

The Political Economy of Regulations and Trade:

Wine Trade 1860–1970

Giulia Meloni ¹ and Johan Swinnen ^{1,2}

¹ LICOS Center for Institutions and Economic Performance
& Department of Economics
University of Leuven (KU Leuven)

² Centre for European Policy Studies

Version: January 2018

Abstract

Dramatic changes in the 1860-1970 wine trade provide insights on the political economy of regulations and policy instrument choice and trade. An invasion of *Phylloxera* in the 1870s and turned France from the world's leading exporter to a massive importer of wine and grapes. When French production recovered a combination of tariffs, safety regulations and quality standards were introduced to protect its French producers, causing dramatic changes in global wine and grape production and trade, including in Spain, Italy, Turkey, Greece, Algeria, Tunisia and Morocco. Changes in wine regulations were caused by relative income and loss aversion factors in political economy. Tariffs were the preferred policy instruments as they directly restrict imports, bring in revenues, have low transaction costs, and are preferred political instruments when there are information imperfections. Safety regulations and quality standards, including labeling and input prohibitions, reduce asymmetric information for consumers or undesirable externalities, and simultaneously protected domestic producers. Regulations were often targeted to imported products (wine and raisins) when tariffs were ineffective or constrained by institutions (such as on colonial wine). Hence, tariffs and quality regulations were jointly used in wine policy, both as complements and substitutes in policy design.

Keywords: political economy, wine trade, regulations, standards.

Corresponding author: Giulia Meloni (giulia.meloni@kuleuven.be). This research was funded by the KU Leuven (Methusalem Funding). The paper benefited from comments by two anonymous reviewers and suggestions from Kym Anderson, Robert Boyer, Ugo Gragnolati, Vicente Pinilla and Jean-Philippe Touffut, and participants in the 2015 IAAE Conference in Milan and in the 2016 AAWE Conference in Bordeaux. We thank Antonio Meloni for excellent assistance.

1. Introduction

The principle of comparative advantage in trade is often explained with David Ricardo's original example: the long-standing and mutually beneficial wool–wine trade between Britain and Portugal where Britain can produce wool more efficiently than wine and Portugal can produce wine more efficiently than wool. But John Nye (2007) in his “*War, Wine, and Taxes*” book argues that Ricardo's example is not a good example because “few would buy Portuguese wine if they had the choice” and that “the Portuguese wine industry better serves as a historic example of how the antiquated mercantilist theory of trade misguided production.” He argues that, of course, Portuguese wine was better than English wine but the fruitful Portuguese–British wine trade heralded by Ricardo can be traced back to the 1703 Methuen Treaty guaranteeing Portuguese wine lower tariffs than French wine in exchange for preferential treatment of British textile imports.

Government policies that distort trade are obviously not limited to wine trade. Throughout history and globally today, trade has been heavily affected by both economics and politics; and nowhere are these factors more clear than in global agriculture and food trade. While the geography of the production of many agricultural products is heavily depending on natural factors such as the quality of the soil and the climate, governments have heavily distorted trade patterns with a variety of policy instruments, such as subsidies, tariffs, trade quota, etc. (Johnson, 1973; Anderson, 2009). Today governments around the world spend more than half a trillion (520 billion) euro every year subsidizing their farmers while many other governments tax their farmers by extracting rents, often through trade restrictions (OECD, 2017). Governments often use a combination of different policy instruments to affect trade and protect domestic industries.

There is a rich literature on the political economy of agricultural protection and taxation—focusing mostly on tariffs and subsidies (see e.g. Anderson et al., 2013; Krueger et al., 1988;

Rausser et al., 2011; Swinnen, 2009, 2018 for reviews). However, there are much fewer studies on why governments used specific instruments to protect their domestic markets. This holds in particular regarding the use of quality standards and safety regulations as non-tariff barriers.

While the use of quality standards and safety regulations in food trade is not new—rules to prevent adulterations and frauds have existed as long as agricultural products have been exchanged and traded—in recent years standards have increased rapidly, both geographically and in addressing new concerns. Production and trade are increasingly regulated through stringent public and private standards on quality, safety, environmental, and ethical aspects.¹

This rise and spread of standards has triggered vigorous debates on the impacts on international trade.² Regulations and standards can facilitate trade by reducing transaction and information costs (Maertens and Swinnen, 2009; Marette and Beghin, 2010; Van Tongeren et al., 2009). But standards can also limit or even prevent trade, which is why many trade economists consider them as non-tariff barriers which have grown as international trade agreements (such as WTO) have globally reduced tariffs (Anderson et al., 2004; Beghin et al., 2012; Fisher and Serra, 2000).

However, determining whether regulations and standards enhance welfare or are protectionist instruments is complicated, both conceptually and empirically (Beghin et al., 2015).³

¹ An illustration of the rapid increase in public food standards is the number of notifications of new SPS measures to the WTO. These have increased exponentially from a few hundred in the mid-1990s to more than 15,000 (Maertens and Swinnen, 2014). Private standards are often more stringent than public ones (Fulponi, 2007; Vandemoortele and Deconinck, 2014).

² There is another major debate in the development literature. The debate is whether developing countries and the poor can comply with the standards and, if not, whether this is leading to the exclusion of small and weakly capitalized producers from these “high standard value chains” and, for those who can participate, whether they are hurt by rent extraction through superior bargaining power of increasingly concentrated downstream agents, or whether they may benefit from institutional innovations in the value chains (see arguments in e.g., Dries et al., 2009; Maertens and Swinnen, 2009; Minten et al., 2009; Reardon et al., 2003, 2009; Swinnen, 2007).

³ See also the special issues of the *World Trade Review* (guest edited by Heckelevi and Swinnen in 2012) and the *World Economy* (guest edited by Beghin and Orden in 2012) and Beghin et al. (2015) for reviews.

Conceptual models which include social benefits through reducing asymmetric information and externalities as well as distortions and implementation costs yield nuanced conclusions on their trade effects, which are likely to be sector-specific and regulation-specific (Marette and Beghin, 2010; Sheldon, 2012; Swinnen and Vandemoortele, 2011; Van Tongeren et al., 2009; Xiong and Beghin, 2014).

The complexity and nuances of these conceptual arguments are mirrored in difficulties in the empirical measurement. The informational requirements are large.⁴ Perhaps not surprisingly, in a review of the literature, Beghin et al. (2015) conclude that there are a variety of empirical approaches, including econometric and simulation models, which yield a mix of results, with some finding anti-trade, others pro-trade and yet others no effect on trade.

In this paper we use a different empirical approach. We focus on a specific historical case where both tariff and regulations (standards) were introduced. We explicitly link the introduction of the regulations to pressures of lobby groups and to both efficiency and equity arguments. We also document how they relate to import tariffs and other policies—and discuss their effects. We focus on wine trade, policies and regulations during the 1860–1960 period. We believe this is a very interesting and insightful case to study how various types of government regulations affect trade for several reasons.

First, the use of tariffs and so-called quality regulations has been so pervasive, particularly in countries where the wine sector and trade was a very important sector for the economy, such as France (Meloni and Swinnen, 2013; Spahni, 1988; Tracy, 1989). Second, the 1860–1970 period

⁴ For example, one needs reliable estimates of fixed and variable costs for heterogeneous firms and valuation of external effects by consumers. Moreover, the policy instruments involved are often dissimilar and difficult to aggregate; data are scarce for effects of public regulations and almost inexistent for private standards (Baldwin, 2000; Marette, 2014). Li and Beghin (2014) conclude that sorting out the protectionism of standards is complex once one moves beyond simple detection strategies.

is a particularly interesting period to study wine trade because of the dramatic changes in trade flows during this period. It includes the “first globalization period” (from the late 19th to the early 20th centuries), the collapse and recovery of French vineyards in the late 19th century, major fluctuations in Spanish and Italian wine trade, the growth and decline of North African wine industries and the Greek and Turkish raisin economies, and ends with the creation of the European Union (EU) wine market and its Common Wine Policy. Third, it allows to focus our historical political economy analysis to a limited number of countries since the Mediterranean region dominates wine and dried grapes (raisins) trade during this period. From 1860 to 1970, Mediterranean wine trade represented 80% to more than 90% of global wine trade (see Table 1).⁵

[Insert Table 1 here]

Our analysis is related to other studies on wine and raisin trade. Morilla Critz, Olmstead and Rhode (1999, 2000) investigate the production and trade of Mediterranean fruits and nuts during the end of the 19th and early 20th centuries and how competition from cheap American agricultural products contributed to economic and political crises in southern Europe. However, their study does not include wine trade. Pinilla (2014), Pinilla and Ayuda (2002, 2010), and Pinilla and Serrano (2008) provide excellent analyses on the political economy of the Spanish wine trade in the first globalization period. A forthcoming edited volume by Anderson and Pinilla (2018) analyses production and trade in many wine producing countries and a historical database on the two waves of globalization of wine. Swinnen (2009) and Tracy (1989) explain and document major agricultural trade distortions in Europe and the political economy reasons and mechanism

⁵ In earlier periods, wine exports to Britain dominated trade: French wine was exported mainly to Britain from its main harbors on the Atlantic coast—La Rochelle during the 13th and 14th centuries and then Bordeaux in the 17th and 18th centuries (Francis, 1972; Rose, 2011). After 1970, wine exports from the New World (Argentina, Australia, Chile, New Zealand, South Africa, the United States, etc.) grew in importance, but these trade flows were less important during the period covered by our analysis.

behind them. Swinnen (1994) and Anderson (1995) provide theoretical explanations for government interventions in agricultural and food markets. Finally, our analysis in this paper is related to Meloni and Swinnen's (2013, 2014) political economy studies of the historical roots of current EU wine regulations. Our paper integrates these insights into a broader analysis on the potential use of regulations as non-tariff barriers and extends the focus beyond the trade between France, Spain and Algeria (we cover other North African countries as well as the dried grape trade with Greece and Turkey).

2. The Devastation of French Vineyards and Changing Trade Flows

While Greece and Rome had dominated wine production and trade in earlier times, from the Middle Ages onward, the global wine business was dominated by France (Francis, 1972; Lampe, 1975; Rose, 2011).⁶ However, all this was about to change with the arrival of an unexpected—and unwelcome—guest in France: a small insect called *Phylloxera*. In the second half of the 19th century, *Phylloxera* arrived in France from its home in North America and it devastated French vineyards which were not resistant to it. The impact on the wine industry and trade was dramatic. One-third of the French vine area was destroyed, and the remaining (infected) vineyards produced little wine. As a consequence, French wine production declined by about 70% in the 1870s and 1880s (Loubère, 1990; Simpson, 2011; Unwin, 1991).

While potential cures for *Phylloxera* were searched and tested, France moved from being the world's leading wine exporter to a wine importing country in less than a decade. By 1890,

⁶ Since the Middle Ages, France has been dominating wine trade from its harbors on the Atlantic coast—first La Rochelle and later Bordeaux. Bordeaux exported an annual average of about 790,000 hectoliters to Britain during the first 30 years of the 14th century (Francis, 1972, Appendix).

average annual production in France had fallen to 30 million hectoliters, while consumption remained at about 45 million hectoliters (see Figure 1). To fill this gap, France started importing wine and raisins and invested in production in its North African colonies.

[Insert Figure 1 here]

Tariff Regimes and Wine Trade

France started to import wine, mostly from Spain and Italy, where *Phylloxera* was slow to arrive. Wines were imported for consumption or to be mixed with French table wines. French wine imports increased tenfold in a ten-year period: from 1.2 million hectoliters in 1875–79 to 10.6 million in 1885–89 (see Figure 2). The main source of wine imports was Spain.

[Insert Figure 2 here]

In the second half of the 19th century, Spain's production and export of wine increased strongly. Initially, the growth (also referred to as the “*golden age*” of wine) was driven by the integration of the domestic market (through the extension of railway lines) and the increase in urban wine consumption determined by an increase in per capita incomes. After the *Phylloxera* outbreak in France, the main driver was French demand for Spanish wine (Fernández and Pinilla, 2018).

In order to facilitate large inflows of wine, France granted a favourable tariff regime to Spanish wine imports in 1877. Following the reduction of French import tariffs, the main wine-producing regions in Spain (such as Aragon, Navarre and La Rioja) started to plant more vines and export wine to France. The vine area increased by around 40% between 1860 and 1888 (Pinilla and Ayuda, 2016). As a result, Spain became the world's largest wine exporter, followed by Italy. Almost all their wine exports went to France. In 1891, Spanish exports were “32 times greater

than those of 1850 or six times those of 1877,” with the French market accounting for 85% of the Spanish exports between 1886 and 1890 (Pinilla and Serrano, 2008).

The developments were similar in Italy, but somewhat smaller. Italian wine exports to France increased from about 200.000 hectoliters in the early 1870s to 2 million hectoliters in the mid-1880s. For Italy as well, France became the main wine export destination, absorbing about 80% of Italian wine exports (Federico and Martinelli, 2018).

Raisin Trade

The second element of France’s strategy to deal with the production declines was to import raisins as a raw material for wine production. The main source of the raisins was Greece, which captured 60% of the French market, followed by Spain and Turkey (the two other big raisin producers) (Petmezas, 1997).⁷ Until 1830, there was little production or exports of raisins in Greece. Raisin production took off during the 1830s, after the War of Greek Independence (1821–1832), fueled by growing British demand. Greek raisins were consumed by the British middle class and used in their traditional pudding (Progoulakis and Bournova, 2001).⁸ Until the 1860s, Britain was the principal consumer of Greek raisins. But, from the late 1870s onwards, new (and unexpected) consumers spurred demand for Greek raisins.

France started to import raisins from Greece to produce wine out of them (Tsiovaridou, 1980). During the second half of the 1880s, between 1 and 2 million hectoliters of wine were officially declared French ‘raisin wines’ (wines produced from raisins) and they accounted for 8%

⁷ See Meloni and Swinnen (2016) for a detailed analysis of the Greek-French raisin trade at the end of the 19th century.

⁸ By the mid-1860s, vineyards-owners enjoyed a larger return, about 9 drachmas per hectare, compared to the cereal-owners, about 2 drachmas per hectare—four to five times more profitable (Progoulakis and Bournova, 2001).

of total French wine production (see Figure 3).⁹ This was mirrored by an increase in raisin imports. French imports of Greek raisins increased fourfold in a decade. The export growth was spectacular: from almost nothing in the early 1870s to about 9,000 tons in 1878, to 30,000 tons four years later (1881) to 71,000 tons in 1889—representing around 40% of the total Greek raisin exports (Table 2).

[Insert Figure 1 and Table 2 here]

The combined growth of British and French demand during the second half of the 19th century caused a dramatic growth of raisin production in Greece: from 25,000 tons in 1830 to 150,000 tons in 1890 (Pizánias, 1988). The increased demand for Greek raisins, coupled with the 1871 land distribution act,¹⁰ led to a large increase in vineyards in Greece, in particular in the Peloponnese region in southern Greece (Aroni-Tsichli, 2014). The cultivated vine area for raisins in Greece increased almost fivefold from 24,000 hectares in the 1860s to 114,000 hectares in the 1880s—with the Peloponnese region increasing its share from 7% to 26% over the same period (Franghiadis, 1990, pp. 17/24). Raisin production followed quickly thereafter, tripling from 55,000 tons in 1870 to 150,000 tons in 1890. Raisin exports followed the same impressive pace as almost all of the Greek raisin production was exported (Pizánias, 1988, pp. 136–139).¹¹

⁹ “Raisin wines” were one of the “adulterations” allowed during the late 19th century. Taking into account “raisin wines” (wines produced from raisins), “sugar wines” (obtained either from the addition of sugar to the wine or from the addition of water and sugar to the grape marcs) and “grape marc wines” (or “*piquettes*” obtained from the addition of only water to the grape marcs), the percentage of “adulterated wines” increased to 25% of French wine production in the second half of the 1880s (Bichet, 1934, p. 259; Heath, 2014, p. 95; Stanziani, 2003, 2004).

¹⁰ In 1871, a land-reform program was enforced and more than 250,000 hectares of national lands were redistributed among 350,000 families between 1871 and 1911 (Progoulakis and Bournova, 2001; Gallant, 2015).

¹¹ The main export harbor from which raisins were exported was Patras, in the northern Peloponnese region (Frangakis-Syrett, 1994; Pizánias, 1992).

Similarly, in Turkey, raisin production expanded rapidly with the growing exports of raisins to France.¹² The value of Turkish raisin exports increased from around 75 million pounds in the early 1870s to almost 200 million pounds by the mid-1880s. By then, Turkey had overtaken Spain as the world's largest raisin producer (Inal, 2018; Morilla Critz et al., 1999, 2000).

In summary, in the 20-year period between 1870 and 1890, France became a large importer of Greek and Turkish raisins and Greek and Turkish raisin production and exports grew exponentially. In Greece, raisins not only became the principal export (representing about 55% of Greek export value during the 1886–90 period) but also the main crop cultivated in Greece.

3. Colonial Trade Liberalization and Investments in the Wine Industry in North Africa

In response to the collapse of wine production in France, French colonies in North Africa started looking to expand wine production, aided by the inflow of technology, capital and know-how and wine trade liberalization with France.¹³ French import tariffs on Algerian wine imports were removed in 1867 and on Tunisian wine in 1890 (Isnard, 1954; Kassab et al., 1987; Lequément, 1980; Nogaro and Moye, 1910).

¹² Vineyards in Turkey (then known as Anatolia) existed as early as 4,000 BCE. It is considered one of the birthplaces of wine. However, during the Ottoman Empire (1299–1923) wine drinking was banned and only raisin production remained (Özdemir, 2013).

¹³ For example, in the case of Algeria after its annexation in 1830, there were tariffs on both French and Algerian products in bilateral trade. In 1835, tariffs were removed from French products entering Algeria, but not vice versa. Algerian products were still considered “foreign” imports by France. In 1851, a new law permitted certain Algerian products, such as fruits, vegetables, cotton, and tobacco, to enter France duty free. However, wine was not initially included (Isnard, 1954, p. 30; Leroy-Beaulieu, 1887, p. 176).

The combination of these factors had a major impact on wine production in and exports from North Africa (Algeria, Tunisia and Morocco).¹⁴ The devastation of French vineyards by *Phylloxera* not only caused an increase in the demand for wine from French colonies but also induced an inflow in North Africa of skills in wine-making through the migration of many broke French winegrowers to North Africa. This also induced technological progress in wine production. At the beginning (1830–1860) winegrowers did not have the technology to produce drinkable wines in a hot climate. However, in the second half of the 19th century, advanced refrigeration systems were introduced to control temperature during fermentation in the tank.

In Algeria, which was a French colony since 1830, the collapse of vineyards in France triggered massive vineyard investments in the 1880s. Between 1880 and 1900, the area under vines increased from 20,000 to 150,000 hectares. Wine production increased from about 25,000 hectoliters per year in 1854 to 400,000 hectoliters in 1880, to 5 million hectoliters by 1900, and to 10 million hectoliters by 1915 (Figures 4 and 5). World War I (1914–18) and the spread of *Phylloxera* in Algeria caused a temporary decline in Algerian wine production. However, Algerian wine production and exports rapidly increased again in the 1920s and the early 1930s, to 400,000 hectares of vines and to 20 million hectoliters of wine by 1935 (Isnard, 1949).¹⁵ In the 50-year period between 1880 and 1930, Algerian wine production and exports grew dramatically, becoming the world’s largest exporter of wine (Meloni and Swinnen, 2014). By then it exported twice as much wine as the other three major exporters (France, Italy, and Spain) combined.

¹⁴ Algeria was a French colony from 1830 to 1962; Tunisia was a French Protectorate from 1881 to 1956; and Morocco was a French Protectorate from 1912 to 1956. While Algeria was a “true” colony (considered part of the France and divided in several departments), Tunisia and Morocco were French “protectorates”—retaining some sovereignty. In a “true” colony, there was a total assimilation of culture, politics, regulations and trade (direct control of the French administration). On the other hand, in the “protectorates”, the indigenous rulers continued to govern at home under the influence of the French administration (indirect control through a French resident-general and a military presence) (Wesseling, 2004).

¹⁵ In 1925, a law allowed agriculture credit banks to provide medium and long-term loans (Isnard, 1949).

[Insert Figures 4 and 5 here]

Also in Tunisia, the growth of wine production and export is closely linked to French policies. Before Tunisia became a French Protectorate in 1881, less than 2,000 hectares of grape vines were cultivated and some *kosher* wine was produced by the Jewish communities. From the 1880s onwards, the Tunisian wine industry grew rapidly as the French administration stimulated investments in vineyards (among other things by providing loans) to service and reinforce French settlements in the colonies and to export to France to compensate for the fall in French production.

New settlers soon started investing. A first wave of colonial immigrants were wealthy French landowners and capitalists seeking for new (cheap) lands free of *Phylloxera*. A second wave of immigrants were ruined Italian winegrowers (mainly from Sicily and Pantelleria, off the Tunisian coast) ruined by the arrival of *Phylloxera* in Italy, that were seeking for a new place to live and to farm the land (Poncet, 1962, p. 141; Riban, 1894, p. 57).¹⁶ These different groups of settlers brought the combination of new technologies, viticultural know-how and the capital to start planting vines on a large scale. The new large wine estates combined (a) capital to invest in modern technologies (as large cellars, mechanical wine presses); (b) the experience from Algeria to produce wine in a hot climate (the cooling system during fermentation); (c) and an experienced labor force (former winegrowers) from Italy (Poncet, 1962, p. 159).

Tunisian wine exports to France benefited also from a regime of preferential trade tariffs. A new law in 1890 changed the trade regime between France and Tunisia, and permitted Tunisian wines to enter France duty free, provided they had an alcohol degree of less than 11 degree alcohol (Poncet, 1962, p. 488; Nogaro and Moye, 1910, p. 221).

¹⁶ The allocation of land between French and Italian settlers was unbalanced. In 1892, a total of 331 French estates were owning 236,000 hectares of land, with more than a third of them having an average size of more than 400 hectares. On the other hand, the average size of the estates owned by Italian immigrants was below 30 hectares (Poncet, 1962, p. 143).

As a result, vine planting (and consequently wine production) expanded massively. In 1892, around 6,000 hectares were planted with vines and production reached 95,000 hectoliters (see Figures 5 and 6).¹⁷ World War I temporarily interrupted the growth of wine production but Tunisian wine production and exports rapidly increased again in the 1920s (Znaïen, 2015). Tunisian wine production doubled from 500,000 hectoliters in 1920 to almost 1 million hectoliters in 1925 and exports tripled from 200,000 hectoliters to 600,000 hectoliters over the same period (Figures 5 and 7). The spectacular growth was driven both by higher productivity (from 20 hectoliters per hectares in 1920 to 35 hectoliters per hectares in 1925) and expanding vineyards (from 18,000 hectares in 1915 to 28,000 hectares by 1925) (Tiengou des Royeries, 1959, p. 77).¹⁸

[Insert Figures 5, 6 and 7 here]

Morocco was (partly) colonized by France in 1912, much later than Algeria and Tunisia. Morocco was divided in two Protectorates—the southern part of the country was occupied by France while the northern part was occupied by Spain. The total European settlers increased from 65,000 in 1911 to 207,000 in 1936 (Wesseling, 2004; Tiengou des Royeries, 1959, p. 89). When the French imposed their protectorate in 1912, around 2,000 hectares were already planted with vines—mainly for the production of fresh grapes. European settlers triggered the growth in vineyards and wine production both for local consumption (they started to drink wine as they did in their home country) and for exports.

¹⁷ European settlers borrowed substantial amounts of capital: a total of 1,500,000 francs were granted to invest in vineyards (Poncet, 1962, p. 197). At the beginning of the 20th century, French investments policy changed somewhat to support smaller vineyards (Leroy-Beaulieu, 1887, p. 430).

¹⁸ After World War I, more ruined Italian immigrants arrived. Their establishment was encouraged by the Protectorate by buying the large domains and selling land and vineyards to the small settlers (mainly Italians). The result was a shift in vineyards ownership. In 1913, French settlers owned 9,186 hectares of vineyards and the Italian settlers 6,448 hectares. By 1920, Italian winegrowers had 10,112 hectares while the French stabilized their vineyards at 9,436 hectares. In 1938 half of the vineyards in Tunisia (about 24,000 hectares out of 43,000 hectares total) were cultivated by 1,845 Italian winegrowers—representing two-thirds of the total European winegrowers (Huetz de Lempdes, 2001, p. 323; Poncet, 1962, p. 248).

At first, wine production was not enough to cover the internal demand from the French and Spanish settlers and Morocco imported about 180,000 hectoliters of wine. However, at the end of the 1920s, there was a true “planting fever” triggered by government loans for agricultural (vineyard) investment. The settlers borrowed substantial amounts of capital which led to a tenfold increase of the area planted with vines (from 2,000 hectares in 1924 to 25,000 hectares in 1938), resulting in increased wine production (from 60,000 hectoliters to 700,000 hectoliters) and decreased wine imports (from around 260,000 hectoliters in 1922 to 55,000 hectoliters in 1933—a 70% decrease) (Huetz de Lemp, 2001, p. 322; *Statistique Générale de la France*, 1878/1901).

Soon wine production exceeded internal demand and Morocco was ready to export Moroccan wine. However, things were different for Morocco than for Algeria and Tunisia. By the time Moroccan wine arrived on the international market in the 1930s, the export market was already flooded with Algerian and Tunisian wine and French wine production had recovered.¹⁹

4. Recovery of French Vineyards and the Introduction of Tariffs and Regulations

It took France more than twenty years to understand why vines were dying and to make vineyards resistant to *Phylloxera*.²⁰ New types of *Phylloxera*-resistant vines were developed, using grafting

¹⁹ Morocco also exported to Belgium, Switzerland and West Africa but these markets were able to absorb only a small fraction of Moroccan wine production (Huetz de Lemp, 2001).

²⁰ French experts were initially led astray by history. French vineyards had been destroyed a few decades earlier by *oidium* (powdery mildew). From 1847 to 1854, wine production decreased from 54 million to 11 million hectoliters. The discovery of sulfur to tackle the *oidium* vine disease allowed France to rapidly recover its wine production levels (production was back at 54 million hectoliters by 1858) (*Statistique Générale de la France*, 1878/1901). This stimulated winegrowers to fight *Phylloxera* with the same means, but unsuccessfully. In the search for a cure, two groups of scientists opposed each other diametrically: the “Chemists” and the “Americanists”. The first group advocated chemical treatments, and steam engines were adapted to pump expensive carbon disulfide into vineyards. The second group claimed that the solution to *Phylloxera* was, paradoxically, its cause. Vineyards could be saved only through the use of the *Phylloxera*-resistant American vines (Gale, 2011; Ordish, 1987; Paul, 1996).

and hybrids with resistant American vines,²¹ and during the 1890s, French vineyards were reconstructed with these new grape varieties. French wine production began to recover and by 1900 it had reached around 65 million hectoliters, the level of the pre-crisis years (Chevet, 2018; Gale, 2011; Paul, 1996).

This recovery and the increased imports caused a fall of wine prices (see Figures 1 and 8). From the peak in 1880, average wine prices fell by more than 60% over the course of the next 25 years. The most dramatic decline was during the 1890s, when imports were high and French production began to recover. The declining prices resulted in demands by French producers to limit imports of wine and raisins.²² As wine prices continued to fall, the protests by winegrowers grew increasingly intense, and turned violent.

[Insert Figure 8 here]

Under these pressures, the French government introduced a series of laws aimed at limiting supply on the French market. The laws were a combination of increased tariffs on wine and raisin imports, of regulations to control “wine quality”²³ (thereby banning certain wines), and of restrictions on the area of land under vineyards. The combination of these regulations had major impacts on Mediterranean wine and raisin trade, and on the exporting countries.

²¹ The first solution—grafting—consisted of attaching European vines to the roots of the *Phylloxera*-resistant American vine species. The second solution—hybrids—consisted of crossing two or more varieties of different vine species. Hybrids were the result of genetic crosses either between American vine species (“American direct-production hybrids”) or between European and American vine species (“French hybrids”) (Campbell, 2004; Gale, 2011).

²² At the turn of the century, viticulture in France was still very important. By 1900, about 1.7 million winegrowers were supporting around 7 million people—representing 18% of the total population in France (Paul, 1996, p. 11).

²³ At the beginning of the 20th century, several laws defined wine, imposed the notification of annual production levels and forbade the addition of water and sugar of wines. Moreover, other laws were introduced linking the “quality” of the wine, to its production region (the *terroir*) and the traditional way of producing wine. The system of *Appellations d’Origine Contrôlées* (AOC) was born (for details see Simpson, 2011; Stanziani, 2004, 2012).

French Tariffs and Wine Trade

The first response of the French government was to increase tariffs on wine imports. Tariffs on Italian wine were increased from 5% to almost 50% in the late 1880s (Becuwe and Blancheton, 2014; Nogaro and Moye, 1910).²⁴ Import tariffs on Spanish wines increased from 5% in 1885 to more than 40% after 1892 – with the “Méline tariff” (Figure 9).²⁵ Import tariffs were further raised in 1899 and led to a dramatic decrease in imports of Spanish and Italian wine (see Figure 10) (Golob, 1944; Fernández and Pinilla, 2018; Pinilla and Ayuda, 2002, 2008). Figure 10 shows that imports fell from more than 10 million hectoliters in the late 1880s to 5 million hectoliters in the early 1900s, mostly as a consequence of the decline in Spanish imports.

[Insert Figures 9 and 10 here]

The French government continued to allow tariff-free entry of Algerian and Tunisian wine (Morocco did not produce an export surplus until the 1930s), produced by French winegrowers ruined by *Phylloxera* who had emigrated to the colonies. Moreover, France still needed extra wine to meet domestic demand—average French annual production was 30 million to 40 million hectoliters in the 1890s, compared with its annual pre-*Phylloxera* average of 50 million hectoliters (see Figure 1).

The changed structure of French import tariffs thus caused a substitution of wine imports from Spain and Italy to France’s North African colonies. Imports of Algerian and Tunisian wine

²⁴ The “trade war” (1887–1892) between Italy and France included also Italy’s increase of tariffs on wheat and manufactures in 1887 (Federico and Tena, 1999).

²⁵ The “Méline tariff” of 1892 was named after the French statesman, Jules Méline, at that time president of the Chamber of Deputies. The “Méline tariff” of 1892 set a double-tariff system, a “general tariff” applied to all the countries and a “minimum tariff” applied to countries who gave France correlative advantages in trade, i.e. an invitation for bilateral agreements (Barral, 1974; Haight, 1941, p. 66). According to Smith (1992), the “Méline tariff” is “*credited with ending France’s experiment in free trade and returning the country to a policy of high protection (...) it was arguably the most important piece of economic legislation in the history of the Third Republic*”.

more than tripled as imports from Spain and Italy declined. As Figure 10 illustrates, from 1900 onwards, French wine imports roughly equaled Algerian and Tunisian production.

Quality Standards, Tariffs and the Collapse of Raisin Trade

The decline of Spanish and Italian wine imports did not bring the expected relief for French vineyard owners since wine and grape prices remained low due to growing wine imports from the North African colonies and because of growing production of French wines from imported raisins. French producers therefore continued to lobby the government for additional measures to protect them. One of their demands was to restrict the import of raisins, mostly from Turkey and Greece, and the use of imported raisins for French wine production.

In 1889, at the peak of Greek and Turkish raisin exports to France, the French government gave in to the pressure and introduced four major regulations to reduce the production of French wine from imported raisins: (1) compulsory labeling of “raisin wines” to distinguish these from “real” wine; (2) high taxes on “raisin wine” production in France; (3) prohibition of adding water to wines; and (4) high tariffs on raisin imports. The import tariffs on raisins and production taxes on raisin wines made these wines much more expensive. The compulsory labeling of “raisin wines” and the regulation that prohibited adding water to wine were both presented as “quality regulations” to protect French consumers from inferior wines and to resolve asymmetric information problems. However, these regulations obviously tried to restrict the market for raisin wines. In particular, the prohibition of adding water to wine greatly complicated wine production from raisins, a process where water was normally added.

The combined effect of these regulations was dramatic. They effectively destroyed the production of “raisin wines” in France. French production of “raisin wines” decreased from 4

million hectoliters (the production peak) to less than a million after 1893. It fell further to almost nothing after the beginning of the 20th century (see Figure 11).

[Insert Figure 11 here]

The impact on raisin trade was similar. Greek raisin exports to France fell from 71,000 tons in 1889 to 14,600 tons in 1893 (Petmezas, 2000). Turkish raisin exports fell from around 200 million pounds to around 100 million pounds by 1900, mostly due to declining exports to France (Morilla Critz et al., 2000; Williamson, 2000). Hence, the impressive growth of Turkish and Greek raisin production and exports in the 19th century was followed by an equally spectacular fall (see Figure 12).

[Insert Figure 12 here]

The impact of the decline in trade on the Turkish and Greek economies differed because the Greek economy was much more exposed to raisin exports to France (in 1889, raisins dominated Greek exports and 43% of Greek raisins were exported to France) than the Turkish economy. In Greece, the French raisin regulations ultimately led to a national crisis (Franghiadis, 1990, p. 33; Petrakis and Panorios, 1992). Greek raisin prices dropped from 0.63 francs per kilograms in 1890 to 0.09 francs per kilograms in 1893—a 85% decrease (Tsiovaridou, 1980). There were important macro-economic implications as foreign debts represented one-third of the national budget and were partially guaranteed by the revenues from raisin exports. The fall in the raisin export value contributed thus to a significant decrease in government revenues and ultimately to the bankruptcy of the Greek government in 1893 (Chiotellis, 2014; Gallant, 2015; Morilla Critz et al., 1999; Pepelasis Minoglou, 1995; Stavrianos, 1958).

Turkey had a more diversified export portfolio and British demand for their raisins remained stable.²⁶ Turkish raisin production was hit by the spread of *Phylloxera* to Turkey, causing a decline in grape production. This contributed to the growth of exports from California and Australia as a leading raisin producers in the early 20th century. They especially competed on the British market and Turkey gradually managed to reorient raisin exports to northern Europe (Morilla Critz, 1995; Morilla Critz et al., 2000; Pamuk, 1992).

5. Tariffs, Regulations and Wine Trade from North Africa

However, even with Spanish and Italian wine and Greek and Turkish raisins blocked from the French market through a combination of standards and tariffs, wine prices in France to continue to decline during the first decade of the 20th century (see Figure 8). Moreover, after 1905, further increases in Algerian and Tunisian imports (from 4 million hectoliters to 6 million hectoliters) caused total wine imports (which now consisted mostly of Algerian and Tunisian wine) to increase between 1905 and 1915.

Wine imports from Algeria, Tunisia and Morocco were initially not subject to tariffs and caused a substitution of wine imports from Spain and Italy to these North African countries. Yet, their colonial status and the overall trade regimes were not the same for the three countries and this mattered when the pressure on the government from French wine producers continued to grow.

²⁶ Between 1882 and 1913, while raisins accounted for 40% of total Greek exports, they accounted for 24% of the Turkish ones (Morilla Critz, 1995, p. 269).

A Protectorate is not a Colony: Differential Tariffs on North African Wine Imports

While Algeria was a “true” colony, and therefore part of a French custom union with zero internal tariffs, Tunisia and Morocco were French “protectorates”—retaining some sovereignty, but also different trade relationships. France had a regime of preferential trade tariffs with Tunisia and Morocco (based on a system of duty free quota). As previously explained, Tunisian wine exports benefitted from the 1890 law that permitted Tunisian wines to enter France duty free. However, as French production increased and Algerian imports continued to grow, there was strong pressure on the French government to constrain imports from Tunisia (and Morocco).

A first restrictive trade measure was introduced in 1928, when a new law imposed an annual quota of 550,000 hectoliters of Tunisian wine which could be exported free of duty into France. Beyond this quota wine imports were taxed at a minimum tariff rates (JORF, 1928). Not surprisingly, Tunisia objected vehemently. Tunisia was producing 1.2 million hectoliters and exporting around 700,000 hectoliters of wine (see Figure 5).²⁷ Tunisian winegrowers therefore strongly lobbied the French government for a larger duty free quota (Marseille, 1984). After seven years of lobbying, a 1935 law increased the duty free import quota to 750,000 hectoliters of wines and an extra quota of 500,000 hectoliters could be imported at a lower tariff of 30 francs per hectoliter—below the minimum tariff rates (Chaudier, 1898; Haight, 1941, p. 244; Poncet, 1962, p. 488; Marseille, 1984).

Morocco never benefited from the preferential access to French wine markets. By the time that it produced an export surplus, in the mid-1930s, France was a saturated market and the French government was under strong political pressure from the domestic wine producers to protect them. France immediately imposed high tariffs on Moroccan wines (Tiengou des Royeries, 1959, p. 92).

²⁷ Domestic consumption never exceeded 350,000 hectoliters in Tunisia (Tiengou des Royeries, 1959, p. 80).

Algeria escaped the protectionist tariff regimes in France because it was a colony integrated in France's zero tariff custom union. In fact, it now benefited from all its competing exporters to the French market facing high tariffs and continued to increase exports.

Non-Tariff Regulations to Restrict North African Exports

By the 1930s, France had totally banned imports of wine from Spain and Italy and raisin imports from Greece and Turkey through tariffs and other regulations and limited imports from Morocco and Tunisia through tariff quotas. However, the pressure on the French wine market continued. With growing internal production, growing imports from Algeria and the 1929 Great Depression reducing demand, prices kept falling. Between 1927 and 1935, real wine prices declined by 50% in France (see Figure 8). This caused more protests from wine growers in France (Augé-Laribé, 1950; Chevet, 2018 Lachiver, 1988). In response, the French government prohibited the blending of French wines with those of other countries, and it introduced laws aimed at reducing vineyards surface and at banning new planting of vines.

First, a 1930 French law prohibited the blending of foreign wines with national wines.²⁸ Most wine coming from the colonies served as *vin de coupage*²⁹ for the French wines—they were blended in order to increase French alcoholic content.³⁰ Moroccan and Tunisian wine exports were

²⁸ The 1930 law established that: “*Imported wines will be able to circulate for sale, be offered for sale or sold, if the indication of the country of origin and their alcohol content is clearly marked on the containers, invoices and other official documents (...)*” [Translation by the authors. “*Les vins importés ne pourront circuler en vue de la vente, être mis en vente ou vendus, que si l’indication de leur pays d’origine et de leur degré alcoolique figurent clairement sur les récipients, factures et pièces de régie*”] (Article 4, JORF, 1930).

²⁹ “*Is considered ‘vin de coupage’, any wine resulting from the blending by a merchant of wines with different origin.*” [Translation by the authors. “*Est considéré comme vin de coupage, tout vin résultant du mélange par un commerçant de vins différant entre eux par la provenance.*”] (JORF, 1930).

³⁰ French demand for high alcohol wines had increased because new hybrid vines (one of the solutions to *Phylloxera*) produced wines with lower alcohol levels—no higher than 8% or 10%. In order to increase the alcohol content of their wines, French wine producers had to either add sugar or blend their wines with North African wines that had a much higher alcohol level—from 13% to 16% (Gautier, 1930).

directly affected by the blending prohibition but Algerian wine exports not. As Algeria was formally part of France, Algerian wines were not considered “foreign wines” and therefore not affected by the 1930 law (Isnard, 1966; JORF, 1930, Article 4).

Second, between 1931 and 1935, a series of laws aimed at controlling the wine supply were introduced by restrictions on vineyards surface and new planting of vines and premiums for grubbing up vineyards (Meynier, 1981, p. 129). Because almost all North African production was exported to France, a limit on vineyard expansion was equivalent to import constraints. The *Statut Viticole*, applied to France and Algeria, immediately halted the increase in vineyard area (see Figure 6). Total vineyard area in Algeria never expanded beyond the level reached in the mid-1930s (400,000 hectares). In Tunisia, laws prohibited the extension of vineyards above 10 hectares in 1932 and banned new planting and replanting of vines in 1933. Grubbing-up premiums were provided to winegrowers who permanently abandoned vineyards.³¹ In Tunisia the total surface planted with vines decreased from 51,000 hectares in 1933 to 42,000 hectares in 1937. In Morocco, three laws were introduced to halt the expansion of vineyards. In 1935, an edict (*dahir*) prohibited the planting of new vines and, in 1937, another edict provided restrictions not only on new plantings but also on the replanting of vines (Poncet, 1976; Tiengou des Royeries, 1959, p. 80/93).

Third, the *Statut Viticole* also included other measures that discriminated against Algerian production. It obliged producers to store part of the excess production (*blocage*). Due to the hot climate, the obligation to store part of the excess production was more difficult for Algerian than for French wine producers. It also imposed a tax on large crops and yields, and prohibited new planting of vines for ten years for producers who owned vineyards of more than 10 hectares or

³¹ The winegrowers committed at reducing by 10% the planted areas, a percentage lifted to 15% in 1935 (Tiengou des Royeries, 1959, p. 80).

who produced more than 500 hectoliters of wine. Also this regulation affected Algerian producers harder than French producers because in the 1930s, the average vineyard of French winegrowers was around 1 hectare, whereas in Algeria it was around 22 hectares. Furthermore, the average yield in France was 38 hectoliters per hectare, whereas in Algeria it was almost 50 hectoliters per hectare (Isnard, 1947; Loubère, 1990).

Destructions and Trade Liberalization in the 1940s

In the decade between 1935 and 1945, North African wine exports were reduced by the arrival of *Phylloxera* and the destructions caused by World War I. The vine area declined with the arrival of *Phylloxera* in Morocco (1935) and Tunisia (1936). This reduced the vineyards by a third: vineyards in Tunisia decreased from 42,000 hectares in 1937 to 30,000 in 1945 and vineyards in Morocco decreased from 26,000 hectares to 18,000 hectares over the same period (*Statistique Générale de la France*, 1878/1901). Starting in 1939, North African wine exports were paralyzed as the fighting in World War II (1939–45) seriously affected maritime trade and caused destruction and abandonment of many vineyards in France and Algeria, leading to a sharp fall in wine production.³² The destructions affected the French regulations. With falling North African production and exports, the *Statut Viticole* was repealed and planting restrictions were liberalized in 1942 (Blanc, 1967; Meloni and Swinnen, 2014).

After the war, North African wine production and exports recovered helped by new trade agreements with France (Isnard, 1949; Isnard and Labadie, 1959). World War II had caused a sharp fall in French and Algerian wine production and France needed more wine than it could

³² Somewhat paradoxically, World War II also stimulated the wine industry in some regions. In Morocco and Algeria, the internal consumption increased after the landing of allied troops (code-named ‘Operation Torch’) in 1942. As a consequence, local wine consumption increased as Americans and British soldiers were asking for wine. Wine consumption increased so abruptly that Morocco had to import wines (250,000 hectoliters) in 1944.

produce. While Algerian production recovered, more liberal trade regimes with Tunisia and Morocco stimulated wine production and exports there.

A new trade agreement between France and Morocco was reached in 1948. A total of 1 million hectoliters of wines could enter France duty free.³³ Moreover, the restrictive vine planting regulations were eased: in 1943 the Sultan Mohammed V allowed the planting of 10,000 hectares of new vines and, from 1953 onwards, allowed the planting of 3,000 hectares per year. Morocco vine plantings increased fourfold (from 20,000 hectares in 1946 to about 70,000 hectares in 1956) and its wine production increased sixfold (from 300,000 hectoliters to 2 million hectoliters) over the same period (Huetz de Lemps, 2001, p. 327; Valay, 1966).

A new customs agreement with Tunisia (1955) raised the duty free quota to 1.25 million hectoliters (instead of 750,000 hectoliters). As a result, Tunisian wine production doubled in four years (from 1 million hectoliters in 1954 to 2 million hectoliters in 1958) and wine exports tripled (from 400,000 to 1.3 million hectoliters) over the same period (Poncet, 1962, p. 488).

Independence, Tariffs and the Collapse of the Wine Trade in North Africa

By the 1950s, North Africa accounted for almost two-thirds of the world's wine exports and Algeria was the world's largest exporter of wine (see Figure 13). However, global wine trade changed dramatically when Morocco (in 1956), Tunisia (in 1956) and Algeria (in 1962) became independent and France immediately increased tariffs on their wine imports in response.

After the independence of Tunisia and Morocco, France eliminated their preferential wine tariffs and did not allow duty-free wine imports anymore. In 1959, a new trade agreement was

³³ The 1 million hectoliter quota was divided in: 300,000 hectoliters for wines with an alcohol degree of less than 12 degree alcohol and 700,000 hectoliters for wines with an alcohol degree of more than 12 degree alcohol (Tiengou des Royeries, 1959, p. 95).

reached, with Tunisian exports enjoying some preferences in the French market under the most-favored-nation rule. However, when the Tunisian government decided to nationalize vineyards belonging to the European settlers in 1964, France retaliated by ending the Franco-Tunisian trade agreement (Angles, 1996; Valay, 1966). Tunisian wine exports to France fell from 1.3 million hectoliters in 1959 to 600,000 hectoliters in 1968 (see Figure 7). For Morocco as well, France decided in 1967 to eliminate the duty free quota of 1 million hectoliters. As a result, Moroccan wine exports decreased sharply: from 1.7 million hectoliters in 1959 to 700,000 hectoliters in 1968 (Huetz de Lempis, 2001, p. 328).

The trade implications of their independence were most problematic for Algeria which until then had not faced import tariffs for its wine exports to France. After independence, Algerian wine was no longer a “French product” and therefore subject to tariffs. In 1964, a five-year agreement was reached between France and Algeria in which France committed to import between 7 million and 9 million hectoliters of Algerian wine per year over the next five years (much lower than the 15 million it was importing annually before independence. Actual French imports were even lower since the French government did not fulfill the agreement. Consequently, Algerian wine exports to France fell by two-thirds in only a few years (Isnard, 1966).

The new French trade restrictions induced the North African wine exporters to search for other export markets. Morocco found some minor export markets in Germany and in West Africa (Ivory Coast and Senegal) but at low prices (Huetz de Lempis, 2001, p. 328). Tunisia also tried to export to other countries, such as the United States, Germany and West Africa, but with little success. Algeria signed a wine trade agreement with the Soviet Union in 1969. This led to a brief recovery of exports with the Soviet Union becoming Algeria’s principal wine export market (with exports around 12 million hectoliters in 1969 and 1970), but the recovery did not last. Exports to

France continued to decline, and wine prices paid by the Soviet Union were too low to make wine export profitable (Sutton, 1988). Profitability of North African wine production and exports was also undermined by the loss of skills with the departure of many European settlers after independence and poor new management with vineyards being nationalized and now run by state organizations and local politicians without much agricultural knowledge or wine-making skills (Huetz de Lemp, 2001; Stone, 1997).³⁴

In summary, the combination of French regulations and poor domestic management of the wine sector after its nationalization and caused a dramatic reduction in exports. The state-managed system was unable to respond effectively to the changed international market situation and could not find alternative outlets or reposition North African wines for a growing global market.³⁵ The fall of the North African wine industry continued through the rest of the 20th century and returned to where it had been a century earlier, before its spectacular rise as the world's leading exporter. From a global perspective, it has effectively disappeared. Production, vineyard surface, and exports have fallen back to negligible levels. French policies were crucial in its growth and in its fall.

The collapse of the North African wine industry coincided with the integration of European wine markets and regulations in the (then EEC's, now EU's) Common Wine Policy (Meloni and Swinnen, 2013). As the European wine market grew, so did the regulations, expanding from the French and Italian market with the accession of Spain and Portugal in the 1980s, Austria in the

³⁴ In Algeria, the ruling political party (National Liberation Front) nationalized agricultural land in 1962, including vineyards and the entire wine sector. In Morocco vineyards were taken over by the *Société de Développement Agricole* (SODEA) (Birebent, 2007; Huetz de Lemp, 2001, p. 328). In Tunisia, the new President Habib Bourguiba advised winegrowers to stop planting and to progressively replace vines by more profitable crops such as flowers and asparagus (Isnard, 1966).

³⁵ For instance, the state decided to uproot a large share of the vineyards in Algeria. Between 1970 and 1973, 20% of the total vineyards were uprooted, some 71,300 hectares of vine (Sutton, 1988).

1990s and East European producers such as Bulgaria, Romania and Hungary in the 2000s. Yet at the same time, the share of the traditional wine traders in global markets was reduced by the success of the New World's wine exports.

6. Conclusions

The 1860-1970 wine trade is a rich source of insights on the bi-causal relationship between economic changes and political decisions on public regulations; and about the political economy of instrument choice in public policy. To understand the dramatic changes in wine trade from the middle of the 19th and to the mid-20th centuries, it is crucially important to recognize the central role of France regulations. France was the world's leading wines exporter for centuries but the invasion of *Phylloxera* devastated French vineyards in the 1870s and 1880s. This was the start of dramatic changes in wine trade as France liberalized its trade regime and started importing millions of hectoliters of wine from Spain and Italy. They rapidly became the world's largest wine exporters and France became the world's largest wine importer. France not only imported wine but also dried grapes (raisins) from Turkey and Greece to produce wine.

At the same time French migrants, encouraged by France trade policy, invested in vineyards in the North African colonies (Algeria, Tunisia and Morocco). Before then, there were very few vineyards in North Africa, mostly for local consumption by French colonists and settlers. Wine production grew rapidly in the late 19th century, mostly for exports to France.

After French production recovered in the late 1890s, the combination of increased local production and growing wine imports from Spain, Italy and North Africa and raisins from Greece and Turkey caused a fall in wine prices. French producers put pressure on the government for policies to protect them. This resulted in a series of regulations introduced during the late 19th

century and continued into the 20th century. One set of government interventions were the introduction of high tariffs on Spanish and Italian wines and on Turkish and Greek raisins. In addition, “quality regulations” introduced labeling to distinguish “wine” from “raisin wine”, imposed taxes on raisin wines and prohibited the use of water in (raisin) wine production. The combination of these tariffs and regulations was the collapse of wine imports from Spain and Italy and of raisin imports from Turkey and Greece.

However, as colonial wines were initially not subject to tariffs and substituted for Spanish and Italian wine imports, French wine prices continued to fall. This resulted in a new set of trade restrictions and regulations to constrain the growth of North African wine imports in the 1920s and 1930s. Yet, their colonial status and the overall trade regimes were not the same for the three North African countries and this mattered when the pressure on the government from French wine producers continued to grow. While Algeria was a “true” colony, and therefore part of a French custom union with zero internal tariffs, Tunisia and Morocco were French “protectorates”, benefiting from a regime of preferential trade tariffs (based on a system of duty free quota). Vineyard destructions due to World War II caused a temporary recovery of wine prices and liberalization of French wine regulations. However, regulations were re-introduced when wine production in North Africa and France recovered from the war and trade growth resumed. Imports from North Africa finally came a (crashing) end when Tunisia, Morocco and Algeria declared their independence and took over the vineyards. France retaliated by imposing quotas and tariffs, with devastating consequences for their wine exports. Attempts to shift exports to other regions failed and wine exports from North Africa collapsed. After that, wine trade became increasingly integrated within the heavily regulated EU’s Common Wine Market while global wine trade grew with exports from the New World.

These developments, and particularly French changes in French wine policy, are consistent with the so-called relative income and loss aversion arguments in political economy theory where vested interests invest in political activities when returns from the market fall, and vice versa (Freund and Ozden, 2008; Swinnen, 1994; Tovar, 2009). Market evolutions, and in particular wine prices, are strongly correlated with producer lobbying and government policy interventions to protect wine producers—and vice versa with liberalizations of trade restrictions and domestic regulations when wine prices recover.

They also provide insights on the political economy of policy instrument choice. Our analysis clearly shows that tariffs are the first instrument used to protect domestic producers. This is not unusual. In fact, one of the stylized fact of agricultural and food policies is trade-policy instruments such as tariffs are the most important agricultural and food policies to protect producers—and consumers. In earlier history, they were often the only policies, but even today remain very important (Anderson, 2009). While tariffs cause strong market distortions³⁶ and conflicts with trade partners, from a political economy perspective they are often the first instrument used.

There are several reasons why tariffs are used first (Anderson et al., 2013; Swinnen, 2018). First, and most obviously, with pressure on domestic producers coming from imported products, the most direct way of reducing the pressure is to restrict imports. A second factor is the so-called “revenue motive” of public policy. Tariff revenues increase government revenues and improve terms of trade, while other forms of protection (such as direct subsidies) cost public funds. Third, import tariffs have relatively low transaction costs, i.e. they are often the easiest and least costly

³⁶ There is an extensive literature comparing the transfer efficiency and the distortions of various policy instruments in trade and agricultural policies (Gardner, 1983; Alston and James, 2002).

policy to implement (Rodrik, 1995; Dixit, 1996). In particular, in countries where tax-collection or subsidy-distributing institutions are weakly developed, trade taxes (import tariffs or export taxes) are often an important policy both for protecting certain sectors and to collect tax revenue. This was the case in the late 19th and early 20th century when other tax and subsidy institutions were less developed. Finally, tariffs may also be preferred by politicians when there are information imperfections in political markets.³⁷

The choice to complement or substitute tariff interventions with other regulations, such as standards, including labeling and prohibitions, on the wine production process and the use of certain inputs, can be motivated both by economic and political considerations (Marette and Beghin, 2010; Swinnen, 2016). Labeling and the restrictions of certain inputs (such as the use of raisins in wine production or the blending of French wine with imported North African wine) can reduce asymmetric information for consumers or undesirable externalities. However, at the same time, it can be used to protect certain producer groups. From our analysis, it is clear that while some of these regulations could enhance consumer information, they were often introduced under pressure from French wine growers to protect their markets. Not surprisingly, regulations were often targeted to imported products (wine and raisins) when tariffs by themselves were either not possible to be introduced (such as on colonial wine). This is also consistent with arguments why other wine regulations were introduced in France to protect “traditional wine regions” from “new wine regions” inside France where hybrids allowed wine to be produced (Meloni and Swinnen,

³⁷ Two other political economy arguments relate to information imperfections. Politicians have an incentive to use policies that hide the costs of protectionist interventions (Magee et al., 1989). This obfuscation perspective helps explain why non-budget methods of redistribution, such as tariffs, are politically preferable to direct subsidies. A related argument is that governments may prefer distortionary policies, such as tariffs, when they have imperfect information on their target group or the amount of transfer needed (Foster and Rausser 1993; Mitchell and Moro, 2006). The total transfers—even with deadweight costs—may be lower than would be the case with direct (lump-sum) transfers when governments need to secure a minimum amount of political support.

2013). The shift from quality regulations to tariffs once the North African colonies became independent is also consistent with this argument.

Finally, while tariffs and regulations are jointly used in wine policy, either as complements or as substitutes in policy design, it appears that their historical legacy is quite different. This is due to dynamic political economy effects. While it is relatively easy to raise and lower tariffs because of low political and administrative transaction costs, it is much more difficult to change regulations. Once regulations are introduced, producers and consumers will adjust their behavior (investments, production processes and consumer preferences) in response. This will, in a dynamic way, affect the future political economy equilibria, leading to hysteresis in regulations. Meloni and Swinnen (2013, 2015) and Swinnen (2017) have documented and explained these dynamic political economy effects of food regulations for several sectors, including wine. One factor is that several of today's EU regulations have their roots in regulations which were introduced (often by France) more than a century earlier.

References

- Alston, J.M. and J.S. James. (2002). “The Incidence of Agricultural Policy,” In B. Gardner and G. Rausser (eds.), *Handbook of Agricultural Economics*. Amsterdam: North Holland, pp. 2073–2123.
- Anderson, K. (1995). “Lobbying Incentives and the Pattern of Protection in Rich and Poor Countries,” *Economic Development and Cultural Change*, 43(2): 401–23.
- Anderson, K., Damania, R. and L. A. Jackson. (2004). “Trade, Standards, and The Political Economy of Genetically Modified Food,” Policy Research Working Paper No. 3395. Washington, D.C: The World Bank.
- Anderson, K. (ed.) (2009). *Distortions to Agricultural Incentives: A Global Perspective, 1955 to 2007*. London: Palgrave Macmillan and Washington DC: World Bank.
- Anderson, K. and V. Pinilla (with the assistance of A.J. Holmes) (2017). *Annual Database of Global Wine Markets, 1835 to 2016*, Wine Economics Research Centre, to be posted at www.adelaide.edu.au/wine-econ/databases/global-wine-history (Accessed on December 24).
- Anderson, K. and V. Pinilla (eds.) (2018). *Wine Globalization: A New Comparative History*, Cambridge and New York: Cambridge University Press.
- Anderson, K., Rausser, G. and J. Swinnen. (2013). “Political Economy of Public Policies: Insights from Distortions to Agricultural and Food Markets,” *Journal of Economic Literature*, 51(2): 423–77.
- Angles, S. (1996). “Les Aspects Récents de la Viticulture Tunisienne,” in Le Gars, C. and P. Roudié (eds.) *Des vignobles et des vins à travers le monde: Hommage à Alain Huetz de Lemps*. Cervin: Presses Universitaires de Bordeaux, pp. 567–574.
- Aroni-Tsichli, K. (2014). “The Agrarian Question: The Agrarian Movement and Issues of Land Ownership in Greece, 1821–1923,” *Martor*, 19: 43–62.
- Augé-Laribé, M. (1950). *La Politique Agricole de la France de 1880 à 1940*. Paris: Presses Universitaires de France.
- Baldwin, R.E. (2000). “Regulatory Protectionism, Developing Nations and a Two-Tier World Trading System,” In Collins, S. and D. Rodrik (eds.), *Brookings Trade Forum*, Washington, DC: Brookings Institution Press, pp. 237–293.
- Barral, P. (1974). “Les Groupes de Pression et le Tarif Douanier Français de 1892,” *Revue d'Histoire Economique et Sociale*, 52(3): 421–426.
- Becuwe, S. and B. Blancheton. (2014). “The Dispersion of Customs Tariffs in France between 1850 and 1913: Discrimination in Trade Policy,” in C. Hanes and S. Wolcott (eds) *Research in Economic History (Research in Economic History, Volume 30)*. Emerald Group Publishing Limited, pp.163–183.
- Beghin, J., Anne-Célia, D., Stéphan, M. and T. Frank Van. (2012). “Welfare Costs and Benefits of Non-Tariff Measures in Trade: A Conceptual Framework and Application,” *World Trade Review*, 11(3): 356–375.

- Beghin, J.C., Maertens, M. and J. Swinnen. (2015). “Non-tariff Measures and Standards in Trade and Global Value Chains,” *Annual Review of Resource Economics*, 7(1): 425–450.
- Beghin, J. and D. Orden. (eds). (2012). “Special Issue: NTMs, Agriculture and Food Trade, and Competitiveness,” *The World Economy*, 35(8): 967–1088.
- Bichet, R. (1934). “Piquettes et Vins de Sucre,” in Hitier, H. and L. Brétignère (eds.), *Journal d'Agriculture Pratique*, Paris: Librairie de la Maison rustique du XIXe siècle.
- Birebent, P. (2007). *Hommes, vignes et vins de l'Algérie Française: 1830–1962*. Nice: Editions Jacques Gandini.
- Blanc, G. (1967). *La Vigne dans l'Économie Algérienne. Essai d'Analyse des Phénomènes de Domination et des Problèmes Posés par l'Accession à l'Indépendance Économiques dans le Secteur Agricole*. Thèse présentée et publiquement soutenue devant la Faculté de Droit et des Sciences Economiques de Montpellier pour l'obtention du grade de Docteur en Sciences Economiques.
- Campbell, C. (2004). *Phylloxera: How Wine was Saved for the World*. London: HarperCollins.
- Chaudier, J. (1898). *Le Régime Douanier de la Tunisie : La loi Française du 19 juillet 1890, le Décret Beylical du 2 mai 1898*. Montpellier: Imprimerie de Serre et Roumégous. Available at <http://gallica.bnf.fr/ark:/12148/bpt6k57728089> (Accessed March 16, 2016).
- Chiotellis, A. P. (2014). “Sovereign Debt Restructuring and the Internal Legal Framework: The Greek Experience,” in Christoph G. Paulus (ed.), *A Debt Restructuring Mechanism for Sovereigns: Do We Need a Legal Procedure?* München: C.H. Beck, pp. 99–117.
- Chevet, J.-M., Fernandez, E., Giraud-Héraud, E. and V. Pinilla. (2018). “France,” in Anderson, K. and V. Pinilla. (eds.), *Wine Globalization: A New Comparative History*, Cambridge and New York: Cambridge University Press, forthcoming.
- Dixit, A.K. (1996). *The Making of Economic Policy: A Transaction Cost Politics Perspective*. Cambridge, MA: MIT Press.
- Dries, L., Germenji, E., Noev, N. and J. Swinnen (2009). “Farmers, Vertical Coordination, and the Restructuring of Dairy Supply Chains in Central and Eastern Europe,” *World Development*, 37(11): 1742–1758.
- FAO (2016). FAOSTAT. *Food and Agriculture Organization of the United Nations*. Available at <http://faostat3.fao.org/home/> (Accessed May 1, 2016).
- Federico, G. and A. Tena. (1999). “Did Trade Policy Foster Italian Industrialization? Evidences from the Effective Protection Rates, 1870–1930,” *Research in Economic History*, 19: 111–138.
- Federico, G. and P. Martinelli. (2018). “Italy before World War Two,” in Anderson, K. and V. Pinilla. (eds.), *Wine Globalization: A New Comparative History*, Cambridge and New York: Cambridge University Press, forthcoming.
- Fernández, E. and V. Pinilla. (2018). “Spain,” in Anderson, K. and V. Pinilla. (eds.), *Wine Globalization: A New Comparative History*, Cambridge and New York: Cambridge University Press, forthcoming.

- Fisher, R. and P. Serra. (2000). "Standards and Protection," *Journal of International Economics*, 52(2): 377–400.
- Foster, W.E., and G.C. Rausser. (1993). "Price-Distorting Compensation Serving the Consumer and Taxpayer Interest," *Public Choice*, 77(2): 275–291.
- Francis, A. D. (1972). *The Wine Trade*. London: Adams and Charles Black.
- Frangakis-Syrett, E. (1994). "Monoculture in Nineteenth-Century Greece and the Port City of Patras," *Journal of the Hellenic Diaspora*, 20: 9–34.
- Franghiadis, A. (1990). *Peasant Agriculture and Export Trade: Currant Viticulture in Southern Greece, 1830–1893*. Florence: European University Institute.
- Freund, C., and C. Ozden. (2008). "Trade Policy and Loss Aversion," *American Economic Review*, 98(4):1675–1691.
- Fulponi, L. (2007). "The Globalization of Private Standards and the Agri-Food System," In: J. F. M. Swinnen (ed.), *Global Supply Chains, Standards and the Poor*. CABI publications, pp. 19–25.
- Gale, G. D. (2011). *Dying on the Vine. How Phylloxera Transformed Wine*. Berkeley: University of California Press.
- Galet, P. (1964). *Cépages et Vignobles de France*, Tome IV. Montpellier: Imprimerie du Paysan du Midi.
- Gallant, T. (2015). *The Edinburgh History of the Greeks, 1768 to 1913: The Long Nineteenth Century*. Edinburgh: Edinburgh University Press.
- Gardner, B.L. (1983). "Efficient Redistribution through Commodity Markets," *American Journal of Agricultural Economics*, 65(2): 225–234.
- Gautier, M.E.F. (1930). "L'Evolution de l'Algérie de 1830 à 1930," in Comité National Métropolitain du Centenaire de l'Algérie (ed.), *Les 12 cahiers du Centenaire de l'Algérie* (ed., vol 3). Orléans: A. Pigelet & Cie.
- Golob, E. O. (1944). *The Méline Tariff: French Agriculture and Nationalist Economic Policy*. New York.
- Haight, F. A. (1941). *A History of French Commercial Policies*. New York: Macmillan. Available at <https://catalog.hathitrust.org/Record/001153650>.
- Heath, E. (2014). *Wine, Sugar and the Making of Modern France: Global Economic Crisis and the Racialization of French Citizenship, 1870-1910*. Cambridge: Cambridge University Press.
- Heckelei, T. and J. Swinnen. (eds). (2012). "Special Issue on 'Standards and Non-Tariff Barriers in Trade'," *World Trade Review*, 11(3): 353–553.
- Huetz de Lemp, A. (2001). *Boissons et civilisations en Afrique*. Pessac: Presses Universitaires de Bordeaux.
- Inal, O. (2018). "Fruits of Empire: Figs, Raisins, and Transformation of Western Anatolia in the Late Nineteenth Century," *Environment and History*, forthcoming.

- Isnard, H. (1947). "Vigne et Colonisation en Algérie (1880–1947)," *Annales. Économies, Sociétés, Civilisations*, 2(3): 288–300.
- Isnard, H. (1949). "Le Vignoble Européen de Tunisie au lendemain de la Guerre," *L'information géographique*, 13(4): 159–161.
- Isnard, H. (1954). *La Vigne en Algérie, Etude Géographique*. Book II. Ophrys: Gap.
- Isnard, H. (1966). "La Viticulture Nord-Africaine," in *Annuaire de l'Afrique du Nord-1965* (Vol. 4). Paris: Editions du CNRS, pp. 37–48.
- Isnard, H. and J. H. Labadie. (1959). "Vineyards and Social Structure in Algeria," *Diogenes*, 7: 63–81.
- Johnson, D. G. (1973). *World Agriculture in Disarray*. London: Macmillan.
- JORF. (1928, April 1). Loi du 30 mars 1928 modifiant le régime douanier applicable aux vins et autres produits tunisiens, *Journal Officiel de la République Française*, p. 3719.
- JORF. (1930, January 12). Loi du 1^{er} Janvier 1930 sur les vins, *Journal Officiel de la République Française*, p. 394.
- Kassab, A., Abdussalam, A. A. and F.S., Abusedra. (1987). "L'Economie Coloniale: L'Afrique du Nord," in Albert Adu Boahen (ed.), *L'Afrique sous domination coloniale, 1880-1935*. Paris: Editions UNESCO, pp. 455–493.
- Krueger, A. O., Schiff, M. W. and A. Valdés. (1988). "Agricultural Incentives in Developing Countries: Measuring the Effect of Sectoral and Economy-wide Policies," *The World Bank Economic Review*, 2(3): 255–71.
- Lachiver, M. (1988). *Vins, vignes et vigneron. Histoire du vignoble français*. Paris: Fayard.
- Lequément, R. (1980). "Le Vin Africain à l'Epoque Impériale," *Antiquités Africaines*, 16: 185–193.
- Leroy-Beaulieu, P. (1887). *L'Algérie et la Tunisie*. Paris: Librairie Guillaumin.
- Li, Y. and J. C. Beghin. (2014). "Protectionism Indices for Non-Tariff Measures: An Application to Maximum Residue Levels," *Food Policy*, 45: 57–68.
- Loubère, L. A. (1990). *The Wine Revolution in France: The Twentieth Century*. Princeton, NJ: Princeton University Press.
- Maertens, M. and J. Swinnen. (2009). "Trade, Standards and Poverty: Evidence from Senegal," *World Development*, 37(1):161–178.
- Maertens, M. and J. Swinnen. (2014). "Agricultural Trade and Development: A Supply Chain Perspective," Working Paper. World Trade Organization (WTO), Geneva.
- Magee, S.P., W.A. Brock, and L. Young. (1989). *Black Hole Tariffs and Endogenous Policy Theory*. Cambridge, UK: Cambridge University Press.
- Marseille, J. (1984). *Empire Colonial et Capitalisme Français. Histoire d'un Divorce*. Paris: Albin Michel.
- Marette, S. (2014). "Non-Tariff Measures when Alternative Regulatory Tools can be Chosen." Mimeo.

- Marette, S. and J.C. Beghin. (2010). "Are Standards Always Protectionist?" *Review of International Economics*, 18(1): 179–192.
- Meloni, G., and J. Swinnen. (2013). "The Political Economy of European Wine Regulations," *Journal of Wine Economics*, 8(3): 244–284.
- Meloni, G. and J. Swinnen. (2014). "The Rise and Fall of the World's Largest Wine Exporter – And Its Institutional Legacy," *Journal of Wine Economics*, 9(1): 3–33.
- Meloni, G. and J. Swinnen. (2015). "Chocolate Regulations." In M. Squicciarini and J. Swinnen (eds.), *The Economics of Chocolate*. Oxford, UK: Oxford University Press, pp. 268–306.
- Meloni, G. and J. Swinnen. (2016). "Standards, Tariffs and Trade: The Rise and Fall of the Raisin Trade Between Greece and France in the Late 19th Century and the Definition of Wine," LICOS Discussion Paper 386, University of Leuven.
- Meynier, G. (1981). *L'Algérie révélée: La guerre de 1914–1918 et le premier quart du XX^e siècle*. Geneva, Paris: Librairie Droz.
- Minten, B., Randrianarison, L. and J. Swinnen (2009). "Global Retail Chains and Poor Farmers: Evidence from Madagascar," *World Development*, 37(11): 1728–1741.
- Mitchell, M., and A. Moro. (2006). "Persistent Distortionary Policies with Asymmetric Information," *American Economic Review*, 96(1): 387–393.
- Morilla Critz, J. (1995). "La Irrupción de California en el Mercado de Productos Vitícolas y sus Efectos en los Países Mediterráneos (1865–1925)", in J. Morilla Critz (ed.) *California y el Mediterráneo. Estudios de la Historia de dos Agriculturas Competidoras*, Madrid: Ministerio de Agricultura, Pesca y Alimentación: 255–318.
- Morilla Critz, J.M., Olmstead, A.L. and P.W. Rhode. (1999). "Horn of Plenty: The Globalization of Mediterranean Horticulture and the Economic Development of Southern Europe, 1880–1930," *Journal of Economic History*, 59(2), 316–352.
- Morilla Critz, J.M., Olmstead, A.L. and P.W. Rhode. (2000). "International Competition and the Development of the Dried-Fruit Industry, 1880–1930," in Pamuk, Ş. and J.G. Williamson (eds.), *The Mediterranean Response to Globalisation before 1950*. London: Routledge, pp. 199–232.
- Nogaro, B. and M. Moye. (1910). *Les Régimes Douaniers. Législation Douanière et Traités de Commerce*. Paris: Colin. Available at <https://archive.org/details/lesrgimesdouan00moyeuoft> (Accessed April 6, 2016).
- Nye, J.V.C. (2007). *War, Wine, and Taxes: The Political Economy of Anglo-French Trade, 1689–1900*. Princeton NJ: Princeton University Press.
- OECD. (2017). *Agricultural Policy Monitoring and Evaluation 2017*. Paris: OECD Publishing. Available at http://dx.doi.org/10.1787/agr_pol-2017-en (Accessed on December 20, 2017).
- Ordish, G. (1987). *The Great Wine Blight*. 2nd ed. London: Sidgwick and Jackson.
- Özdemir, D. (2013). "Turkey's Arduous Journey from Vine to Wine: Why Can a Country, with the Fourth Largest Vineyard in the World, not Make Wine from its Grapes?" AAWE Working Paper No. 143.

- Pamuk, Ş. (1992). "Anatolia and Egypt during the Nineteenth Century: A Comparison of Foreign Trade and Foreign Investment," *New Perspectives on Turkey*, 7: 37–55.
- Paul, H.W. (1996). *Science, Vine and Wine in Modern France*. Cambridge: Cambridge University Press.
- Pepelasis Minoglou, I. (1995). "Political Factors Shaping the Role of Foreign Finance. The Case of Greece, 1832–1932," in Colin M. Lewis, John Harriss, and Janet Hunter (eds.) *The New Institutional Economics and Third World Development*, London: Routledge, pp. 250–264.
- Petrakis, P.E. and H. Panorios. (1992). "Economic Fluctuations in Greece: 1844–1913," *Journal of European Economic History*, 21(1): 31–46.
- Petmezas, S. D. (1997). "El Comercio de la Pasa de Corinto y su Influencia sobre la Economía Griega del Siglo XIX (1840–1914)," in J. Morilla Critz, Gómez-Pantoja J. and P. Cressier (eds.), *Impactos exteriores sobre la Agricultura Mediterranea*, Madrid, pp. 523–562.
- Petmezas, S. D. (2000). "Export-dependent Agriculture, Revenue Crisis and Agrarian Productivity Involution. The Greek Case (1860s–1930s)," *Histoire & Mesure*, 15(3–4): 321–337.
- Pinilla, V. (2014). "Wine Historical Statistics: A Quantitative Approach to its Consumption, Production and Trade, 1840–1938," AAWWE Working Paper No. 167.
- Pinilla, V. and M.-I. Ayuda. (2002). "The Political Economy of the Wine Trade: Spanish Exports and the International Market, 1890–1935," *European Review of Economic History*, 6: 51–85.
- Pinilla, V. and R. Serrano. (2008). "The Agricultural and Food Trade in the First Globalization: Spanish Table Wine Exports 1871 to 1935—A Case Study," *Journal of Wine Economics*, 3(2): 132–148.
- Pinilla, V. and M.-I. Ayuda. (2010). "Taking Advantage of Globalization? Spain and the Building of the International Market in Mediterranean Horticultural Products, 1850–1935," *European Review of Economic History*, 14(2): 239–274.
- Pizánias, P. (1988). *Οικονομική ιστορία της ελληνικής σταφίδας, 1851–1912. Παραγωγή, διεθνής αγορά, διαμόρφωση τιμών, κρίση* [The Economic History of the Greek Raisin 1851–1912: Production, International Market, Price development, Crisis]. Athens: Institute of Research and Education of the Commercial Bank of Greece.
- Pizánias, P. (1992). "Surplus Agricole et Circulation du Capital Commercial: La Grèce au XIX^e siècle," *Annales. Économies, Sociétés, Civilisations*, 47(2): 293–314.
- Poncet, J. (1962). *La Colonisation et l'Agriculture Européenne en Tunisie depuis 1881. Étude de Géographie Historique et Économique*. Paris–La Haye: Mouton & Co.
- Poncet, J. (1976). "La Crise des années 30 et ses Répercussions sur la Colonisation Française en Tunisie," in C. Coquery-Vidrovitch (ed.), *L'Afrique et la crise de 1930 (1924–1938)*. Revue Française d'Histoire d'Outre-mer, tome 63, n°232–233, 3e et 4e trimestres, pp. 622–627.
- Progoulakis, G. and E. Bournova. (2001). "Le Monde Rural Grec, 1830–1912," *Ruralia*, 08|2001. Available at <https://ruralia.revues.org/214> (Accessed May 10, 2016).

- Rausser, G., Swinnen, J.F.M. and Zusman, P. (2011). *Political Power and Economic Policy: Theory, Analysis, and Empirical Applications*. New York: Cambridge University Press.
- Reardon, T., Timmer, C.P., Barrett, C. and J. Berdegué. (2003). “The Rise of Supermarkets in Africa, Asia, and Latin America,” *American Journal Agricultural Economics*, 85(5): 1140–1146.
- Reardon, T., Barrett, C.B., Berdegué, J.A. and J. Swinnen. (2009). “Agrifood Industry Transformation and Small Farmers in Developing Countries,” *World Development*, 37(11): 1717–1727.
- Riban, C. (1894). *Causeries sur la Tunisie Agricole*. Tunis: Imprimerie Rapide.
- Rodrik, D. (1995). “Political Economy of Trade Policy,” In G. Grossman and K. Rogoff (eds.), *Handbook of International Economics*. Amsterdam: North-Holland, pp. 1457–1494.
- Rose, S. (2011). *The Wine Trade in Medieval Europe 1000–1500*. London: Bloomsbury Academic.
- Sheldon, I. (2012). “North-South Trade and Standards: What Can General Equilibrium Analysis Tell Us?” *World Trade Review*, 11(3): 376–389.
- Simpson, J. (2011). *Creating Wine: The Emergence of a World Industry, 1840–1914*. Princeton, NJ: Princeton University Press.
- Smith, M.S. (1992). “The Méline Tariff as Social Protection: Rhetoric or Reality?” *International Review of Social History*, 37(2): 230–243.
- Spahni, P. (1988). *The Common Wine Policy and Price Stabilization*. Aldershot, UK: Avebury.
- Stanziani, A. (2003). “La Falsification du Vin en France, 1880–1905: Un cas de Fraude Agro-alimentaire,” *Revue d’Histoire Moderne et Contemporaine*, 50(2): 154–186.
- Stanziani, A. (2004). “Wine Reputation and Quality Controls: The Origin of the AOCs in 19th century France,” *European Journal of Law and Economics*, 18(2): 149–167.
- Stanziani, A. (2012). *Rules of Exchange: French Capitalism in Comparative Perspective, Eighteenth to Early Twentieth Centuries*. Cambridge: Cambridge University Press.
- Statistique Générale de la France (1878). *Annuaire Statistique de la France. Ministère de l’agriculture et du commerce, Service de la statistique générale de France. 1878-1899*. Paris: Imprimerie Nationale. Available at <http://gallica.bnf.fr/ark:/12148/cb343503965/date> (Accessed September 20, 2016).
- Statistique Générale de la France (1901). *Annuaire Statistique de la France. Ministère de l’agriculture et du commerce, Service de la statistique générale de France. 1901-1952*. Paris: Imprimerie Nationale. Available at <http://gallica.bnf.fr/ark:/12148/cb34350395t/date> (Accessed September 20, 2016).
- Stavrianos, L. S. (1958). *The Balkans since 1453*. New York: Holt, Rinehart and Winston.
- Stone, M. (1997). *The Agony of Algeria*. London: Hurst & Co.
- Sutton, K. (1988). “Algeria’s Vineyards: A Problem of Decolonisation,” *Méditerranée*, 65(65): 55–66.

- Swinnen, J. (1994). "A Positive Theory of Agricultural Protection," *American Journal of Agricultural Economics*, 76(1): 1–14.
- Swinnen, J. (ed.) (2007). *Global Supply Chains. Standards and the Poor*. Wallingford: CABI Publishing.
- Swinnen, J. (2009). "The Growth of Agricultural Protection in Europe in the 19th and 20th centuries," *The World Economy*, 32(11): 1499–1537.
- Swinnen, J. (2016). "Economics and Politics of Food Standards, Trade, and Development," *Agricultural Economics*, 47(S1): 7–19.
- Swinnen, J. (2017). "Some Dynamic Aspects of Food Standards," *American Journal of Agricultural Economics*, 99(2): 321–338.
- Swinnen, J. (2018). *The Political Economy of Agricultural and Food Policies*. Palgrave Macmillan.
- Swinnen, J. and T. Vandemoortele. (2011). "Trade and the Political Economy of Food Standards," *Journal of Agricultural Economics*, 62(2): 259–280.
- Tiengou des Royeries, Y. (1959). *La Production Viticole hors de France*. Paris: Librairies Techniques.
- Tovar, P. (2009). "The Effects of Loss Aversion on Trade Policy: Theory and Evidence," *Journal of International Economics*, 78:154–167.
- Tracy, M. (1989). *Government and Agriculture in Western Europe 1880-1988*, 3rd ed., New York: Harvester Wheatsheaf.
- Tsiovaridou, T. (1980). "La Répercussion en Grèce à la fin du XIX^e siècle de la Crise du Raisin Sec," *Balkan Studies*, 21: 128–145.
- Unwin, T. (1991). *Wine and the Vine: An Historical Geography of Viticulture and the Wine Trade*. London: Routledge.
- Valay, G. (1966). "La Communauté Economique Européenne et les Pays du Maghreb," *Revue de l'Occident musulman et de la Méditerranée*, 2(1): 199–225.
- Vandemoortele, T. and K. Deconinck. (2014). "When are Private Standards more Stringent than Public Standards?" *American Journal of Agricultural Economics*, 96(1): 154–171.
- Van Tongeren, F., Beghin, J. and S. Marette. (2009). "A Cost-benefit Framework for the Assessment of Non-tariff Measures in Agro-food Trade," OECD Food, Agriculture and Fisheries Working papers, no. 21. Paris: OECD Publishing. <http://dx.doi.org/10.1787/220613725148>
- Wesseling, H. L. (2004). *The European Colonial Empires: 1815–1919*. Harlow: Pearson Education Limited.
- Williamson, J. G. (2000). "Real wages and relative factor prices around the Mediterranean, 1500–1940," in Pamuk, Ş. and J. G. Williamson (eds.), *The Mediterranean Response to Globalisation before 1950*. London: Routledge, pp: 45–77.
- Xiong, B. and J.C. Beghin. (2014). "Disentangling Demand-Enhancing and Trade-Cost Effects of Maximum Residue Regulations," *Economic Inquiry*, 52(3): 1190–1203.

Znaien, N. (2015). “Le Vin et la Viticulture en Tunisie Coloniale (1881–1956): Entre Synapse et Apartheid,” *French Cultural Studies*, 26(2): 140–151.

Tables

Table 1
Share of World Wine Export Volume, 1860–1970 (in percentage)

	<i>1860</i>	<i>1875</i>	<i>1885</i>	<i>1900</i>	<i>1925</i>	<i>1950</i>	<i>1970</i>
France	40.0	49.2	18.7	16	9.4	5.7	11.0
Italy	4.9	4.8	10.6	15.4	8.7	3.3	13.6
Portugal	4.1	6.7	9.3	6.9	6.2	5.9	5.8
Spain	27.8	27.3	51.5	32.5	17.5	5.1	9.2
Greece	1.1	0.8	1.3	1.8	3.7	1.1	3.3
Algeria	-	0.1	2.3	20.6	47.1	71.3	34.8
Rest of the World	22.1	11.1	6.3	6.8	7.4	7.6	22.3

Source: Anderson and Pinilla (2017).

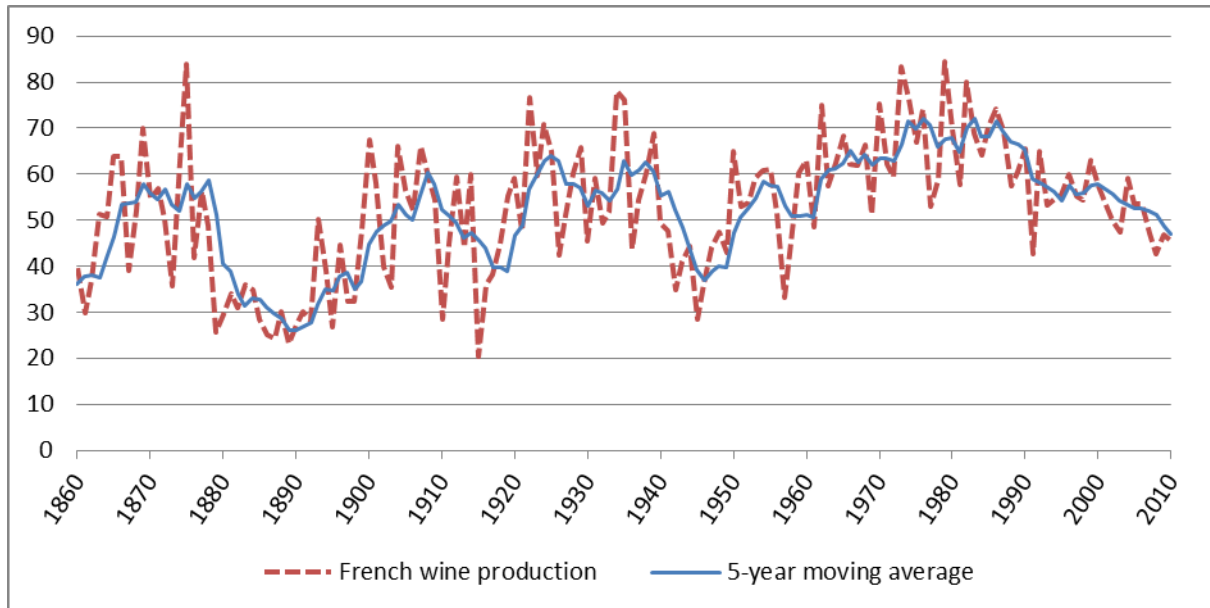
Table 2
Greek Raisin Exports by Major Importing Countries, 1878–1893

	<i>Greek raisin exports to Britain</i>		<i>Greek raisin exports to France</i>		<i>Total Greek raisin exports 1000 tons</i>
	<i>1000 tons</i>	<i>% of total exports</i>	<i>1000 tons</i>	<i>% total exports</i>	
1878	62.5	62	9.2	9	101.3
1879	57.7	60	19.3	20	96.2
1880	58.7	63	21.3	23	93.2
1881	70.5	57	30.6	25	123.2
1882	61.8	56	29.6	27	110.5
1883	65.1	56	25.1	22	116.1
1884	71.9	55	39.6	30	130.5
1885	58.9	51	38.1	33	114.4
1886	54.8	43	45.4	35	128.8
1887	57.9	44	37.8	28	134.1
1888	64.7	48	33.9	25	136.9
1889	53.1	32	71.1	43	166.3
1890	68.6	48	45.1	31	143.8
1891	71.9	40	53.8	30	180.4
1892	61.4	51	18.8	16	121.4
1893	72.7	52	14.6	10	140.9

Source: Tsiovaridou (1980) and authors' calculations.

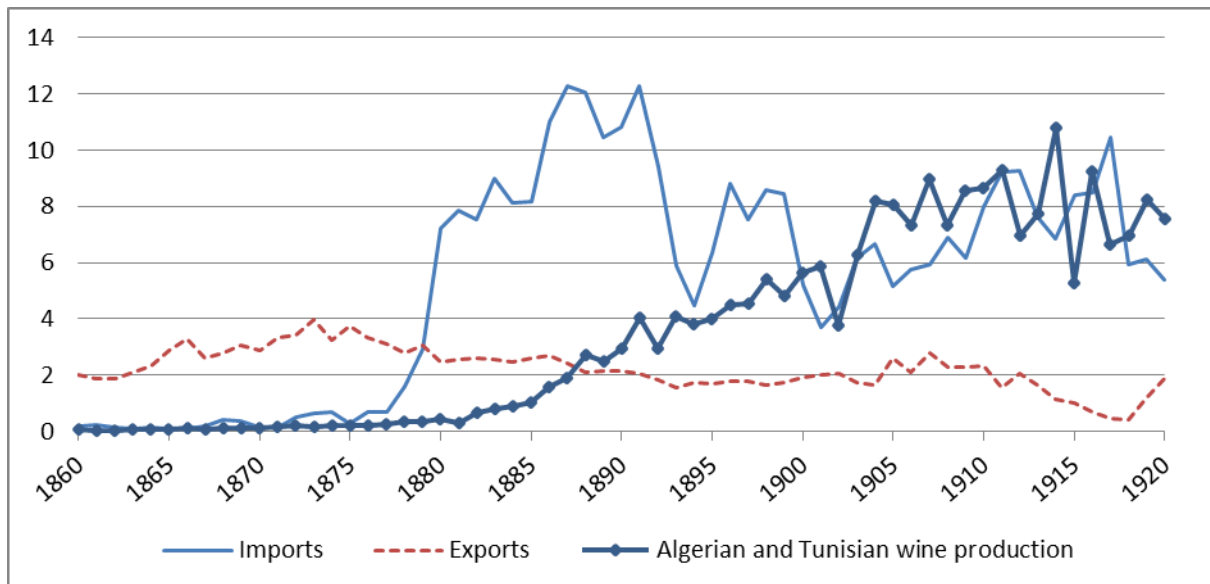
Figures

Figure 1
Wine production in France, 1860-2010 (in million hectoliters)



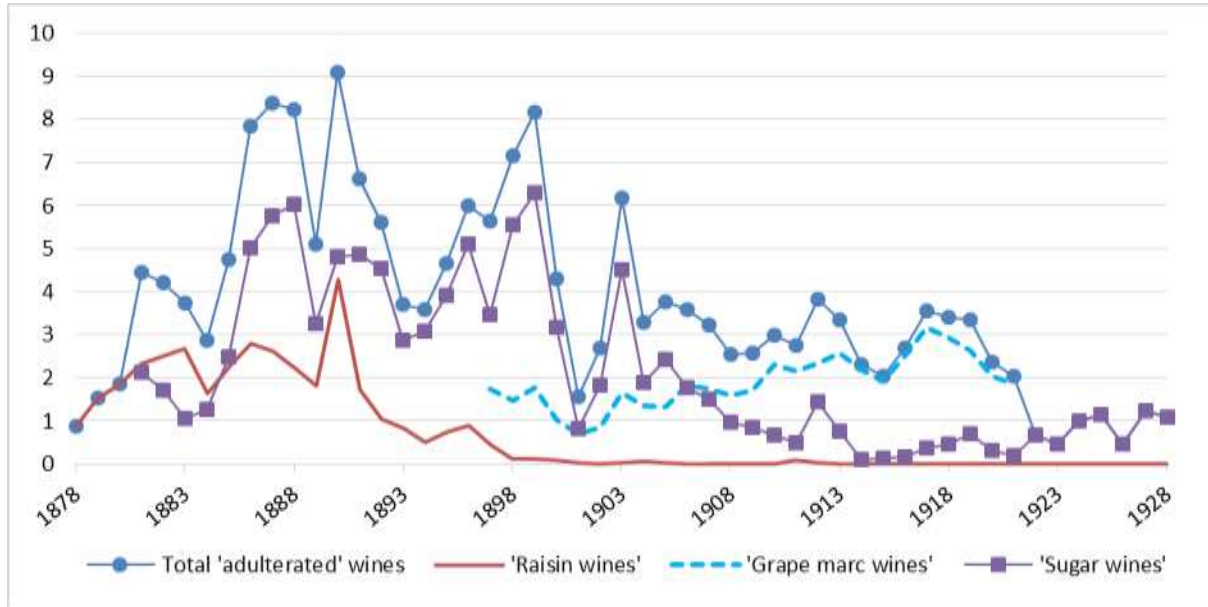
Source: Meloni and Swinnen (2014).

Figure 2
French Imports and Exports of wine and Algerian and Tunisian wine production, 1860–1920 (in million hectoliters)



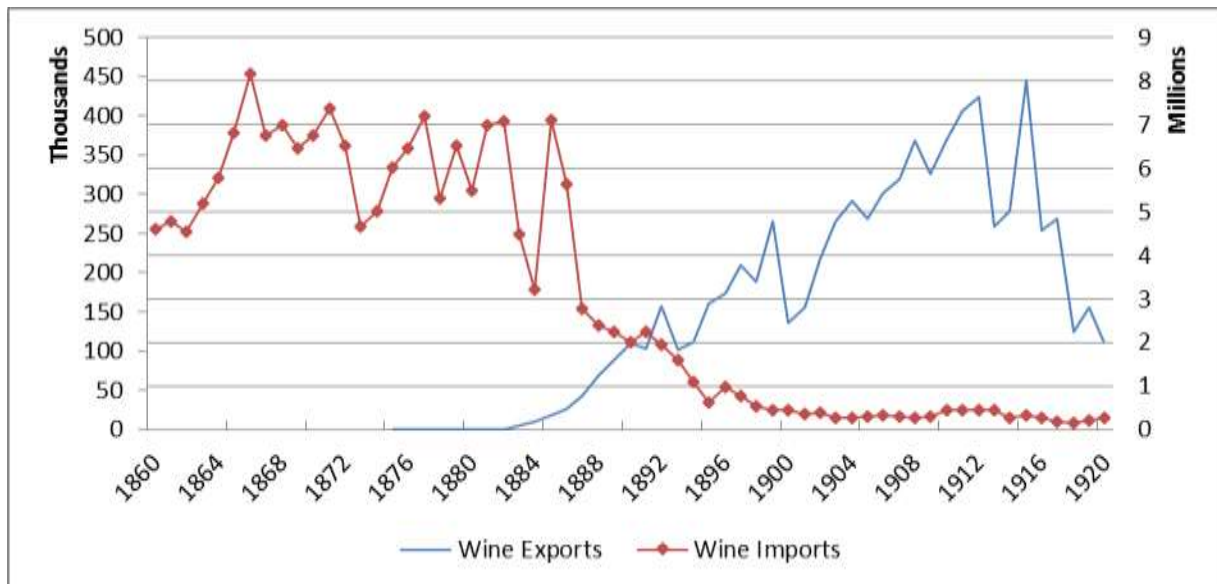
Source: Meloni and Swinnen (2014).

Figure 3
The Production of ‘Adulterated’ Wines in France, 1878–1928 (in million hectoliters)



Note: “Adulterated” wines included “raisin wines” (wines produced from raisins), “sugar wines” (obtained either from the addition of sugar to the wine or from the addition of water and sugar to the grape marcs) and “grape marc wines” (or “*piquettes*” obtained from the addition of only water to the grape marcs).
 Source: Galet (1964, pp. 30–31).

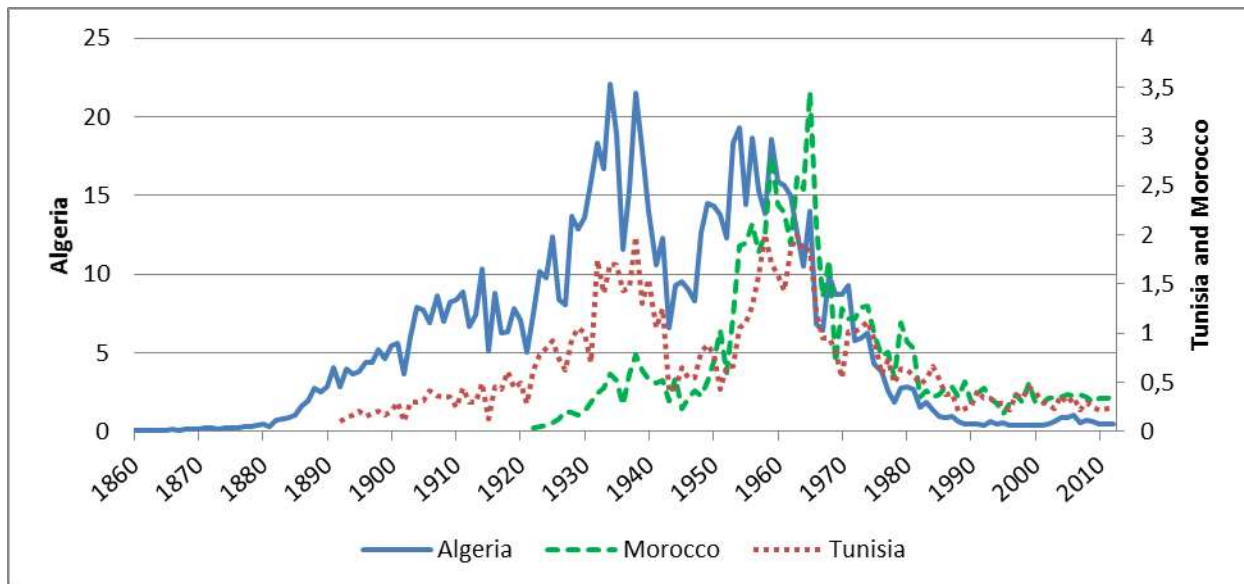
Figure 4
Wine imports and exports in Algeria, 1860–1920 (in hectoliters)



Sources: Anderson and Pinilla (2017); *Statistique Générale de la France* (1878/1901); FAO (2016).

Note: The first y-axis (on the left) refers to Algerian wine imports while the second y-axis (on the right) refers to Algerian wine exports.

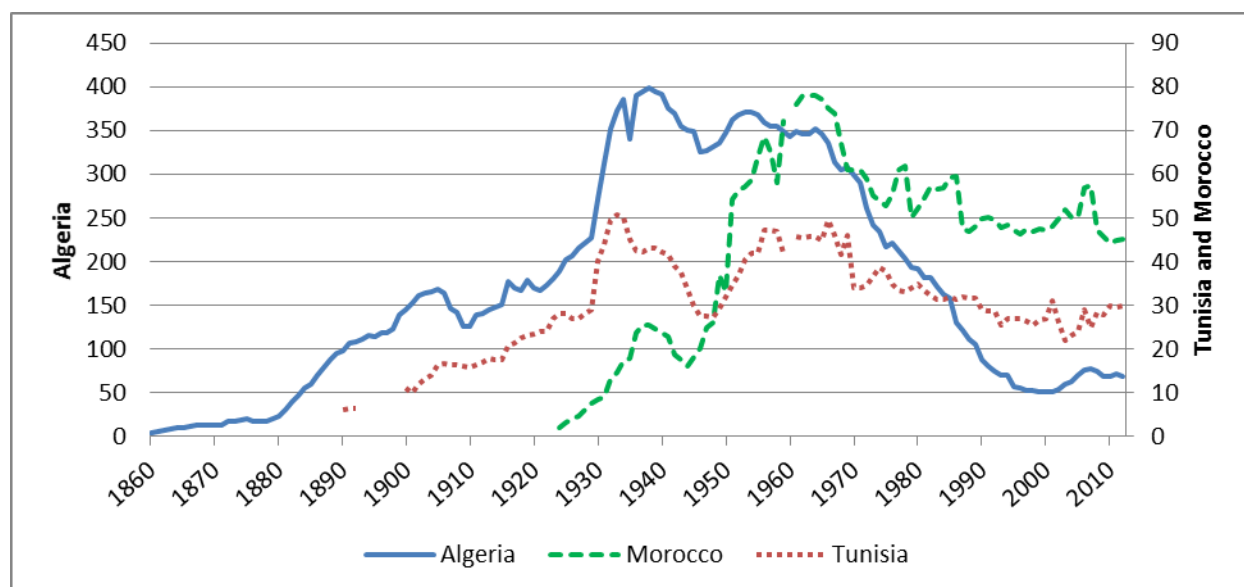
Figure 5
Wine Production in North Africa, 1860–2010 (in million hectoliters)



Sources: *Statistique Générale de la France* (1878/1901); FAO (2016).

Note: The first y-axis (on the left) refers to Algeria while the second y-axis (on the right) refers to Tunisia and Morocco.

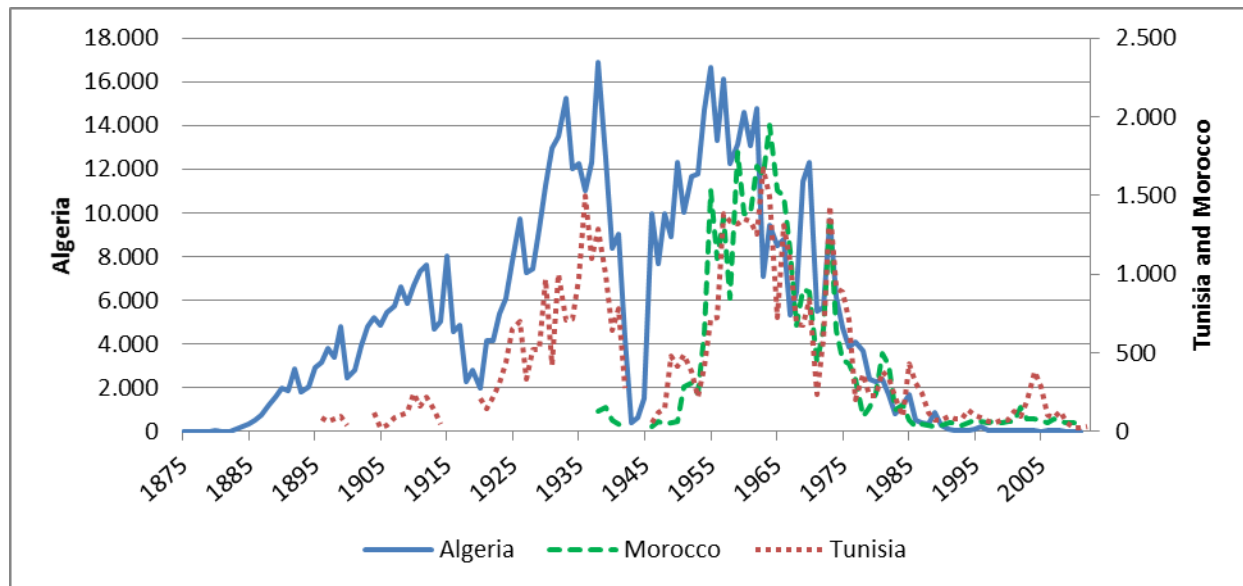
Figure 6
North African Cultivated Vineyard Area (in thousands hectares), 1860–2012



Sources: *Statistique Générale de la France* (1878/1901); FAO (2016).

Note: The first y-axis (on the left) refers to Algeria while the second y-axis (on the right) refers to Tunisia and Morocco.

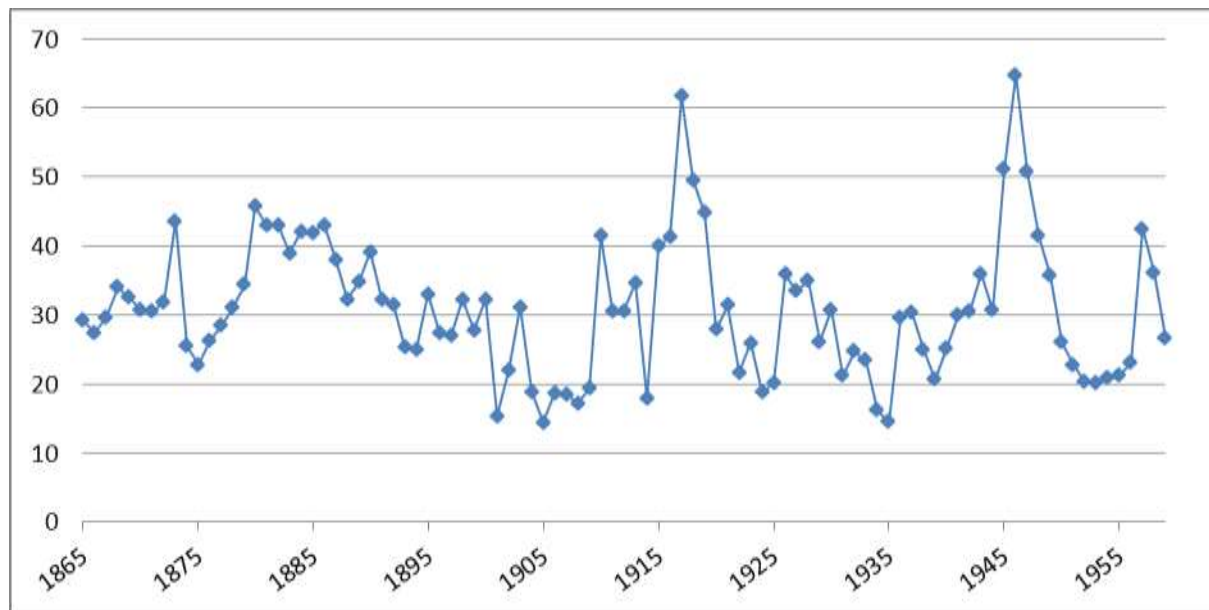
Figure 7
North African Wine Exports, 1875–2012 (in thousands hectoliters)



Sources: Statistique Générale de la France (1878/1901); FAO (2016).

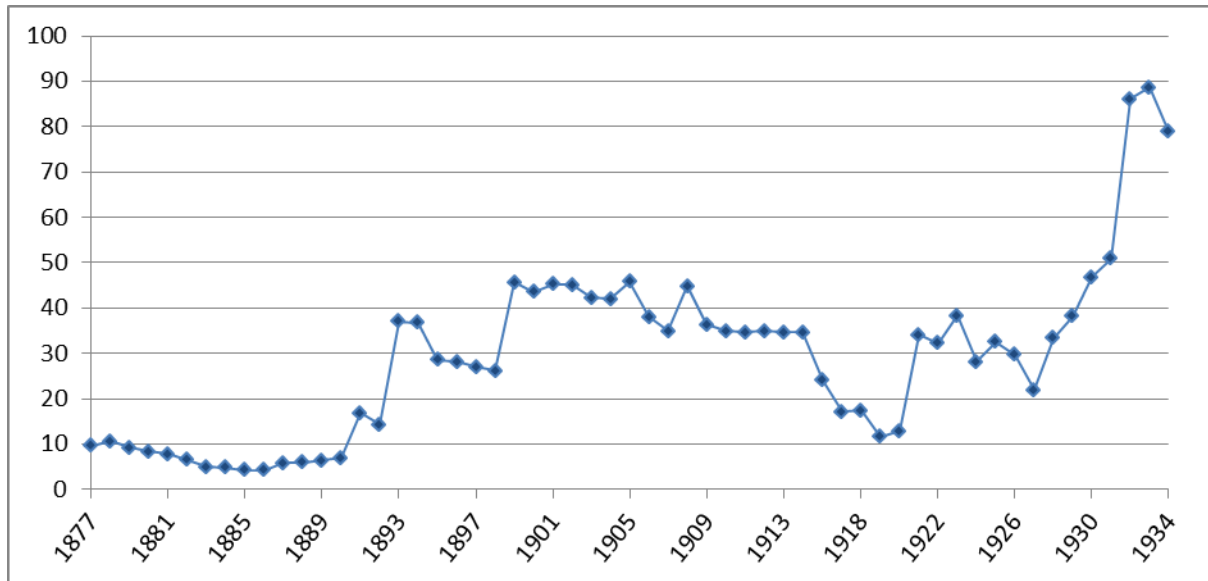
Note: The first y-axis (on the left) refers to Algeria while the second y-axis (on the right) refers to Tunisia and Morocco.

Figure 8
CPI-deflated Wine Prices in France, 1865-1959 (in ancient Francs per hectoliter)



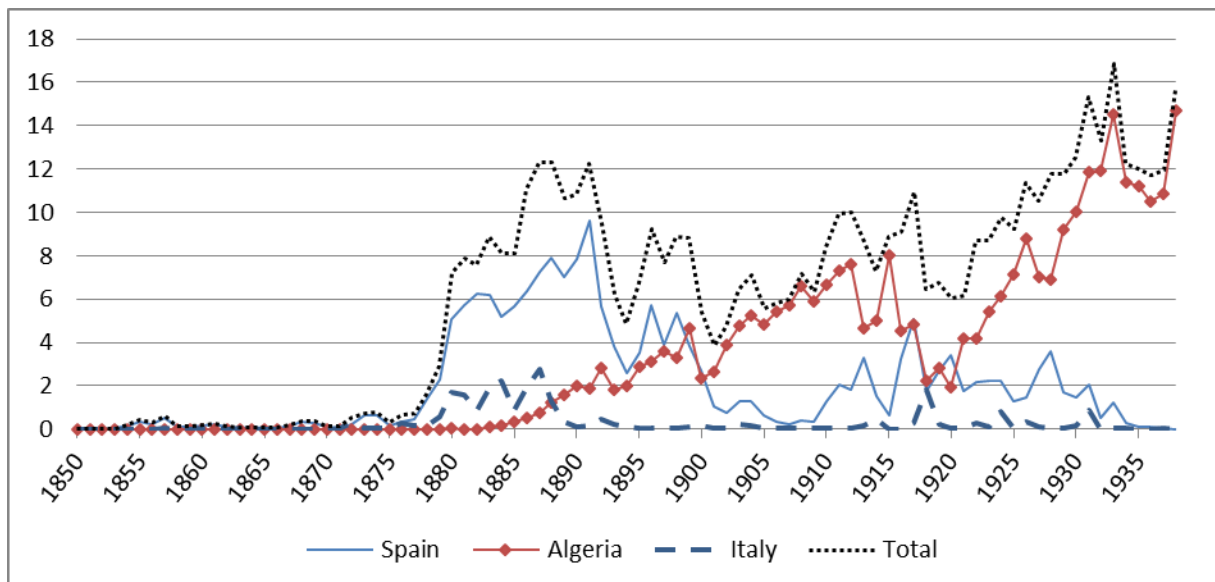
Source: Meloni and Swinnen (2014).

Figure 9
French Import Tariffs on Bulk Wine Imports (in %) (1877–1934)



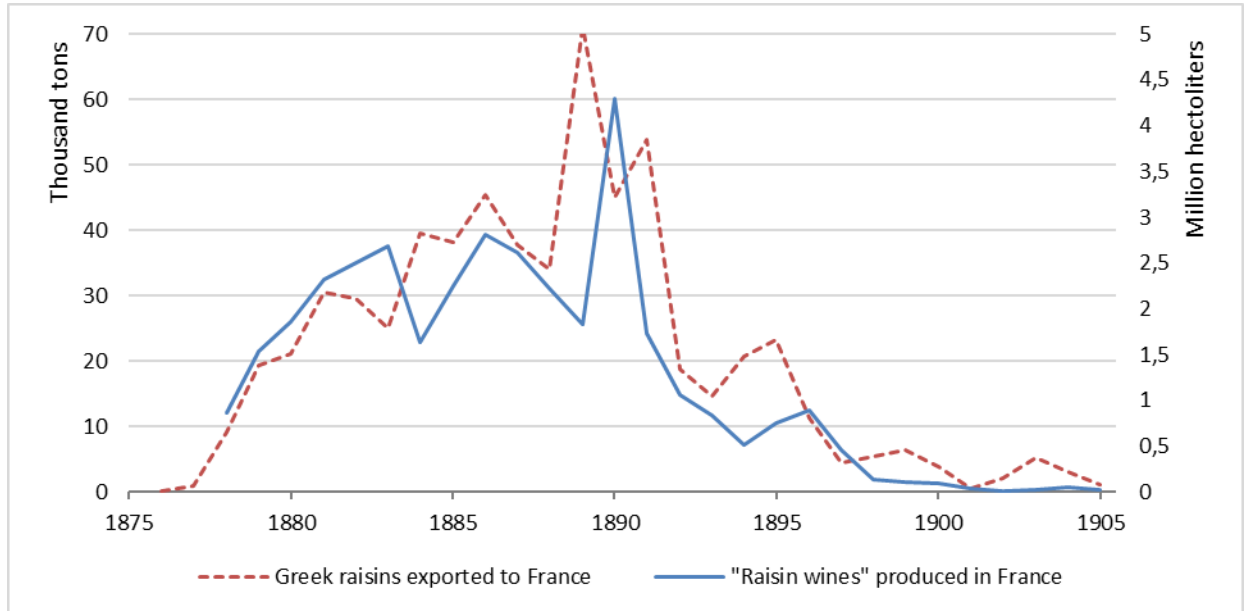
Source: Pinilla and Ayuda (2002).

Figure 10
French Imports of Bulk Wines by Major Exporting Countries (in million hectoliters)



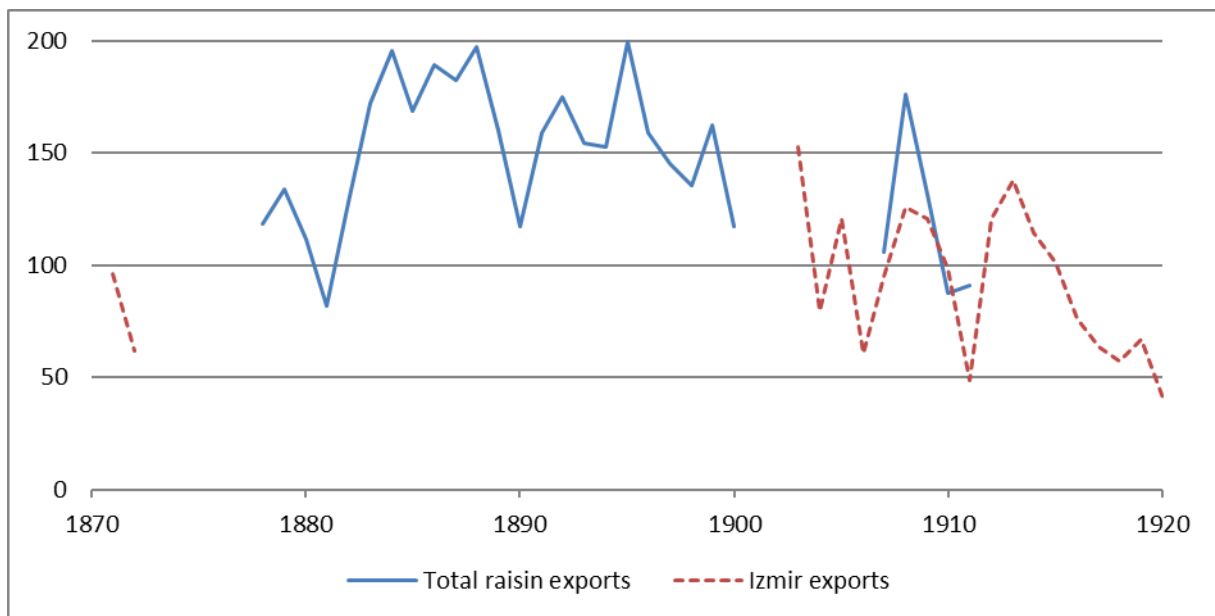
Sources: Pinilla and Ayuda (2002); Pinilla (2014).

Figure 11
Greek Raisin Exports and French Production of “Raisin Wines”, 1875–1905
(in thousand tons and million hectoliters)



Sources: Galet (1964, pp. 30–31); Pizánias (1988, pp. 136–139).

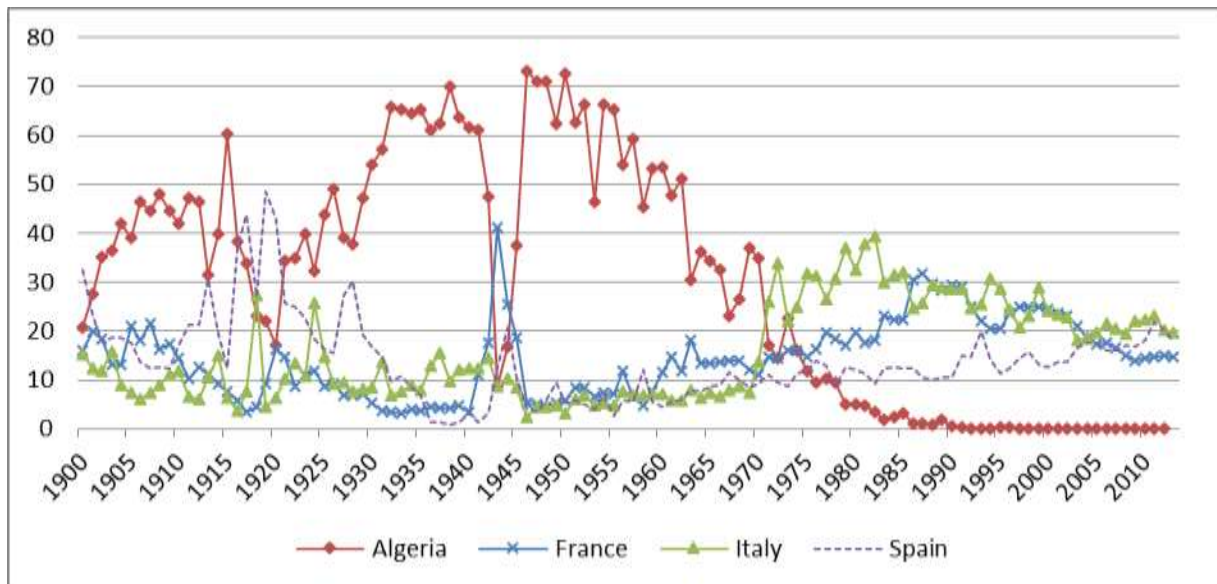
Figure 12
The Turkish Raisin Trade, 1870–1920 (in million pounds)



Source: Morilla Critz et al. (2000, p. 220).

Note: Smyrna (now Izmir) was the main port of Anatolia (now Turkey).

Figure 13
Share of World Wine Export Volume, 1900–2012 (in percentage)



Sources: Anderson and Pinilla (2017).