gianni Toniolo, Michelangelo Vasta and all the participants to the annual PhD meeting in Pontignano that intervened with several stimulating comments. This, together with suggestions I received at the Economic History Society conference in London and at the annual meeting of Economic History Association in California allowed me to extend the analysis to other interesting perspectives.

The time spent as visiting student at University of Oxford has been crucial for the final results of the thesis. I would like to thank Rui Esteves for his welcome and his comments during all the six months spent there. A great acknowledgment goes to Bryan A'Hearn and to all the young and smart economic historians that allowed me to present my work and introduced me to a wonderful academic environment: Robin Adams, Maddalena Alvi, Chiara Focacci, Giacomo Gabbuti, Gabriel Mesevage, Marco Molteni, Giovanni Pala, Andrea Ramazzotti and Kilian Rieder. It has been one of the most relevant experience of my life.

While at Oxford I was lucky to share office, ideas and coffees with wonderful mates: Friedrich Bergmann, Andrea Bernini, Boris Georgiev, Benjamin Kett, Felix Klimm, Kewan Mertens, Viviana Perego, Carlo Pizzinelli and Pavel Luengas Sierra. I want to thank all of you for the amazing time spent together.

There is no trip without shipmates. Thanks to Damiano and Serena for sharing thoughts, doctoral anxieties and happy moments.

A special mention goes to Renato Giannetti that guided me as student since the

bachelor. His lessons on the love for research and humanities will always be precious guides for the future.

Finally I want to thank my family that always supported me during this great journey.

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Chapter 1

Capital Flows in the Periphery: the Italian Balance of Payments in the Liberal Age, 1861-1914

1.1 Introduction

Few processes affect history as globalization since the Seventies of 19th century. Reduced transport costs and an increasing communication network allow mass migration and the increase of trade in a growing global context. Production factors, technology, goods and financial flows circulate among different national economies, involving both poor and rich countries, without relevant trade barriers. Capital flows increase more than in any other century, raising both practical and theoretical implications (O'Rourke and Williamson, 2001). Within this context Italy is a relevant case study for its position as peripheral economy at that time. This stimulated many economic historians to debate on the relevance of capital flows for the first decades after Unification (Fenoaltea, 1988; Tattara, 1995; Pistorresi and Rinaldi, 2015). These studies usually refer to the trade balance in order to quantify capital flows or are based on the balance of payments series provided by Istat. The first is a weak and rough assumption justified by the lack of accurate data. The second imply, rather implausibly, that Italy was a net long-term exporter of capital. In order to overcome these issues, this paper provide a new and more robust estimates of the Italian capital flows looking at the main invoice of the current account. These are remittances, tourism, freights and interest on foreign investments. Results confirm the idea never

demonstrated before, that is capital flows were always underestimated in previous reconstructions. In addition, results revalue the role of some specific balance of payments invoices, such as tourism and remittances.

The paper is organized as follows. The first part presents the historical economic literature on the balance of payments dynamics and both the role of current account and international capital flows for Italy in the Liberal Age. The second section describes the preexisting series of the Italian balance of payments stressing the main issues. The third part shows the new estimates of each series of the current account. Finally Appendix A covers the methodologies adopted to compute the new series of the balance of payments.

1.2 Balance of payments and capital flows: a survey of the literature

Firstly international capital mobility creates a global marketplace for capital based on technological and institutional developments within financial sector: a broad variety of private debt and equity instruments, a developed bond markets, future contracts and the adoption of modern communications system to transmit and collect prices are introduced (Obstfeld and A.M. Taylor, 2003). On the theory side, capital mobility changes the growth theory's perspective emphasizing the relevance of investment demand and international capital flows as the main determinant of economic growth. This gradually replaces the prevailing view of a macro catching up approach, based on exports of commodities to finance import of industrial goods by periphery, and based on import of commodities and export of industrial goods by the core.

Williamson and O' Rourke describe this episode as "the Atlantic economy" which develops in the second half of 19th century. During these decades, until the eve of WWI, there is a massive increase of capital flows from core to peripheral countries, as Italy is after its Unification process. United Kingdom, Germany and France are the main capital exporters, as clearly emerges from data on foreign investments as percentage of domestics savings (Jones and Obstfeld, 1997). Capital flows are based on micro-decision investments by investors of core countries (Lévy-Leboyer,

Bourguignon, et al., 2008). These depend on the relative risks and in the returns of foreign and domestic investments, so that, in the last quarter of 19th century peripheral countries receive an increasing amount of capital. According to this view capital flows are both the determinant of the balance of payments fluctuations and the main cause of the observed business cycles in developing countries. This approach reduces the attention to the traditional emphasis on domestic economic policies because exogenous and global factors, such as capital inflows and the gold standard regime of exchange stability that they require, explain the process of capital formation within developing countries (Di Martino, 2001). This view contrasts the macro Keynesian approach which develops in Italy during the Sixties and the Seventies of 20th century and it is based on the relevance of the trade balance rather than on investments cycles from abroad. Gerschenkron, for example, assesses that the industrial production discontinuity in Italy in the last two decades of 19th century marked the beginning of the modern economic growth (Gerschenkron, 1968). This “big spurt”, according to Gerschenkron definition, is primarily due to a substitutive institutional environment represented, in the Italian case, by the adoption of the German banking system. This allow Italian industries to finance their activities thanks to a larger internal supply of capital.

In a more typical Keynesian growth approach, Bonelli and Cafagna start from the role of the trade balance of backward countries, as Italy is in 19th century (Bonelli, 1978). According to this frame, an increase in the rate of growth driven by investments requires an increase of imports usually followed by a trade balance deficit (Cafagna, 1989). The way to maintain the equilibrium of the balance of payment in long run is to increase exports, as Italy experiences during 1861-1880 by exporting raw silk or, later, other textile goods and light manufacturing sectors (Federico and Wolf, 2013). In this context public policies are the main focus of historical analysis, going from a technological catching up approach (Gerschenkron, 1968), to a political cycle perspective (Fenoaltea, 1969) and to a distributive perspective (Zamagni, 1993). The latter, in particular, underlines the crucial role of right wing policies (1867-1876) in stabilising national accounts after huge expenses of post-Unification years. According to Zamagni, a thrifty policy was the only instrument available to improve the Italian bonds rating.

A different perspective, based on a monetarist approach, shifts the attention from trade balance to balance of payment stating that the driving force of growth are the international capital flows and that the current account balance simply adjusts to these. Spinelli refers to the actual and desired supply of money according to the monetary theory of the balance of payment. When the money supply exceeds the demand, capital outflows increases and the currency depreciates (Spinelli, 1988). According to this framework, the public finance debt financed by currency issue is the first cause of money oversupply. The insight of this theory is that public finance is the main determinant of the high inflation in Italy. Fenoaltea adopts the same approach to explain the Italian economic growth and its fluctuations (Fenoaltea, 2011). These are due to the supply of foreign capitals in the international market and to the expectations of English investors. In particular, the balance of payments deficit increases both the national financial risk and the interest rates, inducing an increase in the cost of capital and reducing the investments.

This view raised a lot of criticism especially on the side of empirical evidence. Some economic historians attempt to test this explanation using data on foreign capital flows and trying to reconstruct balance of payments' series for the period 1861-1914 in Italy. Tattara explains the theory of market equilibrium in the context of gold standard without any statistical testing (Tattara, 1995). Morys and Pistoresi-Rinaldi, by contrast, adopt an econometric approach. Morys applies an econometric model to compare Italy and Austria-Hungary balance of payments (Morys, 2006). Pistoresi-Rinaldi refers to Granger causality test to analyse the account deficits at the end of 19th century (Pistoresi and Rinaldi, 2015). These studies are generally based on the national accounts series provided by Istat (ISTAT, 1957) and the two existing benchmarks of the balance of payments provided by the Bank of Italy for 1891 (Biagioli and Picozza, 2002) and 1911 (Marolla and Roccas, 2002), according to the frequency of national censuses. Both these estimates will be discussed in next paragraphs.

As mentioned above, the trade balance has been explained from two main methodologies. On one hand, according to Fratianni and Spinelli, fiscal policy of the Italian governments sensibly affected money supply (Fratianni and Spinelli, 2005). Bonds issue and money printing were the main instruments to finance the state. The Department of Treasury (Ministero del Tesoro) borrowed huge amount of money at low

rates from central banks. These, in turn, were allowed to increase money circulation over gold reserves in order to expand credit. According to this framework, public finance during Liberal Age was the main determinant of high inflation in Italy. It also had a relevant impact on the monetary regime (Fратиanni and Spinelli, 2005). Public deficits caused Italy's exit from the gold standard in 1866 and were responsible of the two monetary shocks in 1866-67 and 1870-72. In addition, Frатиanni and Spinelli underlines the impact of public deficits on the convertibility suspension during the 1880's and on the improvement of a new monetary policy after the first decade of 20th century.

On the other hand, a different perspective comes from a Keynesian macroeconomic approach which considers also the trade balance dynamics. According to this model, the total amount of import are endogenously determined by domestic GDP while exports are exogenously determined by the global demand of national goods. In a developing country, as Italy was after Unification, imports usually exceeds exports. This creates a trade balance deficit that can be covered by interventions both in short and long run. In the short run deficit can be covered by selling national bank reserves or by capital inflows. In the long run deficit is balanced by currency devaluation. The Italian evidence confirms this approach: during the '60s and the '80s of 19th century, Italy balanced the current account deficit through capital inflows while, in the early 20th century, were the substitutive relevant factors (Bonelli, 1978).

According to this theoretical tradition, the Italian post-Unification growth has been interpreted by Bonelli and Cafagna referring to Keynesian business cycle (Bonelli, 1978; Cafagna, 1989). The main assumption of the Bonelli-Cafagna model, as it is usually considered by macroeconomic literature, assumes that goods are exchanged in international market and that growth shows cyclical waves. Exogenous shock and historical events determine each cycle: agricultural prices, emigrants remittance, financial crisis, wars, balance of payments deficit are all possible shocks able to change the growth direction starting from a given economic structure.

An empirical approach based on national accounting has been advanced by Simon Kuznets in 1961. Kuznets does not find evidence of trade balance adjustment mechanisms in the Atlantic economies at the end of 19th century, but finds evidence of the global role played by international capital flows (Kuznets, 1961). His explanation is

based on the long-swing peaks of migrants and capital flows in the last decades of 19th century. Empirical evidence confirms a narrow link between construction cycle and financial capital flows, both affected by changes in foreign investments of UK, the dominant exporter of capital (Kuznets, 1961). According to Kuznets, the mechanism is driven by mass migration between 19th and 20th century, which shifted the demand for infrastructure investments from European countries to USA, Australia, Canada and Argentina, all characterized by low demographic rates and lack of capitals but rich natural resources.

Stefano Fenoaltea adapted this approach to the Italian economic growth in the Liberal Age (Fenoaltea, 2011). He underlines that Italy was involved within the international capital and labor flows, and uses construction sector to empirically test Kuznets cycle theory starting from his own estimates. Figure 1.1 shows the evolution of aggregate new constructions, referred mainly to railways and private buildings, and the net imports of capital based on selected components of the balance of payments provided by Istat in 1957: the export of services, including the repatriated earnings of temporary migrants and remittances of the permanents, and a general series capital imports analysed in the following paragraph.

Fenoaltea finds an early post-Unification cycle, followed by a collapse corresponding to budget crisis of 1866. Afterwards a classical Kuznets cycle follows, peaking in 1874, 1886 and 1910 with a minimum in 1876, 1898 and 1905. Construction responded to shifts in capital supply behaving as a “finance-sensitive” capital formation. In particular, the construction cycle seems caused by changes in the supply of foreign capital due, in turn, to changes in the premium required to attract that capital in Italian financial market.

The problem with the Kuznets’s paradigm arises from the direction of migration: Italy was a country of high emigration, not immigration as in all the other cases considered. Even if data on migration flows statistics are not satisfying for the net migration flow, empirical reconstruction generally shows that population growth in Italy was basically determined by the natural increase in a context of demographic transition rather than by migration flows (Giusti, 1965). Population growth was constant during the first decades, and Fenoaltea admits that construction investments

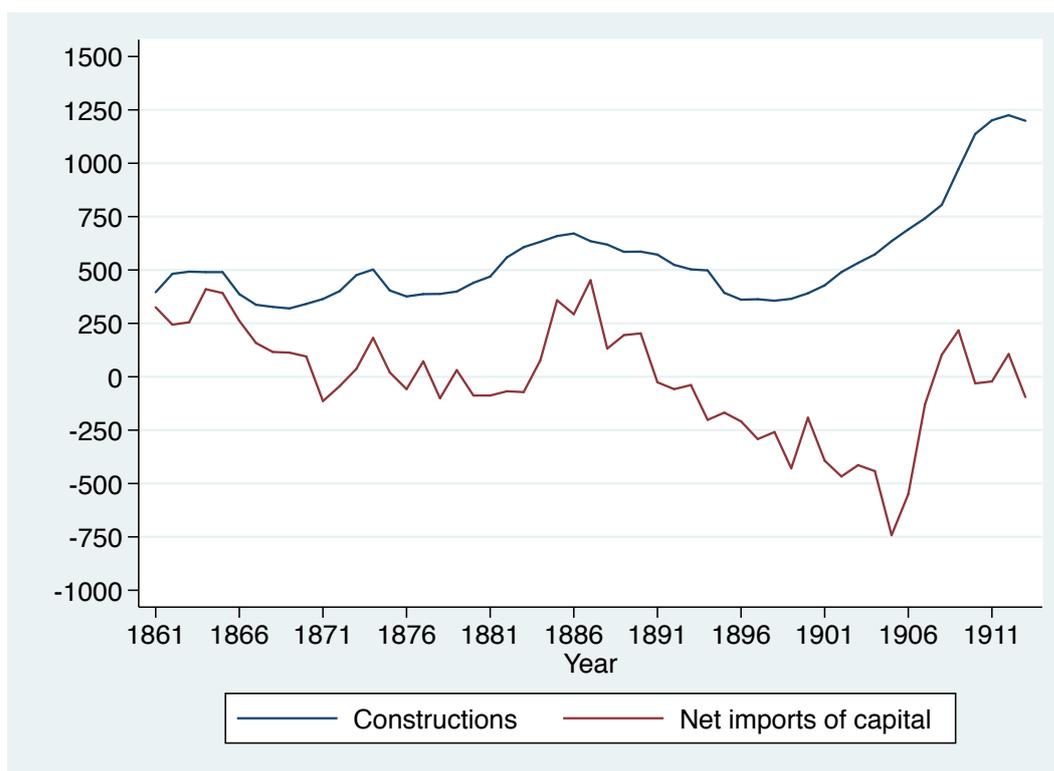


FIGURE 1.1: Constructions and net imports of capital (million lire 1911) Source: Fenoaltea, 2011

in Italy are not a proper example of “population-sensitive capital formation”. Differently from demographic cycle, Italian financial flows are consistent with that observed in North America, because capital imports were high when British capital exports were high, and low when these were low.

Fenoaltea measures the effect of financial flows through the evolution of the balance of payments (Fenoaltea, 2011). Its equilibrium comes from movements in the relative value of the goods of trading countries, i.e. the “real exchange rate”. The higher it is, the cheaper foreign goods will be and the other way round. In the context of gold standard and fixed exchange rates of this period, the equilibrium of the balance of payments comes from changes in relative domestic price levels, due to changes in money stock created by the foreign balance itself. Thus, within gold standard regime, countries with foreign deficit lose money while countries with a foreign surplus receive it. The international equilibrium can be weakened by forces arising in the market of goods and capital. In the first case, if a country imports more goods at the current exchange rate, the trade deficit increases with an overall deficit of the

balance which causes, on its turn, a reduction of the exchange rate. This effect can be partially compensated by financial mechanism: due to fixed exchange rates, the currency losses cause net demand for liquidity that attracts foreign loans.

In the case of troubles in the market of capitals, otherwise, an higher import of capitals can cause a disequilibrium in the balance of payments, due, for example, to a wave of infrastructure investments. At the prevailing real exchange rate, an overall surplus can cause a rise in the exchange rate itself, which leads to an increase in trade deficit and in capital imports. Therefore, trade deficit and capital imports move together with the real exchange rate if the initial impulse come from financial market, with the capital flows causing trade deficits. Conversely, they move in opposite direction if the starting impulse comes from the market of goods and the trade deficits causes capital flows. As Fenoaltea pointed out, with the only exception of the early 1870s, in Italy the cycle in the real exchange rate goes together the cycle of trade deficit and capital imports, so that, the trade deficit depends from to capital-imports and not vice versa (Fenoaltea, 2011).

In order to describe the financial market behavior, Fenoaltea illustrates the path of the yield of Italian rent consols. The correlation between yield and construction seems to be negative: if construction and capital imports decline, the interest rate rises or it is constant, while if construction and capital imports rise the interest rate decreases. This approach refers to the debate on the determinants of capital flows lead by Di Martino and Tattara. Their analysis is based on two different methodology that look, respectively, to the static portfolio equilibrium (Di Martino, 2001) and to the intertemporal study of exchange rates (Tattara, 2002). However, consols yields are not an exhaustive indicator for financial markets, because the yield considered is the nominal yield. This is an uncertain measure of the interest rate and Fenoaltea considers other and more general financial indicators, for example, a wave in public investments for the improvements of railways. This can create tension in financial market inducing an inflow of foreign capital, but the increase in railway investments could reduce the finance available for private citizens and industrials inducing a “crowding-out” phenomenon. The Italian case does not show any crowding-out before the Great War, and high construction and capital imports generally coincided

with high investment also in industrial investments and public spending (Fenoaltea, 2011). The absence of crowding-out confirms that construction and industrial investments were high during periods of financial abundance and were low during period of financial scarcity, so that financial cycle followed cycles in capital imports. Moreover, financial cycles were not caused by an independent upsurge in domestic saving, which, on the contrary, would have generated an opposite cycle in capital imports. This confirm that investments were directly connected to the cycle in currency supply due, on its turn, to the cycle in the supply of foreign capital.

These arguments reject the explanation of the cycle in industrial and infrastructure investments with internal causes. To summarize, Fenoaltea's model moves away from the entire research tradition based on a national perspective and on domestic saving as a source of business cycle. This new interpretation shares the modern perspective focused on factors available on global scale by which is always possible to start a national process of growth if domestic institutions and markets are enough attractive for foreign investments. Underdevelopment is due only to factors as the quality of institutions and the political class.

The empirical validity of Fenoaltea's model has been tested by Pistorresi and Rinaldi. Their econometric model applies a Granger causality test that confirms that deficits of current accounts in Italian Liberal Age were caused by variations in capital inflows (Pistorresi and Rinaldi, 2015). The role of capital inflows, however, it is confirmed only as a driver for a specific industrial investments cycle in machinery and equipment while it less evident in explaining a general investment cycle, which includes construction and the other components of investment.

1.3 Sources and data: a lacking context

The uncertain conclusions provided by the studies described above underline the need for an accurate analysis of the data used by reference literature. There are two possible ways to quantify net capital flows. On the one hand, the direct method

estimates supply and sale of securities by official securities statistics on foreign investments. In addition this method considers financial participation of foreign capital in national companies. On the other hand, the indirect method starts from the balance of payments and adds both the balance of trade ("visibles") and the balance of service ("invisibles"). Thus, the residual component is the net capital flow. The lacking context of sources and data for the first fifty years after Unification forces to adopt the indirect method. The balance of payments estimated by Istat in 1957 is a landmark for almost all the analysis of Italian capital flows in post-Unification decades. The account of the invisible trade balance, which is commonly used as a proxy for capital flows (Tattara, 1995; Morys, 2006; Fenoaltea, 2011; Pistoresi and Rinaldi, 2015) refers to data on services related to transports, tourism, government spending, labour income and returns on investments.

Istat distinguishes between maritime, air and land transports (ISTAT, 1957). Data on maritime transports come from statistics collected from navigation registers, ensuring data on goods and passengers from 1861. In order to distinguish passengers nationality, Istat collected these informations basing on the "Annuario statistico dell'emigrazione italiana" edited by the Commissariato Generale dell'Emigrazione. Navy reports are the landmark to construct series on goods freights, integrated by an English issue on international transports (Angier, 1920). Istat computes the total amount of global freights by the average ton and passenger freight. The latter are distinguished between transoceanic and Mediterranean flows, assuming a specific percentage of passengers transported by Italian ships. Percentage data on expenses made by foreign ships in Italy and by Italian ships abroad integrate estimates on assets and liabilities entries. Land transports are not estimated due to the lack of data while data on insurances lack completely for the period before World War I.

Regarding tourism, Istat estimates the expenses by foreign tourists in Italy and by Italian tourists abroad. The word "tourist" is considered in a broad sense, including business travellers, students and diplomatic officials while emigrants are not considered in this entry. The period 1861-1896 lacks of statistically adequate estimates. For this years Istat refers to the main reports provided by Luigi Bodio (Bodio, 1899) and Bonaldo Stringher (Stringher, 1912) while the first decade of 20th century is estimated with data collected by Ente Nazionale Industrie Turistiche (ENIT, 1939) and

by Gino Borgatta (Borgatta, 1933).

The reconstruction of assets value is based on the number of tourists, their average stay and their average expenses. Bodio statistics on the number of tourists are integrated with the international navigation data while the average stay results from "Annuari", a series provided by the main Italian cities, as Venice and Rome. Istat estimates a decreasing average stay from 30 to 20 days, according to the evolution of the national railway service and the travelling speed. Data on the average expense are very few. The only source, used by Istat, is again Bodio which provide data for 1897 (Bodio, 1899). This year is used as benchmark in order to compute the average expenses for the previous and following years, by adding transport costs and referring to the cost-of-living index. Finally, the assets balance estimated transients passengers are added. Until 1906, Istat estimates the average expenses of transient passengers as the 9% of the average expense of by sea passengers, with a gradual decrease in the following years. The liabilities balance lacks completely. Istat estimates it applying specific percentages to the average expenses by foreign tourists in Italy.

Government spending is the complex amount of expenses that the Italian State did abroad and, conversely, the expenses made by foreign countries in Italy. Within this category Istat includes diplomatic expenses of Italian schools abroad, conference expenses, police border expenses and other administration expenses. The main source for these entries is the series of "Elenchi" edited by Ministero degli Affari Esteri which provides data on local checks paid to public staff abroad and data on the other expenses incurred abroad. Istat estimates the assets side by official publications of Ministero degli Affari Esteri that includes only informations about the number of foreign countries staff in Italy.

Returns on investments and labour income are a relevant category of the balance of payments, but they are very scarce. Capital inflows of commercial and industrial firms are estimated by fiscal statistics provided by Ministero delle Finanze (Ministero, 1914), while data on Italian capital outflows are collected from few publications (Stringher, 1912). On this restricted base, according to the sources listed above, for the assets balance Istat estimates data on the interests paid on public debt, while there are only few statistics on the interests paid by Italian institutions or private

citizens for investments on foreign shares.

Istat estimates on passive returns on investments refers essentially to three elements: interests, premia and commissions that the Italian government paid to cover debts managed by Direzione generale del debito pubblico and by Direzione generale del Tesoro; interests for the loan located in the U.S. through Morgan Bank; total amount of foreign corporations capitals subjected to Italian taxation. The returns on this investments are finally estimated applying a rate of profit drawn on the financial market trend. Istat estimates returns of the assets balance from Italian investments in foreign shares and firms applying specific profit rates to two different series: foreign public and private bonds estimated by fiscal statistics and central bank balance sheets; Italian capital outflows within the principle countries on yearly foreign report.

Labour income includes incomes collected from Italian workers temporarily abroad - in the assets balance, - and labour incomes collected from foreign workers temporarily in Italy, in the liabilities balance. Istat uses three main groups of sources. The first comes from statistics of several public administrations as Commissariato generale dell'Emigrazione within its series "Annuario statistico dell'emigrazione italiana". This source provides data on the total amount of deposits and remittance of Italian citizens abroad in the Casse postali di risparmio until 1890 and the total amount of money orders. The second group of sources are the banks statistics, in particular data from Banco di Napoli that collected the most detailed informations on money orders. The third source is a series of private studies focused on remittances (Coletti, 1912; Bodio, 1891). In order to obtain a more reliable series for labour income in the assets balance, Istat applies specific variable percentages on the total amount of remittances (assets), while in the series of labour income for the liabilities balance, the total amount of remittances (liabilities) is considered as labour income.

The last part of the invisible trade balance considered by Istat is the unilateral monetary transfers. This part consists of remittances by emigrants, subsidies to scientific, educational and religious authorities and war reparations. The most of data available regards emigrant remittances for which Istat uses many of the sources cited above for the construction of labour income series and, in particular, data provided

by Banco di Napoli. Data on governmental unilateral transfers are collected from official publications of Ministero delle Finanze e del Tesoro (Ministero, 1891) and from the list of official publication containing the law decrees describing each transfers. The series results from the simple sum of data collected in each group of sources.

The Istat series of the balance of payments is strongly criticized by Giuseppe Tattara (Tattara, 1984). Firstly, Istat does not provide clear informations about the methodology applied to construct the series of current and capital account. Secondly, his critique refers to the consistency of the series. Comparing concurrent annual series for the period 1920-1940, the one published in 1957 by Istat substantially varies, especially for freights and investments. Also Fenoaltea, even adopting the Istat series for his analysis, cast doubts on its validity: according to him it is quite likely that Istat underestimates the value of net capital flows in Italy for that time.

Moving from these critiques, a different reconstruction of the Italian balance of payments for the Liberal Age is provided by two studies of Bank of Italy (Biagioli and Picozza, 2002; Marolla and Roccas, 2002). Their procedure is based on a benchmark approach and it offers a detailed series of the invisible trade balance in 1891 and 1911, according to the census chronological criterion. The main differences with the statistics provided by Istat are both methodological and historiographical. The first regards the balance scheme (Figure 1.2) used to reconstruct specific values for the benchmarks.

The scheme is one of the framework adopted by the International Monetary Fund (IMF) which started the publication of the first edition of the “Balance of Payments Manual” in 1948 (IMF, 1948), to continue the integration process of balance of payments standardization carried on previously by the League of Nations until 1930’s. The aim was the integration between national account and balance of payments statistics, a goal reached only with the Fifth Edition of the Manual in 1993. IMF integrated the two schemes towards the adoption of stock data instead of flows data. The relevant difficulties in defining stock data for post-Unification decades induced the authors to adopt the scheme of the fourth balance of payment manual, edited in 1977, that is the most updated version to look at balance of payment statistics in historical perspective.

The second difference is the wider use of secondary sources, both from Italian and

Current Account	Capital Account
A. Goods, Services and Income	A. Capital, excluding reserves
Merchandise	Direct Investment
Shipment	In reporting economy
Other Transportation	Portfolio Investment
Travel	Corporate equities
Investment Income	Deposit money banks
Other Goods, Services and Income	Liabilities constituting foreign authorities
B. Unrequited Transfers	Short-term capital
Migrants' transfers	B. Reserves
Workers' remittances	Monetary Gold
Official transfers	Special Drawing Rights
	Reserve Position in the Fund
	Foreign Exchange Assets
	Other Claims
	Use of Fund Credit

FIGURE 1.2: Balance of payments outline, IMF Manual, IV edition (1977) Source: Biagioli and Picozza 2002.

international literature. Estimates looks at studies on United Kingdom (Feinstein, 1972), but also on studies carried on by foreign scholars on Italy as Tena-Junguito (Tena-Junguito, 1989), McGuire (McGuire, 1926) and Baedeker (Baedeker, 1913). This new estimates, compared with the Istat series, vary around 15% for 1891 and around 2,5% for 1911.

In a more recent comparative analysis with Austria-Hungary, Morys provides new estimates for the Italian balance of payments (Morys, 2006). Morys confirms the balance of trade series provided by Istat in 1957 and the main sources used previously by Bank of Italy. New estimates regard remittances and a deeper analysis of capital movements and interests. Morys estimates remittances using the average amount of money that an Austrian worker usually send home to his native country in 1911. This approximation is adopted simply stating that it is reasonable to find similarity between Italy and Austria without any historical explanation. The value for Austria is finally multiplied with a loan index for United States (David and Solar, 1977), considered as the most important destination for Italian migration.

Morys gives new estimates on capital movements and interests payments realized

abroad and new estimates on interests and dividends payments of foreign governments and companies in Austria-Hungary. The first group includes government debt, foreign companies subjected to Italian capital tax and Italian companies shares held by foreigners. Government debt comes from Zamagni (Zamagni, 1999), taking into account that it shows an overestimated bias indicator because the large amount of the debt held abroad was the Italian Rendita. Morys estimates the capital tax for foreign companies according to Marolla and Roccas (Marolla and Roccas, 2002) while for the shares of Italian companies held by foreigners refers to Hertner (Hertner, 1981) who estimated the amount of foreign investments in Italian companies before 1914.

The second group regards interests and dividends payments of foreign governments and companies in Austria-Hungary. According to Morys, Italian historiography, from Stringher to Marolla and Roccas, agree on an underestimation of data in this field due to tax evasion. Morys uses the only two estimates available, Hertner (Hertner, 1981) and Stringher (Stringher, 1912), to obtain the other yearly values by interpolation.

Rinaldi and Pistoresi estimate data on the Italian balance of payments through a different approach (Pistoresi and Rinaldi, 2015). Their work makes a brief reconstruction of all the time series available on the Italian balance of payments, but the main aim is to test the Fenoaltea's work using a new dataset. However data used in the econometric model provided by Rinaldi and Pistoresi refers exactly to previously constructed data. Data on current account balance are collected from Istat for the period 1861-1867 while Morys series covers the years between 1868-1913. Total investments and GDP are finally collected from Baffigi (Baffigi, 2013).

The need for a renewed and more detailed time series on the balance of payments is given also by looking at the net balance between trade and "invisible-trade" series, as plotted in Figure 1.3.

Data on the "invisible trade" refers to all the series discussed above and provided by Istat (ISTAT, 1957), by the two benchmarks of the Bank of Italy (Biagioli and Picozza, 2002; Marolla and Roccas, 2002) and by Morys (Morys, 2006). An additional series is given by adding more recent estimates on Italian remittances (Esteves and Khoudour-Castéras, 2011) with the updated data on the Italian balance of payments

year	Trade balance		Invisible trade balance		
	(Federico-Vasta 2011)	Banca d'Italia	Morys	Istat	Morys+Esteves et al.
1872	-25,0		46,0	6,0	
1876	-99,0		96,2	115,0	97,6
1891	-236,9	9,3	257,0	191,0	263,7
1892	-208,0		225,6	191,0	230,9
1893	-219,0		235,4	186,0	242,6
1900	-356,0		305,0	392,0	304,9
1907	-959,0		1145,1	856,0	1142,5
1908	-1211,0		1221,2	878,0	1220,9
1911	-1202,6	234,6	1001,8	968,0	1001,5
Balance between trade and "invisibles"					
		Banca d'Italia	Morys	Istat	Morys+Esteves et al.
1872			21,0	-19	
1876			-2,8	16	-1,7
1891		-227,6	20,1	-45,9	26,8
1892			17,6	-17	22,9
1893			16,4	-33	23,7
1900			-51,0	36	-50,9
1907			186,1	-103	183,6
1908			10,2	-333	9,5
1911		-968,0	-200,8	-234,6	-201,1

FIGURE 1.3: Net balance between trade and "invisible trade" for different series (million lire 1911)

by Morys (Morys, 2006). Each invisible-trade series is finally integrated with data on the trade balance collected from Federico et al. (Federico, Natoli, et al., 2011). The net balance give us an uneven picture for the years represented above. By simply applying a different series for the invisible-trade, the Italian net balance changes from a condition of an importer to an exporter of capital. It is historically difficult to state that Italy was a capital exporter during that time, especially knowing that remittances count for the highest value in the computation of the capital account. This weaknesses, together with the critiques by Tattara and Fenoaltea make the words by McGuire still valid: "It appears that the amount of foreign investment in Italy has been a matter of dispute before, as well as since, the war; there is reason to believe that the volume of such investment has been generally underestimated" (McGuire, 1926).

1.4 Invisible trade balance: the new series

In the following subsections there are the new reconstructed series compared to the previous ones. A detailed description of the methodology adopted for the new estimates is given at the end of the chapter, within Appendix A.

1.4.1 Remittances

Results of the new estimates, together with the old series, are depicted in figure 1.4.

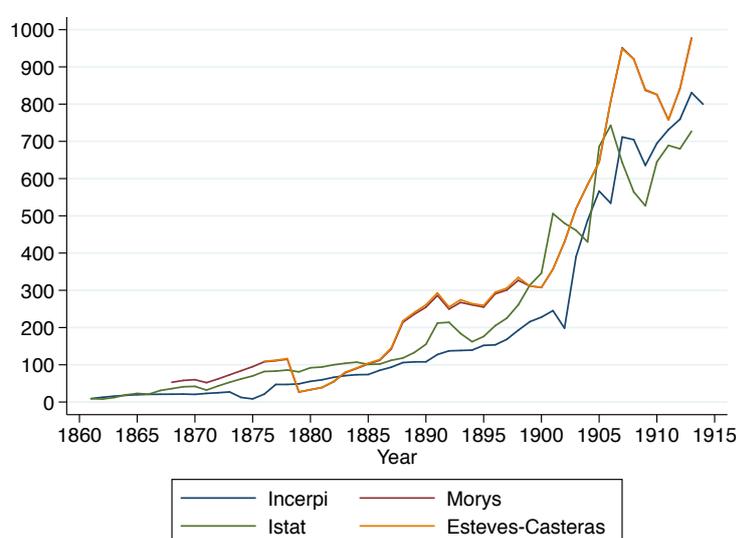


FIGURE 1.4: Remittances: new and old series, 1861-1913 (current millions lira)

The new series (blue line) shows lower values than the other ones presenting a constant trend until the beginning of 19th century. The jump starting in the new century reflects the increase of migration flows, especially in the Americas, and a more secure system for sending remittances back to the motherland (Gomellini and Gráda, 2013). The decreases in some years (i.e. during the Seventies or in the first decade of 19th century) arises basically from both some specific economic conditions, such as crisis within labour market, and the decrease of migration flows. However, the real break is the new regulated system for sending remittances after the set of migration laws issued in 1901. Until then, Italian emigrants could exploit various and risky means: international money orders, consular orders, remittances by private

bankers and hand-carried remittances (De Rosa, 2000). International money orders were available only in few countries and usually placed within the big cities with an international postal service. The procedure for sending the orders abroad was slow and unsafe. Thus the amount of international money orders was not relevant before 1901. This was also the case for consular orders. Italian consulates were often located in big city centers, far from the workplaces where Italians were employed in. Emigrants preferred sending money by registered letters, where transfers of cash issued by the Italian banking system were allowed. Right in the U.S.A. and in Brasil the system for sending remittances was costly and unsafe (De Rosa, 2000). This was due to language difficulties of Italian emigrants which usually did not speak English, and also to the Italian private banks. These were kind of "lodging-houses" that often subtracted money during the transfer of remittances.

The law issued in 1901 by the Italian government entrusted the Bank of Naples to organize the system of remittances substituting the Italian private bankers wherever Italians emigrants communities were. The Bank of Naples in the following years opened a proper inspectorate in U.S.A., Latin America and in several European countries acting as the most relevant channel to transfer remittances. This safer process stimulated emigrants in sending their savings, increasing the macroeconomic impact of remittances in the balance of payments.

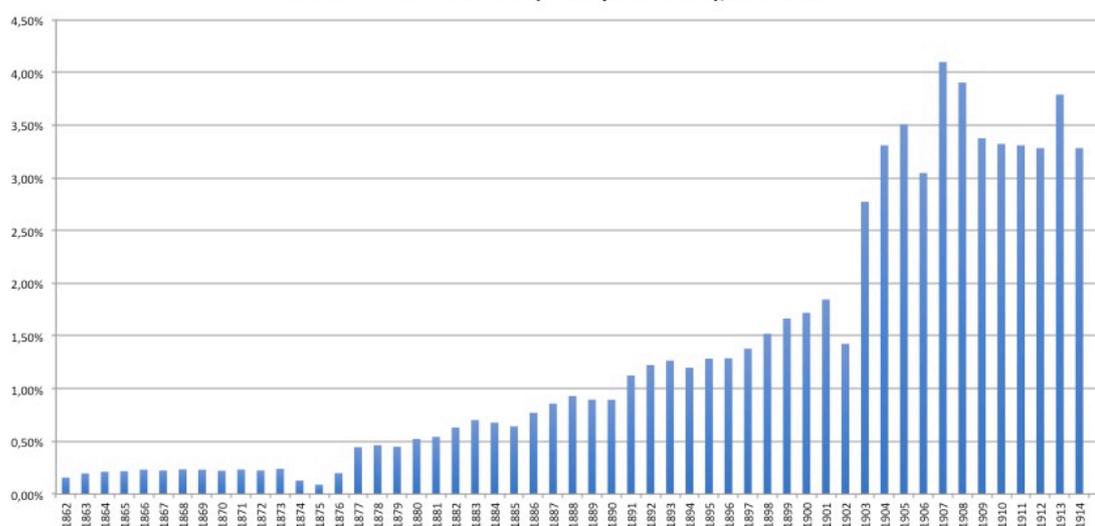


FIGURE 1.5: Remittances, 1862-1914 (% of GDP). Sources: GDP (Baffigi, 2015)

The relevance of remittances from the perspective of national accounts is clear in figure 1.5. Here remittances are shown as percentage of the GDP. Remittances are below the 1% for the first thirty years after Unification then they increase with an average above the 2,5% between 1903 and 1914 with some peaks around 4%. Although remittances are a relevant part for the Italian national accounts, the definitions of remittances given by Esteves as "a fantastic rain of gold" is now questioned. This is also confirmed by the relevance of other invoices of the balance of payments, such as tourism which is described in the next paragraph.

1.4.2 Tourism

The new series of tourism for the balance of payments is compared with the previous one by Istat (adopted also by Morys, 2006), in figure 1.6.

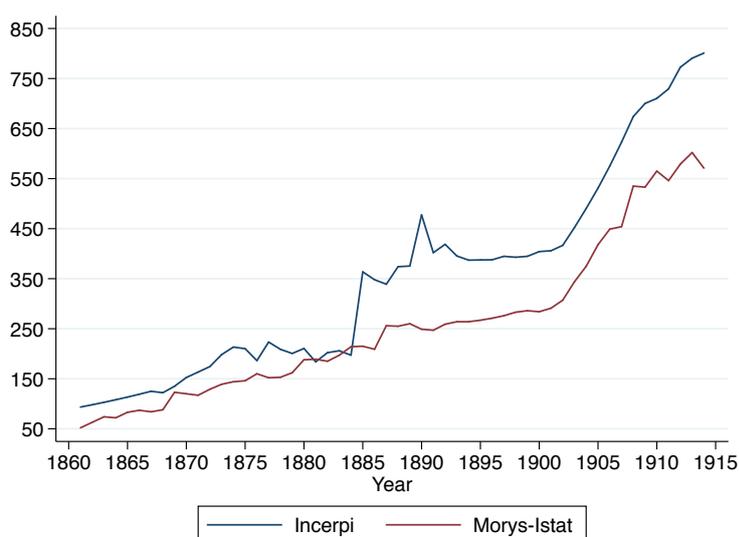


FIGURE 1.6: Tourism: new and old series 1862-1914 (current millions lira)

The series refers to the money spent by foreigners in Italy. The new estimates are constantly higher until WWI, with the exception of 1884. The relevance of tourism in Italy it is also confirmed by a widespread hospitality industry. In the second half of 19th century the quality of the industry was good along the all country: cities, watering places and bathing sites had excellent facilities. Furthermore, inns and boarding houses of the second class increased their standard quality becoming the substantial

network of the Italian hospitality industry (Battilani, 2016). This was also the period of the so-called "Grand Tour", a traditional trip of Europe for median and upper classes. In this context Italy was one of the main countries to visit for young men and women, both for tourism and business. Means of transport improved constantly after Unification, allowing longer stays to visit more locations. The increasing number of tickets sold at border stations and by ships arrivals confirmed the prominent role Italy was achieving after Unification.

Tourism as percentage of GDP, as shown in figure 1.7, shows the impact of money spent by tourists in Italy from a macroeconomic perspective.

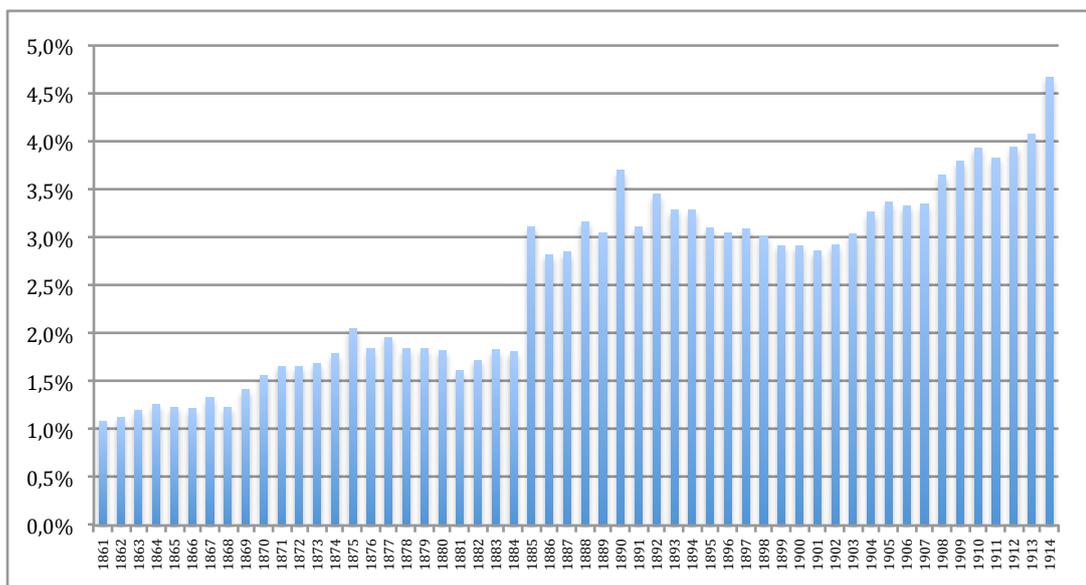


FIGURE 1.7: Tourism, 1862-1914 (% of GDP) Sources: GDP (Baffigi, 2015)

Tourism counts as the 1% of GDP at the time of Unification, increasing between 1,5% and 2% from 1870 until 1884. Starting from 1886 there is a jump around 3% which remains almost constant until the beginning of 19th century when the ratio increases reaching the 4,5% on WWI's eve. Thus tourism, according to this new series, is the main determinant to balance the Italian national accounts during the first decades after Unification.

1.4.3 Freights and insurances

Series of freights and insurances, summed together, is shown in figure 1.8 together with data by Istat and Morys.

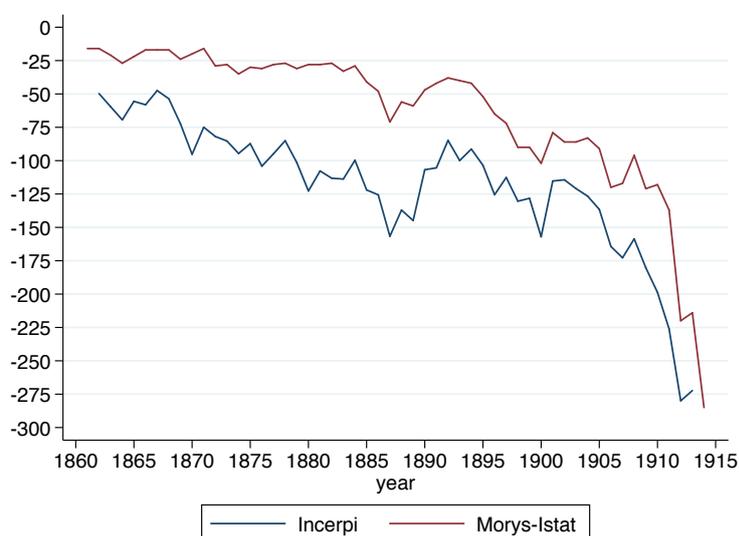


FIGURE 1.8: Freights, 1862-1914 (current millions lira)

The up-to-date series is surprisingly different from the one by Istat regarding the consistency. The amount of data available for the Italian foreign trade, as described in Chapter 3, together with this results support the need for new series of the invisible trade balance. The trend of freights is coherent with the dynamics of the Italian balance of trade at that time. The balance is constantly negative since Italian imports always exceed exports. This is also confirmed by differences in the annual growth rate. During 1862-1887 the growth rate for exports is 4.4% and for imports 5.2%. In the following years between 1888 and 1914 the two values converge: the growth rate for exports is 2.6% while the growth rate for imports is 2.1%. According to this, Figure 1.7 shows a constant negative trend until 1886 followed by a positive decade. Then, at the beginning of 19th century the negative balance goes from -120 to -275 millions lire before WWI.

1.4.4 Interests

This series includes both interests paid on investements on public bonds and interests paid on private sector. Results are depicted in figure 1.9.

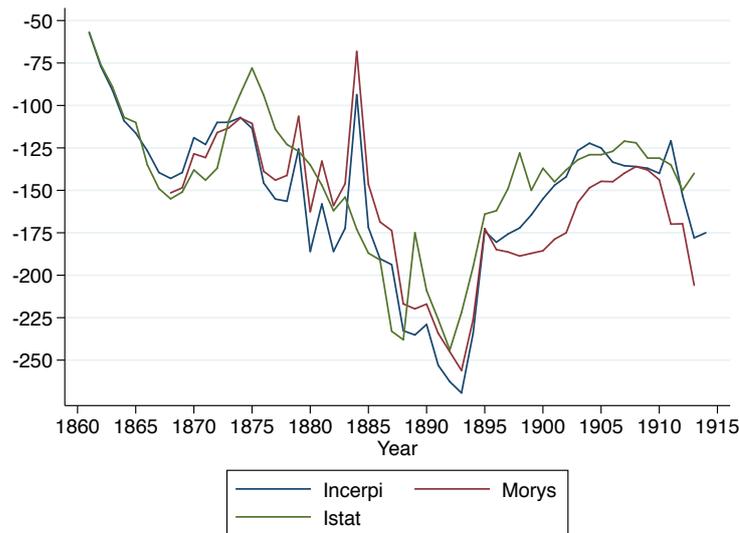


FIGURE 1.9: Interests, 1862-1914 (current millions lira)

In the first decade interests increase following the worsening of Italy's net economic position: the initial value of 55 millions lira arises up to 140 millions in 1870. A significant improvement occurs from the late 60's, as confirmed by Corbino (Corbino et al., 1938). This can be explained by the reflow of the Italian bonds as result of fiat currency issued in 1866. During these years several Italian investors with Italian bonds send their coupons abroad to receive gold, as common practice for foreign creditors. This procedure was partially countered by the introduction of *affidavit* (1874-1881): this was a request to certificate the payment only to foreign investors. Results of the following years confirms the trend of the series by Morys: a significant but brief improvement until 1884 followed by a rapid worsening after 1885. The early abolition of fiat currency in 1881-1883 made it necessary several foreign loans: between 1881 and 1887 around 1.5 billion lira of Italian bonds were sold abroad (Hertner, 1981). In the last decade of the century, since *affidavit* and fiat currency were again introduced, payment for interests rapidly decreased: from 1891 to 1895 Italian bonds owned by foreigners went from 3.2 billion lira to 1.6 billion lira (in nominal value) (Flora, 1895). Then, before WWI, the net economic position of Italy improves and the level of interests goes back to 70's.

1.5 Conclusion: an overview of capital flows in Italy

Referring to the assumption in paragraph 1.3, the net capital flows can be deducted from the current account, that is the visible and the invisible trade balance. The visible trade balance can rely on a set of detailed data (Federico, Natoli, et al., 2011). The invisible side is the sum of all the four invoices of the balance of payment described above. The result of the new current account is depicted in figure 1.10, together with the other series estimated by Morys and Istat.

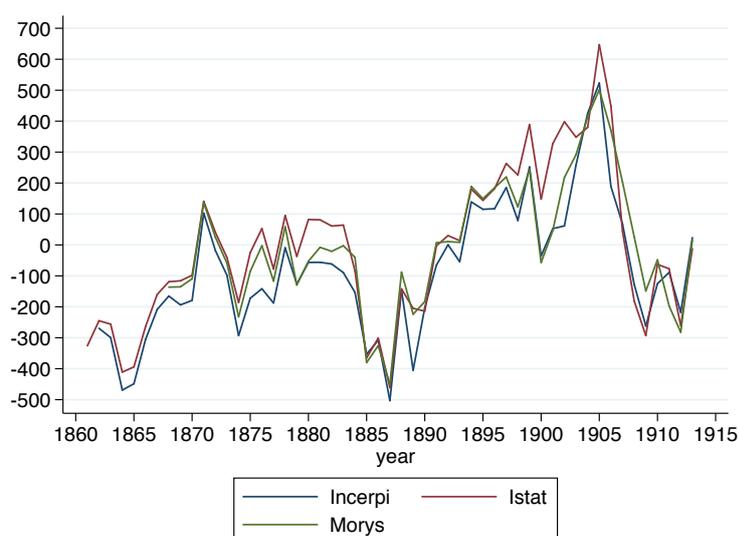


FIGURE 1.10: Current Account, 1862-1914 (current millions lira)

The trend of the new series is coherent with the ones by Morys and Istat but results confirmed what McGuire, Tattara and Fenoaltea suggested: capital imports in Italy have been underestimated by previous studies. This is true especially during 60's, the 80's and the last years before WWI. During this periods the assets of the Italian balance of payment cannot cover the liabilities given by a constant trade deficit and the interests that follow the nature of a peripheral country. The new series confirm the hypothesis of previous literature and give other intuitions regarding the impact of remittances and tourism. The "fantastic rain of gold" (Esteves and Khoudour-Castéras, 2011) given by remittances is resized by the prominent role of tourism. This is the asset invoice that really adjust the Italian balance of payments for all the fifty years after Unification. The result is coherent with a peripheral country

as Italy was until WWI and suggests that market (tourism) and savings (remittances) characterized the Italian macroeconomic equilibrium at that time.

1.6 Appendix A

The following section is dedicated to the description of the methodologies adopted in building up each new series of the invisible trade balance. The Appendix also gives informations on the main sources and data that have been collected.

1.6.1 Remittances

Remittances are estimated avoiding the distinction, made by the Bank of Italy (Marolla and Roccas, 2002; Biagioli and Picozza, 2002), between unilateral transfers and labor income. The lacking informations for the first decades after Unification hinder this parting that is also not relevant for the main purpose of the chapter. The methodological criterion changes according to the main sources and data available until 1914. Thus, I adopt three different methodologies referring to the following periods: 1861-1876, 1877-1901 and 1902-1914.

The first methodology, covering the years between 1861 and 1914, is based on the estimate of the stock of Italian emigrants abroad and the estimate of an average remittance per emigrant. This is due by the weaknesses of data on remittances for the first fifteen years after 1861. These data are few and often not homogeneous. Corbino's *Annali dell'economia italiana* (Corbino et al., 1938) and Stringher's analysis on the balance of payments (Stringher, 1912) are the only informations related, more or less directly, to remittances.

Regarding the stock of Italian emigrants abroad, I exploit data on net migration (Giusti, 1965) and repatriations (Carpi, 1871), including some data on clandestine migration (Carpi, 1871). I assume the value of net migration in 1861, 22.000 individuals, as the stock of Italians living abroad and I correct it by considering the average weight of repatriations on the total. Thus, I add repatriations as consistent part of the stock. This correction increases the initial stock until 55.000 Italians abroad in 1861. The value is aligned with migration literature which underlines the small number

of Italians abroad at the time of Unification (Giusti, 1965; Sori, 1979; De Rosa, 2000). In order to compute the stock of emigrants for the following years, I apply the net migration data (Giusti, 1965) to correct the stock year by year.

As second step, I estimate the average remittance per emigrant. First of all it is relevant to understand which were the main means for sending remittances at that time. There are two different context distinguished by likewise laws that the Italian government issued in 1901. The law n. 23 *Disposizioni sull'emigrazione* (January 31, 1901) and the following law n. 24 *Per la tutela delle rimesse e dei risparmi degli emigranti italiani all'estero* (February 4, 1901) provided higher protections for the savings of Italian emigrants. Until then, the ways emigrants could send remittances abroad were: international money orders, consular orders, remittances by private bankers and hand-carried remittances (De Rosa, 2000). This set of different instruments shows the difficulties emigrants experienced in sending their savings to the motherland. Furthermore, postal service did not allow people to send cash or coins through the common mail, as already mentioned in paragraph 1.4.1. This also reveals the lack of data for each of the instruments mentioned above. The only estimate of the average amount for each remittance is provided by Coletti who focuses on hand-carried remittances (Coletti, 1912). Coletti specifies the amount of 500 lire for each remittance from U.S.A. and 50 lire for remittances sent from European countries in 1912 (Coletti, 1912). Assuming average individual remittances being constant across time, I correct these two values applying the Lira indexes for monetary appreciation (ISTAT, 2007) obtaining 425 lire for remittances from U.S.A. and 43 lire for remittances from Europe in 1861. I assume an equal distribution between remittances from U.S.A. and remittances from Europe since there are no informations about the composition of the Italian emigrants divided by country after Unification. Thus the average individual hand-carried remittance for 1861 is 234 lire.

It is also possible to estimate the average value of an international money order per person. First detailed informations on that are available starting from 1901, referring to the *Annuario Statistico della Emigrazione Italiana* (Co.Gen.Emig., 1927). Dividing the total amount of international monetary order in 1901, that is the first data available, by the flow of Italian emigrants in the same year I obtain the value of 103 lire. I correct this applying the Lira coefficient and I get an average value of 96 lire for an

individual international money order in 1861. I compute a simple arithmetic mean between the value for hand-carried remittance and the one for international money order obtaining a final value of 165 lire. I use this as a proxy for the average individual remittance in 1861. Finally I correct this value year by year by simply applying Lira coefficients and multiplying it for the stock of Italian emigrants abroad.

The second methodology covers the period 1877-1901 and counts on two additional informations available for that decades: the composition of Italian emigrants abroad by ten-year benchmark (Co.Gen.Emig., 1927) and the trend of real wages by country (Williamson, 1995). Data on the composition of Italians abroad are related to 1871, 1881, 1891, 1901 and 1911 while data on real wages cover start from 1830 covering several countries until 1988. In order to estimate remittances in 1877 I firstly compute a rough estimate of remittances in 1881, which is the closer year for which data on Italians abroad are available. I take into account the first official value of remittances measured by *Commissariato Generale della Emigrazione* in 1902, after the Bank of Naples was charged to manage all remittances of Italian emigrants. I assume a decrease of remittances proportional to the decrease of the stock of Italian emigrants from 1901 to 1881, that is 28,6%. According to this estimate, remittances in 1881 can be temporarily considered 56,7 current million lire. In order to estimate the value for 1877, I take into account differences in the composition of Italian emigrants abroad and differences in real wages by countries. In 1881 Italian emigrants are distributed as follows:

Europe	America	Africa	Asia
37,0%	56,6%	6,0%	0,7%

FIGURE 1.11: Stock of Italian emigrants abroad, 1881 (% on the total)

I round off the shares of Europe and America to 40% and 60% respectively since there are no data about emigrants and real wages for countries belonging to Africa and Asia. The matching between Italian emigrants and real wages it is possible for the following countries: Belgium, France, Germany and United Kingdom for Europe; U.S.A., Brasil and Argentina for Americas. By knowing the weight of Italian emigrants by each country and the corresponding differences in real wages by country I can correct the initial value of remittances. The weight of emigrants for

countries mentioned above are depicted in the next figure:

European Countries		American Countries	
Belgium	0,4%	U.S.A.	29,3%
France	54%	Brasil	14,2%
Germany	20%	Argentina	51,0%
United Kingdom	3%		

FIGURE 1.12: Weight of Italian emigrants by country, 1881

Thus, I compute trend in real wages from 1902, that is the starting value for remittances, and 1877, that is the starting year. I compute differences in real wages according to the next table.

Country	European Countries			Country	American Countries		
	RW ind. 1902	RW ind. 1877	Trend		RW ind. 1902	RW ind. 1877	Trend
Belgium	99	66	-33,0%	U.S.A.	104	72	-30,8%
France	102	77	-24,5%	Brasil	128	83	-35,2%
Germany	98	74	-24,5%	Argentina	94	45	-52,1%
United Kingdom	101	74	-26,7%				

FIGURE 1.13: Trend of real wage indexes, 1902-1877

Following these values, I compute a weighted average to obtain a correction value for both European and not European (Americans) countries, that are -19% and -33% respectively. Thus, I recall the previously estimated amount of remittances, that is 56,7 million lire, and I split the share related to European (40%) and Americans countries (60%). By applying the correction values to the shares I get 18,4 million lire as remittances coming from European emigrants and 22,8 million lire coming from emigrants within Americas. I assume the composition of emigrants by country as constant across 1877 and 1891, I estimate the correction value referring to changes in wages by country. Regarding changes in the stock of Italian emigrants abroad until 1891, I compute the change between 1881 and 1891 and I distribute it homogeneously among the years, as suggested by Fenoaltea (Fenoaltea, 2011). I compute this by a compound annual growth rate that gives 7,2% as the growth rate referred to Americas and 1,6% referred to the growth rate of Europe. Thus, knowing the value of remittances in 1877, I increase the 40% value of remittances from Europe, that is 16,5 million lire, by 1,6% and I increase the 60% value of remittances from Americas, that is 24,7 million lire, by 7,2%. I get 16,8 million for Europe and

26,5 million for Americas. Then I correct these values exploiting the weighted average of the changes in wages for each of the considered country. The correction values related to wages are 4% for Europe and -5% for Americas, so that the value of remittances in 1878 is 42,7 current million lire. The following figure 1.14 shows the correction values related to changes in wages for each year until 1890.

Year	Europe	Americas
1879	1,0%	-1,0%
1880	0,2%	7,3%
1881	1,2%	14,5%
1882	2,2%	12,3%
1883	2,7%	6,8%
1884	1,8%	-0,4%
1885	1,2%	-11,0%
1886	1,6%	15,2%
1887	1,7%	6,9%
1888	1,7%	9,6%
1889	-0,1%	-7,7%
1890	2,2%	-14,6%

FIGURE 1.14: Correction values for wages, 1878-1890

Once I got the value for 1890 I can exploit new informations on the stock of Italian emigrants abroad and on the composition by country referring to data for 1901, following the same methodology of the previous decade. I compute the compound annual growth rate for the period 1891-1901 getting 3.3% for Europe and 6,9% for Americas. Thus I estimate the composition of emigrants by country. Results are summarized in figure 1.15.

European Countries		American Countries	
Belgium	0,6%	U.S.A.	38,0%
France	72,0%	Brasil	20,4%
Germany	24,8%	Argentina	41,6%
United Kingdom	2,6%		

FIGURE 1.15: Weight of Italian emigrants by country, 1901

At the same time I estimate the share of remittances for Europe and Americas obtaining 22,5% and 77,5% respectively. Then I follow the same procedure adopted for the previous decade applying the correction values related to wages shown in the next figure.

Year	Europe	Americas
1891	-2,6%	15,9%
1892	1,0%	2,8%
1893	1,7%	3,4%
1894	-1,2%	-5,6%
1895	2,7%	3,7%
1896	2,3%	-6,3%
1897	1,9%	4,0%
1898	-0,4%	9,6%
1899	2,1%	8,5%
1900	0,3%	-1,2%
1901	0,2%	1,7%

FIGURE 1.16: Correction values for wages, 1891-1901

Finally, the third methodology, covering the years between 1902 and 1914, refers to the estimates for 1911 provided by the Bank of Italy (Marolla and Roccas, 2002). I consider the whole remittances as belonging to five categories for this period: international money orders, remittances via the Bank of Naples, remittances via other banks, remittances by letters and hand-carried remittances.

Official data on international money orders and on remittances via Bank of Naples are available since 1902 and collected within *Annuario Statistico della Emigrazione Italiana* (Co.Gen.Emig., 1927). In order to estimate remittances via other banks I refer to informations provided by Stringher. According to him, the total amount of remittances by means of the banking system is 412 million lire (Stringher, 1912). I deduct from this value the amount of remittances from the Bank of Naples, since I consider it already included within estimate of Stringher. Unfortunately there are no data on remittances from other banks in other years. Thus I consider the percentage of yearly change of remittances via Bank of Naples, assuming the other banks being affected by the same trends.

I adopt something similar for remittances by means of letters. According to Stringher, these remittances amount to 15 million lire in 1910. I estimate the value for previous years applying the same percentage change of official remittances (international money order and Bank of Naples) (Marolla and Roccas, 2002). Finally, I estimate hand-carried remittances. Firstly I compare repatriation from Americas and Europe in 1910. The latter are the 80% over the total. Thus I assume the same share for

these years, in order to estimate the net repatriation by composition. I apply the average value provided by Coletti: 500 lire for repatriated from Americas and 50 lire for repatriated from Europe (Coletti, 1912). Finally I correct the total amount by subtracting the quantity of money emigrants had before leaving Italy, according to some informations provided by the Bank of Naples (Co.Gen.Emig., 1927). This is the only correction term we have, since there are no informations on remittances by foreign emigrants. This last phenomenon is considered irrelevant at that time (Marolla and Roccas, 2002).

1.6.2 Tourism

Official statistics on tourism are available from 1920's when ENIT (Ente Nazionale Italiano per il Turismo) starts its surveys. Until then, Luigi Bodio and Bonaldo Stringher are the only ones to investigate the number of tourists and the money they spend (Bodio, 1899, Stringher, 1912). Since sources are scarce and not homogeneous, I estimate the series referring to the methodology adopted for the benchmarks of the Bank of Italy and by Bodio. The estimate is based on three sets of informations: the number of tourists arrived in Italy by railways and by sea, the average number of days spent by tourists within Italian borders and the daily average expenditure for tourist.

Firstly, I estimate the number of tourists looking at the amount of first-class and second-class tickets sold in private and public railways or in any ports for arrivals by sea. Marolla and Roccas exploit informations provided by Stringher about different kind of tickets sold in border stations: round-trip tickets, tickets by kilometers and tickets by stations. These specific informations are available only for 1912, thanks to Stringher's private survey. Thus, looking at railway tickets, I consider only the companies that provided transport services for border routes: *Società per le Ferrovie dell'Alta Italia* until 1885 and *Rete Adriatica* and *Rete Meridionale* from 1886. In 1885 the *Società per le Ferrovie dell'Alta Italia* went bankrupt and the two-third of the trains moved to *Rete Meridionale* and on-third to *Rete Adriatica* (Kalla-Bishop, 1971). I apply the same proportion to the overall tickets of *Rete Meridionale* and *Rete Adriatica* to estimate tickets sold in border routes. In order to find a unique and possible criterion to estimate the number of tickets sold to tourists, I compare the number estimated

by Marolla and Roccas with the overall number of tickets in 1911. I assume the same yearly percentage of tickets sold to tourist for the entire period, that is 20% of total first-class and second-class tickets for railways and 60% for ships. Data on the overall tickets are collected within official statistics by Ministero dei Lavori Pubblici and Ministero della Marina. I use linear interpolation where data are not available (1869-71 for railways, 1892,1894, 1898-1900, 1905-08, 1910-12 for ships). Regarding railways, in the last decade the series of Relazioni sulle Strade Ferrate becomes a business report in which data on tickets are not available anymore. Thus I estimate the overall tickets by applying the simple annual compound growth rate of the last five years available.

As second step, I estimate the average number of days each tourist spend in Italy. I consider 20 days as the average stay for the period 1861-1891 and 25 days as the average stay for the period 1891-1914. The change in the number of days is based on the evolution of services and transports in Italy (Battilani, 2016) and according to the benchmark of the Bank of Italy (Marolla and Roccas, 2002, Biagioli and Picozza, 2002). In addition to this, I also take into account transiting tourists for arrivals by sea. Indeed, I estimate a share of arrivals as transiting passengers for other countries. According to Marolla and Roccas, these passengers are the half of the arrivals by sea, that is the 30% of the total number of tickets by sea. For these kind of passengers I estimate an average temporary stay of three days.

Finally I estimate the daily average expenditure per tourist. I estimate an expenditure of 30 lire for first-class tourists and 20 lire for second-class tourists. Where the class of tickets is not specified I apply a value of 27,5 lire. All the values are adjusted by Istat's lira coefficients.

1.6.3 Freights and Insurances

The estimate of freights and insurances is based on a large amount of data. These data are collected referring to the official statistics on the Italian foreign trade (Federico, Natoli, et al., 2011). I thoroughly explain the reconstruction of unit freights series and trade costs within Appendix B at the end of chapter 3. Thus, within in this paragraph, I describe the criteria adopted to compute the share of freights paid

to Italian and foreign carriers. In addition I provide the assumptions for the estimates of insurances and premia paid to Italian and foreign insurance companies.

In order to estimate the share of freights paid to foreign and Italian carriers I take into account the informations within the series of *Annuario Statistico Italiano*. Here there are data on the total quantity of goods traded by each class of carriers. I use the simple share and I apply the unit freight described in chapter 3 to find out the overall freight. I use a median value for Italian and foreign carriers for the years in which this information is not available. Freights related to passengers are also part of these invoice for the balance of payments. Unfortunately data on passengers freights are too few for the period to attempt any kind of reconstruction.

IMPORTS			
<i>Value of commodities imported via foreign carriers</i>	<i>Premia paid to foreign insurance companies</i>	<i>Compensations (2/3 of insurance cost)</i>	<i>Net premia paid to foreign insurance companies</i>
580.913	11.618	7.668	3.950
EXPORTS			
<i>Value of commodities exported via Italian carriers</i>	<i>Premia paid to Italian insurance companies from abroad</i>	<i>Compensations (2/3 of insurance cost)</i>	<i>Net premia paid to Italian insurance companies from abroad</i>
230.562	4.611	3.043	1.568

FIGURE 1.17: Estimate of insurances, example (million current lira values)

Regarding insurances (figure 1.17), firstly I compute the value of commodities traded by Italian and foreign carriers. This is possible referring to the official statistics on the Italian foreign trade and to the reports of national-private railways (*Relazione, 1868-1914*) and the reports of merchant navy (*MinMar, 1861-1914*). Both provide yearly informations on the shares of commodities traded by foreign and Italian carriers. Where data are not available I apply the share of the previous year. Then I estimate the cost of insurance. Referring to the benchmarks of the Bank of Italy and to the new dataset of Federico and Tena-Junguito, 2016, I consider a cost of insurances that is the 2% of the overall value of commodities for both imports and exports. In order to divide costs and revenues of insurances I need some assumptions. For foreign carriers I assume premia entirely paid to foreign insurance

companies. For Italian carriers I assume half premia paid to Italian insurance companies and half to foreign ones. Then I correct premia by compensations provided by insurance companies that are, according to Biagioli and Picozza, two-thirds of the insurance cost.

1.6.4 Interests

The reconstruction of this series is based on the interests paid abroad or to foreign investors related to public debt and other kind of investments. For the public sector I take into account the interests paid on the Italian public bond called "Rendita". These are based on the percentage of coupons paid abroad, leaving aside the problem of *affidavit* previously described (Zamagni, 1999).

The estimates of the interests paid on the foreign capital in Italy rest on a lacking context of data. Hertner did the most accurate study on this topic with an aggregate reconstruction of all the informations we have on the foreign capital in Italy before WWI (Hertner, 1981). Hertner provides data on the amount of capital invested by foreign companies operating in Italy and data on Italian joint stock companies with a share of foreign capital. I compare these data with the two benchmark values of interests provided by the Bank of Italy and I extract other four benchmark with a simple ratio, in order to have at least one observation for each decade until 1914. Then I use T.R.A.M.O. technique (Time Series Regressions with ARIMA Noise, Missing Observations and Outliers) to estimate the yearly series of interests within private sector by the trend of the following related variables: exchange rate (DiNino, Eichengreen, and Sbracia, 2013), gross private inflows (Esteves, Reis, and Ferramosca, 2009), interests rate (De Bonis et al., 2012) and interests paid abroad on the Italian Rendita (Zamagni, 1999). I do not consider the revenues related to foreign financial assets owned by Italians since data are too few to cover the entire period.

Chapter 2

Current Account and Budget

Deficit: a Test for the Twin Deficits

Hypothesis in Italy, 1861-2017

2.1 Introduction

The twin deficit hypothesis stimulated a wide debate on both a theoretical perspective and on the side of the empirical approach. From the Ricardian equivalence to the monetary approach, several models try to find the causality linkages that affect the relationship between budget deficits and current account deficits. In particular the Italian literature is dominated by two opposite frameworks: the Keynesian perspective stressed by Bonelli-Cafagna model, and the monetarist approach proposed by Fratianni and Spinelli, both deepen in chapter 1. Empirical results provide a motley picture where, even for the same countries, changing dataset and time span can also radically changes the main findings. Several studies cover the analysis of Asian, African and Western European countries, leaving partially uncover Western counterparts. The aim of this chapter is to provide new empirical evidence for the Italian case basing on two different datasets, yearly (1861-2017) and quarterly (1999-2017) to cover the entire history of Italy since Unification. The analysis looks to both the short run and the long run using Granger causality test and Vector Error Correction Model (VECM) techniques in order to empirically support or not the two theoretical perspective. The chapter is organized as follows. The first part describes theories and models explaining the twin deficit hypothesis, from Ricardian equivalence to

structural gap approach. The second part shows the empirical evidence of some recent studies together with data and sources I use in the chapter. The third part describes the econometric analysis divided by short run and long run, while results are sum up within the last paragraph. Finally, Appendix B provides all the preliminary tests and the results described in previous sections.

2.2 Twin deficits hypothesis: theories and models

The theoretical framework of twin deficits hypothesis have old foundations. According to Mundell-Fleming model (Mundell, 1968; Fleming, 1962), twin deficits hypothesis is based on a Keynesian proposition that is, when there is a government deficit caused by government expenditure this reduces current account surplus and vice versa (Keynes, 1936). This proposition is the basis for both neo-Keynesian and monetary approaches to the balance of payments. The neo-Keynesian approach presents a model with simultaneous external and internal equilibrium: the first is reached by exchange rate adjustments, the latter is reached by regulating the national fiscal policy. The monetary approach to the balance of payments emphasizes the importance to avoid fiscal deficit to reach external financial stability. Since increasing domestic credit can have a long-lasting negative impact on current account while increasing in exports and outputs have short positive effects, it is fundamental to control for the domestic credit balance (Polak, 1997). Thus, according to the conventional wisdom, the main policy implications is raising taxes to reduce budget deficit that, in turn, reduces trade (current) deficit.

One of the main competing theory, the so-called New Cambridge School, makes a different claim. It states that fiscal policy has a greater influence on the balance of payments. Thus, conversely, fiscal policy is responsible for the external equilibrium, while exchange rate is responsible for the internal equilibrium. In order to understand these principles, it is necessary to look at the main accounting identities (Gandolfo, 2013). Considering the budget constraint of the private sector:

$$S - I = \Delta H_p + \Delta D_p + \Delta N_p + \Delta F_p$$

assuming saving greater than investment, the excess is employed by this sector to accumulate monetary base ΔH_p , deposits ΔD_p , domestic securities ΔN_p and foreign securities ΔF_p . It is now possible to consider all the net financial assets of this sector as a single stock denoted as follows:

$$S - I = \Delta V_p$$

where ΔV_p is the sum of the terms in the right side of the previous equation. Knowing that saving in private sector is equal to disposable income minus consumption, that is $S = Y_d - C$, if we call A_p the total current expenditure of the sector ($A_p = C + I$) we obtain

$$Y_d - A_p = \Delta V_p$$

This means that the excess of disposable income over private current expenditure is equal to the change in the stock of financial assets within private sector. Considering trade for goods and services, it is possible to deduce this additional identity:

$$(IMP - EXP) = (A_p - Y_d + (G - T))$$

where IMP are imports, EXP are exports, G is the government expenditure and T are taxes. In this context of accounting identities, the New Cambridge School introduces behaviour assumptions. It assumes that the private sector keep a constant proportion of its net financial assets with respect to disposable income (Ganchev, 2010):

$$V_p = \alpha Y_d$$

where α is a coefficient. Assuming $\Delta V_p = \alpha \Delta Y_d$ and $\Delta Y_d = g Y_d$, where g is the growth rate of the disposable income, we have:

$$\Delta V_p = \alpha g Y_d$$

Thus it is possible to get the expenditure of private sector as function of disposable income, that is:

$$A_p = (1 - \alpha g)Y_d$$

According to this theory, $(1 - \alpha g)$ is the marginal propensity to spend. This means that if the financial surplus is small and constant, $(1 - \alpha g)$ it will be close to one. In this case, according to previous assumptions, disposable income is equal to expenditure:

$$IMP - EXP = G - T$$

that is the fiscal deficit is equal to the current account deficit.

Other theories start from this equation to criticise its conclusions. The Ricardian "equivalence theory" (Ricardo, 1817) states that government budget deficit must not negatively affect capital formation or the aggregate demand. This because "rational" economic agents capitalize the overall implied future taxes related to budget deficit (Magazzino, 2012). In particular, equation $IMP - EXP = G - T$ is true only if private sector does not react to fiscal policy measures (Gandolfo, 2013). Private sector, for example, could cut savings after a tax increase so that compensating for fiscal tightening.

Another theory, called "structural gap approach", reject an implicit assumption of the New Cambridge School (related to the behaviour of foreign investors), which states that the external sector has a constant and low propensity to invest within respective economy. According to structural gap approach, in a context of a closed global financial system, foreign saving can finance current account deficit. Thus, the increasing savings in one country can increase investments and external deficit in another country (Feyrer and Shambaugh, 2012).

Italian economic historians usually refer to two main theoretical frameworks to analyse external and internal equilibrium dynamics. These are the Keynesian Bonelli-Cafagna model and the monetary approach supported by Fratianni and Spinelli, both discussed in chapter 1. In recent years, following the strand focused on capital

flows, the monetary approach became predominant (Fenoaltea, 2011). According to it, fiscal deficits can increase money supply. In particular, when money holdings exceed the desired real monetary balances, the purchase of foreign assets also increases causing a worsening of the current account balance (Harberger, 2008).

In order to clarify the theoretical debate above, it is necessary to look at the main conclusions (C. Kim and D. Kim, 2006). The traditional Keynesian theory, the New Cambridge School and also the monetary approach states that constant budget deficit generates a trade (current account) deficit. Conversely, the neoclassical perspective argues that a country experiencing a financial crisis by current account deficit could require public funds to recover the economic system. In this case the causal relationship goes from the current account deficit to the budget deficit. The structural gap approach states instead that current account deficit lead to fiscal surpluses in the long run (referring to a context of a small open economies). Furthermore, the bi-directional hypothesis assume that the existence of significant feedback may cause causality between the two variables to run in both directions (Magazzino, 2012). Finally the Ricardian equivalence hypothesis refers to an inter-temporal framework in which government does not affect the budget constraints of the private sector. In addition, since budget deficits does not affect interest and exchange rate, it has also null effect on the current account imbalances (Garcia and Ramajo, 2004). Thus, according to this approach, current account deficit and budget deficit are casually independent.

2.3 Empirical evidence, data and sources

Several studies test the causality between current account balance and fiscal deficit. Findings and results vary depending on the country and the time span observed. Most of the recent research cover Middle East and Asian countries: India (Ratha, 2012; Parikh and Rao, 2006), South Korea (C. Kim and D. Kim, 2006), Lebanon (Pattichis, 2004), Pakistan (Hakro, 2009), Sri Lanka (Saleh, Nair, and Agalewatte, 2005). Others are focused on Southern Europe: Greece (Vamvoukas, 1999) and Italy (Magazzino, 2012). Finally, there are also some studies that consider a set of countries using panel data (Khalid and Guan, 1999; Ganchev, Stavrova, and Tsenkov, 2012).

The following figure summarize the most relevant studies and their findings - i.e. the causal relationship between current account and budget deficits.

Authors	Time span	Countries and Causality
Hakro (2009)	1948-2005	Pakistan: BD -> CAD
Islam (1998)	1973-1991	Brazil: BD <-> CAD
Khalid and Guan (1999)	1950-1994	Egypt, France, Mexico, U.S.A.: BD -> CAD; Indonesia, Pakistan CAD -> BD; Canada, India: BD <-> CAD; Australia, UK: neutrality
Kim, Kim (2006)	1970-2003	South Korea: CAD -> BD
Parikh, Rao (2006)	1970-2000	India: BD -> CAD
Pattichis (2004)	1982-1997	Lebanon: BD -> CAD
Ratha (2010)	1998-2009	India: BD -> CAD
Saleh et al. (2005)	1970-2003	Sri Lanka: BD -> CAD
Vamvoukas (1999)	1948-1994	Greece: BD -> CAD
Magazzino (2012)	1970-2010	Italy: CAD -> BD
Ganchev (2012)	1998-2009	Bulgaria, Estonia: neutrality; Lithuania, Hungary, Poland, Romania, Slovakia, Slovenia: CAD -> BD

FIGURE 2.1: Results of the main studies on twin deficits hypothesis

Studies on the Italian case are few and limited to short datasets (Magazzino, 2012; Forte and Magazzino, 2013). Here I extend the analysis to both long run and short run, exploiting two datasets on current account deficit and budget deficit: a yearly dataset (1861-2017) and a quarterly dataset (1999-2017). The series refers to different sources. Regarding yearly data, sources are: for the current account, previous chapter 1 (1861-1914), Istat (1915-1970), Eurostat (1970-2017); for the budget deficit, Istat (1861-1970), Eurostat (1970-2017). The source for quarterly data is Eurostat for both the variables and for all the time span.

Figure 2.2 shows the yearly time series divided in four periods: 1861-1914; 1915-1950; 1951-1980; 1980-2017.

Graphs can show the evidence of some macroeconomics shocks, such as WWI and WWII, or confirm the results of national political economy, as the expansionary spending started during the 1970's. However, it is impossible to understand the relationship between budget deficit and current account from the graph. To address this issue it is necessary to deepen the analysis with some econometric tools.

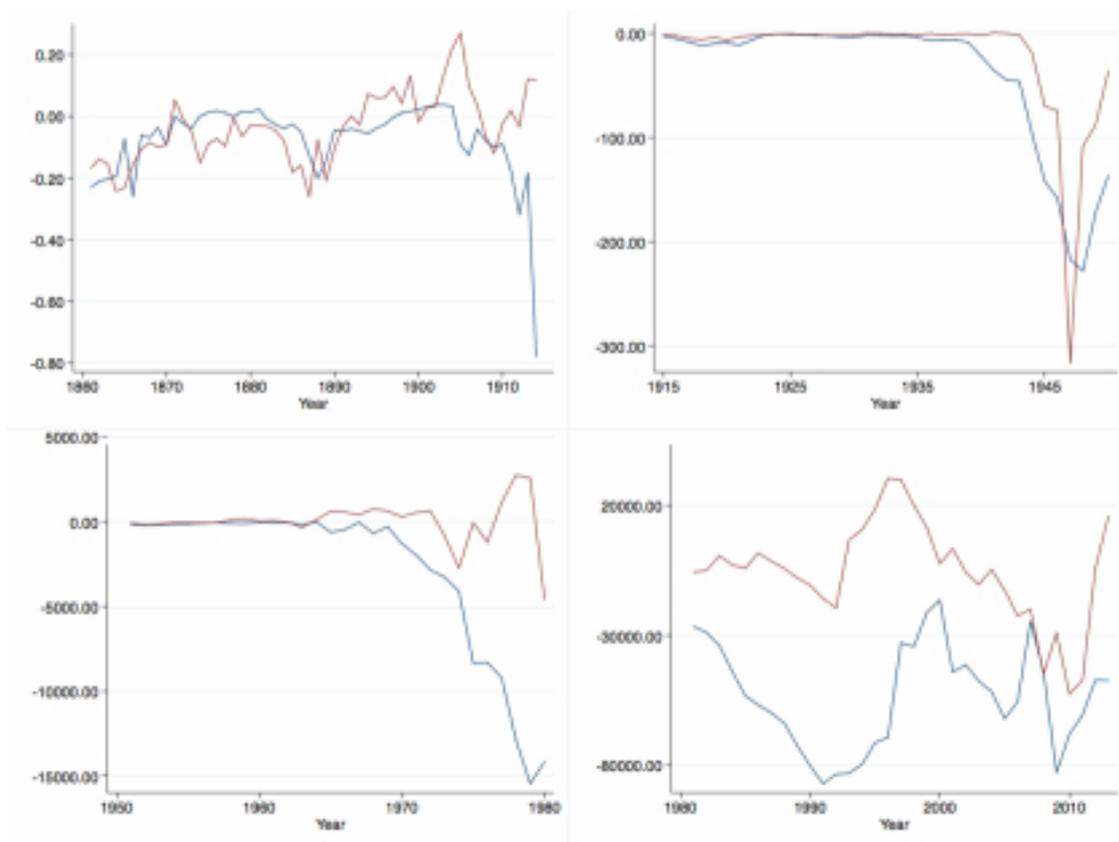


FIGURE 2.2: Budget deficit (blue line) and current account deficit (red line), (1861-2017) current million euro

2.4 Econometric analysis and results

There are two way to test the relationship between fiscal and current account balances according to time series techniques. Firstly, the application of Granger causality test allows to determine which of the two variables is useful in predicting the other one in the short run. Then I apply a vector error-correction model (VECM) to understand the long-term interdependence that reflect the equilibrium convergence properties.

Before running Granger test, it is crucial to do some preliminary analysis. In particular, I run both Dickey-Fuller and Phillips-Perron tests to verify the null hypothesis that the two time series are integrated of order 1. Results for quarterly series (Appendix 2), clearly show trend in the original data -i.e. the p-value of the test statistics is well above 5%. For differentiated data, both for budget and current account deficit, I reject the null hypothesis that the time series is not stationary, since p-values are below 5%. The same also holds for annual series. However, the Dickey-Fueller test on

current account deficit shows stationarity on both original and differentiated data. Finally the optimal lag length tests suggest a lag of the fifth and sixth order on the differentiated data, both for annual and quarterly time series.

2.4.1 Short run

The equations for Granger causality test are the following, where x and y are the current account deficit and the budget deficit:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \dots + \alpha_l y_{t-l} + \beta_1 x_{t-1} + \dots + \beta_l x_{t-l}$$

$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \dots + \alpha_l x_{t-l} + \beta_1 y_{t-1} + \dots + \beta_l y_{t-l}$$

Then I estimate six VAR models with order from one to six for both quarterly and yearly data. Regarding quarterly data, fifth and sixth order VAR exhibit uncorrelated and normal errors. On the other hand, the six models applied to yearly series have correlated and non-normal errors. Results of Granger causality test support the bi-directional causality: budget deficit Granger causes current account deficit and vice versa (Appendix B). These first results seem to suggest a simultaneous determination of these two key variables, casting doubts on the validity of using single equation approach to test the twin deficit hypothesis.

2.4.2 Long run

As a second step, the vector error-correction analysis allows to understand what is the interdependence that can be expected in the long term. Johansen test for cointegration confirm one integration equation only for annual data (Appendix B). Thus I estimate six VECM models with order from one to six for quarterly and yearly series. The basic cointegration equation is:

$$CA = \beta BD$$

where CA is the current account deficit, BD is the budget deficit and β is the regression coefficient. Then the simple vector error correction equation is:

$$\Delta CA_t = \alpha_1(CA_t - \beta BD_t) + E_{1,t}$$

$$\Delta BD_t = \alpha_2(CA_t - \beta BD_t) + E_{2,t}$$

where α_1 and α_2 are speeds of adjustment to a long-term equilibrium, while $E_{1,t}$ and $E_{2,t}$ are the error terms. It is possible to focus on the relation $CA - \beta BD = 0$ leaving aside the adjustment process to obtain:

$$(S - I) + (BD) = \beta(BD)$$

Assuming $(S - I)$ being different from zero, β coefficient can take any value since $(S - I) = BD(\beta - 1)$. In the other case, if the private sector is in equilibrium -i.e. $(S - I) = 0 = BD(\beta - 1)$ then it must be equal one. This can be used to validate New Cambridge School hypothesis and similars.

Thus, three different scenarios can exist. The first, when $\beta > 1$ means that the current account deficits change in the same direction of the budget deficit in the long-run. In this case the current account reacts since the private sector sums up to both fiscal and current account deficits. This is possible if capital inflows can finance at the same time public and private sector deficits (Ganchev, 2010). The second scenario, when $0 < \beta < 1$, suggests that there is a positive relationship between budget deficits and current account deficits. This means that when the fiscal surplus increases the current account deficit decreases and vice versa. The third scenario is $\beta < 0$. It means that there is a negative relationship between budget deficit and the current account surplus.

VECM results (Appendix B) allows to reject the strong form of the twin deficit hypothesis since β coefficient is never greater than one. Results partially support Ricardian equivalence as β is always less than zero for both yearly and quarterly data. Looking to results, there are two exceptions, that are VECM(5) and VECM(6) for yearly data, where β coefficient is between 0 and 1. This confirms the traditional Keynesian theory and the monetary approach, as carried on by Fratianni and Spinelli (Fratianni and Spinelli, 2005). This result suggests a negative relationship between

the financial position of the private sector (as reflected in the current account) and of the government (fiscal balance).

2.5 Conclusions

This paper tests the twin deficit hypothesis in Italy in order to confirm or reject the macroeconomic theoretical frameworks that dominated last decades, that is between Keynesian and monetarist, filling the gap of a dry literature on the Italian case. The analysis differs from the other studies since can exploit two different datasets (yearly and quarterly). In addition it looks to both the short run and the long run by applying Granger causality test and vector error-correction model (VECM). Results of Granger test support a bi-directional causality between budget deficits and current account deficits, suggesting a different kind of econometric tool, such as a simultaneous equation model, to properly deepen the analysis. On the other hand, VECM results provide three different hints. First, they reject the twin deficit hypothesis in its hard form -i.e. the equality between current account deficits and fiscal surpluses. This has also some implications for economic policy. It suggests that a policy focused on generating additional fiscal surpluses to decrease the current account deficits can be effective only in the long run, according to Ganchev hypothesis (Ganchev, 2010). Second, the Ricardian equivalence seems to hold for quarterly and, partially, for yearly data. As consumers anticipate the future of tax raising, higher government spending, financed by borrowing, implies lower spending in the future. Third, according to VECM models with suggested lags, the prevailing monetary approach for Italy is confirmed, indicating capital inflows (current deficit) as the driving force of the external equilibrium and the monetary policy as the main tool to maintain the internal equilibrium.

2.6 Appendix B

Augmented Dickey-Fuller test for unit root Number of obs = 67

Test Statistic	Interpolated Dickey-Fuller		
	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-1.153	-4.113	-3.170

MacKinnon approximate p-value for Z(t) = 0.9196

FIGURE 2.3: CA, Dickey-Fuller test, quarterly data

Augmented Dickey-Fuller test for unit root Number of obs = 66

Test Statistic	Interpolated Dickey-Fuller		
	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-5.079	-4.115	-3.170

MacKinnon approximate p-value for Z(t) = 0.0001

FIGURE 2.4: (diff) CA, Dickey-Fuller test, quarterly data

Augmented Dickey-Fuller test for unit root Number of obs = 67

Test Statistic	Interpolated Dickey-Fuller		
	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-2.678	-4.113	-3.170

MacKinnon approximate p-value for Z(t) = 0.2454

FIGURE 2.5: BD, Dickey-Fuller test, quarterly data

Augmented Dickey-Fuller test for unit root Number of obs = 66

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(t)	-4.888	-4.115	-3.484	-3.170

MacKinnon approximate p-value for Z(t) = 0.0003

FIGURE 2.6: (diff) BD, Dickey-Fuller test, quarterly data

Phillips-Perron test for unit root Number of obs = 73
Newey-West lags = 3

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(rho)	-14.806	-19.314	-13.484	-10.838
Z(t)	-2.879	-3.548	-2.912	-2.591

MacKinnon approximate p-value for Z(t) = 0.0478

FIGURE 2.7: CA, Phillips-Perron test, quarterly data

Phillips-Perron test for unit root Number of obs = 72
Newey-West lags = 3

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(rho)	-70.653	-19.296	-13.476	-10.832
Z(t)	-16.759	-3.549	-2.912	-2.591

MacKinnon approximate p-value for Z(t) = 0.0000

FIGURE 2.8: (diff) CA, Phillips-Perron test, quarterly data

Phillips-Perron test for unit root Number of obs = 73
Newey-West lags = 3

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(rho)	-84.934	-19.314	-13.484	-10.838
Z(t)	-10.190	-3.548	-2.912	-2.591

MacKinnon approximate p-value for Z(t) = 0.0000

FIGURE 2.9: BD, Phillips-Perron test, quarterly data

Phillips-Perron test for unit root Number of obs = 152
Newey-West lags = 4

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(rho)	-40.026	-19.973	-13.804	-11.069
Z(t)	-4.539	-3.493	-2.887	-2.577

MacKinnon approximate p-value for Z(t) = 0.0002

FIGURE 2.15: CA, Phillips-Perron test, yearly data

Phillips-Perron test for unit root Number of obs = 151
Newey-West lags = 4

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(rho)	-139.968	-19.970	-13.802	-11.068
Z(t)	-10.923	-3.493	-2.887	-2.577

MacKinnon approximate p-value for Z(t) = 0.0000

FIGURE 2.16: (diff) CA, Phillips-Perron test, yearly data

Phillips-Perron test for unit root Number of obs = 152
Newey-West lags = 4

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(rho)	-4.710	-19.973	-13.804	-11.069
Z(t)	-1.397	-3.493	-2.887	-2.577

MacKinnon approximate p-value for Z(t) = 0.5837

FIGURE 2.17: BD, Phillips-Perron test, yearly data

Phillips-Perron test for unit root Number of obs = 151
Newey-West lags = 4

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(rho)	-133.948	-19.970	-13.802	-11.068
Z(t)	-11.774	-3.493	-2.887	-2.577

MacKinnon approximate p-value for Z(t) = 0.0000

FIGURE 2.18: (diff) BD, Phillips-Perron test, yearly data

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	8.5387	2	0.014
D_CA	ALL	8.5387	2	0.014
D_BD	D.CA	25.104	2	0.000
D_BD	ALL	25.104	2	0.000

FIGURE 2.19: Granger causality, quarterly data, lag 2

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	29.869	3	0.000
D_CA	ALL	29.869	3	0.000
D_BD	D.CA	3.6012	3	0.308
D_BD	ALL	3.6012	3	0.308

FIGURE 2.20: Granger causality, quarterly data, lag 3

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	24.453	4	0.000
D_CA	ALL	24.453	4	0.000
D_BD	D.CA	11.826	4	0.019
D_BD	ALL	11.826	4	0.019

FIGURE 2.21: Granger causality, quarterly data, lag 4

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	47.078	5	0.000
D_CA	ALL	47.078	5	0.000
D_BD	D.CA	15.273	5	0.009
D_BD	ALL	15.273	5	0.009

FIGURE 2.22: Granger causality, quarterly data, lag 5

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	48.102	6	0.000
D_CA	ALL	48.102	6	0.000
D_BD	D.CA	17.015	6	0.009
D_BD	ALL	17.015	6	0.009

FIGURE 2.23: Granger causality, quarterly data, lag 6

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	7.933	2	0.019
D_CA	ALL	7.933	2	0.019
D_BD	D.CA	14.53	2	0.001
D_BD	ALL	14.53	2	0.001

FIGURE 2.24: Granger causality, yearly data, lag 2

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	59.331	3	0.000
D_CA	ALL	59.331	3	0.000
D_BD	D.CA	51.604	3	0.000
D_BD	ALL	51.604	3	0.000

FIGURE 2.25: Granger causality, yearly data, lag 3

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	56.02	4	0.000
D_CA	ALL	56.02	4	0.000
D_BD	D.CA	62.161	4	0.000
D_BD	ALL	62.161	4	0.000

FIGURE 2.26: Granger causality, yearly data, lag 4

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	61.096	5	0.000
D_CA	ALL	61.096	5	0.000
D_BD	D.CA	83.241	5	0.000
D_BD	ALL	83.241	5	0.000

FIGURE 2.27: Granger causality, yearly data, lag 5

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_CA	D.BD	57.15	6	0.000
D_CA	ALL	57.15	6	0.000
D_BD	D.CA	76.868	6	0.000
D_BD	ALL	76.868	6	0.000

FIGURE 2.28: Granger causality, yearly data, lag 6

Johansen tests for cointegration

Trend: constant Number of obs = 70
Sample: 2000q1 - 2017q2 Lags = 4

					5%	
maximum				trace	critical	
rank	parms	LL	eigenvalue	statistic	value	
0	14	-1379.5661	.	12.9735*	15.41	
1	17	-1373.0903	0.16891	0.0220	3.76	
2	18	-1373.0793	0.00031			

					5%	
maximum				max	critical	
rank	parms	LL	eigenvalue	statistic	value	
0	14	-1379.5661	.	12.9515	14.07	
1	17	-1373.0903	0.16891	0.0220	3.76	
2	18	-1373.0793	0.00031			

FIGURE 2.29: Johansen tests for cointegration, quarterly data

Johansen tests for cointegration

Trend: constant Number of obs = 149
Sample: 1865 - 2013 Lags = 4

					5%	
maximum				trace	critical	
rank	parms	LL	eigenvalue	statistic	value	
0	14	-2981.7312	.	36.4253	15.41	
1	17	-2964.4158	0.20739	1.7946*	3.76	
2	18	-2963.5185	0.01197			

					5%	
maximum				max	critical	
rank	parms	LL	eigenvalue	statistic	value	
0	14	-2981.7312	.	34.6307	14.07	
1	17	-2964.4158	0.20739	1.7946	3.76	
2	18	-2963.5185	0.01197			

FIGURE 2.30: Johansen tests for cointegration, yearly data

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	1	.	.	.	.	.
CA	-.1091603	.0709336	-1.54	0.124	-.2481876	.029867
BD						
_cons	-1020.561	.	.	.	.	.

FIGURE 2.31: Beta coefficient, VECM(1), yearly data

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	1	.	.	.	.	.
CA	-.0479671	.0638965	-0.75	0.453	-.173202	.0772678
BD						
_cons	-111.9961	.	.	.	.	.

FIGURE 2.32: Beta coefficient, VECM(2), yearly data

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	1	.	.	.	.	.
CA	-.0240407	.0394335	-0.61	0.542	-.1013289	.0532475
BD						
_cons	-165.1246	.	.	.	.	.

FIGURE 2.33: Beta coefficient, VECM(3), yearly data

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	1	.	.	.	.	.
CA	-.0217976	.0412746	-0.53	0.597	-.1026943	.0590991
BD						
_cons	172.34	.	.	.	.	.

FIGURE 2.34: Beta coefficient, VECM(4), yearly data

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	1	.	.	.	.	.
CA	.0036577	.0467125	0.08	0.938	-.0878971	.0952125
BD						
_cons	563.2218	.	.	.	.	.

FIGURE 2.35: Beta coefficient, VECM(5), yearly data

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	1	.	.	.	.	.
CA	.0449544	.0351377	1.28	0.201	-.0239143	.1138231
BD						
_cons	552.8282	.	.	.	.	.

FIGURE 2.36: Beta coefficient, VECM(6), yearly data

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	1	.	.	.	.	.
CA	-3.463765	.2807749	-12.34	0.000	-4.014074	-2.913456
BD						
_cons	-38967.25	.	.	.	.	.

FIGURE 2.37: Beta coefficient, VECM(1), quarterly data

beta		Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	CA	1	.	.	.	.	.
	BD	-7.251702	1.038799	-6.98	0.000	-9.28771	-5.215694
	_cons	-83892.76	.	.	.	.	.

FIGURE 2.38: Beta coefficient, VECM(2), quarterly data

beta		Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	CA	1	.	.	.	.	.
	BD	-4.11189	.5742832	-7.16	0.000	-5.237465	-2.986316
	_cons	-46680.87	.	.	.	.	.

FIGURE 2.39: Beta coefficient, VECM(3), quarterly data

beta		Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	CA	1	.	.	.	.	.
	BD	-2.874821	.7045624	-4.08	0.000	-4.255738	-1.493904
	_cons	-32751.73	.	.	.	.	.

FIGURE 2.40: Beta coefficient, VECM(4), quarterly data

beta		Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	CA	1	.	.	.	.	.
	BD	-3.043121	.7562492	-4.02	0.000	-4.525342	-1.5609
	_cons	-35580.28	.	.	.	.	.

FIGURE 2.41: Beta coefficient, VECM(5), quarterly data

beta		Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1	CA	1	.	.	.	.	.
	BD	-3.8073	1.139008	-3.34	0.001	-6.039715	-1.574886
	_cons	-45378.27	.	.	.	.	.

FIGURE 2.42: Beta coefficient, VECM(6), quarterly data

Chapter 3

Do transport costs matter? Freight and the Italian foreign trade, 1862-1938

3.1 Introduction

International trade experienced booms and busts cycles across the last two centuries. Sources and data from several countries (Federico and Tena-Junguito, 2016) showed that trade grew very fast from the 1820s to World War I, with a slow-down after 1870 (the so-called first globalization), stagnating in interwar years and growing again since 1950 (second globalization). According to standard theory, trade openness, defined as the ratio of trade to GDP, reflects a decrease in trade costs - i.e. barriers to trade, formal (duties), informal (costs of dealing with strangers) and transport costs (Anderson and VanWincoop, 2004). Previous estimates suggested that the fall of trade costs in general, and of transport costs in particular, accounted for a sizeable share of growth in world trade. These proxies usually refer to the standard gravity model framework (Jacks, Meissner, and Novy, 2011). Here transport costs are usually considered within the overall trade cost and assumed to be constant over time since they are function of distances among countries. This approach allows to bypass the lack of more accurate data on shipping and rail costs but it is empirically weak. On the other hand, the debate on "distance puzzle" (Disdier and Head, 2008) states that transport costs can also increase due to the composition of trade by product and by distance. Thus, all these studies, that is the conventional wisdom,

agree on identifying the decrease of transport costs with the decrease of unit cost (Findlay and O’rourke, 2009; Williamson, 2008). This paper starts exactly from the opposite point of view stating that unit transport costs are one of the main driver of trade during the first globalization. In addition, the analysis considers also other variables, such as distance and, for the first time, "bulkiness", that is the composition of trade by a specific category of product identified by its stowage.

This paper investigates the role of freights - shipping and railway costs - exploiting, for the first time within this kind of literature, a new yearly dataset on unit freights by routes and by means of transport . In addition, the accurate Italian trade statistics allow to cover the entire period between 1862 and 1938 (Federico, Natoli, et al., 2011). Empirical results suggest that a decomposition of the trade costs can be the most appropriate way to clarify the debate.

The paper is structured as follows. In section two I provide a brief description of the wide theoretical context that analyse the role of transport costs. Section three introduce the two main sources that I have exploit to compute alla the variables that I focused into. In section four I show results for each components of trade costs together with some preliminary conclusions. The Appendix at the end of the paper describes precisely criteria and methodologies adopted to look at each specific variables.

3.2 Trade and transport costs: a survey

Dynamics of trade and their possible explanations have been widely discussed by economists for the last sixty years. The theoretical framework refer to gravity equations as the main tool to analyze the determinants of bilateral trade. The pioneering work of Tinbergen is the first empirical attempt to explain the relationship of trade flows between countries with the Gross National Product by the standard gravity model (Tinbergen, 1962). This model comes from specific applications in phisycs about testing gravitational interactions and the relevance of the law of gravity. The basic form of the model is the following:

$$x_{ij} = \alpha_1 y_i + \alpha_2 y_j + \sum_{m=1}^M \beta_m \ln(z_{ij}^m) + \epsilon_{ij}$$

where x_{ij} is the log of exports from country i to country j , y_i and y_j are respectively the log of GDP for the exporter and the importer country, z_{ij}^m is the set of some observables variables related to bilateral trade barriers and ϵ_{ij} is the disturbance term (Anderson and VanWincoop, 2004, Jacks, Meissner, and Novy, 2011).

The model predict a positive relationship between international trade flows and size of the country measured by both GDP and distance across countries. Distance in particular is relevant due to its effects on the possibility to create linkages among partners of trade or to ease communications. Furthermore, distance is crucial also to overtake the main shortcoming of the studies on trade in historical perspective: the lack of transport costs data for bilateral trade. Gravity models usually compute indirectly transport costs since transport frictions are included implicitly in its formulation. This is proved by the assumption of transport costs as embedded in distance variable, that is transport costs are function of the distance across countries. The formulation of the model can misunderstand or at least masking the effect of transport costs on the growth of trade.

Several authors tried to understand causes and dynamics of the growth of trade showing a puzzling context. Among these, Madsen is the first attempt to explicitly decompose world trade looking to the collapse of Great Depression (Madsen, 2001). The analysis focuses on the role of discretionary changes in tariffs induced by contextual deflation, nontariffs barriers and income. The assumption of the dependency between nominal income and trade barriers shows an unclear result: for the period 1929-1932 trade barriers accounted by 18 per cent for the fall of trade while fall of income accounted by 13 per cent given a total trade decline of 50 per cent. The residual part is not explained and results seems controversial.

Deepening the debate on the determinants of the growth of world trade, Baier and Bergstrand move away by the two main explanations -i.e. technology-led declines in transport costs and policy-induced trade liberalization - by proposing a different empirical perspective (Baier and Bergstrand, 2001). They exploit a standard general equilibrium model of international trade in final goods to study the mean growth in real bilateral trade flows among 16 OECD countries. Their estimation looks at the role played by income convergence, income growth, tariffs reduction and transport costs decline between 1950s and 1980s. Results show that the growth of trade during

this thirty years (around 148 per cent in logarithmic mean) is explained for the 67-69 per cent by the real GDP growth rate, for the 23-26 per cent by tariffs rate reductions and for the 8-9 per cent by transport cost decline. The convergence in real GDP conversely has no direct effect on the growth of trade. All the output of the model sum up to the 40 per cent of the overall explanation in the trade boom for that time.

Other studies focused on the institutional international context, such as monetary regimes and currency unions, and its implications on the first globalization (Lopez-Cordova and Meissner, 2003; Estevadeordal, Frantz, and A. Taylor, 2003). Within their work, Lopez-Cordova and Meissner, using a standard gravity model of trade, find out that the gold standard regime had a large impact on the patterns of trade: their estimates suggest an increase of 30 per cent in trade flows for countries that adopted the fixed currency regime. A similar result is obtained also by Estevadeordal et al. whose analysis stress the role played by gold standard regime and by transport costs as the main determinants of the growth of trade in the first globalization (Estevadeordal, Frantz, and A. Taylor, 2003).

This large differences in the interpretation of trade globalization reflect the different methods of computation adopted by each authors without a proper analysis for the key results. In particular, two different results cast doubts on the issue. Firstly, the study of Jacks and Pendakur, adopting a standard gravity model in order to investigate the role of transport improvements for UK during the first globalization, use a country-specific index of freight rates rather than distance (Jacks and Pendakur, 2010). In the main OLS regression the variable is positive and significant, that is the fall in freights would cause a decline in trade for the period 1870-1913. The authors hypothesize freight as endogenous but the instrumental variable regression seems to provide doubtful results: variable freight becomes negative but it remains not significant. Secondly, several empirical studies show that the distance coefficient has been increasing instead of decreasing across the time (Disdier and Head, 2008). In their database of 1467 estimates from 103 papers about the magnitude of distance effect, Disdier and Head show that the mean effect is around 0.9 per cent and that an increase of 10 per cent in distance lowers bilateral trade by 9 per cent. The negative impact of distance on trade has remained remarkably high from the half of the last century casting doubts on the possible explanations.

Following a different perspective, Hummels stressed the relevance to analyze the cost of shipping referring to the so called "stowage factor" i.e. the share of bulk commodities on the total trade (Hummels, 2007). The technological revolution in container shipping lowered shipping costs from 3 to 13 per cent but increases in the cost of fuel and ports congestion became a problem for countries with growing trade volumes (Carruthers, Bajpai, and Hummels, 2003). The idea of a decomposition of transport costs, experienced previously even by authors (Moneta, 1959) seems to point out new possible explanation in shedding lights on the role of transport costs in historical perspective. I adopted the same approach, exploiting new data, in order to see how component such as unit freight, bulkiness and distance acted during the first globalization and the successive deglobalization in the Italian context.

3.3 The Italian foreign trade: trend and patterns 1862-1938

Before getting within the analysis it is relevant to describe the macro-trends of the Italian foreign trade. The industrialization process after Unification radically changes the structure of trade. Its volume increases showing a different composition by products and trade partners.

Figure 3.1 depicts the "openness" of the Italian trade, that is the sum of imports and exports over GDP. The value more than double in the first fifty years after Unification, meaning an increasing role played by Italy within international trade flows. According to the graph, WWI is the break that divides an expansive phase from a period of trade restrictions. Until 1939 exports increase more (3.1%) than imports (2.9%), without considering trade with colonies (Federico, Natoli, et al., 2011). Interwar years show two different pictures: during 1920's exports increase more than 12%, fostered by international demand, while imports increases around 3%. On the other hand during 1930's the international global demand drops, causing the fall of both imports (-4.1% per year) and exports (-0.9%). Since the growth rate of imports is basically always higher than the growth rate of exports, the balance of commodities over GDP becomes constantly more negative. This trend is partially reversed during 1930's due to bilateral trade constraints carried on by the fascist Italian government. Regarding the composition of trade by commodities, in 1862 primary commodities



FIGURE 3.1: "Openness" (black line), exports/GDP (dots line), imports/GDP (segmented line) 1862-1939; source: Federico, Natoli, et al., 2011

prevail both for exports, especially silk, and also imports, since Italy has scarce raw materials such as wheat, coal, cotton and wood. This confirms Italy as a developing and low industrialized country at the time of Unification. A first significant change in the commodities composition takes place at the beginning of 20th century. Here the share of raw materials on the overall exports decreases more than 20%, according to the national industrialization process. This trend continues also during 1930's, when the share of raw material decreases reaching the half of the overall exports. On the other side, imports shows a more constant pattern, since raw materials are still relevant before WWII. However, in the first decade of 20th century there is a relevant increase of industrial raw products, such as cotton and coal, and a consistent reduction of textile products due to a developed production capacity. In addition the demand of the heavy industry increases the imports of energy product. An idea of the composition of the Italian trade is given in the following two figure, 3.2 and 3.3, where the firsts ten exported and imported products are listed by period.

Finally, the analysis of origin and destination of commodities provide additional informations. Regarding imports, during the first decades after Unification the 90% of Italian imports come from European countries. Starting from the 20th century,

1862-67	% on the total	1909-13	% on the total	1935-39	% on the total
wheat	12,3%	raw cotton	9,1%	coal	13,2%
silk	9,3%	coal	8,7%	raw cotton	7,2%
woolen textiles	5,8%	wheat	5,6%	wheat	4,5%
cotton textiles	5,2%	hard wheat	4,2%	wool	3,1%
sugar	4,9%	wood	4,0%	copper	2,9%
silkworms	3,1%	silk	3,9%	oil	2,5%
cotton yarns	3,0%	cocoons	2,2%	wood	2,5%
wood	2,7%	maize	1,7%	mineral oils	2,0%
coffee	2,3%	leather	1,7%	scrap iron	2,0%
leather	2,2%	fish	1,5%	machine tools	1,8%
Total	50,7%	Total	42,6%	Total	41,8%

FIGURE 3.2: First ten imported goods by period. (Source: Federico, Natoli, et al., 2011)

1862-67	% on the total	1909-13	% on the total	1935-39	% on the total
silk	29,9%	silk	9,1%	cotton textiles	13,2%
olive oil	11,9%	silk textiles	8,7%	almonds	7,2%
sulfur	5,3%	cotton textiles	5,6%	artificial fibers	4,5%
citrus fruits	4,6%	cheeses	4,2%	citrus fruits	3,1%
natural colors	3,2%	cocoons	4,0%	fresh fruits	2,9%
hemp and linen	2,9%	raw hemp	3,9%	raw hemp	2,5%
cocoons	2,7%	olive oil	2,2%	cheeses	2,5%
wheat	2,2%	almonds	1,7%	wine	2,0%
wine	2,2%	other textiles	1,7%	wool textiles	2,0%
rice	2,1%	wine	1,5%	silk	1,8%
Total	67,1%	Total	41,9%	Total	31,0%

FIGURE 3.3: First ten exported goods by period. (Source: Federico, Natoli, et al., 2011)

thanks to transport revolution, the share decrease around 60%. Imports from Americas shows the highest increase, from 15% to 30% between 1900 and 1919. On the exports side, France is the main trade partner after Unification until the "trade war" in 1887. Other partners are usually European countries, such as Switzerland, Austria-Hungary and United Kingdom. At the turning of 19th century, Germany becomes the main destination for Italian exports while exports in the Americas reflect Italian migration flows (Federico, Natoli, et al., 2011). Before WWII Germany is confirmed as the main market for Italian commodities.

3.4 Data and sources

The results that follow in section 4 derive from two main sources: the reconstruction of Italian foreign trade statistics by Federico et al. (2011) and a new data set on

world trade provided by Federico and Tena-Junguito (2016). The first one collect informations about commodities, prices, values, tonnes by year and country collected from *Movimento commerciale del Regno d'Italia*. The second one is a general survey of informations related to world trade statistics including freights, polities and prices. A detailed description of methodology for the computation and of other sources is given in the Appendix.

3.5 Bulk or not bulk?

Before getting through the results, it is necessary to clarify the notion of "bulk commodity", which will be often recall in next paragraphs. First of all it is relevant to stress that there is not a standard classification for bulk commodities. Usually we refer to bulk commodities as for something that is shipped in large quantities and without packaging. Carriers companies commonly distinguish between major bulk commodities, such as coal, grain and ore, and minor bulk commodities as sugars, steel, cement and scraps (some references for bulk companies and their definitions: starbulk.com; nordicbulkcarriers.com). Is it possible also distinguish among dry bulk commodities and wet bulky commodities: the first ones refer to iron, cereals, steel, wood, crude oil, murble etc. the latter to acids, loose wines, solvents etc. The lack of a detailed classification of bulk commodities need an additional criterion in order to match the previous general defintion with a doble check. This criterion is the price of commodities for ton, since bulk commodities are usually the cheapest. In order to see if the cathegories mentioned above as "bulky commodities" are also the ones with the lower price, I computed the price per ton for each commodities using the same coefficient applied to the computation of the series of weights. I did this check for two benchmark years, 1913 and 1938, in order to eventually catch sizable differences in prices. Results of this double check, cathegories and prices, is depicted in Figure 3.4 that lists the main cathegories of commodities considered and selected in all the period 1862-1938. I used this cathegories also to select the sub-cathegories directly related.

Textile and raw fabrics are never mentioned in the examples of bulk commodities given by companies of carriers. Since also the price is oftenly not as cheap as the

Dry bulk		Wet bulk
coal	cement	acids
raw iron	scraps	loose wines
cereals	crude oil	loose milk
minerals	marble	mineral waters
steel	building materials	juices
wood		alcohols
sugars		chemical solvents

FIGURE 3.4: Bulk commodities

other raw commodities, I did not consider any raw fabrics as bulk commodity. In addition I excluded also processed products derived by the main bulk - i.e. steel, wood, marble - since the price per ton is sensitively higher compared to the price of the main raw material that this products are made of - i.e. bolts, foil woods, marble statues.

3.6 Results and empirical evidence

The estimates and the empirical evidence that arise after managing the data as described within Appendix C show some interesting results. To begin with, the comparison of the unit freight with the so called "freight factor" - i.e. the ratio between total trade costs among all countries and total value of traded commodities - shows the picture drawn in figure 3.5.

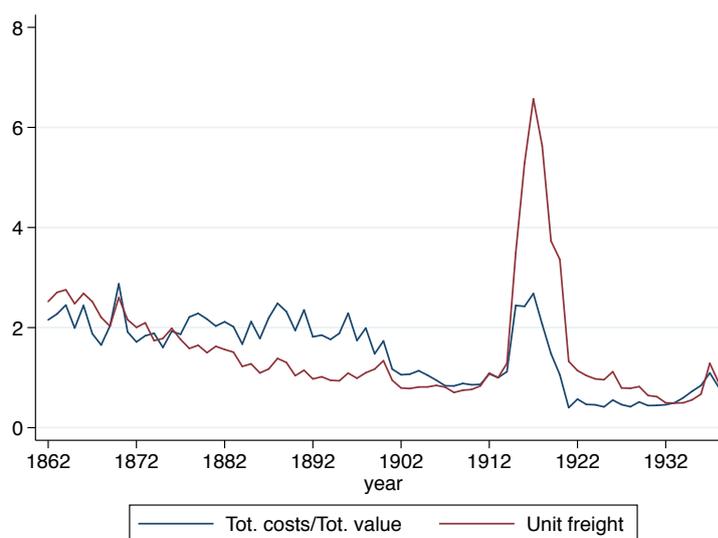


FIGURE 3.5: Freight factor and unit freight (1913=100 as index)

During the first globalization, the decreasing trend of unit freight is followed by an elastic but stable increase in total costs. The following deglobalization period, starting with World War I, clearly show an opposite picture in which unit freights remarkably increase due to the international trade context. An additional decomposition by imports and exports give more informations, as shown in figure 3.6.

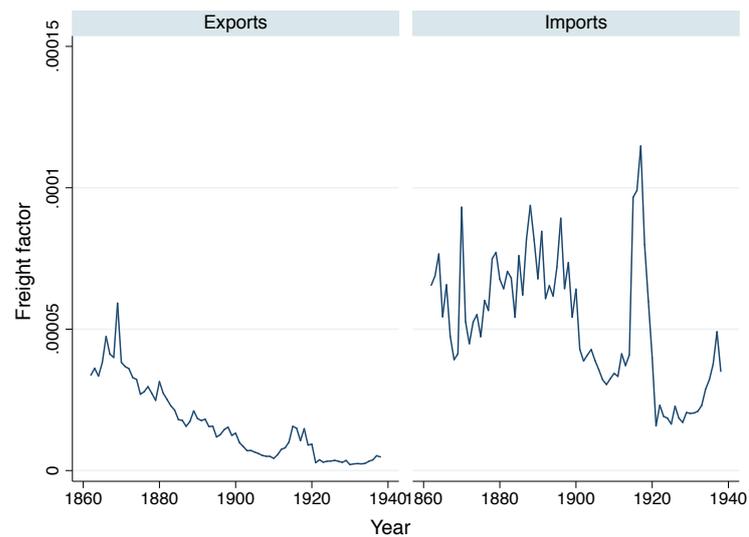


FIGURE 3.6: Freight factor for exports and imports

Here freight factor for exports presents a decreasing trend that remains almost constant until World War I, when the boom of the unit freights affect the increase. Imports, that are the right side of the graph, show an opposite trend, confirming Italy as an importer country for that time. Comparing figure 3.5 with figure 3.6 it seems that imports freight factor is the component of the increase which affected the first globalization. At the same time, while exports show a very low and stable freight factor for the last years, imports have an increasing trend for all the interwar period.

Proceeding with the empirical decomposition, I look at the composition of Italian international trade. In particular, I focused the attention on the percentage of bulk commodities looking for other additional explanation of the general trend in trade costs. I plotted the results of this additional step in figure 3.7.

Again results show different features distinguishing by exports and imports. The latter are made of an high percentage on bulk commodities, such as coal, iron and

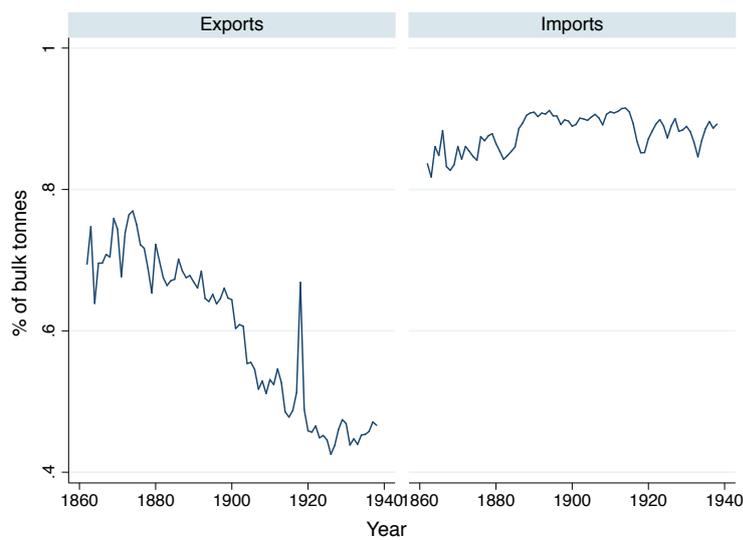


FIGURE 3.7: Percentage of bulk tonnes on the total

other main raw materials. Conversely, exports show a different trade composition, essentially made of textile commodities, manufactures and other medium and high value goods with a marked elasticity. Looking at the overall percentage of bulk commodities on the total of trade, as depicted in figure 3.8, results suggest that bulk commodities are the relevant part of traded goods especially during the first globalization, even though the increase is about few percentage points.

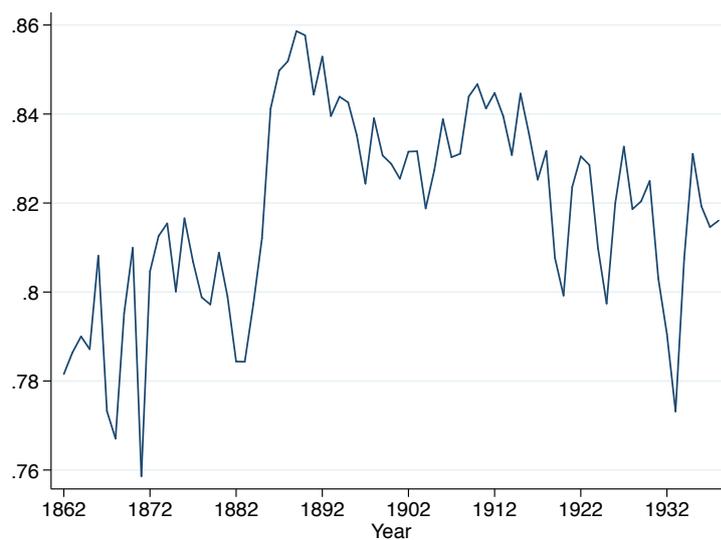


FIGURE 3.8: Percentage of bulk tonnes on the total

The elasticity of the "bulkiness" is particularly evident during the first two decades

after Unification and starting from the 1920s, with a relevant decrease in the early 1930s. A possible explanation can be found in shock occurred within the trade of some specific bulk commodity during each year. In order to test the empirical evidence and the relationship between freight factor, unit cost and possible omitted variables, I run a simple regression, splitting the series in two periods (globalization 1862-1913 and deglobalization 1914-1938) with fixed effects for imports and exports according to the following form:

$$Ff = Uc + Bulk + \epsilon$$

Where Ff is the freight factor, Uc is the unit cost, $Bulk$ is the percentage of bulk commodities and ϵ is the error term. Results are aligned with the assumptions made before. The coefficient of unit cost is negative (-0.015) meaning that unit freight and freight factor are conversely related. On the other hand bulk coefficient is positive (0.018), that is an increase in bulk commodities positively affect the freight factor. Results for the second time span (1914-1938) are weaker but can be explained by the different context of de-globalization. Here the coefficient of unit cost is slightly negative (-0.00004) while the bulk coefficient is slightly positive (-0.00005). Robustness of results for 1862-1938 are confirmed by the R squared that is equal to 0.81. For 1914-1938 the R-squared of 0.33 suggests less robust results.

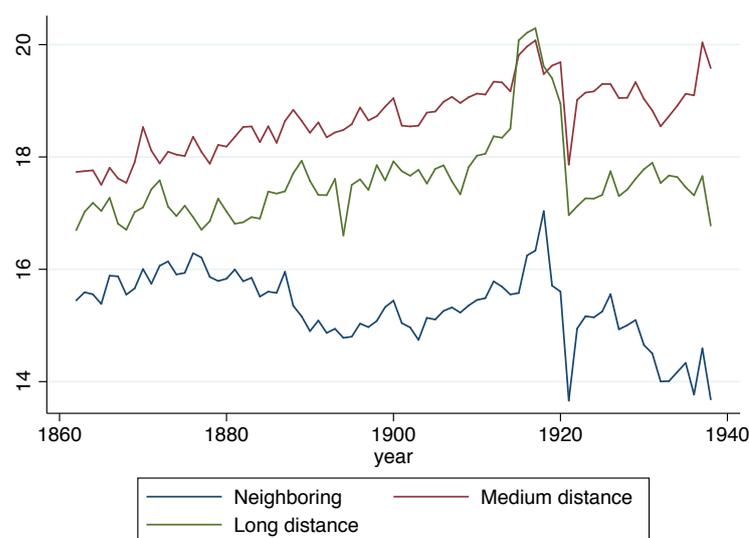


FIGURE 3.9: Trade by distance

Finally it is possible to look at composition of trade by distance. I separated the overall trade cost by three groups of countries. In the first one I collected countries considered as neighboring (France and Austria), in the second one I collected medium distance countries (Germany, United Kingdom, Belgium, Netherlands) and a third one made of long distance countries (Russia, USA, Argentina). The international trade of Italy is compound as depicted in figure 3.10. Globalization is characterized by a general increase in medium and long distance trade, while the short distance shipping decrease until 1903-1904. By then, leaving aside the WWI period, the overall composition presents an average increase of long distance trade and a decrease of the shipping with neighboring countries. In this case data on neighboring countries are also affected by the historical political context in which Austria separated from Hungary losing ports and the following statistics on shipping.

3.7 Conclusions

Literature on international trade show a puzzling role for transport costs by a lack of more accurate data on bilateral trade. Thanks to new information for the Italian context, it is possible deepening transport costs looking at their main components, as argued by a wide literature. Among these, freights, bulk commodities and distance seems to had an interesting role in explaining trend for trade boom during globalization and a more debated role during interwar period. In particular the decrease of unit freight during globalization is followed by an increase in freight factor fueled by an intensification of trade with more distant countries and a increase in bulk commodities on the overall composition. These results can be the base to build up gravity models exploiting, for the first time, a unit freight series and solve the issue from a completely different perspective.

3.8 Appendix C

3.8.1 Freight series

Yearly maritime freights series are estimated referring to a wide dataset on world trade statistics (Federico and Tena-Junguito, 2016). The dataset is based on benchmark freights for 1848, 1861, 1913 and the corresponding index to adjust to yearly values. Each maritime freight is the transport cost for moving a specific quantity of commodity across borders. These costs consist of four aggregates items: port handling costs and fees, insurance, actual costs of transport and duties on imports or exports, if any. Freights can vary for different commodities for inbound data while refers only to coal for outbound statistics. However the few informations provided do not allow to diversify freight estimates for commodity.

Both inbound and outbound freights series refer to UK and cover a set of specific maritime routes. These routes often do not include Italian ports or its trade partners as defined within the statistical series of *Movimento commerciale del Regno d'Italia* (Federico, Natoli, et al., 2011). Here data on total value, total quantity and price for each commodity are defined for ten trade partners: Austria (Hungary included until 1911), Belgium (Luxembourg included), France, Germany, Netherlands, United Kingdom (Ireland included since 1911), Russia (counting as Soviet Union since 1923), Switzerland, Argentina and U.S.A.. Total values and total quantities include even values for commodity whose destination or origin is not specified.

In order to adjust the freight to Italian routes I firstly identify the UK maritime freights benchmarks more related to the geographical context of the Italian trade partners. Ports of reference are listed in figure 3.10.

Afterwards, I apply the corresponding coefficient to the benchmark freights of the reference port, obtaining a yearly value stated in the form pound unit of measure/unit of weight. Note that for outbound freight of USA I use Buenos Aires freight until 1868 because before there are not indexes related to USA. After 1869 I apply to USA the generic index for East Atlantic context. Regarding inbound indexes, I apply Bilbao index instead of Danzig index from 1914 because this one is only available until then. Furthermore I complete some index series by linear interpolation for the following years: St. Petersburg (1915; 1917-1922; 1933-1935), Odessa

INBOUND		OUTBOUND	
Origin	Reference port	Destination	Reference port
Belgium	<i>Danzig</i>	Belgium	<i>Danzig</i>
France	<i>Danzig</i>	France	<i>Danzig</i>
Austria-Hungary	<i>Danzig</i>	Austria-Hungary	<i>Danzig</i>
UK	<i>Danzig</i>	Netherlands	<i>Danzig</i>
Netherlands	<i>Danzig</i>	Germany	<i>Danzig</i>
Germany	<i>Danzig</i>	UK	<i>Genoa</i>
Russia	<i>St. Petersburg</i>	Russia	<i>St. Petersburg</i>
Argentina	<i>Buenos Aires</i>	Argentina	<i>Buenos Aires</i>
U.S.A.	<i>New York</i>	U.S.A.	<i>Buenos Aires</i>

FIGURE 3.10: Ports of reference

(1915-1919) and USA (1915).

Thus, since unit of measure and unit of weight of freights are not homogeneous, I transform all the freights to obtain values in lire per tonne values. To do that, I convert each value according to figure 3.11 applying the exchange rates provided in the same dataset of world trade.

Pound conversion		Tonne conversion	
Pound	1	Tonne	1
shillin	20	load	1.09
pence	240	quarter	4.61
		libbre	2204.62

FIGURE 3.11: Criteria for conversion

As next step I adjust the outbound and inbound freights for UK looking at the mercantile maritime routes in nautical miles related to Italy and its trade partners. I refer to the Philip's mercantile atlas (Philip, 1935) to firstly compute freights to and from the port of London and, secondly, the ones for Italy referring to Genoa as I assume being the main Italian port for all the period. I apply a simple proportion based on the differences among distances between ports as depicted in figure 3.12.

The overall computation can be summarized by the following formulas: the first one has been adopted to compute freights referred to UK, the second one is the proportion to estimate freights for Italy:

INBOUND	Belgium	France	UK	Netherlands
<i>Reference dist.</i>	Danzig-London	Danzig-London	Danzig-London	London-Danzig
	767	767	767	767
<i>Dist. to Genoa</i>	Antwerp-Genoa	Marseilles-Genoa	London-Genoa	Amsterdam-Genoa
	2,201	200	2,161	2,237
	Germany	Russia	Argentina	USA
<i>Reference dist.</i>	London-Danzig	St.Petersburg-London	Buenos Aires-London	New York-London
	767	1,207	6,294	3,270
<i>Dist. to Genoa</i>	Hamburg-Genoa	St.Petersburg-Genoa	Buenos Aires-Genoa	New York-Genoa
	2,468	3,248	6,180	4,054
OUTBOUND	Belgium	France	UK	Netherlands
<i>Reference dist.</i>	London-Danzig	London-Danzig	London-Genoa	London-Danzig
	767	767	2,161	767
<i>Dist. from Genoa</i>	Genoa-Antwerp	Genoa-Marseilles		Genoa-Amsterdam
	2,201	200		2,237
	Germany	Russia	Argentina	USA
<i>Reference dist.</i>	London-Danzig	London-St. Petersburg	London-Buenos Aires	London-Buenos Aires
	767	1,207	6,294	6,294
<i>Dist. from Genoa</i>	Genoa-Hamburg	Genoa-St. Petersburg	Genoa-Buenos Aires	Genoa-New York
	2,468	3,248	6,180	4,054

FIGURE 3.12: Distance between ports (nautical miles)

$$FreightUK = (((Fb_{uw} * I_{yc}) / U_{pound}) * e_{dp}) * e_{ld}) * U_{weight}$$

$$FreightITA = (FreightUK_y * d_{ITA}) / d_{UK}$$

where Fb_{uw} is the benchmark freight (1848, 1861 or 1913) stated in a specific unit of measure for pound and weight, I_{yc} is the yearly freight index for country c , U_{pound} is the coefficient to convert the value in pound, e_{dp} and e_{ld} are the exchange rate dollar/pound and lira/dollar respectively, U_{weight} is the coefficient to convert the value per tonne. Within the second formula $FreightUK_y$ is the UK freight for the year y while d_{ITA} and d_{UK} are the distances referred to Genoa or to London as reference ports. Finally I transform all the freight values in current lira 1911 adopting the monetary coefficients estimated by the National Institute of Statistics (ISTAT, 2007). I finally estimate a unit freight also for commodities without origin or destination specified by simply computing an average value among the other freights that cover a set of different distances.

3.8.2 Weight of commodities (tonnes)

Yearly freights by country must be multiplied for the total amount of tonnes in order to compute the overall transport cost. Statistics on the Italian foreign trade provided by Federico et al. (2011) classify commodities by twenty different units of measure collected in figure 3.13 together with the coefficient that I adopt for the conversion in tonnes.

Units of measure	Coefficient
grams	empty
hectograms	0.0001
kilograms	0.001
quintals	0.1
tons	1
litre	0.001
hectolitres	0.0001
number	<i>see below</i>
set of ten	empty
hundreds/hundred of bottles	<i>see below</i>
thousand	<i>see below</i>
value	<i>n.c.</i>
meters	<i>see below</i>
cubic meters	<i>empty</i>
deck (cards)	<i>see below</i>
pairs	<i>see below</i>
hundred pairs	<i>see below</i>
GRT (gross registered tonnage)	<i>see below</i>

FIGURE 3.13: Units of measure and coefficients for tonnes

During 1862-1938 there are no commodities classified by grams and set of ten. I do not take into account goods classified only by values since it is not possible assume any kind of quantity by these few informations only. The other categories that are related to number values instead of weight values are estimated by assuming specific weight for each commodities. These values are listed as follows (commodities are reported in Italian as within the original dataset by Federico et. al (2011), while the weight is in kilograms). Unit of measure "numbers" (weight for one unit

of commodity): Aeroplani e idrovolanti 2000; Altri cari con molle 10000; Altri ombrelli 0,5; Altri strumenti musicali 3; Apparecchi da tastiera 3; Armi 3; Armoniche a mantice 7; Armonium 200; Arpe 10; Asini 120; Autocarri peso >3000kg 5000; Automobili con o senza carrozzeria peso <400kg 300; Automobili con o senza carrozzeria peso >4000kg 5000; Automobili con più di due ruote 1500; Automobili di peso <500kg 400; Automobili di peso compreso 400-900kg 700; Automobili di peso compreso 500-1000kg 750; Automobili di peso compreso 900-1600kg 1300; Automobili di peso >1000kg 1500; Automobili di peso compreso 1600-2500kg 2000; Automobili di peso 2500-4000kg 3000; Bagni in marmo 100; Basti 10; Balaustre e pilastri 100; Bauli e imperiali per vettura 10; Berretti - cappelli 0,15; Bestiame caprino 100; Bestiame ovino 100; Binocoli e monocoli 0,2; Calzoni di pelle 0,5; Canne da pistola 0,3; Canne da fucile 1; Caprini 100; Carri - carretti - carri merci - carri per masserizie - n.s. 1000; Carrozze - carrozze ferroviarie 30000; Carrozze laterali o da rimorchio 100; Carrozzelle per bambini 10; Carrozzelle per infermi - altre 25; Cartucce cariche 0,1; Casse per orologi 0,05; Castelli di orologi da tasca 0,5; Castelli di orologi da tavola 1; Cavalli 500; Cellula fotoelettrica 0,1; Fisarmoniche 5; Fucili 4; Giovenche e torelli 700; Lame di sciabole dorate 3; Lastre di marmo <150cm 100; Lastre di marmo >150cm 200; Manicotti di pelliccia 0,3; Marmo segato in tavole <150cm 100; Marmo segato in tavole >150cm 200; Mattoni 2,5; Mortai di marmo 2,5; Mole di marmo per vermicellai 2,5; Motocicli 100; Movimenti di orologi 0,1; Muli 200; Navi e bastimenti 40000; Occhi di vetro, protesi 0,1; Ombrelli di seta 0,5; Organi portatili e carillon 10; Orologi a sistema americano 0,1; Orologi con castelletto in legno 2; Orologi da tasca 0,1; Orologi da tavola 2; Ovini e caprini 100; Palloni dirigibili 30000; Penne stilografiche 0,04; Pianoforti 200; Pietre da arrotare 1; Pietre da macina 500; Pistole da misura - pistole (altre) 1; Porci peso compreso 10-20kg 15; Porci peso compreso 20-50kg 35; Porci peso compreso 50-100kg 75; Porci peso compreso 100-110kg 105; Porci peso fino a 10kg 7,5; Porci peso fino a 20kg 15; Porci peso oltre 20kg 50; Porci peso oltre 100kg 125; Porci peso oltre 110kg 125; Quadrelli di marmo <25cm (centinaia) 300; Quadrelli di marmo 25-41cm (centinaia) 500; Quadrelli di marmo 41-61cm (centinaia) 700; Sciabole 3; Selle 10; Slitte 5; Sonerie musicali 5; Strumenti peso <400g 0,3; Strumenti peso >400g 0,6; Strumenti n.s. 0,5; Suini 150; Sveglie e orologi a ripetizione - svegliaresini 1; Tegole 2,5; Tubi in terracotta 2,5; Tubi per fogne 2,5; Vacche

e giovenche 700; Valigie in pelle 3; Valvole 80-150g 0,13; Valvole >150g 0,2; Valvole fino a 80g 0,1; Velocipedi 200; Ventagli 0,15; Vetture con due ruote 300; Vetture con più di due ruote 600; Vetture in bianco non finite n.s. 600; Vitelli 250; Vitelli peso >300kg 500; Unit of measure "hundreds/hundreds of bottles" (weight for hundred): Bottiglie comuni 60; Bottiglie 1L 60; Bottiglie 1/2L 30; Bottiglie >1L 80; Bottigliette, boccette e flaconi 10; Cappelli di feltro guarniti 15; Damigiane 300; Fiaschi 60; Legno sgrossato 200; Liquori in bottiglia (tutti) n.s. 100; Liquori in bottiglia 0,5-1L 75; Liquori in bottiglia <0,5L 30; Liquori in botti 400; Unit of measure "thousand" (weight for thousand): Verghe 1500; Unit of measure "meters" (weight for meter): Doghe botti 1,5; Scalini e cornici di marmo 3; unit of measure "deck" (weight for deck): Carte da gioco 0,1; unit of measure "pairs" (weight for pair): Scarpe - gambali - pantofole 0,5; Remi 20; Unit of measure "Gross registered tonnes": looking at some data on ships I found that the ratio between total net tonnes and GRT is approximately 1.5, so that I simply multiply GRT values for this ratio to obtain an estimate of the weight for this category.

In addition I finally consider overland freights since the main dataset (Federico, Natoli, et al., 2011) refer both to neighboring and not neighboring countries that trade with Italy also by railways. There are only few informations available for freights by railways. These are periodically collected by the *Ministero dei Lavori Pubblici* without any specific criterion (1867-many years). I apply an average freight of 12 current lira (1866) for 1862-1867 based on informations available for different commodities, mainly raw materials. Additional informations provided by the reports of *Ministero dei Lavori Pubblici* suggest an increase of tariffs around 20 current lira for 1868-1881 and an additional 20 per cent increase (24 current lira) until 1890. A 50 per cent decrease follows until the eve of World War I while I cover the following period by adjusting freight rail value according to the variation of the maritime freight for Germany. Finally, I convert all values in constant 1911 lira.

3.8.3 Trade costs

I compute the series of trade costs applying unit freight cost per tonnes to the total amount of tonnes for each country available in the main dataset (Federico, Natoli, et al., 2011). For overland trade between neighboring countries, since distance across

borders is equal to zero, I assume null trade costs as conventionally adopted by the literature. It is possible to justify this choice according to the methodology applied to collect trade statistics. They are usually referred to borders, meaning that value of imports include cost of transport (c.i.f. records: cost, insurance, freight) while the value of exports is not included (f.o.b. records: free on board). Thus I consider part of the non bulky commodities traded with France and Austria-Hungary as traded by overland routes. I assume bulky commodities as completely traded by shipping routes due to their weight and volume. Since there are no informations about the share of trade by railways, I assume a constant 30 per cent of the total of non bulky commodities traded with France and Austria-Hungary. I consider Austria-Hungary only until 1914 because by that time the two countries split their territories and data refer only to Austria - i.e. a neighboring country whose trade is only by overland routes and whose trade cost is null. Trade cost referring to Switzerland is also equal to zero since trade is possible only by overland routes. Germany is a different case: it is not a neighboring country and this time I have also to consider the trade costs by railways. I assume the same constant 30 per cent among the non bulky commodities as traded by overland routes.

Trade costs for all the other countries (Belgium, United Kingdom, Netherlands, Russia, Argentina, USA) are simply computed by multiplying freight unit costs for the amount of tonnes, while the overall trade costs is given by the sum of all the values obtained as described above.

Bibliography

- Anderson, J.E. and E. VanWincoop (2004). "Trade costs". In: *Journal of Economic Literature* 42.3, pp. 691–751.
- Angier, E. AV (1920). *Fifty Years' Freights: 1869-1919*. Fairplay.
- Baedeker, C. (1913). *Northern Italy including Leghorn (etc.) Handbook for travellers*. Carl Baedeker.
- Baffigi, A. (2013). "I conti nazionali". In: G. Toniolo (a cura di), *"L'Italia e l'economia mondiale dall'Unità a oggi"*, Collana storica della Banca d'Italia, Venezia, Marsilio.
- (2015). *Il PIL per la storia d'Italia: istruzioni per l'uso*. Marsilio.
- Baier, S. and J. Bergstrand (2001). "The growth of world trade: tariffs, transport costs, and income similarity". In: *Journal of international Economics* 53.1, pp. 1–27.
- Battilani, P. (2016). "L'industria albergoira fra ottocento e novecento: la fragilità di lungo periodo della grande impresa". In: *Revista de la historia de la economia y de la impresa* 10.
- Biagioli, A and C Picozza (2002). "La bilancia delle partite correnti 1891, 1938, 1951". In: Rey, GM (a cura di), *I conti economici dell'Italia. Il conto risorse e impieghi (1891, 1911, 1938, 1951)*, Roma-Bari: Laterza (Collana storica della Banca d'Italia, s. Statistiche storiche, 1.3. 1).
- Bodio, L. (1891). *Di alcuni indici misuratori del movimento economico in Italia*. Vol. 286. Tipografia nazionale di G. Bertero.
- (1899). "Sul movimento dei forestieri in Italia e sul denaro che vi spendono". In: *Giornale degli economisti*, pp. 54–58.
- Bonelli, F. (1978). *Il capitalismo italiano: linee generali di interpretazione*. Einaudi.
- Borgatta, G. (1933). "Rimesse degli emigrati e turismo". In: *Rassegna Economica del Banco di Napoli* 3, pp. 310–22.
- Cafagna, L. (1989). *Dualismo e sviluppo nella storia d'Italia*. Marsilio.
- Carpi, Leone (1871). *Dell'emigrazione italiana all'estero*.

- Carruthers, R., J. Bajpai, and D. Hummels (2003). "Trade and logistics: an East Asian perspective". In: *East Asia integrates: a trade policy agenda for shared growth*, pp. 117–137.
- Co.Gen.Emig. (1927). *Annuario statistico della emigrazione Italiana dal 1876 al 1925: con notizie sull'emigrazione negli anni 1869-1875*. Commissariato Generale Dell'Emigrazione.
- Coletti, F. (1912). *Dell'emigrazione italiana*. U. Hoepli.
- Corbino, E. et al. (1938). *Annali dell'economia italiana*. Vol. 1-5. Società anonima tipografica "Leonardo da Vinci".
- David, P.A. and P. Solar (1977). "A Bicentenary Contribution to the History of the Cost of Living in America". In: *Research in economic history* 2.1, p. 80.
- De Bonis, R et al. (2012). "Nuove serie storiche sull'attività delle banche e altre istituzioni finanziarie dal 1861 al 2011: che cosa ci dicono?" In: *Quaderno di ricerche storiche* 26.
- De Rosa, L. (2000). "Le rimesse degli emigrati e lo sviluppo economico dell'Italia (1861-1914)". In: *Nuova rivista storica* 84.3, pp. 563–574.
- Di Martino, P. (2001). "Corso della Rendita e andamenti del tasso di cambio della Lira negli anni del "gold standard"(1883-1893)". In: *Rivista di storia economica* 17.1, pp. 3–32.
- DiNino, V., B. Eichengreen, and M. Sbracia (2013). "Tasso di cambio reale, commercio internazionale e crescita". In: "L'Italia e l'economia mondiale. Dall'Unità ad oggi" Marsilio. Chap. 13, pp. 487–524.
- Disdier, A. and K. Head (2008). "The puzzling persistence of the distance effect on bilateral trade". In: *The Review of Economics and statistics* 90.1, pp. 37–48.
- ENIT (1939). *Statistica del turismo*. Tech. rep. Ente Nazionale Industrie Turistiche.
- Estevadeordal, A., B. Frantz, and A. Taylor (2003). "The rise and fall of world trade, 1870-1939". In: *Quarterly Journal of Economics* 118.2, pp. 359–407.
- Esteves, R. and D. Khoudour-Castéras (2011). "Remittances, capital flows and financial development during the mass migration period, 1870–1913". In: *European Review of Economic History* 15.3, pp. 443–474.
- Esteves, R., J. Reis, and F. Ferramosca (2009). "Market integration in the golden periphery. The Lisbon/London exchange, 1854–1891". In: *Explorations in Economic History* 46.3, pp. 324–345.

- Federico, G., S. Natoli, et al. (2011). *Il commercio estero italiano: 1862-1950*. Laterza.
- Federico, G. and A. Tena-Junguito (2016). "World trade, 1800-1938: a new data-set". EHES Working Paper N. 93.
- Federico, G. and N. Wolf (2013). "I Vantaggi Comparati". In: "L'Italia e l'economia mondiale. Dall'Unità ad oggi" Marsilio, pp. 453–486.
- Feinstein, C.H. (1972). *National income, expenditure and output of the United Kingdom 1855-1965*. Vol. 6. Cambridge University Press.
- Fenoaltea, S. (1969). "Public policy and Italian industrial development, 1861-1913". In: *Journal of Economic History*, pp. 176–179.
- (1988). "International resource flows and construction movements in the Atlantic economy: the Kuznets cycle in Italy, 1861–1913". In: *The Journal of Economic History* 48.3, pp. 605–637.
- (2011). *The reinterpretation of Italian economic history: From unification to the Great War*. Cambridge University Press.
- Feyrer, J. and J. Shambaugh (2012). "Global savings and global investment: The transmission of identified fiscal shocks". In: *American Economic Journal: Economic Policy* 4.2, pp. 95–114.
- Findlay, R. and K.H. O'Rourke (2009). *Power and plenty: trade, war, and the world economy in the second millennium*. Princeton University Press.
- Fleming, J.M. (1962). "Domestic financial policies under fixed and under floating exchange rates". In: *Staff Papers* 9.3, pp. 369–380.
- Flora, F. (1895). "Il ribasso dell'aggio". In: *La Riforma Sociale* 3.2, pp. 578–584.
- Forte, F. and C. Magazzino (2013). "Twin deficits in the European countries". In: *International Advances in Economic Research* 19.3, pp. 289–310.
- Fratianni, M. and F. Spinelli (2005). *A monetary history of Italy*. Cambridge University Press.
- Ganchev, G.T. (2010). "The twin deficit hypothesis: the case of Bulgaria". In: *Financial theory and Practice* 34.4, pp. 357–377.
- Ganchev, G.T., E. Stavrova, and V. Tsenkov (2012). "Testing the twin deficit hypothesis: The case of Central and Eastern Europe countries". In: *International Journal of Contemporary Economics and Administrative Sciences* 2.1, pp. 1–21.

- Gandolfo, G. (2013). *International Economics II: International Monetary Theory and Open-Economy Macroeconomics*. Springer Science & Business Media.
- Garcia, A. and J. Ramajo (2004). "Budget deficit and interest rate: empirical evidence for Spain". In: *Applied Economic Letters* 11, pp. 715–718.
- Gerschenkron, A. (1968). *Continuity in History and other Essays*. Belknap Press of Harvard University Press Cambridge (MA).
- Giusti, F. (1965). *Bilanci demografici della popolazione italiana dal 1861 al 1961*. Istituto centrale di statistica.
- Gomellini, M. and C. Ó Gráda (2013). "Migrations". In: *The Oxford Handbook of the Italian Economy Since Unification*.
- Hakro, A.N. (2009). "Twin deficits causality link-evidence from Pakistan". In: *International Research Journal of Finance and Economics* 24, pp. 54–70.
- Harberger, A. (2008). "Lessons from monetary and real exchange rate economics". In: *Cato Journal* 28.2, pp. 225–235.
- Hertner, P. (1981). "Il capitale straniero in Italia (1883-1914)". In: *Studi storici* 22.4, pp. 767–795.
- Hummels, D. (2007). "Transportation costs and international trade in the second era of globalization". In: *The Journal of Economic Perspectives* 21.3, pp. 131–154.
- IMF (1948). *Balance of payments Manual*. Ed. by IMF. International Monetary Fund.
- ISTAT (1957). *Indagine statistica sullo sviluppo del reddito nazionale dell'Italia dal 1861 al 1956*. Istituto Centrale di Statistica.
- (2007). *Il valore della moneta in Italia dal 1861 al 2006*. Tech. rep. 11. Istituto Nazionale di Statistica.
- Jacks, D., C. Meissner, and D. Novy (2011). "Trade booms, trade busts, and trade costs". In: *Journal of International Economics* 83.2, pp. 185–201.
- Jacks, D. and K. Pendakur (2010). "Global trade and the maritime transport revolution". In: *The Review of Economics and Statistics* 92.4, pp. 745–755.
- Jones, M.T. and M. Obstfeld (1997). *Saving, investment, and gold: A reassessment of historical current account data*. Tech. rep. National Bureau of Economic Research.
- Kalla-Bishop, P.M. (1971). *Italian railways*. David & Charles Publishers.
- Keynes, J.M. (1936). *The general theory of employment interest and money*. MacMillan.

- Khalid, A.M. and T.W. Guan (1999). "Causality tests of budget and current account deficits: Cross-country comparisons". In: *Empirical Economics* 24.3, pp. 389–402.
- Kim, C. and D. Kim (2006). "Does Korea have twin deficits?" In: *Applied Economics Letter* 13.10, pp. 675–680.
- Kuznets, S. (1961). *Capital in the American economy: its formation and financing*. Ed. by National Bureau of Economic Reserach. Princeton University Press.
- Lévy-Leboyer, M., F. Bourguignon, et al. (2008). "The French economy in the nineteenth century". In: *Cambridge Books*.
- Lopez-Cordova, E. and C. Meissner (2003). "Exchange rate regime and international trade: evidence from the classical gold standard era". In: *American Economic Review* 93.1, pp. 344–353.
- Madsen, J. (2001). "Trade barriers and the collapse of world trade during the Great Depression". In: *Southern Economic Journal*, pp. 848–868.
- Magazzino, C. (2012). "The twin deficits phenomenon: evidence from Italy". In: *Journal of Economic Cooperation and Development* 33.3, pp. 65–80.
- Marolla, M and M Roccas (2002). "La ricostruzione della bilancia internazionale dei servizi e trasferimenti unilaterali dell'anno 1911". In: *Rey, GM (a cura di), I conti economici dell'Italia. Il conto risorse e impieghi (1891, 1911, 1938, 1951), Roma-Bari: Laterza (Collana storica della Banca d'Italia, s. Statistiche storiche, 1.3. 1)*.
- McGuire, C (1926). *Italy's international economic position*. Ed. by MacMillan. MacMillan.
- Ministero, Finanze (1891). *Annuario del Ministero delle Finanze*. Ragioneria Generale.
- (1914). *Il bilancio del Regno d'Italia negli esercizi finanziari dal 1862 al 1912-13*. Ragioneria Generale.
- MinMar (1861-1914). "Sulle condizioni della marina mercantile italiana al 31 dicembre". In: *Relazione del Ministero della Marina*.
- Moneta, C. (1959). "The estimation of transportation costs in international trade". In: *Journal of Political Economy* 67.1, pp. 41–58.
- Morys, I.M. (2006). "The classical gold standard in the European periphery: a case study of Austria-Hungary and Italy, 1870-1913". PhD thesis. London School of Economics and Political Science (University of London).
- Mundell, R.A. (1968). *International Economics*. MacMillan.

- Obstfeld, M. and A.M. Taylor (2003). "Globalization and capital markets". In: *Globalization in historical perspective*. University of Chicago Press, pp. 121–188.
- O'Rourke, K.H. and J.G. Williamson (2001). *Globalization and history: the evolution of a nineteenth-century Atlantic economy*. Mit Press.
- Parikh, A. and B. Rao (2006). "Do fiscal deficits influence current accounts? A case study of India". In: *Review of Development Economics* 10.3, pp. 492–505.
- Pattichis, C. (2004). "Budget and trade deficits in Lebanon". In: *Applied Economics Letters* 11.2, pp. 105–108.
- Philip, G. (1935). *Philip's Centenary Mercantile Marine Atlas*. Philip George & Son.
- Pistoresi, B. and A. Rinaldi (2015). "Capital Inflows, Current Accounts and the Investment Cycle in Italy: 1861–1913". In: *Research in Economic History*. Emerald Group Publishing Limited, pp. 241–261.
- Polak, J.J. (1997). *The IMF monetary model at forty*. International Monetary Fund.
- Ratha, A. (2012). "Twin Deficits or Distant Cousins? Evidence from India". In: *South Asia Economic Journal* 13.1, pp. 51–68.
- Relazione, SFI (1868-1914). "Relazione sulle strade ferrate italiane". In: *Commissariato generale delle strade ferrate*.
- Ricardo, D. (1817). *On the principles of political economy and taxation*. London: John Murray.
- Saleh, A., M. Nair, and T. Agalewatte (2005). "The twin deficits problem in Sri Lanka: an econometric analysis". In: *South Asia Economic Journal* 6.2, pp. 221–239.
- Sori, E. (1979). *L'emigrazione italiana dall'Unità alla seconda guerra mondiale*. Vol. 188. Il mulino.
- Spinelli, F. (1988). "Pasquale Jannaccone: A Neglected Originator of the Monetary Approach to Balance of Payments and Exchanges Rates". In: *Journal of European Economic History* 17.3, p. 665.
- Stringher, B. (1912). "Su la bilancia dei pagamenti fra l'Italia e l'estero". In: *Riforma Sociale* 23, pp. 49–83.
- Tattara, G. (1984). *La bilancia dei pagamenti italiana: una critica all'Istat*. Tech. rep. 8409. Università Ca' Foscari.
- (1995). "Bilancia dei pagamenti, movimenti dei capitali e equilibrio interno nei primi cinquant'anni del regno d'Italia". In: *Moneta e Credito* 48.189.

- (2002). “Un margine di arbitraggio non sfruttato sulla Rendita italiana a Parigi?”
In: *Rivista di Storia Economica* XVIII.1.
- Tena-Junguito, A. (1989). “On the accuracy of foreign trade statistics: Italy 1890-1938”. In: *Rivista di Storia Economica* 6.1, pp. 87–111.
- Tinbergen, J. (1962). *Shaping the World Economy: Suggestions for an International Economic Policy*. Twentieth Century Fund.
- Vamvoukas, G.A. (1999). “The twin deficits phenomenon: evidence from Greece”.
In: *Applied economics* 31.9, pp. 1093–1100.
- Williamson, J.G. (1995). “The evolution of global labor markets since 1830: background evidence and hypotheses”. In: *Explorations in Economic History* 32.2, pp. 141–196.
- (2008). “Globalization and the Great Divergence: terms of trade booms, volatility and the poor periphery, 1782–1913”. In: *European Review of Economic History* 12.3, pp. 355–391.
- Zamagni, V. (1993). *Dalla periferia al centro: La seconda rinascita economica dell'Italia 1861-1990*. Il mulino.
- (1999). “Una rettifica”. In: *Rivista di storia economica* 15.3, pp. 339–342.