

UK and global wine markets by 2025, and implications of Brexit

Kym Anderson

University of Adelaide and Australian National University

kym.anderson@adelaide.edu.au

and

Glyn Wittwer

Victoria University, Melbourne

Glyn.Wittwer@vu.edu.au

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Abstract

The UK has accounted for a major share of the world's wine imports for centuries, and wine accounts for more than one-third of UK alcohol consumption. It is therefore not surprising that both suppliers of those imports and UK wine consumers, producers, traders, distributors, and retailers are focusing on what the UK's planned withdrawal from the European Union (Brexit) might mean for them. In this paper a model of the world's wine markets is used to project those markets to 2025 without, and then with, Brexit. The Brexit scenarios involve adjustment not just to UK and EU27 bilateral tariffs but also to assumed changes to UK's income growth and currency. The relative importance of each of those three components of the shock are reported, as are impacts on bilateral wine trade values and volumes for still and sparkling wines. The results suggest the impact outside the UK will be very minor compared with other developments in the world's wine markets. Inside the UK, however, the effect of Brexit on incomes and the pound are likely to have non-trivial impacts on the domestic wine market, and to be far larger than just the direct impact of changes in bilateral tariffs.

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Author contact:

Kym Anderson
Wine Economics Research Centre
School of Economics
University of Adelaide
Adelaide, SA 5005 Australia
kym.anderson@adelaide.edu.au

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The UK's planned withdrawal from the European Union (Brexit) will affect markets for many products, including wine. True, very little wine is produced in the UK (although the volume is now five times what it was in the 1980s), and wine has accounted on average for just 0.5% of UK merchandise imports since World War I. Over the past six decades, though, wine's share of UK alcohol consumption has steadily risen from 5% to more than one-third, so wine traders, distributors and retailers as well as consumers are concerned about Brexit's potential impact on them. To wine producers and consumers *outside* the UK, Brexit is attracting considerable attention too, because the UK has always accounted for a major share of the world's wine imports.

To examine how wine markets might be affected by an exit of the UK from the EU, it is necessary to look beyond just the immediate trade-reducing and trade-diverting effects of altering bilateral import tariffs that are the focus of the standard comparative static economic theory of (withdrawal from a) customs unions. Since the process of exiting, establishing new trading arrangements and adjusting to the altered incentives is expected to take many years, and in the interim to possibly slow the growth of UK incomes and devalue the pound, one needs to begin with a projection of how wine markets will look in several years and then show how that projected baseline would change under various Brexit scenarios. We do that using a model of the world's wine markets projected to 2025.

The paper begins by briefly reviewing the UK's historic and present roles in global wine markets. It then summarizes what trade theory would lead us to expect for a country leaving a customs union. A model of the world's wine markets is then outlined, along with a description of the way in which the model projects forward and of how that projection can be altered to simulate the effects of Brexit on the UK and others. The model's results of prospective changes to grape and wine markets by 2025 for a baseline case are then summarized, followed by results for a range of alternative paths following Brexit. The final section draws out implications of the findings for wine markets and their participants in the UK and abroad, both within and outside the EU.

Historical backdrop: Wine in the UK, and the UK in global wine markets

Wine has rarely accounted for more than 2% of UK merchandise imports, and since World War I it has averaged just 0.5%. Also, prior to 1950 wine rarely accounted for more than 4% of the volume of alcohol consumed in the UK (although somewhat more as a share of alcohol expenditure). Over the past six decades, though, wine's share of UK alcohol consumption has steadily risen, and it now exceeds one-third in both volume and value terms (Figure 1).

The UK is a very important player in wine trade circles, as it has always accounted for a major – and often the largest – share of the world's wine imports. Prior to 1960 the UK's share of the value of world imports of wine roughly matched its share for all merchandise: above 20% in the 19th century, and steadily declining to around 10% by 1960. Since then the two shares have diverged though, with the all-goods share falling to around 4% while the wine share climbed back above 20% by the beginning of the present century. And while the UK's share of the volume of global wine imports has always been below its value share, those two shares have converged since 1960 and are now both around 15% (Figure 2).

These two trends are summarized in Figure 3: the ratio of the UK's shares of world imports of wine to that of all goods has risen from 1 to 4 between 1960 and 2000; and the ratio of the UK average import price to the world average has come down from between 3 and 4 pre-1960 (when the UK was mostly importing relatively expensive wines from Bordeaux and Champagne) to about 1.2 by 1980 and is now close to 1.

Associated with the change in the average quality of UK wine imports are dramatic changes in the importance of different wine-exporting countries in the UK's imports, and in the shares of the UK in the wine exports of those countries.

Those recent shares are very different from what they were in 1995, when the New World was just beginning to grow its wine exports. But such changes are not unprecedented. Indeed they changed considerably not only because of the changing global shares of the various wine-exporting countries but also because of changes in the UK's preferential trading arrangements such as the Methuen Treaty with Portugal in 1703, the Cobden-Chevalier Treaty with France in 1860, and the Ottawa Agreement of 1932 with Commonwealth countries (Tables 1 and 2).

In the middle rows of Table 1 the 2010-14 shares of exporters in the international market are shown below their shares in the UK markets. For some countries those two sets of shares are similar (France, Italy, Germany, Chile) while for others they are very different. The latter is most noticeable for the former colonies of Australia, New Zealand and South

Africa, whose shares in the UK are more than twice their shares in the rest of the world. Both shares for the EU27 exceed two-thirds, and many commentators expect them to drop and shares of, e.g., Australia and New Zealand to rise as a consequence of Brexit.

The UK's recent importance to producers in wine-exporting countries is clear from Figure 4. For seven key suppliers, the UK accounted in 2010-14 for more than one-sixth of their wine export earnings, and for three of them (Australia, the US and New Zealand) the UK is a market for more than one-third of their volume of wine exports.

Recent import duties and other taxes affecting the consumer prices of alcohol in the UK are summarized in Table 3, expressed per litre of beverage. Both import and excise duties on wine vary according to their alcohol content. About one-third of UK wine imports arrive in bulk and perhaps half have less than 13% alcohol, and one-tenth of imports are sparkling, so the volume-weighted average import duty is 13 pence per litre. This contrasts with the volume-weighted average excise tax on wine which is 297 pence per litre. To that increase in the wholesale price is added perhaps a 25% retail margin for off-trade sales and well over a 100% margin for many restaurant sales before the 20% VAT is added. So the average import price in 2013-15 of 222 pence per litre is escalated to 800 pence for off-trade sales and more than 1300 pence for on-trade sales (which are about one-fifth of the total sales volume in the UK). The share of that latter retail price that is due to tariffs on wine imports is thus just 1%. The change in the UK's import trade regime from imposing such tariffs on wines currently imported free of duty from the EU, Chile and South Africa is therefore likely to be very minor. However, as will become clear below, the effect of Brexit on wine sales involves far more than just the trade-reducing and trade-diverting effects of altering bilateral import tariffs.

The economics of leaving a customs union

The standard theory of customs unions (Viner 1950) focuses on the fact that when countries join a union and impose a common external tariff on imports from non-union countries, there can be net trade creation (depending on the height of the common external tariff relative to the previous national tariffs), but there will also be trade diversion (because of the preference to producers within the union). When a country leaves a union, the reverse happens, because the leaving country's tariffs will now apply to its imports from union countries as well as from the rest of the world. Hence imports from the union will fall, because their preferential access to the leaving country will no longer apply. That is also the case for countries that

enjoyed a free trade agreement (FTA) with the union. Of significance to wine are the EU's FTAs with Chile and South Africa.

How large that trade-diverting impact of leaving the union will be on wine depends on the external tariff imposed on wine imports not only by the union but also by the leaving country. Some have suggested the UK should become the Hong Kong of Europe and go immediately to free trade on all products. Others have suggested that this would impose huge structural changes on the UK economy which society would not tolerate without major compensation packages. But both groups agree that a new trade policy which sets most-favoured-nation tariff rates is needed before the UK can begin to negotiate new preferential trading arrangements with the EU27, its FTA partners such as Chile and South Africa, or other countries. Rollo et al. (2016) suggest the most practical trade policy for the UK to adopt at the outset is the EU's tariff schedules previously agreed to at the World Trade Organization (WTO). In the Brexit scenarios examined below, we assume this will be the new UK trade policy, and that subsequent negotiations for preferential arrangements will take years and any consequent agreements with the EU or others will not be implemented before 2025.

The impact of leaving a customs union on wine markets comes not only from tariff changes, however. Also relevant are any effects leaving has on real UK incomes and the value of the pound. If the UK were to move immediately to free trade on all products, its per capita income could eventually rise, but only after considerable adjustment. Should instead the UK adopt the EU tariff schedule in the first instance and lock that in at the WTO, as we assume below, then its per capita income growth rate almost certainly will drop and the pound will devalue against other currencies. How large those impacts will be is uncertain of course (see Baldwin 2016, and especially Campos 2016), so we consider a range of possibilities below.

Those assumed adverse macroeconomic effects will add to the tariff's impact on aggregate wine consumption in the UK and hence on its bilateral trades in wine. They will make the loss of sales to the UK by EU (and Chilean and South African) suppliers greater than would otherwise be the case. And they reduce the likelihood that other countries' sales of wine in the UK will be higher than in the baseline. Indeed the macro effects could outweigh the trade-diverting effects, so that even countries that are currently discriminated against by the EU28's wine trade policy may be worse off because of Brexit.

Model of global wine markets, and database

A model of the world's wine markets, first published by Wittwer, Berger and Anderson (2003) and revised by Anderson and Wittwer (2013), disaggregates wine markets into four types, namely non-premium, commercial-premium and super-premium still wines, and sparkling wine.¹ There are two types of grapes, premium and non-premium. Non-premium wine uses non-premium grapes exclusively, super-premium wines use premium grapes exclusively, and commercial-premium and sparkling wines use both types of grapes to varying extents across countries. The world is divided into 44 individual nations and 7 composite geographic regions that capture all other countries.

The model's database is calibrated to 2014, based on the comprehensive wine market volume and value data and trade and excise tax data provided in Anderson and Pinilla (2017) and Anderson, Nelgen and Pinilla (2017). It is projected forward assuming aggregate national consumption, population, and real exchange rates change between 2014 and 2025 to the extent shown in Appendix Table 1.² The Brexit alternative to that baseline also is projected to 2025.

Concerning preferences, there is assumed to continue to be a considerable swing towards all wine types in China and a swing away from non-premium wines in all other countries.

In our baseline scenario both grape and wine industry total factor productivity are assumed to grow at 1% per year everywhere, while grape and wine industry capital is assumed to grow net of depreciation at 1.5% per year in China but zero elsewhere (consistent with the almost-zero growth in global wine production and consumption over the past two decades).

Two alternative Brexit scenarios are considered (large and small), to provide a range of results. We assume that, because of the UK's decision to exit the EU, the rate of UK economic growth is only one-third or two-thirds as fast for the period to 2025 (0.9% or 1.8% per year instead of 2.6%), and the UK pound will be 20% or 10% lower in real terms than in our model's core baseline projection. In both alternative scenarios it is assumed the UK applies the EU's external tariffs on wine (see Table 3) to imports from EU member countries

¹ Commercial-premium still wines are defined by Anderson, Nelgen and Pinilla (2017) to be those between US\$2.50 and \$7.50 per litre pre-tax at a country's border or wholesale.

² The real exchange rate changes over the projection period are the changes expected in the nominal value of country *i*'s currency relative to the US dollar times the expected ratio of the GDP deflator for the US versus that for country *i*.

and does not have enough time by 2025 to negotiate and implement free trade agreements (FTAs) with the EU27, Chile and South Africa (the latter two having preferential access to EU wine markets which would not include the UK unless/until the UK signs and implements new bilateral FTAs with them).³

This global model has supply and demand equations and hence quantities and prices and own- and cross-price elasticities for each of the grape and wine products and for a single composite of all other products in each country. There are also income elasticities of demand for each final product. Grapes are assumed to be not traded internationally, but other products are both exported and imported. Each market is assumed to have been in equilibrium before any shock, and to find a new market-clearing outcome following any exogenously introduced shock. All prices are expressed in real (2014 US dollar) terms. Detailed equations for the model are provided in the Appendix to Anderson and Wittwer (2013).

Projecting global wine markets to 2025

Global wine production and exports are projected in the baseline from 2014 to 2025 consistent with past trends: the model's global volume of production (and consumption) rises little over that 11-year period (9%), made up of a 6% decline in non-premium wine and a one-sixth rise in commercial and super-premium wine. In value though, global wine output and consumption increase by about 50% in total and 60% in the two premium categories in real (2014 US dollar) terms. The international trade projections are similar although a little larger, with the share of global production exported (= share of global consumption imported) rising two percentage points between 2014 and 2025.

The baseline projection does not alter greatly the 2014 shares of various countries in global wine production, apart from China because we assume vineyard expansion there is faster than elsewhere.⁴ In value terms that means China moves from 5th to 4th by 2025 behind France, the US and Italy. Spain remains barely ahead of Australia and they with Germany take the next three places (Figure 5(a)). In total wine production volume terms, China moves from 6th to 5th place, and Argentina drops from 5th to 8th (and from 8th to 9th in volume terms).

³ South Africa currently has duty-free access to the EU28 for just 50 ML of wine per year, beyond which the MFN tariff rate applies. South Africa currently exports around 320 ML to the EU, one-third of which go to the UK. How that quota of 50 ML is divided between the UK and EU27 is subject to future negotiation (Rollo et al. 2016; Swinbank 2017). In what follows we assume none of it is accepted by the UK so that all South African wine imports pay the UK's MFN tariff under Brexit.

⁴ In fact China's wine production fell steadily between 2012 and 2016, by a total of one-sixth, so China's wine imports may grow faster in practice than in this baseline projection.

When sub-divided into fine wine (super-premium still plus sparkling), commercial premium wine and non-premium wine, France and the US retain the highest two places on the global ladder for fine wine production, and Spain and Italy retain the top two places for non-premium wine. As for commercial premium wine (defined to be those between \$2.50 and \$7.50 per litre pre-tax at a country's wholesale level or national border), Italy retains the top ranking over our projections period but, at least in terms of value, China challenges France for the 2nd place.

The country rankings by projected value of total wine consumption change somewhat more than those for production by 2025, with China taking second place after the US ahead of France and Germany, and then the UK slightly overtaking Italy to slip into fifth place (Figure 5(b)). The US, France and Germany retain the top three rankings for consuming fine wine, but Canada slightly overtakes Italy for 4th place, in terms of value at least. As for commercial wine, China strengthens its number one position ahead of the US and the UK does likewise vis-à-vis Germany for 3rd place.

As for the projected changes in consumption volumes, China is projected to dominate the increase in aggregate, although the US is projected to lead the increase in consumption of fine wine. In Western Europe and the Southern Hemisphere's New World countries, fine wines are projected to substitute for commercial wines (defined as the sum of commercial premium and non-premium wines) with almost no change in total wine consumption. Sub-Saharan Africa is the next region that is projected to take off, with its growth accounting for more than one-third of the rest of the world's increase in volumes consumed.

Those differences in production versus consumption rankings are reflected in international trade. Figure 6 shows that France, Italy and Spain remain the three dominant exporters of wine in aggregate value, but that the rankings of the next few change to Australia being slightly ahead of Chile, and then the US, Germany and New Zealand being almost equal 6th place in value terms. France and then Italy are even more dominant in fine wine exports, and remain so by 2025, while Italy outranks France in the commercial premium export category and Spain outranks Italy, Australia and then Chile in the non-premium export class.

Among the importers the US and UK are projected to continue to hold the first two places in 2025 in value terms, but China moves into third place slightly ahead of Germany, followed well behind by Canada, Hong Kong, Belgium-Luxembourg, Netherlands and Japan (Figure 6(b)). Other Africa (excluding South Africa) is projected to experience the largest increase in imports of all the other regions, followed by Other Asia which becomes as big as

Germany in value terms (Figure 7(a)). In terms of total volume of wine imports Germany and the UK held the top two shares in 2014 but by 2025 the UK is projected to be well ahead of Germany (Figure 7(b)) – but this projection ignores the effect of Brexit, to which we now turn.

How might wine markets be affected by an exit of the United Kingdom from the EU?

As mentioned earlier, for our two alternative scenarios involving Brexit ('large' and 'small') we assume that, following the UK's exit from the EU, the rate of UK economic growth would be only one-third or two-thirds as fast for the period to 2025, the UK pound would be 20% or 10% lower in real terms than in our model's baseline projection, the UK would apply the EU's external tariff on wine to imports from EU member countries (as part of establishing MFN rates via the WTO in order to then start new bilateral FTA negotiations), and the UK does not have enough time to negotiate and implement any new free trade agreements, particularly with the EU27, Chile and South Africa by 2025.

Since the pound has already dropped by one-fifth since the Brexit vote in June 2016, we assume our 'large' scenario is the more likely, and so most of the results below refer to it. Generally the results will be about half as big in the 'small' scenario, with the exception of the bilateral trade effects. To show the sensitivity of results to our assumptions, we point out the differences when the 'small' results are not just half the results shown for the 'large' scenario.

In the 'large' alternative scenario involving Brexit, as compared with the initial baseline scenario to 2025 described in the previous section, the consumer price of wine in 2025 would be 22% higher in the UK in local currency terms (20% because of real depreciation of the pound, 4% because of the new tariffs on EU, Chilean and South African wines, and -2% because of slower UK income growth). The volume of UK wine consumption would be 28% lower: 16% because of slower UK economic growth, 7% because of real depreciation of the pound, and 5% because of the new tariffs. Super-premium still wine sales would be the most affected, dropping by two-fifths, while sparkling and commercial wines would drop a bit less than one-quarter. Since the average price rises by more than the fall in the volume sold, the aggregate value of UK sales even in local currency terms would fall under this 'large' Brexit scenario. Under the 'small' Brexit scenario, the consumer price of wine in 2025 would be 11% higher in the UK and the volume of UK wine consumption would be 17% lower.

The volume of projected UK imports in 2025 is 427 million litres (ML) or nearly one-quarter lower in the ‘large’ scenario than in the baseline scenario, comprising 58 ML less sparkling, 31 ML less super-premium still wine, and 339 ML less commercial wine. World imports would be lower by just 239 ML because imports by other countries would be 189 ML higher in response to the international prices of wines being lower in this scenario. In value terms UK imports are \$1.75 billion (or 27%) lower in 2025 because of ‘large’ Brexit: \$1.13 billion because of lower incomes, \$0.38 billion because of the fall in the pound, and \$0.14 billion because of the rise in wine import tariffs (Table 4). These aggregate trade impacts are a little more than half as large under the ‘small’ Brexit scenario.

Despite the levels of imports falling because of raised import tariffs, domestic consumption of all three quality categories of UK-produced wine is lower with than without Brexit, because of the shrunken demand for all wines resulting from the lowered UK incomes and value of the pound. The pound’s devaluation does make it easier for the UK to sell wines abroad though: their exports are 7 ML or nearly 5% higher in 2025 in the ‘large’ Brexit scenario, and UK production is 3% higher. Those UK exports (or re-exports of imported bulk wine after it is bottled in the UK) that go to EU27 countries are reduced though because of the tariff now imposed at the new EU border.

Without Brexit, the UK’s shares of global wine imports would have been slightly higher in volume terms in 2025 than in 2010-15, but 2 percentage points lower in value terms thanks to East Asia’s expanding demand for imports of premium wines. With ‘large’ Brexit, however, that value share would be a further 2 percentage points lower, and the volume share would be almost 5 points lower (Figure 8). The net effect of these impacts on global trade are shown in Figure 9: most of the trade effect of Brexit is a large decline in net imports of wine by the UK with very little offsetting positive effect on trade in the rest of the world. The ‘small’ Brexit numbers are a bit more than half these for ‘large’ Brexit.

The aggregate effect of ‘large’ Brexit on the market shares of various wine-exporting countries in the UK is almost indiscernible even with one decimal point. The projected 2025 shares are quite different from the actual 2014 shares for several countries. They are much smaller in 2025 for South Africa, Australia and New Zealand (and the US in volume terms), and are much larger in volume for Spain and in value for Italy. This is because wine-exporting countries benefit differentially from the varying rates of growth in net import demand for wine in non-UK countries over this projection period. The most important projected changes are the increase in the real value of annual wine imports between 2014 and 2025 by China (200% or \$3 billion), Other Asia (110% or \$2.2 billion) and Africa (270% or

\$1.6 billion). More than half of Australia's increase in annual exports from 2014 to 2025 go to Asia, and more than half of South Africa's increase in exports go to other Africa.

Table 5 reveals that European, Chilean and South African wine exports are lowered by 'large' Brexit, by 150 ML or US\$1.2 billion in the case of the EU, with some of their exports diverted from the UK to EU27 and other markets in competition with New World exporters. While the US, Australia and Argentina sell only a little less into the UK, they sell less also to other countries. For Chile and South Africa, who lose their preferential access to UK (but not to EU27) markets in this Brexit scenario, some of their exports are re-directed from the UK to EU27 countries but again they export less overall. Global wine trade in 2025 would be less under this 'large' Brexit scenario by 240 ML (1.9%) or \$1.8 billion (3.5%). The percentage by which wine exporters' trade shrinks is greater for values than for volumes because of changes in relative prices of different-quality wines. Those differences are shown in the numbers in parentheses in Table 5.

Three other points are worth making about Table 5. One is that Australia sells slightly more to the UK in the 'small' Brexit scenario, rather than slightly less as in the 'large' Brexit case. Evidently the negative income and devaluation effects in the former scenario do not more than offset the positive trade-diverting effect of removing the EU preference on Australian exports to the UK in the 'small' scenario. Second, New Zealand sells slightly more to non-UK countries under Brexit, despite greater competition from EU27, Chile and South Africa. This anomaly is due to changes in the relative prices of different qualities of wine in global wine markets, bearing in mind that New Zealand has the world's highest average price for still wine exports. And third, the value (but not the volume) of exports of 'Other' countries to markets other than the UK is higher under Brexit. This too is due to changes in the relative prices of different qualities of wine in global wine markets.

Caveats and conclusions

The above Brexit simulations are just two of many scenarios that could be run. Obvious additional ones could also assume FTAs are reached with the EU27 or other trading partners including Chile and South Africa, and also Commonwealth countries such as Australia and New Zealand. The sequence in which FTAs are signed and the speed with which they are implemented will matter (as was also the case with the sequential signing over the past decade of bilateral FTAs with Northeast Asian countries by Chile, Australia and New Zealand, see Anderson and Wittwer 2015). Even if the UK were able to sign new FTAs and

begin implementing them before 2025, it would make very little difference to the above results (since wine tariffs are a very minor contributor to them) unless those FTAs were to reverse our assumed slowdown in UK economic growth before 2025.

We have assumed above that no changes are made to alcohol excise duties in the UK following Brexit, when in fact they are scheduled to be progressively raised with inflation and may be raised even more if the UK has difficulty raising enough government revenue to pay the disputed exit fee to Brussels. Nor have we made any allowance for UK consumer wine price rises that may be needed to cover the higher cost of clearing customs on imports from EU27 countries (which may be more or less offset by increased smuggling and duty-free purchasing). Importers of fine wine, including individuals who buy Bordeaux wines *en primeur*, may well reduce their demand because of concerns that delays on docks will affect the quality of their wine.

To summarize, Brexit will be costly to UK consumers of wine (and of many other products), because the domestic retail price in local currency tax-inclusive terms will be 22% higher than it otherwise would be in 2025 and the volume of wine consumed domestically will be 28% lower (in the ‘large’ Brexit scenario, or 11% higher prices and 17% lower quantities in the ‘small’ case). The volume reduction will be a blow to many participants in UK wine bottling, transporting, storing, wholesaling and retailing businesses, in addition to restaurants and pubs. Very little of that impact is because of higher import tariffs; most important are the assumed fall in UK incomes and the pound’s devaluation. But higher tariffs on two-way trade between the UK and EU will mean less re-exporting in both directions (e.g. from bottlers of imported bulk wine, who are non-trivial players in both the UK and Germany). This may not be a significant item today, but with bulk wine expanding (in 2016 it accounted for 42% of the volume of global wine exports), such two-way trade has the potential to become larger as competitiveness in bottling commercial wines for multinational supermarkets alters across Europe.

For the small but growing number of local UK vignerons (who supply less than 0.5% of all domestic wine sales and less than 4% of sparkling wine sales), they are projected to sell less wine domestically because of reduced demand and export only a little extra (5% or 7 ML) abroad in 2025 with help from the pound’s devaluation. Overall their production is 3% higher in 2025 in the ‘large’ Brexit scenario (not taking into account the fact that their casual labour is likely to be more expensive under Brexit because of tighter restrictions on immigration).

EU27 wine exporters will export 150 ML or US\$1.2 billion less wine in 2025 thanks to Brexit, while exporters in the rest of the world will export 90 ML or \$630 million less in the ‘large’ Brexit case. The latter group of losing countries includes not only Chile and South Africa whose preferences into the UK market disappear but also other non-EU wine-exporting countries, notwithstanding the leveling of the playing field in the UK market for imported wine.

Finally, wine consumers in countries other than the UK are slightly better off, but only to the extent of about a 1.6% fall on average in their local currency price of the wine they purchase and an expansion of around 1.0% in the volume of wine they would consume in 2025 (in the ‘large’ scenario, or about half those magnitudes in the ‘small’ case). Overall world wine production and consumption are slightly less under Brexit, as we should expect with a rise in protectionism, so gains to non-UK consumers are more than outweighed by losses to UK consumers and non-UK producers.

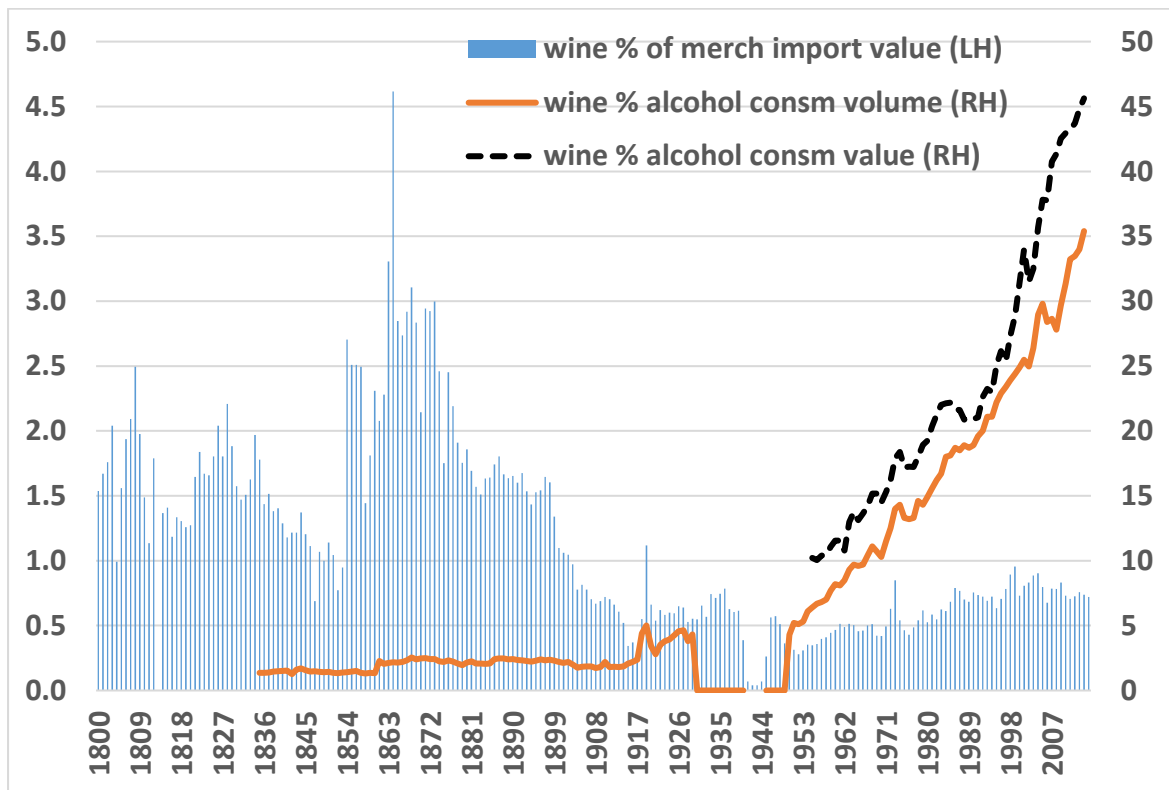
Clearly there will be great uncertainty for some time yet over the possible policy outcomes to flow from Brexit, and of their consequent impact on household disposable incomes in the UK and the value of the pound. Meanwhile, the above projections under explicit assumptions provide some idea of how wine markets might be affected by Brexit. In particular, they make clear that there could be non-trivial impacts on the domestic wine market, effects that are likely to be far larger than just the direct impact of changes in bilateral tariffs. The effects on wine in the rest of the world (negative for producers, slightly positive for consumers) are smaller in percentage terms, but the net effect of Brexit on the welfare of the world’s consumers and producers of wine as a whole will be negative unless and until new FTAs with major wine-exporting countries are agreed to and implemented.

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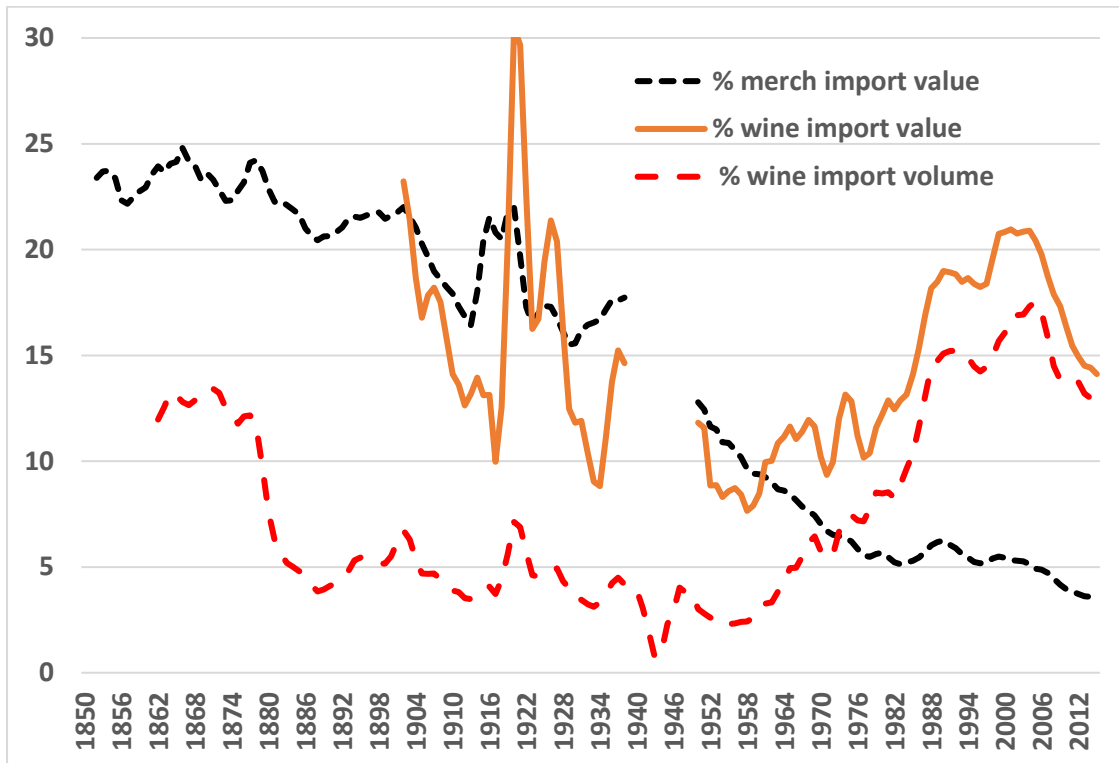
Figure 1: Wine's shares of UK merchandise import value and of volume and value of UK alcohol consumption,^a 1800 to 2015 (%)



^a Reliable wine consumption volume data are not available for the 1930s and 1940s, nor are value of alcohol consumption data pre-1955.

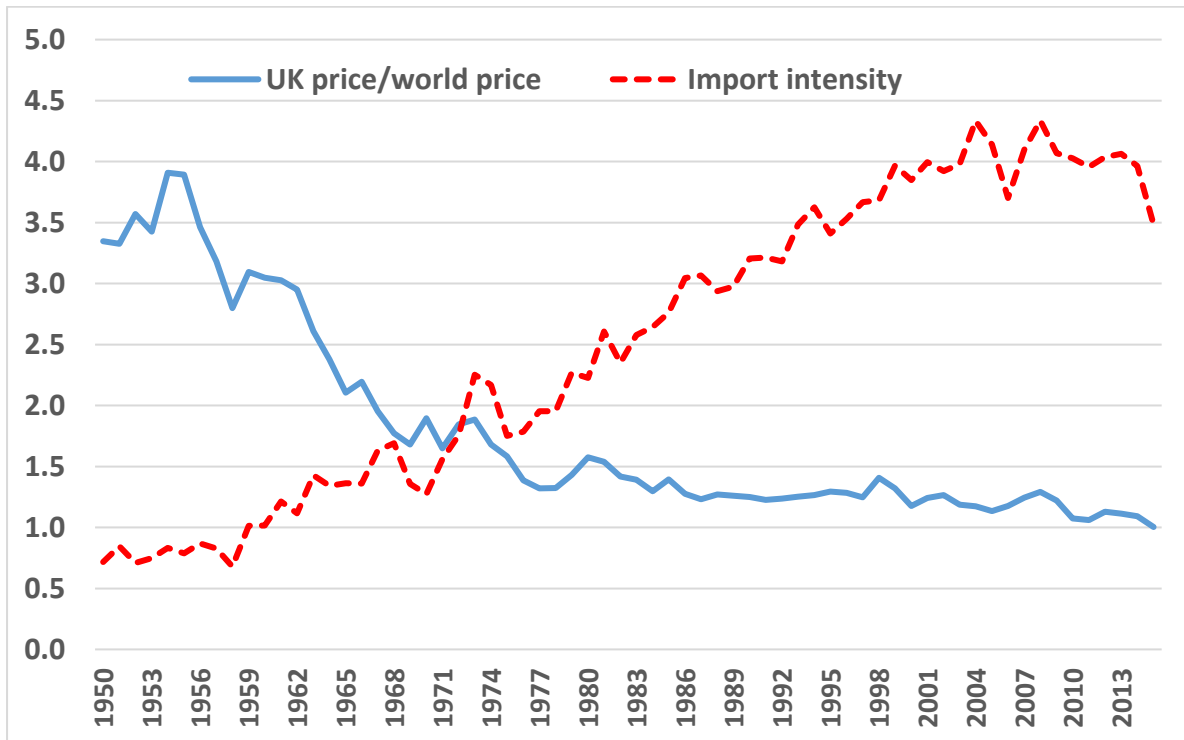
Source: Compiled from data in Anderson and Pinilla (2017) and Holmes and Anderson (2017).

Figure 2: UK shares of value of world merchandise imports and of value and volume of world wine imports, 1850 to 2015 (% , 3-year averages to year shown)



Source: Compiled from data in Anderson and Pinilla (2017).

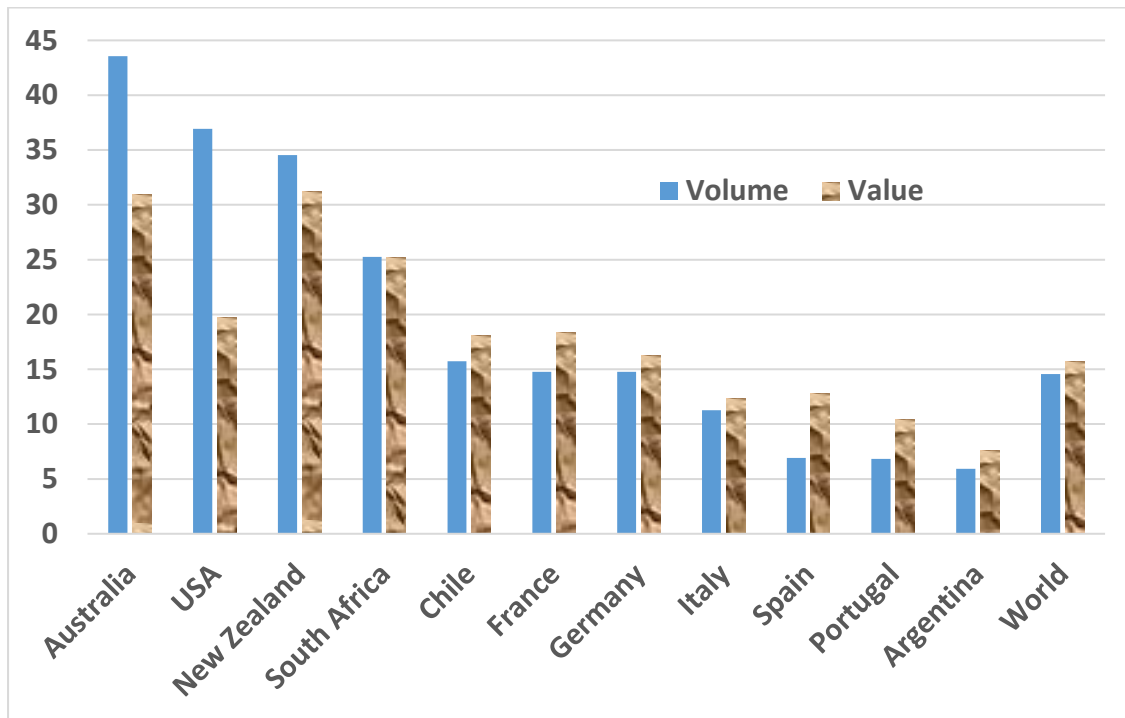
Figure 3: UK price relative to world price of wine imports, and UK wine import intensity,^a 1950 to 2015 (%)



^a Import intensity is defined as the UK's share of the value of global wine imports divided by UK's share of the world's total merchandise imports.

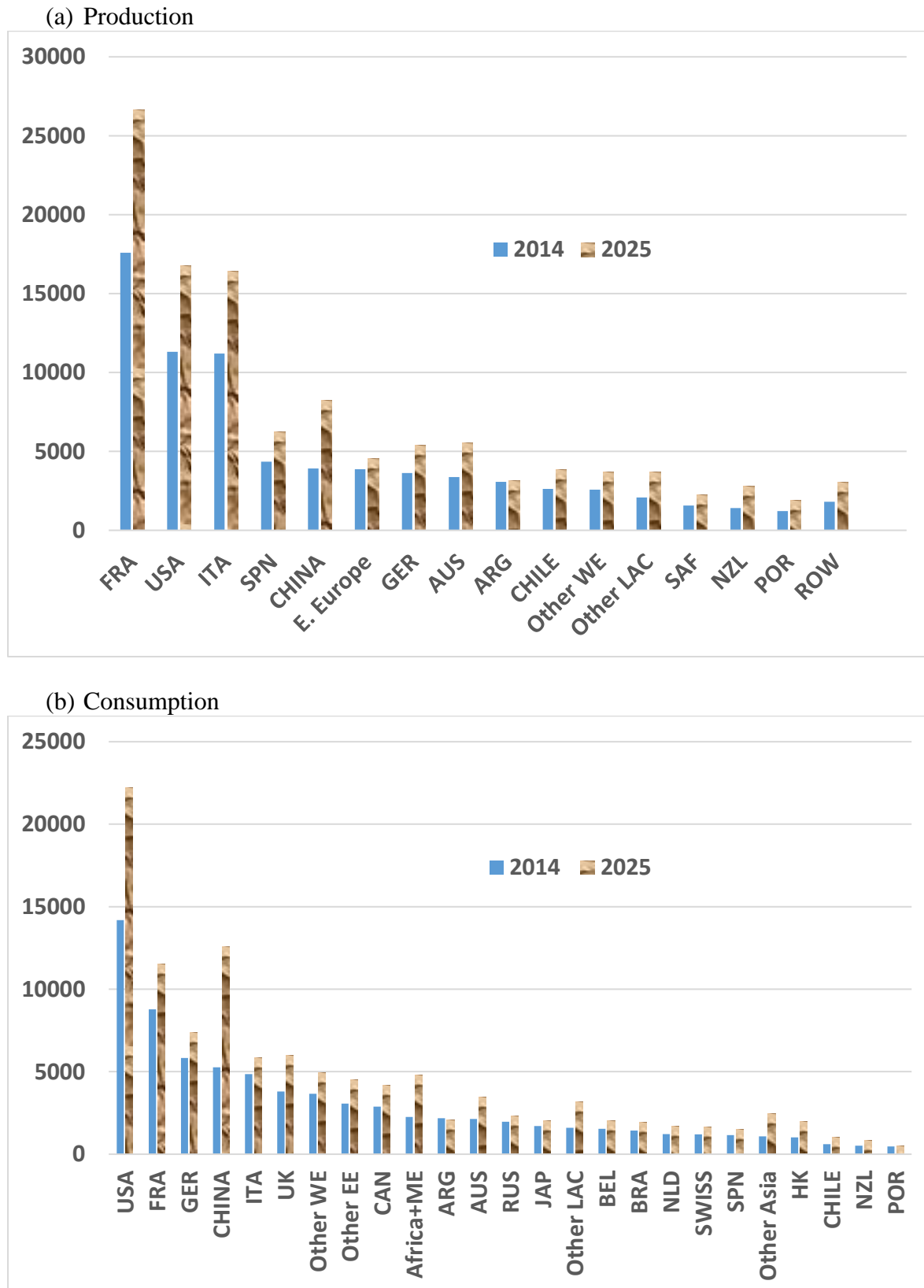
Source: Compiled from data in Anderson and Pinilla (2017).

Figure 4: Shares of UK in wine exports of key wine-exporting countries, 2010-14 (%)



Source: Compiled from data in Anderson and Pinilla (2017).

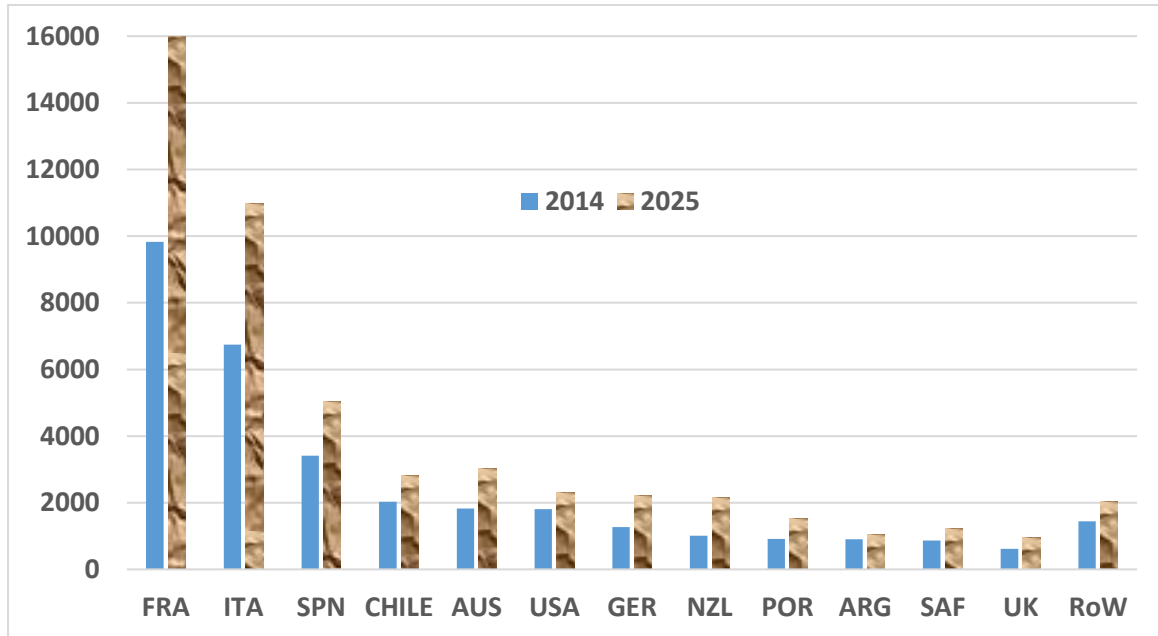
Figure 5: Value of wine production and consumption in key countries, 2014 and projected baseline for 2025 (2014 US\$ million at winery/wholesale pre-tax prices)



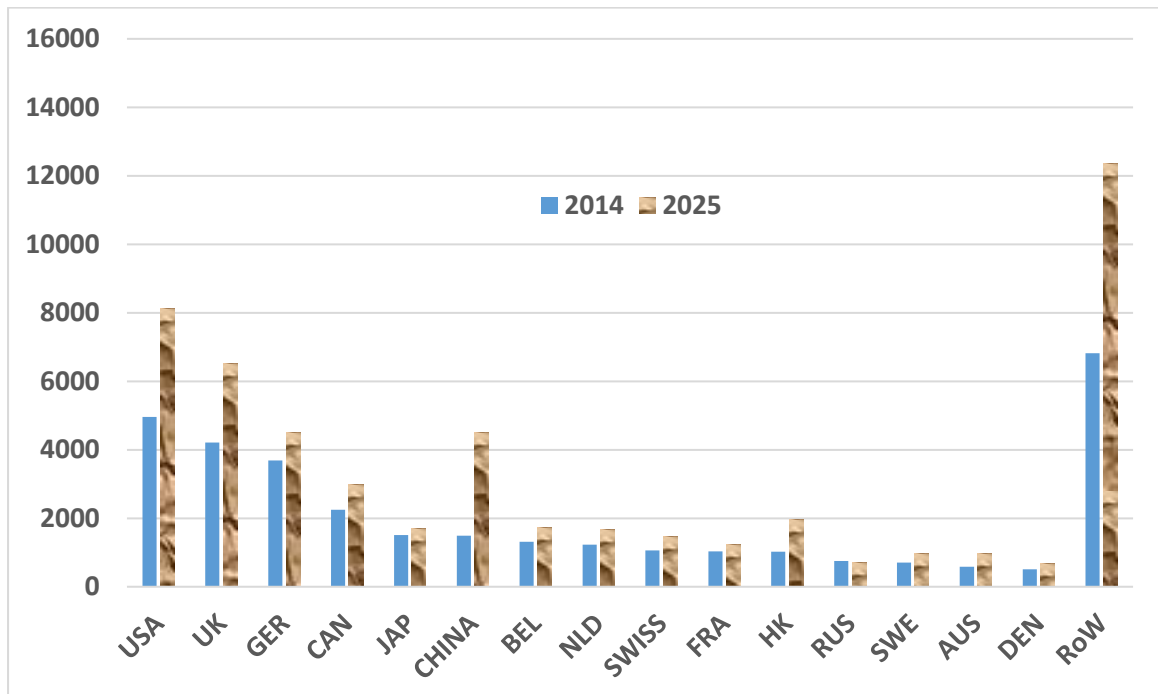
Source: Authors' model results.

Figure 6: Value of wine exports and imports, key wine trading countries, 2014 and projected baseline for 2025 (2014 US\$ million)

(a) Exports



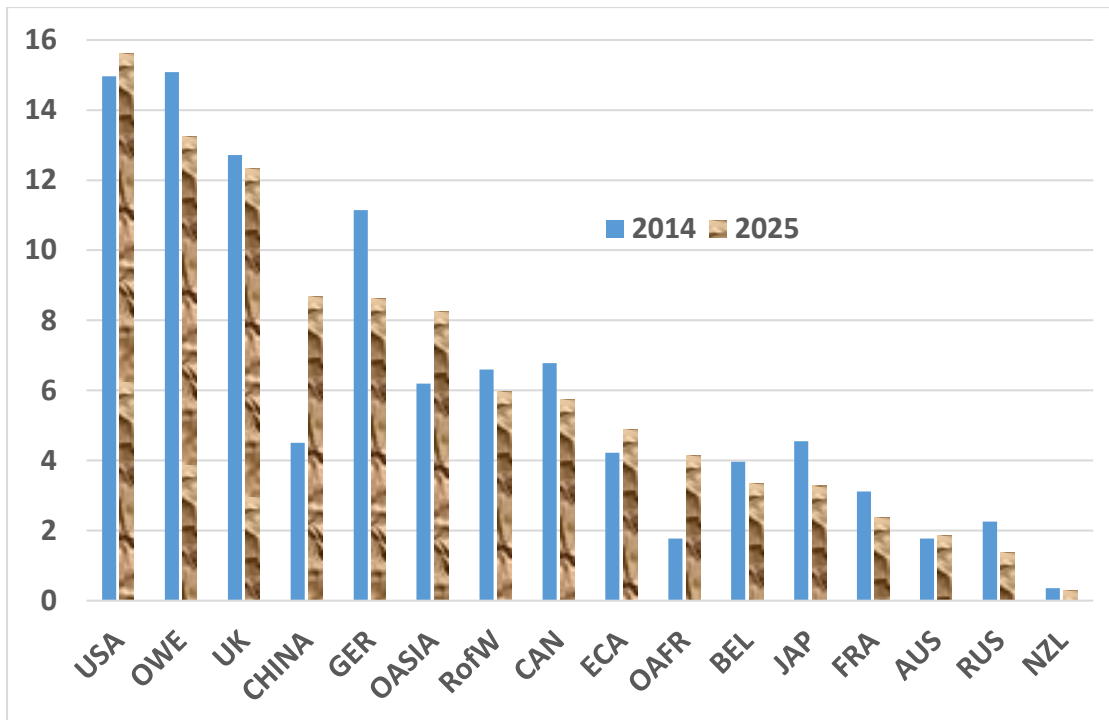
(b) Imports



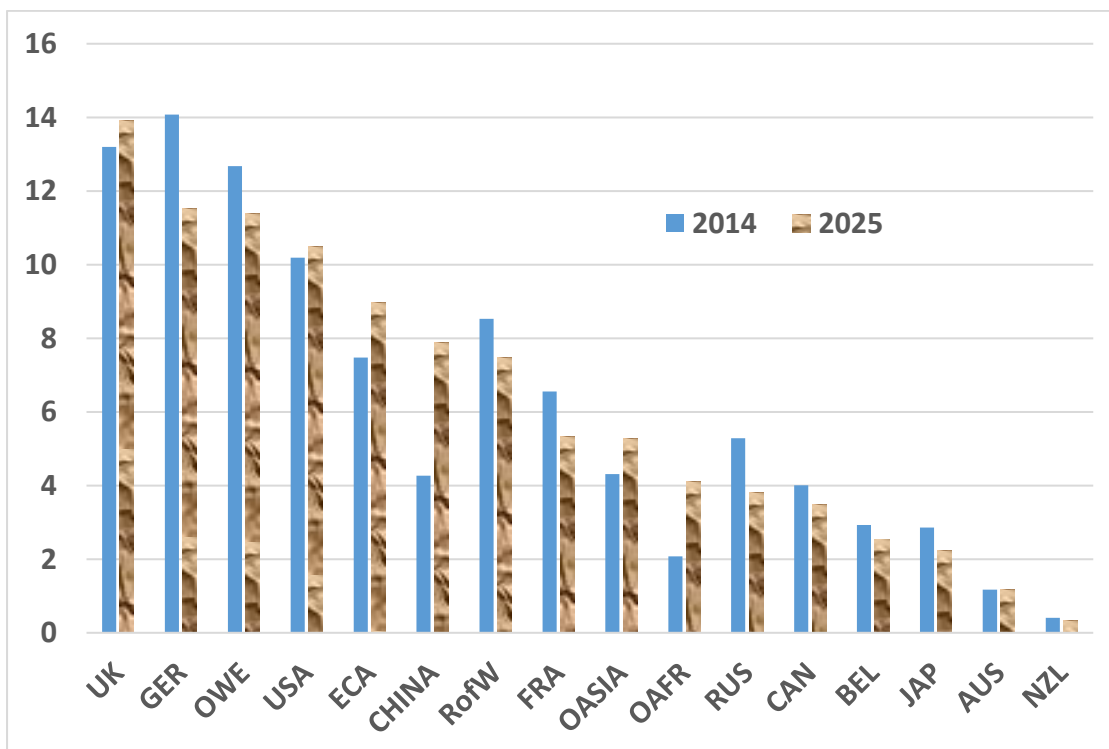
Source: Authors' model results.

Figure 7: National shares of global wine import value and volume, 2014 and projected baseline for 2025 (%)

(a) Value shares (%)

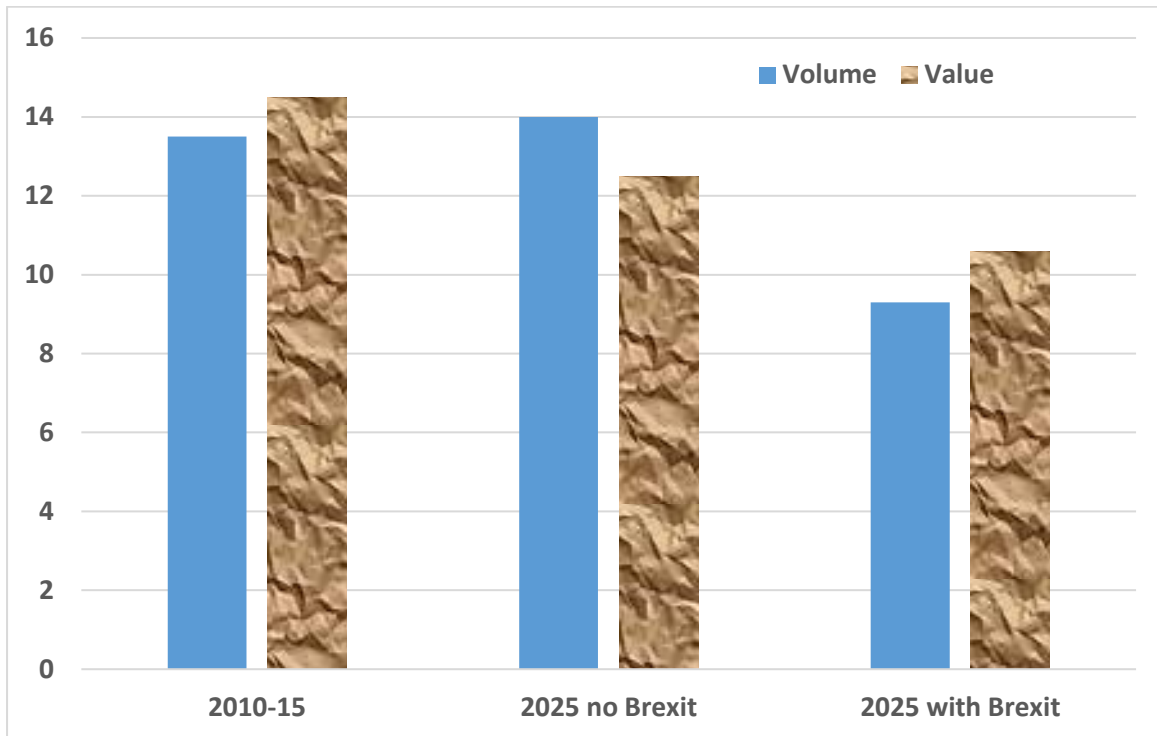


(b) Volume shares (%)



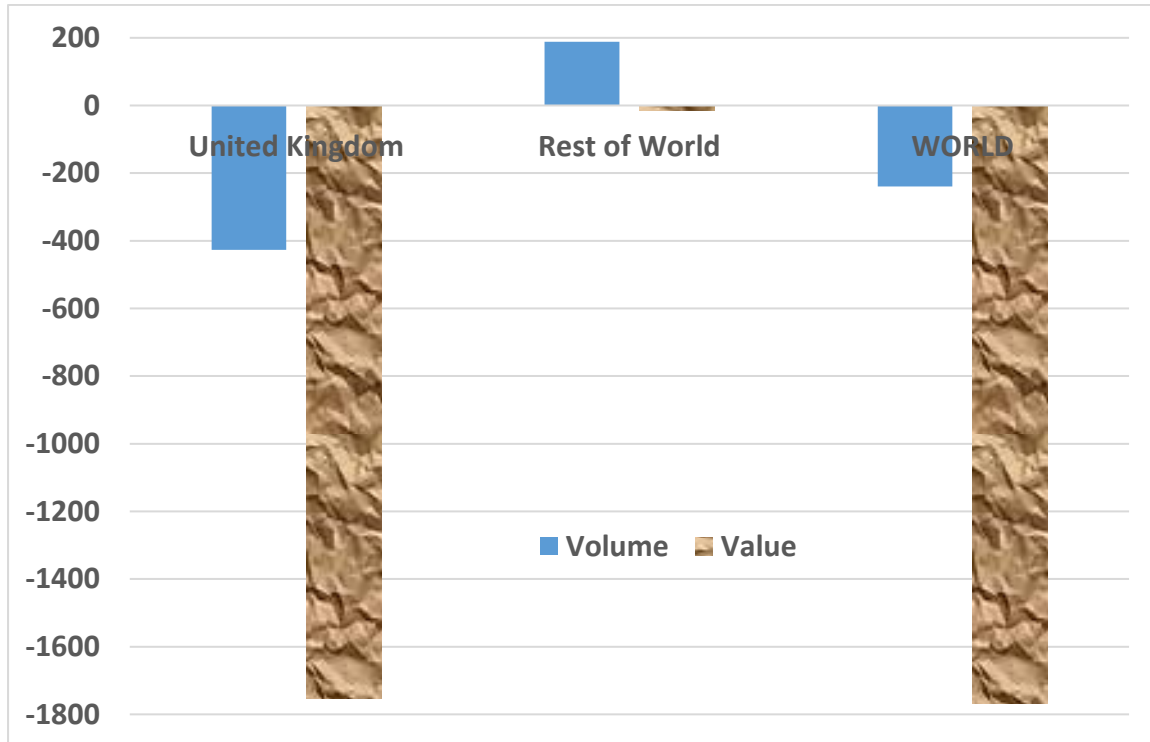
Source: Authors' model results.

Figure 8: UK shares of world wine imports, 2010-15 and projected to 2025 without and with 'large' Brexit (%)



Source: Anderson and Pinilla (2017) and authors' model results.

Figure 9: Difference in 2025 wine import volumes and values as a result of 'large' Brexit (ML and US\$ million in 2014 US dollars)



Source: Authors' model results.

Table 1: Shares of UK wine imports from today's key wine-exporting countries, 1675 to 2014 and projected 2025 without and with Brexit (%)

Volume:	France	Spain	Portugal	Italy	Germany	South Africa	Australia	United States	Chile	New Zealand	Argentina	Other countries	Total
1675-1696	25	42	23	1	9	0	0	0	0	0	0	0	100
1697-1862	5	26	49	1	3	2	0	0	0	0	0	14	100
1863-1919	26	26	22	0	0	0	2	0	0	0	0	25	100
1920-1940	12	18	32	0	0	5	14	0	0	0	0	20	100
1995:													
volume	32	10	3	18	14	3	7	3	2	1	0	7	100
value	43	9	4	13	10	2	8	3	2	1	0	5	100
2010-14:													
volume	15	9	1	17	4	8	21	10	8	4	1	2	100
value	35	8	2	15	4	4	11	5	6	6	1	2	100
<i>Exporters' share of world wine exports, 2010-14:</i>													
volume	15	20	3	22	4	4	7	4	7	2	3	9	100
value	30	9	3	19	4	2	6	4	5	3	3	12	100
2025 projected, no Brexit													
volume	18.8	18.8	2.6	20.7	4.5	4.5	6.5	4.3	6.4	1.7	2.0	9.2	100
value	32.3	10.0	3.0	21.8	4.4	2.3	5.8	4.4	5.4	4.1	2.0	4.5	100
2025 projected, with Brexit													
volume	19.0	18.8	2.7	20.8	4.3	4.4	6.6	4.2	6.3	1.7	1.9	9.3	100
value	31.1	9.6	2.9	21.0	4.1	2.4	5.9	4.4	5.5	4.1	2.0	7.0	100

Source: Compiled from data in Anderson and Pinilla (2017) to 1940, United Nations COMTRADE, <https://comtrade.un.org/data/> for 1995-2014, and authors' model results for 2025.

Table 2: Taxes on British wine imports, by source, 1660 to 1862 (UK Pounds per KL)

	France	Germany	Spain	Portugal	South Africa
1660-65	7	9	8	8	
1666-84	7	9	8	8	
1685-91	14	20	19	18	
1692-95	22	20	19	18	
1696	47	20	19	18	
1697-1702	51	25	23	22	
1703	52	27	24	23	
1704-44	55	31	26	25	
1745-62	63	35	30	29	
1763-77	71	39	34	33	
1778	79	43	38	37	
1779	84	41	40	39	
1780-81	92	49	44	43	
1782-85	96	51	47	46	44
1786	65	51	37	37	37
1787-94	47	51	32	32	37
1795	78	64	51	51	57
1796-97	108	92	71	71	77
1798	111	96	73	73	79
1799-1801	107	92	71	71	77
1802	112	97	74	74	80
1803	131	109	87	87	87
1804	142	117	95	95	95
1805-24	144	119	96	96	96
1825-30	78	50	50	50	25
1831-59	58	58	58	58	29
1860	32	32	32	32	32
1861	16	21	21	21	21
1862	11	26	26	26	26

Source: Summarized from Ludington (2013, Table A1).

Table 3: Import duties, excise duties and value-added tax affecting consumer prices of wine and other alcohol in the UK, 1 April 2017

Value-added tax	20%
MFN import duties on wine:	£ per litre
-bottled still wine, <13% alc.	0.114
-bottled still wine, 13-15% alc.	0.134
-bottled still wine, 15-18% alc.	0.162
-bulk still wine, <13% alc.	0.086
-bulk still wine, 13-15% alc.	0.105
-bulk still wine, 15-18% alc.	0.134
-sparkling wine	0.278
Weighted average^a	0.130
Excise duties on alcohol:	£ per litre
-still wine, <15% alc.	2.887
-still wine, 15-22% alc.	3.848
-sparkling wine, 5.5-8.5% alc.	2.795
-sparkling wine, 8.5-15% alc.	3.697
-spirits (assumed 40% alc.)	11.551
-beer (assumed 5% alc.)	0.954
Value-added tax on alcohol	20%

^a Assumes one-third of UK wine imports arrive in bulk and half have less than 13% alcohol, and one-tenth of imports are sparkling.

Source: HM Revenue, <https://www.gov.uk/government/publications/alcohol-duty-rate-changes> for excise duties and VAT, accessed 9 April 2017, and Wine Australia (2015) for import duties, converted at the 2016 average exchange rate of £0.740634 per Euro.

Table 4: Difference in 2025 projected volume and value of wine imports by the United Kingdom and the rest of the world as a consequence of Brexit (ML and 2014US\$ million, 'large' scenario)

	Volume (ML)					Value (US\$ million)				
	NP + CP ^a	Super Pr ^b	Sparkling	TOTAL	%	NP + CP ^a	Super Pr ^b	Sparkling	TOTAL	%
<i>ΔUK imports due to:</i>										
Lower incomes	-198	-20	-29	-247	58	-644	-253	-234	-1131	65
Lower pound	-70	-10	-14	-93	22	-248	-127	-102	-476	27
Higher tariffs	-71	-1	-16	-87	20	-110	-8	-24	-143	8
TOTAL	-339	-31	-58	-427	<i>100</i>	-1001	-388	-360	-1750	<i>100</i>
<i>% diff. from base</i>	<i>23</i>	<i>32</i>	<i>33</i>	<i>25</i>		<i>24</i>	<i>32</i>	<i>32</i>	<i>27</i>	
<i>% of total cuts</i>	<i>79</i>	<i>7</i>	<i>14</i>	<i>100</i>		<i>57</i>	<i>22</i>	<i>21</i>	<i>100</i>	
ΔROW net imports	143	21	25	189		230	143	-181	192	
ΔWORLD TRADE	-195	-10	-34	-239		-763	-246	-543	-1552	

^a Non-premium plus Commercial Premium still wines ^b Super-premium still wines

Source: Authors' model results.

Table 5: Difference in 2025 bilateral wine import volumes and values from key exporters by the UK and rest of the world (RoW) as a result of Brexit (ML and 2014US\$ million)^a

(a) 'large' scenario

	Volume (ML)				Value (US\$m)			
	UK	RoW	WORLD	(%)	UK	RoW	WORLD	(%)
EU27	-287	136	-150	(-1.7)	-1187	-5	-1192	(-3.1)
Chile	-59	35	-25	(-3.0)	-169	31	-138	(-4.8)
Sth. Africa	-53	35	-18	(-3.2)	-105	20	-85	(-6.7)
USA	-7	-6	-13	(-2.4)	-75	-40	-115	(-5.0)
Australia	-4	-3	-7	(-0.9)	-25	-65	-90	(-3.0)
Argentina	-3	-9	-12	(-4.8)	-16	-39	-55	(-5.2)
NewZealand	-11	9	-2	(-0.9)	-162	71	-91	(-4.3)
Others	-2	-10	-12	(-0.2)	-11	-52	-63	(-4.4)
WORLD	-427	187	-240	(-1.9)	-1750	-79	-1829	(-3.5)

(a) 'small' scenario

	Volume (ML)				Value (US\$m)			
	UK	RoW	WORLD	(%)	UK	RoW	WORLD	(%)
EU27	-178	82	-96	(-1.2)	-692	-43	-736	(-1.9)
Chile	-46	28	-18	(-2.4)	-128	36	-91	(-3.2)
Sth. Africa	-43	29	-14	(-4.2)	-82	23	-59	(-4.7)
USA	1	-6	-5	(-1.1)	-23	-28	-51	(-2.2)
Australia	5	-10	-5	(-0.6)	19	-56	-38	(-1.3)
Argentina	0	-6	-6	(-2.6)	-3	-25	-29	(-2.7)
NewZealand	-5	4	-1	(-0.6)	-80	34	-46	(-2.2)
Others	0	-9	-9	(-0.1)	-1	-33	-34	(-2.4)
WORLD	-266	112	-154	(-1.3)	-991	-92	-1083	(-2.1)

^a Numbers in parentheses are the percentage difference between the Brexit and baseline scenarios for 2025 projected wine import volumes or values by source.

Source: Authors' model results.

Appendix Table A1: Cumulative consumption and population growth rates and changes in the real exchange rate (RER) relative to the US dollar, 2014 to 2025 without Brexit (%)

	Aggregate				Aggreg.		
	consumption	Pop'n	RER		consm	Pop'n	RER
France	18	4	-11	Australia	35	11	-17
Italy	11	2	-9	New Zealand	32	9	-26
Portugal	14	0	-9	Canada	27	8	-18
Spain	26	8	-9	United States	31	8	0
Austria	19	4	-7	Argentina	7	10	109
Belgium	20	7	-9	Brazil	16	8	-29
Denmark	22	2	-9	Chile	55	8	-2
Finland	21	3	-7	Mexico	42	12	-8
Germany	14	-2	-11	Uruguay	45	3	1
Greece	22	-1	-14	Other L. Am	60	10	-5
Ireland	42	12	-9	South Africa	36	12	-1
Netherlands	21	4	-9	Turkey	50	8	20
Sweden	24	9	-13	North Africa	53	11	0
Switzerland	18	8	-6	Other Africa	109	18	84
United Kingdom	32	6	1	Middle East	52	18	-12
Other W. Europe	21	10	-1	China	79	3	5
Bulgaria	41	-7	7	Hong Kong	42	3	2
Croatia	20	-2	-1	India	134	13	17
Georgia	35	0	23	Japan	11	-3	-24
Hungary	25	-3	-11	Korea	38	1	-9
Moldova	49	-11	13	Malaysia	62	15	-16
Romania	45	-4	22	Philippines	75	18	7
Russia	18	-2	-8	Singapore	44	21	-22
Ukraine	22	-5	14	Taiwan	29	1	-13
Other E. Europe	40	-5	48	Thailand	47	3	-9
				Other Asia	99	10	10

Source: Authors' compilation from projections by various international agencies and from global economy-wide modeling by Anderson and Strutt (2016).