Cumulative effects of Brexit and other UK and EU-27 bilateral free-trade agreements on the world's wine markets

Anderson, Kym and Wittwer, Glyn (2018) Cumulative effects of Brexit and other UK and EU-27 bilateral free-trade agreements on the world's wine markets. World Economy, 41 (11). pp. 2883-2894. ISSN 0378-5920

Cumulative Effects of Brexit and Other UK and EU27 Bilateral FTAs on the World's Wine Markets

I. INTRODUCTION

Over the past six decades, 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 wine consumers are concerned about the UK's planned withdrawal from the European Union (Brexit). Brexit is also attracting the attention of wine producers and consumers *outside* the UK, because the UK accounts for a major share of the world's wine imports. This product thus makes an ideal case study of the various impacts of the Brexit vote and follow-on consequences on a commonly purchased product.

The immediate trade-reducing and trade-diverting effects of altering bilateral import tariffs are the focus of standard comparative static economic theory of (withdrawal from) a customs union. But the process of exiting, establishing new trading arrangements and adjusting to the altered incentives is inherently uncertain and expected to spread over many years, and initially to slow the growth of UK incomes and devalue the pound. Therefore, one needs to begin with a projection of how wine markets would have looked without Brexit in several years and then show how that projected baseline might change under various scenarios involving a replacement trade agreement between the UK and EU27 and subsequent FTAs with non-EU trading partners. We do that using a model of the world's wine markets projected to 2025.

The paper begins by summarizinges what trade theory would lead one to expect for a country leaving a customs union.[1] 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

[1] It was not yet certain as of midt end-20187 whether the UK would seek to form a UK-EU27 customs union. But that would require the UK to retain the EU's tariff policy, continue to allow freedom of movement of labour, and remain under the European Court of Justice – none of which Brexiteers want. We therefore ignore this possibility and, following Rollo et al. (2016) and Smith (2017), assume that the UK will commit to the current EU tariff schedule at the WTO in the first instance and then seek a free trade agreement (FTA) with the EU27. Other trading partners will want to wait and see what that FTA looks like before signing on to a bilateral FTA of their own with the UK. Meanwhile, the EU has been pursuing other bilateral trade agreements (see EC 2015), but most of those too are unlikely to be completed before the settling of a new trade arrangement between the UK and EU27.

projection can be altered to simulate the effects of Brexit and subsequent bilateral trade agreements on those markets. 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 additional adjustments following Brexit. They are then compared with the effects of a multilateral agreement to remove all wine import tariffs. Unrealistic though the latter~~is~~ is, it exposes the far bigger ~~contributions to~~responses by wine producers and consumers that could emerge from a single multilateral undertaking than from several bilateral or regional FTAs. 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.

II. EXPECTED EFFECTS OF LEAVING A CUSTOMS UNION

When countries join a customs 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 – see Viner 1950). If the overall consequence of joining the union is trade-liberalizing for a member, its real income is likely to rise. 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 (and its real income is likely to fall, assuming the leaver's tariff rates are not reduced). 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 enjoy a free trade agreement (FTA) with the union. Of ~~greatest~~ significance to wine are the EU's FTAs with Chile and South Africa (although there are more than 30 other bilateral or regional FTAs with the EU that the UK may wish to replicate after its exit).

How large the 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~~ that its society would not tolerate, at least not without major compensation packages. But both groups agree that a new trade policy ~~which~~ that sets most-favored-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 any other country. 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 all but one of the Brexit scenarios examined below, we assume this will be the new UK trade policy commitment to WTO members, and that subsequent negotiations for preferential arrangements will take years, and any consequent agreements with the EU and others will be gradually implemented after that.

The impact of leaving a highly integrative customs union on wine markets comes not only from tariff changes, however. Also relevant are any effects the uncertainty associated with the decision to leave has on real UK incomes and the value of the pound. If the UK were to move to free trade on all products (the Hong Kong option), its per capita income could eventually rise, but only after considerable adjustment. Should instead the UK commit to the current EU tariff schedule at the WTO in the first instance, as we assume below, then its per capita income growth rate and the pound's exchange rates almost certainly will be lower for some time – at least until new trade agreement negotiations with the EU27 and others are sufficiently advanced as to restore investor and consumer confidence in the UK economy. Support for that notion was provided initially by Campos (2016). A more-comprehensive assessment of macroeconomic effects by Dhingra et al. (2017), using a general equilibrium model, estimates welfare losses for the average UK household of 1.3% if the UK remains in the EU's Single Market (a softer Brexit than we consider below) and 2.7% if the UK leaves the Single Market (a 'hard' Brexit). When the dynamic effects of Brexit on productivity are taken into account, those estimates more than treble to between 6.3% and 9.4% per capita, partly via falls in foreign investment. (See also Born et al. 2017, Emerson et al. 2017, Oberhofer and Pfaffermayr 2017, and Sampson 2017.)

The assumed adverse macroeconomic effects of Brexit will add to the initial impact of altered wine tariffs on aggregate wine consumption in the UK and hence on its bilateral trades in wine. They will make the loss of wine 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. That is, even countries currently discriminated against by the EU28's wine trade policy may be worse off because of Brexit if the adverse macroeconomic effects outweigh the positive trade-diverting effects on them.

III. GLOBAL WINE MARKETS MODEL AND DATABASE

We use a model of the world's wine markets summarized in Anderson and Wittwer (2013). It is a partial equilibrium model that follows the theory of computable general equilibrium (CGE) models (Dixon et al. 1982). Unlike the CGE approach, the model depicts the input structures and sales patterns only of the grape and wine sectors, which comprise a small fraction of economic activity in wine-producing nations.

Consumers follow a linear expenditure function within the model, although aggregate consumption is assumed to be exogenous, given the small budget share of wine in total consumption. The model includes an~~ling includes~~ expenditure function so as to project~~ions~~ markets to 2025, since this~~. This~~ requires projecti~~o~~n~~gs of~~ aggregate consumption growth~~,~~ with a distinction between fast~~-~~growing economies such as China and other emerging economies relative to slower~~-~~growing Western economies (see Appendix Table ~~A~~1), with a taste swing towards higher~~-~~quality wines and away from lower~~-~~quality wines and provision for higher~~-~~quality wines to have higher income elasticities than lower~~-~~quality wines. The linear expenditure system and provision for taste swings as formulated in the theory of the World Wine Model enable~~s~~ us to capture each of these attributes.

Wine from different national origins is assumed to be imperfectly substitutable, following the Armington (1969) assumption. The model is implemented using GEMPACK software (Harrison et al. 2016).

The World Wine Model disaggregates wine markets into four types, namely non-premium, commercial-premium and super-premium still wines, and sparkling wine.[2] There are two types of grapes, namely 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. In the model's database the world is divided into 44 individual nations and 7 composite geographic regions that capture all other countries. That database is calibrated to 2014, based on the comprehensive wine market volume and value data and trade and excise tax data provided in Anderson, Nelgen and Pinilla (2017). It is projected forward assuming

[2] 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.

Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman, Not Italic
Formatted: Font: Times New Roman
Formatted: Indent: First line: 1.27 cm, Line spacing: 1.5 lines
Formatted: Font: Times New Roman, Not Italic
Formatted: Normal, Indent: First line: 1.27 cm
Formatted: Line spacing: 1.5 lines

aggregate national consumption, population, and real exchange rates change between 2014 and 2025 to the extent shown in Appendix Table 1. The alternatives to that baseline also are projected to 2025. As for preferences, there is assumed to continue to be a considerable swing towards all wine types in China and a swing away from non-premium to premium wines in all other countries through to 2025. And in the 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.

Two alternative scenarios for the initial impact of Brexit are considered ('hard' and 'soft'). In those scenarios the rate of UK real GDP growth is only one-third or two-thirds as fast over the projection period (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 the model's core baseline projection.[3] In both Brexit scenarios it is assumed the UK applies the EU's external tariffs on wine at the end of the agreed transition period following the UK's formal triggering of Article 50.

We consider a 'soft' Brexit to be the result of the UK negotiating, signing, implementing and responding to, by 2025, a free trade agreement (FTA) with the EU27. We therefore modelled a subsequent scenario in which the pound and real incomes in the UK are as in our 'soft' initial Brexit scenario but also involving an FTA between the UK and the rest of the EU that removes the tariffs on wine in UK-EU27 trade.

Various additional bilateral FTAs are then assumed to be signed sequentially. Just prior to the Brexit decision, the EU announced it would be pursuing other bilateral trade agreements, with Australia and New Zealand as early possibilities (EC 2015). The UK too has signalled that it too will be looking to sign FTAs with non-EU trading partners as soon as it has settled a new trade arrangement with EU27. Again Australia and New Zealand have been mentioned as early possibilities (they account for one-fifth of the value of UK wine imports), as have Chile and South Africa (whose share is one-sixth, with all other non-EU suppliers accounting for just one-eighth of UK wine imports). Each of these FTAs may have some trade-creating effects, but none is likely to have significant positive macroeconomic effects to offset the adverse macro effects of the prolonged uncertainty introduced by Brexit. They will, however, have some trade-diverting effects that may offset each other, just as has

[3] The nominal US$ price of the pound in the fortnight following the Brexit vote on 23 June 2016 dropped 13% to US$1.30, and 16 months later the pound sat at a similar rate. Our choice of a low of 10% and a high of 20% aims to capture future possible rates while uncertainties remain. The average real wage in the UK fell in the first half of 2017, and projected real GDP growth during 2018-20 was revised down to 1.7% in the UK's latest Budget (HM Treasury 2017).

happened with recent bilateral FTAs between wine-exporting countries and three Northeast Asian countries (see Anderson and Wittwer 2015).

IV. HOW MIGHT BREXIT AFFECT WINE MARKETS BY 2025?

In the absence of Brexit, global wine production and exports are projected in the model's baseline from 2014 to 2025 to be consistent with past trends: the 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 real (2014 US$) value though, global wine output and consumption increase by about 50% as the average quality rises. The international trade projections are similar although a little larger, with the share of global wine 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. When sub-divided into fine wine (super-premium still plus sparking), 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 production (defined to be those between US$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 2nd place. France, Italy and Spain remain the three dominant exporters of wine in aggregate value. 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 in the absence of Brexit.

a. Initial impact of Brexit

As mentioned earlier, we consider two alternative scenarios to capture the initial effects of Brexit ('hard' and 'soft'). 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, and 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). In the first of these initial scenarios it is assumed the UK does not implement any new free trade agreements, particularly with the EU27, Chile and South Africa. The second ('soft') scenario is assumed to be more pertinent if and when an FTA between the UK and EU27 is agreed. Generally the results are about half as big in the 'soft' 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 'soft' results are not close to half the results shown for the 'hard' scenario.

As compared with the baseline scenario to 2025, in the 'hard' Brexit scenario the consumer price of wine in 2025 is ~~22~~16% higher in the UK in local currency terms (~~20~~10% because of real depreciation of the pound, ~~4~~8% 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 is 28% lower: 16% because of slower UK economic growth, ~~7~~9% because of real depreciation of the pound, and ~~5~~3% because of the new tariffs. Super-premium still wine sales are 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 in this 'hard' Brexit case. Under the 'soft' Brexit scenario, the consumer price of wine in 2025 would be 11% higher in the UK and its volume of 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 'hard' 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 'hard' 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 1). These aggregate trade impacts are a little more than half as large under the 'soft' 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 a 'hard' Brexit, because of the shrunken demand for all wines resulting from the lowered UK

incomes and their raised local price because of the devaluation 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 'hard' 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 are projected to be 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 a 'hard' Brexit, however, that value share would be a further 2 percentage points lower, and the volume share would be almost 5 points lower. Most of the trade effect of a 'hard' 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 'soft' Brexit numbers are a bit more than half these for a 'hard' Brexit.

The aggregate effect of a 'hard' Brexit on the market shares of various wine-exporting countries in the UK is almost indiscernible. 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 in the no-Brexit baseline 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 2 reveals that European, Chilean and South African wine exports are lowered by a 'hard' 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 'hard' 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 2.

A number of other points are worth making about Table 2. One is that Australia sells slightly more to the UK in the 'soft' Brexit scenario, rather than slightly less as in the 'hard' Brexit case. Evidently the negative income and price (devaluation) effects do not more than offset the positive trade-diverting effect on Australian exports to the UK of removing preferences in the 'soft' 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.

b. Subsequent impact of Brexit from a UK-EU27 FTA

The next most-likely step in the Brexit process is for the UK to negotiate a new trade arrangement with the EU27. We therefore assume that a UK-EU27 FTA with free bilateral wine trade is implemented and adjusted to by 2025, and that progress toward that end occurs soon enough that the adverse macroeconomic shocks from the initial impact of uncertainty over the Brexit process are confined to those assumed in our 'soft' scenario outlined above.

This subsequent development in the Brexit process would reverse the sign of most of the initial effects of Brexit by 2025, but be only a partial offset to them because of our assumption of lost growth in the initial years of uncertainty. (The longer it takes before this FTA is finalized and implemented, the longer will the estimated initial adverse effects persist and so the larger will be the cumulative cost of Brexit to UK wine consumers and to grape and wine producers in wine-exporting countries.)

Table 3 summarizes the subsequent trade effects for 2025. It suggests that only one-sixth of the loss in volume and one-twelfth of the loss in value of world trade in wine from the initial 'soft' impact would be restored. Most of that improved outcome is because of recovered imports from EU27, commensurate with the latter's high share of UK imports (52% by value in 2013-14).

This subsequent (FTA) step in the Brexit process thus can be expected to restore by 2025 only a little of the initial adverse effects in the UK of the Brexit vote. The boost to

world wine trade of just $84 million from this FTA is small because the EU's tariff on wine is so small (a weighted average of 13 pence per litre). As is evident from the final column of Table 1, the tariff itself is a very minor contributor to the adverse effect of Brexit, compared with the macro effects.

V. EFFECTS OF NEW BILATERAL FTAs WITH NON-EU COUNTRIES

The signing of new trade agreements affecting wine trade will not end with just the UK-EU27 FTA. While President Trump has ruled out the planned Trans-Atlantic Trade and Investment Partnership (TTIP) between the EU and US, the EU has signaled it wants other bilateral FTAs, including with Australia and New Zealand. So too does the UK, and it would also seek FTAs with other countries that currently have agreements with the EU, most notably Chile and South Africa in terms of wine trade importance. Meanwhile, in December 2017 an EU-Japan Economic Partnership agreement was finalized, which will see Japan's tariff on wine imports from the EU removed. In this section we examine the cumulative impact of such a sequence of FTAs on the value of wine exports from key countries and globally.

Bilateral EU27-Australia and EU27-New Zealand FTA agreements add about half as much again to the global trade increase due to the UK-EU27 FTA. Most of that extra benefit is enjoyed by the signing partners – more than offsetting their loss from the UK-EU27 FTA – while a small additional loss of sales is imposed on other exporters (columns 1 and 2 of Table 4).

When new bilateral FTA agreements are then implemented between the UK and four Southern Hemisphere exporters, global exports expand a little further, benefitting not only Australia and New Zealand but also Chile and South Africa but at the expense of exporters in the EU27 and the US (column 3 of Table 4).

The new EU-Japan Economic Partnership agreement further boosts global wine exports, but in this case virtually all of that benefit is enjoyed by EU27 exporters while other wine exports lose a little from this new preferential arrangement (column 4 of Table 4).

All of these prospective FTAs, even including the UK-EU27 FTA, raise the value of world wine trade in 2025 by less than 0.5% compared with the original baseline projection for 2025. This is because the gross trade creation of each FTA is reduced by considerable trade diversion, whereby one exporter's gain is largely at the expense of other exporting countries.

To see how close those FTAs get the world to free international trade in wine, we also ran a scenario in which all import tariffs on wine are removed multilaterally. The results of that scenario are reported in the final two columns of Table 4. Clearly the gains are far greater, and far more evenly spread among wine exporters, when all tariffs are removed simultaneously rather than just a few being removed preferentially. The value of world wine trade would be 7% greater in 2025 with all wine tariffs eliminated, which is sixteen times the cumulative increase from the above-listed sequence of FTAs.

VI. CAVEATS AND CONCLUSIONS

The above simulations are just a few of many scenarios that could be modelled following the Brexit vote in June 2016. 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).

We have assumed above that no changes are made to alcohol excise duties in any country, including the UK following Brexit, when in fact they are scheduled to be progressively raised with inflation in the UK and some other countries. They may be raised in various countries for health reasons too, and possibly raised even more for wine relative to spirits and beer in the UK to offset the opposite effects of Brexit on those two domestic industries. Even without a change in relative consumer tax rates of beverages, consumption of local beers and spirits are likely to rise relative to wine consumption because of Brexit.

Brexit will be costly initially to UK consumers of wine (and of many other tradable products), because the domestic retail price in local currency tax-inclusive terms will be higher than otherwise and the volume of wine consumed domestically will be lower unless and until a UK-EU27 FTA comes into force. Even if such an FTA does get signed, ratified by all 28+ parliaments and implemented by 2025, the slower income growth in the interim will mean a smaller UK wine market in 2025. 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 initial impact is because of higher import tariffs; most important is the assumed fall in UK real incomes relative to what they would have been if the UK vote in June 2016 had been to remain in the Single Market. A fall in real incomes will dampen growth in consumption of other beverages also.

Even with a UK-EU27 FTA in place, EU27 wine exporters are projected to export US$625 million less wine in 2025 thanks to Brexit, Chile and South Africa to export $158 million less wine, Australia and New Zealand export $93 million less, and Argentina and the United States $92 million less.

There will be great uncertainly for some time yet over the possible policy outcomes to flow from Brexit, and of their consequent sequential impacts on UK household disposable incomes, foreign exchange rates, and bilateral wine tariffs. Meanwhile, the above projections under explicit assumptions provide some idea of how wine markets might be affected by the most-likely first two stages of the Brexit process (agreeing on a new tariff schedule at the WTO, and agreeing to and implementing a UK-EU27 FTA). In particular, they make clear that there could be non-trivial initial adverse impacts on the domestic wine market, effects that are likely to be much larger than just the direct impact of changes in bilateral tariffs. In any event, the net effect of Brexit on the welfare of the world's consumers and producers of wine as a whole will be negative not just initially but permanently unless new trade policy commitments by the UK with major wine-exporting countries are sufficiently more liberal than current arrangements.

As for the gains to wine producers and consumers that could emerge from a single multilateral undertaking to remove all import tariffs on wine, they would be even greater if that multilateral agreement involved liberalizing all product markets and thus boosting global incomes. Unfortunately, however, the world's leaders seem disinterested in any such undertaking at present, as witnessed in the lack of any substantive communique ~~to come out of~~resulting from the WTO's biennial Trade Ministerial Meeting in Buenos Aires in December 2017.

REFERENCES

Anderson, K. and Nelgen, S. (2011). *Global Wine Markets, 1961 to 2009: A Statistical Compendium*. Adelaide: University of Adelaide Press. Also freely available as an e-book at www.adelaide.edu.au/press/titles/global-wine

Anderson, K., Nelgen, S. and Pinilla, V. (2017). *Global Wine Markets, 1860 to 2016: A Statistical Compendium.* Adelaide: University of Adelaide Press. Also freely available as an e-book at www.adelaide.edu.au/press/

Anderson, K. and Pinilla, V. (with the assistance of A. J. Holmes) (2017). *Annual Database of Global Wine Markets, 1835 to 2016.* Wine Economics Research Centre, University of Adelaide, at www.adelaide.edu.au/wine-econ/databases/

Anderson, K. and Strutt, A. (2016). Impacts of Asia's rise on African and Latin American trade: Projections to 2030. *The World Economy* 39(2): 172-94, February.

Anderson, K. and Wittwer, G. (2013). Modeling global wine markets to 2018: Exchange rates, taste changes, and China's import growth. *Journal of Wine Economics* 8(2): 131-58.

Anderson, K. and Wittwer, G. (2015). Asia's evolving role in global wine markets. *China Economic Review* 35: 1-14, September.

Armington, P. A. (1969). A theory of demand for products distinguished by place of production. *IMF Staff Papers* 16: 159-78.

Born, B., G.J. Müller, M. Schularick and P. Sedlácek (2017). The economic consequences of the Brexit vote. DP12454, Centre for Economic Policy Research, London, November.

Campos, N. F. (2016). Lousy experts: Looking back at the *ex ante* estimates of the costs of Brexit. Ch. 3 in R. E. Baldwin (ed.) *Brexit Beckons: Thinking Ahead by Leading Economists*. VoxEU.org eBook, London: CEPR.

Dhingra, S., H. Huang, G. Ottaviano, J.P. Pessoa, T. Sampson and J. Van Reenen (2017). The costs and benefits of leaving the EU: Trade effects. *Economic Policy* 32(92): 651–705, October.

Dixon P., Parmenter, B., Sutton, J. and Vincent, D. (1982). *ORANI: A Multisectoral Model of the Australian Economy.* Contributions to Economic Analysis 142, Amsterdam: North-Holland.

EC (2015). *Trade for All: Towards a More Responsible Trade and Investment Policy.* Brussels: European Commission.

Emerson, M., Busse, M., Di Salvo, M., Gros, D. and Pelkmans, J. (2017)., An Assessment of the Economic Impact of Brexit on the EU27, IP/A/IMCO/2016-13, Study for the European Parliament, Brussels, March. http://www.europarl.europa.eu/studies

Harrison J., Horridge, M., Jerie, M. and Pearson, K. (2014). *GEMPACK Manual.* Melbourne: GEMPACK Software, ISBN 978-1-921654-34-3.

HM Treasury (2017). *Spring Budget 2017.* London: HM Treasury, March.

Oberhofer, H. and M. Pfaffermayr (2017). Estimating the Trade and Welfare Effects of Brexit: A Panel Data Structural Gravity Model. CESifo Working Paper No. 6828, Munich, December.

Rollo, J., Borchert, I., Dawar, K., Holmes, P. and Winters, L. A. (2016). The World Trade Organisation: A safety net for a post-Brexit UK trade policy? Briefing Paper 1, UKTPO, University of Sussex, July. http://blogs.sussex.ac.uk/uktpo/files/2017/01/Briefing-paper-1-final-1.pdf

Sampson, T. (2017). Brexit: The Economics of International Disintegration. *Journal of Economic Perspectives* 31(4): 163-84, Fall.

Smith, A. (2017). Brexit: Hard truths and hard choices. UKTPO blog, 19 June, at https://blogs.sussex.ac.uk/uktpo/2017/06/19/brexit-hard-truths-and-hard-choices/

Viner, J. (1950). *The Customs Union Issue*. New York: Carnegie Endowment for International Peace.

Table 1: Difference in 2025 projected volume and value of wine imports by the United Kingdom and the rest of the world as a consequence of the initial Brexit shock (ML and 2014US$ million, 'hard' scenario)

	Volume (ML)					Value (US$ million)				
	NP + CP[a]	Super Pr[b]	Sparkling	TOTAL	*%*	NP + CP[a]	Super Pr[b]	Sparkling	TOTAL	*%*
ΔUK imports due to:										
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**	*100*	**-1001**	**-388**	**-360**	**-1750**	*100*
% diff. from base	*23*	*32*	*33*	*25*		*24*	*32*	*32*	*27*	
% of total cuts	*79*	*7*	*14*	*100*		*57*	*22*	*21*	*100*	
ΔROW net imports	141~~143~~	21~~21~~	25~~25~~	187~~189~~		-126~~230~~	129~~143~~	-83~~-181~~	-79~~192~~	
Δ**WORLD TRADE**	**-197~~-195~~**	**-10~~-10~~**	**-33~~-34~~**	**-240~~-239~~**		**-1127~~-763~~**	**-259~~-246~~**	**-443~~-543~~**	**-1829~~-1552~~**	

[a] Non-premium plus Commercial Premium still wines [b] Super-premium still wines

Source: Authors' model results.

Table 2: 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 initial Brexit shock (ML and 2014US$m)[a]

(a) 'hard' Brexit scenario

	Volume (ML)				Value (2014US$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)**

(b) 'soft' Brexit scenario

	Volume (ML)				Value (2014US$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.

Table 3: 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 implementing a UK-EU27 FTA (difference relative to initial 'soft' Brexit shock, ML and 2014US$ million)[a]

	Volume (ML)				Value (2014US$m)			
	UK	RoW	WORLD	('soft' w'out FTA)[a]	UK	RoW	WORLD	('soft' w'out FTA)[a]
EU27	67	-38	30	(-96)	169	-58	111	(-736)
Chile	-8	7	-1	(-18)	-27	22	-5	(-91)
Sth. Africa	-5	5	0	(-14)	-14	11	-3	(-59)
USA	-4	2	-1	(-5)	-16	6	-10	(-51)
Australia	-7	6	0	(-5)	-26	19	-7	(-38)
Argentina	-2	1	0	(-6)	-6	4	-2	(-29)
NewZealand	-1	1	0	(-1)	-6	4	-2	(-46)
Others	-2	2	0	(-9)	-6	8	2	(-34)
WORLD	**40**	**-13**	**27**	**(-154)**	**69**	**16**	**84**	**(-1083)**

[a] Numbers in parentheses are the world trade differences between the 'soft' initial Brexit scenario before the FTA is implemented and the baseline scenario, copied from columns 3 and 7 of Table 2(b).

Source: Authors' model results.

Table 4: Cumulative impacts of additional FTAs, and of multilateral free trade in wine, on the value of national and global wine exports in 2025 (difference relative to 'soft' Brexit with UK-EU27 FTA, in 2014 US$ million)

Extra FTAs: ***Exporter:***	EU27-ANZ FTA	EU27-ANZ FTA + UK-NW[a] FTA	EU27-ANZ FTA + UK-NW[a] FTA + EU27-Jap FTA	Global free wine trade	*(% above 2025 base)*
EU27	122	105	188	2137	*6%*
Australia + NZ	30	45	44	368	*8%*
Chile + S. Africa	-10	16	12	379	*10%*
USA	-11	-18	-24	219	*10%*
Rest of world	-1	3	3	451	*13%*
WORLD	**131**	**150**	**222**	**3553**	***7%***

[a] 'NW' includes Australia, NZ, Chile and South Africa

Source: Authors' model results.

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

	Aggregate consumption	Pop'n	RER		Aggreg. 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

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