DISCUSSION PAPER SERIES

DP17696

FROM GLOBAL TO LOCAL: TRADE SHOCKS AND REGIONAL GROWTH IN ITALY DURING THE FIRST GLOBALIZATION

Matteo Gomellini, Anna Missiaia and Dario Pellegrino

ECONOMIC HISTORY

ISSN 0265-8003

FROM GLOBAL TO LOCAL: TRADE SHOCKS AND REGIONAL GROWTH IN ITALY DURING THE FIRST GLOBALIZATION

Matteo Gomellini, Anna Missiaia and Dario Pellegrino

Discussion Paper DP17696
Published 25 November 2022
Submitted 23 November 2022

Centre for Economic Policy Research
33 Great Sutton Street, London EC1V 0DX, UK
Tel: +44 (0)20 7183 8801
www.cepr.org

FROM GLOBAL TO LOCAL: TRADE SHOCKS AND REGIONAL GROWTH IN ITALY DURING THE FIRST GLOBALIZATION

Abstract

Globalization can create winners and losers at the spatial level within national economies. This paper examines the economic impact of international trade on local economies in the case of late nineteenth-century Italy. We combine data on foreign trade at the national level with census data on manufacturing employment, and with our new estimates of agricultural employment by crop at the provincial level. Crossing this information, we compute two measures of trade exposure at the local level, namely import penetration and export ratio. We then perform a panel analysis to test whether changes in trade exposure explained provincial GDP growth. First, we detect that import penetration of agricultural products was associated with lower growth of Southern provinces. Second, we find that Northern provinces were more able to benefit from positive export dynamics in the manufacturing sector. The latter finding might stem from a higher degree of mechanization among Northern manufacturing firms. These results suggest that trade exposure could have been a factor contributing to widening the (already existent and growing) North-South gap.

JEL Classification: N13, N73, N93, F14, R11

Keywords: N/A

Matteo Gomellini - matteo.gomellini@bancaditalia.it
Bank of Italy

Anna Missiaia - anna.missiaia@gu.se
University of Gothenburg and Lund University and CEPR

Dario Pellegrino - dario.pellegrino@bancaditalia.it
Bank of Italy

Acknowledgements
We wish to thank Andrea Linarello, Federico Barbiellini Amidei, Federico Cingano, Luca Citino and seminar participants to the Lost Highways seminar in Siena, the economic history seminar at the University of Gothenburg, the economics seminar at the University of Bologna, the 2022 EHES Conference and the 2022 ASE meeting for useful comments. Anna Missiaia wishes to acknowledge funding from the Handelsbanken research fund (Jan Wallanders och Tom Hedelius stiftelse, Tore Browaldhs stiftelse), for the project Regional backlash in a globalizing world: Trade, regional inequality and the rise of protectionism in Italy (1870- 1914) P19-0239. The views expressed herein are those of the authors and are not necessarily those of Bank of Italy.

1 Introduction

The economic, social, and political consequences of globalization are one of the most debated topics in the current public discourse. The integration of markets, one of the distinctive features which identify globalization, can influence many aspects of national economies. Access to new marketplaces for primary products or industrial goods can boost national exports while new international competition may put pressure on wages and result in lower production costs, but can also displace local production. Thus, although the net economic effect is in general positive because of a process of specialization which according to comparative advantages increases efficiency, globalization has distributive consequences and poses many challenges. Openness–induced technological shocks and foreign competition can reduce employment, in particular in sectors where new imported technologies can replace unskilled labour or in sectors that are more vulnerable to competition from abroad.

These dynamics are occurring since the 1990s in many advanced economies, with the less skilled part of the labour force suffering the economic consequences of delocalization of production and competition in labour markets. Scholars like Piketty (2013) and Milanovic (2016) have documented the increasing interpersonal inequality that arises, as well as the social and political turmoil that we are witnessing in Europe and the US. Recently, policymakers and scholars alike have shifted their attention to the spatial distributional impacts of globalization, pointing to the regional dimension as a fundamental one to address the challenges of globalization (e.g. Iammarino et al. (2017); Dijkstra et al. (2018)). Rodríguez-Pose (2018) shows how "the places that don't matter", meaning places that are experiencing deindustrialization and economic decline as a result of the globalization process, are those in which the current wave of political populism is stronger.

The recent wave of globalization presents many similarities with the First Globalization that occurred in the second half of the nineteenth century and ended with the outbreak of the First World War. Jeffrey Williamson, a leading economic historian, identified "winners and losers" along the social class dimension, the losers being the unskilled workers in advanced economies who saw their income pushed down towards one of the unskilled workers in developing economies (Williamson (2005)). In terms of geographical impact, Williamson (1996) finds that there is an "unambiguous positive correlation between globalization and convergence". But the narrative on the geographical dimension of globalization has largely been focused on the convergence or divergence between the "West" and "the Rest". Much less attention has been devoted to the regional effects within each country as a result of the process of market opening and market integration. This gap in the literature is largely driven by the lack of quantitative empirical evidence on imports and exports for sub-national geographical units for any period before the mid-twentieth century.

This paper aims to partially fill this gap, by looking at the case of Italy during the First Globalization and assessing the regional impact of openness to trade despite the lack of official regional trade statistics. At the time, Italy was a peripheral European economy where a just-started process of late industrialization coexisted with a predominant agricultural sector. The process of structural change saw the rise of regional inequality connected to the concentration of the most modern industrial activity in the Northwestern part of the country (see for example, Felice (2018)).

The broad aim of this paper is to cast light on whether local economies were differently affected by the growing opportunities and challenges of the First Globalization, and what economic consequences these dynamics had. In particular, the goal is to assess the effect of local openness to trade, both in terms of imports and exports, on the economic performance measured through GDP growth of the 69 Italian provinces during the First Globalization.

We first reconstruct and document employment specialization on 35 tradable sectors/products of/from both agriculture and industry. We obtain these figures by collecting employment data in manufacturing from population censuses and by estimating full-time equivalent employment for each agricultural product. Second, based on the trade data compiled by Federico et al. (2011), we calculate two measures of national openness to trade, namely a measure of import penetration and a measure of export ratio at the sectoral level. Then, we provincialize the two indices based on the specialization of each province. We do this by calculating a weighted average of the national "import penetration" and the "export ratio" with provincial employment in each sector as a weight. Doing so, we obtain for each province a measure of its exposure to both imports and exports based on the specialization of its local economy. The intuition is that these measures are a weighted average of the openness of the national sectors, with the provincial shares of the sectors as weights. The growth rates of the computed indexes, which, in the same vein of Autor et al. (2013), are expected to gauge trade shocks, are used as independent variables in a panel data framework to analyze whether international openness had an impact on economic growth. The panel comprises four ten-year benchmarks from 1871 to 1911 for the 69 provinces.

The paper is organized as follows. In Section 2 we provide a literature background, discussing the asymmetrical impact of trade in broad terms and describing the established knowledge about the first globalization in Italy. In Section 3 we present our data reconstruction and provide basic descriptive evidence. In Section 4 we describe the econometric strategy, in Section 5 we provide resulting evidence. In Section 6 we draw our conclusions.

2 Literature and historical background

The effects of Globalization on various aspects of the economy have been largely studied both from contemporary and historical perspectives. In this section, we will review the literature linking increasing international trade and market integration to shocks in labour markets, as these shocks often also translate into more inequality among workers with different skills as well as increasing regional inequality. We will then provide a short historical review of the First Globalization in Italy and how this can relate to the evolution of regional inequality.

2.1 International trade, local labour markets, and regional inequality

A sizeable empirical literature has dealt with the local effects of international trade, both during the First and Second Globalization, focusing on the distributional consequences and stressing that the economic interests of some social groups were damaged by trade integration. In order to theoretically predict who is winning and who is losing from the integration of a local economy in the international markets, the degree of mobility of factors of production across sectors is key. In a baseline Hecksher–Ohlin model, for which we assume perfect factor mobility, all units of the relatively abundant factor will benefit from free trade, even if they are employed in an import-competing sector. That would suggest conflicting interests of capital vs. workers, or skilled vs. unskilled workers. On the other hand, if factor mobility is limited, at least in the short run, the economic interests in trade will cut through sector lines (Mussa, 1982), and thus will asymmetrically affect sub-national areas according to their specialization.

At the turn of the twentieth century, there seemed to be a consensus on a limited role of trade in labour market outcomes, relying on assumptions of relative factor mobility. If any, the impact of trade would have been felt on low-skilled workers, but not on trade-exposed workers specifically, as they could have relocated in other sectors or regions if displaced by trade. This received wisdom was challenged by the disruptive and unprecedented effects of the emergence of China in international trade. In their seminal paper, Autor et al. (2013) show that the more US local labor markets were specialized in sectors affected by Chinese import competition, the higher the decline in manufacturing employment. This evidence is confirmed at the worker level, with lower cumulative earnings for workers in sectors affected by Chinese imports. Consequently, the areas more exposed to import competition suffered more from openness to trade and if these areas were those already lagging behind this could have exacerbated already existing divides. Acemoglu et al. (2016) extends these results beyond the direct impact on exposed industries in a general equilibrium perspective. First, starting from an industry-level regression, they disentangle the direct impact of the exposed industry from the (mitigating) effects of reallocation of factors across sectors and from negative local demand effects (in particular decreased consumption of non-tradable). Second, they consider (negative) upstream and (ambiguous) downstream effects on linked industries, using input-output tables. Feenstra et al. (2019) build a more comprehensive picture of trade exposure, by simultaneously assessing both the effects of the China trade shock and of US export performance on employment. They find that the increase in employment due to overall export growth compensates almost entirely for the loss due to China import competition.

Other contributions have then tested the effects of Chinese imports competition on the labour markets of non-US advanced economies, resulting in overall noticeable heterogeneity. The negative effects in Spain were larger compared to the US, arguably because of labour market rigidities (Donoso et al., 2015). On the other side, the effects in Norway and France are smaller compared to the US (Balsvik et al. (2015); Malgouyres (2017)). Dauth et al. (2014) test the effects of the rise in trade of Germany with both China and Eastern Europe (the so-called "two East" with which Germany increased its trade exposure during the second globalization). They find that job gains due to exports more than offset the losses due to import competition. Interestingly, for Portuguese firms, the negative effects of Chinese competition are more on export markets, from which they were displaced, rather than domestic markets (Cabral et al., 2018; Branstetter et al., 2018).

Evidence on the First Globalization is more sparse and limited, mostly because of data availability. O'Rourke (1997) focuses on the effects of the "grain invasion" from America in Europe, arguably the most noticeable trade shock in the late nineteenth century. Based on a computable general equilibrium model, he explains the British free-trade policy response, compared to the protectionist drift of other European powers, based on the distributional consequences of cheap wheat. Contrary to, for instance, France, in the UK a decrease in the grain price benefited both labor and capital. Overall, according to O'Rourke (2019), in the First Globalization the most prominent losers and winners were, respectively, European landowners and native-born New World workers. The spatial concentration of gains and losses from international trade is also confirmed by a substantial body of literature which focuses on electoral patterns of several countries during the first globalization (Irwin, 1994; Klug, 2001; Lehmann, 2010; Lehmann and Volckart, 2011).[1]

[1] Irwin (1994) is the first empirical account of the political backlash to the First Globalization, analyzing voting patterns on 1906 British General Elections, where trade was a key issue in the contest between Conservatives

In terms of quantification of the local effects of trade during the First Globalization, the recent work by Bräuer et al. (2021) looking at the Prussian case is the closest in spirit to ours. The paper is interested in the effect of the Grain Invasion on the Prussian labour markets. It, therefore, focuses on the agricultural sector only and finds that trade shocks increased internal migrations. The migration effect was able to limit the negative impact on per capita income. The authors also look at the effect on election outcomes, finding that trade shocks did not increase political polarization.

The effect of international trade on local economies and ultimately on regional inequality since the last decades of the Twentieth century, especially in Western economies, has been the subject of intense debate. Autor et al. (2013) look at the effects through local labour markets, but others have taken a more macro perspective. Rodríguez-Pose (2018) looks at the relationship between openness and within-country regional inequality for a sample of 28 countries between 1975 and 2005. He finds that the mere increase in trade does not produce regional divergence in the entire sample, but low and middle-income countries with high sectoral specialization of their regions and weak State intervention do experience increasing inequality because of opening to trade. Ezcurra and Rodríguez-Pose (2013) develop this research strand further, adding FDI flows to the picture. Case studies on specific countries have also been proposed (Rivas, 2007; Daumal, 2013). Their findings point to developing countries as more vulnerable to regional divergence in a globalized world.

Although economic historians have long been interested in regional inequality and the identification of its drivers[2], the relationship between trade and regional inequality has not been properly investigated in a historical perspective. O'Rourke (2019), after pointing out that the recent literature shows regional disequilibrium arising from trade shocks as more persistent

and Liberals. He computes (and regresses) the odds ratio by constituency between the two main trade coalitions. Opposition to free trade came from occupational groups in sectors adversely affected by import competition, while support for free trade came from those employed in export-oriented and non-tradable goods. It is also interesting how the author relates the geographical concentration of production with sector political relevance. Klug (2001) extends Irwin by adding results of German elections, from a comparative perspective: in Germany, from the late 1870s, the converging interest of landowners and heavy industrialists, a.k.a. the "marriage of iron and rye", brought a protectionist swing in trade policies. He takes into account religion, turnout, and electoral franchise to explain the success of parties competing on different trade agendas in the UK. Lehmann (2010) and Lehmann and Volckart (2011) respectively analyse German and Swedish election in 1878 and 1887. They make ecological inferences based on Kings's algorithm, a tool that has been widely used recently in political science to analyze elections. They find that, consistent with expectations, non-farmers and small farmers (specialized in breeding) favored free trade, while large owners favored protection. But, in the second case, small farmers then shifted towards protectionist candidates, arguably for reasons unrelated to trade (corruption scandals).

[2]In particular, the seminal work by Williamson (1965) has linked regional inequality in the twentieth century to the process of industrialization of countries that took off at different moments in different areas. Since then, scholars have been working on extending back the regional estimations of GDP to identify the beginning of regional divergence. Rosés and Wolf (2018) recently coordinated a collective effort to harmonize existing estimates for NUTS-2 regions covering the main European countries from 1900 to today. The results show that regional inequality declined in Europe from an overall Gini coefficient of 0.55 in 1900 to the 1980s, when it reached 0.47 and then increased again up to today.

and more severe than previously thought, explicitly calls for further historical research on this issue.

2.2 The First Globalization in Italy

The Italian experience during the First Globalization constitutes an interesting case study for several reasons. Italy represents an industrialized country historically (and currently) exhibiting high levels of regional inequality (Felice, 2018). Regional economies in the recently unified Italy differed not only in the level of GDP, but also in the sectorial specialization (Ciccarelli et al. (2010); Ciccarelli and Fenoaltea (2014)) and access to international markets (Missiaia, 2016), making Italy an ideal candidate to investigate whether different degrees of exposure to international competition widened or narrowed regional GDP disparities.

In the very long run, the figures on Italy's GDP (Baffigi, 2011) tell the story of a converging path for Italy's GDP per capita towards the leading economies (first of all, UK: cf. Bolt and van Zanden (2014)) over the whole 1871-1911 period. Nonetheless, this path is entirely driven by the performance that Italy exhibited in the second part of the period, from 1891 to 1911. Furthermore, at the spatial level, the above-international average growth was recorded mainly in the North-Western regions, which grew at a much higher pace compared to the other parts of the country and in particular to the South of Italy (with Sicily and Puglia scoring worst). In Figure 1 we show the province GDP growth rates between the four census years (using a GDP proxy base on the allocation of regional employment. The South of Italy seems to have progressively lost ground along the 1881-1911, recording significantly lower GDP growth with respect to the North, in a period characterized by a noticeable trade growth acceleration.

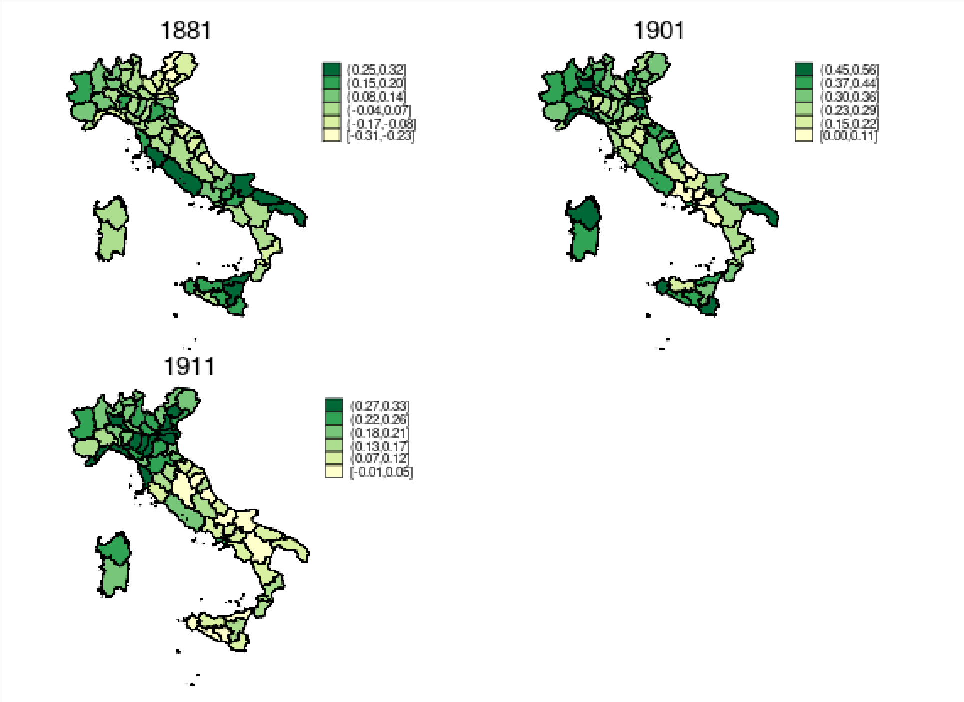
As far as trade is concerned, we show the Italian participation in the First Globalization through the overall trade openness, that is the ratio of the sum of imports and exports over GDP (Figure 2). Over the period from the Unification until 1911, this indicator significantly grew in Italy.[3] The protectionist wave that led to the 1887 tariffs, and the subsequent trade war with France starting in 1888, temporarily reversed this trend leading to a drop in trade openness of about 5 percentage points[4] but, by the end of the 20th century, trade openness was back to the 1887 level, and kept on growing until WWI. Consistently, over the whole period, we see a decrease in a synthetic measure of barriers to trade (Gomellini (2020)).

The First Globalization was characterized by the emergence, for the first time in world history, of significant amounts of long-distance trade, even of bulky products. In Italy, we observe

[3]Overall, especially in the last two decades of the 19th century, imports grew more than exports, giving rise to a noticeable trade deficit financed mostly by remittances of Italian emigrants and by international tourism (see Gomellini and O'Grada (2011); Incerpi (2019)).

[4]On the other side, no discontinuity can be observed during the protectionist measures in 1878.

Figure 1: GDP growth between census years



Source: Our calculations.

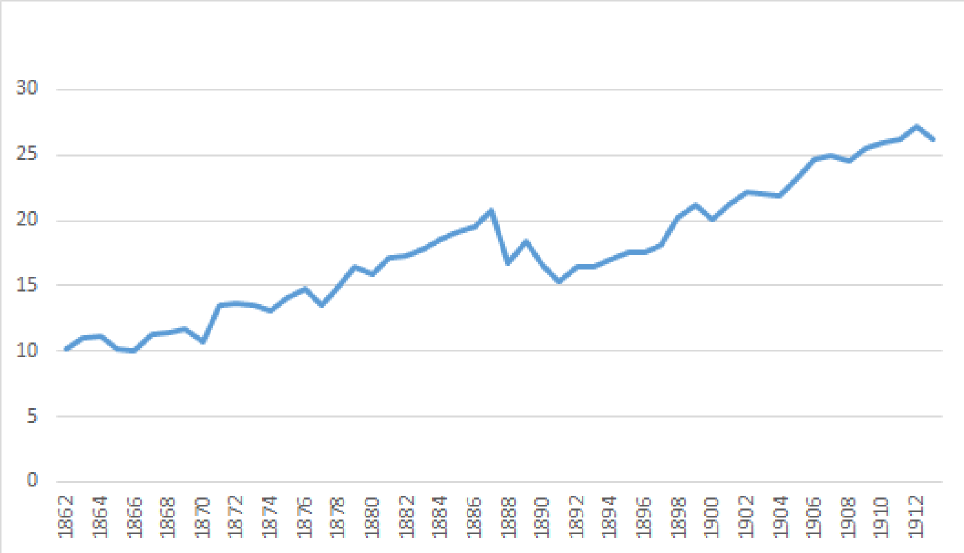
a significant increase in trade with non-neighbouring countries and extra-European countries. In 1871 more than 90 percent of Italian trade was towards European partners, mostly towards neighbouring countries (France, Switzerland, and Austria). In 1913, around 35 percent of trade was toward extra-European partners (Federico et al. (2011)), while trade with neighbouring countries accounted for less than a third.[5]

Trade diversification increased in terms of both products and partners. Revealed comparative advantage indexes show how Italy shifted from a specialization in primary products toward a mix of primary products and manufacturing during the first fifty years of her history as a unified country (Federico and Wolf (2013)). This signals the beginning of an industrialization process, whose extent was nevertheless more limited with respect to the most advanced European economies. Overall, Italy had an initial comparative disadvantage on the whole manufacturing, but by the turn of the century, the index from negative became zero and stayed around this level until WWI. In the engineering sector, the index was constantly negative while in chemicals it was positive since the beginning of the period, thanks to traditional tanning materials, soap, and perfumes exports, then turned slightly negative signaling a relative de-specialization path. The overall increase in manufacturing advantage was largely driven by textiles. [6]

[5]Increasing international competition may also be behind the evidence of mark-ups reduction estimated over the period (Giordano and Zollino (2017)).

[6]Looking at a revealed technological advantage index based on patents, to identify the relative strengths and weaknesses of Italian technological innovative performance during the first Italian catch-up phase (i.e., the

Figure 2: Openness to trade (export and imports on GDP).



Source: Federico et al. (2011)

Italy offers an interesting policy history in terms of tariffs: after unification in 1861, the entire country adopted a common regime of low tariffs, which was taken from the pre-unitary state of Piedmont. A conservative majority pursued, for the first years following the unification, balanced budget and free trade policies that resulted increasingly unpopular because of the lack of support for economic growth (Felice (2015)). The government was then replaced by the so-called "Historical Left" in 1876, which marked the beginning of the transition to a higher nominal tariffs' regime. In 1878 the new government imposed higher tariffs on the imports of textiles and other industrial products, while in 1887 an even stronger protectionist boost extended the industrial tariffs to the imports of grains (James and O'Rourke (2013)).

The historical debate on trade in Italy in this period is large (cf. Fenoaltea (2011), for a discussion), and has mostly hinged on the effects of trade policies, in particular on the supposed protectionist backlash which interrupted the free trade stance of the first few years after Unification: a first tariffs package was introduced in 1878 and a more substantial one dated to 1887. Overall, Italian trade policy was in line with the international trend (James and O'Rourke (2013)).

The aggregate effect of these protectionist measures is considered by the most prominent scholars as mildly negative, but not massive. Federico (2006) states that the protection was not particularly effective except for some sectors (in particular wheat and iron and steel production), the effect on the distribution of income was "noticeable but still not huge" and "trade policy seems to have been determined mainly by lobbying and fiscal purposes". The effects of the

Giolittian phase), Italian patents gained ground across several sectors, but in particular in the most advanced ones: rubber, transportation equipment, and electrical equipment and supplies(Barbiellini Amidei et al., 2013).

tariffs on the level of regional inequality have so far been analysed in a scattered fashion, discussing specific provisions. Cafagna (1989) for instance regards the protection of silk as fundamental for the development of the northern industries, while Felice (2015) considers the tariffs on wheat to have been detrimental for the South, which was pushed by the protection into specializing in agricultural production for which it did not have a comparative advantage. Tena-Junguito and Federico (1998) estimated the effective level of protection by sector, concluding that aggregate protection in Italy was rather low, except for a short period following the protectionist backlash. It would not have either harmed welfare or contributed to industrialization as a whole. Also, according to Federico and O'Rourke (2000) protection did not yield significant aggregate welfare effects or changes in the overall structure of the economy, although affecting production allocation within agriculture and industry. In light of this, Felice (2015) remarked about a "more apparent than real" protectionism. Federico and Vasta (2010) take a different angle and look at the effect of trade composition on the terms of trade of Italy between 1861 and 1939. [7] The decrease in the share of primary exports only slightly improved the terms of trade and did not affect the price volatility, concluding that industrialization does not necessarily lead to more stable terms of trade.

The literature reviewed so far has taken an exclusively national perspective on trade. Until recently, the effects of openness to trade on regional inequality have been qualitatively discussed, without any formal empirical test. A'Hearn and Venables (2013) argued that the increasing North-South gap in this period is to be found in the first phase on physical endowments and internal market access in the second one, while foreign market access would have mattered only later on, in the second half of the Twentieth century. The recent examination of the performance in trade of Southern Italy during the Liberal Age (1861-1914) by Felice (2018) represents a tentative narrative account of the implication of the first globalization on Southern Italy based on regional customs data. In the first "free trade" phase, manufacturing in Southern Italy suffered from opening to French and British imports, while at the same time developing a comparative advantage in high–price agricultural exports (wine, olive oil, fruits) in a few areas (especially Puglia[8]). Still, on the whole, Southern Italy remained a more closed economy compared to the rest of the country and was unable to fully exploit its comparative advantage, due to its economic and socio-institutional context of low social capabilities, low quality extractive institutions. The South exhibited poorer preconditions for development at the time of unification in 1861 (lower

[7] The study addresses the debate around the so-called Prebisch-Singer hypothesis, stating that the specialization in primary exports leads to a deterioration of the terms of trade as a consequence of the larger volatility of prices of primary products.

[8] Interestingly, Puglia performed well during the free-trade policy period, but very bad in the phase of increased agrarian protectionism

human capital, worst transport, and credit infrastructures, less social capital) and these were decisive factors for the South inability of exploiting the opportunities given by the "main flows activated by globalization", namely international migration, capital inflows, and trade.

Missiaia (2016) looked into the effects of market access on the development of the Italian regions in the period 1871-1911.[9] In particular, her research finds that domestic market potential had a positive effect on the GDP per capita of the Northern regions of Italy but a negligible (or even negative) effect on Southern regions as early as 1871. These results suggest that local economies were affected differently by access to markets and encourage further research on the relationship between trade and growth at the regional level.[10]

Timini (2018) investigates the drivers of Italian exports to understand the role of factor endowments, productivity, and trade costs in shaping the course of Italian trade during the first globalization. In this period, Italy increased the number of products mainly at the intensive margin (continuing goods in continuing destinations growth accounted for 71 percent of trade growth). Timini stressed the importance of trade policy which has been positively associated with both trade flows and showed that important destinations for Italian emigrants were associated with large increases in Italian exports and product market entry, as well as reductions in the probability of market exit.

All in all, the First Globalization, which coincided with the first fifty years of Italy as a unified country, was a period in which Italy set the basis for her subsequent development. Among the many different factors that shaped this process, trade and trade policy had a prominent role. The debate on the effects of the First Globalization and in particular of the openness to trade in the post-unification up to 1911 is still alive, and many studies have investigated this issue adopting different perspectives and reaching different conclusions. Nonetheless, the impact of trade on within-country spatial differences in development remains an issue to which quantitative analyses have not yet given substantial answers.

[9]Following the seminal work by Krugman (1991), many have pointed to market access as the main driver of the location of economic activity, with some regions forging ahead because of greater opportunities to trade (cf. also Gomellini and Toniolo (2017)). This hypothesis is tested at the global level by Head and Mayer (2011) for the period 1965-2002. In their analysis, GDP per capita for a large sample of countries is explained through market potential, a measure of market access based on the coefficients of a trade gravity model (cf. Anderson and van Wincoop (2003)).

[10]Market potential based on GDP and trade costs presents some shortcomings. First, it represents, in fact, a potential that regions have in participating in national and international trade: the extent to which regions translate that into actual openness to trade can depend on other factors not captured by market potential. Another shortcoming is that market potential is an aggregate measure that does not distinguish between regional sectors that might be more or less likely to translate their production into exports.

3 Data and descriptive evidence

3.1 Sources and statistical reconstruction

Our analysis aims at measuring the local impact of international trade. In order to do so, we match province-level employment specialization on tradable products, both in agriculture and manufacturing, with nationwide trade statistics.[11] Reconstructing the province-level employment specialization has been particularly demanding and constitutes a methodological contribution of our paper in itself. The main challenge is posed by the agricultural employment figures, for which population censuses provide aggregate provincial figures, with little detail on which type of agriculture workers was engaged in. Given the detail provided in the same censuses on the industrial sectors, we acknowledge that agricultural employment could not be as easily recorded due to high levels of by-employment on multiple crops. In the existing literature, agricultural product specialization has been for instance computed based on cultivated surfaces (Gray et al., 2019). We improved this benchmark by estimating full-time equivalent employment for the main products of the Italian agricultural sector, combining information from several coeval sources. For most of the crops, we combined surface data (ISTAT, 1886) with labour per hectare intensity (Angelini, 1936; Niccoli, 1898). For further information on the reconstruction, see Appendix A.

Regarding manufacturing employment, we relied on 1881 population census data, which had been previously elaborated by Ciccarelli and Missiaia (2013). Based on cross-referencing with trade data, we disaggregated those sectors, like textiles, when we had both substantial foreign trade volume and a specific census item to be linked to the trade statistic. Refer to Appendix A for details. Overall, we came up with 35 productive sectors with traded products. This allows us to compute a rather granular account of sector-specific trade shocks for each province. For the descriptive analysis, we grouped these sectors into eight main "macro sectors". In agriculture, we grouped cereals, breeding, raw materials for textiles, and "intensive agriculture", the latter encompassing relatively high value-added products (olive, grapevine, and citrus). Concerning manufacturing, we followed the classification by Zamagni (1978). We labeled "advanced manufacturing" those activities with a higher average level of mechanization and capital intensity. We computed the textiles sector as distinct from other advanced manufacturing because of its inherent relevance at the time. We called intermediate manufacturing those industries characterized by a moderate degree of economies of scale. Traditional manufacturing

[11] We will encompass in "agriculture" also breeding activities, while we will include mining activities (in particular sulfur and marble extraction), within "manufacturing".

includes those products which were still mostly artisanal activities (clothing, leather, and wood). In Table 1, we show the sector classification, and the relative weight in national employment.

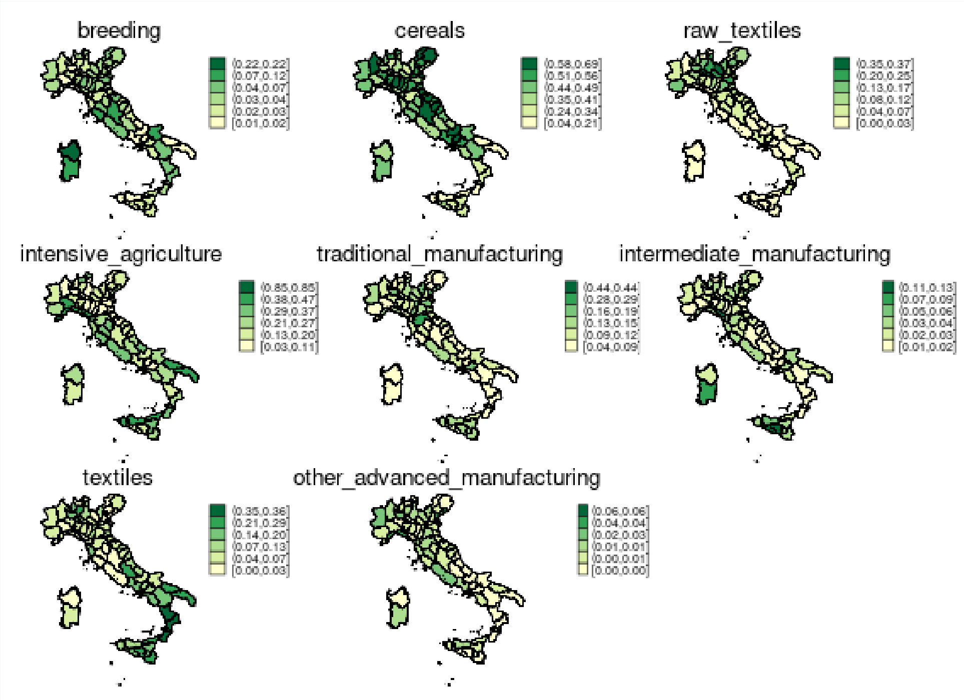
We matched this sector classification with nationwide imports and exports trade statistics from Federico et al. (2011). These data are available with Standard International Trade Classification (SITC) with a 4-digit disaggregation, for each year since 1861.

The maps of Figure 3 related to the productive specialization in 1881 (computed as shares of overall employment in tradable goods) show that North-South differences were marked as a result of the sectors of cereals, raw textiles, both traditional and advanced manufacturing with the South less specialized than the North. Referring to a finer disaggregation, the South emerges as relatively specialized in the agricultural sectors of wheat, olives, citrus, barley, jute, linen, hemp, cotton, and wool, while the North productive structure is more industrialized with a specialization in metal-making, precision mechanics, machines, paper printing, chemical, rubber, rice, pasta, bread, glass. If and how much these differences in productive specialization made the South of Italy suffer international competition more or exploit international opportunities less than the North of Italy, is the topic of our investigation.

As a dependent variable in our analysis, we rely on growth rates of estimated provincial GDP between census years (1881, 1901, and 1911). GDP estimates for the 16 Italian regions (corresponding to the NUTS-2 level) are available from Felice (2019). The estimates include value added for the three main sectors of the economy using a mix of bottom-up estimates for industry from Ciccarelli et al. (2010), Ciccarelli and Fenoaltea (2014), and top-down estimates using the Geary Stark method that allocates national value added to regions according to regional employment with a correction for productivity according to relative wages. However, similar estimates for the 69 provinces (corresponding to the NUTS-3 level) are not readily available. We, therefore, obtained the provincial GDP in the following way. For industry, we used the provincial estimates by **?** which allocate the regional GDP to each province within any given region according to the industrial labour force. For agriculture and services, we allocate the regional value-added estimated by Felice (2019) according to the provincial labour force.

Concerning other data beyond the main dependent variable and the regressors, international outmigration data have been drawn from CGE (1927); the energy use per province in 1877 has been computed as in Missiaia (2019) using MAIC (1884), which provided a census of watermills at the provincial level for 1877; the energy potential is measured as the total stream of rivers per km^2 from SVIMEZ (2011); total horsepower has to be computed from MAIC (1914); market potentials are from Missiaia (2016).

Figure 3: Specialization in 1881, by macro-sectors.



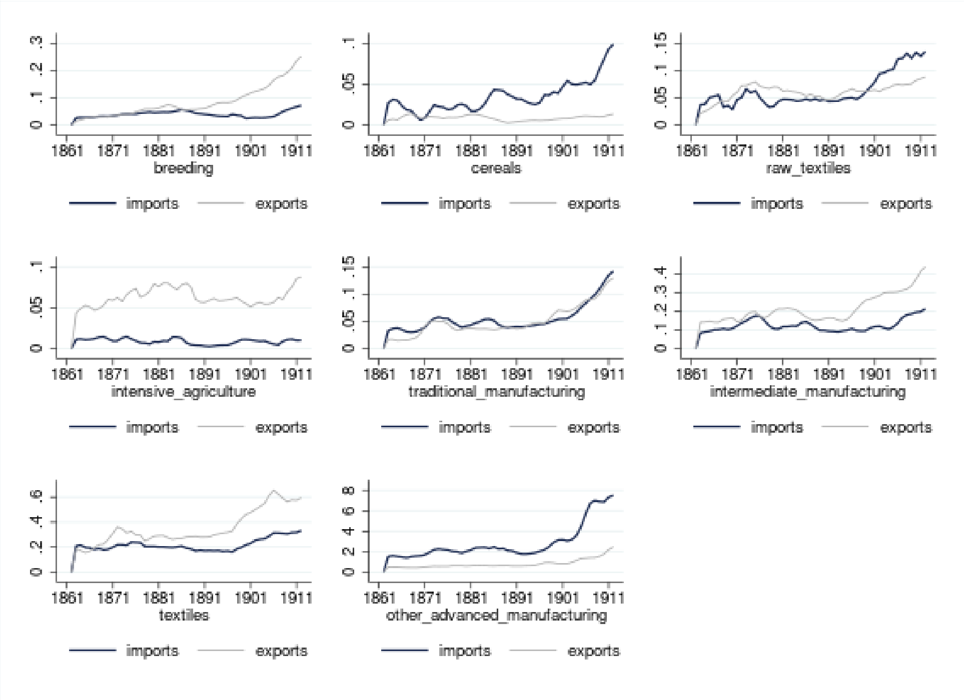
Source: Our calculations.

3.2 Descriptive evidence

Based on (Federico et al., 2011) trade data and 1881 census employment figures, we computed in Figure 4 nationwide trade exposures for the aforementioned macro-sectors, that is import and export in thousands of liras per worker (for the detailed sectors, see Appendix C. Trade exposure dynamics).

The trade openness evolution over the period is echoed in most of the sectors: moderate growth in the first "free trade" post-unification years is followed by a trend of stagnation starting from the mid-1870s roughly corresponding to the Italian and international protectionist reaction, and then showing a marked trade revamping in the last decade, which actually accounts for most of the overall increase. Looking at the maps in the Appendix where we show these indicators detailed by sectors, we observe that the agricultural imports growth was led by cereals and raw textiles, mostly in the last decade. Concerning agricultural exports, they mostly were part of higher value products that we have labeled as "intensive agriculture", that is wine, olive oil, and citrus. Italy had a competitive advantage in those products, which yet did not consolidate in those years, its trade dynamics being relatively flat. Regarding manufacturing trade, we observe an overall growth trend in both imports and exports starting from the late 1890s. In this phase, the gap between exports and imports in advanced manufacturing products increased. On the other side, a relative comparative advantage emerged in textiles and intermediate

Figure 4: National trade exposure, by macro sector.

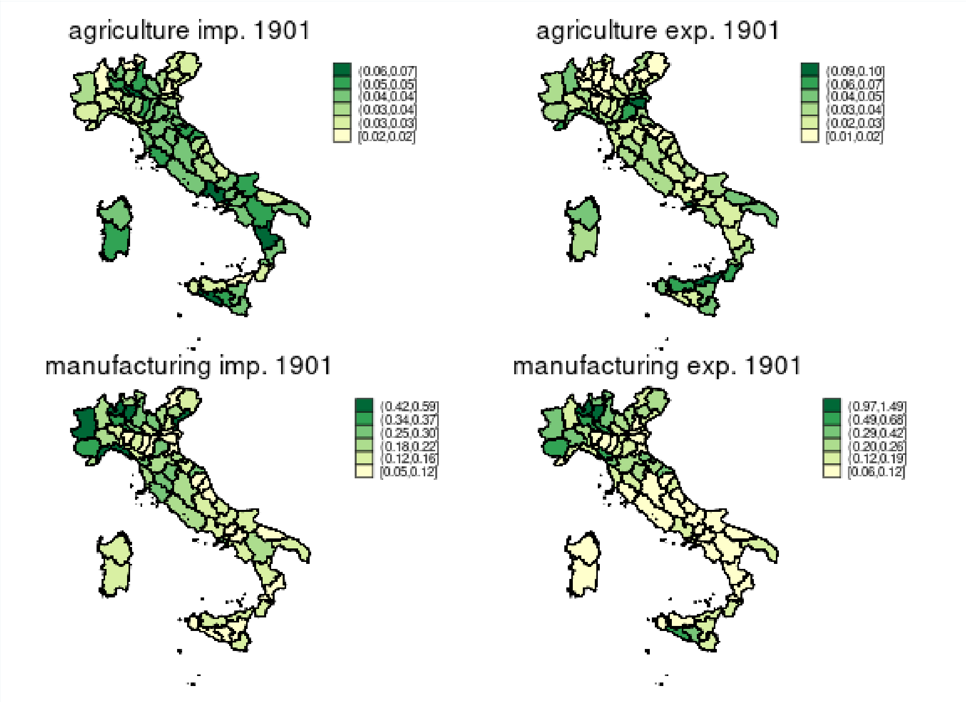


Source: Our calculations.

manufacturing. The latter encompassed characteristics Italian export industries, like marble, sulfur, glass, crystals, and ceramics. When we plot the spatial distribution of trade exposure (Figure 5 for 1901, see Appendix C for 1881, 1891, 1911), a North-South divide emerges clearly, in particular in the manufacturing sector where the North of the country exhibits a higher exposure to trade with respect to both exports and imports.

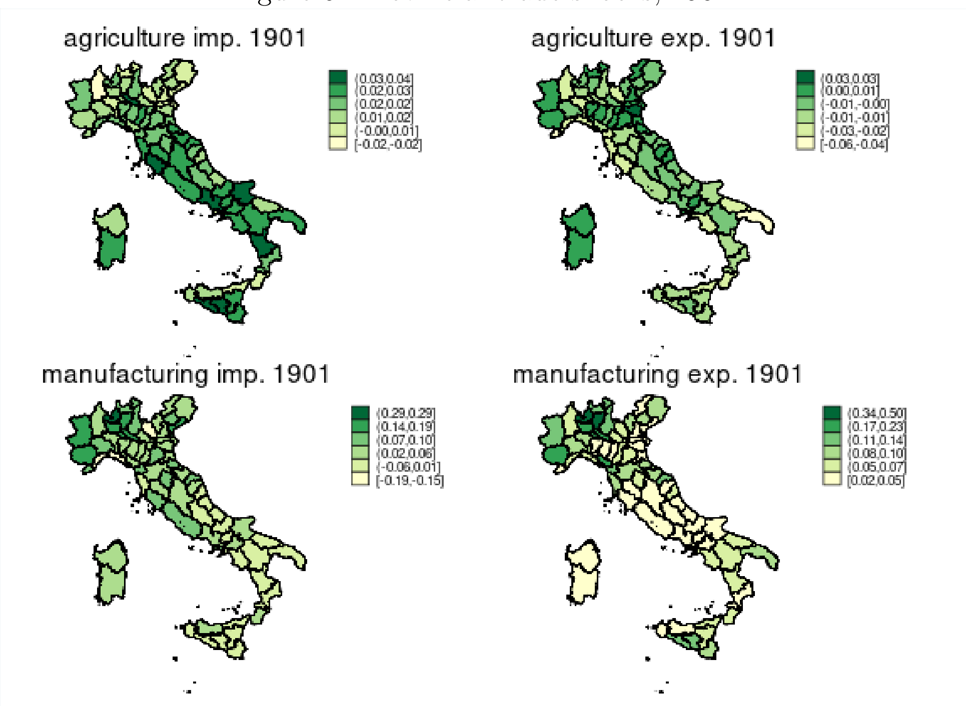
Based on the data reconstructions above, we show in Figure 6 the variation in trade exposure, which we call trade shock (i.e. the change in trade exposure along the census years. Figure 6 refers to 1881-1901 while in Appendix C the same index is computed for 1871-1881 and 1901-1911), displays a pronounced North-South divide in the manufacturing sector.

Figure 5: Provincial trade exposure, 1901.



Source: Our calculations.

Figure 6: Provincial trade shocks, 1901.



Source: Our calculations.

Table 1: Sector classification

Area	Macro sector	Sector	Share of employment in tradables
Panel A - Agriculture			
	Cereals	Wheat	17,92%
		Maize	16,93%
		Barley	0,69%
		Legumes	3,12%
		Rice	2,34%
	Intensive agriculture	Citrus	1,21%
		Olive oil	5,93%
		Wine	14,75%
	Breeding	Breeding	3,41%
	Raw textiles	Cocoons	4,43%
		Raw hemp	1,27%
		Raw linen	1,06%
Panel B - Manufacturing			
	Textiles	Cotton	2,47%
		Jute, linen and hemp	6,14%
		Silk	1,55%
		Wool	1,39%
	Other advanced manufacturing	Chemicals, rubber	0,14%
		Machines	0,14%
		Metalmaking	0,12%
		Paper, printing	0,37%
		Precision mechanics	0,07%
		Ships	0,11%
		Sugar	0,00%
	Intermediate manufacturing	Ceramic	0,12%
		Glass and crystals	0,03%
		Marble	0,05%
		Marble products)	0,41%
		Other mining	0,28%
		Rice, pasta and bread	1,75%
		Sulfur	0,21%
		Tobacco	0,10%
	Traditional manufacturing	Clothing	4,81%
		Hats	0,81%
		Leather	3,04%
		Wood	2,85%

4 The empirical strategy

We estimate the relationship between the performance of provinces GDP and the change in trade exposure, i.e. trade shocks, in the following way. First, we compute for each sector j, with $j = 1 \dots J$, the trade shocks at time t is:

$$tradeshock_{jt} = \frac{trade_{jt} - trade_{jt-1}}{employment_j} \tag{1}$$

These shocks are specific for each sector and calculated at the national level. The intuition is that for each sector we look at the change in the value of trade and we control for the size of the sector in 1881. We compute the trade shocks separately for imports and exports. We then estimate the following model:

$$ln(\frac{Y_{it}}{Y_{it-1}}) = \alpha_i + \alpha_t + \beta * \sum_{j=1}^{J} s_{ij} * tradeshock_{jt} + X_t + \epsilon_{it} \tag{2}$$

Where the dependent variable is the growth rate of provincial gross domestic product (GDP) Y_{it}, of $i = 1...N$ provinces. The main explanatory variable of the model is the product of the national trade shocks by s_{ij} which is the sector specialization of the province in sector j in 1881, i.e.: $s_{ij} = employment_{ij}/employment_i$. The variable is a measure of the potential participation of each province in national trade, according to its specialization, proxied by its relative employment in the different sectors. α_i and α_t denote province and year fixed effects. X_t represents a set of controls.

In our model, we control for province fixed effects and year fixed effects. The former allows capturing structural time-invariant differences in provinces which may affect growth, while the latter capture the average growth trends. We acknowledge that these controls do not rule-out concerns about endogenous correlation between trade exposure and growth. Ideally, we would like to identify trade variation due to factors like foreign supply shocks or reduction in transport costs, ruling out spurious correlation associated to provincial local demand or supply shocks. Usually, in order to identify the impact of trade shocks, related literature about the Second Globalization relies on sector-specific trade flows between foreign partners, but these figures are not available in our case.[12]

[12] The identification strategy laid down by Autor et al. (2013) is to instrument Chinese import penetration in US with Chinese import penetration in other developed countries. The intuition is to rule out local demand

Still, we have priors on expected bias of the OLS estimates, based both on theoretical grounds and empirical evidence from previous literature. On the one side, we expect local sector-specific demand shocks to positively affect both imports and growth of those provinces specialized in that sector. That would lead to underestimate the eventual negative impact of import penetration. On the other side, local supply shocks, like a technological upgrading which increases firms competitiveness, would increase both local growth and boost exports. That would lead to an overestimation of the effects of trade on local growth.

5 Results

5.1 Baseline results

In Table 2 we present the baseline regression, showing the relationship between both import and export exposure and provincial growth. Columns (1) and (2) report the average impact of the whole tradable sectors. The first result is that increasing trade exposure is associated to GDP per worker growth, both on the import and on export side. The coefficients show the marginal effect of one thousand of liras of trade per worker (weighted by province specialization) on GDP growth rate. Thus, a 0.3 coefficient implies that 100 lire of trade per worker is associated with a GDP increase by 3 percentage points over the period.

In columns 3 and 4, we show the effect of the shocks affecting the agricultural sector, while in columns 5 and 6 we show the effect of the shocks belonging to manufacturing. By separating agriculture and manufacturing, it emerges that the average positive effect is entirely driven by manufacturing, while the agricultural trade shocks display little association with growth, being negative and weakly statistically significant in the case of imports. As a result of such heterogeneity between agriculture and manufacturing findings, we move to a separate specification for agriculture and manufacturing separate.

As widely illustrated in the existing literature, during this period regional inequality in Italy was

and supply shocks, while exploiting foreign supply shocks (which may be due to, say, a fall in transport costs or an increase in foreign productivity). As a robustness check, Autor et al. (2013) perform also a "gravity estimate", which should capture changes in the productivity or transport costs of Chinese producers relative to U.S. producers. They regress the differences between Chinese and U.S. exports to third markets on sector and destination fixed effects. The time differences of the residuals can then be interpreted as the increase of Chinese exports driven by Chinese supply shocks. Results are similar to the baseline identification strategy. Fischer and Sauré (2018) cast doubts about Autor et al. (2013) strategy, by observing correlation between Chinese and other developing countries imports in the US. Indeed, this might endanger the hypothesis of a supply shocks which are specific to the Chinese economy. They propose an alternative specification based on a structural model, which controls for common developing countries supply shock. Nonetheless, such identification strategy has become an established benchmark for the subsequent literature. Feenstra et al. (2019) extends it also to identify export shocks, as they instrument US exports with export expansion of eight other high-income economies to the world except the United States. In the same paper, they use, as an alternative instrumental variable, the predicted US exports due to reductions in tariffs faced by the US exporters and their competitors in other countries. Alternative instrumental strategies of import penetration are the use of tariff and transport cost (Bernard et al. (2006)) and (a geometric average of) exchange rates (Revenga (1992); Khandelwal (2010)).

Table 2: The impact of trade shocks on provincial GDP growth

	Total		Agriculture		Manufacturing	
	(1) Import	(2) Export	(3) Import	(4) Export	(5) Import	(6) Export
Trade shock	0.360**	0.467***	-2.762*	-0.814	0.272**	0.357***
	(0.171)	(0.146)	(1.552)	(1.022)	(0.103)	(0.124)
Observations	207	207	207	207	207	207
R^2	0.557	0.563	0.559	0.552	0.559	0.564
N. of prov.	69	69	69	69	69	69
Prov. FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Notes: Heteroskedastic robust standard error in parentheses. *, ** and *** correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level respectively. The dependent variable is the GDP growth.

increasing, with a widening North-South gap. In order to test whether the same specific shocks affected differently Northern and Southern provinces, in Table 3 we interact trade exposure with a dummy for provinces located in the South. Results reveal a remarkable heterogeneity along the North-South divide. First and foremost, Southern provinces which were more exposed to increasing agricultural imports penetration displayed a large and significant relative decline in GDP.

Table 3: The impact of trade shocks on provincial GDP growth in the North and South

	Agriculture		Manufacturing	
	(1)	(2)	(3)	(4)
	Import	Export	Import	Export
Trade shock	-0.745	1.152	0.250**	0.427***
	(1.440)	(0.949)	(0.107)	(0.144)
Trade shock * South	-4.929***	-2.664***	-0.745***	-1.165***
	(1.243)	(0.884)	(0.229)	(0.399)
Observations	207	207	207	207
R^2	0.604	0.569	0.587	0.598
N. of prov.	69	69	69	69
Prov. FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Coeff. of trade shock South	-5.673***	-1.512**	-0.495**	-0.738

Notes: Heteroskedastic robust standard error in parentheses. *, ** and *** correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level respectively. The dependent variable is the GDP growth.

Overall, specialization in agricultural exports is not associated to positive growth, consistently with the literature cautioning about the long-run effects of comparative advantage in commodities (Prebisch, 1959). In the South, the associated coefficient is weakly negative. A potential interpretation of the latter can be found by the empirical work in Gray et al. (2019), showing that increasing agricultural prices fostered international migration, by increasing peasants incomes just enough to allow them to escape the poverty trap and to finance outmigration (with negative effects on employment levels and thus on overall growth). Column 3 shows that increasing import penetration negatively affected Southern provinces not only in the agricultural but also in the manufacturing sector. Concerning manufacturing exports, we find a noticeable association between trade exposure and growth in the Northern provinces, while this association is negative (although not statistically significant) in the South. While we cannot establish the direction of causality between growth in the North and manufacturing exports, it is evident that manufacturing export growth was associated with an increase in the North-South divide. All in all, one standard deviation in agriculture imports in the Southern provinces is associated with 2.4 standard deviations of lower growth. One standard deviation of manufacturing export exposure in the North is associated with 2.1 standard deviations of higher growth.

In order to gauge the relevance of our estimated coefficients in terms of the growth patterns recorded in the 1871-1911 period, we perform some back-of-the-envelope calculations, following the approach set by Autor et al. (2013). A summary of these calculations is in Table 4. First, we take into account the average import and export dynamics between 1871 and 1911 for both the Northern and Southern provinces (Table 3). Second, we multiply the coefficient of our preferred specification with those trade shocks. In this way, we obtain the incremental growth associated with the trade dynamics. Third, we compare these growth differentials to the average growth rate of the Northern/Southern provinces. We find that the growth reduction in Southern provinces associated with agricultural import penetration account roughly for an expected reduction of more than a third of the overall growth rate (21 percentage points reduction, on an actual growth rate of 56 percent). Manufacturing exports dynamics account for almost 10 percentage points of additional growth (4.5 percent over an actual growth of 55.5; in appraising the latter number, consider that manufacturing accounted for around 20 percent of overall GDP (Baffigi, 2011).

While caution is necessary for interpreting our results, the figures show that trade patterns explain a sizable share of province growth over the entire period 1871–1911.

Table 5 shows the relative contribution of the two components of provincial GDP growth, i.e. employment dynamics and growth of GDP per worker.[13] We observe a negative impact of agricultural import penetration on GDP per worker, both in the North and in the South. In the South, this impact is compounded by the decline in employment.

Table 5 suggests the presence of a population dynamic that is stronger for the South. The period of the first globalization is a period of strong international migration flows from the South,

[13]Employment dynamics are often used to approximate local growth in regional and persistence studies. In our case, it may be noteworthy to remind that employment data are drawn from the population census, which took account of the whole of the province workforce. Therefore, its dynamics should be regarded essentially as driven by demographic factors, first of all (but not exclusively) migration.

Table 4: Cumulative impact of trade shocks on provincial GDP growth in the North and South

		Agriculture		Manufacturing	
		Imports	Exports	Imports	Exports
Average trade exposure increase 1871-1911	North	0.031	0.015	0.209	0.114
(1000s of liras p. worker)	South	0.034	0.027	0.14	0.091
Incremental growth associated to the average trade shock	North	-0.031	0.018	0.043	0.047
(log. approximation of perc. change)	South	-0.215	-0.036	-0.076	-0.066
Average growth 1871-1911	North	0.556	0.556	0.556	0.556
(log. approximation of perc. change)	South	0.507	0.507	0.507	0.507

Source: Our back-of-the-envelope calculations using the coefficients in Table 3.

and previous literature such as Gray et al. (2019) has suggested that international migration patterns were linked to agricultural exports in the South. In Table 6 we re-estimate our model using international migration flows as a dependent variable. If international migrations explain declining employment in times of increase in trade exposure, we expect these estimates to be sort of specular compared to panel A of Table 5. The rationale is that when employment for instance decreases because agricultural imports increase, at the same time international migration flows will increase. In Table 6 we see that at least for the agricultural trade shocks there is a positive and significant effect of shocks on international migrations in the South compared to the North. Of course, the relationship is not mirrored perfectly, as other population dynamics as internal migrations, and changes in mortality and fertility rates contribute to explaining employment evolution.

In table 7 and 8 we assess the contribution of selected sub-sectors within agriculture and manufacturing. There is an inherent trade-off in this kind of exercise. On the one hand, potential heterogeneity may provide a better understanding of our findings. On the other hand, the smaller the size of the sector partition, often characterized by a narrower geographic scope, the higher the likelihood that results are driven by specific local dynamics.

In Table 7, we show results on agricultural sub-sectors. We first focus on cereals (Column 1), recalling that the so-called "grain invasion" was one of the defining features of international trade in the considered period. As expected, we find that cereal import penetration is associated with noticeable lower growth in the South. A composition effect due to the kind of cereals may at least partially explain this pattern. Indeed, we see a strong negative impact on wheat, the main cereal production in the South (Column 2). In interpreting these results, it is noteworthy

Table 5: The impact of trade shocks on provincial employment and provincial GDP growth in the North and South.

	Agriculture		Manufacturing	
	(1)	(2)	(3)	(4)
	Import	Export	Import	Export
Panel A: Dep. var growth of employment	(1A)	(2A)	(3A)	(4A)
Trade shock	2.213**	1.247*	0.065	0.066
	(0.929)	(0.739)	(0.081)	(0.109)
Trade shock * South	-3.555***	-1.844**	-0.490***	-0.447*
	(0.883)	(0.716)	(0.144)	(0.260)
R^2	0.500	0.461	0.473	0.453
Coeff. of trade shock South	-1.342	-0.597	-0.425***	-0.382
Panel B - Dep. var: growth of GDP per worker	(1B)	(2B)	(3B)	(4B)
Trade shock	-2.958**	-0.095	0.185**	0.361***
	(1.345)	(0.922)	(0.090)	(0.083)
Trade shock * South	-1.374	-0.820	-0.255	-0.718**
	(1.064)	(0.799)	(0.176)	(0.333)
R^2	0.591	0.568	0.575	0.597
Coeff. of trade shock South	-4.331***	-0.914*	-0.0705	-0.356
Observations	207	207	207	207
N. of prov.	69	69	69	69
Prov. FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes

Notes: Heteroskedastic robust standard error in parentheses. *, ** and *** correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level respectively.

to keep in mind that maize and rice, the most relevant cereals farmed in the North, experienced negligible trade dynamics.

In column 3 we find a positive association between raw textiles imports and growth, which is confirmed if we consider only silk cocoons production (Column 4). The input role of the most sizable emerging manufacturing sector in this period is arguably behind this positive association. As shown in previous maps (ref.), those productions were mostly located in Northern Italy. In Column 5 we see the negative effect of export shocks on intensive agricultural products, namely olive oil, wine, and citrus.

Table 6: The impact of trade shocks on migration flows in the North and South.

	Agriculture		Manufacturing	
	(1)	(2)	(3)	(4)
	Import	Export	Import	Export
Trade shock	-0.092	-0.098**	-0.026***	-0.024***
	(0.078)	(0.045)	(0.006)	(0.008)
Trade shock*South	0.306***	0.180***	0.047***	0.034
	(0.067)	(0.043)	(0.017)	(0.022)
Observations	207	207	207	207
R^2	0.723	0.690	0.736	0.691
N. of prov.	69	69	69	69
Prov. FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Coeff. of trade shock South	0.214***	0.0823**	0.0212	0.0103

Notes: Heteroskedastic robust standard error in parentheses. *, ** and *** correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level respectively. The dependent variable is the average international outmigration per population over the period.

Table 7: The impact of trade shocks in selected agricultural sectors on provincial GDP growth in the North and South.

	(1)	(2)	(3)	(4)	(5)
	Import	Import	Import	Import	Export
	Cereals	Wheat	Raw textiles	Silk cocoons	Intensive agriculture
Trade shock	-1.705	-6.880**	10.588***	18.604***	1.412
	(1.721)	(2.743)	(3.282)	(4.208)	(0.971)
Trade shock * South	-4.890***	-3.434*	-15.554*	12.429	-3.237***
	(1.552)	(2.054)	(8.840)	(14.925)	(1.042)
Observations	207	207	207	207	207
R^2	0.604	0.624	0.586	0.595	0.568
N. of prov.	69	69	69	69	69
Prov. FE	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes
Coeff. of trade shock South	-6.595***	-10.31***	-4.967	31.03*	-1.825**

Notes: Heteroskedastic robust standard error in parentheses. *, ** and *** correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level respectively. The dependent variable is the GDP growth.

Table 8: The impact of trade shocks in selected manufacturing sectors on provincial GDP growth in the North and South.

	(1) Import Textiles	(2) Import Advanced manuf.	(3) Import Intermediate manuf.	(4) Import Traditional manuf.	(5) Export Textiles	(6) *Export* *Silk*	(7) Export Advanced manuf.	(8) Export Intermediate manuf.	(9) Export Traditional manuf.
Trade shock	0.589***	0.249*	2.852***	1.757	0.249**	0.309**	1.113**	0.479***	0.379
	(0.219)	(0.144)	(0.974)	(1.698)	(0.115)	(0.131)	(0.478)	(0.176)	(0.486)
Trade shock * South	-1.424***	-1.361	-13.516***	-4.687***	-2.260***	0.634	-3.032**	0.681	-13.629***
	(0.448)	(0.829)	(4.466)	(1.095)	(0.438)	(1.661)	(1.440)	(0.468)	(3.272)
Observations	207	207	207	207	207	207	207	207	207
R^2	0.568	0.577	0.578	0.600	0.599	0.556	0.580	0.563	0.619
N. of prov.	69	69	69	69	69	69	69	69	69
Prov. FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Coeff. of trade shock South	-0.836**	-1.112	-10.66**	-2.929	-2.011***	0.943	-1.918	1.160***	-13.25***

Notes: Heteroskedastic robust standard error in parentheses. *, ** and *** correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level respectively. The dependent variable is GDP growth.

In Table 8, we show disaggregated results for the main manufacturing macro-sectors. Overall, the previous findings on the impact of aggregate manufacturing trade, and its geographical asymmetry along the North-South line, are confirmed along for most of the macro-sectors. In the Southern provinces, we find a negative impact of imports in the textiles, intermediate and traditional manufacturing. The Northern exports-growth nexus is driven by textiles, advanced and intermediate manufacturing. Within the textiles sector, we single out the contribution of silk production, the most important and established export-oriented Italian manufacturing activity, confirming a positive association between exports and growth. All in all, the results confirm, even at a higher level of disaggregation, significant heterogeneity in the reaction to international trade along the North-South line. The mechanics behind this asymmetry still require further analysis.

5.2 Robustness checks

As a robustness check, in Table 9, we control for the interaction between year dummies and the share of manufacturing employment and the initial (1871) literacy rate. In fact, even if in our baseline specification, including province fixed effects, we control for time-invariant province-specific omitted variables, still, we may have that same province characteristics impact may vary across time. Overall, our findings are confirmed.

Table 9: The impact of trade shocks controlling for year-province characteristics interaction.

	Agriculture		Manufacturing	
	(1)	(2)	(3)	(4)
	Import	Export	Import	Export
Trade shock	-0.705	1.698**	0.147	0.438***
	(1.480)	(0.823)	(0.115)	(0.158)
Trade shock * South	-3.863***	-2.890***	-0.482*	-0.831**
	(1.458)	(1.066)	(0.281)	(0.383)
Observations	207	207	207	207
R^2	0.617	0.610	0.607	0.621
N. of prov.	69	69	69	69
Prov. FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Coeff. of trade shock South	-4.568***	-1.192	-0.335	-0.393

Notes: Heteroscedastic robust standard errors in parentheses. *, **, *** Correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level, respectively. The dependent variable is GDP growth. The regression includes controls for the interaction between year dummies and the share of the manufacturing sector and literacy rate.

Fenoaltea (2003) pointed out a potential overestimation of textile employment, due to women, mostly in rural areas, which were classified as textile workers but worked only part of their time on artisanal domestic textile activities. As a rule of thumb, he suggested correcting downwards these figures, assuming that in each province female textile workers were the minimum between the reported number and four times male textile workers. As an additional robustness check, in Table 10 we provide benchmark estimates of the impact of trade shocks on provincial GDP growth in the North and South after having corrected provincial employment in textile sectors along this method. Qualitative findings are confirmed: if any the North-South divide in province performance due to manufacturing exports is bigger.

Table 10: The impact of trade shocks with alternative textile sector employment estimates.

	Agriculture		Manufacturing	
	(1)	(2)	(3)	(4)
	Import	Export	Import	Export
Trade shock	-0.745	1.152	0.203	0.831***
	(1.440)	(0.949)	(0.133)	(0.210)
Trade shock * South	-4.929***	-2.664***	-0.571**	-0.875***
	(1.243)	(0.884)	(0.223)	(0.238)
Observations	207	207	207	207
R^2	0.604	0.569	0.578	0.590
N. of prov.	69	69	69	69
Prov. FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Coeff. of trade shock South	-5.673***	-1.512*	-0.368	-0.0434

Notes: Heteroscedastic robust standard errors in parentheses. *, **, *** Correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level, respectively. The dependent variable is GDP growth.

In Table 11, we propose as a robustness check a modification of the baseline model including the trade exposure level at *t-1* rather than the growth rate of trade as the main explanatory variable. This modification is intended to address the issue of possible endogeneity between GDP growth and trade growth. The results appear in line with those in Table 3, with a large and significant negative coefficient for the South compared to the North.

5.3 Mechanisms of trade-growth nexus in manufacturing

In this section, we explore more in detail the possible mechanisms through which trade growth might have a different impact on the growth of GDP in the North and South. One possible explanation could be related to the effect of different access to the international markets in the two areas of the country. In principle, the different results might be explained by the North having better access to international markets compared to the South. This hypothesis has already been tested by Missiaia (2016) through the estimation of market potential for the Italian regions between 1871 and 1911. The estimates show that although northern regions had better domestic market access, southern regions did better in international market access. This was due to increasingly cheaper shipping and the larger share of economic centers being ports

Table 11: The impact of trade exposure levels at *t-1*

.

	Agriculture		Manufacturing	
	(1)	(2)	(3)	(4)
	Import	Export	Import	Export
Trade exposure	-1.330	1.722	0.120	0.215**
	(1.211)	(1.216)	(0.142)	(0.102)
Trade exposure*South	-2.461***	-3.455***	-0.603**	-1.032***
	(0.672)	(1.135)	(0.237)	(0.216)
Observations	207	207	207	207
N. of prov.	69	69	69	69
Prov. FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Coeff. of trade shock in the South	-3.792***	-1.734	-0.483	-0.817***

Notes: Heteroskedastic robust standard errors in parentheses. *, **, *** Correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level, respectively. The dependent variable is GDP growth.

in the South compared to the North. These findings make it unlikely that our trade exposure measures simply mimic market access conditions. In Table 12, in col. 1 and 2 we interact the import and export shocks with a dummy equal to 1 when the provincial market potential constructed from the foreign market access by Missiaia (2016) is above the median level. We do not find any effect of foreign market access, suggesting that it cannot explain the different results between North and South.

The other mechanism we explore in Table 12 is the different energy endowments of the provinces, which could explain why some areas were able to take advantage of the increased trade flows and some others were not. We use in Table 12 two measures of energy potential used in Missiaia (2019): one is the total flow of rivers in the provinces measured in meters per second (Columns 3 and 4), and one is the actual production of water power per worker from water mills in 1878 (Columns 5 and 6). These measures are expected to proxy the natural endowment of provinces rather than energy production, which may be endogenously connected to energy demand. We find that the coefficient for the interaction between import exposure and energy potential is significant at the 5% level. Surprisingly, the interaction between import exposure and actual energy production is not significant. There is therefore no apparent effect of the potential for energy production, suggesting that an alternative channel must be identified.

We conjecture that the heterogeneity in the impact of manufacturing trade exposure could be due to differences in firms competitiveness, stemming from different productivity levels. During the 19th century, manufacturing underwent a process of increasing mechanization which fueled

Table 12: The impact of trade shocks through market access, water availability, and water power production in 1878.

	(1) Import	(2) Export	(3) Import	(4) Export	(5) Import	(6) Export
Trade shock	0.260*	0.301**	-0.032	0.237	0.271***	0.288*
	(0.143)	(0.130)	(0.186)	(0.220)	(0.098)	(0.162)
Trade shock * Above median Foreign MP	0.027	0.184				
	(0.145)	(0.236)				
Trade shock * Above median hydro. capacity			0.345**	0.173		
			(0.167)	(0.235)		
Trade shock * Above median mills capacity					0.005	0.157
					(0.156)	(0.200)
Observations	207	207	207	207	207	207
R^2	0.569	0.559	0.559	0.566	0.566	0.566
N. of prov.	69	69	69	69	69	69
Prov. FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Notes: Heteroskedastic robust standard error in parentheses. *, ** and *** correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level respectively. The dependent variable is the GDP growth. Hydro. capacity, is computed as the logarithm of streams of rivers per km. Mills capacity is computed as horsepowers per worker as of 1881.

productivity. Thus, we expect mechanization to play a role in the aforementioned heterogeneity. As a proxy for mechanization, we use energy consumption, measured in horsepower per manufacturing worker. This variable is available as an aggregate for all the manufacturing sectors within a province. We know that in Northern provinces, this variable was on average around twice than in the Southern ones. In Table 13 we interact a dummy equal to 1 if the province had a level of horsepower per worker higher than median one, with the import and export shocks for the whole manufacturing sector. We find that provinces with higher horsepower intensity benefited more from the overall increase in trade exposure (Columns 1 and 3). In Column 2 and 4 we add both the interactions between trade shocks and horsepower, and between trade shocks and the dummy South. Both remain statistically significant, although the magnitude of the South interaction decreases compared to the specification without the mechanization dummy (cf. Columns 3 and 4 in Figure 3). According to this result, mechanization partially explains the North-South heterogeneity in the reaction to trade exposure.[14]

Finally, we present some figures on the different degree of participation of northern and southern manufacturing in the international markets, providing suggestive evidence on their relative degree of competitiveness. Table 14 provides a rough picture of the type of exports from northern and southern ports, constructed using data on port custom data in 1913 from Felice (2018). The table provides the share of exports through the ports of the South as a share

[14]It should be noted that because of the classification of the industrial census, it was not possible to compute sector specific horsepower per worker. We therefore had to resort to using total provincial horsepower, which is a more imprecise measure of mechanization. In spite of this possible attenuation bias, we still find a North-South effect.

Table 13: The impact of trade shocks on provincial GDP growth by the level of mechanization.

	(1)	(2)	(3)	(4)
	Import	Import	Export	Export
Trade shock	-0.249	-0.102	-0.012	0.182
	(0.217)	(0.190)	(0.182)	(0.119)
Trade shock * Above median horsepowers p. worker	0.559***	0.382**	0.648***	0.408**
	(0.179)	(0.160)	(0.214)	(0.161)
Trade shock* South		-0.572***		-0.949**
		(0.199)		(0.376)
Observations	207	207	207	207
R^2	0.582	0.597	0.586	0.606
N. of prov.	69	69	69	69
Prov. FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes

Notes: Heteroscedastic robust standard errors in parentheses. *, **, *** Correspond to a coefficient significantly different from zero with a 10%, 5% and 1% confidence level, respectively. The dependent variable is the GDP growth. Horsepower consumption p. worker is computed for the whole manufacturing sector at provincial level.

of the national value. The share of agricultural exports from the South was almost a third, roughly in line with the share of employment in the South. On the other side, manufacturing exports from the South were a very small fraction, just 8 percent, falling to 4 per cent when excluding pasta and sulphur. Those numbers are rather striking, considering that the South encompassed a significant share of overall manufacturing employment [15]. It emerges how Southern manufacturing was essentially a "passive actor" on the international markets.

Table 14: Exports flows from Italian main ports/customs (mln of liras), 1913.

	South	Italy	% South
Agriculture	195.1	584.2	33.4
Manufacturing	97.7	1202.1	8.1
excluding pasta/flour and sulfur	44.7	1088.9	4.1

Source: Elaboration on data from custums, as reported by Felice (2018).

6 Concluding remarks

Our research investigated the effects of increasing trade openness on provincial growth in Italy during the First Globalization. After reconstructing the sectoral specialization at the provincial level in tradable goods, we assessed how international trade dynamics affected local employment growth. Our findings can be summarized as follows.

Trade shocks (i.e., changes in trade exposure) result positively associated with aggregate GDP growth. However, both the spatial and the sectoral dimensions reveal a remarkable heterogeneity. By separating trade exposure changes in agriculture and manufacturing, we

[15] according to the 1881 census, amounting to 48 per cent, 36 per cent applying the aforementioned downward correction of female textile employment, cf. Figure 3 for macro-sectors specialization

find that the overall positive association is driven by the latter. Looking at the different effects of trade shocks for Southern vs. Northern provinces, we find that the positive effect of trade shocks is driven by the Northern regions. The South of the country does not seem to have been able to take advantage of the opening of international markets either for its agricultural or for its industrial productions, suffering in particular from import penetration in the agricultural sector (foreign competition on wheat). Differently, growth in Northern provinces results correlated to export performance in manufacturing, suggesting a link between the opening to trade and the industrialization process the North over the period.

Decomposing GDP growth into employment and productivity growth (GDP per worker), we find that in the South, the negative impact on agriculture operated through a reduction of employment, an effect that can be linked to the massive international migration outflows from the South in those years (similar dynamics were found in the case of Prussia during the First Globalization, with internal migrations being triggered by import penetration in agriculture: Bräuer et al. (2021)).

As far as manufacturing, among the possible mechanisms explaining the different regional impact of trade, we show that a higher level of mechanization in the North explains the positive impact of changes in trade exposure, while we reject two other potential explanations, namely the degree of foreign market access and easier access to energy production sources.

Our results speak to several debates, both from historical and current perspectives. In particular, we have shown that the First Globalization has had a distributional impact in Italy not only at the interpersonal level but it also a sizeable distributional effect at the spatial level (O'Rourke and Williamson, 1999; O'Rourke, 1997, 2019), arguably contributing to the widening of (pre-existent) regional income differentials (Rosés and Wolf, 2018; Felice, 2018).

A Appendix - The historical reconstruction of the provincial productive specialization in Italy

A.1 Agriculture - crops

The Italian statistical sources of the post-unification do not report numbers on the workers for each agricultural product, but rather aggregate distinct figures for agriculture and breeding. This is not due to a sheer lack of collected data, but rather to the fact that employees usually worked on several crops throughout the year. In light of that, this paper proposes a reconstruction of full-time equivalent employees for the main agriculture products in the Italian provinces, decomposing the overall agriculture employment in 1881.

This reconstruction starts from the data on the size of cultivated land for each crop. The area dedicated to each crop at the province level was recorded by the Italian Statistical Yearbook (ASI) of 1886 (MAIC, 1886), reporting the average cultivated area between 1876 and 1881 for the following crops: maize, wheat, legumes, oats, barley, hemp, linen, wine, olives, citrus fruits, rice.[16] The total number of employees in the agricultural sector for each province was collected from the population census of 1881 (MAIC, 1881).

A first rough estimate of the workers involved in single crops j in province i can be obtained by dividing the total number of workers engaged in agriculture in i based on the share of the area dedicated to the single crops in each province (cf. Gray et al. (2019)):

$$Occ_{i,j} = \frac{Sup_{i,j}}{Sup_i} * Occ_i \tag{3}$$

The ratio between the surface dedicated to a specific crop j in the province i and the total area dedicated to agriculture, $\frac{Sup_{i,j}}{Sup_i}$, is multiplied by the total number of agricultural workers in the province, Occ_i thus obtaining the number of employees for each crop for each province,$Occ_{i,j}$.

This first rough estimate assumes that labour intensity, the number of employees required per unit of land, is the same for all crops. To overcome this issue, a weighting index of the cultivated area for each crop was calculated using the labour intensities provided by two sources: Niccoli (1898) were used for maize, wheat, legumes, hemp, wine, oil, rice; Angelini (1936) was used for

[16] A significant correction was made to consider that the areas cultivated with olive trees and vines are divided into a part specialized on the single crop and a promiscuous part (that is the land was shared with other crops). In particular, from Angelini (1936) the promiscuous surface was weighted based on the ratio between hours of work on the promiscuous surface and hours of work on specialized surfaces. The result is a "promiscuous-surface equivalent to the specialized". The total surface is then the sum between the specialized surface and the promiscuous "equivalent to the specialized" surface. The ratio between the weighted total surface and the total surface is then computed, and this ratio has been multiplied by the total surface digitized from the Italian Statistical Yearbook (ISTAT, 1886).

weighting oats, barley and linen. The key statistic that allows the calculation of the weighting index is the number of employees per unit of the area reported in the two sources cited, which consider the different use of work necessary for specific crops per unit of land (hectare). The statistics are reported in Table A1.

Table A1: Number of employees per year per unit of land (ha)

Crop	N. employees
Source: Angelini (1936)	
Oats	245*
Barley	267*
Linen	880
Source: Niccoli (1898)	
Maize	1100
Wheat	525
Legumes	625
Hemp	1400
Wine	1500
Olive	1600
Rice	1150

*average between North, Centre and South of Italy.

Once this allocation has been carried out, the total number of employees per single crop, estimated using the methodology above, is recalculated in order to take into account the labour intensity for the single crops. In particular, starting from the number of employees per unit of area for each crop (Labour Intensity, $Lint_j$), the average of employees per unit of area was computed across crops, $AvgLint_j$. The ratio between the number of employees per unit of area in the single crop and the calculated average provides the weighting index:

$$I_j = \frac{Lint_j}{AvgLint_j} \tag{4}$$

The index is then used to obtain the adjusted total number of employees in every single crop, weighted $WeightedOcc_{i,j}$, weighting the first estimates $Occ_{i,j}$, based on the relative labour intensity in the individual crops, $\frac{Lint_j}{AvgLint_j}$:

$$WeightedOcc_{i,j} = I_w * Occ_{i,j} \tag{5}$$

A.2 Citrus and cocoons

For two primary products, citrus fruits, and silk cocoons, it was not possible to proceed as described due to the lack of data on labor intensity. We, therefore, proceeded as follows.

A.2.1 Citrus fruits

Two sources were used for the reconstruction of the number of workers in the citrus sector. The first is the volume by Briganti (1917), entitled "Citrus fruits: Production, Commerce, Customs Regime", from which the data relating to the promiscuous areas and specialized areas for the cultivation of citrus fruits for each region are reported separately. With these data, a mixed area equivalent to the specialized area was calculated, assuming that the promiscuous area is only 50 per cent allocated to citrus fruits. The total area at the regional level ($Sup_{r,j}$) is therefore obtained by adding to the specialized area ($SupSpec_{r,j}$) the equivalent weighted mixed area ($0.5 * SupProm_{r,j}$):

$$Sup_{r,j} = SupSpec_{r,j} + 0.5 * SupProm_{r,j} \tag{6}$$

Finally, the regional data are allocated at the provincial level using the Italian Statistical Yearbook (ISTAT (1886), p. 858) which reports the data on citrus fruit production (number of fruits: $Prof_i$) and computing, for each province, the percentage of the regional production. Based on this percentage, the total regional area is divided among the provinces:

$$Sup_{i,j} = \frac{Prod_i}{Prod_r} * Sup_{r,j} \tag{7}$$

These data reconstructed for the areas cultivated with citrus fruits in each province are finally used to attribute the share of workers to the province, weighting the total employees in agriculture with the share of the total agricultural area dedicated to citrus fruits.

A.2.2 Silk cocoons

The data on the employees in the silk cocoon sector have been reconstructed based on the information contained in Federico (1994), which records a total of 561 million hours worked in

1911 for cocoons. Using the relationship:

$$\text{Total Hours per Year} = \text{Number of Employees} * \text{Hours per day} * \text{Number of days} \quad (8)$$

the total number of employees is easily obtained using the inverse formula:

$$\text{Number of Employed} = \frac{\text{Total Hours per Year}}{\text{Hours per day} * \text{Number of days}} \quad (9)$$

The same source suggests using a number of hours per day equal to about 6 hours per day for 180 days a year. From this simple calculation, it follows that the total number of workers in the sector is equal to 496,241. This value, appropriately discounted based on the trend of the sector employees between 1881 and 1911, was divided at the provincial level based on the data recorded in the MAIC (1886) on (kilograms) cocoons production by province.

A.3 Breeding

Employees in the breeding sector were reconstructed using three sources. The first is the Italian Statistical Yearbook ((ISTAT, 1886)), which reports the number of horses, bovines, sheep, goats, and pigs at the provincial level. Horses are those recorded by the Census of horses and mules (1876); the other categories are reported in the Census of donkey, bovine, sheep and swine livestock (1881), a publication of the Ministry of Agriculture, Industry and Commerce - Directorate General of Agriculture. Once we collected these data, the number of employees was retrieved using the data on the number of animals per worker from a second source (Angelini, 1936), which the number of employees required by each type of breeding (in particular, in the different Italian regions a single worker was needed to guard 25 horses, or 26 cattle, or 200 sheep, or 50 goats or 50 pigs). The number of employees was thus calculated by the ratio of the number of animals over the number of animals per worker.

These data were finally compared to those reported in a third source, the Population Census of 1881 (MAIC, 1881), which contains aggregate figures on both agriculture and breeding at the provincial level. This census was not used as the benchmark source to collect the information on employment in the breeding sector since, as it is well known, it underestimates the number of workers (many workers were attributed to the agricultural sector, even though they worked, at least part-time, in breeding activities). The figures from the census were taken as a lower

Table A2: Industrial sectors

Industrial sectors
Marble
Sulfur
Mining (excl. marble and sulfur)
Rice, bread and pasta
Sugar
Foodstuffs (excl. rice, bread and pasta and sugar)
Tobacco
Silk
Cotton
Jute, linen and hemp
Wool
Textiles (excl. silk, cotton, jute, linen, hemp and wool)
Hats
Clothing (excl. hats)
Leather
Wood
Metalmaking
Agricultural machinery
Automobiles
Ships
Precision mechanics
Engeneering (excl. agricultural machinery, automobiles, ships, precision mechanics)
Glass and crystals
Non-metallic mineral products (excl. glass and crystals)
Chemicals, rubber
Paper, printing

Source: Our calculations.

bound, i.e. we considered them as breeding employees if they were higher than the reconstructed numbers from ISTAT (1886).

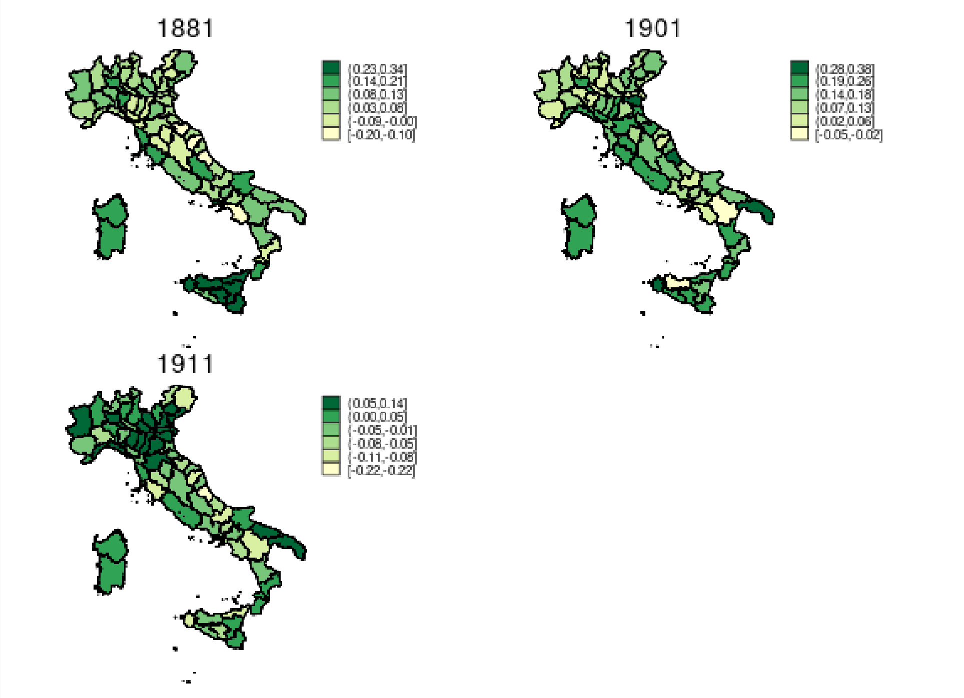
A.4 Manufacturing

In order to assess the employment figures in the 69 Italian provinces in the industrial sectors that are more exposed to trade, we proceeded in the following way. We adopted a three-step strategy: first, we ranked the SITC-3 categories by the value of exports and imports. We then, for each of these categories, decided whether it belonged to agriculture or industry. For the categories belonging to the industry, we looked for a corresponding specific category within the industrial sector. For this purpose, we relied on as a starting point, on the classification in 15 industrial sectors used by Ciccarelli and Fenoaltea (2010), Ciccarelli and Fenoaltea (2014), Ciccarelli and Missiaia (2013).

We, therefore, preliminarily assigned each of the relevant SITC-3 product classes to one of these broad industrial categories. Broad industrial sectors had been originally designed by Vitali (1970) to provide an overview of the labour force distribution, and they were taken almost unchanged by Fenoaltea (2001) to produce value-added series. In this work, we relate for the first time industrial sectors to trade statistics, which present a much finer level of disaggregation compared to industrial value-added series. Although for several categories of exports and imports it is reasonable to maintain a high level of aggregation because of their relatively low weight, for a number of them it is less so. The most noticeable example is that of textiles, which is taken as a whole in the value-added reconstructed series, but in which we can identify several distinct and important export goods, most notably silk. The fact that a particular good is well represented in value in the trade statistics is not the only criterion for deciding to specify its employment: another relevant reason can be the fact that the production of the good was known to be geographically concentrated. An example of this is within the mining, where we decided to specify the employment in marble and sulfur, productions that were highly concentrated in Tuscany and Sicily. Taking into account the need to identify specific goods within the 15 broader industrial sectors, we ended up with the classification in Table A2.

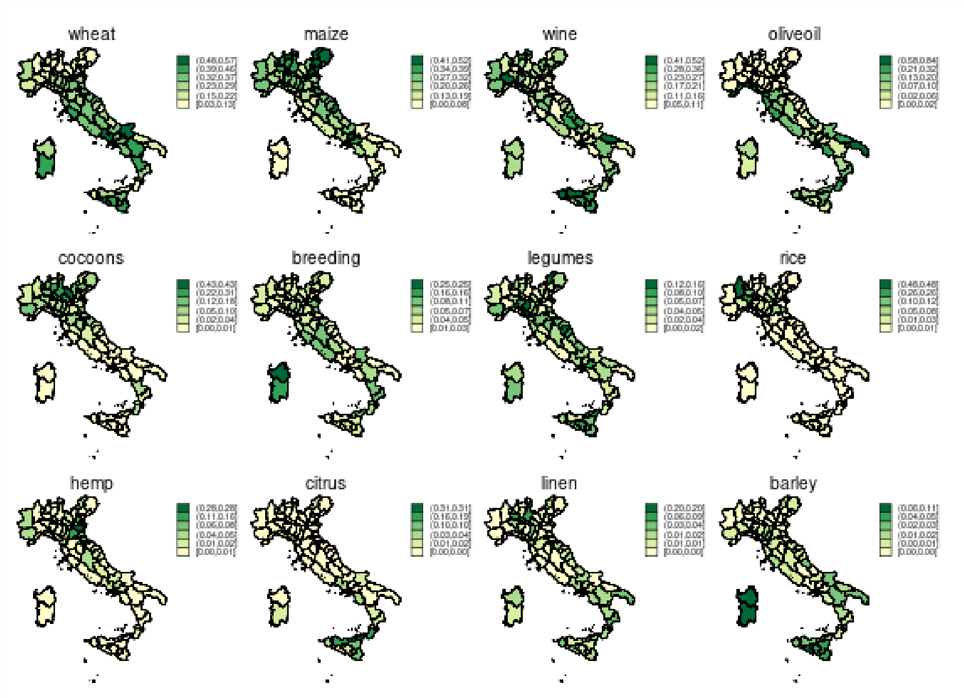
B Appendix - Provincial GDP growth and productive specialization

Figure B1: Employment growth.



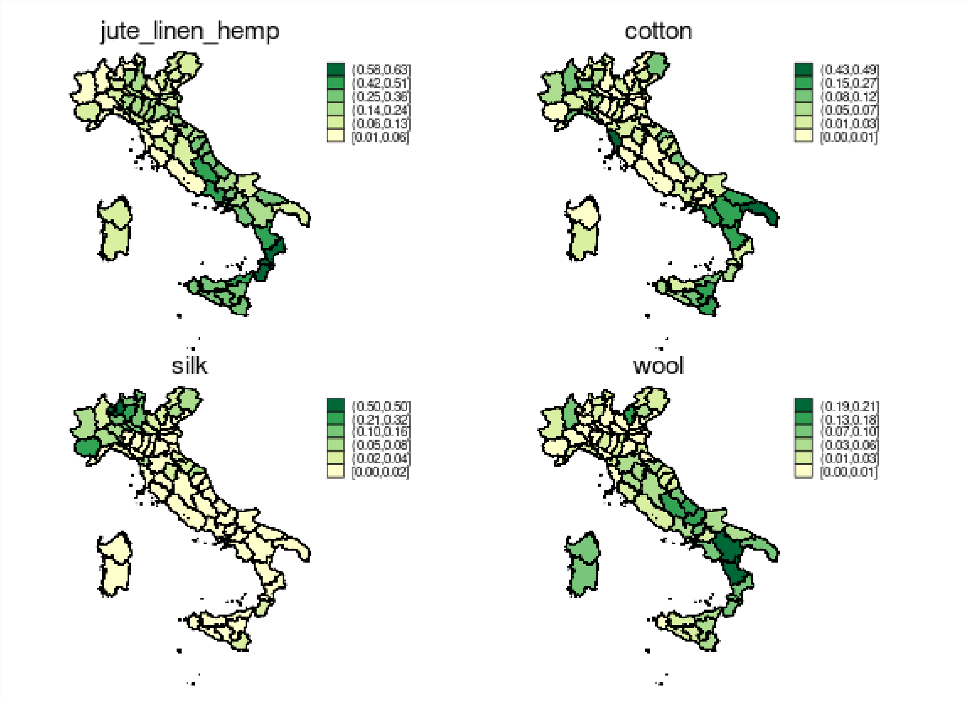
Source: Our calculations.

Figure B2: Sectoral specialization - Cont.



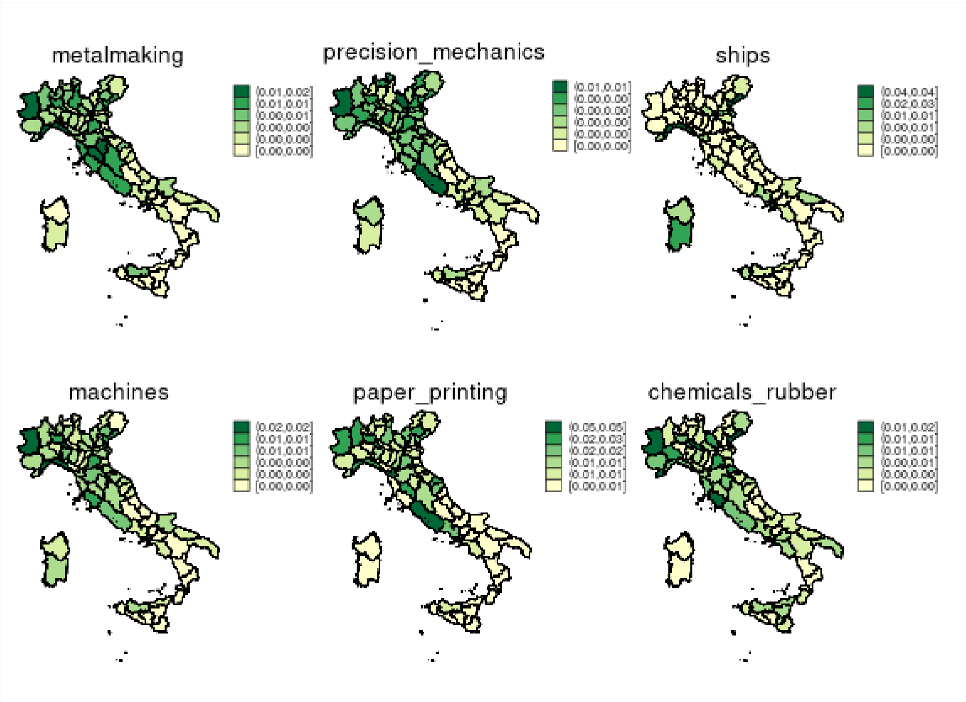
Source: Our calculations.

Figure B3: Sectoral specialization - Cont.



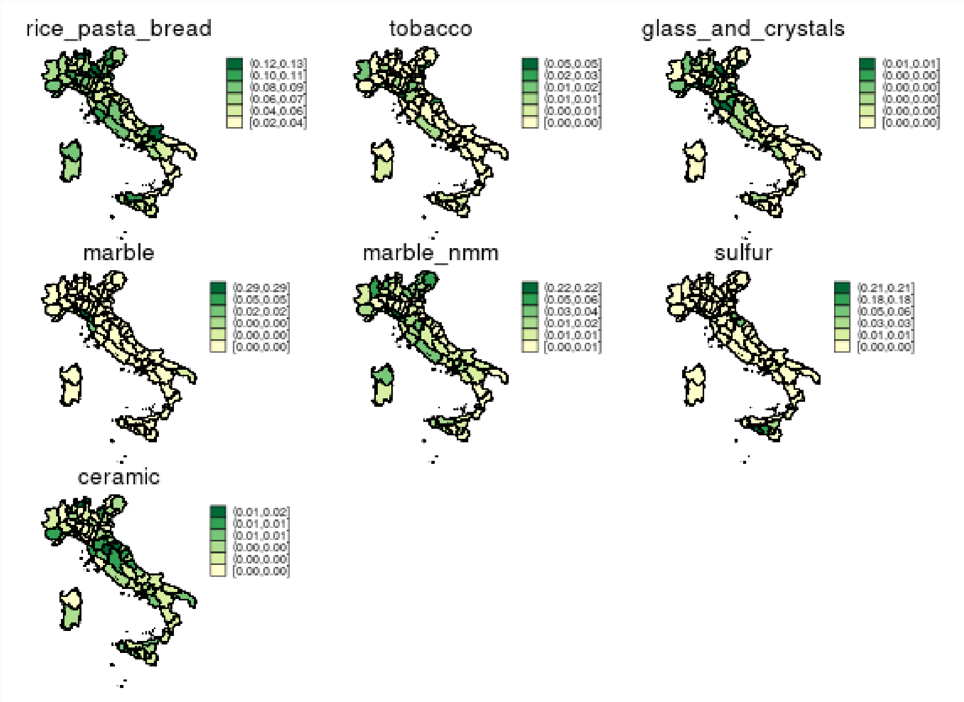
Source: Our calculations.

Figure B4: Sectoral specialization - Cont.



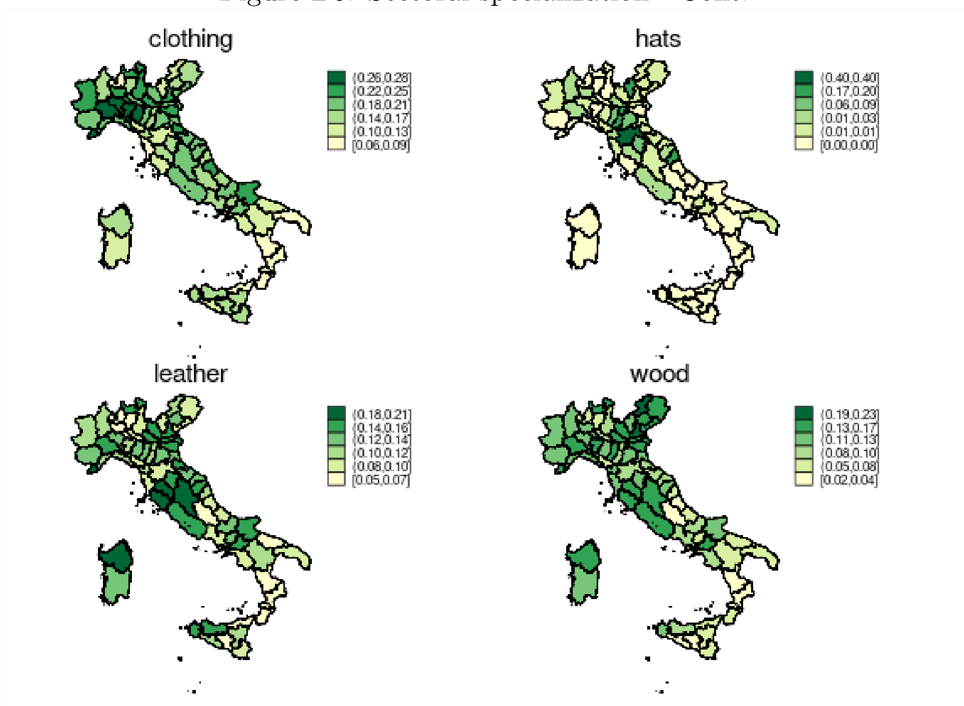
Source: Our calculations.

Figure B5: Sectoral specialization - Cont.



Source: Our calculations.

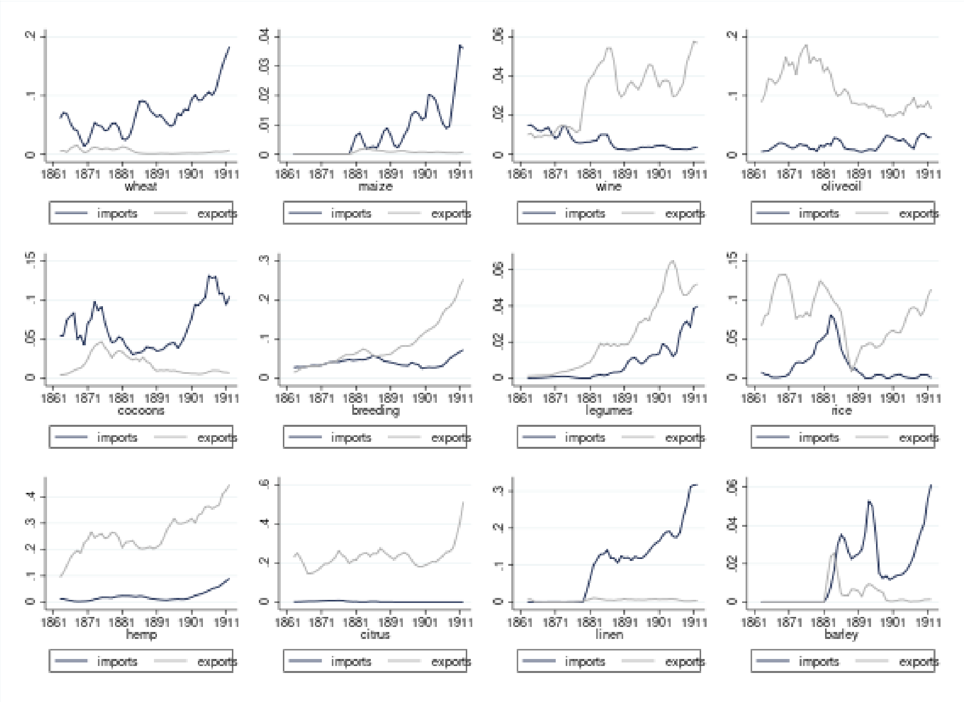
Figure B6: Sectoral specialization - Cont.



Source: Our calculations.

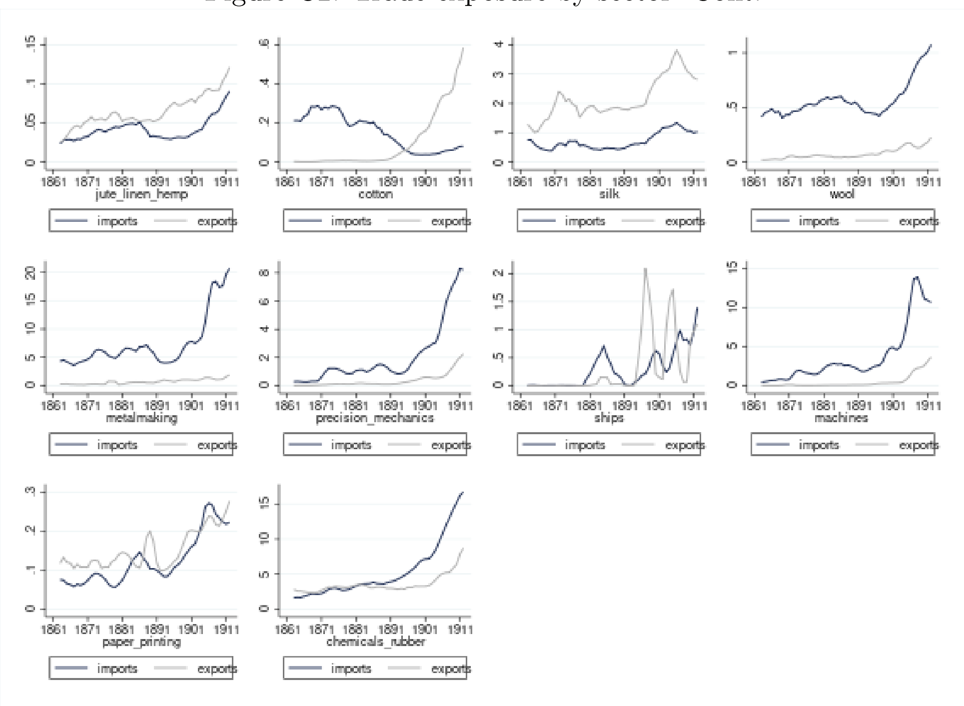
C Appendix - Trade exposure dynamics

Figure C1: Trade exposure by sector.



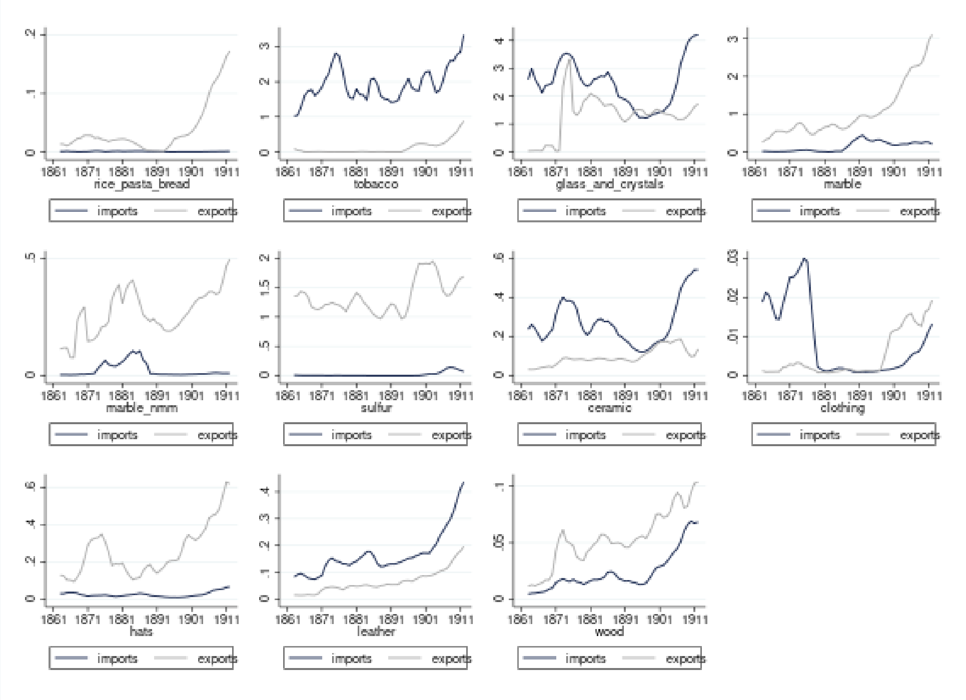
Source: Our calculations.

Figure C2: Trade exposure by sector- Cont.



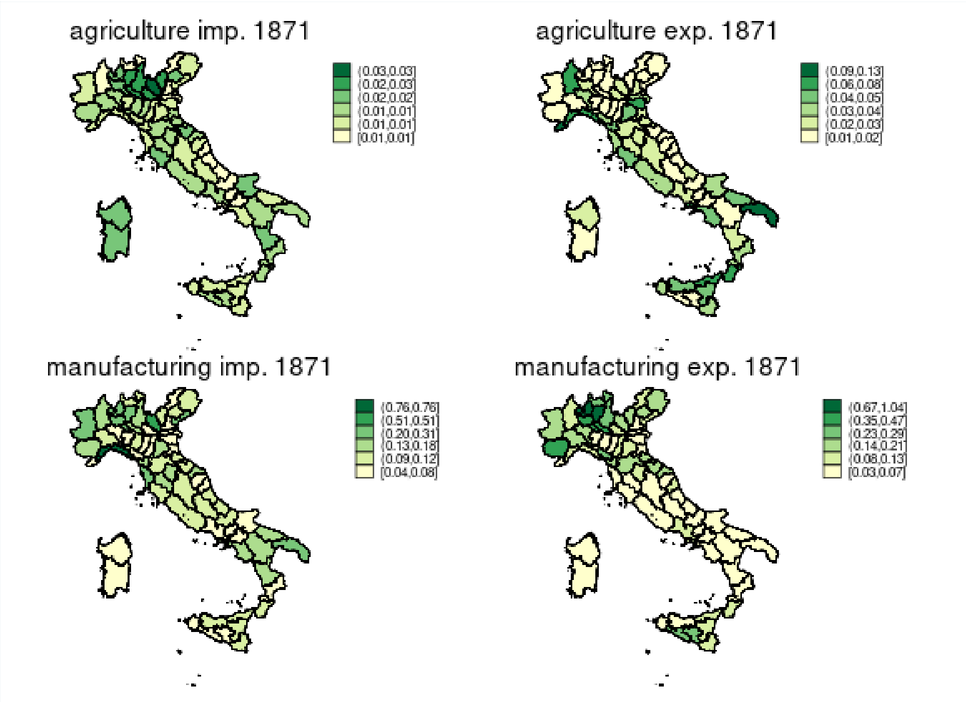
Source: Our calculations.

Figure C3: Trade exposure by sector- Cont.



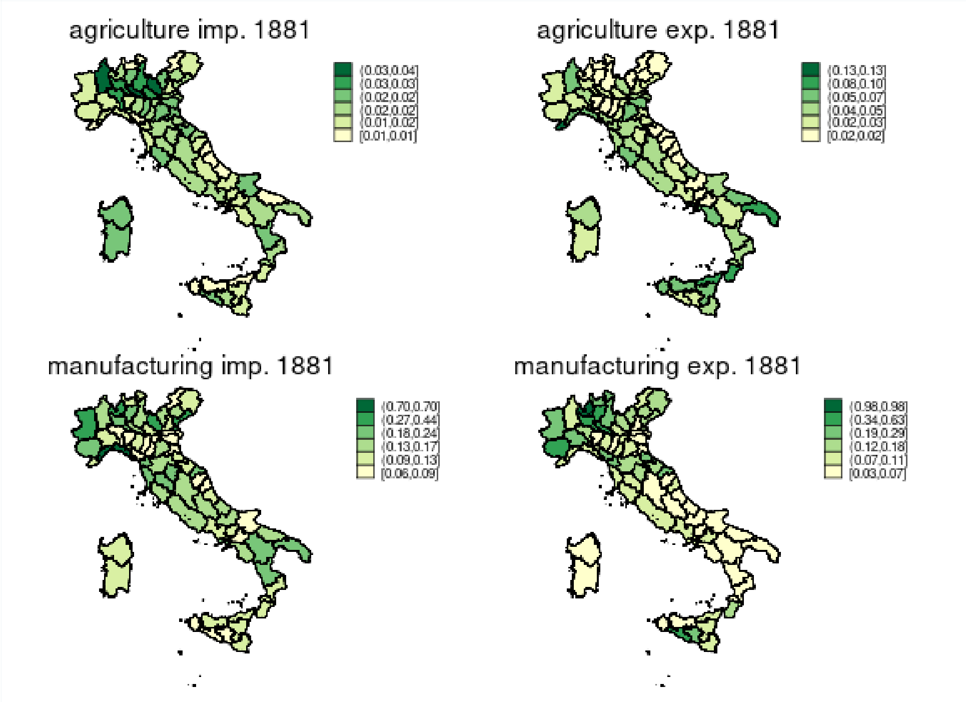
Source: Our calculations.

Figure C4: Provincial trade exposure.



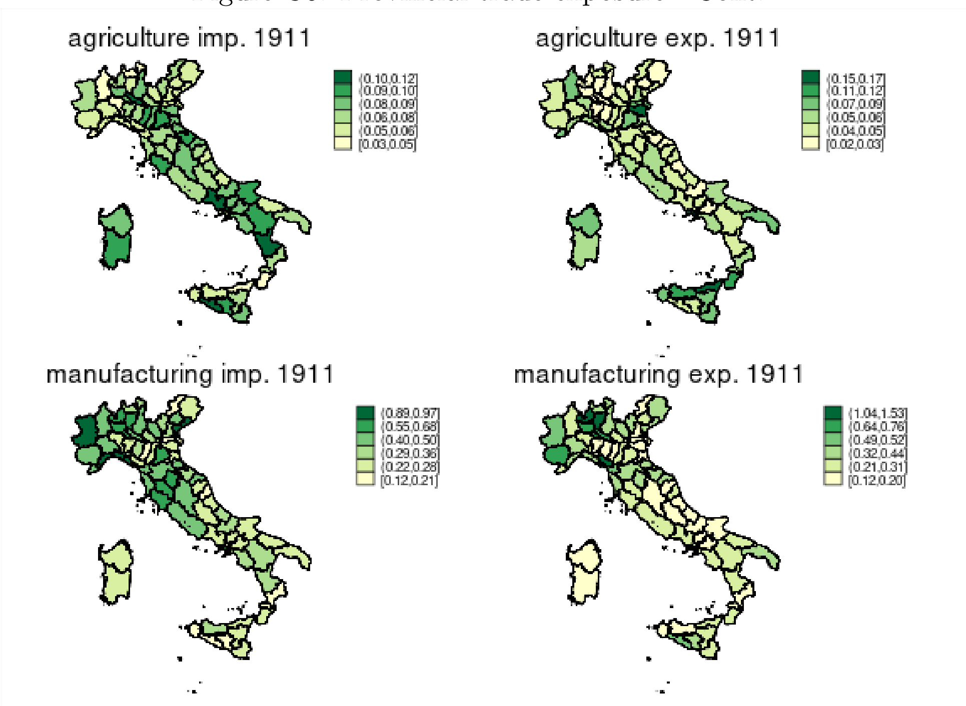
Source: Our calculations.

Figure C5: Provincial trade exposure - Cont.



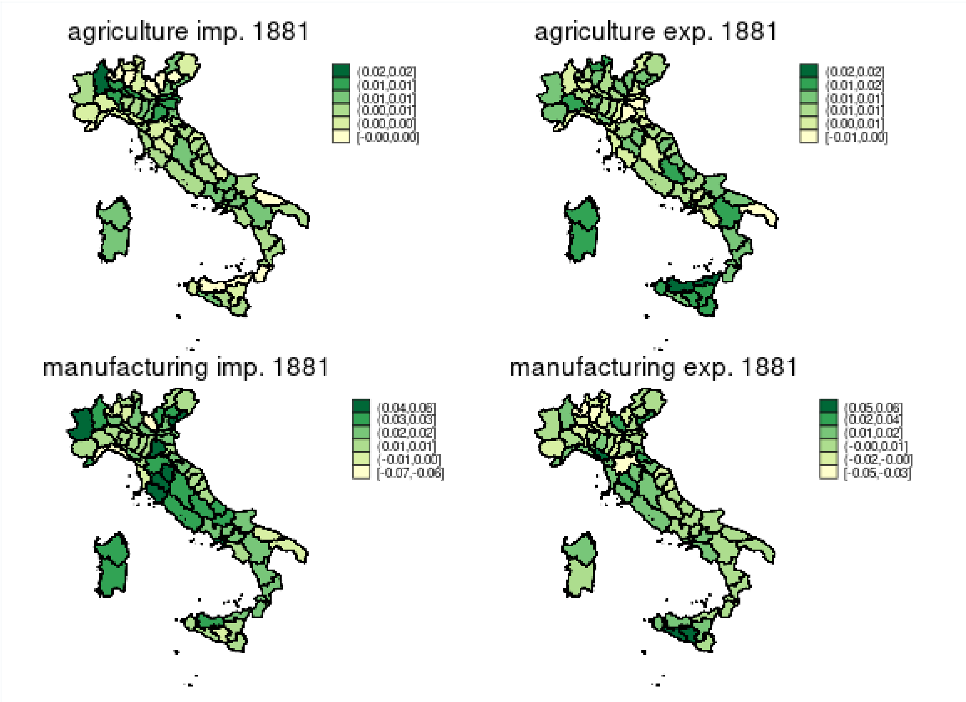
Source: Our calculations.

Figure C6: Provincial trade exposure - Cont.



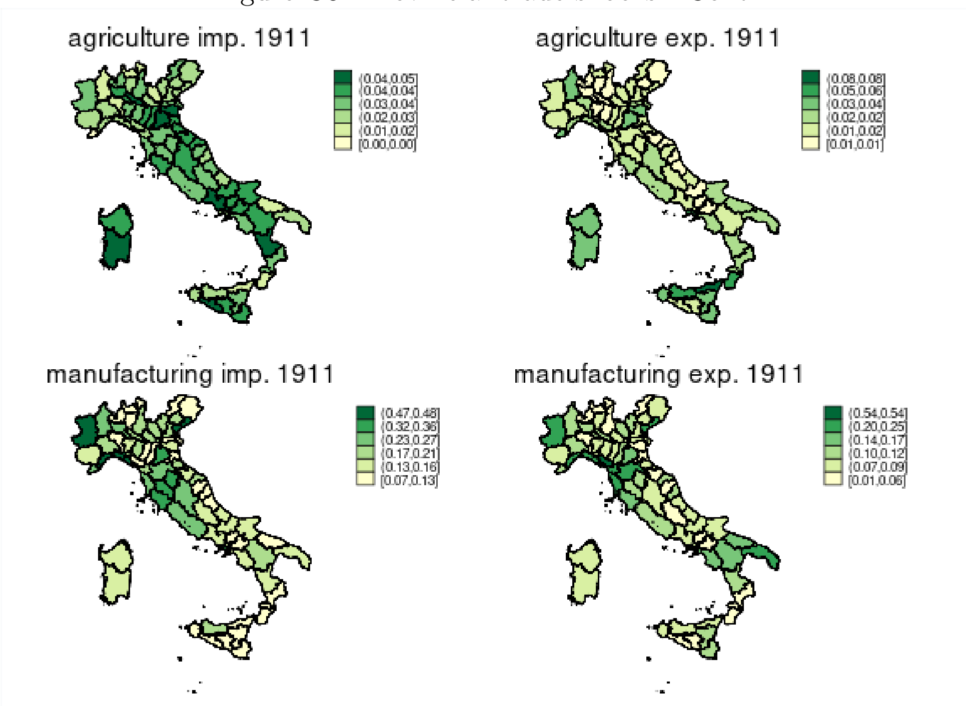
Source: Our calculations.

Figure C7: Provincial trade shocks - Cont.



Source: Our calculations.

Figure C8: Provincial trade shocks - Cont.



Source: Our calculations.

References

ACEMOGLU, D., D. AUTOR, D. DORN, G. H. HANSON, AND B. PRICE (2016): "Import competition and the great US employment sag of the 2000s," *Journal of Labor Economics*, 34, 141–198.

A'HEARN, B. AND A. J. VENABLES (2013): "Internal Geography and External Trade: Regional Disparities in Italy, 1861-2011," *Bank of Italy Economic History Working Papers*.

ANDERSON, J. E. AND E. VAN WINCOOP (2003): "Gravity with Gravitas: A Solution to the Border Puzzle," *American Economic Review*, 93, 170–192.

ANGELINI, F. (1936): *Il lavoro nell'agricoltura italiana*, Confederazione Fascista dei Lavoratori dell'Agricoltura.

AUTOR, D. H., D. DORN, AND G. H. HANSON (2013): "The China syndrome: Local labor market effects of import competition in the United States," *American Economic Review*, 13, 2121–68.

BAFFIGI, A. (2011): "Italian National Accounts, 1861-2011," *Bank of Italy Economic History Working Papers*, 18.

BALSVIK, R., S. JENSEN, AND K. G. SALVANES (2015): "Made in China, sold in Norway: Local labor market effects of an import shock," *Journal of Public Economics*, 127, 137–144.

BARBIELLINI AMIDEI, F., J. CANTWELL, AND A. SPADAVECCHIA (2013): "378 Innovation and Foreign Technology," in *The Oxford Handbook of the Italian Economy Since Unification*, Oxford University Press.

BERNARD, A., J. JENSEN, AND P. SCHOTT (2006): "Survival of the best fit: Exposure to low-wage countries and the (uneven) growth of U.S. manufacturing plants," *Journal of International Economics*, 68, 219–237.

BOLT, J. AND J. L. VAN ZANDEN (2014): "The Maddison Project: collaborative research on historical national accounts," *The Economic History Review*, 67, 627–651.

BRANSTETTER, L. G., B. K. KOVAK, J. MAURO, AND A. VENANCIO (2018): "No Pain, No Gain: The China Shock and Portuguese Manufacturing," *Meeting paper, ISEG and ADVANCE, CSG Universidade de Lisboa.*

Bräuer, R., W.-F. Hungerland, and F. Kersting (2021): "Trade shocks, labour markets and elections in the first globalisation," *IWH CompNet Discussion Papers Halle Institute for Economic Research (IWH).*

Briganti, G. (1917): *Agrumi: produzione, commercio, regime doganale*, Tipografia Nazionale Bertero.

Cabral, S., P. S. Martins, J. P. dos Santos, and M. Tavares (2018): "Collateral Damage? Labour Market Effects of Competing with China - at Home and Abroad," *Banco de Portugal, Economics and Research Department.*

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

CGE (1927): *Annuario statistico della emigrazione dal 1876 al 1925*, Commissariato Generale dell'Emigrazione, Rome.

Ciccarelli, C. and S. Fenoaltea (2010): *La produzione industriale delle regioni d'Italia, 1861-1913: una ricostruzione quantitativa.*, Banca d'Italia, Roma.

——— (2014): *La produzione industriale delle regioni d'Italia, 1861-1913: una ricostruzione quantitativa. 2. Le industrie estrattivo-manifatturiere*, Banca d'Italia, Roma.

Ciccarelli, C., S. Fenoaltea, and T. Proietti (2010): "The effects of unification: Markets, policy, and cyclical convergence in Italy, 1861-1913," *Cliometrica*, 4, 269–292.

Ciccarelli, C. and A. Missiaia (2013): "The industrial labor force of Italy's provinces: estimates from the population censuses, 1871–1911," *Rivista di Storia Economica*, 2, 141–192.

Daumal, M. (2013): "The Impact of Trade Openness on Regional Inequality: The Cases of India and Brazil," *The International Trade Journal*, 27, 243–280.

Dauth, W., S. Findeisen, and J. Suedekum (2014): "The rise of the east and the far east: German labor markets and trade integration," *Journal of the European Economic Association*, 12, 1643–1675.

Dijkstra, L., H. Poelman, and A. Rodríguez-Pose (2018): "The Geography of EU Discontent," *Working Papers Directorate-General for Regional and Urban Policy.*

Donoso, V., V. Martín, and A. Minondo (2015): "Do Differences in the Exposure to Chinese Imports Lead to Differences in Local Labour Market Outcomes? An Analysis for Spanish Provinces," *Regional Studies*, 49, 1746–1764.

Ezcurra, R. and A. Rodríguez-Pose (2013): "Does Economic Globalization affect Regional Inequality? A Cross-country Analysis," *World Development*, 52, 92–103.

Federico, G. (1994): *Il filo d'oro: Industria mondiale della seta dalla restaurazione alla grande crisi*, Marsilio.

——— (2006): "Protection and Italian economic development: Much ado about nothing," in *Classical Trade Protectionism 1815-1914*, ed. by J.-P. Dormois and P. Lains, Routledge.

Federico, G., S. Natoli, G. Tattara, and M. Vasta (2011): *Il commercio estero italiano: 1862-1950*, Laterza.

Federico, G. and K. O'Rourke (2000): "Much Ado About Nothing?" in *The Mediterranean Response to Globalisation before 1950*, ed. by S. Pamuk and J. Williamson, Routledge.

Federico, G. and M. Vasta (2010): "Was industrialization an escape from the commodity lottery? Evidence from Italy, 1861-1939," *Explorations in Economic History*, 47, 228–243.

Federico, G. and N. Wolf (2013): "Comparative Advantages in Italy: A Long-Run Perspective," *Bank of Italy Economic History Working Papers*.

Feenstra, R. C., H. Ma, and Y. Xu (2019): "US exports and employment," *Journal of International Economics*, 120, 46–58.

Felice, E. (2015): *Ascesa e Declino*, Il Mulino.

——— (2018): "Falling Behind in Globalization: Southern Italy in the Liberal Age," *Rivista di storia economica*, XXXIV, 257–292.

——— (2019): "The roots of a dual equilibrium: GDP, productivity, and structural change in the Italian regions in the long run (1871-2011)," *European Review of Economic History*, 23, 499–528.

Fenoaltea, S. (2001): *La crescita industriale delle regioni d'Italia dall'Unità alla Grande Guerra: una prima stima per gli anni censuari*, Quaderni dell'Ufficio Ricerche Storiche, Bank of Italy.

——— (2003): "Peeking backward: Regional aspects of industrial growth in post-unification Italy," *Journal of Economic History*, 63, 1059–1102.

——— (2011): *The reinterpretation of Italian economic history: From unification to the great war*, Cambridge University Press.

Fischer, A. M. and P. Sauré (2018): "Identifying Chinese Supply Shocks: Effects of Trade on Labor Markets," *CEPR Discussion Papers*, 13122.

Giordano, C. and F. Zollino (2017): "Macroeconomic Estimates of Italy's Mark-Ups in the Long-Run, 1861-2012," *Bank of Italy Economic History Working Papers*, 39.

Gomellini, M. (2020): "Breve storia delle barriere agli scambi in Italia," *Bank of Italy Economic History Working Papers*, 46.

Gomellini, M. and C. O'Grada (2011): "Outward and Inward Migrations in Italy: A Historical Perspective," *Bank of Italy Economic History Working Papers*, 08.

Gomellini, M. and G. Toniolo (2017): "The Industrialization of Italy, 1861-1971," in *The Spread of Modern Industry in the Periphery since 1871*, ed. by K. O'Rourke and J. Williamson, Oxford University Press.

Gray, R., G. Narciso, and G. Tortorici (2019): "Globalization, agricultural markets and mass migration: Italy, 1881-1912," *Explorations in Economic History*, 74, 101276.

Head, K. and T. Mayer (2011): "Gravity, market potential and economic development," *Journal of Economic Geography*, 11, 281–294.

Iammarino, S., A. Rodríguez-Pose, and M. Storper (2017): "Why Regional Development matters for Europe's Economic Future," *Regional and Urban Policy Working Papers (European Commission)*, 07.

Incerpi, A. (2019): "Balancing the Current Account: Remittances and Tourism in Italy, 1861-1914," *Rivista di storia economica*, 3, 269–294.

Irwin, D. A. (1994): "The Political Economy of Free Trade: Voting in the British General Election of 1906," *The Journal of Law and Economics*, 27.

ISTAT (1886): *Annuario Statistico Italiano*, Istituto Nazionale di Statistica, Rome.

James, H. and K. H. O'Rourke (2013): *The Oxford Handbook of the Italian Economy Since Unification*, Oxford University Press.

Khandelwal, A. (2010): "The long and short (of) quality ladders," *Review of Economic Studies*.

Klug, A. (2001): "Why Chamberlain failed and Bismarck succeeded: The political economy of tariffs in British and German elections," *European Review of Economic History*.

Krugman, P. (1991): *Geography and Trade*, MIT Press, Cambridge (MA).

Lehmann, S. and O. Volckart (2011): "The political economy of agricultural protection: Sweden 1887," *European Review of Economic History.*

Lehmann, S. H. (2010): "The german elections in the 1870s: Why germany turned from liberalism to protectionism," *Journal of Economic History*, 70, 146–178.

MAIC (1881): *Censimento della Popolazione del Regno d'Italia*, Ministero di agricoltura, industria e commercio, Rome.

——— (1884): *Bollettino di Notizie Agrarie 4, 38*, Ministero di agricoltura, industria e commercio, Rome.

——— (1886): *Italian Statistical Yearbook*, Ministero di agricoltura, industria e commercio, Rome.

——— (1914): *Primo censimento degli opifici e delle imprese industriali*, Ministero di agricoltura, industria e commercio, Rome.

Malgouyres, C. (2017): "the Impact of Chinese Import Competition on the Local Structure of Employment and Wages: Evidence From France," *Journal of Regional Science*, 57, 411–441.

Milanovic, B. (2016): *Global Inequality. A New Approach for the Age of Globalization*, Harvard University Press.

Missiaia, A. (2016): "Where do we go from here? Market access and regional development in Italy (1871-1911)," *European Review of Economic History*, 20.

——— (2019): "Market versus endowment: explaining early industrial location in Italy (1871-1911)," *Cliometrica*, 13, 127–161.

Mussa, M. (1982): "Imperfect factor mobility and the distribution of income," *Journal of International Economics*, 12, 125–141.

Niccoli, V. (1898): *Economia rurale, estimo e computisteria agraria*, Unione Tipografico Editrice Torinese.

O'Rourke, K. H. (1997): "The European grain invasion, 1870-1913," *Journal of Economic History*, 57, 775–801.

——— (2019): "Economic History and Contemporary Challenges to Globalization," *Journal of Economic History*, 79, 356–382.

O'Rourke, K. H. and J. G. Williamson (1999): *Globalization and History : The Evolution of a Nineteenth-Century Atlantic Economy*, The MIT Press.

Piketty, T. (2013): *Capital in the twenty-first century*, Harvard University Press.

Prebisch, R. (1959): "Commercial Policy in the Underdeveloped Countries," *The American Economic Review*, 49, 251–273.

Revenga, A. L. (1992): "Exporting Jobs?: The Impact of Import Competition on Employment and Wages in U. S. Manufacturing," *The Quarterly Journal of Economics*, 107, 255–284.

Rivas, M. (2007): "The Effects of Trade Openness on Regional Inequality," *The Annals of Regional Science*, 41, 545–561.

Rodríguez-Pose, A. (2018): "The revenge of the places that don't matter (and what to do about it)," *Cambridge Journal of Regions, Economy and Society*, 11, 189–209.

Rosés, J. and N. Wolf (2018): *The Economic Development of Europe's Regions - A Quantitative History Since 1900*, Routledge Explorations in Economic History.

SVIMEZ (2011): *150 anni di statistiche italiane: Nord e Sud. 1861-2011*, Il Mulino, Bologna.

Tena-Junguito, A. and G. Federico (1998): "Was Italy a protectionist country?" *European Review of Economic History*, 2, 73–97.

Timini, J. (2018): "The Margins of Trade: Market entry and Sector Spillovers, The Case of Italy (1862-1913)," *Working papers Banco de España.*

Vitali, O. (1970): *Aspetti dello sviluppo economico italiano alla luce della ricostruzione della popolazione attiva*, Failli, Roma.

Williamson, J. (1965): "Regional Inequality and the Process of National Development : A Description of the Patterns," *Economic Development and Cultural Change*, 13, 1–84.

——— (1996): "Globalization, Convergence, and History," *The Journal of Economic History*, 56, 277–306.

——— (2005): *Wider Perspectives on Global Development*, Palgrave Macmillan.

Zamagni, V. (1978): *Industrializzazione e squilibri regionali in Italia. Bilancio dell'età giolittiana.*, Il Mulino.