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Wine's Globalization: New Opportunities, New Challenges

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Abstract

The second decade of rapid globalization of the wine industry is assessed using a newly-published statistical compendium of global wine markets. A dozen observations are made from those data offer insights into key new opportunities and challenges associated with recent globalization forces. A snapshot of the value, both nationally and globally, of various quality segments of the world's wine markets as of 2009 also is examined. That view of market segments is important for developing a baseline for models used to assess future prospects for different types of grape and wine producers. These data also provide guidance for prioritizing future research agendas for theorists and cross-country econometric analysts seeking to explain past patterns and developments, as well as for simulation modelers seeking to project where global markets might be headed. The paper finishes by briefly discussing prospects for further developments in wine's globalization.

Keywords: wine market developments, alcohol taste changes

JEL codes: C81, F14, F15, Q11, Q13

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I. Introduction

A decade ago, a conference was held in Adelaide, Australia to examine the rapid globalization of the world's wine markets over the previous decade.¹ One clear indicator of that phenomenon was the growth in the volume of exports as a percentage of world wine production, which rose from 15 to 25 percent between 1988-90 and 2001. For the big four European wine exporters (France, Italy, Portugal and Spain) that ratio rose from 20 to 30 percent, which was impressive by historical standards; but for the New World exporters (North and South America, South Africa, Australia and New Zealand), the ratio rose from just 3 percent in the late 1980s to 20 percent by 2001. Meanwhile, their share of world wine production had risen from one-sixth to one-quarter, while the European wine exporters' share had fallen from 61 to 54 percent.

It was thus obvious a decade ago that the dramatic entry onto the international stage by New World producers presented a serious challenge to producers in Europe, and expanded choice for wine-importing countries. It was also argued then that the rapid expansion in New World vineyard plantings in the latter 1990s/early 2000s would cause New World regions also to face challenges once grapes from those new plantings were added to the stocks of wine available for sale – especially if there was not a reversal in the previous two decades' decline (from 28 to 21 billion litres) in global wine consumption.

With a second decade of rapid globalization of the industry now behind us, it is an appropriate time to re-assess developments as participants move forward. This paper seeks to do so by drawing on a newly-published statistical compendium of global wine markets. In Section II a dozen observations are made from those data, illustrated with the help of charts,

¹ Summaries, including projections to 2005, were subsequently published in Anderson, Norman and Wittwer (2003), and more detailed analyses of developments in each of the world's main wine regions up to that time, by authors from those regions, are available in Anderson (2004).

before providing a summary of key new opportunities and challenges associated with the past decade's globalization. In Section III we report the value, both nationally and globally, of the various quality segments of the world's wine markets as of 2009. This is possible because of a newly included set of estimates in the compendium, based on a methodology outlined in the Appendix. That view of market segments is important as a baseline for assessing future opportunities and challenges for different types of grape and wine producers. It also provides guidance for prioritizing future research agendas for theorists and cross-country econometric analysts seeking to explain past patterns and developments, and for simulation modelers seeking to project where global markets might be headed. The paper finishes by briefly discussing prospects for further developments in wine's globalization and some implications for policy.

II. Observations on wine's latest globalization phase

The following observations are drawn from a new statistical compendium of the world's major wine markets that was recently published online (Anderson and Nelgen 2011). That volume is a revised, updated and expanded edition of earlier compendia produced at the University of Adelaide, and now offers five decades of indicators for more than 50 countries and country groups spanning the globe. We begin with the most obvious indicator of globalization, namely export developments.

Observation 1. The volume of exports as a percentage of world wine production has continued to rise, from 25 to 32 percent between 2001 and 2009. For the big four European wine exporters it rose by one-sixth (from 30 to 35 percent), while for the New World exporters it doubled (rising from 20 to 40 percent between 2001 and 2007) before falling back to 37 percent in 2009. For Australia and Chile those shares are now more than two-thirds (Figure 1). Thus in both Old and New World wine-exporting countries, marketed production (proxied as domestic consumption plus net exports) is growing faster or falling less than domestic consumption (Figure 2(a)). The Old World's chronic surplus problem has not diminished, though: its production continues to be about one-third above its sales of beverage wine (Figure 2(b)). Looking from the viewpoint of importing countries, between 2000 and 2009 the share of wine consumption supplied by imports has risen from 28 to 37 percent globally and from 23 to 34 percent for the European Union. This is partly because,

within Europe, the countries where wine consumption is declining (rising) fastest are the countries that are net exporters (importers) of wine (Figure 3).

Observation 2. Australia led the export charge for ten or so years from the mid-1990s, but in more-recent years it has been New Zealand, South Africa and Argentina that have enjoyed the fastest export growth (Figure 4). That, together with continued high export growth by Chile and moderate growth by the United States, has ensured the New World continues to take global market share from the Old World. Indeed, when intra-EU trade is excluded, the New World exporter group (NWE8, which also includes the United States, Canada and Uruguay) has almost caught up with the EU-15 in export value terms, and has surpassed the EU-15 in volume terms (Figures 5 and 6).

These first two observations represent a continuation of trends begun in the 1990s. But this most-recent decade of rapid globalization of the wine industry has several characteristics that distinguish it from the 1990s. The next ten observations are among the more important ones to note.

Observation 3. The rate of export volume growth in the past decade was slower than in the previous decade. It more than halved for the Old World, dropping from 3.8 percent in the 1990s to 1.8 percent in 2000-09 period, whereas the New World's export volume growth dropped by only two-fifths, from 18 to 11 percent. However, the US\$ unit value of wine exports in the past decade hardly changed for the New World, whereas it grew by 7 percent per year for the four big European exporters, which meant the value of the latter's exports grew almost as fast as for the New World (Anderson and Nelgen 2011, Tables 127 and 132).

Observation 4. Wine exports peaked for Australia in 2007, and growth is expected to slow in New Zealand too as marketers in both countries struggle to dispose of burgeoning stocks in the wake of their appreciating currencies and the North Atlantic recession. Local prices of grapes and especially of vineyard and winery assets have plummeted even more than unit values of their exports, which fell between 2007 and 2009 alone by one-quarter in nominal US dollar terms. Australia's appreciating currency (thanks to its boom in mining exports to China) also encouraged import growth. That meant its wine self-sufficiency fell from its peak of 337 percent in 2004 to 236 percent by 2009. By contrast, New Zealand's boom, which began several years later than Australia's, showed no sign of slowing by 2009: its wine self-sufficiency rose from around 80 percent early in the decade to 240 percent by 2009, and its revealed wine comparative advantage index more than trebled and now exceeds Australia's. The comparative advantage index for Chile is similar to New Zealand's, and both

now exceed those for France and Portugal and are now ranked equal third in the world after Moldova and Georgia (Figure 7).

Observation 5. The sleeping giant of the Southern Hemisphere was abruptly awakened when Argentina abandoned its peg to the US dollar and devalued by two-thirds at the end of 2001. The share of Argentina's production that is exported rose from 4 percent in 2001 to 29 percent by 2008. Initially the quality of those exports was low, but it has been rising rapidly: the unit value of exports almost trebled between 2003 and 2010, from US\$0.88 to \$2.67 per litre, and the share of bulk shipments in total wine exports halved, falling from 52 to 26 percent. By contrast, the shares of Australian, New Zealand and United States wine exports shipped in bulk has roughly quadrupled between 1999 and 2010. New World exporters as a whole now ship a slightly larger share in bulk than does the EU-15, in contrast to the turn of the century when the New World's share was half the Old World's (Figure 8). That partly reflects decisions by large firms to bottle cheaper wines at their destination rather than in a distant country of origin; but it is also a symptom of a rising over-supply situation in Australia and New Zealand, as are the declines in their unit value of bottled still wine exports since 2007-08.

Observation 6. This past decade has seen the wine market grow rapidly in the region where it had its smallest presence, namely Asia. While wine's share of recorded alcohol consumption has not changed much from 18 percent globally, its share in Asia has doubled over the past decade, albeit to just 3 percent. The growth has been concentrated mostly in China, where it trebled to 3.7 percent. That resulted in China's aggregate consumption almost quadrupling over the decade, so that it now dwarfs consumption in the rest of Asia including Japan (Figure 9) and, by 2009, almost equalled United Kingdom consumption. On a per adult basis, wine consumption volume growth has been equally impressive in the much less populous but more affluent economies of Hong Kong, Korea, Malaysia and Singapore, while it has been lacklustre in Japan (Figure 10).

Observation 7. Even more striking is the rapid emergence of Asian countries as importers of super-premium wines. By 2009, seven of the 15 top-ranked countries in terms of unit value of wine imports were Asian. The growth in their average price of imports has varied though, being highest for China, Hong Kong and Japan. Particularly notable is the rapid decline in the share of China's wine imports that are bulk, from close to 90 percent in the first half of the decade to less than half that by 2009. As a result, Asian still wine imports are now very much higher priced than those of traditional importers (Figure 11).

Observation 8. China (and to a far smaller extent India)² is not only expanding wine consumption but is also planting more vines and expanding domestic wine production (in part with the help of imported juice and bulk wine as inputs). Certainly China's wine self-sufficiency has fallen, but not hugely, from around 93 percent a decade ago to 85 percent by 2009. Whether the one percentage point difference over the past decade in the annual rates of growth of China's wine consumption and production will increase is a moot point, but many exporting countries are focusing their marketing efforts increasingly on China in the apparent hope that it will. One sign that has encouraged them is the growth in the quality of China's wine imports: their unit value doubled in the second half of the past decade (Figure 11). Another encouraging sign is the rapid rise in China's share of global income, which is expected by many international agencies to more than double over the next two decades. As of 2009, France held the dominant position as a wine exporter to China (and India), followed by Australia and Chile. That is especially so in value terms, since the unit value of France's exports to China that year was US\$4.29 compared with Australia's \$2.34 and Chile's \$0.97. In value terms Australia has the highest trade intensity index though, defined as the share of its export sales that are going to China divided by the share of China's imports in global (net of the exporting country's) wine imports (Table 1).

Observation 9. China is not the only former planned economy to see a surge in interest in wine. Over the past decade the share of wine in Ukraine's recorded alcohol consumption has, like Asia's, doubled, and Russia's has gone up by a half such that in both countries wine accounted for one-tenth of their recorded alcohol consumption by 2009. Domestic wine production also has grown there, but even so net imports accounted for 33 percent of Russian consumption in 2009 compared with only 15 percent in 2000. Meanwhile, production in the rest of Eastern Europe and the former Soviet Union has declined, so Russia is buying more from other regions. The unit value of its imports is rising only one-third as rapidly as that for China though, so France is showing much less interest in the Russian market. As a result, the value of world wine exports to China was equal to those shipped to Russia in 2009, having been only one-tenth of Russia's in 2001 – even if the volume of wine going to China is only half that going to Russia (Table 1).

Observation 10. Alcohol consumption patterns of traditional wine-exporting countries and those of neighbouring countries within Europe are converging (Figure 3). The

² India's wine production and consumption grew at a faster rate than China's during the past decade, but its wine market is still barely 1 percent of China's (which is why it does not appear in Figure 10). India's imports have been growing at more than 25 percent a year over the past decade, but from a low volume and remain hampered by a 150 percent import duty.

former was only 45 percent above the latter in 2009, compared with 220 percent above in 2000. The growth in wine demand in non-traditional wine-consuming countries of Europe and Asia has contributed to a halting of the rapid decline in wine's share of recorded alcohol consumption globally, which had more than halved between the 1960s and 1990s (Figure 12).

Observation 11. Some aspects of the differences between the Old World and the New World persist. One is the extent of firm concentration. Wine is the least concentrated of the beverage and tobacco industries, according to Rabobank: the world market share of the three largest firms in the late 1990s was just 6 percent in the wine industry compared with 35 percent for beer, 42 percent for spirits, and 78 percent for soft drinks (Chart 26 in Anderson and Norman 2003). Certainly mergers and acquisitions within the global wine industry are happening continually, and between 2003 and 2009 the shares of global sales held by the four, and 30, largest firms both rose by almost one-third. Even so, in 2009 the three largest wine firms held only 7 percent of global sales, and the next five need to be added before the share rises to one-eighth. That firm concentration is predominantly in the New World, where the majority of sales are by the four biggest firms. By contrast, in the Old World barely one-eighth of sales are from the four largest firms.³ Even in this respect, though, there are signs of change, as more large firms emerge in Europe. Moreover, the large publicly listed firms that dominate the New World are coming under shareholder pressure to be sold as profitability falls following rapid expansions there.⁴

Observation 12. The extent of globalization of the world's wine markets can be summarized with two other sets of indicators. One is provided by graphing the national shares of world production, export and consumption volumes cumulatively. The less-steep the rise in such a graph and the larger the number of countries required to get near to 100 percent, the more globalized the industry's production could be considered. Figure 13 indicates the changing situation from 100 years ago (just prior to World War I, after a half-century of dramatic globalization) to the early 1960s and then to the most recent five years

³ This difference in firm concentration between the Old World and the New World was evident as early as the 19th century, for a complex set of environmental, technological and institutional reasons (Simpson 2011).

⁴ Fosters, Australia's largest beverage company, spun off its wine business in May 2011 under a new name, Treasury Wine Estates. Fosters had made a series of acquisitions during the first half of the past decade, including paying US\$1.1 billion for Beringer, a Californian label, in 2000 and culminating in the purchase of Southcorp (owner of Penfolds, Lindemans and Rosemount) in 2005 for A\$3.2 billion. Having cost around A\$7 billion to put together, a private-equity firm reportedly offered to pay between A\$2.3 and 2.7 billion for it in September 2010. Its valuation on 10 May 2011, the first day of listing as Treasury Wine Estates, was just A\$2.15 billion. In December 2010, Champ, a Sydney-based private-equity firm, took an 80 percent stake in the Australian and British wine business of New York-based Constellation Brands (which Constellation had paid around A\$1.9 billion for in 2003), in a transaction valued at just A\$290 million.

for which global data are available. According to that Figure, the industry is certainly more globalized now than it was at the end of the previous major wave of globalization. The other indicator is provided by graphing national wine production per adult against national wine consumption per adult. Figure 14 reveals that this strong relationship has weakened since the 1960s, and that the mean and standard deviation of both variables have shrunk greatly. The outliers in the right-hand edge of that figure for 1961-64 (starting from the right) are Portugal, France, Italy, Argentina, Spain and Chile – all of whose production per adult had shrunk hugely by 2005-09.

Summary of new challenges. In addition to the on-going chronic surplus of wine produced in the Old World (which has been disposed of mainly though subsidized distillation into brandy), there are now signs of surpluses in parts of the New World. This is most notable in Australia, where an appreciating currency and higher pricing of irrigation water have combined with reduced export demand (recession plus an adverse preference change in Europe and the United States) to make it difficult for producers to find markets for the burgeoning supplies that followed Australia's dramatic expansion of vineyards. Those surpluses depress prices of all but the highest-quality grapes and wines. That is adding to the pressure felt by growers and wineries from increasingly dominant supermarkets, which are squeezing producer profit margins not only on branded wines but also on bulk wines purchased for own-store labels. Insofar as the supermarket revolution is encouraging consolidation of large wineries to enable them to better negotiate with retailers, it is simultaneously strengthening those wineries' bargaining power over grape growers.

Summary of new opportunities. This past decade has seen a slight reversal in the long-term decline in wine's share of global alcohol consumption, and in the more-recent decline in the world's total volume of wine consumed. Thanks to the ongoing growth in demand in non-traditional European wine markets and to the very rapid growth – albeit from a low base – of grape wine consumption in emerging Asian economies, exporters have a widening range of countries to look to for market growth. The latter growth has been in super-premium and iconic red wines initially, which has been a boon to Bordeaux producers, and in China's case has involved a rapid decline in the share of China's wine imports that is bulk non-premium wine used for blending with domestically produced wine. This change in China's imports, like the earlier rapid growth in non-traditional European demand for commercial-premium bottled wines sold in supermarkets, is a reminder of the diversity of wine qualities. It suggests the need to disaggregate the data presented above into various quality segments, to which we now turn.

III. How valuable are the various quality segments of the world's wine markets?

To go beyond the above compilation and estimate a comprehensive dataset that summarizes global shares by value categories is a non-trivial exercise. However, it is possible if one is prepared to make several assumptions and pool data from various sources. Anderson and Nelgen (2011) do so by distinguishing four categories of wines: non-premium, commercial-premium and super-premium still wines, plus sparkling wines. This is more helpful than dividing the market into just 'commodity' and 'fine' wines, given the wide spectrum of qualities in the marketplace. We have done so with the most-recent data available on a comparable basis across all key countries, which is 2009. In that year, global wine sales totalled the equivalent of 30 billion 750ml bottles, and had a wholesale pre-tax production value of US\$98 billion, representing an average price of \$3.27 per bottle wholesale pre-tax or US\$5.50 retail including taxes.

We define commercial premium still wines in 2009 to be between US\$2.50 and US\$7.50 per litre pre-tax at the national border.⁵ Still wines below US\$2.50 per litre pre-tax are considered non-premium, as are bulk wines traded internationally, and those above US\$7.50 are classified as super-premium. This classification is used to get shares of the volume of domestic consumption of the three still wine categories, compressed from *Euromonitor* data on volume of sales by retail price range. The price ranges are reduced to pre-tax wholesale prices by taking account of excise taxes, GST/VAT and import taxes and assuming the marketing/distribution margins of 25 percent for non-premium wines and 33 percent for other wines. From this base, the volume, value and hence unit value of the other variables (production, exports and imports) are also calculated for each of the four wine types, using the methodology described in the Appendix.

What do those value estimates reveal? They suggest commercial-premium still wines account for two-fifths of global sales in both value and volume terms; super-premium still wines account for one-third of the global still wine market's value but only one-tenth of its volume; and non-premium wines account for just one-seventh of global wine in value terms

⁵ This is equivalent to around AUD4 and AUD12 per 750ml bottle retail in Australia including all taxes and distributor mark-ups of 25 percent for non-premium wines and 33 percent for other wines.

but almost half in volume terms. Sparkling wines make up the rest, accounting for 13 percent by value and half that share by volume (Anderson and Nelgen 2011, Tables 167 and 168).

The more-familiar data are for exports, and all the main players are included in Figure 15(a). Countries are ranked according to their shares of the global value of total (including sparkling) wines. Looking at the second bar for each country, France is the clear outsider with a little over 50 percent of the world's super-premium still wine exports, nearly three times that of second-ranked Italy at 18 percent. Perhaps more surprising is that New Zealand is ranked 3rd in this category with 7 percent, ahead of Australia and Spain (each 3 percent of world exports of super-premium still wines). South Africa and Argentina trail behind Chile and the United States – although Argentina's share has risen somewhat since 2009.

It is Italy that has the number one rank in terms of value of exports of commercial-premium wines, ahead of France, while Spain is first ranked in non-premium wine exports, well ahead of Italy and then France. Together these three account for 50 percent of commercial-premium and non-premium global still wine export value, and 70 percent of super-premium still wine. The next-ranked commercial premium exporters are Australia, Chile, the United States and South Africa, and the same ordering applies to non-premium exports.

Those export shares are not all that closely related to value of global production shares, because of the large differences across countries in the extent to which national production is exported and consumption is imported. Most notable is the jump to 1st place for the United States followed by France and then Italy in the value of super-premium still wine production. The super-premium shares of Australia, Spain and New Zealand are similar but well behind Italy's (Figure 15(b)).

Global import value shares are best sub-divided into European and then others (see Figure 16). In the super-premium category, Switzerland, Belgium (plus Luxembourg) and the United Kingdom take the first three places, before there is a step down to the next three Europeans, namely Denmark, Germany and France. The United States and Japan have even larger shares of super-premium imports by value though, at 17 percent and 12 percent, respectively; and Canada is slightly ahead of the UK in this category. The East Asian markets were still rather minor as destinations for super-premium wine as of 2009. However, they have grown very considerably from that low base since then.

The United Kingdom and United States are almost equally dominant importers in the commercial-premium category, and with Germany account for just over half of the value of

those global imports. As for non-premium, China is the only significant East Asian importer: by 2009 it was ranked 11th.

The shares of consumption values are shown in Figure 17, again with the Europeans and others separated. The United States is the dominant outlier in terms of super-premium consumption, followed by France. The next three are Japan, Canada and Switzerland, and then Germany, Denmark and the UK. As for commercial-premium wines, the United States and then the UK are ranked highest, followed well behind by France and then China, Germany and Canada. With this diversity of consumption shares across countries, it is not surprising that there is a wide spectrum of retail expenditure per adult on wine, and even of wine expenditure as a share of national income (Figure 18) – suggesting again that there is still plenty of scope for further globalization of tastes towards wine. One reason for the differences even when expressed in terms of wine expenditure as a share of national income is the large cross-country spread in wine consumption tax rates (Figure 19).

IV. Conclusion: prospects for further developments in wine's globalization

The current wave of globalization over the past two decades is not a first for the world's wine markets. There was an earlier wave, from 1860 to 1913, which was due not only to a decline in international trade costs that boosted most merchandise trade during that period, but also to vine diseases. The spread of phylloxera devastated French vineyards in the last third of the 19th century, and along with mildew damage led to France becoming a major importer of wine from the 1880s. Export-oriented viticulture boomed in North Africa as a consequence, thanks also to the French colonies in the region being provided with preferential access to the French market. By the early 20th century Algeria accounted for about 40 percent of global wine exports and, with Tunisia, for 6 percent of global wine production. North Africa's share of world production was still 6 percent in 1961-64, when its share of world exports was a huge 54 percent – before dwindling to less than 4 percent in the 1980s and almost nothing from the 1990s (Anderson and Nelgen 2011, Tables 124 and 266 to 269). It is unlikely that region will ever regain its earlier share of world exports now that the New World has so strongly exerted itself in international markets, but nonetheless wine could become again a major rural export industry for those Islamic states if they chose to rejoin the world's wine markets.

In addition to production shocks, wine markets are also subject to rapid changes in tastes and preferences. The fascination with exports of Australian wines from the mid-1990s lasted for more than a dozen years, but has since faded as exports of commercial premium wines from other locations have captured the imagination of supermarkets and their customers on both sides of the North Atlantic. Meanwhile, taste changes in Asia are manifesting themselves in the international marketplace. Initially it was China's imports of non-premium bulk wine, but in more-recent years the region is also showing up as a major new market for super-premium (and especially iconic Bordeaux) wines – assisted by the recent decision to remove Hong Kong's import duties on wines. Also, there is expected to be a growing market for commercial-premium wines as more and more Asian households reach middle-income status, especially if the high taxes on wine consumption in some of those countries were to be reduced. How much of that commercial-premium demand in Asia is met with local production will depend on the speed with which China in particular imports and adapts modern grape and wine technologies and marketing know-how, including via direct foreign investment and joint ventures.

There is great scope for more economic analysis of these possibilities. Econometric work on past changes in taste for wine and other alcoholic beverages has predominantly focused on OECD countries (Selvanathan and Selvanathan 2007, Bentzen and Smith 2010), plus a few middle-income countries (as in Aizenman and Brooks 2008). With the new consumption and tax time series in Anderson and Nelgen (2011), that work could now extend to include emerging economies in Asia and elsewhere, drawing on the theory in Stigler and Becker (1977).

Similarly, econometric analysis of investment responses to new opportunities could boost our understanding of the supply side, as could studies of disinvestment reticence in settings where profits have fallen and remain low (drawing on the theory of investment under uncertainty in, e.g., Dixit and Pindyck 1994). There would now be sufficient data for firm-level analysis of prolonged success or otherwise in exporting, particularly from the New World, using the Melitz (2003) framework. Analyses might even be extended to examine the role of technology spillovers via flying winemakers and foreign investors (Keller 2009).

Improved insights from such econometric analyses could be used by modelers of the world's wine markets for projecting future paths of production, consumption and trade of non-premium, commercial-premium, super-premium and sparkling wines (by updating and revising the model developed by Wittwer, Berger and Anderson 2003). The fact that there is still a wide dispersion across countries in wine consumption per adult and in wine

consumption taxes, and that both the Old World and the New World are still exporting only about one-third of their wine production, suggests there is plenty of scope for globalization to progress further in the future. The continuing falls in international transport and communication costs, and to the lowering of production cost differences across countries, will contribute to that and could be taken into account in such model projection work.

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Appendix: Estimating value shares of national and global wine markets, by quality

Anderson and Nelgen (2011) distinguish four categories of wines: non-premium, commercial-premium and super-premium still wines, plus sparkling wines. We define commercial premium still wines in 2009 to be between US\$2.50 and US\$7.50 per litre pre-tax at the national border. Still wines below US\$2.50 per litre pre-tax are considered non-premium, as are bulk wines traded internationally, and those above US\$7.50 are classified as super-premium. This classification is used to get shares of the volume of domestic consumption of the three still wine categories, compressed from *Euromonitor International* data on volume of sales by retail price range. The price ranges are reduced to pre-tax wholesale prices by taking account of excise taxes, GST/VAT and import taxes (compiled by Anderson 2010) and assuming the marketing/distribution margins of 25 percent for non-premium wines and 33 percent for other wines. This definition is used to get shares of the **volume of domestic consumption** of the three still wine categories, from Euromonitor's volume of sales by price range data. Euromonitor also provides the volume and value (hence unit value or average price) of sparkling wine consumption, so aggregate still wine consumption is derived from total wine consumption less sparkling consumption. The raw data on price ranges for still wine refer only to off-trade, which is helpful as it does not include the additional mark-ups associated with on-trade sales in restaurants, hotels, bars and pubs. However, it requires that we assume the on-trade has the same quality distribution as the off-trade sales. Euromonitor's prices are at the retail level though (P_r), so they first need to be reduced to a **pre-tax price at the national border** (P_b). This is done using the following formula and assuming there are no production or export taxes or subsidies or import subsidies:

$$P_b = P_r / (1+t)(1+e)(1+m)(1+g)$$

where t is the import tariff rate if any, e is the wine wholesale excise tax rate, m is the distributor/wholesaler-to-retail mark-up (assumed to be 0.25 for non-premium wines or otherwise 0.33), and g is the goods-and-services or value-added tax. Once the prices defining the price ranges in Euromonitor's volume of still wine sales are so converted, we use the shares for those ranges to obtain estimates of the shares and volume-weighted average prices (P_b) of domestic consumption for the three still wine categories by fitting the share data to a statistical frequency distribution function, from which the volume-weighted average border price (P_b) for each of the three categories is estimated. That estimated average price is then

multiplied by the estimated volume to generate the **value of domestic consumption** for each of the three still wine categories.

United Nations COMTRADE data provide **export and import volumes and values (hence unit values)** for sparkling wine, for still wine in bottles of less than 2 litres, and for other still wine. The latter is assumed to be equal to non-premium still wine. To split data for trade in premium still wine (bottles of less than 2 litres) into its two categories, we assume λ_x and λ_m are the shares of bottled still (<2 litres) export and import volumes that are commercial-premium (hence $1-\lambda$ is the super-premium share), and guess the λ value for each country from trade unit value data, consumption shares by price range, and the shares of production exported and consumption imported. We then calculate the prices of commercial-premium and super-premium exports and imports such that the weighted average of the two premium wine types' export or import prices equals the unit value of the country's exports or imports of all bottled still wine (<2 litres).

Having estimated the trade and consumption volumes and values and the domestic prices of the four wine categories, we then assume for sparkling wine that its volume of production = consumption + imports – exports and subtract that from total wine production to get the volume of still wine production. Typically still wine production in any year will differ from beverage consumption that year because some output may be used for industrial or other purposes, and because there may be changes in stocks (positive or negative). The proportional difference between still wine production and beverage consumption of still wine is assumed to be the same for all three still wine categories. That proportion is used to inflate/deflate 'consumption + imports – exports' for each of the three still wine types to obtain estimates for their **volume of production**. These volumes are then multiplied by their respective estimated pre-tax domestic prices at the national border to obtain estimates for their **value of production**.

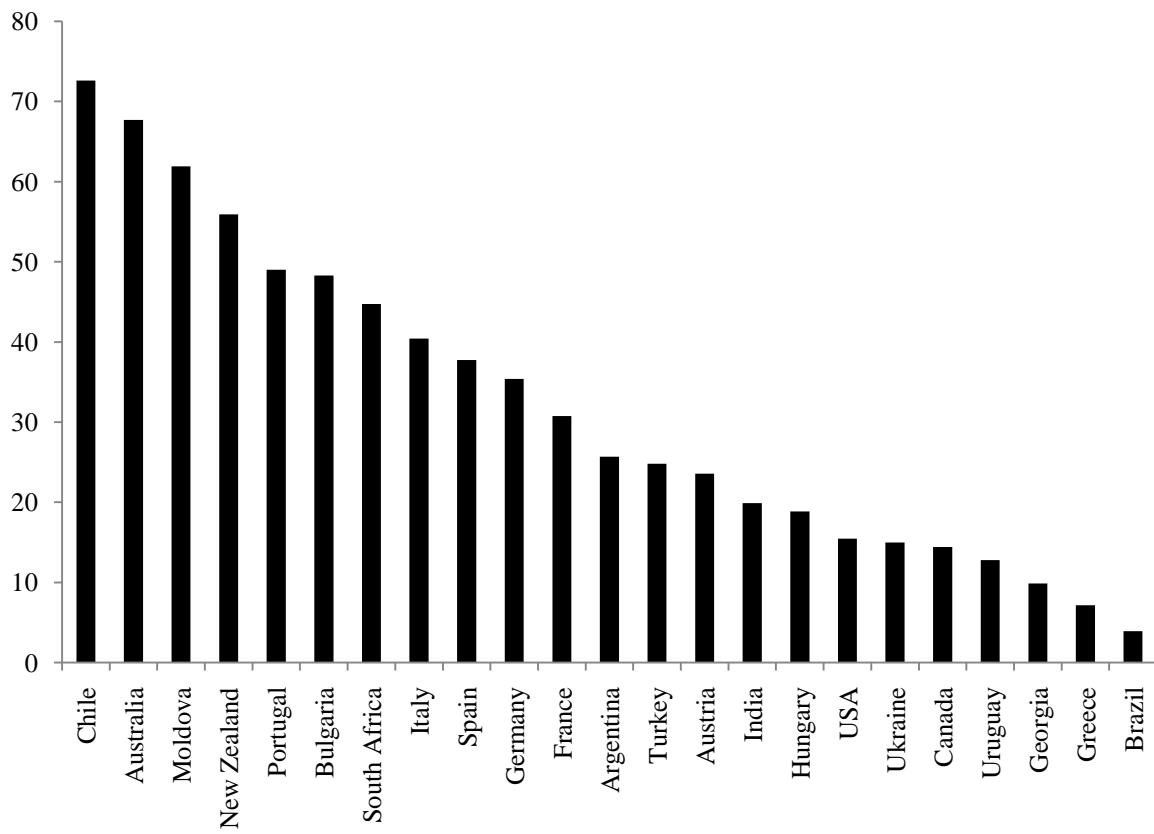
Table 1: Volume, value, unit value and index of intensity of wine exports to China and Russia, 2009

	Volume, million litres (and share, %)	Value, million US\$ (and share, %)	Unit value (US\$ per litre)	Index of export intensity ^a	
				in volume terms	in value terms
<i>To China:</i>					
France	48.1 (24)	306 (38)	4.29	2.1	2.0
Australia	43.7 (22)	102 (19)	2.34	3.0	3.2
Chile	55.6 (28)	54 (10)	0.97	4.6	2.0
United States	11.5 (6)	35 (7)	3.08	1.3	2.0
Italy	7.9 (4)	27 (5)	3.42	0.2	0.3
South Africa	7.5 (4)	7 (1)	0.88	0.8	0.4
All exporters	202.0 (100)	538 (100)	2.66	1.0	1.0
<i>To Russia:</i>					
France	14.5 (4)	40 (7)	2.76	0.3	0.3
Italy	65.1 (15)	91 (17)	1.39	0.9	1.0
Germany	22.5 (6)	46 (9)	2.04	1.4	2.3
E. Europe and CIS	152.6 (39)	225 (42)	1.47	7.3	16.8
All exporters	396.2 (100)	538 (100)	1.36	1.0	1.0

^a The trade intensity index is defined as the share of a country's export sales going to China divided by the share of China's imports in global (net of the exporting country's) wine imports.

Source: Anderson and Nelgen (2011, Section V).

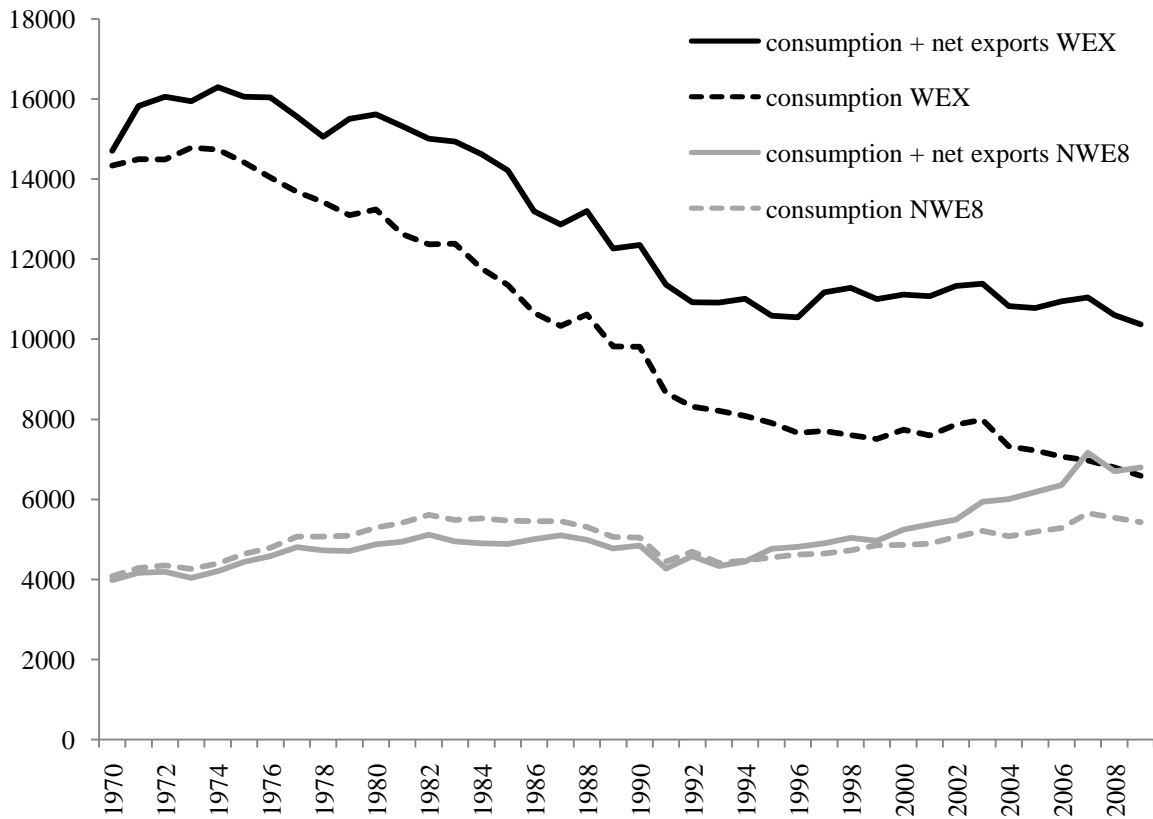
Figure 1: Exports as % of national wine production volume, 2007-09



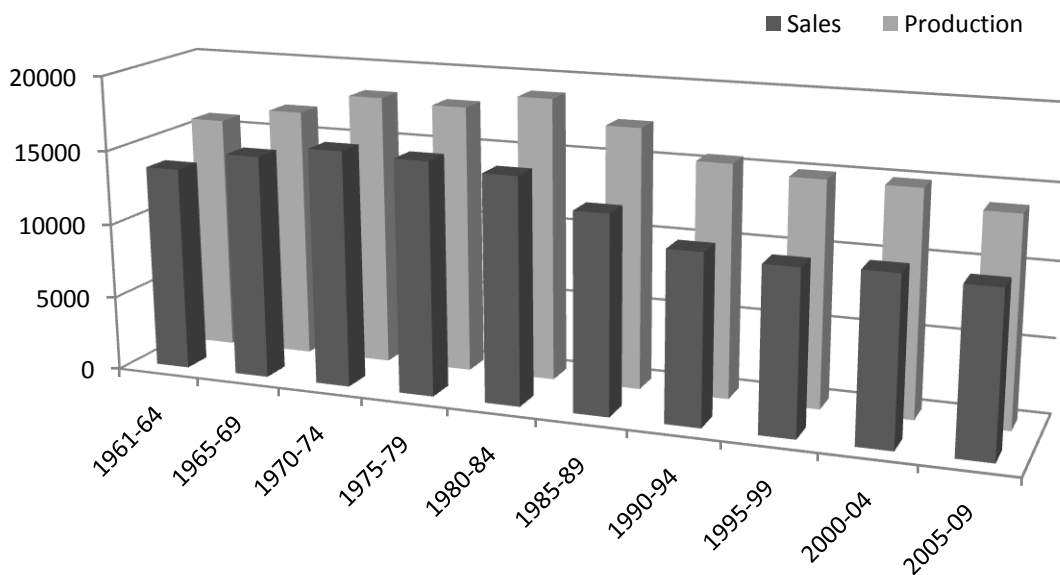
Source: Anderson and Nelgen (2011, Table 51).

Figure 2: Wine production, consumption and net export volumes, traditional European exporters (WEX) and New World exporters (NWE8), 1970 to 2009 (ML)

(a) Wine consumption and net exports



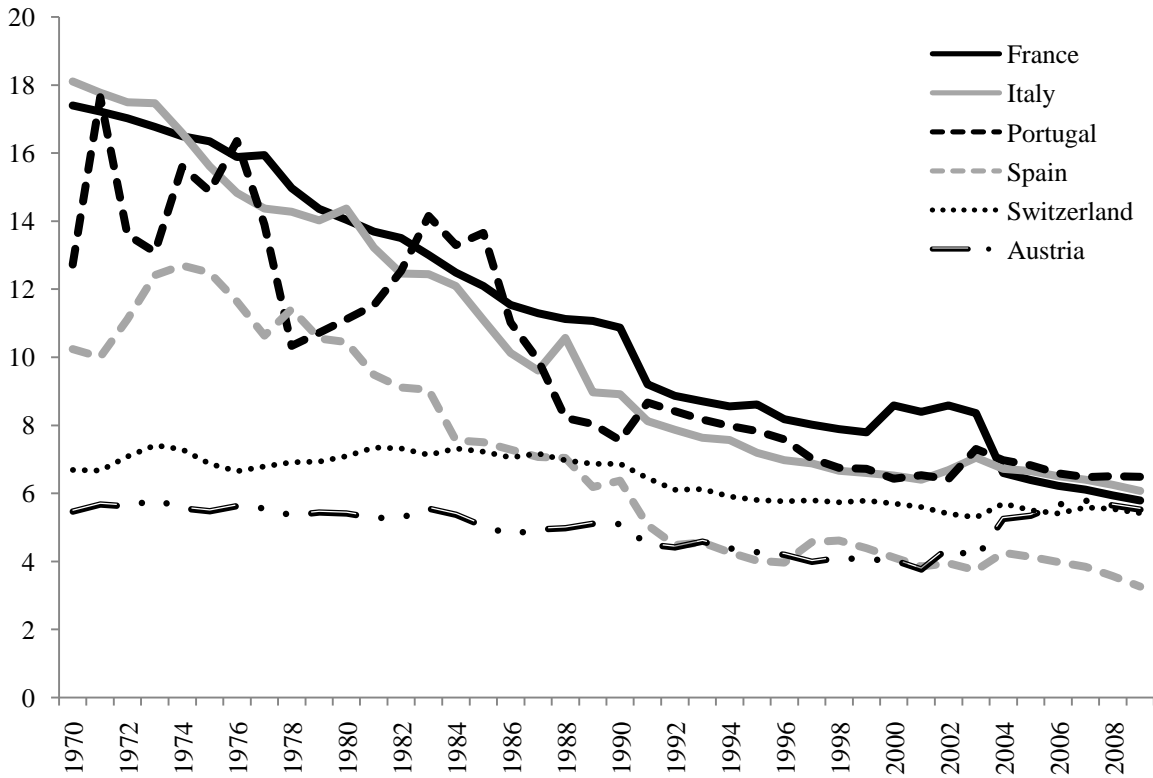
(b) Wine production and wine sales (domestic plus export), WEX



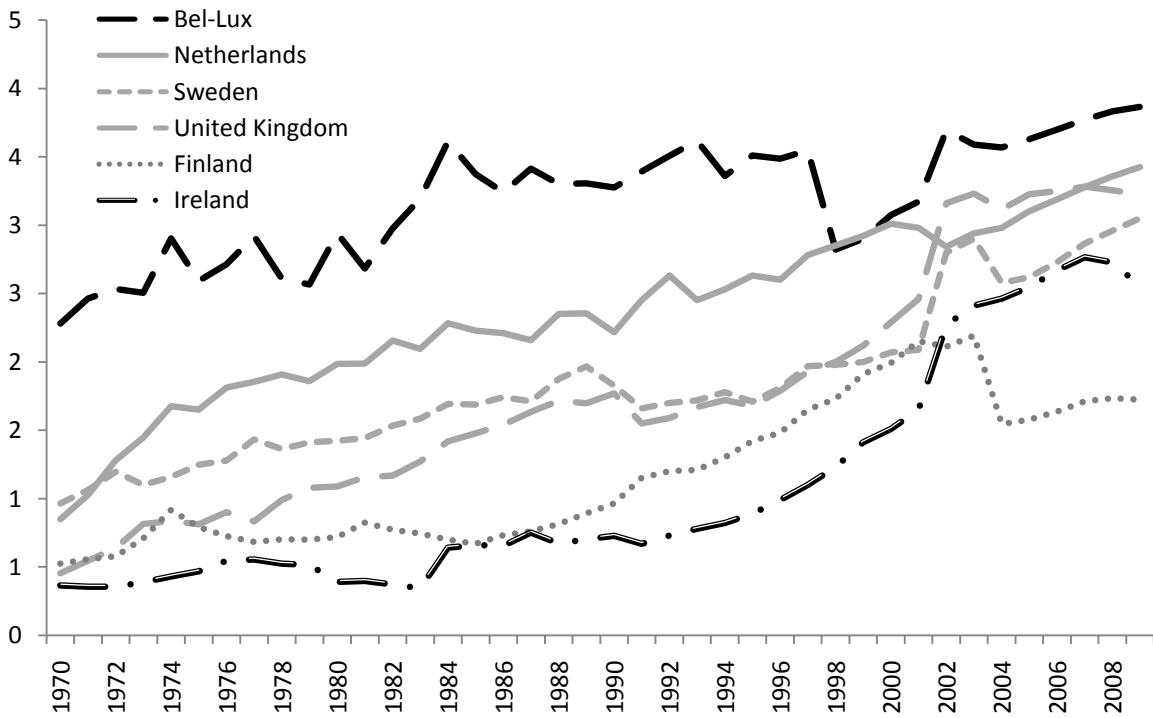
Source: Anderson and Nelgen (2011, Tables 99, 101, 117 and 118).

Figure 3: Wine consumption per adult, traditional and other European markets, 1970 to 2009 (litres of alcohol)

(a) traditional and other European markets

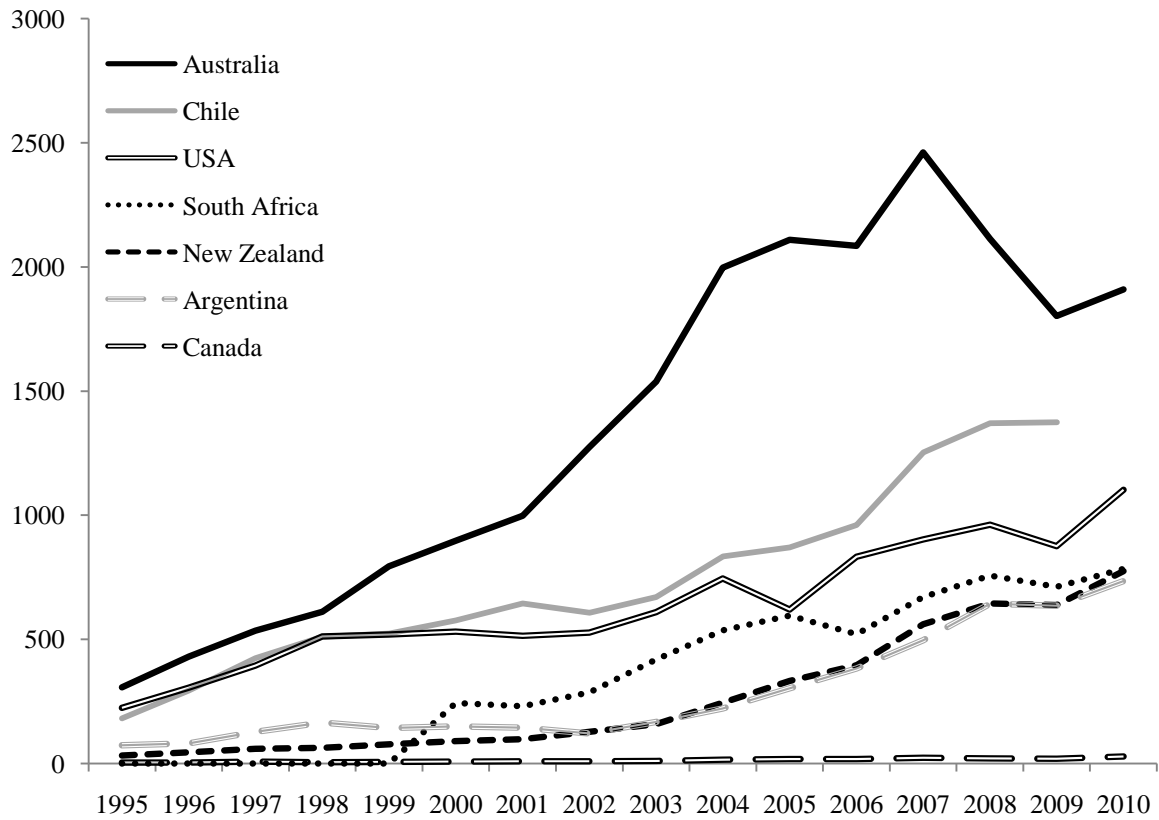


(b) Non-traditional European markets



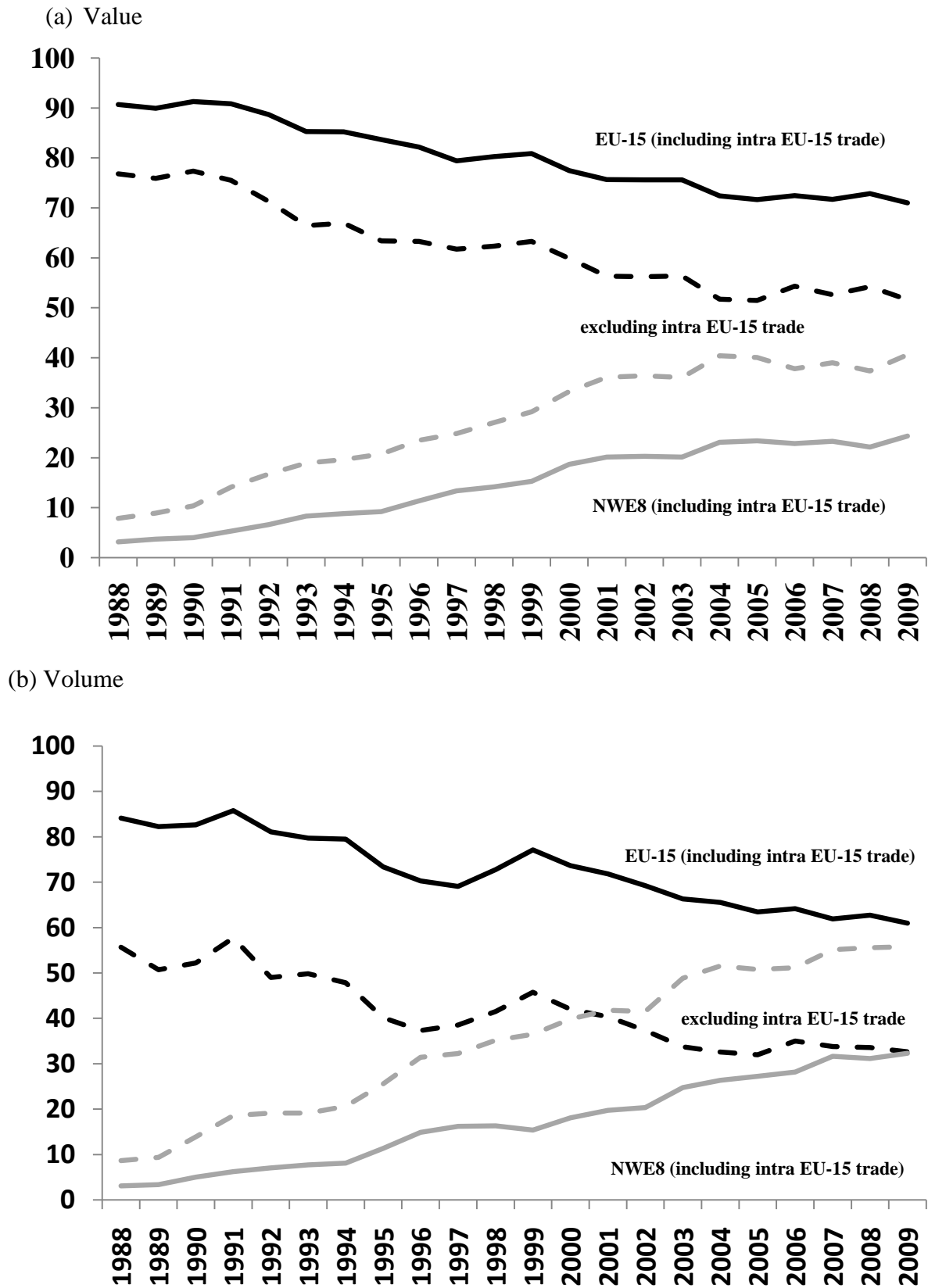
Source: Anderson and Nelgen (2011, Table 106).

Figure 4: Value of New World countries' wine exports, 1995 to 2010 (current US\$ million)



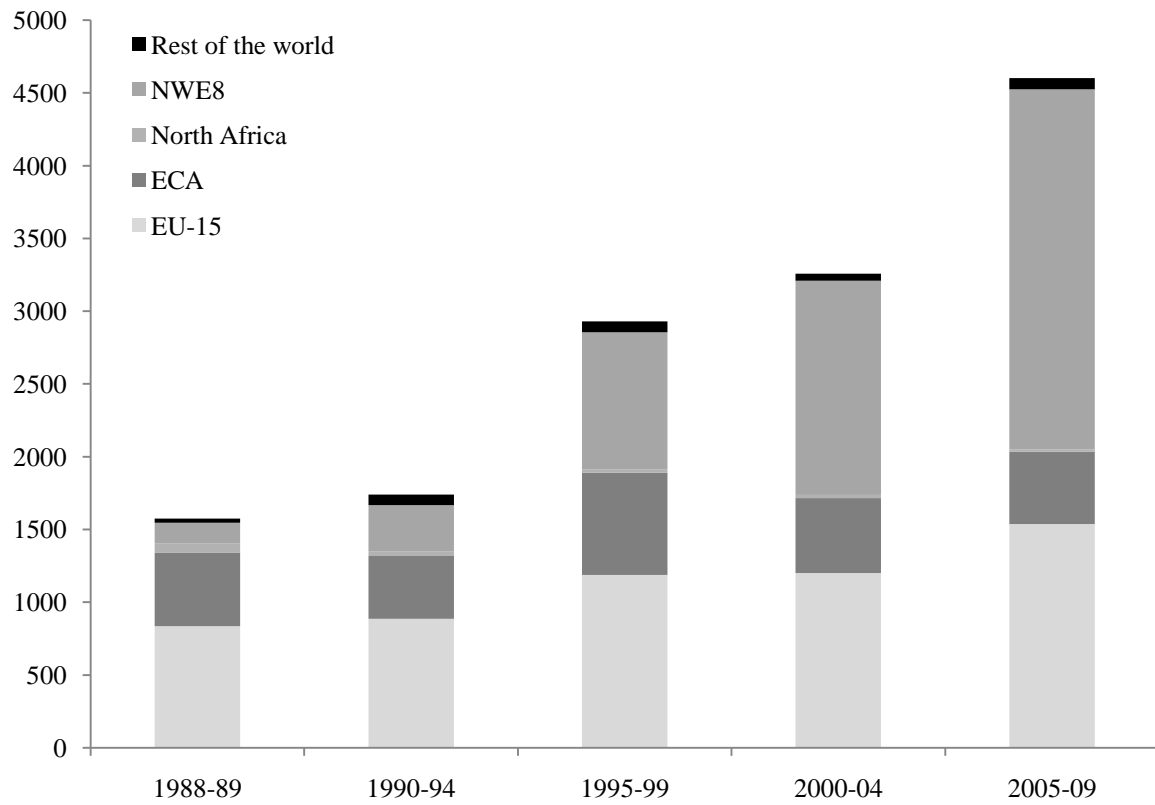
Source: Anderson and Nelgen (2011, Table 63).

Figure 5: EU-15 and New World shares of world wine export value and volume, 1988 to 2009 (percent)



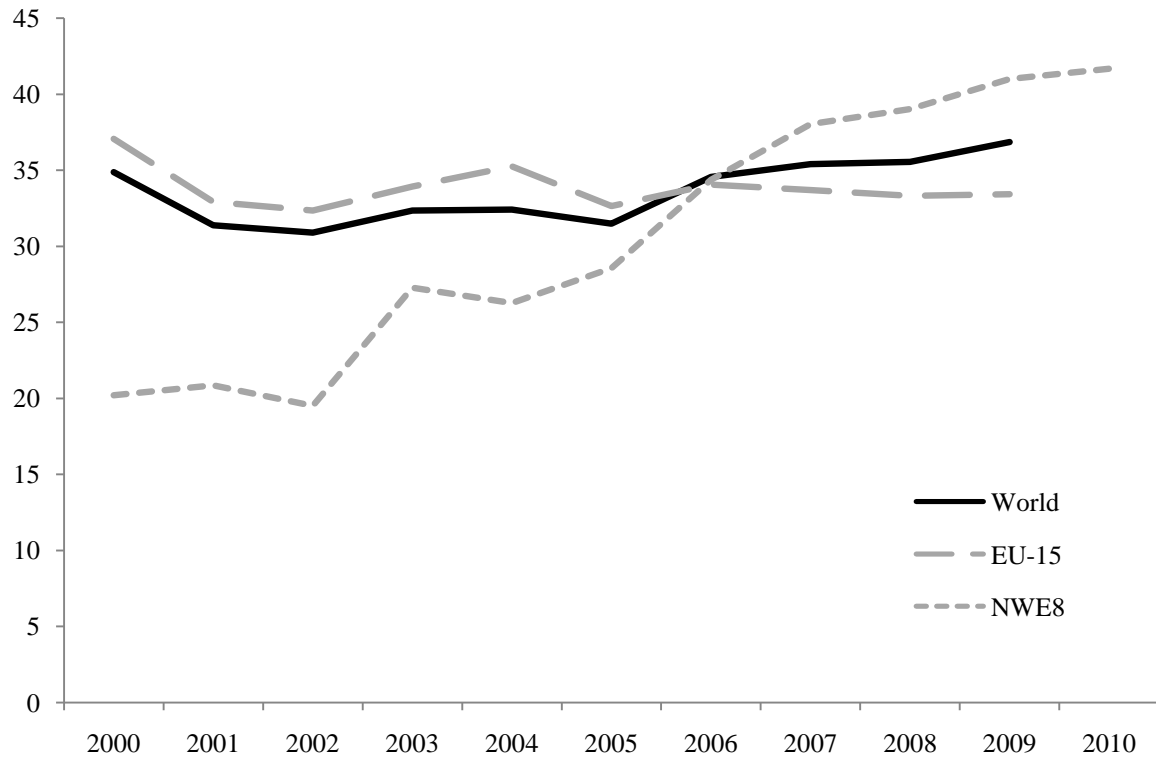
Source: Anderson and Nelgen (2011, Table 138).

Figure 6: Volume of world (excluding intra-EU15) wine exports, 1988-89 to 2005-09 (ML)



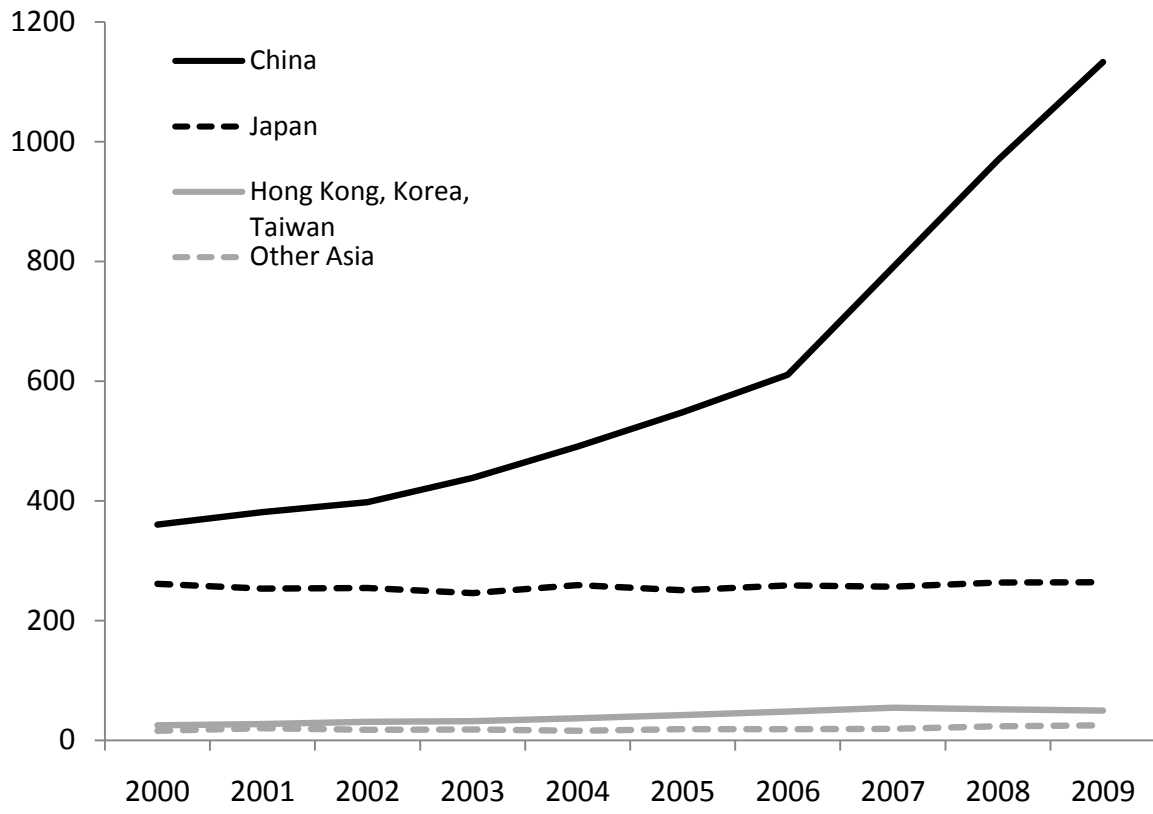
Source: Anderson and Nelgen (2011, Table 136).

Figure 8: Bulk wine as % of total wine export volume, 2000 to 2010



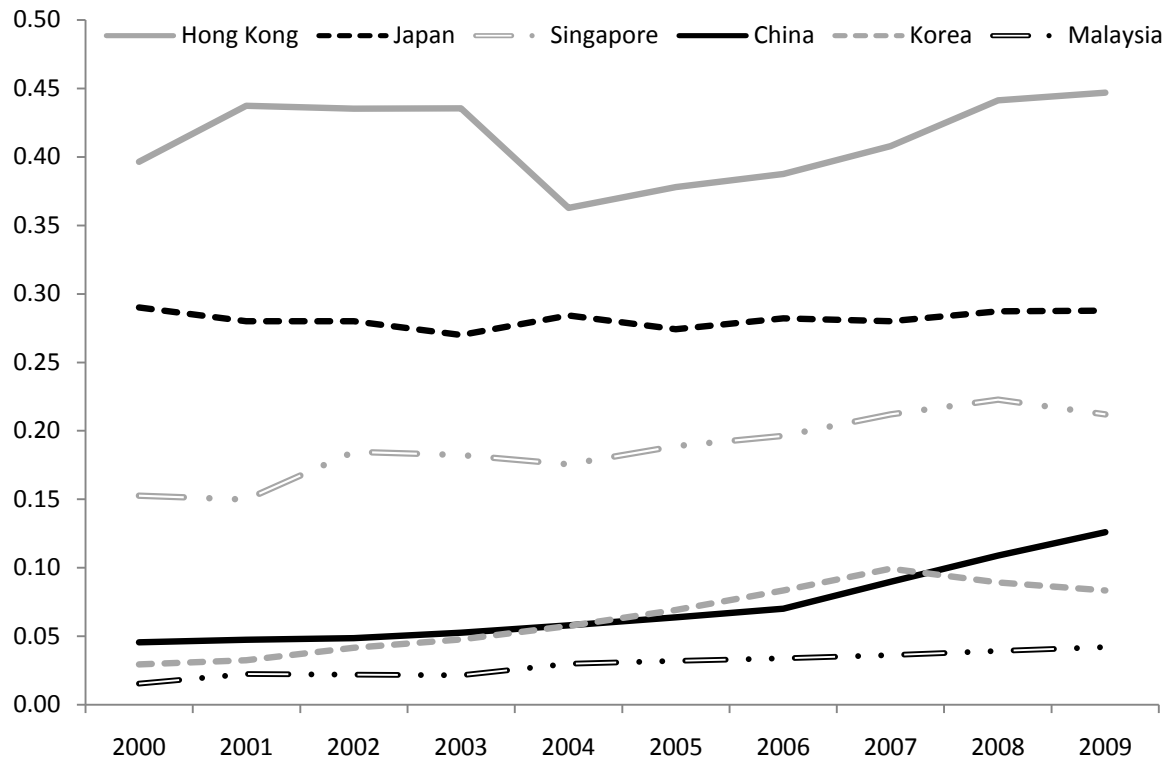
Source: Anderson and Nelgen (2011, Table 41).

Figure 9: Asian grape-wine consumption volume, 2000 to 2009 (ML)



Source: Anderson and Nelgen (2011, Table 17).

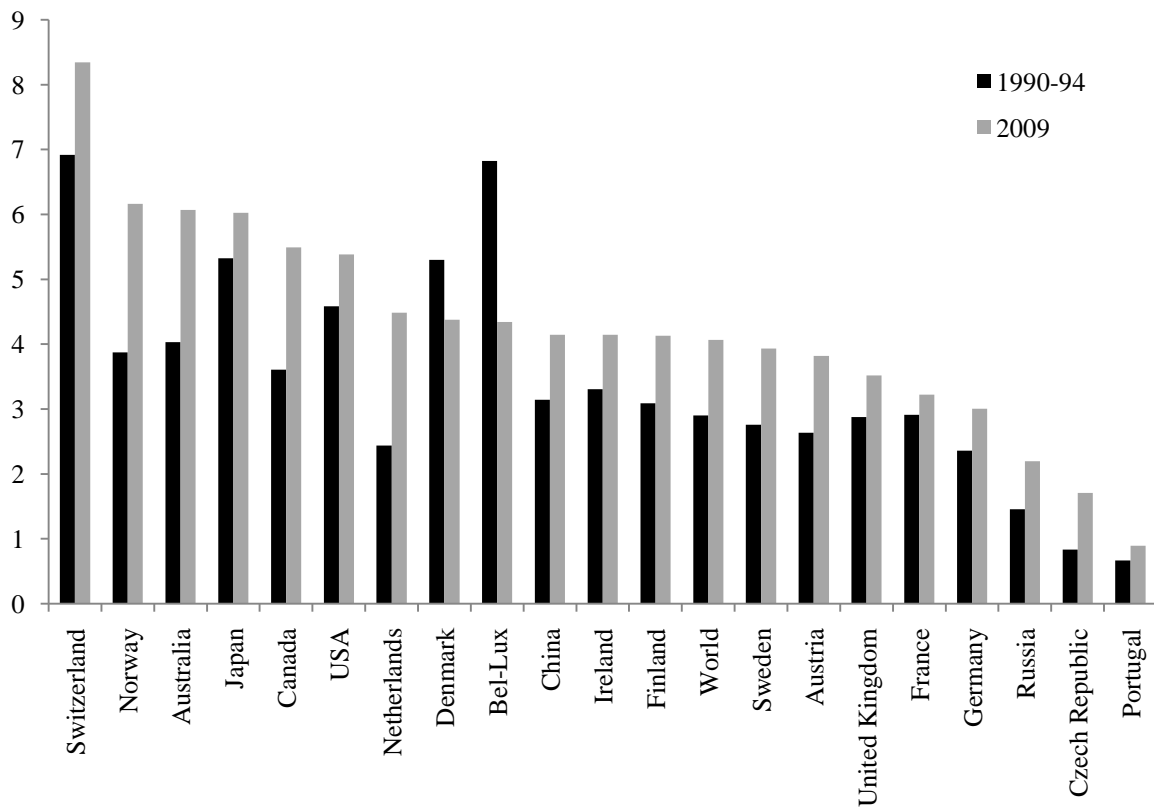
Figure 10: Grape-wine consumption per adult, Asian markets, 2000 to 2009 (litres of alcohol)



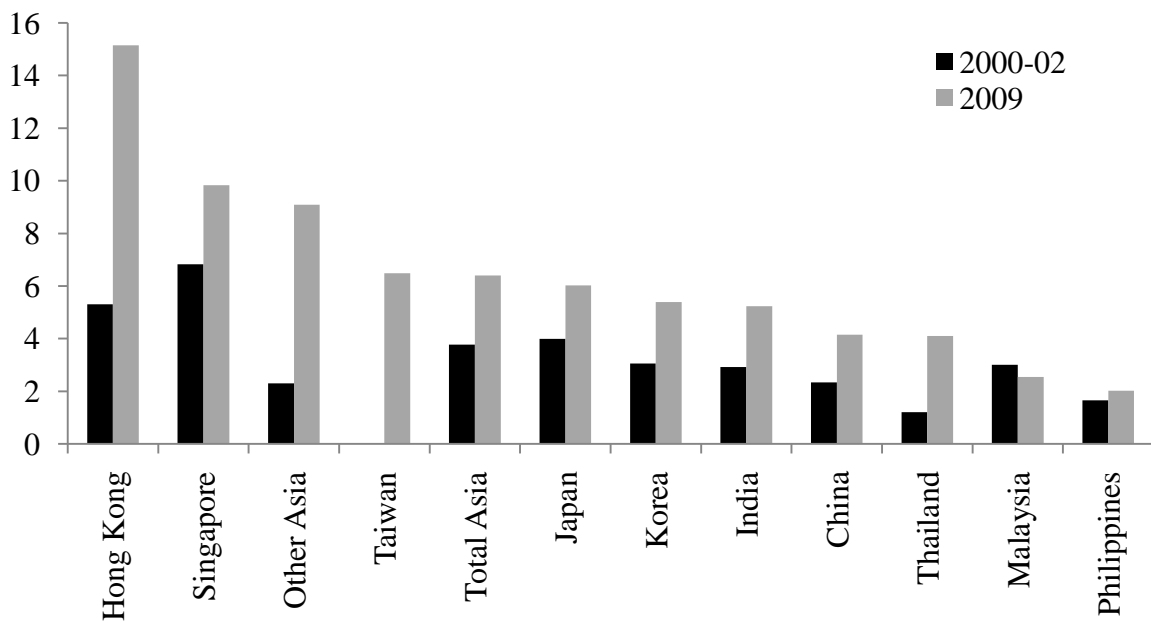
Source: Anderson and Nelgen (2011, Table 21).

Figure 11: Unit value of bottled still wine imports, traditional and Asian markets, 1990-94 and 2009 (US\$/litre)

(a) Traditional markets

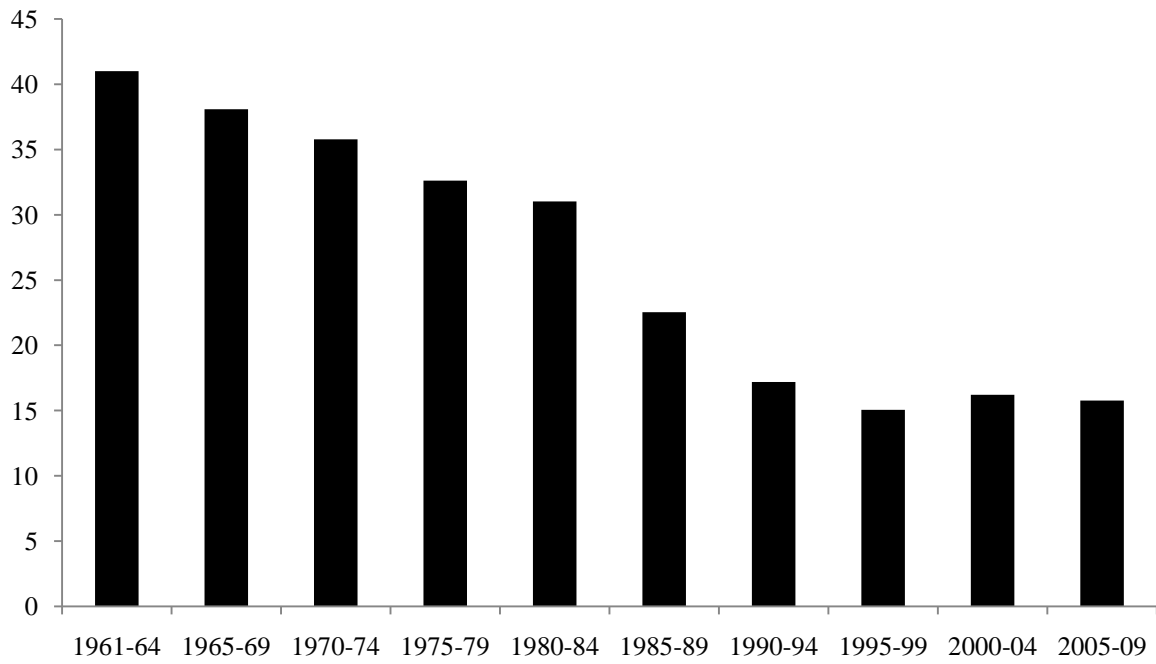


(b) Asian markets



Source: Authors' compilation based on data in Anderson and Nelgen (2011, Table 133).

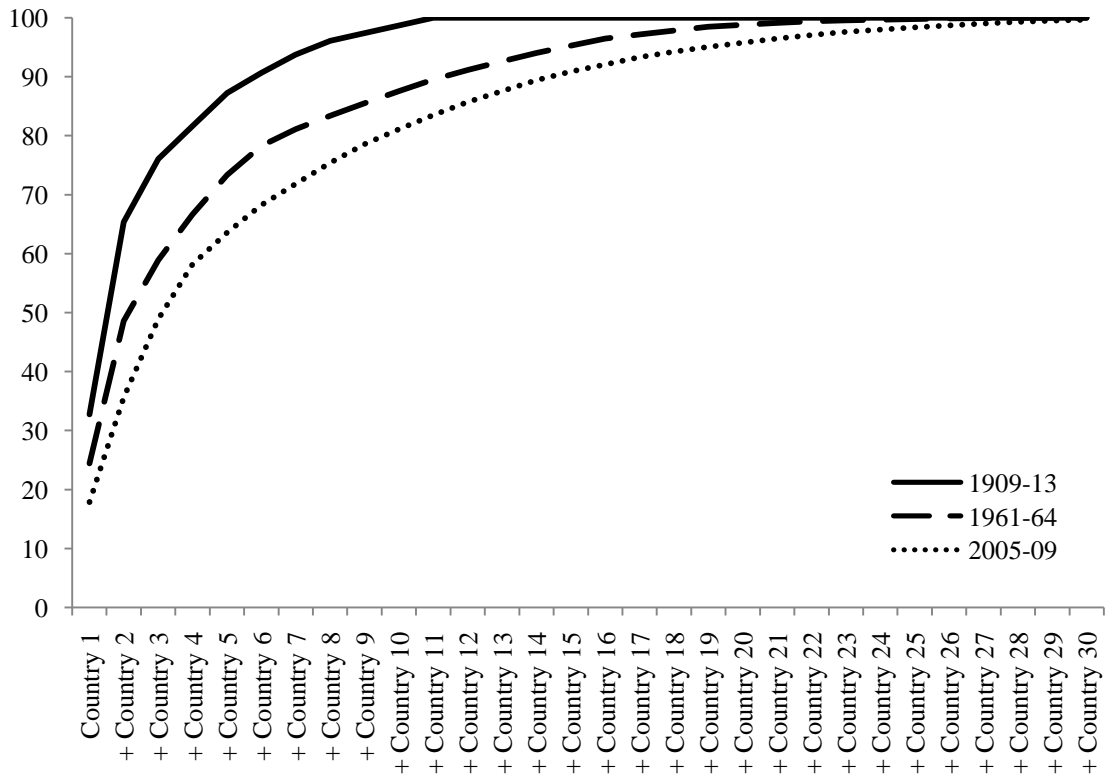
Figure 12: Wine's share of the world's recorded alcohol consumption volume, 1961-64 to 2005-09 (%)



Source: Anderson and Nelgen (2011, Table 116).

Figure 13: Cumulative national shares of world wine production, export and consumption volumes, 1909-13, 1961-64 and 2005-09 (%)

(a) Production volume



(b) Export volume

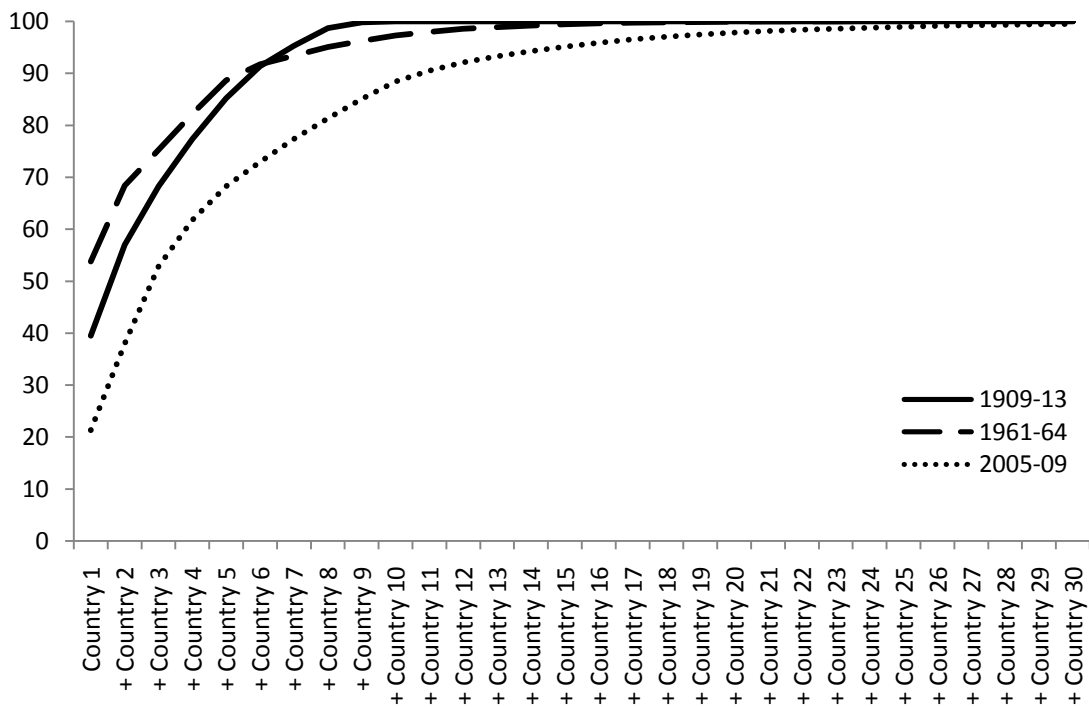
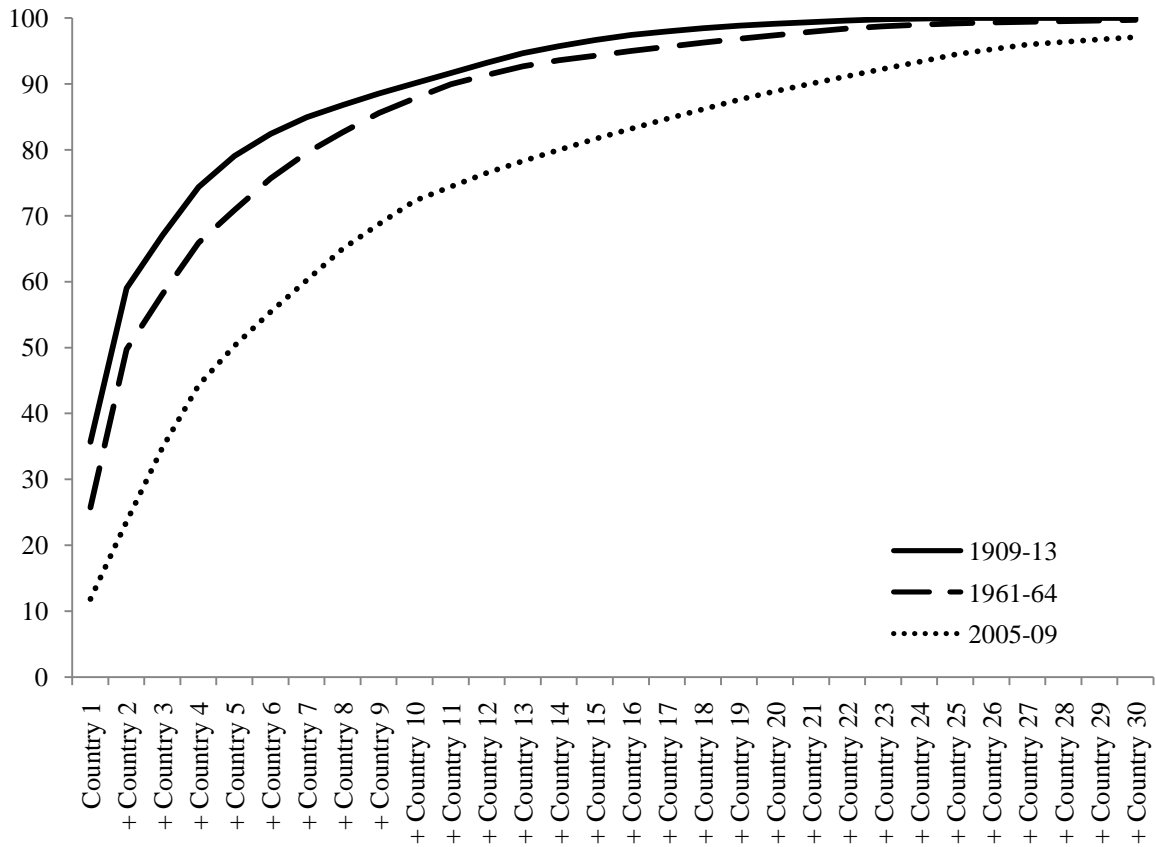


Figure 13 (continued): Cumulative national shares of world wine production, export and consumption volumes, 1909-13, 1961-64 and 2005-09 (%)

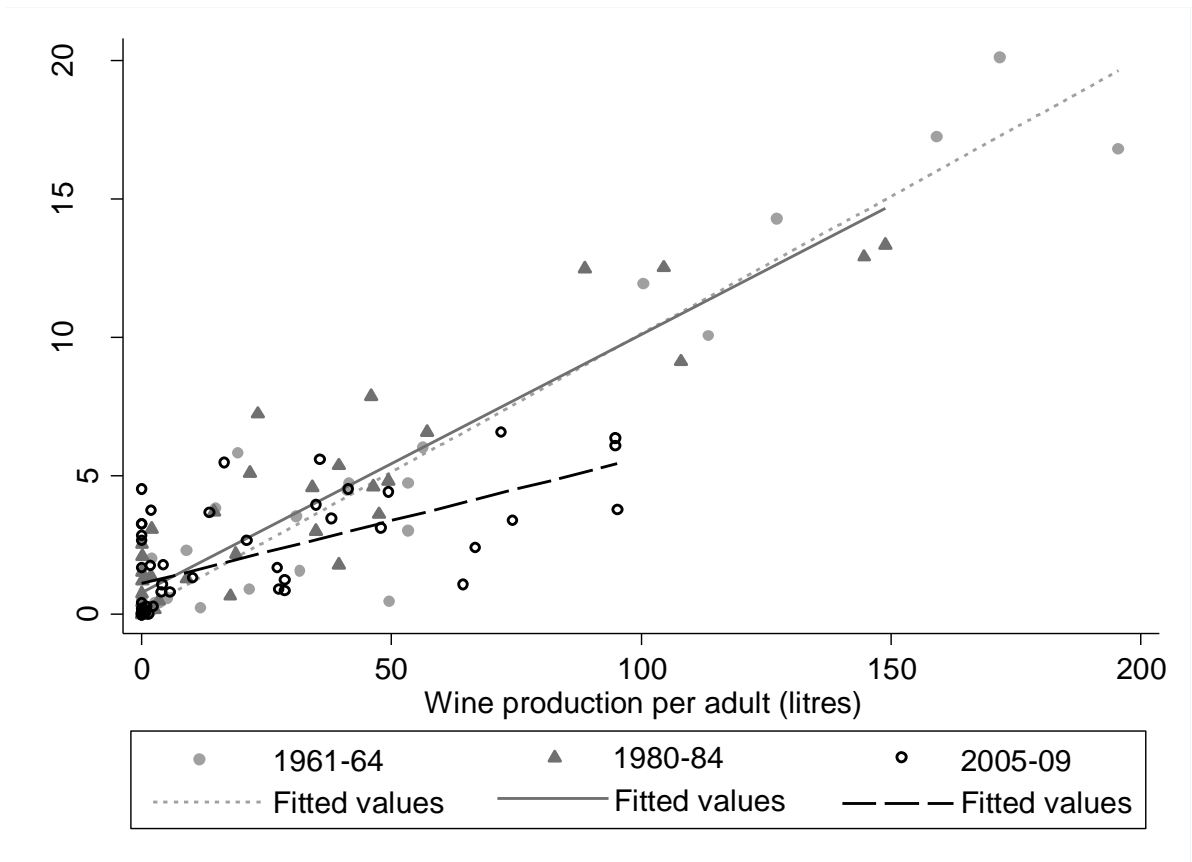
(c) Consumption^a volume



^a Consumption in 1909-13 is assumed to be production plus net imports for each country.

Source: Authors' compilation based on data in Anderson and Nelgen (2011, Tables 99, 117, 266 and 267).

Figure 14: Relationship between wine production per adult and wine consumption per adult, 46 countries, 1961-64, 1980-84 and 2005-09

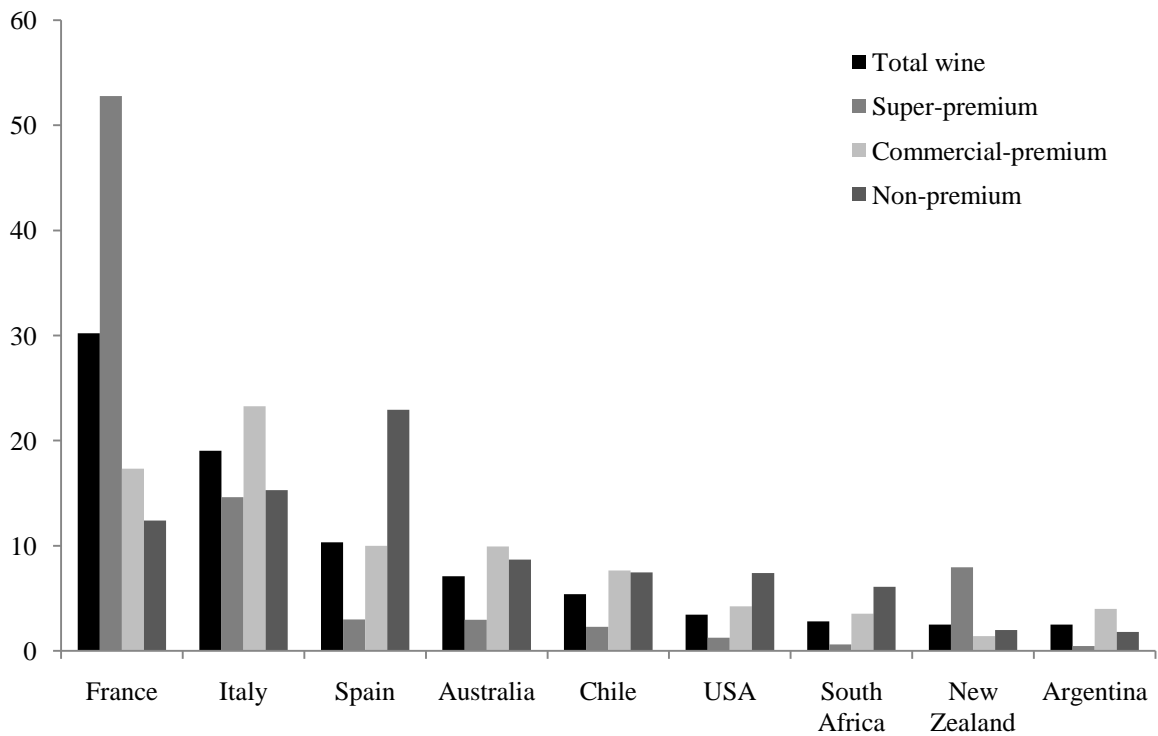


	<u>R-squared</u>	<u>Mean</u>	<u>Standard deviation</u>
1961-64	0.93	Consm: 3.23, Prodn: 30.0	Consm: 5.28, Prodn: 50.7
1980-84	0.86	Consm: 3.19, Prodn: 25.2	Consm: 3.95, Prodn: 39.0
2005-09	0.43	Consm: 2.01, Prodn: 19.8	Consm: 1.99, Prodn: 28.6

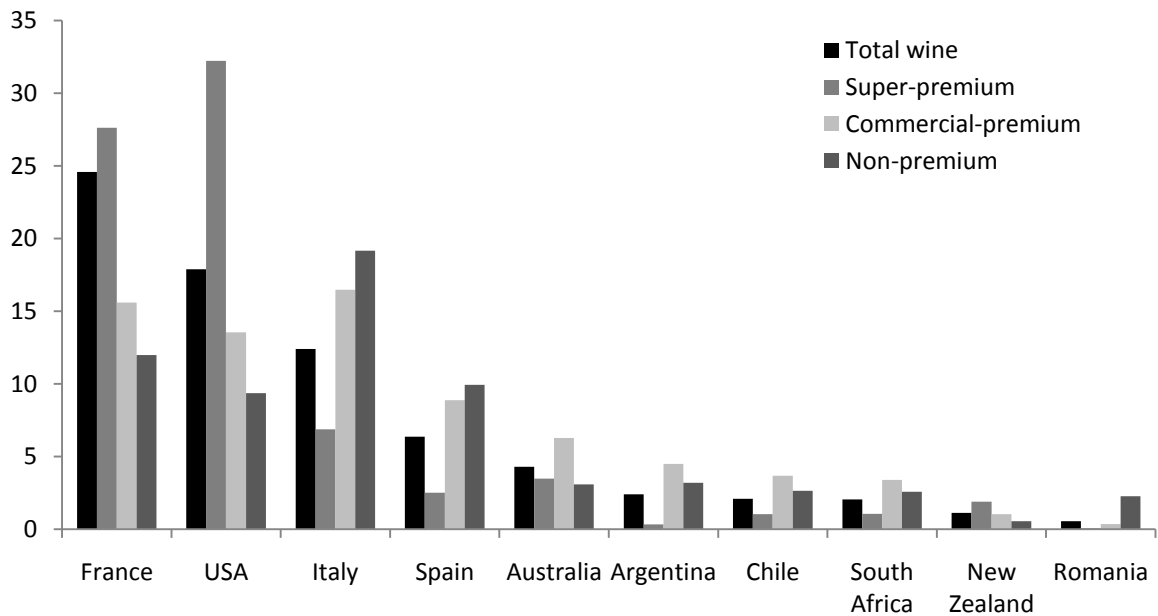
Source: Authors' compilation based on data in Anderson and Nelgen (2011, Tables 99, 116 and 135).

Figure 15: Shares of global export and production value, total (including sparkling) wines plus super-premium, commercial-premium and non-premium wines, 2009 (%)

(a) Shares of global export value



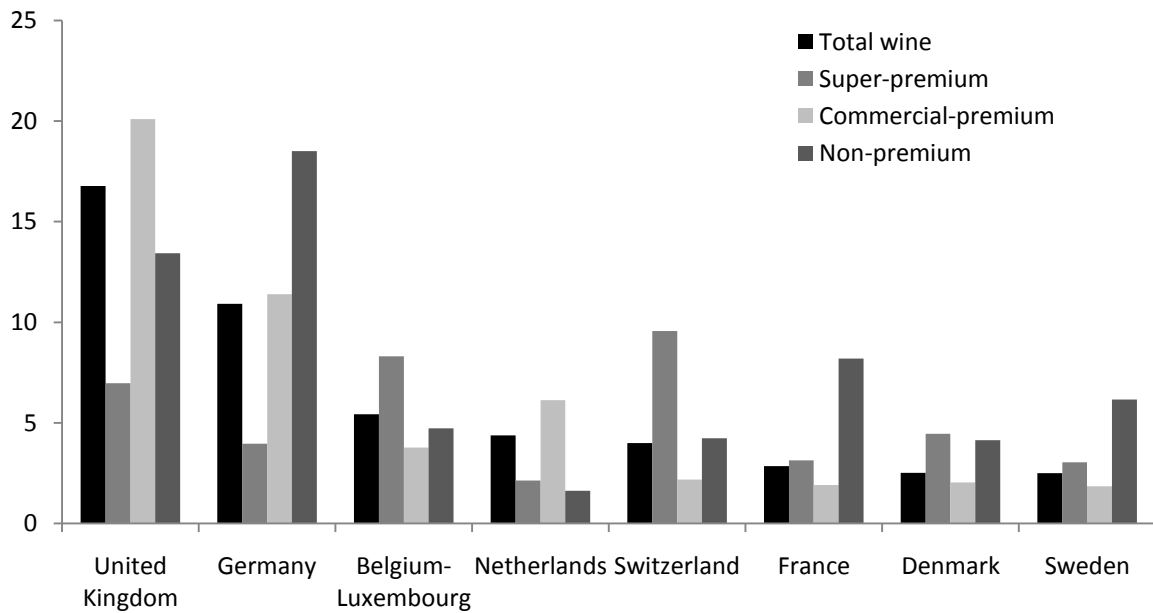
(b) Shares of global production value



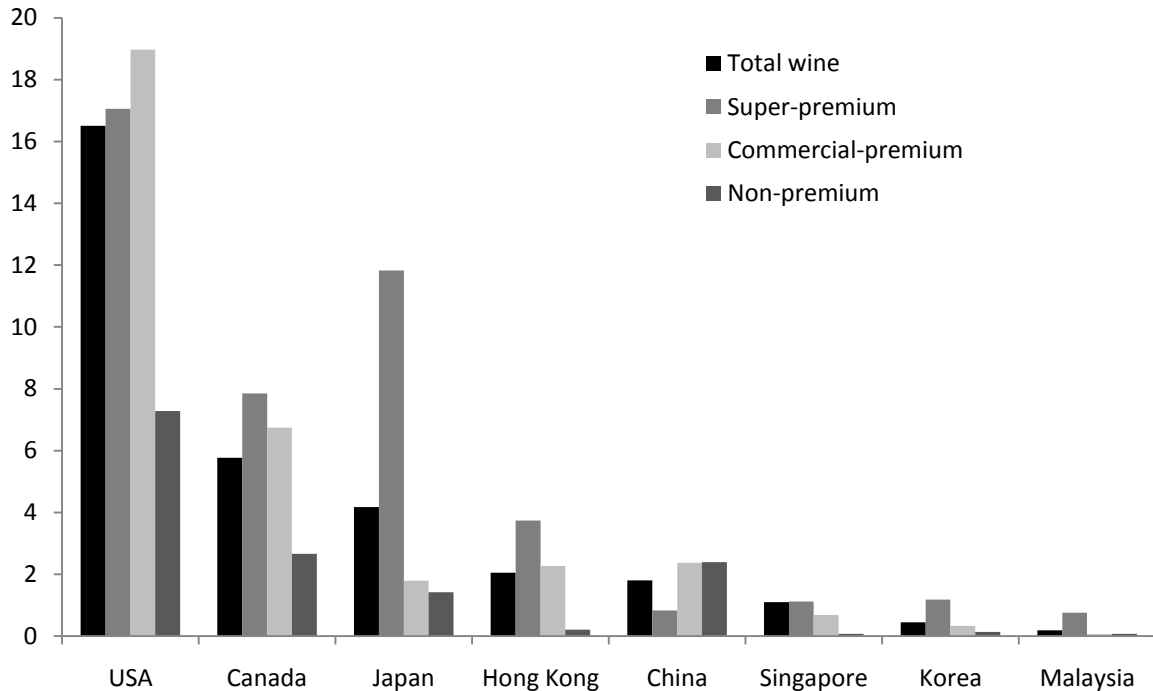
Source: Anderson and Nelgen (2011, Tables 175 and 177).

Figure 16: Shares of global import values, total (including sparkling) wines plus super-premium, commercial-premium and non-premium wines, 2009 (%)

(a) Key European countries



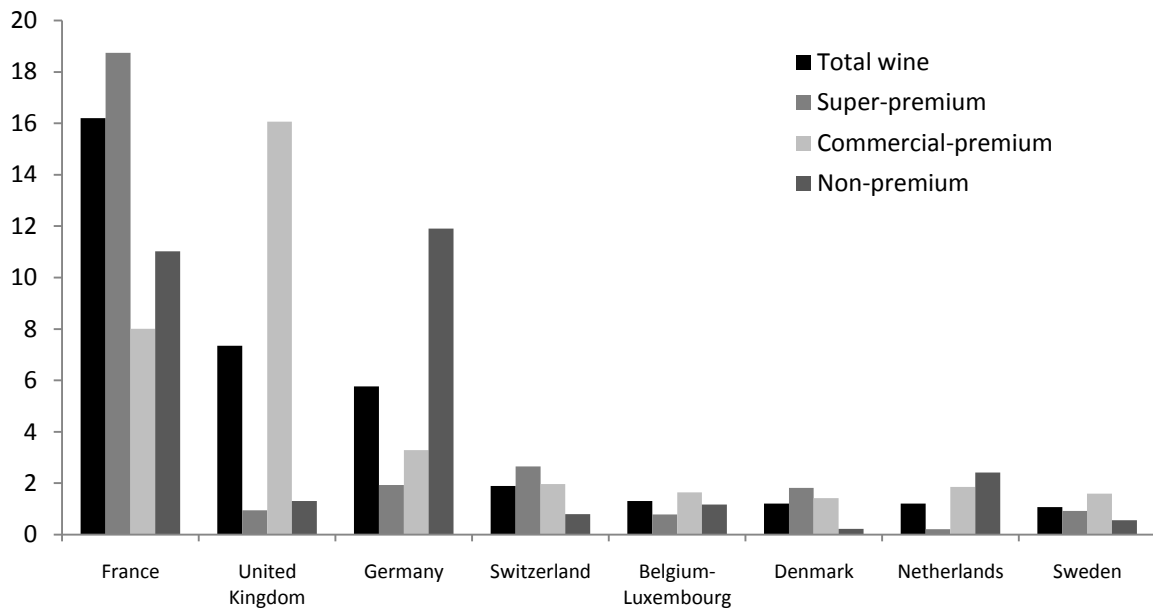
(b) Key non-European countries



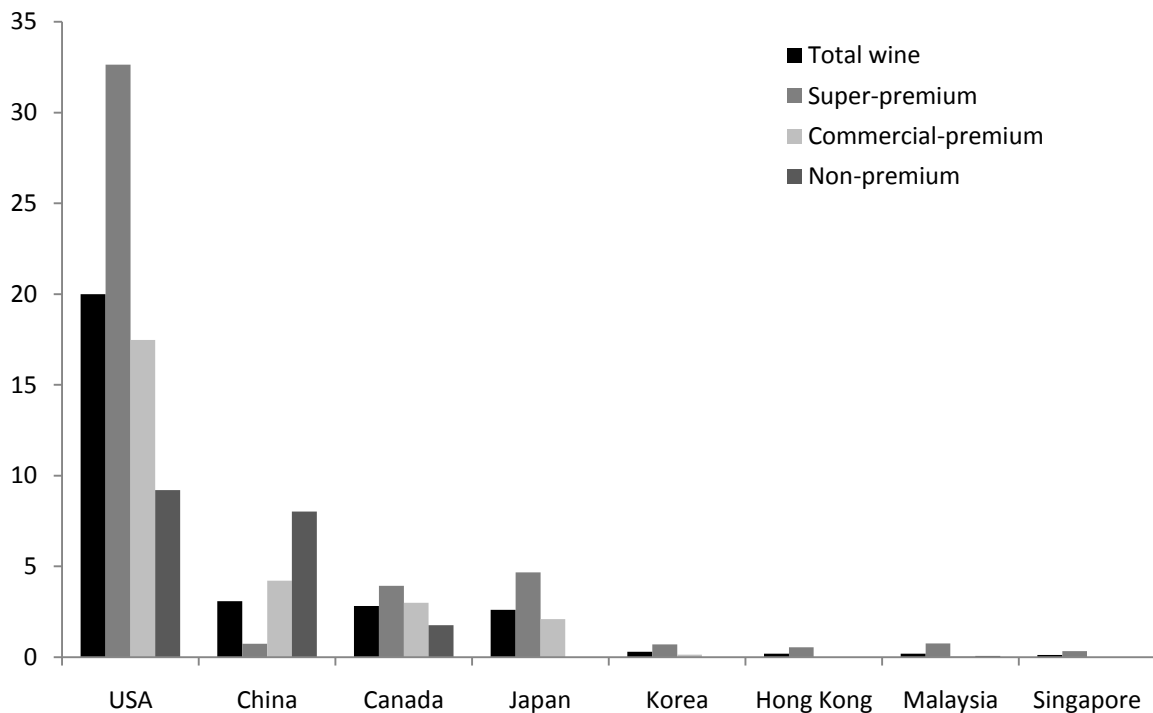
Source: Anderson and Nelgen (2011, Table 177).

Figure 17: Shares of global consumption value, total (including sparkling) wines plus super-premium, commercial-premium and non-premium wines, 2009 (%)

(a) Key European countries

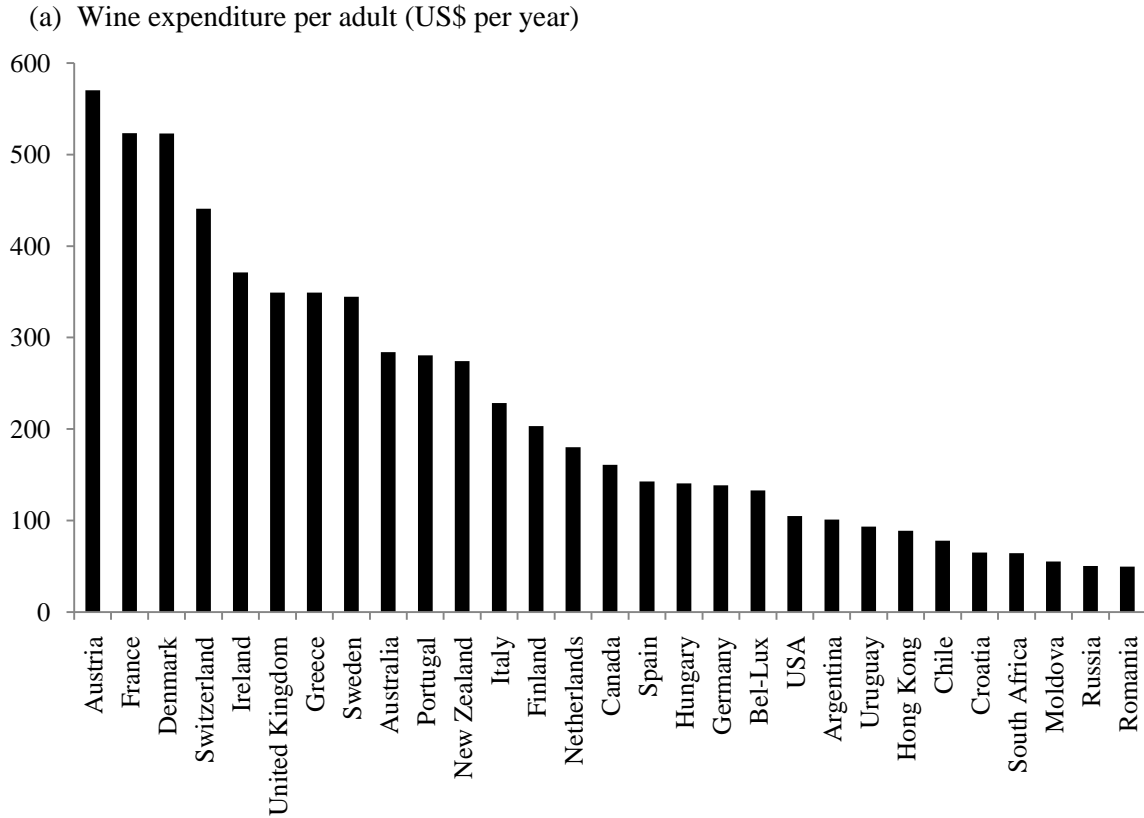


(b) Key non-European countries

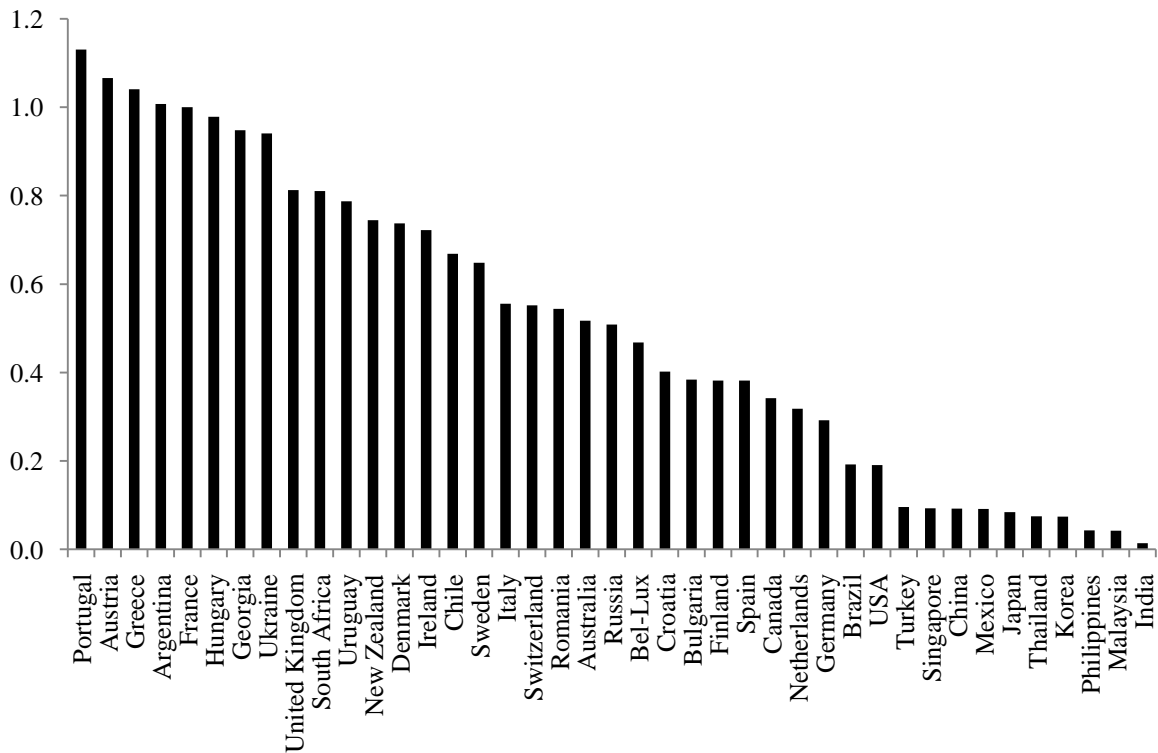


Source: Anderson and Nelgen (2011, Table 176).

Figure 18: Wine expenditure per adult as a share of national income, 2009 (US\$ per year and %)



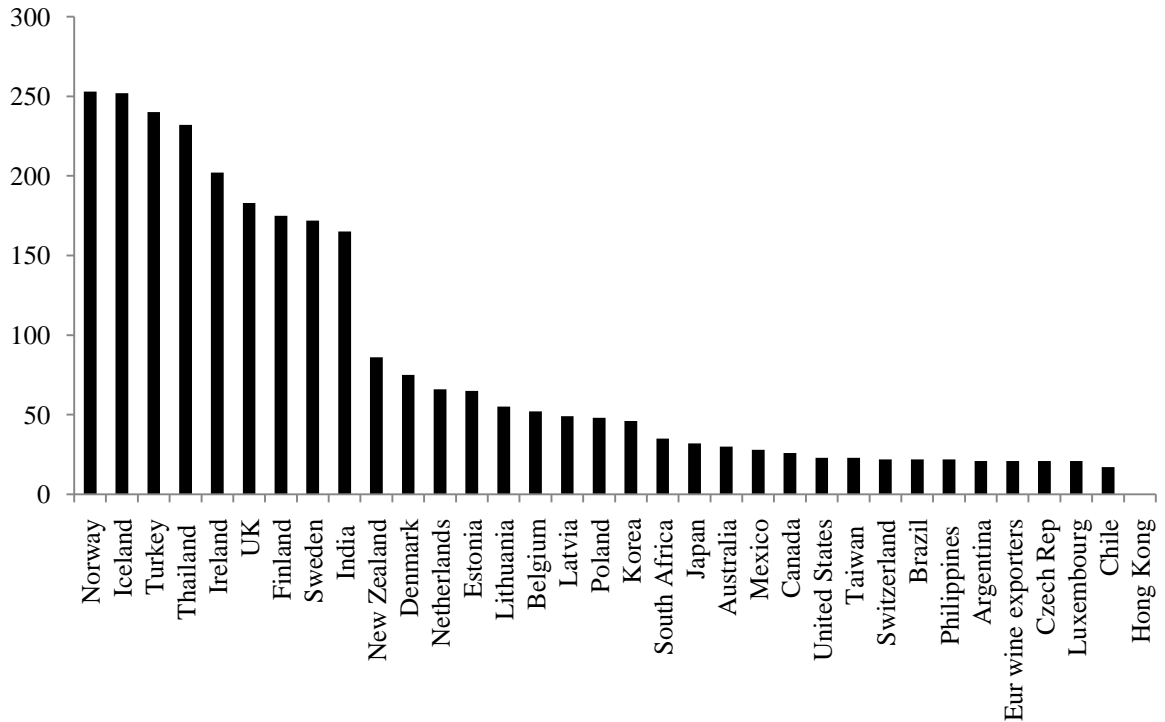
(b) Wine expenditure as % of national income



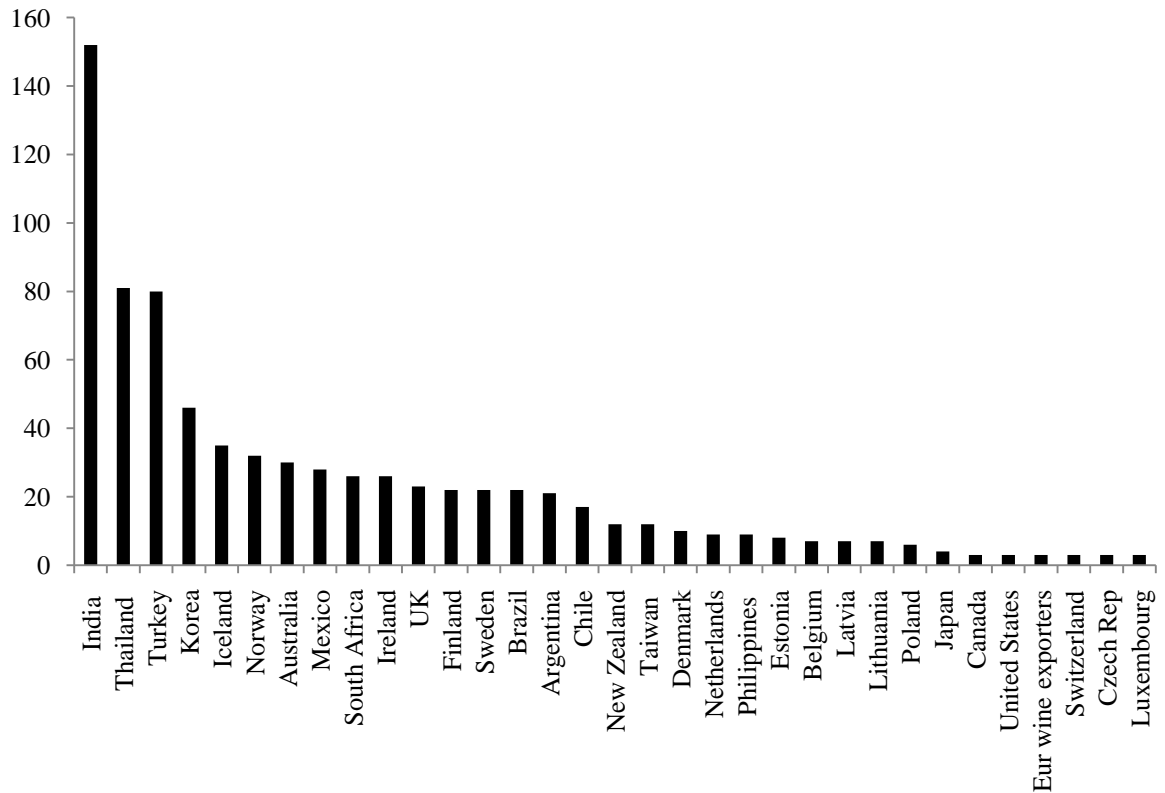
Source: Anderson and Nelgen (2011, Tables 165 and 166).

Figure 19: Taxes (import plus excise plus VAT/GST) on non-premium and super-premium wine consumption, 2008
(ad valorem equivalent, %)

(a) Tax on non-premium wine consumption



(a) Tax on super-premium wine consumption



Source: Anderson and Nelgen (2011, Table 180).