

Argentine Trade Policies in the XX Century: 60 Years of Solitude*

Irene Brambilla[†]
Universidad de La Plata
and NBER

Sebastian Galiani[‡]
Washington University
in St. Louis

Guido Porto[§]
Universidad Nacional
de La Plata

August 2010

Abstract

At the turn of the last century, the Argentine economy was on a path to prosperity that never fully developed. International trade and trade policies are often identified as a major culprit. In this paper, we review the history of Argentine trade policy to uncover its exceptional features and to explore its contribution to the Argentine debacle. Our analysis tells a story of bad trade policies, rooted in distributional conflict and shaped by changes in constraints, that favored industry over agriculture in a country with a fundamental comparative advantage in agriculture. While the anti-export bias impeded productivity growth in agriculture, the import substitution strategy was not successful in promoting an efficient industrialization. In the end, Argentine growth never took-off.

JEL CODES: F13, F14

Key Words: tariffs, export taxes to agriculture, La Rural Argentina

*We thank Rafael Di Tella and Edward Glaeser for encouraging us to write this chapter. We appreciate the superb work done by Natalia Porto in the coordination of all the data collection effort. Nicolas Botan, Laura Jaitman and Ivan Torre provided excellent research assistance. Comments from Alberto Porto and seminar participants at the “Argentine Exceptionalism” conference at Harvard University are greatly appreciated.

[†]Universidad Nacional de La Plata, Calle 6 e 47 y 48, Oficina 532, La Plata 1900, Argentina; email: irene.brambilla@depeco.edu.ar

[‡]Washington University in St. Louis.

[§]Universidad Nacional de La Plata, Calle 6 e 47 y 48, Oficina 521, La Plata 1900, Argentina; email: guido.porto@depeco.econo.unlp.edu.ar

1 Introduction

At the turn of the last century, the Argentine economy was on a promising path to prosperity, a prosperity which, in the end, never fully materialized. Argentina failed in many dimensions and various concurrent factors—addressed in different chapters of this book—help explain this debacle. Often, directly or indirectly, a major culprit is international trade.¹ This is the focus of our paper. We have two broad objectives: to uncover the exceptional features of the history of Argentine trade policy; and to assess the contribution of these exceptional features to the economic performance of Argentina.

In our analysis, we follow a descriptive approach based on two major sources of data: a compilation of quantitative and qualitative accounts from 1890 to 1966 taken from the literature on Argentine history, and a comprehensive (i.e., disaggregated) trade policy dataset (on imports and exports) from 1966 to 2006 that we put together for this project. These data are used to document the high degree of anti-export bias of Argentine trade policy. We emphasize two manifestations of such bias: the burden imposed by economic policies on the agricultural export sector; and the benefits granted to manufacturing sectors that typically competed against imports from the rest of the world—the model of import substitution.²

To understand the Argentine anti-export bias and the import-substitution policy, we provide an account of two major factors that help explain both the cross-section structure of protection as well as the overall trends in this structure of protection: the distributional conflict and constraints, and how these shape the Argentine policy-making process. Broad differences in sectoral protection (industry versus agriculture or imports versus exports) are the result of distributional conflict between landowners, industrialists, and workers. The finer differences (at more disaggregated level of the import nomenclature, for instance) are also a consequence of distributional conflict (within the manufacturing sectors, for instance, or between unskilled and skilled labor) as well as of political economy considerations (lobbies or unions). The trends, in turn, can be understood with changes in the way different governments weighed the distributional conflict and with changes in the constraints faced by

¹The chapter by Taylor in this volume shows that international trade can account for around 25 percent of the income gap between Argentina and the developed world.

²Due to the Lerner symmetry theorem, in fact, these are manifestations of the same phenomenon.

those governments. The Great Depression and World War I and II, international commodity prices, international institutions (like the World Trade Organization), exchange rates, and fiscal budget considerations, affect the feasibility of the policies available to the government and thus shape trade policy. Our account is thus based on the interplay of endogenous domestic decisions and exogenous shocks, with roots in the inherent Argentine distributional conflict, that hindered the long-run economic growth of the country. These ideas provide the stylized facts about trade policy that motivate the modeling framework of the next chapter in the volume (by Sebastian Galiani and Paulo Somaini).

The resulting anti-export bias and import substitution model had negative consequences for growth and economic performance. We document this by first looking at the evolution of agricultural productivity in the country (compared to the U.S.), and, second, by assessing the evolution of productivity in the Argentine industrial sector vis-à-vis other countries. In the end, we show that the anti-agro bias impeded growth in agricultural productivity and the import substitution model failed at boosting productivity growth in industry. These are major factors that help explain why Argentina was unable to grow and achieve its once-tangible prosperity.

The remainder of the paper is organized as follows. In section 2, we document historic aggregate trade flows and describe the pattern of Argentine trade. In Section 3, we characterize the structure and evolution of import tariffs from 1870 to 2006. In section 4, we document the Argentine anti-export policies by providing an account of export taxes from 1966 to 2006. In section 5, we assess some of the consequences of bad trade policies. Section 6 concludes.

2 Trade Flows, Trade Patterns, and Trade Policy

In this section, we present an overview of trade flows, trade patterns, and trade policy in Argentina. Argentina was initially an open economy, then it closed to trade, and finally opened up again in recent years. The trends in openness (the ratio of exports plus imports to GDP) from the 1900s to 2006 can be seen in Figure 1. During the first globalization era,

Argentina showed high openness ratios, which ranged from 30 to 40 percent for a period of almost 30 years. In contrast, trade openness significantly declined during the 1930s and 1940s, then slightly recovered at the end of the 1940s, and continued to decline throughout the 1950s and 1960s. From the 1970s to the early 2000s, the ratio of exports and imports to GDP remained relatively stable (with fluctuations) and, finally, strongly increased in recent years, especially after the 2001 crisis.

Argentine comparative advantage lies primarily on agricultural goods, broadly defined so as to include both primary products as well as agro-manufactures. In fact, Argentina has historically been considered as one of the “grain yards” of the world. To a large extent, this is because the country is relatively abundant in land. Irwin (2002) argues that, in a sample of twenty five developed and developing countries, Argentina had the highest ratio of productive land to population in 1890, followed by New Zealand, Australia, Canada and the United States. Table 1, based on data compiled by Lai (1998), confirms this claim. Between 1875 and 1889, Argentina had the highest ratio of productive land per capita, 216.44 acres per capita. By the mid-1940s, Argentina remained largely abundant in land, but showed much lower ratios compared to, for instance, Canada or Australia. The country also ranked high in the relative endowment of livestock. Based on data from the 1895 Argentine Census, we report in Table 2 that, compared to eight other countries including the U.S. and Australia, Argentina ranked first in horses, second in cattle and third in sheep.

The relative un-abundance of skilled labor and capital (compared to the developed world) also contributed to a specialization in agriculture, especially in the early years. To assess the stock of human capital, we look at literacy rates. Data from Sokoloff and Engerman (2000) are reported in Table 3. In 1900, 52 percent of the Argentine population was literate. The literacy rate was much higher than in other countries in the region, such as Brazil (25.6 percent), Chile (43 percent), Costa Rica (33 percent) and Mexico (22.2 percent). However, it was lower than in developed countries, namely the U.S. (86.7 percent) and Canada (80 percent). In fact, the ratio of skilled to unskilled labor (computed as the rate of the literacy rate over its complement, the illiteracy rate) was actually 5.5 times higher higher in the U.S. than in Argentina (and it was 3 times higher in Canada). Clearly, while Argentina appeared

as relatively well-endowed in skills in the early 1900 with respect to developing countries, skilled labor was relatively un-abundant compared to developed countries.

To look at capital abundance, we build approximations to the capital to land ratio by using the calculations of Argentine's wealth reported in the National Census of 1914. For Argentina, we find that the ratio of industrial capital relative to the value of the agricultural resources (livestock plus land) was 0.10. This indicator was 0.39 for France (1909), 0.63 for the United States (1904) and 0.80 for Sweden (1908). This suggests a relatively scarcity of capital in the country.³

The same pattern of factor endowments is seen in more recent year. We use data on the stock of skilled and unskilled labor, capital and land compiled by Cusolito and Lederman (2009). Relative endowments in 2000 for a sample of the most relevant countries for our purposes are listed in Table 4. Argentina is currently relatively abundant in land: the country ranks fifth in the land/labor ratio. The capital/labor ratio is relatively low (Argentina ranks 47th), while the skilled to unskilled ratio is also relatively low (Argentina ranks 41st). These observations reveal that the factor abundance of the country resides mostly in land and unskilled labor and that the sources of comparative advantage of Argentina, measured by its factor endowments, have remained unchanged since the late 1800s.

This structure of factor endowments implies a historic specialization in goods mostly intensive in land and unskilled labor which are, to a large extent, agricultural goods. This can be seen by looking at the patterns of trade. For the early years, we rely on Vazquez Presedo (1971). In the 1900s, agricultural primary products accounted for most of Argentine's exports. In fact, at the end of the 18th century and at the beginning of the 19th century, Argentina was the third exporter of wheat in the world (after the United States and Russia). Furthermore, the Argentine share of wheat exports among the eight major exporters doubled from 9 to 18 percent during the 1891-1910 period. In addition, the combined exports

³These figures are consistent with the industrialization index reported by Bairoch (1982). Bairoch's index reveals, first, a relatively low level of industrialization in the developing world (especially Latin America), and, second, an increasing gap relative to developed countries. Gomez-Galvarriato and Williamson (2008) build a different industrialization index for 1910, which measures industrial performance using as a proxy net exports of cotton textile manufactures per capita (the index includes yarn, thread and cloth of all sorts). According to this index, Argentina (net imports of $-5.47\$$ per capita) and Australia ($-8.7\$$ per capita) recorded the highest dependence on imported cotton textile manufactures.

of Agriculture (primary products) and Processed Food (agro-manufactures) accounted for more than 90 percent of total Argentine exports in the early 1900s.

Using more recent customs data, Figure 2 plots the trends in the share of exports of Agriculture (primary products), Processed Food (agro-manufactures) and Other Products from 1970 to 2006. Clearly, the share of agricultural exports declined in time. There were peaks of over 60 percent in 1971 and 1983 but the shares plummeted in the 1980s and 1990s, reaching a lowest value of less than 30 percent in 2006. The share of Processed Food was relatively stable throughout the period, with a slight increase starting in the mid-1980s. In consequence, the trend in the share of exports of Other Products is almost a mirror image of the trends in Agriculture, with a clear upward trend from around 25 percent in the early 1970s to nearly 50 percent in 2006.

In Table 5, we present the average share of exports and imports from 1970 to 2006 at the 1-digit level of the Harmonized System. Looking at export shares first, we verify the downward trend in Agriculture and the slight increase in Processed Food. Furthermore, we observe that the shares of Mineral Products, Chemical Products, Plastics and Transport increase in time. In contrast, Textiles, Footwear, and Leather become less important. Looking at imports shares, the main categories are Chemical Products, Machinery and Transport Equipment. Clearly, Argentina exports mainly primary products and agro-manufactures, with an increasing participation in minerals and fuels, and imports instead capital goods and inputs.

The overall trends in trade openness can be explained by both external factors (such as the Great Depression, World War I and II) and internal factors, such as import tariffs, quantitative restrictions, and export taxes. The focus of our chapter is on the role of trade policies, how they distort relative prices and how they affect trade volumes and trade patterns. To investigate these issues, we explore the history of import protection in section 3 and of export taxes in section 4. As we will see, however, external and internal factors are interrelated and trade policy can sometimes be affected by changes in external conditions.

3 Tariffs (1890-2006)

In this section, we provide an account of the history of Argentine tariff policy. Our objective is to derive a list of stylized facts that constitute the salient and exceptional features of interventions to imports in Argentina. We cover most of Argentine history, from 1890 to 2006. Due to differences in the quantity and quality of trade policy data, we split the analysis in two. The first analysis covers the period 1890-1966 and is based on the abundant, but fragmented, data available in the literature. The second analysis covers the period 1966-2006 and it is instead based on a huge data collection effort on detailed export taxes and import tariffs, at a high level of disaggregation (8 digits). This effort generated a unique dataset of trade policy for thousands of product lines in Argentina for the last forty years of Argentine history.

3.1 1890 - 1966

The period from around 1810 to World War I was the first “global century:” transport costs continuously declined and commodity markets were increasingly integrated (Williamson and O’Rourke, 1999). During this period, Argentine tariffs were relatively high. Based on data from Clemens and Williamson (2002), Table 6 reports measures of average tariff rates (calculated as the ratio of total revenue from import duties and the value of total imports). The highest tariff rates can be found in Latin American countries. In Argentina, for instance, the average tariff from 1870 to 1899 was 26.1 percent (which was high, but actually lower than in Brazil, Colombia, Peru and Uruguay). Argentine tariffs remained high from 1900 to 1913 (23.4 percent) and only declined to around 18 percent, on average, in the post World War I period. Note that, during the late 1800s and early 1900s, import tariffs were one of the main sources of revenues for countries like Argentina (i.e., countries abundant in land, scarcely populated, and with limited access to capital markets). In these cases, internal taxes on expenditure and wealth were hard to collect (Irwin, 2002).⁴ This suggests a revenue-raising motive, rather than a purely protectionist motive, behind trade policy during this period.

⁴Centeno (1997) finds that the average share of customs duties in total revenues across eleven Latin American republics was 57.8 percent between 1820 and 1890.

During this first phase of globalization, despite high tariffs, Argentina enjoyed very high growth rates in comparison not only to the rest of the periphery and but also to the Core. The main source of growth was agriculture. This growth was driven by at least three major factors: an increase of the harvested area following the expansion of the Argentine border (after the “*Campaña al Desierto*—” military campaigns against the indigenous local population); the penetration of the railways (mostly financed by British capitals) that facilitated crop transportation and exports; and booming international markets for exports (Cortés Conde, 1993).

After a few dark years during World War I, Argentina boomed in the 1920s. Imports and exports rapidly expanded in a growing world that was recovering from the war. In consequence, both the agricultural and industrial sectors grew. The domestic industry benefitted not only from increased world aggregate demand and higher relative prices but also from high exchange rates and from changes in the structure of tariffs. On the one hand, import taxes were expressed in *aforos* and, in 1923, the value of the *aforos* was increased (Barbero and Rocchi, 2003). On the other hand, from 1909 to 1927 tariffs on manufactured products were increased while tariffs on raw materials were reduced, thus increasing effective protection (Díaz Alejandro, 1970).⁵

World trade doomed with The Great Depression of the 1930s. The large decline in economic activity around the world, the abandonment of the Gold Standard, and a move towards bilateralism (as opposed to multilateralism) halted trade. This had strong negative implications for Argentina. Further, the improvement of the terms of trade that boosted the growth in the periphery in the early globalization era, strongly reversed in the 1930s. According to Clemens and Williamson (2002), the decline in Latin America’s terms of trade was of nearly 40 percent. This scenario pushed many developing countries into autarky in the 1940s, 1950s and 1960s, in a context of a highly interventionist industrialization strategy which is usually known as “import substitution industrialization” (ISI).

In Argentina, the Depression of the 1930s is indeed considered as the formal beginning of

⁵As a result, General Motors and Ford established assembly plants in Argentina in 1917 and 1925, respectively. According to Garcia Heras (1983), tariffs on semi-finished cars were 20 percent lower than on finished vehicles.

the import substitution process. In Figure 3, we see that Argentina reverted to protectionism. While tariffs had been increasing since the early 1920s (due to mostly a revenue motive), there was a sharp jump in 1930 when the average import tariff increased from 16.7 percent to 28.7 percent in 1933. Furthermore, Díaz Alejandro (1970) reports that Argentina actually raised tariffs by more than the U.S. and Canada. From 1925-1929 to 1930-1934, for instance, Argentina increased tariffs by 7.5 percentage points, compared to increases of 4.7 percentage points in the U.S. and 0.6 percentage points in Canada. After the peak of the Depression, tariffs were reduced slightly, but remained high (Figure 3).

In the 1930s, Argentina started manipulating the exchange rate to provide additional protection to the local industry. In 1933, the government created a dual exchange rate system, a so-called “controlled” market and a “free” market. Traditional agricultural exports and imports from the U.K. were traded at a low exchange rate in the “controlled” market, where the difference between the sale and buy rates worked as an implicit export tax or import tariff. Imports from the U.S. were instead traded in the “free” market at a higher exchange rate. The fact that U.K. and U.S. imports were not traded in the same exchange market was not casual. Since the U.S. had become Argentina’s main import partner, the higher exchange rate in the “free” market lowered U.S. competitiveness and promoted the development of a local industry to replace U.S. imports.

In the 1940s, Argentina deepened the promotion of the local industry, a policy driven in part by necessity—another World War had blocked Argentina’s imports—and in part by conviction. Shortly before Perón’s access to power in June 1946, the government created the IAPI—The Argentine Institute for the Promotion of Exchange. This institution held the monopoly over the country’s foreign trade and originally had an evident anti-agriculture bias. The IAPI withheld around 50 percent of world agricultural export prices to finance both imports and to support newly created public companies. In the meantime, import tariffs were raised, the multiple exchange rate system was maintained and a scheme of import permits was created. In this context, many local firms that would later become very important (such as Techint—mostly steel—or FATE—tires) were born. In addition, Argentina suffered from the nationalization of railways, telephones, electricity, public transport and other utilities

and services between 1945 and 1950 (the early Peronist years).⁶

During the 1950s and 1960s, several concomitant external factors conspired against Argentine agricultural exports, thus encouraging further domestic protection. First, in the late 1940s, the restrictions faced in the international grain market as a result of the country's exclusion from the Marshall Plan hit Argentina's exports very hard. Second, while world trade recovered in the 1950s, the composition of trade shifted against Argentine comparative advantage: exports of manufactured goods grew consistently more than exports of primary products. This coincides with the emergence of intra-industry trade (mostly among Western Europe, the U.S. and Japan). Third, the agricultural protectionism that followed the end of World War II hindered Argentine exports. In Western Europe, the hindrance originated in the Common Agricultural Policy inside the European Economic Community (EEC) in 1962. In the United States, the hindrance originated in a system of subsidies and tariffs that protected its agricultural sector in the early 1950s.

Argentina turned towards inner development. In 1952, the Peronist government launched its second five-year plan with the aim of developing the heavy and basic input industry as well as the oil sector (concession to start prospecting work were given to Standard Oil in April 1955). Frondizi, the next president, deepened policies for the development of heavy industry as well as the automotive industry. And in the 1960s, President Illia mostly shared the view to support and develop the heavy industry. Nevertheless, something new appeared in the economic policy agenda: the local market solution for the industry was growingly seen as inefficient (particularly in light of the experience of the automotive industry, which had grown strongly but kept consuming a large deal of foreign currency), and the idea of an exporting industry was gaining consensus among the country's authorities.

⁶It is noteworthy that Argentine protectionism boosted while the General Agreement on Tariffs and Trade (GATT) emerged in 1947. The GATT contained two principles: a multilateral approach that was against trade discrimination (captured by the creation of the Most Favoured Nation clause) and an explicit rebuttal of quantitative restrictions in international trade. The initial Geneva Round of the GATT in 1947 achieved a reduction in import tariffs of up to 35% in the case of the United States and a lower but yet significant figure in the case of Western European countries. The following rounds of 1949 and 1951 did not achieve further reductions but prevented the erosion of previous gains that aimed at major trade liberalization, still very far away.

3.2 Import Substitution: The Evidence from 1966 to 2006

For the period 1966-2006, we were able to compile very disaggregated data on export and import tariffs. The data collection effort built on previous work done by Galiani and Porto (2010), who study the impacts of tariffs on wages. Their database contains detailed tariff data at ISIC 3-digits (International Standard Industrial Classification) from 1974 to 2001. In this paper, we expand the Galiani and Porto database in two fronts. First, our tariff data is more detailed, reaching up to 6 to 8 digits of disaggregation. Second, we extend the time coverage backwards (to 1966) and forward (to 2006). Furthermore, we add the whole series of 8-digit export taxes from 1966 to 2006 (see section 4).

The preparation of the data involved significant work. The data on tariffs come from two sources. WITS (World Integrated Trade Statistics) provides detailed data on tariffs based on the Harmonized System from 1991 to 2006. WITS data are electronically available (with paid subscription). Tariff data from 1966 to 1990 are available only on hard copies of the *Guía Práctica*, a publication of Argentine Customs detailing the tariff rates for thousands of product lines using the NADI nomenclature (Nomenclatura Arancelaria y Derechos de Importación). This information had to be manually typed and matched to the Harmonized System nomenclature.

In our account of import protection, we begin with time trends in average tariffs. In Figure 4, we report the swings in tariff reforms observed by Argentina from 1966 to 2006.⁷ Overall, the trends in average tariffs portray a general process of trade liberalization staged in various different reform episodes.

Starting in the 1930s, Argentina adopted a strategy of strong import substitution that can still be seen in our data. In 1966, the earliest year of our data, the average tariff rate was close to 200 percent. The 95th percentile reached over 300 percent, and even the 5th percentile was close to 100 percent. This aggregate level of protection is staggering and reveals how deep the process of import substitution was.

The first liberalization episode took place after 1967 and up to around 1976. Large tariff cuts were implemented and, during the early 1970s, the average tariff was slightly below

⁷These swings were characterized in Galiani and Porto (2010).

100 percent. Tariffs were still high but relatively stable during this period. Part of this liberalization is explained by a “compensated devaluation,” whereby the devaluation of the exchange rate is accompanied by reductions in tariffs to reduce the impact on the relative prices of tradable goods.

The second episode of large tariff cuts took place between 1976 and 1979, during the Military dictatorship. During these years, the average tariff rate declined steeply, reaching around 30 percent in 1980. There was also a reduction in the extreme values and in the dispersion of tariff rates.

During the 1980s, the average tariff was kept relatively constant. Interestingly, notice that, in the early 1980s, while the high extreme values (the 95th percentile) declined slightly, the low extreme values (the 5th percentile) actually increased. One shortcoming of our data is the lack of information on non-tariff barriers. In Argentina, quantitative restrictions were intensively used in the early stages of the import substitution process (1950s). However, they were eliminated in the 1960s and never used again, except in the 1980s. In consequence, the 1980s were actually a period of reversal to protection because the relatively flat trend in the average tariff came together with an increase in non-tariff barriers.

The last episode of liberalization took place with President Menem in the 1990s. These reforms came in two stages. From 1989 to 1991, the average tariff declined from 30 to 18 percent, the dispersion in tariff rates was also reduced, and all non-tariff barriers were pulled down. The second stage in the Menem reform was the adoption of Mercosur—a regional trade agreement among Argentina, Brazil, Paraguay and Uruguay—between 1994 and 1996. The intrazone tariff among members was in most cases reduced to zero. The common external tariff (extrazone) was negotiated between members and implied a further reduction in tariffs in some cases and a reversion to protection in others (as in the case of food products in Argentina, for example). In our data, we account for Mercosur by weighting the intrazone tariff by the share of imports coming from Mercosur (which underestimates the average tariff). There was a slight decline in tariffs after 1996, only fairly noticeable in the average trends. There was also a slight reversal to protection in the 2000s, after the crisis of 2001. But this reversal was short lived since tariff levels returned to previous levels

in 2003-4.

A major factor shapes Argentine trade policy: the distributional conflict. By distributional conflict, we mean the natural tension in the country between the sector with comparative advantage, Agriculture, and factor ownership. Agriculture is intensive in land, which is mostly owned by richer landowners. Industry is the domain of workers. In this scenario, free trade, *ceteris paribus*, worsens the distribution of income in Argentina and this provides a distributional root for protection and anti-export bias. There are of course many other factors that complement the distributive concern in the determination of trade policy. These factors affect the economic environment and constraints that shape the context into which trade policy is dictated. In Argentina, key factors are the level of international commodity prices, the evolution of international institutions, the exchange rates, and the fiscal resource needs of the government in office.

The story about the interplay between the distributional conflict inherent to the Argentine society and external shocks is developed in the next chapter by Galiani and Somaini. They model a three-sector economy (agriculture, manufacturing and nontradable services) that uses three factors, land, labor and capital. Factor owners (workers, landlords, capitalists) have different preferences over trade protection (i.e., tariffs or export taxes). The model identifies several distinctive dynamic patterns that are broadly consistent with the evolution of the Argentine economy and the trade policy described in our chapter. The authors show that, for very high terms of trade, the economy can specialize in agriculture and services (thus importing manufactures) in a political equilibrium that supports free trade policy. This story is consistent with our account of the period 1930-1943 in Argentina. However, as the terms of trade worsen, the economy begins a gradual but persistent industrialization process that carries support for protectionism until it becomes a viable political equilibrium (consistent with the post 1943 period in Argentina). In the model, however, protection has reinforcing effects because the additional flow of capital and labor to the secondary sector raises even more demands for protectionism. This describes an import substitution strategy that might drive the economy towards near autarky. In Argentina, this is consistent with the the situation of the economy towards the early 1970s.

The emergence and the strengthening of the IS model in Argentina strongly correlates with the overall level of protection after the 1930s and up to the late 1960s and 1970s. The debacle of the import substitution model can be traced back to changes in the economic conditions and environment. There are at least three factors that made the model become increasingly unsustainable. First, there was an increasing pressure to eliminate inefficient policies that impeded GDP growth. As highlighted in Galiani and Somaini in this volume, the abrupt change in the trends in tariff protection after the oil crisis points to dynamic factors such as the increasing cost of technology adoption in the manufacturing sector as well as the fiscal constraints to finance subsidies to the manufacturing sector. Second, population growth, unions and unbalanced consumption growth towards services were over time debilitating the protectionist coalition. Third, a major factor that explains the trends in tariff reforms in Argentina in recent years was the increasing need to participate in world fora and to comply with the Uruguay Round and the WTO accession.⁸

We now turn to the cross-section variation in tariffs and look at the evolution of tariffs for different groups of products (at the 2-digit level). Table 7 lists the average tariff for the four broad stages of liberalization described above. Footwear has always been the most protected sector. Textiles and Leather have also received consistently higher levels of tariff protection. The case of Food Processing is interesting because the sector ranked third in 1966-1970 but subsequently lost protection relative to Textiles (starting in 1971) and Stones, Machinery, Metals, Plastics, and Transport Equipment up until the 1990s. From 1991 to 2005, however, the sector recovered protection and it ranked fourth.

There has also been some variation in the ranking of low-protected industries. Minerals were the least protected sectors during the first two periods but it was replaced by Agriculture after 1977. In addition, Minerals and Chemicals were at the bottom of the distribution throughout all the stages of liberalization. An interesting case is the Wood sector which moved between the middle and top of the distribution during the first three periods but became the third least protected industry starting in 1991. There is a somewhat analogue story with Machinery, which was always in the middle of the ranking except during the 1980s

⁸Of course, this does not preclude the taxation of exports, as we show in the next section, and hence the possibility of continuing with a protectionist model.

(when it became the third most protected industry).

Figures 5 and 6 give a better sense of the relative structure of protection across time periods. We show the evolution in tariffs for each major product group (solid line) relative to Agriculture (broken line). In general terms, tariffs have been cut in all sectors, though clearly in different degrees. While the historical sectoral differences in protection levels persist today (the most protected industries in the 1960s are still the most protected in the 2000s, and likewise for the least protected), the liberalization process has caused sectoral tariffs to converge to a large extent.

Another feature revealed by Figures 5 and 6 is how agriculture was left unprotected, relative to other sectors in the economy. The sectors with significantly higher tariff levels than the agricultural sector were Textiles, Footwear, Processed Food and Leather (Figure 5). Instead, Transport, Machinery, Metals, Plastics, Minerals, Chemicals and Wood also show higher tariffs than Agriculture, but the differences are much less pronounced (Figure 6). The only exception is the Mineral sector which had less protection during certain periods (before 1976 and after 1991).

The cross-section structure of tariffs can also be explained by the distributional conflict and how it evolves in time (due to changes in the way the conflict is assessed by different governments or to changes in the trends in the constraints faced by those governments). We argue that the structure of protection in Argentina, which has favored industrial manufactures like textiles or footwear over agro-manufactures, can be accounted for by two interrelated theories, lobbies (and political economy) and unions.

The political economy argument is based on the protectionists lobby literature developed by Grossman and Helpman (1994, 2001). In this theory, industries are organized in lobbies which make contributions to the government in exchange for protection. The government, in turn, receives these contributions and maximizes social welfare. The outcome is a set of equilibrium sectoral tariff rates that balances the power of the lobbies and the efficiency losses in different industries. There is little evidence of the role of industry lobbies in Argentina. Olarreaga and Soloaga (1998) show that active lobbying can explain the exceptions to both the intrazone and the common external tariff in Mercosur. However, Olarreaga, Soloaga and

Winters (1999) show that terms of trade, as well as political economy factors, explain the formation of the common external tariff of Mercosur members.

Another powerful explanation of sectoral tariffs, especially in Argentina, is unions. This setting, explored in Galiani and Porto (2010), exploits the power of unions as a determinant of tariffs. In Galiani and Porto, unions have the power to appropriate part of the tariff rent, which is then distributed to unskilled labor. In the Argentine data, their results suggest that the trends in the structure of protection, and the impacts on the trends in the structure of wages, can be explained by combining long-run forces, as in a Heckscher-Ohlin model, with short-run departures like unions.

4 The Anti-Export Bias

Only relative prices matter, and thus the anti-export bias in trade policy can arise by protecting the import competing industry or by directly taxing the export sector. In consequence, we now explore the structure of export taxes and the most recent evolution from 1966 to 2006. Compiling data on export taxes was actually harder than compiling the data on import tariffs because WITS does not carry information on export taxes and the whole series from 1966 to 2006, only available via the *Guía Práctica*, had to be manually typed. From 1966 to 1990, Argentina utilized the NADE nomenclature (*Nomenclatura Arancelaria y Derechos de Exportación*) and, from 1991 to 2006, the Harmonized System. Concordances between these two nomenclatures had to be manually built as well.

Trends in export taxes are reported in Figure 7. The solid line shows averages across all sectors and the broken lines are the 5th and 95th percentile of the export tax rates. These are not intended to be confidence bands for the mean, but to give a sense of the extreme values applied in practice.

The first salient feature of our data is the presence of long episodes of active policies of export taxes in the recent past, an undeniable manifestation of the anti-export bias. The second salient feature is that the intensity of taxation varies and that export taxes do not follow a clear trend over time. As we will see, they depend, to a large extent, on

the Presidency in office and on its attitude towards free trade, exports and the distributive conflict.

From a relatively low base in the early 1970s, export taxes reached a peak of nearly 15 percent in the mid-1970s. During this early period, many sectors enjoyed no taxes (the 5th percentile is zero, for instance, from 1970 to 2001), but others were hit very hard with tax rate peaks of over 40 percent in the mid-1970s. These are high rates by almost any standards.

Export taxes were reduced significantly at the end of the 1970 and early 1980s, when the Military was in power. Instead, they increased with the advent of Democracy in 1983. However, while the average export tax remained positive throughout all the 1980s, both these averages and the extreme values never reached the higher levels of the mid-1970s.

A striking change occurs in the 1990s. Consistent with the liberalization period of Menem and Cavallo, export taxes were completely eliminated and the sector remained fully liberalized until the Presidency of Kirchner, when export taxes were actively utilized again. They remain in heavy use today. Moreover, it is interesting to note that while historically there have been sectors with zero taxes (see 5th percentile), after 2002 all sectors faced positive export taxes.

The trends in averages clearly mask lots of details. Export taxes in Argentina tend to be concentrated in a few sectors at very high levels. The agricultural sector has been traditionally the most taxed sector throughout time along with mineral products. We explore this in Figures 8 and 9. There are six panels in each Figure. Each panel compares the Agricultural sector (broken line) with other major sectors (solid line). In Figure 8, we see that the Agricultural sectors fared very badly relative to Chemicals, Plastics, Textiles, Footwear, Machinery and Transport, all sectors with very low levels of taxation. The comparison sectors in Figure 9 are instead sectors that face some level of export taxes. While the Agricultural sector is still more heavily taxed, all sectors show positive taxes and, in addition, show similar trends in time.

An additional piece of evidence that shows the hurdles faced by the agricultural sector is given in Table 8. We counted the numbers of years, from 1966 to 2006, in which each sector had positive export taxes. Interestingly, the Agricultural sector and Processed Food

(together with Chemicals) faced positive export taxes for 33 out of 40 years. In contrast, Footwear, Machinery and Transport are among the least-often taxed sectors, with 7 and 13 years respectively.

While the overall anti-export bias is undeniable, there are interesting differences within agriculture. To see this, we plot the trends in average export tax for the four most important sectors in agriculture, Cereals and Oil Seeds, Dairy, and Meat in Figure 10. Clearly, export tax rates within the agricultural sector move in accordance with the general tendency described above. But Cereals and Oil Seeds were often taxed at a much higher rate than Dairy and Meat. In the peak of the mid-1970s, the *average* export tax on Cereals and Oil Seeds was close to 40 percent, while it was 10 percent for Dairy and 20 percent for Meat. In contrast, the most recent export tax intervention of the 2000s had heavily affected Dairy as well. It is important to notice that, within these high averages, there are individual products that faced extreme tax rates; a notorious case is soybeans (in the Oil Seeds group) with current tax rate of 35 percent.⁹

The combination of export taxes liberally applied, especially on the agricultural sector, and significant protection granted to the manufacturing sector are the result of the distributional conflict outlined in section 3. In the end, Argentine trade policy shows a clear anti-export, anti-agriculture bias.

5 Some of the Consequences

In this section, we briefly discuss some of the consequences of Argentine trade policies. Since these policies have numerous impacts on various outcomes it is impossible to provide a comprehensive assessment. Instead, we present evidence to support the broad claims of our analysis: i) the historical debacle of Argentina can in part be explained by bad trade policies; and ii) their manifestation is a marked anti-export bias and an inefficient import substitution model.¹⁰

⁹In 2006, when our data end, taxes on soybeans are “only” 22.5 percent.

¹⁰See the chapter by Lucas Llach (2009) in this volume for a detailed account of the relative performance of Argentina vis-à-vis other countries.

5.1 Agriculture

To document the implications of trade policies on agricultural performance, we explore here various outcomes, including the volume of exports and the share of Argentine agricultural production on world production, an index of agricultural production, and the performance of yields in Argentine agriculture (*vis-à-vis* the U.S.).

In Panel a) of Figure 11, we show the evolution of Argentine exports (largely composed of agricultural exports—both primary products and agro-manufactures). Exports grew steadily until the late 1930s and early 1940s, when, concurrently with the IS model, they plummeted. Exports recovered in the 1980s and early 1990s, and after the mid-1990s, they skyrocketed, especially due to technology adoption in agricultural. Panel b) of Figure 11 uncovers interesting features of these trends. We report the share of corn, wheat and soybean production of Argentina in world production. We see that the shares of corn and wheat grew steadily from the early 1900s until around the 1930s. The shares abruptly collapsed in the late 1930s and early 1940s up until around the 1950s. From the 1950s to the 2000s, the production shares of corn and wheat stagnated: they showed a slightly increasing trend from 1950 to the mid-1970s, a slightly declining trend from the 1970s to the 1990s, and a slightly increasing trend in the 1990s.

The trends in the production shares of soybeans are different. Soybeans were only adopted in Argentina in the 1972-1973, almost 20 years later than in the U.S. The story, told by Reca (2007), gives an interesting portrait of Argentine history. Whereas soybean production had been heavily encouraged in the U.S. since the 1930s, the Argentine agricultural sector always resisted its adoption and the Argentine government never took actions to promote it—it was considered an “exotic plant.” The scenario changed in 1972-1973, only by chance. Argentina used to import balanced animal feed from fish flour produced in Peru (from the “anchoveta peruana,” a type of anchovies). A change in sea currents in the Pacific Ocean caused a disruption in anchoveta production in 1972 and a scarcity of balanced feed in Argentina. As a result, soybeans were finally adopted in 1973-1974 after a joint initiative of the balanced feed industry and the Argentine Secretary of Agriculture. Soon after adoption, Argentina became a major producer, at an increasing rate. With the exception of a small dip at the

end of the 1990s, the share of Argentine soybean production in world production has been increasing continuously, reaching over 15 percent in the 2000s.

To further illustrate the performance of the agricultural sector, we built an index of Cattle, Corn, Soybean and Wheat Production in Argentina for the 1914-2007 period. This index, plotted in Figure 12, implicitly shows how Argentine agricultural production responded to the set of policies and shocks faced by the country. Given all our previous accounts, it is not surprising to see that the agricultural production index increases only gradually from 1914 until about the 1980s. It is only in the 1990s that production takes off.

For end this discussion, we finally compare yields in Argentina vis-à-vis the U.S. The results are in Figure 13. Wheat yields are reported in the upper-left plot. From 1900s to around 1920, yields in the U.S. were higher than in Argentina. The catch-up took place around 1922 and wheat yields remained comparable up until the mid-1950s. A sharp divergence is observed afterwards. The productivity gap increased between the mid-1950s and the late 1980s, and only narrowed in the 1990s. A similar pattern is observed in corn (upper-right plot). Corn yields are comparable from the early 1900s until 1940. U.S. yields sharply and steadily increased after that. While Argentine corn yields also increase, they do it at a much slower pace, especially between 1950 and 1990. In consequence, relative productivity between the U.S. and Argentine diverged. As with wheat, yields seem to slightly catch-up, during the 1990s. In the bottom plot of Figure 13, we report trends in soybean yields. Productivity in the U.S. has been ever increasing at a steady pace. In Argentina, as we mentioned above, adoption took place much later than in the U.S. but yields quickly caught up by 1980s. The productivity gap widened slightly during the late 1980s and early 1990s, but quickly vanished again in the late 1990s. The notable catch-up in wheat, corn and soybean yields observed during the 1990s is the consequence of favorable incentives to introduce new technologies, adopt new hybrid seeds, encourage the mechanization of agriculture and utilize biocides and fertilizers (Bisang, 2007; Ekboir, 2003).

Arguably, trade policies are a key factor behind the agricultural trends (both in export shares and in yields), mostly because these trends broadly coincide with the three phases in the anti-agriculture bias of Argentine trade policies that we identified in previous sections.

An initial phase of rapid growth occurred when the economy was essentially open, and factors like the expansion of the border and railroad innovations facilitated agricultural production destined to growing international markets. This is also a period when the President fair well in the “Rural.” During most of the second phase, starting sometime in the 1930s and 1940s, Argentine policies had an explicit anti-agricultural bias rooted in the inward-development strategy and the import substitution industrialization. Agriculture lagged in comparison with the rest of the world and export markets were gradually lost. The Presidential speech at the “Rural” often faced rejections and boos. In the last phase, especially during the 1990s, the agricultural sector regained some of its initial momentum, production and exports increased (especially of soybeans) and productivity caught up. This success materialized amidst periods of pro-agro bias (as in the early 1990s) and anti-agro bias (as in the 2000s).¹¹

5.2 Industry

To assess the ineffectiveness of the Import Substitution model in the country, we compare the evolution of industrial productivity in Argentina and in other countries. Data scarcity limits the comparisons that we are able to make, especially when it comes to the history of developing countries that adopted a similar IS strategy. However, we were able to compile data for Brazil based on Colistete (2009) and Taylor (1998). The experience of Brazil serves our purpose well because Brazil followed a model of import substitution and actually protected its industry to a larger extent than Argentina did. Taylor (1998), for instance, reports that around 1960, the overall rate of protection in Brazil was higher than that of Argentina. However, the Brazilian industry performed better than Argentine industry. In Brazil, industrial productivity (measured as gross output per industrial worker) grew at an annual rate of 5.2 percent between 1945 and 1979 (Colistete, 2009). In Argentina, instead, industrial productivity grew at 2.6 percent, on average, between 1946 and 1963 and

¹¹Reca (2006) describes the sources of growth of agriculture during this period. Until 1930, 93 percent of agricultural growth is explained by the addition of new arable land, while improvements in yields account for the remaining 7 percent. Between 1931 and 1952, the decline in production is mostly due to a reduction in harvested area. From 1952 to 1987, yields and harvested area equally explain production growth. Finally, starting in 1988, the expansion of harvested area explains 60 percent of the growth rate, and yields the remaining 40 percent.

afterwards actually declined at an annual rate of 0.5 percent between 1963 and 1974 (based on our own calculations using data from the Industrial Census).

Internationally, the Argentine industry was also an underachiever. In Table 9, we report the growth of the industrial output per worker for Argentina and several more developed countries. During the period 1948-1994, Argentina showed the lowest productivity growth in our sample. Furthermore, it is the only country where productivity actually shrank during some of the sub-periods (1948-1954) and (1963-1974). This is strong evidence that the IS model failed and that it never contributed to a fruitful industrialization. It is also worth mentioning that in the last sub-period (1974-1994), there has been a catch up in the output per worker in Argentina with the rest of the countries, and its growth rate was only surpassed by Taiwan. These, to a large extent, may be actually attributable to the liberalization of trade that ultimately led to the survival of only the internationally competitive industries in Argentina.

6 Conclusions

There is a consensus that Argentina, once on a promising path to success, never managed to take off and achieve prosperity. The explanation of such a debacle is complex. It takes a detailed and careful assessment of various factors to account for the economic failure of a country with those promising initial conditions. In this chapter, we have reviewed the role of trade policies.

Argentine trade policies swang from episodes of open trade, especially at the end of the 1800s and during the early 1900s, to episodes of a strong anti-export bias and import substitution, especially after 1930 and until the 1990s. Our analysis tells a story of bad trade policies, rooted in distributional conflict and shaped by changes in constraints, that favored industry over agriculture in a country with a fundamental comparative advantage in agriculture. While the anti-export bias impeded productivity growth in agriculture, the import substitution strategy was not successful in promoting industrialization. In the end, Argentine growth never took-off.

References

Argentine Second National Census (1895).

Argentine Third National Census (1914).

Bairoch, P. (1982). "International industrialization levels from 1750 to 1980." *Journal of European Economic History*, vol. 11, pp. 269-333.

Barbero, I. and F. Rocchi (2003). "Industry." In Della Paolera, G. and A. Taylor (Eds.), *A New Economic History of Argentina*. New York: Cambridge University Press, 2003.

Bisang, R. (2007). "El Desarrollo Agropecuario en las Últimas Décadas: Volver a Creer?." In B. Kosacoff (Ed.), *Crisis, Recuperación y Nuevos Dilemas: La Economía Argentina 2002-2007*, CEPAL.

Cavallo, D, R. Domenech and Y. Mundlak (1989). *La Argentina Que Pudo Ser: Los Costos de la Represión Económica*. Ediciones Manantial, Argentina.

Centeno, M.A. (1997). "Blood and Debt: War and Taxation in Nineteenth-Century Latin America." *American Journal of Sociology*, vol. 102, pp. 1565-605.

Clemens, M. and J. Williamson (2002). "Closed Jaguar, Open Dragon: Comparing Tariffs in Latin America and Asia Before World War II." National Bureau of Economic Research, Working Paper 9401.

Colistete, R. (2009). "Revisiting Import-Substituting Industrialization in Brazil: Productivity Growth and Technological Learning in the Post-War Years." Paper prepared for the Conference on "Latin America, Globalization, and Economic History," 24th and 25th of April 2009, UCLA.

Cortés Conde, R. (1993). "The Growth of the Argentine Republic, 1870 1914." In L. Bethell (Ed.), *Argentina Since Independence*. New York: Cambridge University Press, 1993.

Cusolito, A. and D. Lederman (2009). "Technology Adoption and Factor Proportions in Open Economies: Theory and Evidence from the Global Computer Industry." Mimeo. World Bank Development Research Group, Washington, DC.

Davis, D. (1996). "Trade Liberalization and Income Distribution." NBER Working Paper No 5693.

Díaz Alejandro, C. (1970). *Essays on the Economic History of the Argentine Republic*. Yale University Press.

ECLAC (1951). "Economic Survey of Latin America 1949." United Nations, New York, Department of Economic Affairs.

Ekboir, J. (2003). "Adoption of Non-till by Small Farmers. Understanding the Generation of Complex Technologies." In L. García-Torres, et al. (Eds.), *Conservation Agriculture: Environment, Farmers Experiences, Innovations, Socio-Economy, Policy*, Springer.

Engerman, S. and K. Sokoloff (2000). "History Lessons: Institutions, Factor Endowments, and Paths of Development in the New World." *The Journal of Economic Perspectives*, vol. 14, No.3, pp. 217-232.

Ferreres, O. (2005). *Dos Siglos de Economía Argentina: 1810-2004*. Editorial El Ateneo, Buenos Aires.

Galiani, S. and G. Porto (2010). "Trends in Tariff Reforms and in the Structure of Wages." *The Review of Economics and Statistics*, vol 92(3), pp. 482-494.

Galiani, S. and P. Somaini (2010). "Path Dependent Import Substitution Policies: The Case of Argentina in the XX Century." In E. Glaeser and R. Di Tella (Eds.) *Argentine Exceptionalism*.

García Heras, R (1983). "Los Ferrocarriles Británicos en la Argentina (1928-1934)." Tesis Doctoral en la Universidad de La Plata, Facultad de Humanidades.

- Gomez-Galvarriato, A, and J. Williamson (2008). “Was it Prices, Productivity or Policy? The Timing and Pace of Latin American Industrialization After 1870.” National Bureau of Economic Research, Working Paper 13990.
- Grossman, G. and E. Helpman (1994). “Protection for Sale.” *American Economic Review*, vol 84:4, pp. 833-850.
- Grossman, G. and E. Helpman (2001). *Special Interest Politics*. Cambridge and London: MIT Press, 2001.
- Irwin, D. (2001). “Tariffs and Growth in Late Nineteenth Century America.” *The World Economy*, January 2001, 24, pp. 15-30.
- Irwin, D (2002). “Interpreting the Tariff-Growth Correlation of the Late Nineteenth Century.” National Bureau of Economic Research, Working Paper 8739.
- Junta Nacional de Granos (1975). *Estadísticas de Área Cultivada, Rendimiento, Producción y Exportación de Granos. Totales del País. Período: 1900 a 1975. Publicación N 72.*
- Lai, H. (1998). “Factor Endowments, Trade Direction, and Growth Performances of the Americas and East Asia in the Nineteenth and Twentieth Centuries.” Mimeo, University of California at Los Angeles.
- Mallon, R. and J. Sourrouille (1977). *La Política Económica en una Sociedad Conflictiva. El Caso Argentino*. Amorrortu eds.
- Olarreaga, M. and I. Soloaga (1998). “Endogenous Tariff Formation: The Case of Mercosur.” *The World Bank Economic Review*, Vol. 12, No 2, pp. 297-320.
- Olarreaga, M., I. Soloaga, and L.A. Winters (1999). “What’s Behind Mercosur’s Common External Tariff?” World Bank Policy Research Working Paper No. 2231, Washington DC.
- Reca, L. (2006). “Aspectos del Desarrollo Agropecuario Argentino 1875-2005.” *Anales de la Academia Nacional de Agronomía y Veterinaria, Argentina.*

Reca, L. (2007). “Cambios en el Sector Agropecuario Argentino 1950-2005.” Asociación Argentina de Economía Política, Bahía Blanca, Argentina.

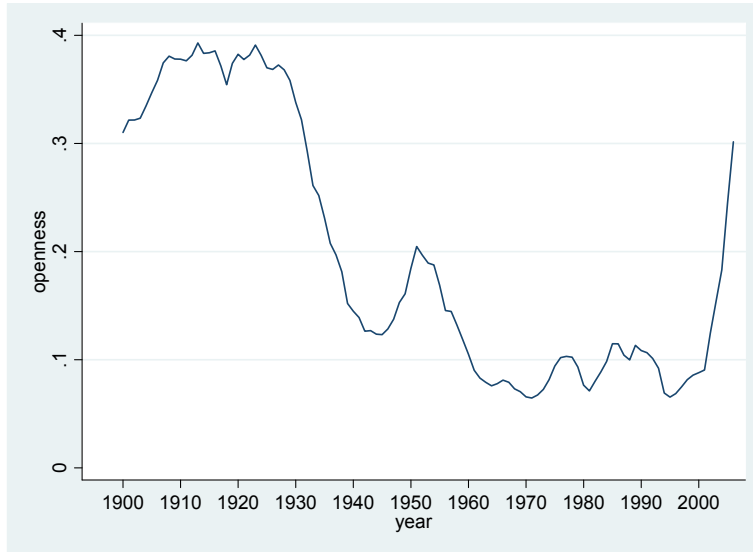
Taylor, A. (1998). “On the Costs of Inward Looking Development: Price Distortions, Divergence, and Growth in Latin America.” *Journal of Economic History*, vol 58, March, pp. 1-28.

Taylor, A. (2010). “The Argentine Paradox: Microexplanations and Macropuzzles.” In E. Glaeser and R. Di Tella (Eds.) *Argentine Exceptionalism*.

Vazquez Presedo , V. (1971). *Estadísticas Históricas Argentinas*. Ediciones Macchi, Buenos Aires, Argentina.

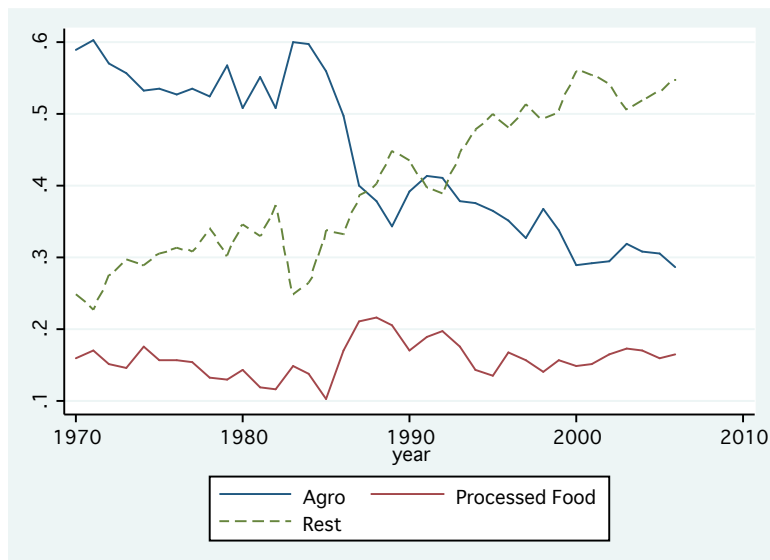
Williamson, J. and K. O’Rourke (1999). *Globalization and History*, MIT Press.

Figure 1
Trade Openness
Exports + Imports as a Share of GDP



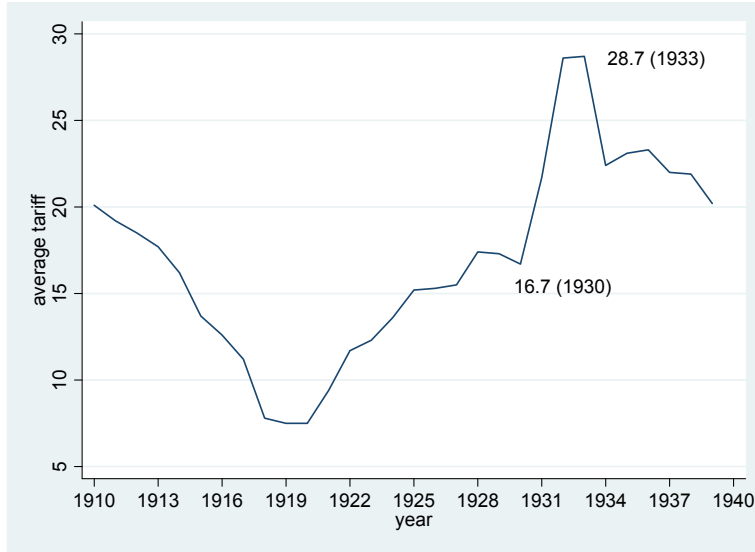
Source: : Own calculations with data from ECLAC, INDEC and Ferreres(2005).

Figure 2
The Composition of Argentine Exports
(shares of total Argentine exports)



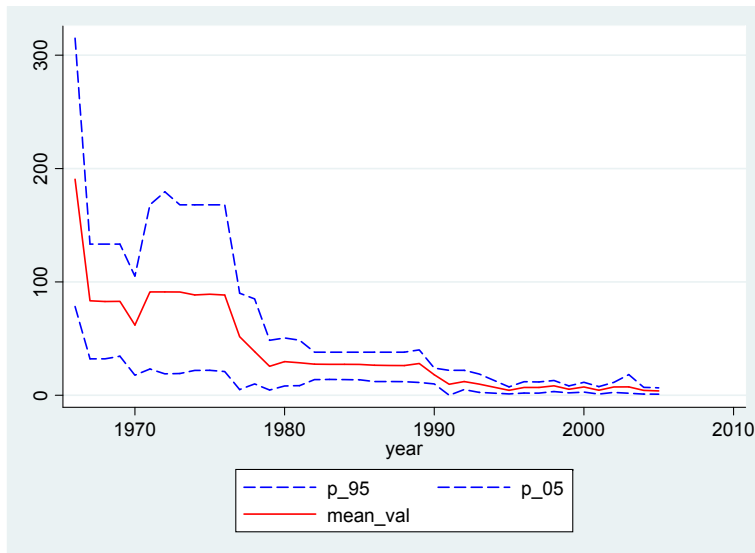
Source: Argentine trade policy data collected by the authors. See text.

Figure 3
Average Import Tariffs
1910-1940



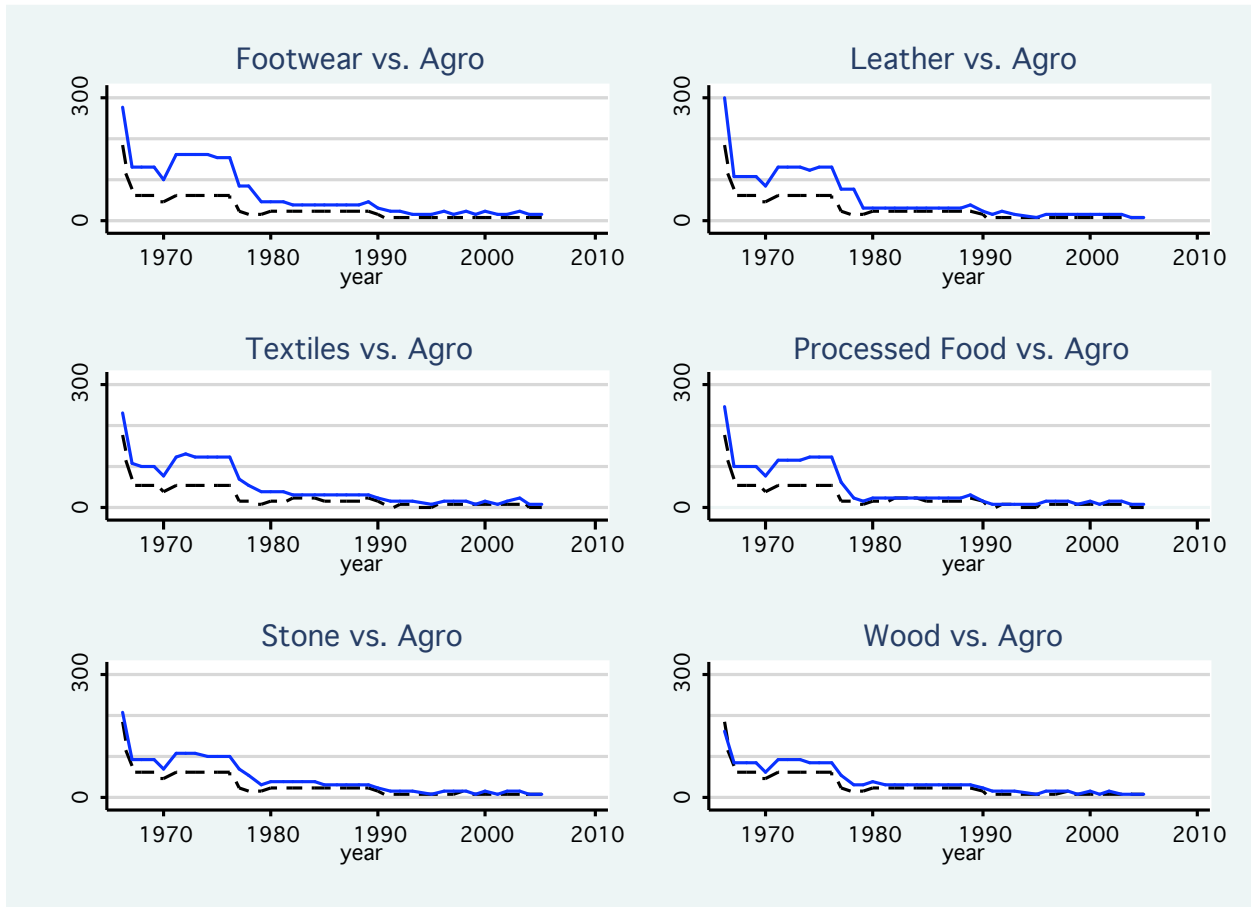
Source: Díaz Alejandro (1970). Import tariffs are calculated as the ratio of revenues from import taxes and the value of imports.

Figure 4
Trends in Average Tariffs
1966 - 2006



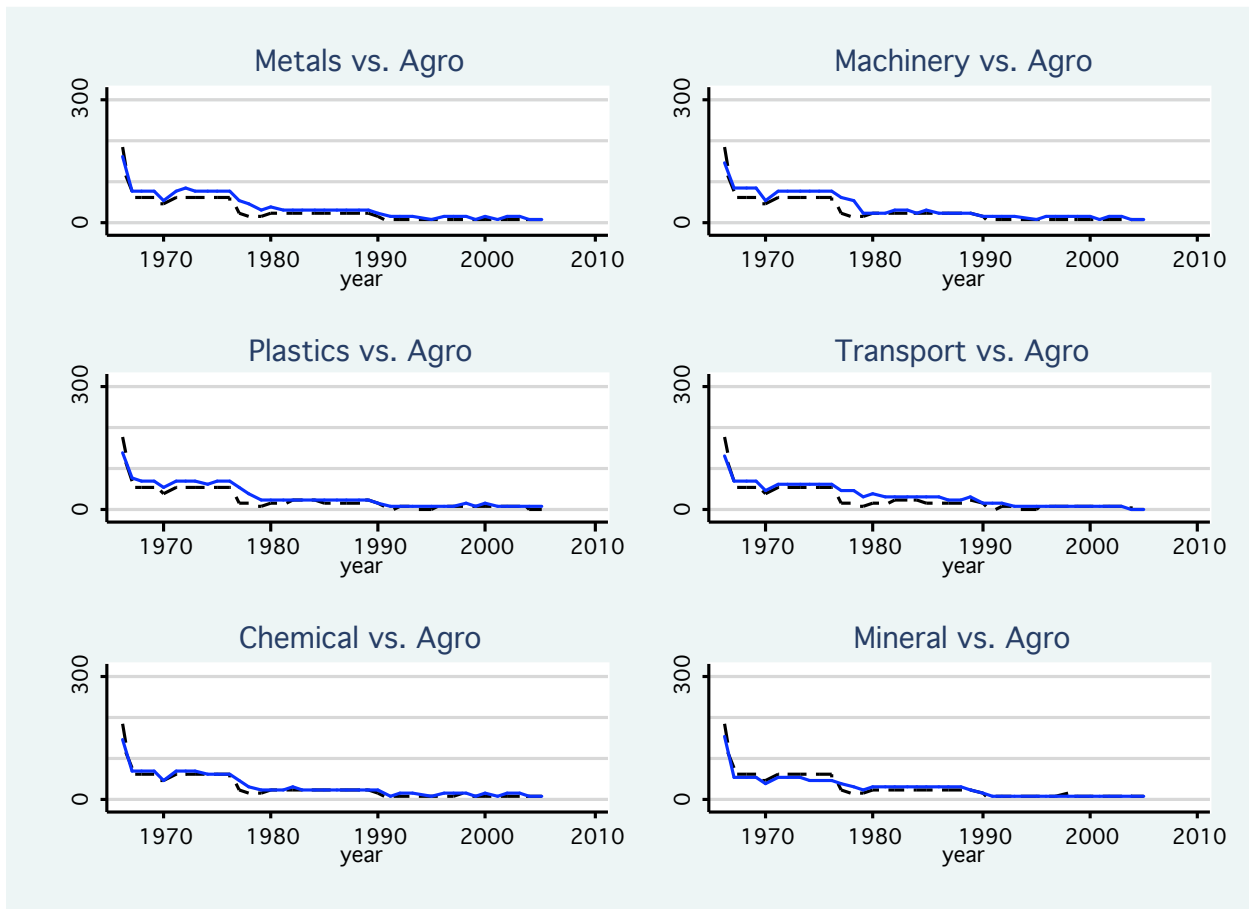
Source: Argentine trade policy data collected by the authors. See text.

Figure 5
Relative Sectoral Protection Against Agriculture



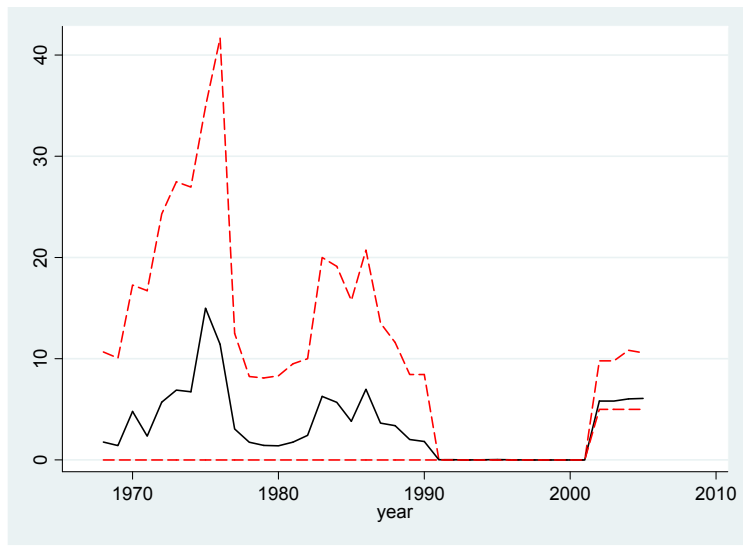
Source: Argentine trade policy data collected by the authors. See text.

Figure 6
Relative Sectoral Protection Against Agriculture



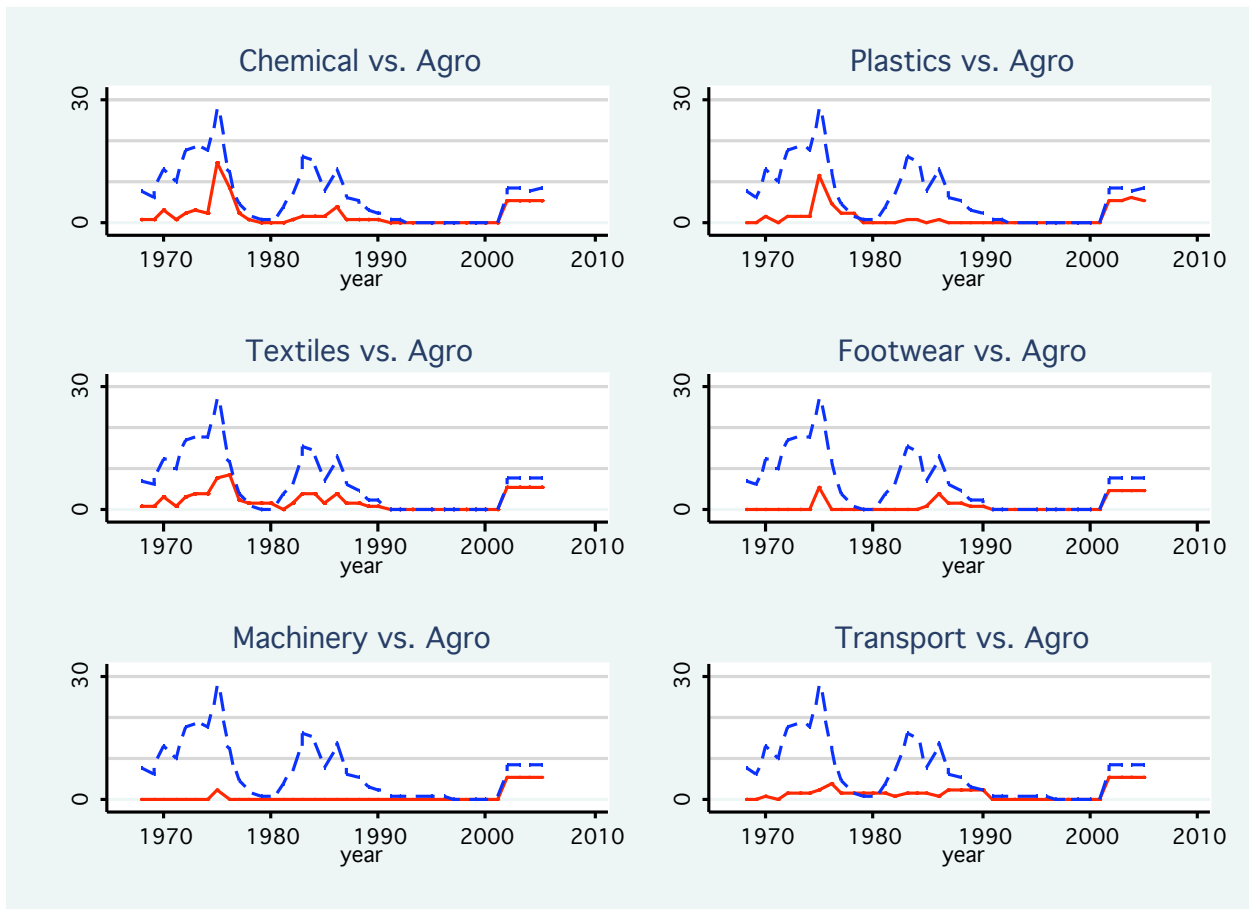
Source: Argentine trade policy data collected by the authors. See text.

Figure 7
Average Export Taxes



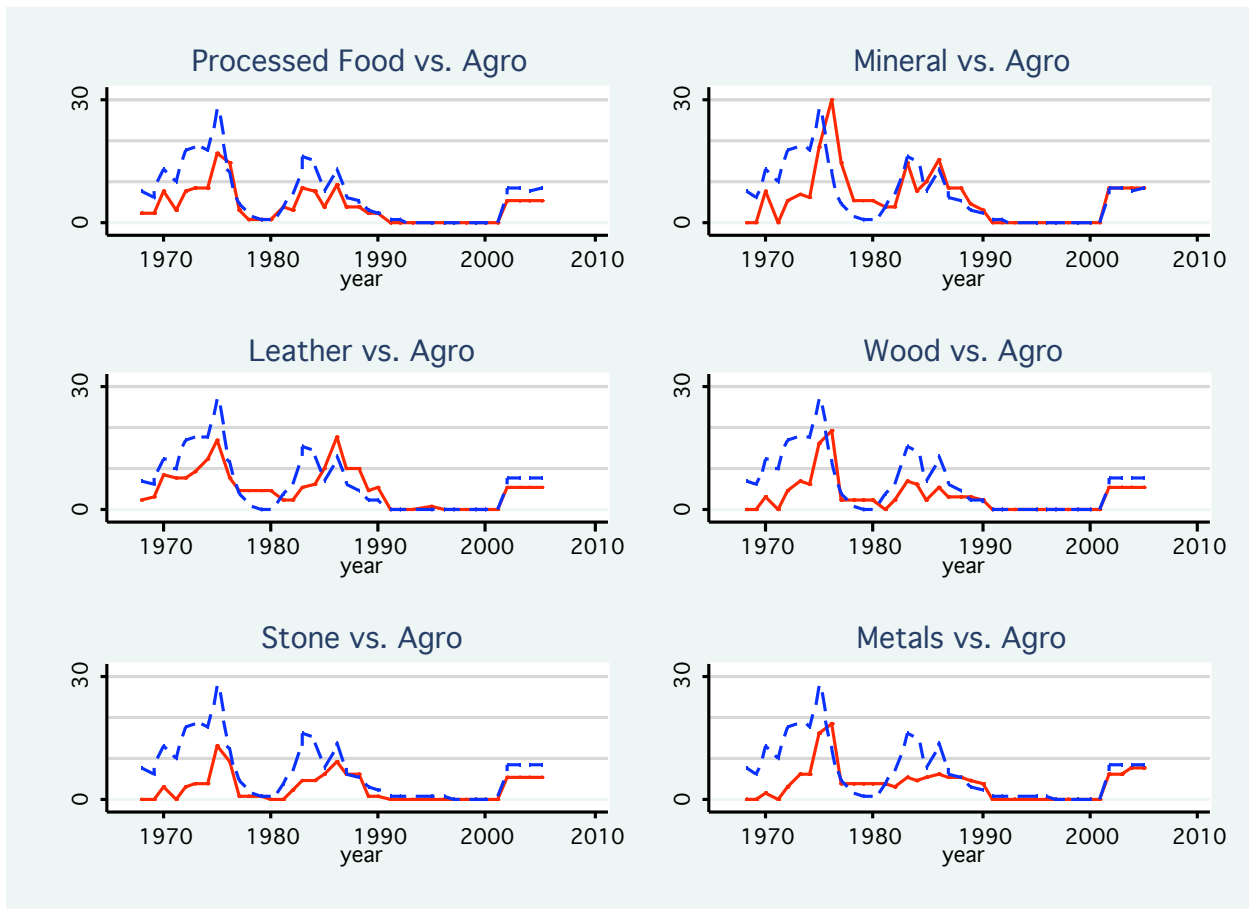
Source: Argentine trade policy data collected by the authors. See text.

Figure 8
Average Export Taxes at 2-digit Groups



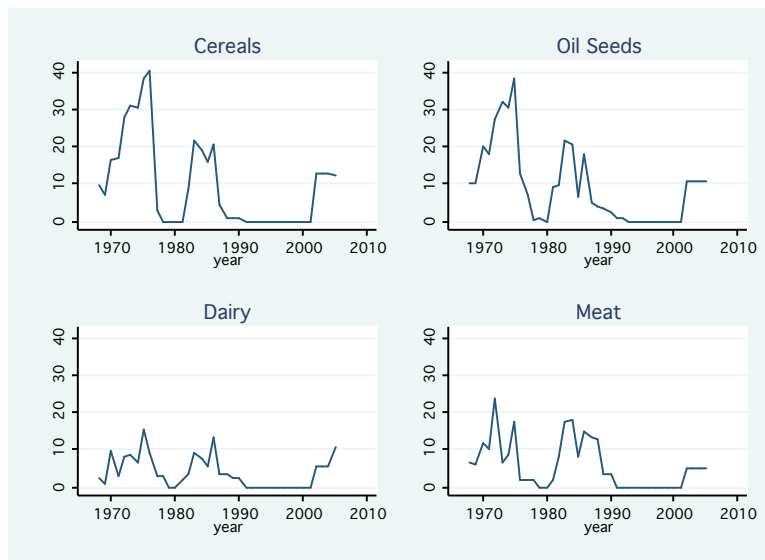
Source: Argentine trade policy data collected by the authors. See text.

Figure 9
Average Export Taxes at 2-digit Groups



Source: Argentine trade policy data collected by the authors. See text.

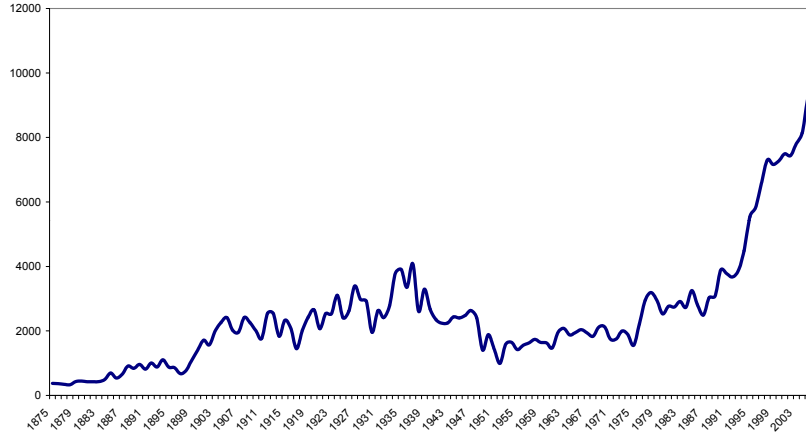
Figure 10
Agricultural Groups



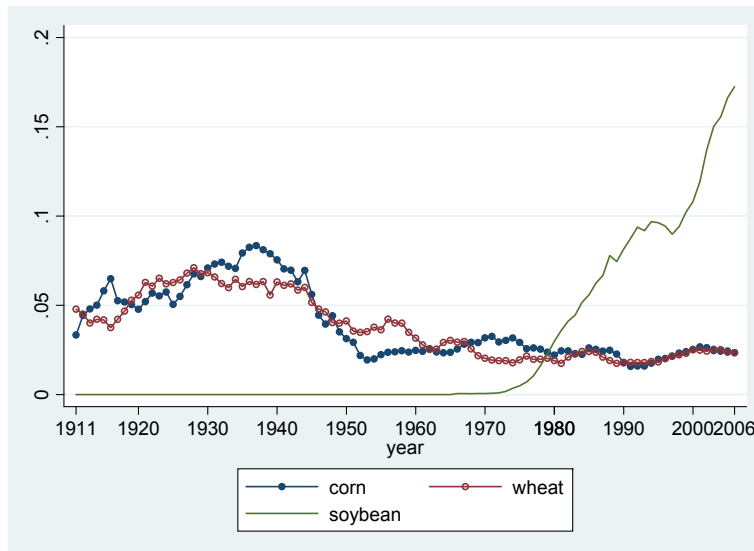
Source: Argentine trade policy data collected by the authors. See text.

Figure 11
Evolution of Argentine Agriculture

a) Volume of Exports per capita

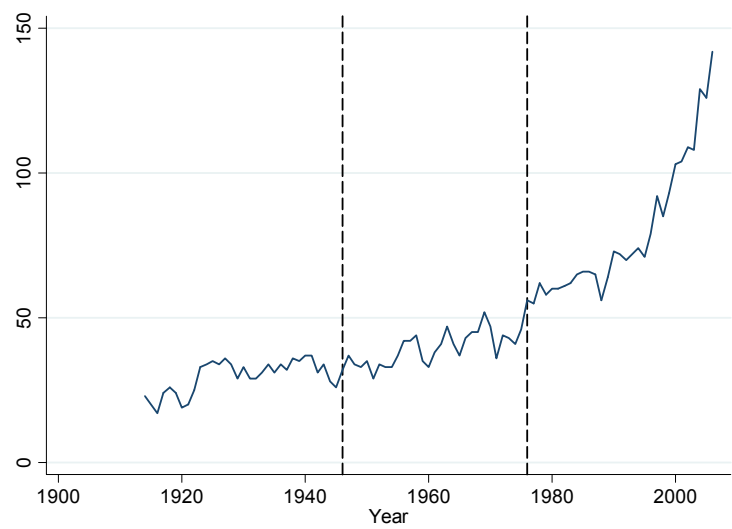


b) Argentine Share of Agricultural Production: Wheat, Corn, and Soybean



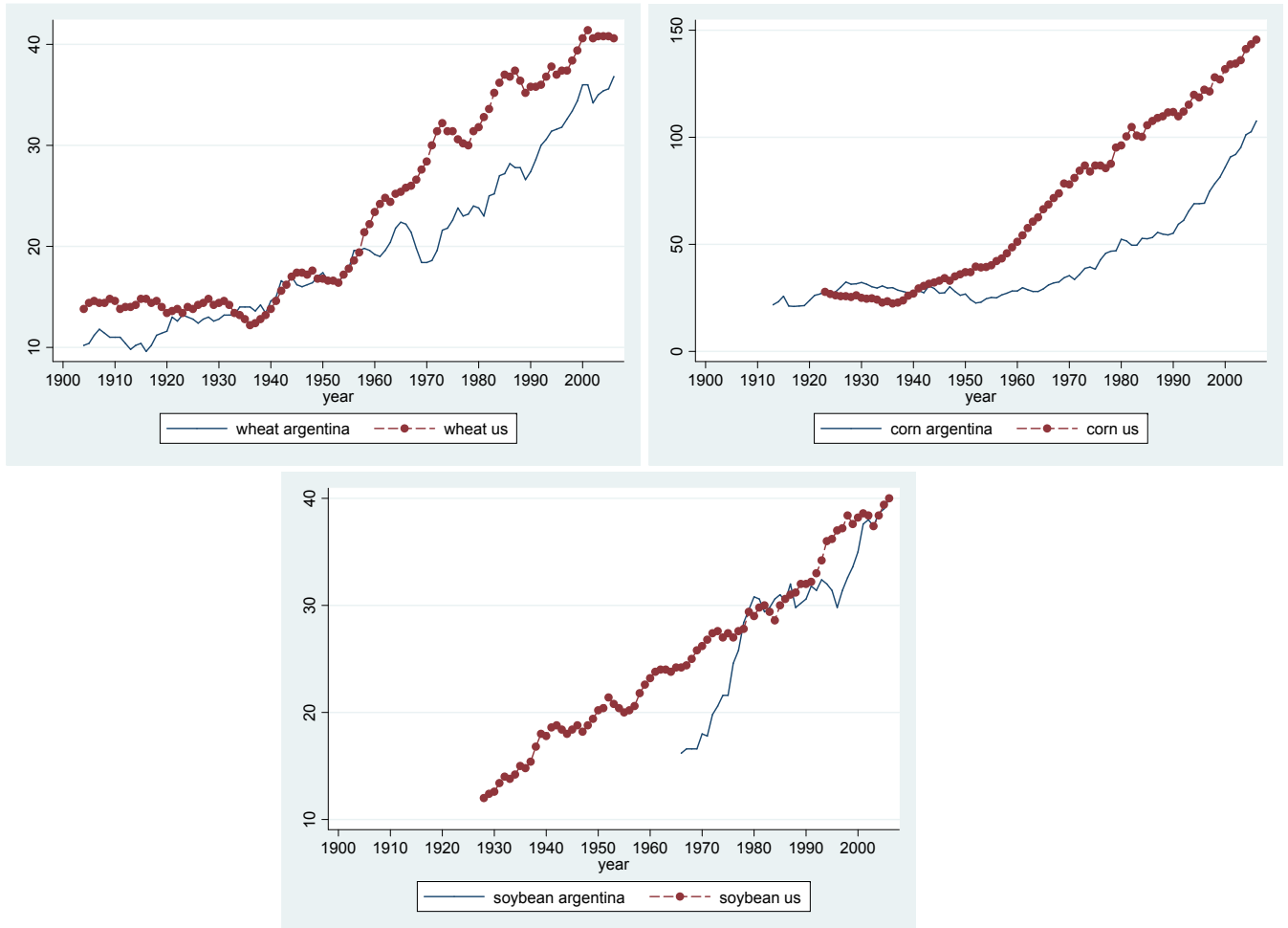
Source. Panel a): CEPAL (ECLAC) office in Buenos Aires. Panel b): Own calculations based on Ferreres (2005) until 1960, and FAOSTAT from 1961 to 2006.

Figure 12
Index of Cattle, Corn, Soybean and Wheat Production
Argentina 1914-2007



Source: Source: Junta Nacional de Granos (1975) and SAGPyA.

Figure 13
 Yields in Agriculture: Wheat, Corn and Soybeans
 Argentina and the United States



Source: Own calculations based on the United States Department of Agriculture, Secretaría de Agricultura, Ganadería, Pesca y Alimentos de Argentina, and Junta de Granos (1975).

Table 1
Productive Land per Capita (in acres)

1875-89					
Abundant in Labor		Moderately Abundant in Land		Abundant in Land	
United Kingdom	1.42	Trinidad (Caribbean)	5.66	Chile	25.43
Japan	1.76	Malaya	7.31	United States	34.91
Switzerland	2.33	Russia	7.48	Mexico	43.79
China	2.38	Siam/Thailand	8.65	Costa Rica	62.49
France	2.7	Malaysia	6.21	Canada	101.81
Spain	4.44			Brazil	102.27
				South Africa	124.75
				Australia	174.4
				Argentina	216.44
1946-1949					
Abundant in Labor		Moderately Abundant in Land		Abundant in Land	
Singapore	0.08	Thailand	5.2	Ethiopia	22.24
Japan	0.95	Malaysia	6.21	Argentina	29.4
Taiwan	0.98	United States	11.77	Brazil	29.96
United Kingdom	1.06	Chile	11.99	Canada	102.27
China	1.97	Costa Rica	16.18	Australia	130.36
Trinidad	1.98	South Africa	18.52		
France	2.64	Russia	19.54		
Indonesia	4.27	Mexico	19.96		
Spain	4.29				

Source: Lai (1998).

Table 2
Livestock per Capita
1895

	Cattle		Horses		Sheep	
	Cattle/Pop.	Rank	Horses/Pop.	Rank	Sheep/Pop.	Rank
Australia	357	3	49	2	2995	1
New Zealand	132	4	34	4	2912	2
Argentina	542	2	111	1	1859	3
Uruguay	650	1	47	3	1602	4
United Kingdom	28	9	5	9	77	5
United States	76	5	24	5	68	6
France	34	7	7	8	54	7
Russia	29	8	23	6	52	8
Germany	35	6	8	7	27	9

Source: Argentine Census (1895).

Table 3
Literacy Rate and Skilled Labor

	Year	Literacy Rate	Skilled/Unskilled
Argentina	1900	52	1.1
Brazil	1900	25.6	0.3
Chile	1900	43	0.8
Costa Rica	1900	33	0.5
Mexico	1900	22.2	0.3
Uruguay	1900	54	1.2
Canada	1870	80	4.0
United States	1890	86.7	6.5

Source: Sokoloff and Engerman (2000).

Table 4
Relative Factor Endowments

Country	Capital/ Labor	Rank	Land/ Capital	Rank	Land/ Labor	Rank	Skilled/ Unskilled	Rank
Argentina	55.5	28	3.5	25	1944.4	5	0.81	33
Australia	148.1	10	3.7	23	5495.5	1	2.76	6
Austria	165.2	6	0.2	63	379.7	42	2.35	11
Benin	3.0	65	35.4	7	1073.1	13	0.11	66
Bolivia	9.4	57	10.4	15	974.4	15	0.41	46
Brazil	35.1	33	2.3	31	801.2	23	0.28	57
Cameroon	4.3	62	29.0	10	1243.7	11	0.15	63
Canada	140.4	14	2.2	32	3069.7	3	3.92	4
Chile	57.8	26	0.6	55	343.7	46	1.07	24
China	14.5	51	1.4	36	204.1	58	0.62	37
Colombia	18.4	47	0.9	44	160.2	62	0.46	43
Costa Rica	19.9	44	0.8	46	160.1	63	0.43	44
Denmark	144.4	12	0.6	56	855.7	21	2.13	12
Dominican Rp	20.6	43	1.3	38	275.6	52	0.38	48
Ecuador	26.3	39	1.3	41	335.3	47	0.59	38
Egypt	11.1	55	1.4	37	154.7	64	0.56	40
El Salvador	11.9	54	2.5	29	293.7	51	0.24	58
Finland	144.5	11	0.6	54	886.6	19	2.38	10
France	152.2	9	0.5	59	712.5	30	1.25	20
Greece	85.7	23	0.7	49	584.6	34	0.90	29
Iceland	125.7	17	0.0	72	48.0	72	1.21	21
India	7.6	58	6.1	18	463.8	39	0.29	56
Indonesia	16.1	49	1.5	35	237.5	54	0.37	50
Ireland	104.4	21	0.6	52	663.9	31	1.78	15
Israel	138.7	15	0.1	67	150.6	65	1.61	16
Italy	153.1	8	0.2	62	369.9	43	0.88	31
Jamaica	24.5	40	0.7	50	165.0	61	0.73	35
Japan	184.8	5	0.0	71	72.8	71	2.56	8
Kenya	4.2	63	10.9	14	454.8	40	0.18	60
Korea Rep.	241.5	1	0.1	69	180.9	60	3.05	5
Malawi	1.6	69	30.7	9	495.4	37	0.05	69
Malaysia	57.6	27	0.4	61	209.6	57	1.02	25
Mexico	44.8	29	1.6	33	729.3	28	0.68	36
Mozambique	1.2	71	46.1	5	558.5	35	0.03	72
Nepal	7.0	59	4.3	22	300.4	50	0.18	61
Netherlands	142.8	13	0.1	68	121.3	68	2.07	14
New Zealand	111.8	19	0.8	48	866.1	20	2.11	13
Nicaragua	15.4	50	8.8	16	1349.3	8	0.34	53
Norway	185.3	4	0.2	65	402.4	41	6.87	2
Pakistan	10.3	56	5.1	20	527.8	36	0.20	59
Panama	36.3	32	1.3	40	471.3	38	0.93	28
Paraguay	18.8	46	7.9	17	1488.3	7	0.36	51
Peru	23.6	41	1.5	34	360.7	44	1.02	26
Philippines	16.1	48	1.3	39	209.6	56	1.16	23
Portugal	88.0	22	0.4	60	344.8	45	0.38	49
Romania	29.5	37	3.2	26	938.1	17	2.69	7
Senegal	2.9	66	24.8	11	721.1	29	0.09	68
Singapore	202.9	3	0.0	73	0.5	73	1.44	17
South Africa	19.8	45	4.3	21	854.0	22	1.38	19
Spain	113.4	18	0.7	51	751.7	26	0.88	30
Sri Lanka	12.3	53	1.0	43	117.1	69	0.81	32
Sweden	132.1	16	0.5	58	632.1	33	4.08	3
Switzerland	203.2	2	0.1	70	112.7	70	2.45	9
Togo	3.2	64	46.7	4	1506.6	6	0.16	62
Trinidad	62.8	24	0.2	64	140.0	66	0.95	27
Tunisia	33.9	35	2.9	27	981.3	14	0.30	54
Turkey	31.1	36	3.7	24	1150.5	12	0.29	55
Uganda	0.9	73	72.7	2	650.8	32	0.12	65
UK	111.0	20	0.2	66	219.3	55	1.39	18
Uruguay	39.9	30	2.4	30	961.0	16	0.81	34
USA	159.5	7	0.8	45	1309.6	9	8.71	1
Venezuela	35.0	34	0.8	47	274.2	53	0.38	47

Source: Cusolito and Lederman (2009).

Table 5
Mean Share of Exports (Imports) during 1970-2005

Sector	1970-1979		1980-1989		1990-1999		2000-2006	
	Export	Import	Export	Import	Export	Import	Export	Import
Agriculture	0.555	0.049	0.495	0.039	0.372	0.033	0.302	0.026
Processed Food	0.154	0.013	0.158	0.014	0.164	0.024	0.165	0.018
Mineral Products	0.007	0.139	0.046	0.133	0.105	0.052	0.189	0.061
Chemical Products	0.033	0.141	0.045	0.180	0.049	0.146	0.057	0.193
Plastics	0.005	0.039	0.013	0.053	0.019	0.060	0.032	0.074
Leather	0.046	0.000	0.046	0.001	0.044	0.003	0.027	0.004
Wood	0.012	0.074	0.010	0.039	0.019	0.044	0.020	0.040
Textiles	0.066	0.020	0.050	0.027	0.039	0.041	0.015	0.037
Footwear	0.003	0.000	0.001	0.001	0.002	0.006	0.000	0.006
Stone	0.003	0.013	0.004	0.013	0.008	0.012	0.004	0.011
Metals	0.032	0.178	0.067	0.093	0.050	0.059	0.043	0.057
Machinery	0.052	0.251	0.044	0.295	0.054	0.319	0.045	0.277
Transport	0.026	0.046	0.014	0.060	0.059	0.131	0.072	0.132

Source: Argentine trade policy data collected by the authors. See text.

Table 6
Average Import Tariffs
1870 - 1938

	1870-1899	1900-1913	1919-1938
Argentina	26.1	23.4	18
Brazil	34.5	40	23.4
Chile	19.4	18.3	22.1
Colombia	33.5	47.4	29.3
Cuba	22.5	25.6	26.2
Mexico	16.6	21.9	21.2
Peru	32.4	23.2	16.3
Uruguay	29.7	33.3	19.6
China	3.2	3.3	11.3
Indonesia	4.9	5.2	10
Japan	6.2	7.7	5.9
Philippines	10.3	21.2	8.1
Siam/Thailand	3.6	7.4	15.1
Burma/Myanmar	4	11.3	22.5
Ceylon	6.2	7.3	13.3
Egypt	11	14.2	26.3
India	3.4	4.7	17.3
Turkey	7.4	9.5	30.7

Source: Clemens and Williamson (2002).

Table 7
 Tariff Statistics for periods of 1966 to 2005

Sector	1966-1970		1971-1976		1977-1979		1980-1990		1991-2005	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Footwear	151	69	158	2.152	69	21	38	6	15	4
Leather	139	89	130	3.623	58	28	28	3	11	3
Processed Food	127	67	121	3.201	35	23	25	4	10	3
Textiles	126	63	126	1.894	53	15	34	5	13	4
Stone	109	56	102	2.236	48	16	31	4	10	3
Wood	91	40	84	2.918	35	15	28	3	8	2
Machinery	89	32	73	2.411	43	20	20	4	11	2
Metals	87	41	76	2.517	42	11	28	3	10	2
Plastics	83	32	67	1.441	40	12	25	2	10	2
Agro	79	57	56	0.227	13	3	19	2	5	2
Transport	77	32	63	2.641	40	11	29	4	10	4
Chemical	76	37	61	1.759	30	11	22	2	8	2
Mineral	69	48	46	2.411	26	7	24	4	2	1

Source: Argentine trade policy data collected by the authors. See text.

Table 8
Number of Years with Positive Export Taxes
1966- 2006

Sector	Years
Agro	33
Processed Food	33
Chemical	33
Leather	30
Wood	28
Textiles	28
Mineral	26
Metals	26
Transport	26
Stone	24
Plastics	17
Footwear	13
Machinery	7

Source: Argentine trade policy data collected by the authors. See text.

Table 9
Evolution of Industrial Productivity
1948 - 1994

	1913- 1935	1935- 1943	1948- 1954	1954- 1963	1963- 1974	1974- 1994	1948- 1994
Argentina	0.6%	-7.5%	-2.0%	3.1%	-0.5%	4.6%	2.2%
Canada			2.5%	4.7%	3.4%	2.8%	3.3%
Australia			n.a.	n.a.	n.a.	3.3%	3.3%
Japan			13.1%	9.0%	8.4%	3.4%	6.6%
France			3.8%	4.7%	5.0%	3.3%	4.1%
Italy			7.3%	5.5%	5.7%	3.9%	5.0%
Holland			5.0%	4.5%	6.6%	3.1%	4.4%
Norway			3.7%	3.2%	3.9%	1.3%	2.6%
Sweden			1.9%	4.1%	5.0%	3.2%	3.7%
United Kingdom			1.3%	2.2%	3.6%	3.3%	2.9%
Taiwan			n.a.	n.a.	n.a.	5.0%	n.a.
Belgium			n.a.	n.a.	6.2%	4.1%	n.a.
United States			1.7%	3.0%	2.4%	3.2%	2.8%

Sources. Argentina: own calculations based on IV Censo General de la Nación, Censo Industrial de 1946, Dirección General de Servicio Estadístico Nacional, Censo Nacional Económico (1964, 1974, 1985, 1994), Anuario Estadístico de la República Argentina (Tomo III), Estadística Industrial, 1949-50, Censo Industrial 1954. Rest of the countries: own calculations based on U.S. Department of Labor, Bureau of Labor Statistics, March 2009. Note: for all countries except Argentina, the available data covers the period 1950-1994.