Wine Economics

The title-level DOI for this work is:

doi:10.7551/mitpress/11106.001.0001

1
The World Wine Market

Wine is one of the most civilized things in the world
—A phrase attributed to Ernest Hemingway (1899–1961)

The first chapter is divided into three sections. The first section describes the evolution of wine production, consumption, and export in time and across countries. The second describes more in detail the "wine war" between New World and Old World countries, from the "Paris judgment" in 1976 to the present day. This section will discuss the heavy investments in terms of both quantity and quality made by New World countries and the strategy adopted by Old World countries to reclaim the historical dominant position they used to hold. The last section highlights the strengths and weaknesses of the two groups; these concepts underlie the policy conclusions at the end of the book.

1.1 Production, Consumption, and Export of Wine

1.1.1 Production of Wine

> Wine is the beverage resulting exclusively from the partial or complete alcoholic fermentation of fresh grapes, whether crushed or not, or of grape must. Its actual alcohol content shall not be less than 8.5% vol. Nevertheless, taking into account climate, soil, vine variety, special qualitative factors or traditions specific to certain vineyards, the minimum total alcohol content may be able to be reduced to 7% vol. by legislation particular to the region considered (definition 18/73; International Organisation of the Vineyard and the Wine [OIV], 2017).

Only grapes belonging to the *Vitis vinifera* species or coming from a cross between this species and others of the *Vitis genus* (as for example, *Vitis labrusca* and *Vitis rupestris*) may be used to produce wine. However, the European Union insists that wine can be produced only with *Vitis vinifera* since this provides a higher quality product.

The vine is a very resistant plant that can be cultivated between the thirtieth and the fiftieth parallel in the Northern and Southern Hemispheres and at an altitude between sea level and one thousand meters, though global warming is slowly

extending these boundaries (e.g., to southern England and Belgium). Red grapes prefer warm climates while white grapes can withstand colder temperatures.

It is impossible to say with certainty who first produced wine and where. It is quite plausible that the discovery of wine making happened by chance with the spontaneous fermentation of grapes left in a bowl. As for the place, the first traces of grape and wine production dated back to periods between 10,000 and 5,000 BCE and have been found in the Middle East in the area amid the Caucasus, eastern Turkey, and Iran. Many scholars believe that vine cultivation for wine making goes back to 4,000 BCE, and they mark the place on the slopes of Mount Ararat where, according to the Bible, Noah's ark ran aground. Vine cultivation spread from Mesopotamia to the rest of the world in various stages, first reaching Egypt and Greece and then later taken to the southern coasts of Italy (*Magna Graecia*, "Big Greece"), France, and Spain by the Greeks and Phoenicians. In Italy the *vitis vinifera sylvestris*, commonly used throughout Europe, was cultivated by the Etruscans before the tenth century BCE, well before Greek domination introduced the *vitis vinifera sativa*, which was found throughout the Middle East (Buono and Vallariello, 2002).

With the birth of the Roman Empire, viticulture spread to the provinces of northern Europe, replacing beer as the favorite drink—or at least among the higher social classes. In Germany, however, the preference for beer remained deeply rooted in popular culture, probably due to the Germanic influence on the Celts (Colen and Swinnen, 2010). In *De Bello Gallico* Julius Caesar reports, with reference to the Nervii and the Germanic people,

> that there was no access for merchants to them; that they suffered no wine and other things tending to luxury to be imported; because, they thought that by their use the mind is enervated and the courage impaired: that they were a savage people and of great bravery: that they upbraided and condemned the rest of the Belgae who had surrendered themselves to the Roman people and thrown aside their national courage: that they openly declared they would neither send ambassadors, nor accept any condition of peace. (Book 2, Chapter 15)
>
> Merchants have access to them rather that they may have persons to whom they may sell those things which they have taken in war, than because they need any commodity to be imported to them. Moreover, even as to labouring cattle, in which the Gauls take the greatest pleasure, and which they procure at a great price, the Germans do not employ such as are imported, but those poor and ill-shaped animals, which belong to their country; these, however, they render capable of the greatest labor by daily exercise. … They on no account permit wine to be imported to them, because they consider that men degenerate in their powers of enduring fatigue, and are rendered effeminate by that commodity. (Book 4, Chapter 2) (Caesar, 1869)

Although Germany today is an important producer and consumer of wine, beer still remains the most popular drink for the reason mentioned above. However, the fall of the Roman Empire led to such a rapid decline in wine production throughout Europe that it nearly came to an end. The knowledge and practice of viticulture was largely kept alive by monasteries because they used wine for the Eucharist. At this time, therefore, wine was produced and consumed primarily in the Mediterranean.

With the discovery of the Americas, viticulture was exported to the New World countries that had the right climatic and territorial conditions while wine production in North Africa resumed with the beginning of French colonialism. Although Europeans had introduced viticulture to other continents, wine production was almost entirely concentrated in the western Mediterranean; wine production in other countries was negligible until the mid-twentieth century. In the second half of the century, however, the geography of wine underwent unprecedented changes. New World producers (especially Argentina, Australia, Chile, New Zealand, the United States, and South Africa) broke into the market while the well-established North African producers, such as Algeria and Tunisia, suffered a drastic downsizing after the raising of customs barriers and the end of French colonialism.

Figure 1.1a shows the trend of world wine production from 1961 to 2014. It was relatively stable over the period, ranging between twenty-one and thirty-seven million tonnes, even though the world population rose from 3.0 to 7.2 billion individuals.[1] Production peaked in the late 1970s and early 1980s before falling in the following decades and then leveling off. As a result, the marked imbalance that had emerged between demand and supply was reduced. In Italy (see figure 1.1b), the economic and demographic growth of the postwar period led to an enormous expansion followed by a rapid reduction in the 1980s. In relative terms the share of table grapes in the total amount of grapes produced has increased and now stands at around 20 percent (figure 1.1c).

If we compare figures 1.2a and 1.2b, which show the main countries' shares of world wine production in hectoliters in 1961 and 2014 respectively, we can see that the

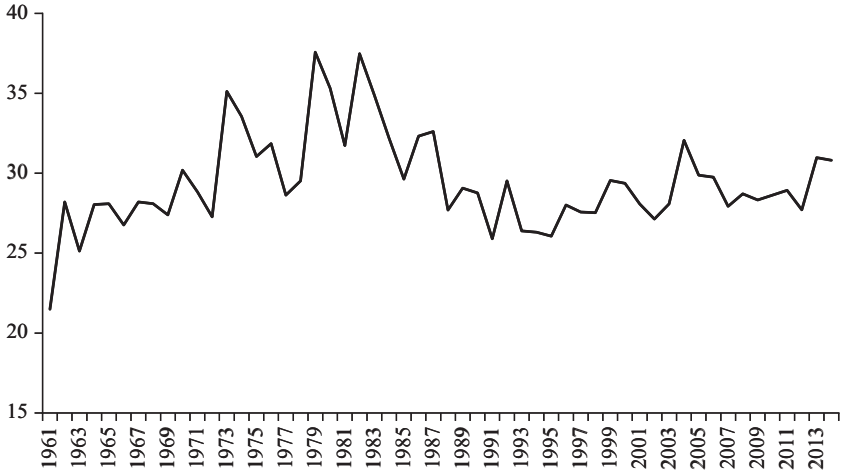

Figure 1.1a
World wine production (million tonnes).
Source: Author's calculations using data from the US Food and Agriculture Organization (FAO).

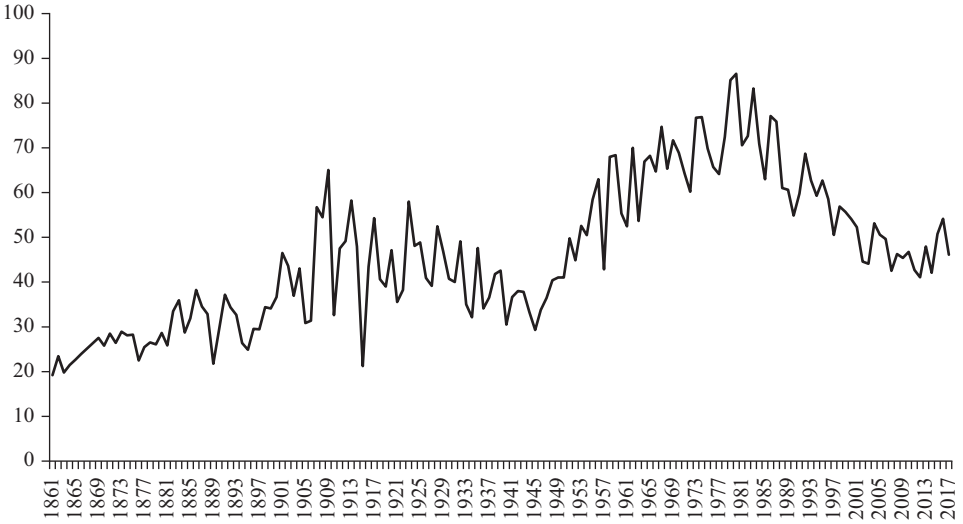

Figure 1.1b
Italian wine production (million hectoliters).
Source: Author's calculations using data from the Italian National Institute of Statistics (ISTAT).

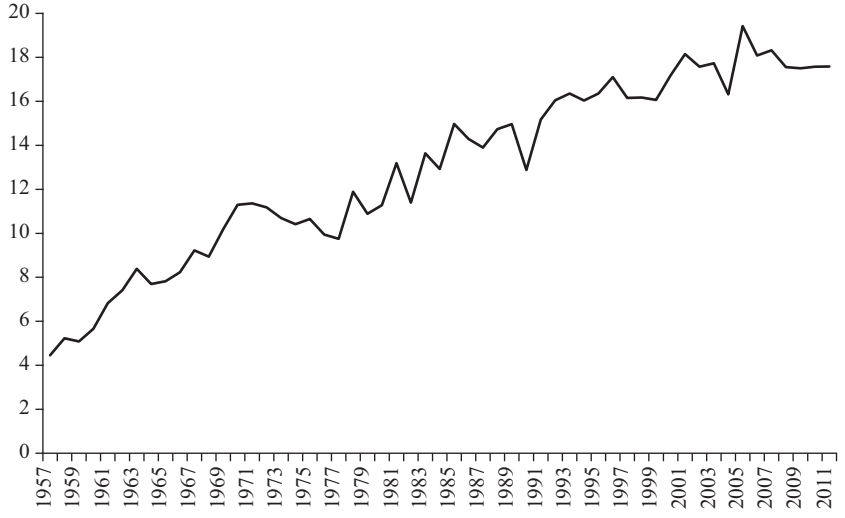

Figure 1.1c
Table grapes as share of total grapes produced in Italy (%).
Source: Author's calculations using data from ISTAT.

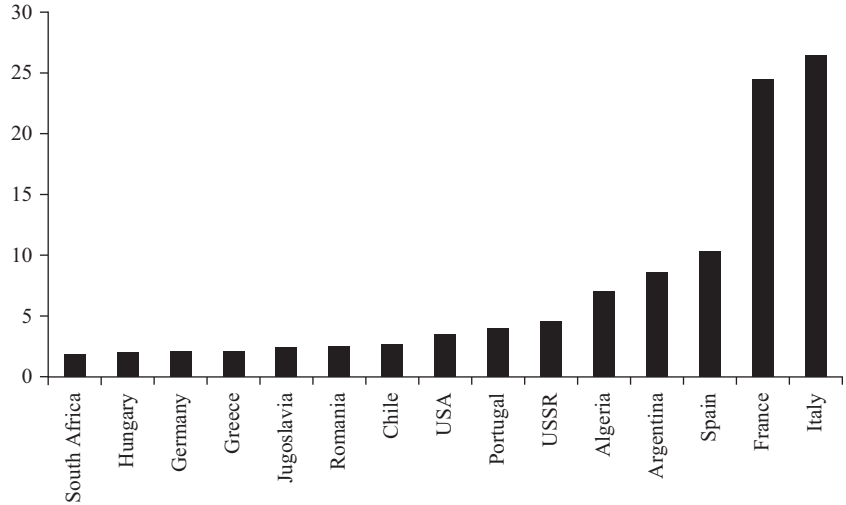

Figure 1.2a
Share of world production (% of total quantities), 1961.
Source: Author's calculations using data from FAO.

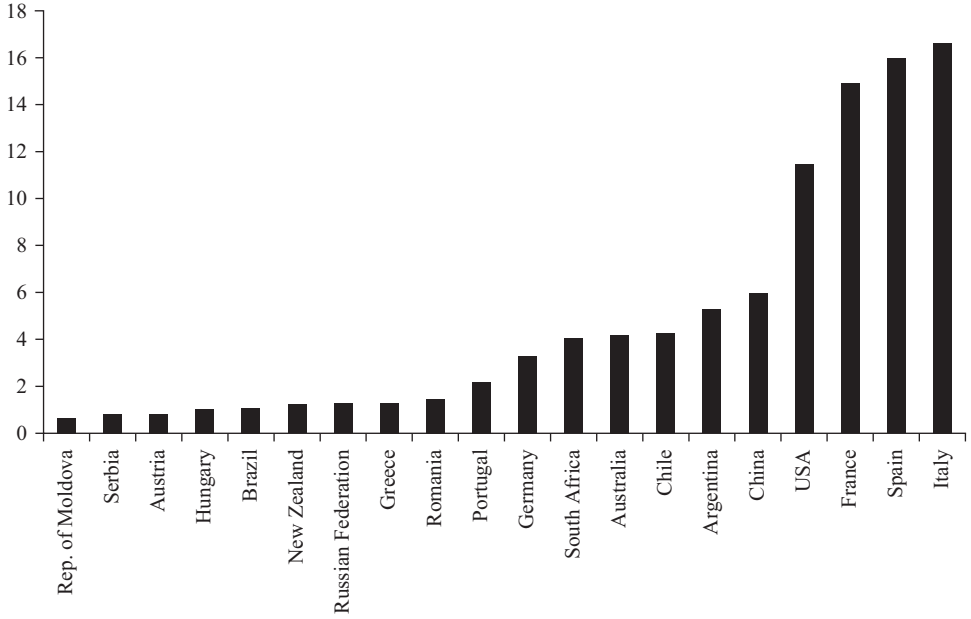

Figure 1.2b
Share of world production (% of total quantities), 2014.
Source: Author's calculations using data from FAO.

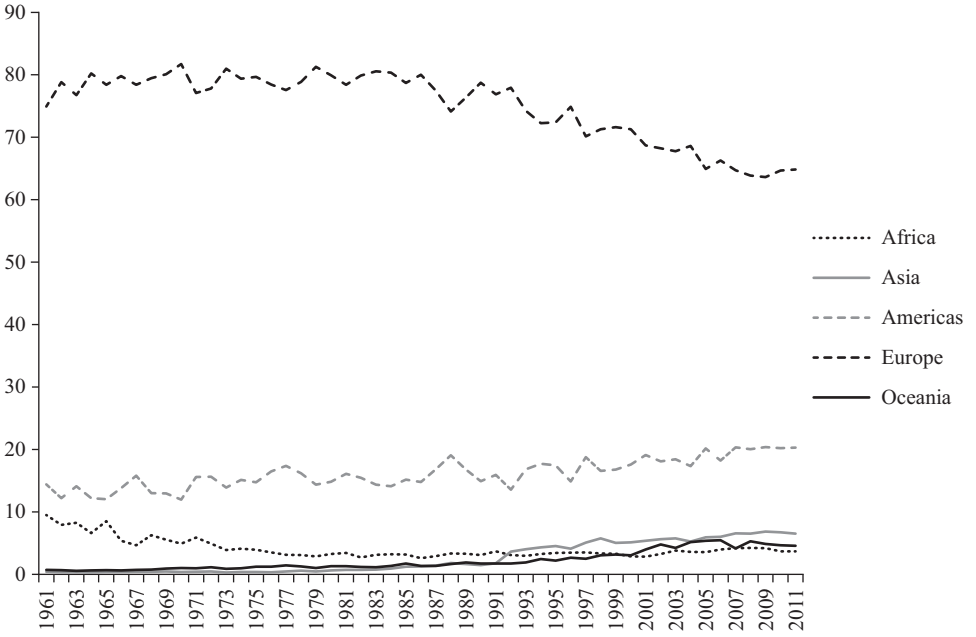

Figure 1.3
Wine production as % share of total hectoliters, by continent.
Source: Author's calculations using data from FAO.

first three positions are held by Italy, France, and Spain (with Spain overtaking France in recent years), even though the total volume of the three producers has fallen from 60 percent to less than 50 percent. There has been a progressive decline in production in all southern Mediterranean countries: over the last fifty years Algeria's share has fallen from 6.3 to 0.1 percent of world production, Morocco from 1 to 0.1 percent, and Tunisia from 0.7 to 0.07 percent. Europe's loss of volume becomes even more apparent in figure 1.3, which shows wine production in hectoliters as a percentage of total production by continent. Until the mid 1980s Europe consistently produced 80 percent of the world's wine, but this share had dropped to 65 percent by 2011. Production has grown notably in the Americas, from about 12 percent to 20 percent, and in Asia and Oceania, reaching 6.5 percent and 4.6 percent respectively. Africa has seen its share fall from 10 to 4 percent. This has happened for the reason mentioned above, despite strong growth in production in South Africa that has tripled in the last half century.

1.1.2 Consumption of Wine

On the demand side, the world per capita consumption of alcoholic drinks among persons of age fifteen and over converted into terms of pure alcohol stood at 6.2 liters in 2010. More than a quarter of alcoholic beverages are produced illegally

at home or without being registered (WHO, 2014). Consumption of this kind of alcohol is particularly dangerous because it can contain impurities or other substances that are toxic for the body (e.g., methanol).

As will be explained in detail in chapter 2, there are marked differences in the consumption levels of the various continents, with the highest levels being recorded not only in the Northern Hemisphere but also in Argentina and Oceania. Intermediate levels of consumption can be found in South Africa and the Americas while the lowest levels are observed in northern and sub-Saharan Africa, in the eastern Mediterranean, and southern Asia. Alcohol consumption is strongly influenced by per capita income and religion, explaining the low consumption levels of most of the latter areas since the Islamic religion explicitly forbids its consumption. As to income, it is correlated positively with total consumption and negatively with home-produced or illegal alcoholic beverages (see WHO, 2011, figure 1).

In dynamic terms (figure 1.4), wine consumption grew to over 280 million hectoliters after World War II, but at the end of the 1980s it suffered a sharp contraction due to the decline recorded in European Mediterranean countries. After falling to just over 220 million hectoliters in the early 1990s, consumption started to grow again in northern European countries and the rest of the world and exceeded 240 million in the five-year period 2006–2010, even though it declined slightly afterward.

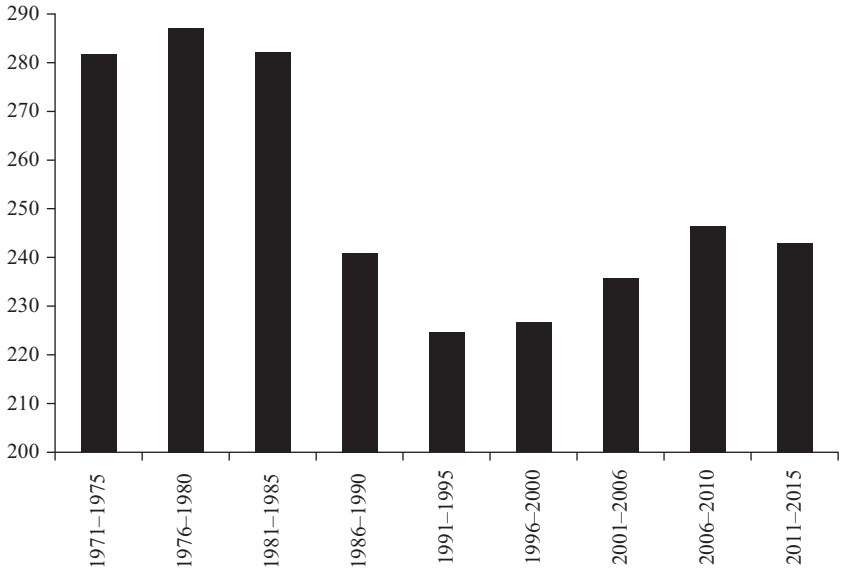

Figure 1.4
World wine consumption (million hectoliters).
Source: Author's calculations using data from the International Organisation of Vine and Wine (OIV).

A process of convergence in consumption has gradually taken place, involving both the number of liters of pure alcohol consumed (and hence total consumption regardless of the product) and the preferences for the different alcoholic beverages available on the market. Figures 1.5a and 1.5b show the evolution of consumption in liters of alcohol per capita per year in West European and New World countries. The Old World here is understood as France, Germany, Italy, Portugal, and Spain, and the New World as Argentina, Australia, Chile, China, New Zealand, the Russian Federation, South Africa, and the United States (this classification will also be maintained in the following tables and figures).[2]

In the last fifty years, per capita consumption has been progressively moving toward similar values both within European and among New World countries. The same is true when all the countries are considered together.[3] What is most striking is that, contrary to what is often believed, the countries with the highest consumption per capita are not in the north of Europe but in the Mediterranean area with France in first place, although it is fast converging toward the values of its neighbors. This process is even more evident if we look at figure 1.6 that shows average consumption for groups of countries.[4]

The most important point for the present discussion is the breakdown of the annual per capita pure alcohol consumption for wine, beer, and spirits to identify preferences and classify each country as "wine, beer, or spirits drinking." Wine accounts for the largest part of alcohol consumed in Argentina, Chile, and in some West European countries. Spirits are the favorite drink in eastern Europe and in a large part of Asia while beer is ranked first in most of northern Europe, the rest of the Americas, Oceania, and much of Africa. The category "other alcoholic drinks" comes top in sub-Saharan Africa where, however, the levels of per capita consumption are very low (see WHO, 2011, figure 2).

What factors influence the consumption of alcoholic beverages and make countries a wine-, beer-, or spirits-drinking country? The first answer that springs to mind is the climate. Wine can be produced only in areas with specific climatic characteristics. Since transportation costs significantly affect the price of goods, especially in the past, each country has tended to consume what could be produced locally. The second element influencing the geography of alcohol consumption is colonization. Britain has always been a great producer and drinker of beer because of its climate, so it was natural that its ex-colonies followed suit. Migratory flows are a third important factor. In the United States the preference for beer, already "imposed" by British colonists, was reinforced by migratory flows from Germany, Ireland, and the Netherlands. Beer is also the most consumed beverage in former Spanish and Portuguese colonies in Central and South America, even though the two colonial powers were historically wine drinkers. The only exceptions are Argentina, Chile, and Uruguay, and the difference in consumption between these three countries and other South American ex-colonies can be explained, first by the unfavorable climatic conditions for viticulture in the equatorial

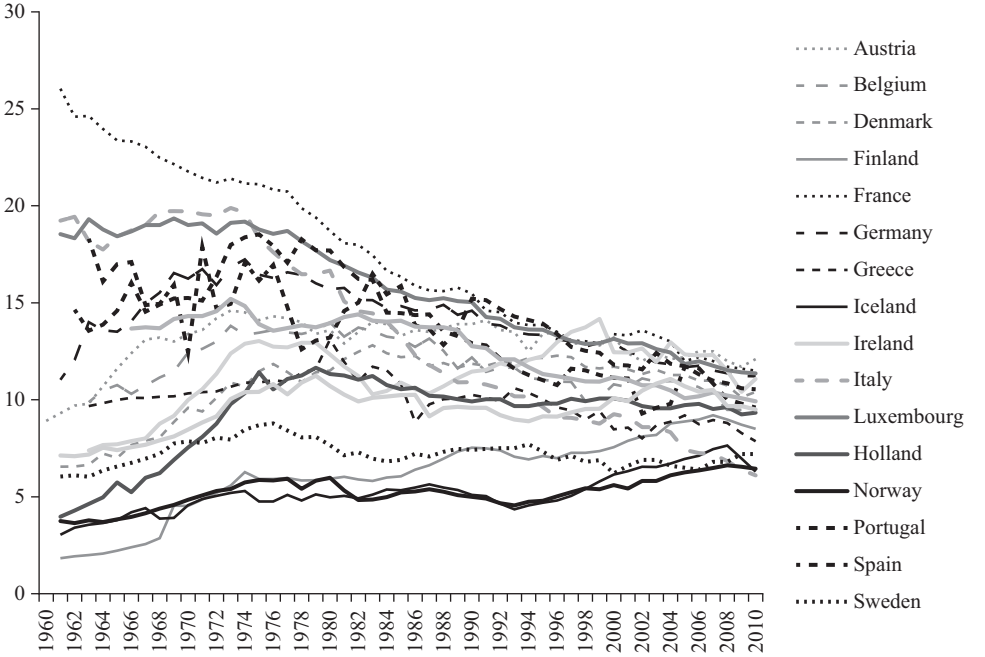

Figure 1.5a
Annual total per capita alcohol consumption, Western Europe (liters).
Source: Author's calculations using data from the World Health Organization (WHO).

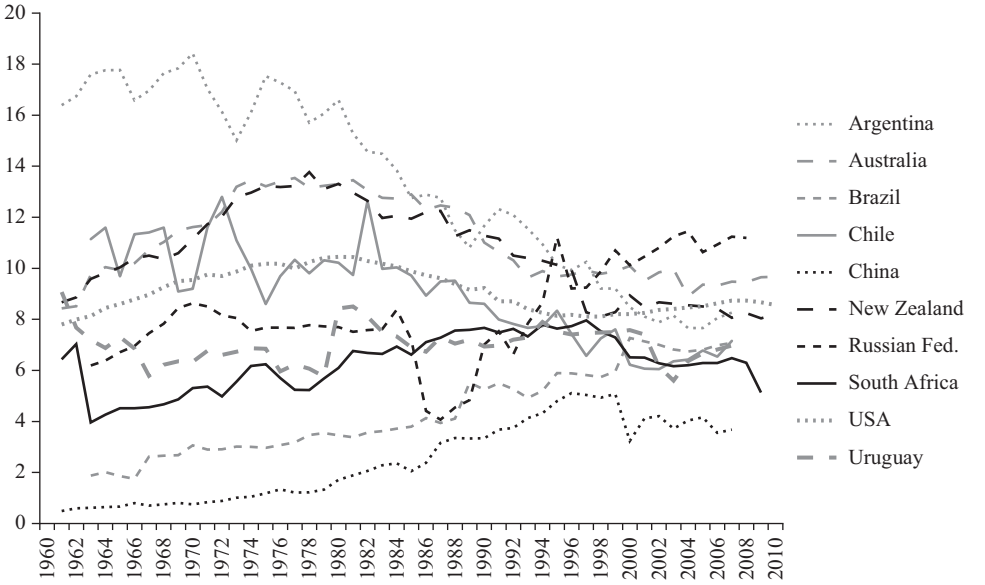

Figure 1.5b
Annual total per capita alcohol consumption, New World (liters).
Source: Author's calculations using data from WHO.

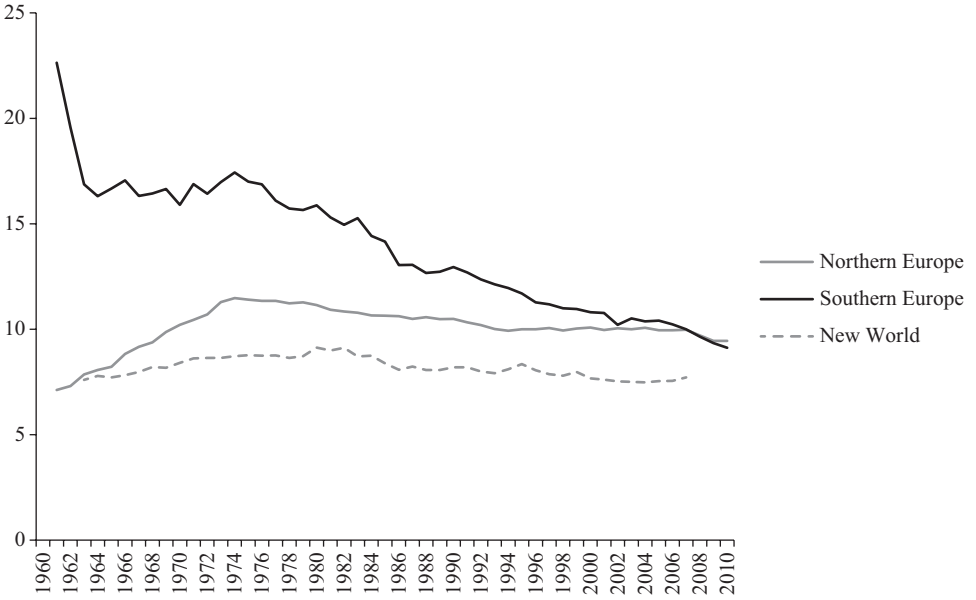

Figure 1.6
Annual total per capita alcohol consumption, Europe and New World (liters).
Source: Author's calculations using data from WHO.

area and second by their larger communities of European migrants from Mediterranean countries.[5] Lastly, religion has conditioned not so much the preference than as the absolute levels of alcohol consumed; indeed, in some areas of Muslim influence they have reached such a low as to render the classification of a country by this criterion meaningless. The same holds true in the United States where state or county laws can forbid the sale of alcohol (in areas known as "dry" states or counties), and this type of regulation is primarily based on moral and religious objections (Marks, 2015, p. 129).

Figure 1.7 shows the 2014 ranking of countries with the highest per capita consumption of wine expressed in liters of pure alcohol. France leads with 6.4 liters, followed by Croatia and Portugal with almost six, and then by Slovenia, Italy, and Moldova. Luxembourg and Switzerland come next, and although they are climatically unfit for wine production, they have very high per capita income and are surrounded by countries with a great wine-making tradition; this has led to a move away from beer. Denmark and Belgium, which also have high income levels as well as a cold climate, are ranked ninth and eleventh. Spain, with its 2.1 liter per capita of alcohol, is ranked thirty-third, and countries that would be expected to be beer consumers, like Belgium, the United Kingdom, the Netherlands, Germany, and Sweden, follow below. The so-called BRICs (Brazil, Russia, India and China) still have

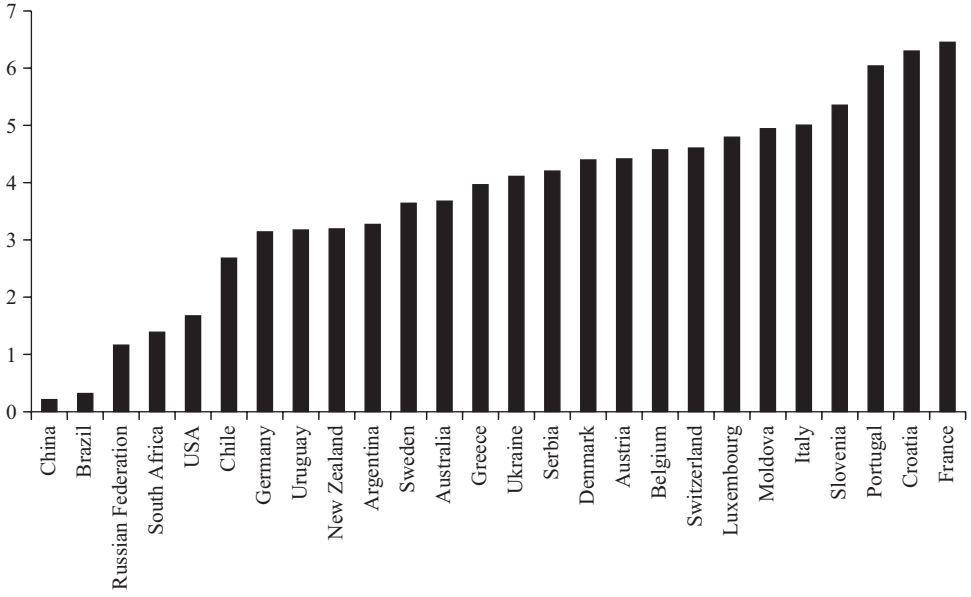

Figure 1.7
Annual total per capita wine consumption in liters of pure alcohol, 2014.
Source: Author's calculations using data from WHO.

very low per capita consumption levels and are therefore not among the top fifteen countries, but given their strong growth rates of recent years, they are expected to become increasingly important markets for companies in the Old and New World.

If we look at how the share of wine in the total consumption of alcoholic beverages is evolving, we can see that the percentages are converging to similar values. Figure 1.8 shows the share of pure alcohol per capita per year in terms of wine in West European countries. In northern Europe, the alcohol content attributable to wine is increasing, whereas the opposite is happening in Mediterranean Europe.

The same phenomenon can be observed in countries in the New World (figure 1.9). This trend is even more evident in figures 1.10 and 1.11, which show the average shares of wine in the total in northern and southern Europe and the standard deviation of the shares in Western European countries and major wine-producing countries (New and Old World), respectively. The wine share is converging toward 40–45 percent in northern and southern Europe. Given the constant growth in one area and the decline in the other, it will be interesting to see in the coming decades whether the roles will be reversed, with traditionally wine-drinking countries preferring beer and vice versa.

The tastes and habits of consumers can, in fact, change in time. Some important examples are Spain, which up to a few decades ago preferred wine and has now

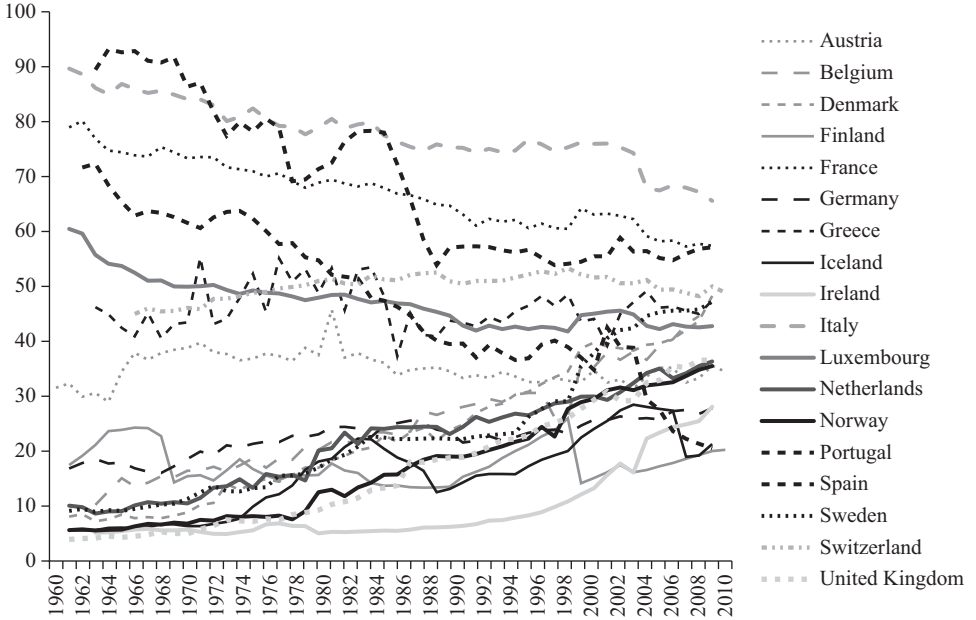

Figure 1.8
Share of annual per capita pure alcohol attributable to wine (%), Western Europe.
Source: Author's calculations using data from WHO.

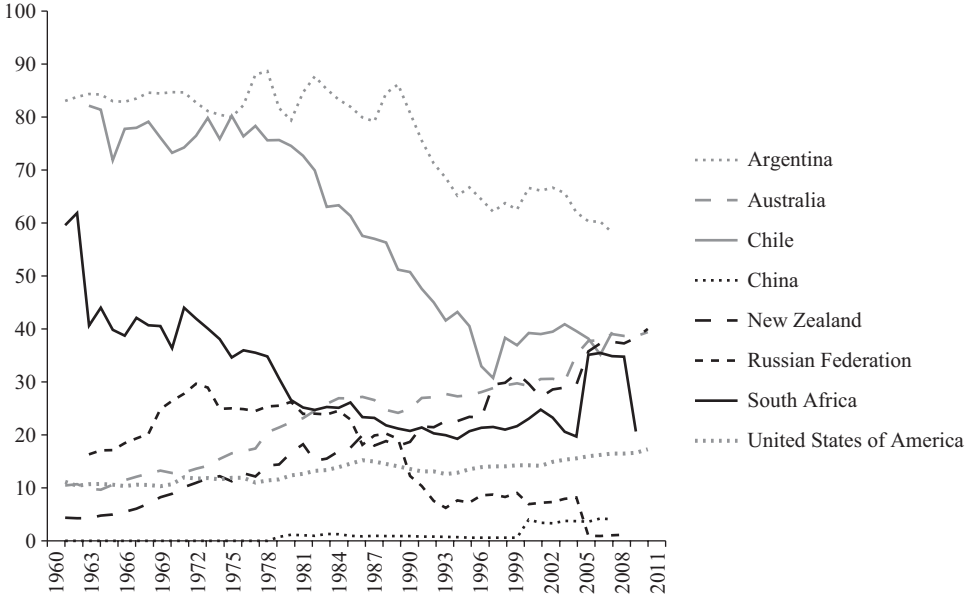

Figure 1.9
Share of annual per capita pure alcohol attributable to wine (%), New World.
Source: Author's calculations using data from WHO.

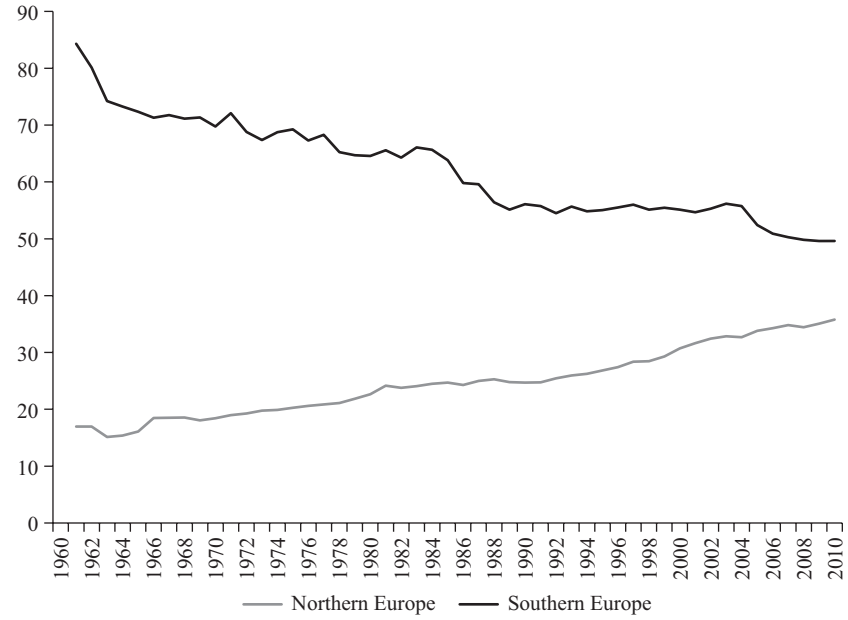

Figure 1.10
Share of annual per capita pure alcohol attributable to wine (%), northern and southern Europe.
Source: Author's calculations using data from WHO.

become beer drinking. Similarly, over a fifteen-year period Russia and Poland have replaced vodka with beer and can be classified as "drinkers of beer" while Denmark and Sweden today belong to the wine-drinking countries (see table 1.1a).[6] Replicating the same charts for the share of beer and spirits on the total produces quite similar results. The United States, traditionally a beer-drinking country, has been gradually replacing this beverage with wine and spirits (see figures 1.12a and 1.12b) over the last several years. Table 1.1b shows the number of countries which prefers each alcoholic beverage.

Colen and Swinnen (2010) and Aizenman and Brooks (2008) confirmed the converging consumption patterns in an econometric analysis conducted on a large sample of countries. Colen and Swinnen used data on 104 countries over a period of thirty-five years (from 1970 to 2005) and showed how the share for beer drinking increased in both traditional wine-producing and emerging countries and dropped in those countries that traditionally drink beer. There is, therefore, a clear sign of convergence in consumption patterns captured by specific variables and econometric methodologies net of other determinants and disturbance factors. Aizenman and Brooks came to the same conclusion by analyzing a sample of thirty-eight countries over the period 1963–2000.

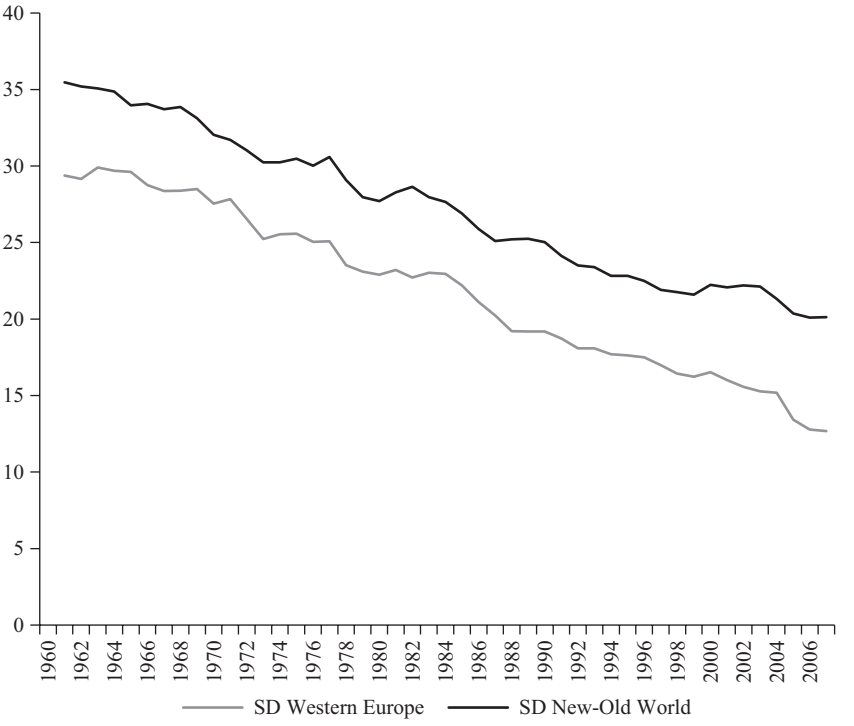

Figure 1.11
Standard deviation of the annual per capita share of pure alcohol attributable to wine, Western European and New/Old World countries.
Source: Author's calculations using data from WHO.

Alcohol consumption is influenced by addiction (Becker and Murphy, 1988; Fehr and Zych, 1998; Grossman, Chaloupka, and Sirtalan, 1998), by models of consumption inherited from previous generations (internal habits; see Sundaresan, 1989; Detemple and Zapatero, 1991), and by imitating peer behavior (external habits; see Abel, 1990; Campbell and Cochrane, 1999). While the first two factors tend to slow down the process of convergence, the third can encourage changes in preferences, as has happened in Russia over the last few years with the replacement of vodka with beer (Dekonink and Swinnen, 2012). The convergence process also appears to be faster in groups of countries with a higher level of integration (Aizenman and Brooks, 2008).

1.1.3 Export of Wine

The abolition of barriers and customs duties and a fall in transportation costs have encouraged trade integration between countries—even those that are quite a distance from each other. At the beginning of the nineteenth century, for example, when a batch of wine was sent from Strasbourg to the Dutch border, it had to go through

Table 1.1a
Consumption of pure alcohol by type of beverage (%), year 2010.

Country	Beer	Wine	Spirits	Other	Main
Australia	44	36.7	12.5	6.8	Beer
Austria	50.4	35.5	14	0	Beer
Belgium	49.2	36.3	14.4	0.1	Beer
Brazil	59.6	4	36.3	0.1	Beer
Bulgaria	39.3	16.5	44.1	0.1	Spirits
Canada	51.2	22	26.8	0	Beer
Chile	29.9	40.7	29.4	0	Wine
China	27.8	3	69.2	0	Spirits
Croatia	39.5	44.8	15.4	0.2	Wine
Czechia	53.5	20.5	26	0	Beer
Denmark	37.7	48.2	14.1	0	Wine
Estonia	41.2	11.1	36.8	10.9	Beer
Finland	46	17.5	24	12.6	Beer
France	18.8	56.4	23.1	1.7	Wine
Germany	53.6	27.8	18.6	0	Beer
Greece	28.1	47.3	24.2	0.4	Wine
Hungary	36.3	29.4	34.3	0	Beer
Iceland	61.8	21.2	16.5	0.5	Beer
India	6.8	0.1	93.1	0	Spirits
Indonesia	84.5	0.1	15.3	0	Beer
Ireland	48.1	26.1	18.7	7.1	Beer
Israel	44	6.2	49.5	0.3	Spirits
Italy	23	65.6	11.5	0	Wine
Japan	19.2	4.1	52	24.7	Spirits
Latvia	46.9	10.7	37	5.4	Beer
Lithuania	46.5	7.8	34.1	11.6	Beer
Luxembourg	36.2	42.8	21	0	Wine
Mexico	75.7	1.5	22.2	0.5	Beer
The Netherlands	46.8	36.4	16.9	0	Beer
New Zealand	38.2	33.9	15.2	12.5	Beer
Norway	44.2	34.7	19	2.1	Beer
Poland	55.1	9.3	35.5	0	Beer
Portugal	30.8	55.5	10.9	2.8	Wine
Romania	50	28.9	21.1	0	Beer
Russian Federation	37.6	11.4	51	0	Spirits

(*continued*)

Table 1.1a (continued)

Country	Beer	Wine	Spirits	Other	Main
Slovakia	30.1	18.3	46.2	5.5	Spirits
Slovenia	44.5	46.9	8.6	0	Wine
South Africa	48.1	17.8	16.7	17.4	Beer
Spain	49.7	20.1	28.2	1.8	Beer
Sweden	37	46.6	15.1	1.4	Wine
Switzerland	31.8	49.4	17.6	1.2	Wine
Thailand	27	0.4	72.6	0	Spirits
Turkey	63.6	8.6	27.9	0	Beer
Ukraine	40.5	9	48	2.6	Spirits
United Arab Emirates	10.3	2.9	86.7	0	Spirits
United Kingdom	36.9	33.8	21.8	7.5	Beer
United States	50	17.3	32.7	0	Beer
Uruguay	30.6	59.9	9.5	0	Wine
Venezuela	75.6	0.8	23.4	0.2	Beer
Vietnam	97.3	0.6	2.1	0	Beer

Source: Author's calculations using data from WHO.

thirty-one checkpoints and tolls (Robinson, 1998, p. 308). The creation of free trade agreements—for example, the European Common Market in 1957 and the North American Free Trade Agreement in 1992—has seen a progressive elimination of barriers and tariffs between neighboring and non-neighboring countries.[7]

As for transportation costs, the spread of steamships and the development of the railways in the nineteenth century played a crucial role in the early years of globalization (North, 1958) while the invention of containers and innovations in the aeronautics industry revolutionized transportation modes in the second half of the twentieth century (Levinsohn, 2006). This substantiates a key forecast of international trade theory that trade integration reduces the correlation between production sites and consumption because goods from faraway countries are easily available at moderate prices. While Aizenman and Brooks (2008) found that the per capita consumption of wine in 1963 was largely attributable to latitude and grape production, this correlation was much weaker in 2000.

The decrease in transportation costs and the increase in the volume of exports play a key role in this convergence process. Unlike production, the volume of the world's wine exports is constantly growing as can be seen in figure 1.13; they have, in fact, increased almost four times over, from 2.7 million tonnes in 1961 to 10.9 in 2016. The combination of stagnant production and growing exports has led to a

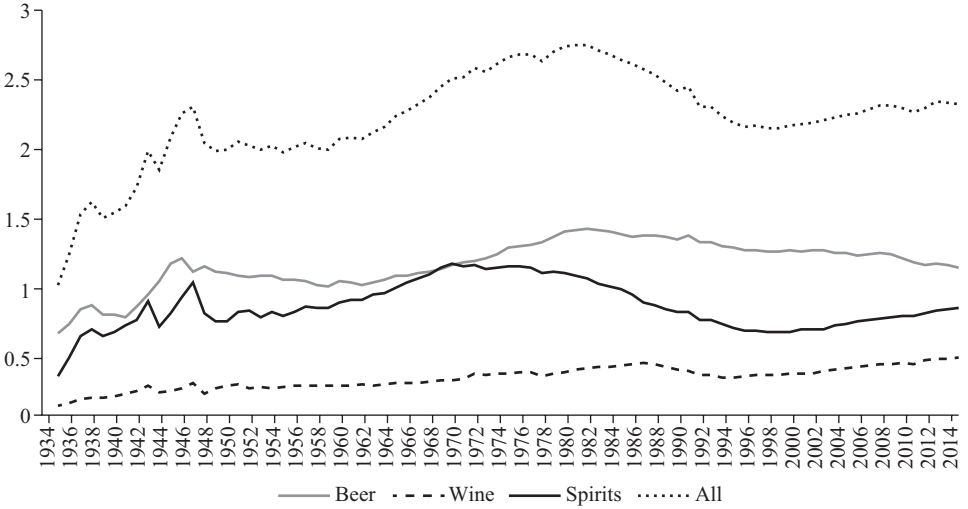

Figure 1.12a
Per capita consumption of alcohol by type of beverage in the United States (gallons).
Source: Author's calculations using data from the US National Institute on Alcohol Abuse and Alcoholism (NIAA).

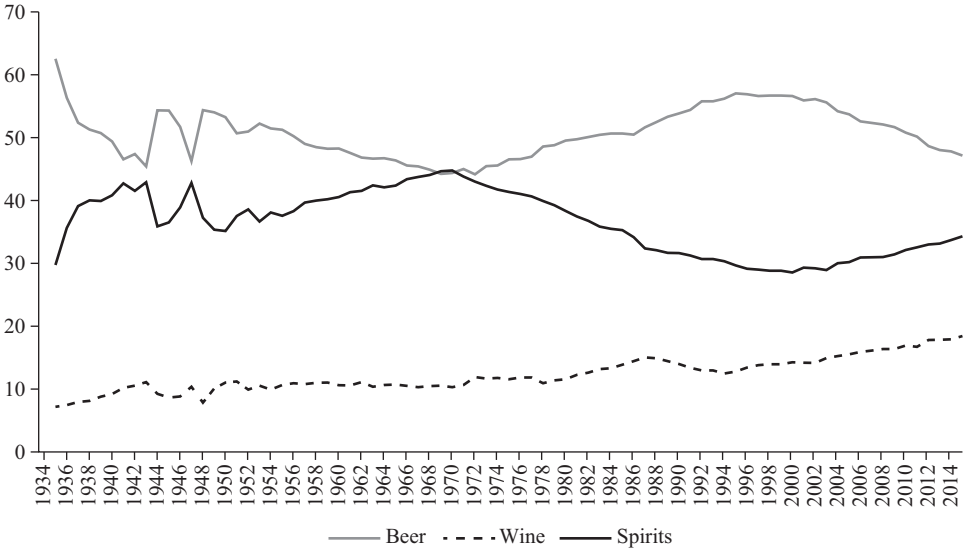

Figure 1.12b
Share of per capita consumption of alcohol by type of beverage in the United States (%).
Source: Author's calculations using data from NIAA.

Table 1.1b
Favorite beverage, 2010.

Beverage	No. of countries that prefer this beverage
Beer	83
Wine	17
Spirits	60
Other	21
Total	181

Source: Author's calculations using data from WHO.

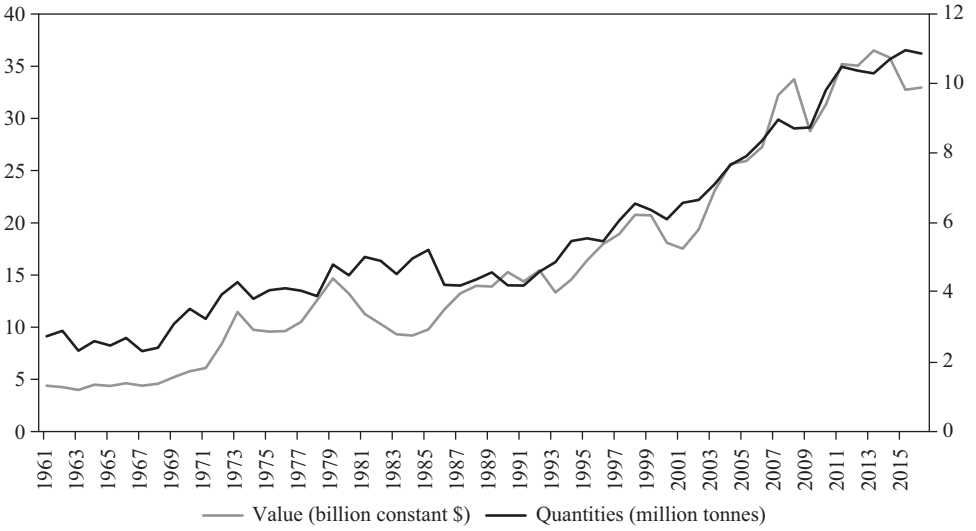

Figure 1.13
World wine exports, billion $ constant 2017 terms (left axis) and million tonnes (right axis).
Source: Author's calculations using data from FAO.

sharp increase in the share of exported wine in the total produced (figure 1.14). While less than 10 percent of the total wine production was destined for export in the 1960s, this figure now stands at more than 30 percent, showing that the export sector is becoming increasingly important for wineries all over the world.

There are essentially three reasons for such a sudden increase in wine exports. First, a reduction in consumption in the main wine-producing countries has driven domestic companies in Mediterranean Europe to seek out markets for their surplus product overseas. The second is linked to an increased demand for wine by countries

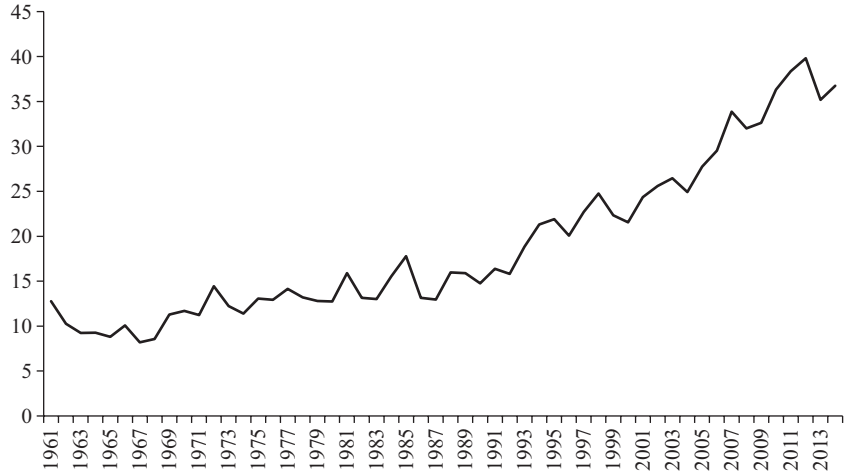

Figure 1.14
Share of world wine exported (as % of total quantities).
Source: Author's calculations using data from FAO.

that traditionally drink beer or other alcoholic beverages after the globalization of consumption patterns, and not just in the agricultural sector. This is an old process that had already been observed by Gide (1907) in his analysis of the French wine market crisis from the end of the ninetieth century to the beginning of the twentieth century; he believed it was caused more by a lack of demand as a consequence of substituting beer for wine rather than by excess supply. The third can be attributed to the reduction or elimination of customs duties and barriers as a result of international agreements and to reduced transportation costs.

Transporting beverages is expensive because the goods are mainly made up of water and are therefore bulky and heavy (Colen and Swinnen, 2010). The lower the value of the drink, the less cost-effective transportation costs will be since the burden of these costs against the drink's price can become unsustainable. For this reason, breweries have expanded their operations abroad mainly through mergers and acquisitions or through on-site production by licensing rather than through exports from the country of origin. In the case of wine, however, exporting is indispensable; climate conditions make it impossible to produce in some areas of the world, and there may be a total or partial ban on producing wine using grapes coming from areas planted outside the boundaries of a protected appellation area.

The exchange of goods between neighboring countries takes place mainly via road, rail, and pipeline (e.g., oil) and almost exclusively by sea and air between distant countries (Hummels, 2007). The choice of transportation is influenced by a number of factors, including the value and weight of the goods. Almost all raw materials, heavy

Table 1.2
Export of Italian wine according to mode of transportation (%).

Share of wine						
Quantity	Sea	Air	Rail	Road	Other	Total
Germany						
1999	1.0	0.0	6.3	92.7	0.0	100
2012	0.0	0.0	2.4	37.6	60.0	100
France						
1999	60.1	0.0	3.1	36.8	0.0	100
2012	2.6	0.0	0.5	44.1	52.8	100
Great Britain						
1999	9.9	0.0	9.9	80.2	0.0	100
2012	0.2	0.0	0.1	56.7	43.0	100
Value						
Germany						
1999	0.9	0.0	1.7	97.4	0.0	100
2012	0.0	0.0	0.8	36.6	62.6	100
France						
1999	45.1	0.0	2.2	52.7	0.0	100
2012	1.5	0.0	0.5	40.5	57.4	100
Great Britain						
1999	9.0	0.0	8.3	82.7	0.0	100
2012	0.1	0.0	0.1	53.7	46.0	100

Source: Author's calculations using data from Eurostat.

goods, and low value goods are transported by ship and fuels via pipeline while air transportation represents a frequent mode for light and high value-added products (e.g., electronics). The willingness of consumers to pay for fast air transportation depends on the incidence of this cost on the final price of the good and the value assigned to the speed and punctuality of delivery. These considerations also apply to wine, a heavy commodity. The cost of air transport is justified in economic terms only for a niche of very valuable products and for a small circle of wealthy buyers.

Table 1.2 shows Italian wine exports to three main European trading partners—Germany, France, and Great Britain—broken down according to transport modes. Air transportation does not account for even 0.1 percent of the total either in quantity or in value for any of the three countries considered. The 1999 data shows that

Table 1.3
Share (%) of EU-27 wine exported by air.

	Quantity		Value	
Year	USA	China	USA	China
1999	0.9	0.2	3.1	1.0
2000	0.9	0.1	3.1	1.5
2001	0.8	0.5	2.9	4.7
2002	0.8	0.9	2.7	4.4
2003	0.7	0.8	2.2	4.1
2004	0.6	0.7	1.8	4.0
2005	0.5	0.2	1.9	5.5
2006	0.5	0.6	2.0	8.1
2007	0.5	0.6	2.0	7.2
2008	0.4	0.6	1.4	7.6
2009	0.2	0.6	1.3	6.7
2010	0.2	0.5	1.1	9.1
2011	0.1	0.6	0.8	8.9
2012	0.1	0.3	1.1	5.8

Source: Author's calculations using data from Eurostat.

they were mostly carried by road (to Germany and Great Britain), followed by sea (especially to France). It is not possible to analyze the evolution of the operators' choices on the basis of the 2012 data because the mode of transportation is no longer recorded for much of the wine (and is therefore classified as "Other"). There is, however, no particular reason to expect changes from the 1999 shares.

Table 1.3 shows the share of EU-27 wine exports to China and the United States transported by air. Expressed as a percentage of the tonnes, this ratio never reaches even 1 percent, and for the United States it appears to be in sharp decline. When expressed as quantity, however, it can be seen that wine is transported almost entirely by sea. If expressed in value, instead, the situation changes. First of all, the percentage of wine transported by air is from eleven (United States) to nineteen (China) times higher when it is expressed in value compared to quantity. Second, while the share expressed in value and quantity is falling for the United States, there is a fluctuating trend for China with peaks in 2006 and 2010, though it is still growing. This is probably due to an increase in the value of imported wines, reflecting the exponential growth of the Chinese economy and the evolution of consumer tastes. What emerges clearly, however, is that the transportation of wine over long distances takes place almost exclusively by ship because of the high costs while air transportation is reserved for a niche of valuable products.

Costs have fallen primarily for air transportation as a result of technological innovations, especially in the 1950s and 1960s (Hummels, 2007), though they continued to fall in subsequent decades, albeit at a lower rate. Other modes of transportation were also affected by innovations and improvements that cut costs, though periodically external shocks (e.g., oil) reduced the savings that had been achieved. Golub and Tomasik (2008) studied transport costs in twenty-one Organisation for Economic Cooperation and Development (OECD) countries over the 1973–2005 period and, contrary to Hummels' results (2007), did not find a downward trend in shipping costs. As far as wine is concerned, it is not possible to study the evolution of costs for all these modes because the only information available is about maritime transportation.

Table 1.4 shows the costs expressed as a percentage of the value (ad valorem) for some combinations of exporting and importing countries. Costs depend on the distance between the two countries, the value of the commodity exchanged, and a set of other factors. Shipping costs, as a percentage of the value of the wine, noticeably diminished over the fifteen-year period, helping to explain the constant growth of

Table 1.4
Cost of sea transport as % of value of wine (ad valorem).

Importer Exporter	USA EU	USA Australia	USA Chile	USA South Africa	EU USA	China EU	China USA
1991	7.14	15.3	13.18	11.64	–	–	–
1992	6.57	10.26	11.52	6.63	–	–	–
1993	6.85	8.68	10.04	7.36	8.69	3.5	15.21
1994	7.13	7.88	10.27	6.13	8.28	6.34	14.1
1995	7.01	7.17	10.38	7.28	7.74	3.15	17.62
1996	6.6	5.53	9.66	6.99	8.88	8.66	12.62
1997	6.53	4.88	8.62	7.82	9.09	10.7	12.71
1998	5.81	4.35	7.5	7.29	9.25	10.85	11.72
1999	5.09	3.97	6.49	5.29	6.58	5.71	6.28
2000	5.54	4.24	7.16	7.56	2.75	5.53	6.54
2001	5.64	4.69	7.29	10.28	2.42	4.6	7.29
2002	5.32	5.95	7.23	9.3	2.49	4.2	3.8
2003	5.19	5.5	7.27	8.63	1.87	2.97	4.1
2004	5.5	5.52	7.76	8.59	1.84	2.2	4.42
2005	5.67	6.03	8.23	7.65	2.41	2.9	4.71
2006	5.64	5.98	7.22	8.65	2.12	1.91	3.67
2007	5.34	5.5	6.55	7.97	2.47	1.16	4.69

Source: Author's calculations using data from OECD.

wine exports. Falling shipping costs make markets more open and competitive with obvious benefits for consumers, but they also generate an increase in the degree of rivalry among the companies operating in the market.[8]

The wine trade's geography has undergone much more marked transformations than production. Figures 1.15a and 1.15b show the rankings of the main exporters of wine as a percentage of world production expressed in tonnes in 1961 and 2016. What is most striking is that in 1961, Algeria was the world's leading wine exporter. Viticulture had been present in the country even before French colonization (1830–1962), but it covered only two thousand hectares in 1830, climbing to five thousand in 1850. By the turn of the century wine production had grown significantly, covering 150,000 hectares in 1900, reaching 220,000 in 1928, and to 407,000 in 1951, the year of maximum expansion (di Garoglio and Desmireanu, 1961). In the meantime, Spain had taken over as the largest exporter in quantity (but not in value; this was a position held by France because of the higher prices it can command for its products—see figure 1.15d), followed by Italy and France. Four countries in the New World followed—namely, Australia, Chile, South Africa, and the United States—which won their positions thanks to very aggressive policies.

The reasons for the expansion and collapse of Algerian viticulture in less than one hundred years have been carefully investigated by Meloni and Swinnen (2014,

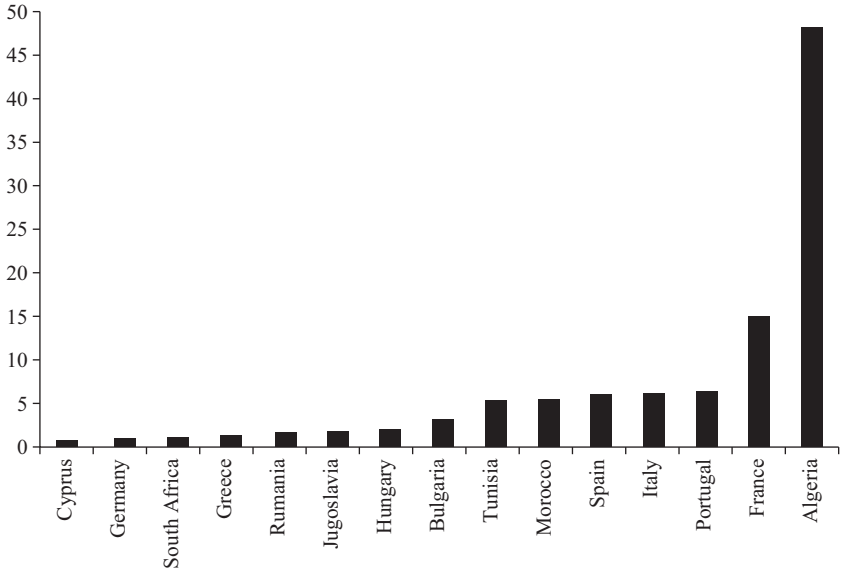

Figure 1.15a
Share of world export of wine (as % of total quantities), 1961.
Source: Author's calculations using data from FAO.

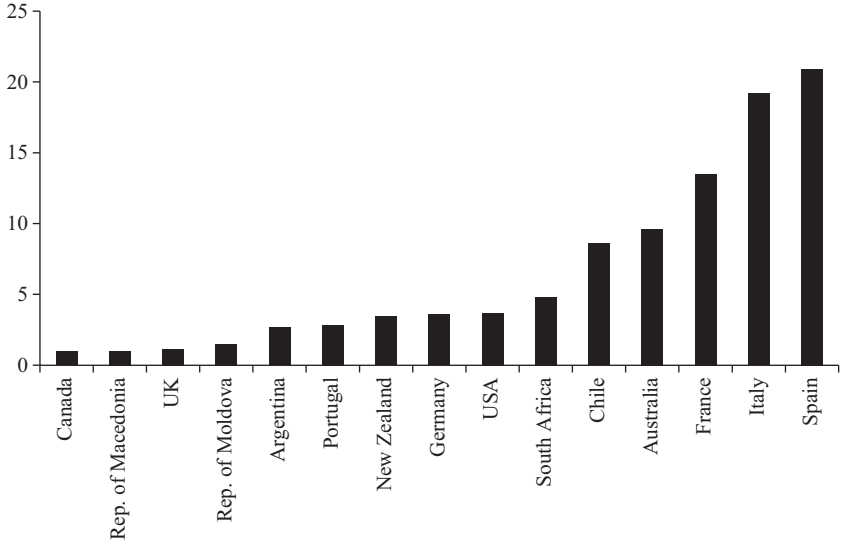

Figure 1.15b
Share of world export of wine (as % of total quantities), 2016.
Source: Author's calculations using data from FAO.

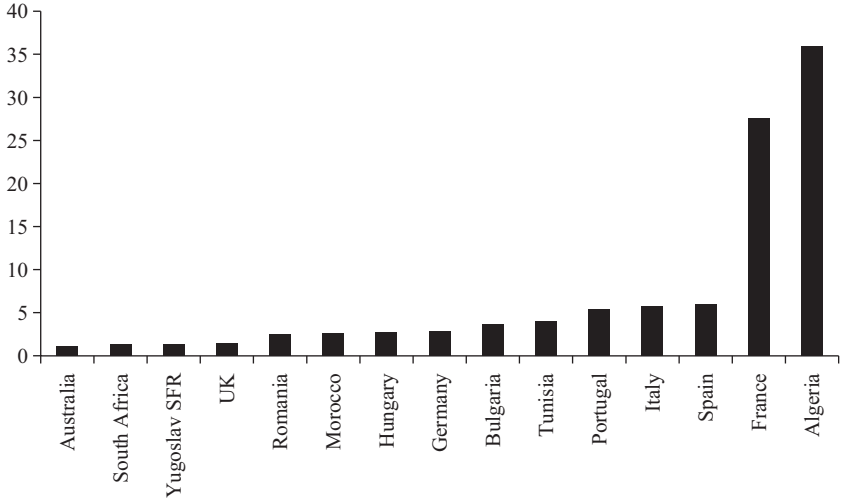

Figure 1.15c
Share of world export of wine (as % of total values), 1961.
Source: Author's calculations using data from FAO.

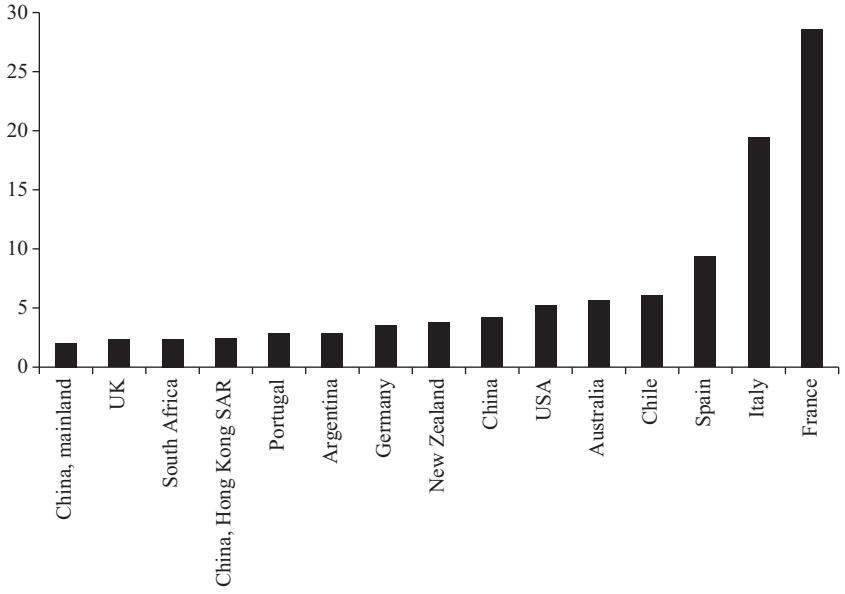

Figure 1.15d
Share of world export of wine (as % of total values), 2016.
Source: Author's calculations using data from FAO.

2018b). From 1863 onward, phylloxera gradually devastated European vineyards, leading to a drastic reduction in the quantities produced and creating persistent imbalances between supply and demand. This stimulated imports from abroad, and fraudulent activities linked to adulterated wine production became widespread. In 1880 the policy of the Franco-Algerian government to increase credit to agriculture forced many French producers on the verge of bankruptcy to emigrate to Algeria, while commercial wars with Italy and Spain between 1887 and 1892 and the absence of import duties on colonial wines quickly changed the geography of the wine supply in favor of the Maghreb territories.

The start of production in Africa had been helped by a number of technological innovations, such as cold fermentation, which allowed quality products to be obtained in areas with very hot climates (Johnson, Nye, and Franck, 2010). Ninety percent of the production, however, was destined for export to France because of the religious prohibition on alcohol consumption for Muslims. The gradual defeat of phylloxera and the consequent return of French production to precrisis levels created excess supply that led to a price collapse. The attempt by Franco-Algerian producers to market their wine in the United Kingdom as if it were French (the "Leakey case"; see Strachan, 2007 and Birebent, 2007) provoked the reaction of French wine makers, who put pressure on government authorities and succeeded in setting up

Appellations (*Appellation d'origine contrôlée*) in 1905, thus binding the name of the wine to a geographical area (*terroir*).

Between 1931 and 1935 a series of laws (*Statut Viticole*) imposed restrictions, taxes, and an obligation to uproot vines on Algerian vineyards, whose trade was later paralyzed by the outbreak of World War II. At the end of the war, Algerian production restarted, but French producers once again called for new laws with restrictive objectives, duly introduced in 1953 (*Code du Vin*). With the end of French colonization, wine production and exports collapsed in all the former French colonies, and by 2010 Algeria had slipped to thirty-sixth in the ranking of major exporters. The absence of domestic demand and the blockade of imports from France led to the return of North African production to 1880 levels.

Figure 1.16 shows the average prices of exported wine in 2016. Some of the highest prices were picked up by countries such as the United Kingdom and New Zealand where quantities are small and the average price is probably conditioned due to the wine being high-quality niche products. However, if we look at the leading world exporters, France manages to charge prices that are several times its rivals (twice the price of Italy and four times that of Spain). This difference is given by a combination of factors, ranging from higher quality to acquired reputation, advertising campaigns, and so on. However, it is hard to assess the real contribution of each variable to the determination of the export price. Figure 1.17 shows the trend of the

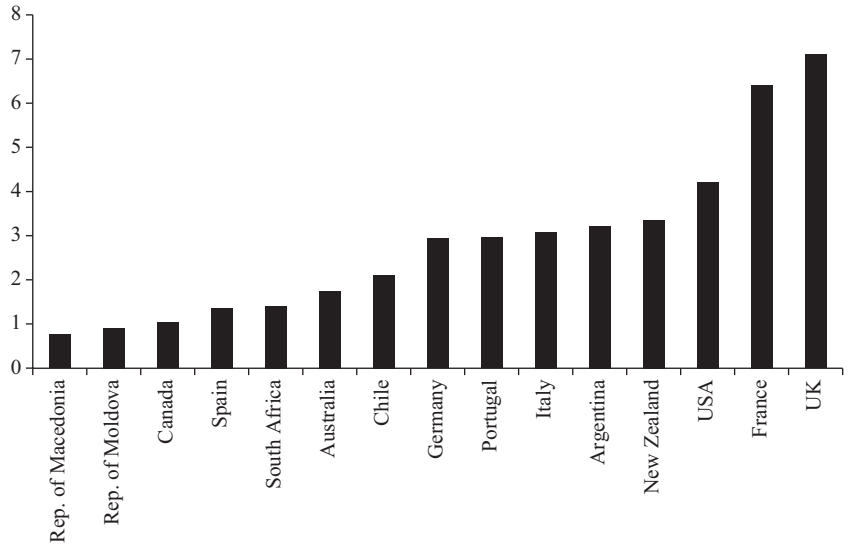

Figure 1.16
Average export price of wine (US$ per kilogram), 2016.
Source: Author's calculations using data from FAO.

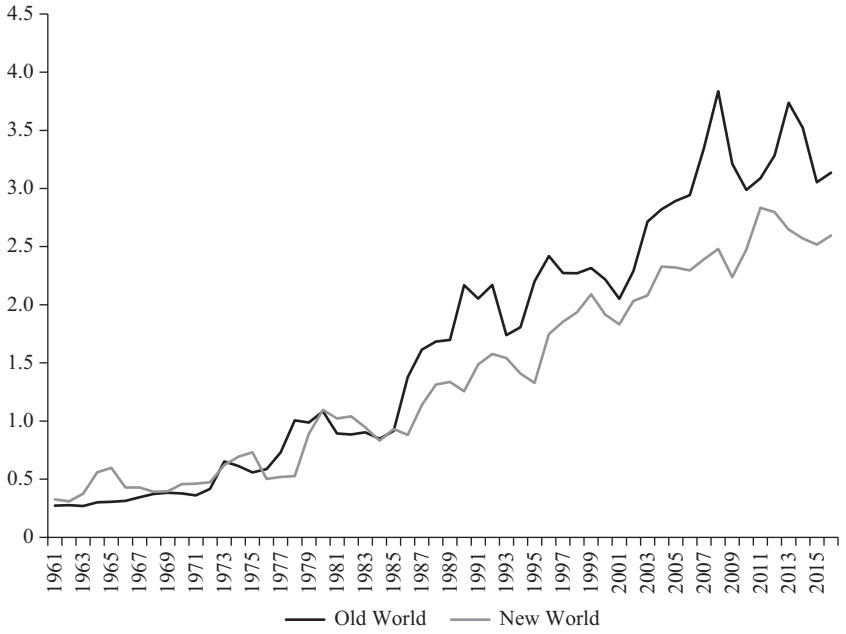

Figure 1.17
Average export price of wine (current US$ per kilogram), New versus Old World.
Source: Author's calculations using data from FAO.

average export price of wines from the Old and New World. Half a century ago the average price was almost the same in the two groups of countries while it now seems to grow at higher rates in the Old World.

1.2 The "Wine War"

1.2.1 The Wine Market Before and After the 1960s

Although wine had spread to many European colonies over the centuries, it was produced and consumed almost entirely in Europe until the 1960s. In 1961, the highest consumption levels in non-European countries were recorded in Argentina and Chile (78 and 58 liters per capita respectively)[9] because of large communities of Italian and Spanish immigrants. These levels were lower than in France and Italy (120 and 110 liters per head respectively) but similar to the 59 liters of Spain. Other New World countries had lower levels of consumption: South Africa, 16 liters; Australia, 5; New Zealand, 2.2; United States, 3.2; and some none at all—China, zero. Australia preferred beer because of its Anglo-Saxon culture and hot climate while a large number of people in the United States were teetotalers and the rest favored

beer and spirits. Wine was, therefore, primarily for immigrants from Mediterranean Europe (Bartlett, 2009).

However, the situation changed radically in the following decades, and consumption grew in New World countries, with the exception of Argentina, Chile, and South Africa where levels converged as described in the previous section. In 2009, per capita consumption of wine stood at 26 liters in Australia, 1.3 in China, 8.1 in New Zealand, and 7.2 in the United States. The constant growth of domestic demand for wine played a crucial role in driving supply. Infant wine businesses in the New World were able to benefit from a number of competitive advantages—especially the widespread availability of land, low labor costs, low tax burden, and the absence of strict geographical and technical constraints such as those imposed by the appellations in European countries. In 2006 the average size of wineries in the United States was 213 hectares and in Australia, 167 hectares, as opposed to 7.4 in France and just 1.3 in Italy (Heijbroek, 2007, p. 5). New World countries, therefore, were able to benefit from large economies of scale and greater freedom to experiment with new agronomic and wine-making techniques.

1.2.2 Innovations in the Wine Sector

Table 1.5 shows the main innovations introduced over the centuries. Until the beginning of the twentieth century, new cultivation and production techniques spread fairly homogeneously, but over the last hundred years the Old World has been more resistant to changes than the New World. Indeed, many of the most important innovations have been explicitly forbidden by EU regulations under the pressure of the so-called "purists" who are opposed to any form of change that could "take the poetry out of wine." In contrast, the New World countries have begun to experiment and adopt new techniques—for example, drip irrigation, making it possible to plant vineyards in areas with low rainfall in Australia, and quality stabilization, a problem that has still not been resolved today in rainy and climatically unstable France. Reverse osmosis, which reduces the percentage of water in grape must before fermentation and makes colors and aromas more intense, was patented in 1992 in France but immediately forbidden, although it is used extensively outside Europe. The larger size of vineyards in the New World means many companies can make a wide-scale use of mechanical pruners and harvesters, reducing labor costs considerably.

Night harvesting, widely used throughout the world to avoid the heat and sun of the day, prevents fermentation and the acidification of grapes during transportation, but in Europe it is still limited to a small number of companies. The doubling of the density of plants per hectare that has proven to be effective in improving the quality of grapes while keeping the yields per hectare constant has been markedly slowed down by the long and complex bureaucratic process needed to change the regulations for wines with an appellation. Improvements in pruning techniques have been adopted all over the world while new fertilizing techniques have been limited in Europe by the more conservative attitude of farmers and more stringent regulations.

Table 1.5
Main innovations in the wine sector.

When it was introduced	Description of innovation	Adopted in Old World	Adopted in New World	Effect on production
End of 18th century	Mass production of glass bottles and cork stoppers	Yes	Yes	Improvement in the preservation and storage of wine
Beginning of 19th century	Use of horses and introduction of rows	Yes	Yes	Improvement in production efficiency and lowering of costs
1855	Bordeaux wine classification system	Yes	Yes	Reduction of producer-buyer information asymmetries
1858	Sulfur dusting of vines	Yes	Yes	Solution of powdery mildew problem
1863	Pasteurization	Yes	Yes	No longer necessary to increase the alcohol content in wine to prevent it from turning sour during transport
1880	Introduction of American rootstocks on European vines	Yes	Yes	Solution of phylloxera problem
20th century	Drip irrigation	No	Yes	Less variation in quality in different years
1992	Inverse osmosis applied to the must	No	Yes	Color and taste are made more intense
End of 20th century	Addition of tartaric and citric acid	Yes	Yes	Control level of acidity
End of 20th century	Night harvesting	Yes/no	Yes	Avoids fermentation during transportation
End of 20th century	Doubling density of plants per hectare, maintaining same yield	Yes/no	Yes	Improvement in the quality of grapes
End of 20th century	Improvements in pruning and fertilization techniques	Yes/no	Yes	Increased yield and improved aroma
End of 20th century	Steel tanks with built-in microchips to electronically control temperature during fermentation	Yes/no	Yes	Improvements in fermentation
End of 20th century	Addition of tannins	No	Yes	Control tannin levels
End of 20th century	Mechanical pruners and harvesters	Yes/no	Yes	Reduction in labor costs
End of 20th century	Use of wood shavings during fermentation	No	Yes	Gives an aroma of wood, saving on costs
End of 20th century	New packaging for marketing (screw caps, carton packs with soft plastic interiors, etc.)	No	Yes	Reduction of transportation costs and fewer storage problems (e.g., mold)

The same has happened to the use of stainless steel tanks with built-in microchips to control fermentation.

Experiments have been made introducing wood shavings into fermentation tanks to give the wine the aroma of wood without the long and expensive process of aging in barrels, but the technique has been prohibited by law in the Old World. Finally, new packaging for the marketing of wine (screw caps, carton packs with soft plastic interiors, etc.) has been extensively adopted in the New World countries while in Europe it has been hampered by what is, at times, excessive attachment to tradition.

These innovations in New World countries have had two important results. The first is a drastic reduction in average production costs; in a comparison of wine producers belonging to the same quality range, costs were found to be 74 percent higher in the Languedoc region in France than in the Riverina in Australia (Heijbroek, 2007, p. 16). The second result is the increase in quality in New World countries, in spite of the criticisms about the limited variety of grapevines compared with the historical European producers and the often excessive use of wood (or its derivatives).

1.2.3 The "Judgment of Paris" and the Surge of New World Countries

On May 24, 1976, Steven Spurrier, an English merchant, organized a public blind wine tasting in Paris for promotional purposes linked to the bicentennial of the United States. It has since become known as the "judgment of Paris" (Colman, 2008, pp. 71–72). Eleven experts—nine French, one English, and one American—evaluated French and Californian red and white wines. Despite having the "home court advantage," the French were outplayed by the Californian wines in both categories, causing a huge stir in France. After numerous accusations of fraud, two years later a new tasting event was organized which still produced the same outcome, with Californian wines winning most of the prizes (Bartlett, 2009).

These contests acted as very effective advertising for New World wines and also convinced producers of their ability to compete globally. They encouraged and accelerated both agricultural (new vineyards) and technological (innovations applied to viticulture) investments that had particularly disruptive effects in the medium- to low-level segments of the market. These less experienced consumers had previously known only a dozen international vines and are particularly sensitive to the quality-price relationship. Large economies of scale in production and distribution have allowed New World countries to practice extremely competitive prices. Companies with thousands of hectares have begun to sell containers of decent or good quality wine very cheaply. Even in the premium sector very high levels have been reached with some American or Australian wines being knocked down in auctions at staggering prices.

While the New World was experiencing a phase of quantitative expansion and qualitative growth in the last quarter of the twentieth century, there was a drastic fall in wine consumption in Mediterranean Europe. From 1970 to 2009, per capita consumption decreased by 66 percent in France, 56 percent in Italy, 49 percent in

Portugal and 35 percent in Spain.[10] The main reasons for this are the changing preferences of the younger generation toward other alcoholic beverages (especially beer but also spirits), greater awareness of the harmful effects of alcohol abuse on health, and the stiffening of controls and sanctions to stop drunk driving. For a long time, the increase in consumption recorded in the rest of the world was not enough to offset the losses in Mediterranean countries. From the end of the 1970s to the mid-1990s, world consumption declined steadily while the imbalance between supply and demand reached a peak of nearly 65 million hectoliters, over 20 percent of production, in the five-year period 1986–1990 (see table 1.6).

This negative trend was finally reversed at the end of the 1990s, and excess production fell. Changing consumer tastes also helped to counteract the decline in wine. In Europe interest faded in low-quality table wine for everyday use while the demand for premium or super-premium wines grew as customers became better informed and more demanding. Besides, in many countries of the New World, wine is considered synonymous with elegance and distinguishes people from the "mass" of less sophisticated consumers. The demand for better quality wine went hand in hand with a rise in the average price paid, not only opening new opportunities for producers but also creating new threats. New consumers are increasingly knowledgeable, so any producer unable to offer a good product at a competitive price will be forced out of the market.

1.2.4 Change in Consumer Preferences

The last few decades have been characterized by profound changes not only in the geography of producers and consumers but also in the preferences of consumers. In the 1980s the United States became much more health conscious and interested in the quality and characteristics of food. This led to an increase in the demand for white

Table 1.6
Total world wine production and consumption (1,000 hectoliters).

Years	Production	Consumption	Difference	Difference/ Production (in %)
1971–1975	313,115	280,356	32,759	10.5
1976–1980	326,046	285,746	40,300	12.4
1981–1985	333,552	280,718	52,834	15.8
1986–1990	304,192	239,485	64,707	21.3
1991–1995	263,092	223,183	39,909	15.2
1996–2000	272,570	225,302	47,268	17.3
2001–2006	272,615	234,329	38,286	14.0
2006–2010	270,724	245,031	25,693	9.5
2011–2015	272,268	241,537	30,731	11.3

Source: Author's calculations using data from OIV.

wine and spritzers (low-alcohol drinks with white wine and tonic water). In fact, by the end of the 1980s three-quarters of the wine consumed in the United States was white, but over the next two decades, the situation changed radically once again. In 1991 an episode of the TV program *60 Minutes* drew attention to a medical study that claimed the daily consumption of red wine was one of the main explanations for the so-called "French paradox"—that is, a low incidence of heart disease in a population with a diet typically rich in fat (Colman, 2008, p. 83). As a result, within a five-year period from 1991 to 1996, the share of red wine increased from 27 percent to 43 percent.[11]

At the same time another radical change took place in the United States when the demand for sweet white wines suddenly slackened, leading to a fall in German exports of this type of wine from three million hectoliters in 1992 to two million a couple of years later. However, changes in consumer preferences do not only involve the type of wine. Americans' favorite white grape in the 1980s was Chardonnay, but ten years later consumers preferred pinot grigio and sauvignon blanc; for red wines a particular liking for Cabernet Sauvignon was followed first by a short-lived boom in merlot and later by the triumph of Pinot Noir.

Changes in consumer preferences are a serious problem for wineries since the planting of a vineyard is a costly investment and is characterized by deferred returns. For the first three years a vine does not produce fruit; from the fourth to the sixth year production is at 30 percent while from the seventh to the thirtieth year it has its highest yield; and from thirty-one years onward (generally up to forty years) there is a gradual decrease in yield per hectare, resulting in a higher quality product. Therefore, an enterprise that has made substantial investments in a vineyard, aiming at a specific vine in vogue at the time of planting, can face financial ruin if consumer tastes change suddenly.

This risk is common to all producers, although it is stronger in the New World where consumer purchases are strongly influenced by the vine. In Europe collective trademarks (appellations) play a much more important role in driving buyers' choices, thereby attenuating the changes and "anchoring" customers more to the terroir. The appellation system, on the one hand, makes the Old World consumer "loyal" to the geographical area; on the other hand, it hinders the conversion of vineyards. A producer who wants to abandon the production of an appellation wine with little demand to focus on a fashionable international vine variety has to give up the institutional recognition that they have obtained to sell a "table wine" or a "geographical indication" (see chapter 6).

1.2.5 Evolution of the World Wine Market

The imbalance between demand and supply mainly affected Europe because of its constantly falling consumption, and it reached a peak toward the end of the 1980s, so much so that there was talk of a "European Wine Lake." From the 1970s onward, the European Union intervened by adopting supportive policies for producers to encourage the voluntary grubbing up of vineyards and by subsidizing the crisis distillation of

surpluses. As will be explained in detail in chapter 8, these measures proved costly and ineffective or even harmful since the EU purchases of bad wine perpetuated the surpluses (Thornton, 2013, p. 291). So in 2008 it was decided to change strategy and to replace support for the disposal of surpluses with the liberalization of the market.

Meanwhile, in the 1990s, the assault of new wine producers continued. In 1996 Australia launched its "Strategy 2025" initiative with "total commitment to innovation and style from vine to palate." The declared goal was to become "the world's most influential and profitable supplier of branded wines" (Winetitles Media, n.d.). Ten years later production had doubled and exports had grown five times over. Other countries of the New World also achieved notable results in both quantitative and qualitative terms so that the geopolitical balance of wine seemed destined to change quickly and definitively.

However, things did not go exactly according to plan. Market saturation and the reorganization of European producers also hit New World wine makers, though not immediately. Excess production from 2000 onward had encouraged Australia to strongly reduce its export prices between 2004 and 2006. This seriously damaged the image of Australian wine that had previously been considered "cheap and cheerful." Some observers labeled it the "coca-colarization" of wine (Aylward, 2008). The excellent value for money, at first allowing the country to triumphantly enter markets that were dominated by countries of long-standing tradition, nearly became a reputation trap. In the meantime, European producers had reorganized and could now rely on EU funds for promotion abroad in their counterattack.

Given the stagnation of domestic consumption, the export market had become increasingly important for Mediterranean Europe, and in 2010 it accounted for one-third of production.[12] The United States, with a population of around 330 million inhabitants with a very high per capita income and per capita consumption growth, became the main battlefield in the wine war. This market presents a mixture of risks and opportunities for exporting countries. On the one hand, the constraints imposed by each state on the marketing and sales of alcoholic beverages and the three-tier distribution system set up after the end of Prohibition make it traditionally complex. The three levels are the producer, the wholesaler, and retailer. In most US states, the law obliges producers to sell only to wholesalers, who then sell to retailers, and only retailers can then sell to consumers.[13] On the other hand, the younger generations have proved to be better informed and more xenophile, giving foreign producers an advantage, especially in the medium-high price range. Despite the great improvements in quality and the economic success of their domestic companies, the United States is now under pressure from rivals and is also suffering from a loss of competitiveness owing to high labor costs and the exorbitant price of land (especially in California's most famous areas), both of which are much lower in countries like Australia and, above all, Chile.

A further variable which is affecting the geography of wine is global warming (Cardebat, 2017, p. 18–20). Experts forecast that temperatures will rise by 3.6°F–7.2°F (2°C–4°C) by the end the twenty-first century. Rising temperatures allow the production of wine at higher latitudes and altitudes (e.g., in England, small mountains, etc.) which can be an advantage for some countries. However, it will be troublesome for other countries with milder climates since temperatures will become scorching and rainfall more scarce and unstable.

1.3 Main Differences Between the Old and New World

Table 1.7 gives a summary of the main differences between Old and New World production, distribution, and consumption of wine. Some variables favor the first group of countries, others the second.

1.3.1 Differences from the Point of View of Production

Production has been declining in Western Europe for decades, just as it has been rising in New World countries (except for Australia and South Africa). In the first group of countries all aspects of the market are regulated, and there is very limited freedom of entry,[14] whereas the market is free outside the old continent. When new consumption patterns move preferences toward new vines, the constraints imposed by governments or consortia may hinder the ability to adapt to market demand.

The size of companies varies, but they tend to be much larger in the New World (Cardebat, 2017, p. 31) for reasons of geography (widespread availability of land), demography (low population density), and history (fragmentation of land ownership in Europe because of inheritance and special laws). Consequently, market concentration is much higher in the New World than in the Old World (Marks, 2015, pp. 112–116). Thornton (2013, p. 289) has estimated the number of wineries and the share of the two and four largest firms for the year 2009 in the most important wine-producing countries. The difference among the two groups of countries is striking, with the four largest companies producing a much larger share: in France 15.9 percent, Italy 9.7 percent, Spain 21 percent, and Germany 3.8 percent while across the ocean in the United States it is 56 percent, Argentina 60.5 percent, Australia 62.3 percent, Chile more than 80 percent, South Africa 37.1 percent, and China 28 percent. In the United States the first twenty wineries have a combined market share of roughly 90 percent; the remaining 10 percent is left to around seven thousand firms (Thornton, 2013, p. 3). This last point has affected the control of the entire production chain, which is often impossible in Europe. As noted by Simpson (2009), wine production is dominated by small businesses and cooperatives in Europe but by major corporations in the New World. The result is a much more marked concentration of production in the second group of countries.

Table 1.7
Comparative analysis of the characteristics of the Old and New World.

Variable	Old World	New World
Production		
Production (hundred liters, or hl)	Falling	Tending to increase
Entry barriers	Planting rights subject to EU laws	Freedom of entry into the market
Firm size	Generally small-to-medium size	Generally large
Control over production chain	Limited due to fragmentation of land ownership (cooperatives)	Large-sized firms and total control of production chain
Production techniques	Bound (often by law) to traditions	Innovative
Product differentiation	Hundreds of native vines and appellations	Few international vines that are planted all over the world
Production costs	High	Lower (on average)
Wine flavor	The naturalness and authentic flavor of the vine are preferred	Very fruity and strong aroma of wood from the use of chippings
Distribution		
Quality signaling	Principally based on the classification system and collective brands	Based on firm brand
Power of distributors	Lower	It depends. For example, in the US it is very high
Consumption		
Domestic consumption (hl)	Generally falling	Generally increasing
Purchasing power of domestic consumers	Falling strongly	Different trends, but not negative as in the Old World

In 2012 only two European wineries (both French) were among the top ten in the world per surface area, with the first three cultivating more than ten thousand hectares each (Mediobanca, 2014, p. 8). This state of fragmentation in Europe is favored by the political influence of numerous producers, both independent and cooperative members, who want to maintain the status quo by hindering the aggregation and consolidation that has taken place in other continents (Simpson, 2009).

In the Old World the small size of many plots of land has encouraged the creation of wine-making cooperatives to which members contribute their grapes. In 2000,

this type of company had 49 percent of the market share in Portugal, 52 percent in France, 55 percent in Italy, and 70 percent in Spain (Anderson, Norman, and Wittwer, 2004, p. 18). There is, however, a real risk of opportunistic behavior (free riding) since the price per kilogram of grapes is generally fixed to a large extent, reducing the incentive to make major investments to pursue qualitative improvements.

From the point of view of production techniques, producers in the New World are much freer to experiment and innovate than in the Old World where they are limited by the regulations of the appellations. Europe can, however, count on its unique heritage of vines as an important element of strength while the production of new competitors is limited to a few international grape varieties. Table 1.8 shows the number of indigenous vines used in the production of wine by country,[15] clearly showing the wealth of countries like Italy, Portugal, and France. Data for New World countries is not available, but apart from some cultivar of American grapes in the United States and Canada, creoles in South America, Pinotage in South Africa, and some new hybrids in Australia, no "native" vines from *vitis vinifera* exist in these areas of the world. The huge variety present in the Old World can intimidate the newcomer and does not mean that all varieties are of high quality, but it can become a key advantage in winning over the most experienced clientele, especially considering the converging trends in the use of vines of recent years.

As shown by Anderson (2013), globalization has heightened the concentration of varieties. Whereas in 2000 half of the new vines planted in the world belonged to twenty-one different species, in 2010 that figure stood at fifteen. Concentration is greatest in the New World countries where half of the newly planted vines belong

Table 1.8
Number of native vines by country.

Country	Table grapes	Wine grapes	Including hybrids	Including foreign varieties	Including native varieties	Total
Italy	87	421	48	32	***341***	508
Portugal	117	339	34	37	***268***	456
France	48	248	53	8	***187***	296
Greece	0	197	1	37	***159***	197
Spain	71	158	10	29	***119***	229
Croatia	44	163	18	53	***92***	207
Germany	6	142	95	7	***40***	148
Hungary	27	88	49	21	***18***	115

Source: Schneider (2011).

to only seven species. In recent years, the trend toward French varieties has intensified; from 2000 to 2010 the total surface area in the world covered by these clones increased from 26 to 36 percent (from 20 to 27 percent in the Old World and from 53 to 67 percent in the New World). In Australia the percentage of French vines has gone from just over 30 percent in 1975 to almost 90 percent in 2010.

All this makes it increasingly difficult for competitors to distinguish themselves from the others, especially in New World countries—many of which have no native plants—while France sees its vines planted all over the world. Although identical clones can produce very different wines depending on the characteristics of the soil and the agronomic and wine-making techniques adopted, it is becoming increasingly difficult to horizontally differentiate products in a market that is globalized and characterized by a smaller variety of vines. As a result, companies are forced to undertake vertical differentiation (linked to quality), with the arduous task of achieving an excellent sensory profile. On the other hand, there are those who claim that imitation by competitors is the best form of flattery a producer can receive. By using French vines as a benchmark, followers implicitly and tacitly recognize the superiority of the leader's viticulture that influences the opinion of experts and enthusiasts.

Another useful indicator is the varietal similarity index that intuitively resembles a correlation coefficient and provides a measure of how similar the portfolio of varieties planted in one country is compared with that of the rest of the world.[16] This index tends toward one when the mix of varieties planted in a country is identical to that of the rest of the world and, on the contrary, is equal to zero when there is no overlap. Table 1.9 shows the data for some countries for 2000 and 2010. From the data analysis it emerges that this index has increased in many countries in both the Old World and the New World, a further demonstration of the homogenization in progress. For the same reason, it is no surprise that France has the highest value of all, at 0.72 in 2010, and it is growing strongly compared with the previous decade. Figures 1.18a and 1.18b, taken from Anderson (2013), show the rankings of the first thirty red and white grapes sorted by world surface percentage; the share of the first five to six vines changed significantly between 2000 and 2010 and saw the advance of both red and white French grapes.

As a consequence of the larger size of companies and the freedom to adopt technological innovations, production costs are more contained in the New World. The wines from this part of the world are sweeter and fruitier with a more marked hint of wood than European ones, mainly thanks to the use of technology.

In a competitive market, characterized by a large number of companies and product homogeneity, rivalry is based exclusively on price. If all companies have the same technology, then larger companies will have lower average costs and therefore can set lower prices in the presence of increasing economies of scale. In this globalized

Table 1.9
Varietal similarity index.

Country	2000	2010
Argentina	0.30	0.38
Australia	0.45	0.62
Austria	0.12	0.15
Chile	0.46	0.60
China	n.a.	0.47
France	0.57	0.72
Germany	0.36	0.26
Greece	0.19	0.21
Italy	0.36	0.44
New Zealand	0.34	0.30
Portugal	0.46	0.29
South Africa	0.29	0.50
Spain	0.69	0.62
United States	0.41	0.65
Uruguay	0.21	0.23

Source: Data come from tables 54 and 55 in Anderson (2013), pp. 530–542.

context, European businesses, smaller in size and with strong regulatory restrictions on the use of technologies, would automatically be losers. For this reason, the New World—having neither native vines nor the appeal of history—focuses on the improvement of globalized products and price cutting.

Europe, in contrast, tries to exploit diversity, hence its native varieties, and to protect them through the appellation system that binds production to precise geographical boundaries.[17] The European Union has succeeded in preventing the production of wines with names similar to "Champagne" or "Chianti" outside Europe through commercial agreements. The idea is to create a market similar to monopolistic competition in which various companies are present (in this case, business groups) that produce differentiated goods. Each manufacturer (or group) can specialize in a certain segment differentiating itself from competitors horizontally (by type of product) or vertically (by quality and, in time, their individual or collective reputation).[18] (See Cardebat [2017, pp. 20–23] for a description of wine segmentation and Marks [2015, pp. 134–135] for an explanation of the way producers develop monopoly power through supply restrictions and the establishment of wine appellations.)

1.3.2 Differences in Distribution

The marketing strategies of non-European companies are mainly based on the indication of the vine and the promotion of the corporate brand while in the old continent the large number and small size of businesses have stimulated the creation of collective trademarks (appellations) and favored the classification of quality based on a hierarchy established by public authorities (e.g., in Italy, the classifications DOCG—Controlled and Guaranteed Designation of Origin; DOC—Controlled Designation of Origin; IGT—Indicazione Geografica Tipica; and "table wine" or Vino da Tavola—VdT). In the New World, wineries generally control the whole value chain. By relying on large distributors wineries can increase their bargaining power and, therefore, their profit margin. In some countries like the United States, however, distributors have become so large and powerful (Thornton, 2013, p. 3) that their profit margins erode those of alcohol producers. Further, distributors often

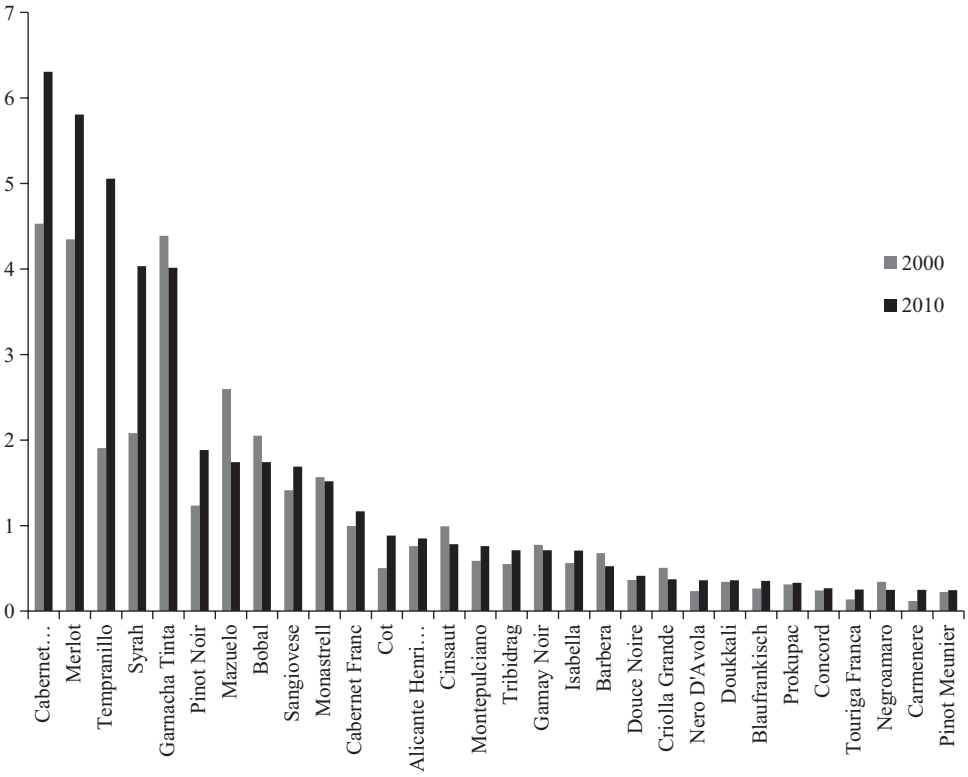

Figure 1.18a
Share of the world surface area cultivated with the top 30 red vines.
Source: Anderson (2013), p. 20, figure 13.

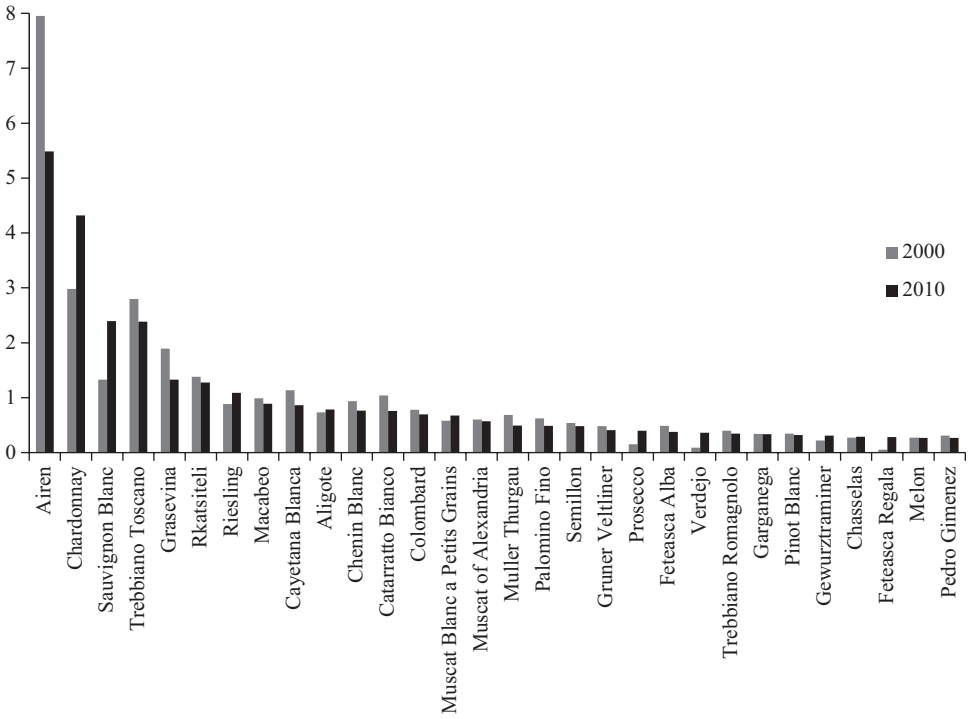

Figure 1.18b
Share of the world surface area cultivated with the top 30 white vines.
Source: Anderson (2013), p. 20, figure 14.

favor large wine producers that can offer a diversified portfolio of labels at low prices with regular deliveries and provide little support to small ones (Thornton, 2013, p. 175). Given that in many US states the law forbids direct sales to retailers and consumers, this can be a serious obstacle to small firm growth and product differentiation and quality. Consolidation in both the distribution and retail sectors pushes competition toward minimizing prices and favors larger-volume producers (Colman, 2008, pp. 91, 97, 114–116).

1.3.3 Differences in Consumption

As discussed above, consumption is decreasing in Mediterranean Europe but is on the increase in most New World countries. Since purchasing power influences consumption in both quantity and, above all, in value, careful attention should be given to trends in this variable in the various geographical areas. The economic crisis that started in 2008 has led to a contraction in growth all over the world, but Europe, and especially the Mediterranean, has suffered most from the collapse of gross domestic product and rising unemployment.

1.4 Challenges for the Wine Market

Over the next decades the world wine market will have to face two big challenges. The first one concerns the development of the Chinese market, and the second, climate change.

A new giant is entering the wine market—China (see Cardebat, 2017, pp. 16, 81). With a population of almost 1.5 billion people and a steadily growing economy, the total consumption of wine in China has tripled in less than twenty years, reaching 19.1 million hectoliters in 2016 (source: OIV). Given the size of its population compared with Western countries, per capita consumption (among people aged 15 years and older) is still very low—just 1.7 liters as opposed to approximately 51.2 liters in France and 43.6 in Italy in the same year. The opportunities for market growth are, therefore, enormous. As shown by Masset et al. (2016), Cardebat et al. (2017), and Cardebat and Jiao (2018), the Chinese market is already an important driver of prices for the finest international wines. China, however, is not content with just importing products from the West and has invested heavily with joint venture agreements and by hiring European oenologists, and this has led to a rapid increase in both the quantity and the quality of its own wine.

There are, therefore, two rival sides in the market. Producers of the old continent hope the decline in domestic consumption may be counterbalanced by increasing exports through intense reorganization and support from restyled EU policies while producers in the New World, located in countries with rising consumption, enjoy a number of competitive advantages ranging from lower production costs to less stringent regulations. Considering this premise, and in view of the entry of new giants into the market, one cannot rule out a further heightening of global competition in the future.

As to the second issue, global warming is producing dramatic changes in climate conditions all over the world with respect to temperature, rainfall, and the frequency and intensity of extreme events such as hurricanes and floods. In their extensive study Hannah et al. (2013) show that the area suitable for viticulture could decrease by 25 to 73 percent in major wine-producing regions by 2050. Viticulture will move toward cooler climates at higher latitudes and altitudes. In their attempt to preserve the quantity and quality of grapes, many producers could be forced to increase the water usage for irrigation and other technologies which might produce negative environmental effects. Some (warm) countries will suffer from these changes while other (cold) ones will benefit (Ashenfelter and Storchmann, 2016; Leeuwen and Darriet, 2016).