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DP14388

**CONSUMER TAXES ON ALCOHOL: AN
INTERNATIONAL COMPARISON OVER
TIME**

Kym Anderson

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Centre for Economic Policy Research
33 Great Sutton Street, London EC1V 0DX, UK
Tel: +44 (0)20 7183 8801
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Abstract

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JEL Classification: D12, D62, E62, H23, I18, P46

Keywords: Consumer tax equivalents, Excise taxes, alcohol import tariffs

Kym Anderson - kym.anderson@adelaide.edu.au
Adelaide University and CEPR

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Author contact details:

Professor Kym Anderson
School of Economics, University of Adelaide, Adelaide SA 5005, Australia, and
Crawford School of Public Policy, Australian National University, Canberra ACT.
kym.anderson@adelaide.edu.au

Consumer Taxes on Alcohol: An International Comparison over Time

I. Introduction

Virtually all countries tax the domestic consumption of some if not all alcoholic beverages (in addition to regulating their consumption using numerous non-price mechanisms, see Meloni et al. 2019). However, the rates of taxation, and the types of tax instruments used, vary enormously between countries. Within each country they also vary between beverages, and often between qualities and styles of each beverage. For a comprehensive view of rates of taxation one needs to compare across countries not just for each product on its own but also relative to those for other alcohol beverages.

In times past these taxes were an important source of government revenue, but in today's more advanced economies the main justification offered for such taxes is to offset negative externalities that alcoholic drinking imposes on society (Sassi 2015; Griswold et al. 2018). Such externalities vary not only across countries but also across beverage types and across drinking/eating patterns (Baxter 2019). This ensures the impact of alcohol taxes on different types of households are very uneven given differences in consumer preferences, which evidently vary greatly both between and within countries (Holmes and Anderson and 2017, Anderson, Meloni and Swinnen 2018, Hart and Alston 2019, 2020).

The purpose of this paper is to provide a comparable set of estimates over time of pertinent tax rates to inform debate about their appropriate sizes and choice of instrument in each nation's policy setting. The findings also will assist modellers of alcohol markets and policies, by providing comparable measures of those tax rates for many countries.

The paper begins with an outline of the basic economics of alcohol taxation. It then explains various methodological issues involved in comparing tax rates across countries, beverage types and tax instruments. Several ways of presenting the rates are outlined before turning to the data themselves. Estimates of those various rates in 2008 and 2018 are presented for a wide range of high-income and middle-income countries. These are reported as ad valorem consumer tax equivalents (CTEs) for wine, beer and spirits, and changes over the past two decades. They encompass not

only wholesale sales taxes/excise taxes but also the consumer price effects of tariffs on imports. VAT/GST rates also are reported as a further contribution to beverage retail price differences across countries. The paper concludes by drawing implications of the findings for future rates of taxation of alcohol consumption as economies grow richer and develop a wider range of revenue-raising options.

II. The Economics of Taxing Alcohol: The Example of Wine¹

The simplest way of modelling the effects of consumer taxation of wine (or beer, spirits or any other tradable product) in a small open national economy is to use a partial equilibrium diagram, assume the country is a price-taking exporter, and examine the effects on such things as domestic prices, quantities consumed domestically and exported or imported, and national economic welfare. In Figure 1(a) it is assumed further that there are no externalities associated with producing, consuming or trading wine, so the marginal private and social benefits (MSB_f and MPB_f) coincide as do the marginal and social costs of domestic production (MSC_f and MPC_f). If P_f is the free-trade price then, in the absence of government intervention, O_fQ_f units are produced, O_fC_f units are consumed domestically and C_fQ_f is exported. An ad valorem tax on domestic consumers of 100t percent (or an equivalent volumetric tax) would lower domestic consumption (and raise exports) by $C_f'C_f$ units, raise government revenue by area acmn, but reduce consumer welfare by area admn. Hence there would be a net reduction in national economic welfare of area acd.

[Figure 1 about here]

Figure 1(a) may well apply to the fine wine market. Indeed it may understate the national welfare cost of such taxation if, as suggested by extensive reviews of the health science literature, moderate wine consumption can have net positive health externalities depending on the social setting. That possibility is ignored in Figure 1(a), where the demand curve is assumed to be unaffected by the consumer price of basic wine (zero elasticity of substitution between fine and basic wine).

The market for basic wine, by contrast, is illustrated in Figure 1(b), in which (i) the domestic demand curve (MPB_b) is more elastic than in Figure 1(a) because non-premium beer and spirits are assumed to be substitutes for basic wine, especially

¹ This section, and some of the 2008 data reported below, draw on Anderson (2010, 2014).

for binge drinkers simply wanting alcohol (see, e.g., Gallet 2007, Srivastava and Zhao 2010, Srivastava et al. 2014, Yang, Zhao and Srivastava 2016), and (ii) the marginal social benefit curve (MSB_b) is increasingly below MPB_b because of the negative externalities on society associated with excessive alcohol consumption.² If P_b is the free-trade price for basic wine then with no government intervention O_bQ_b units are produced, O_bC_b units are consumed domestically and C_bQ_b units are exported in this example. An ad valorem tax on domestic consumers of 100t percent would lower domestic consumption (and raise exports) of basic wine by $C_b'C_b$ units, raise government revenue by area $eijk$ and reduce consumer welfare by area $gijk$, but it would reduce the externality on the rest of the society by area $ighe$. Hence there would be a net improvement in national economic welfare of area ghe from this tax on basic wine.

If the tax on consumption of basic wine also applied to fine wine, the national welfare gain from the taxing of basic wine would be reduced by the welfare loss in the fine wine market, namely area acd in Figure 1(a). If both types of wine were taxed at the same ad valorem rate t (as in several countries, see below), the dollar tax per litre of wine or alcohol would be higher on the higher-priced fine wine and so increase the probability of a net loss from such a wine tax. The likelihood of an overall loss to society is higher the bigger are the ratios of P_f to P_b and C_f to C_b . One way to reduce that loss prospect is to have a lower ad valorem rate for fine wine but, if that is too politically difficult to introduce (e.g., because only richer people drink fine wine – see Srivastava and Zhao 2010), then a change from a common ad valorem tax to a common volumetric tax would be a more covert way of achieving a similar outcome.³

² It is common for analysts to represent the adverse social effects of excessive alcohol by raising the marginal cost curve. In the closed-economy framework of such analyses (e.g., Pogue and Sgontz (1989) and Kendel (1996)), that will generate the same optimal tax rate as is generated by including them as a reduction in national marginal benefit. In the small open economy case, however, it is domestic consumption, not production, that is generating the externality for the nation. Hence the need to represent that externality on the demand side of the diagram (Corden 1997).

³ The optimal rate of a volumetric tax would be difficult to determine even if the only reason for government intervention was to overcome the negative externalities associated with excessive/binge alcohol consumption. One reason is that the marginal net gain in Figure 1(b) from raising a tax on basic wine consumption has to be equated with the marginal net loss in Figure 1(a) from raising a tax on fine wine consumption. Britten-Jones, Nettle and Anderson (1987) show that both the slopes of the marginal benefit curves and the gap between the MSB_b and MPB_b curves affect that calculus. The gap between the MSB_b and MPB_b curves is not independent of other policy initiatives aimed at more-directly curbing adverse effects of excess alcohol consumption, such as information programs, enforcement of drink-driving laws, restrictions on advertising alcoholic beverages, liquor licensing laws that regulate on-premise consumption and ban sales to young people, and the extent of subsidies to health care. Another complexity is that the slope of the MPB curves depend on the elasticities of

The numerous factors affecting the supply and demand curves, especially the rates of tax on non-wine beverage consumption, vary across countries and over time. There is thus no reason in principle to expect the optimal wine tax rates to be the same across countries, or to change in the same way as national income growth, urbanization and other structural changes occur at different rates.

Also, the CTE in ad valorem (percentage) terms varies with the price of wine in those many countries with specific (volumetric) tax rates in place. If the specific tax is in local currency units per litre of beverage, the CTE per litre of alcohol also varies with changes in average alcohol content – which has been rising per litre of wine in recent years (Alston et al. 2015) – and with changes in exchange rates per US dollar.

Countries also differ in the extent to which they are ‘small’ in the sense of being price takers in the international market for wine or other beverages. Fine wines especially tend to be differentiated products, so a country’s export demand curve for them would be somewhat downward sloping, rather than horizontal at P_f as in Figure 1(a). Altering that assumption would not affect the above qualitative conclusions regarding the optimal consumer tax, but it would affect the outcome quantitatively for producers because the tax would shift more sales to the export market and thereby depress the price received for them. That means a tax reform that replaced a uniform ad valorem tax on all domestic wine consumption with a uniform volumetric tax (whose ad valorem equivalent was therefore higher than t for basic wine but lower than t for fine wine in Figure 1) would raise relative returns to producers of fine wine and hence encourage grapegrowers and winemakers to upgrade the quality of their products.

Consumer prices also could be raised by subsidizing wine exports, which is equivalent of a consumption tax and a domestic production subsidy at the same rate. In the absence of any positive production externalities, excessive production would be encouraged, adding to the welfare cost of government intervention in this market.

More commonly, countries that are net importers of wine (not shown in Figure 1) can and often do tax their consumers of alcohol with a tariff or non-tariff barrier to beverage imports. Like an export subsidy, an import tariff is the equivalent of a consumption tax and a domestic production subsidy. It is applied before any excise

substitution between wine and other alcoholic beverages. The position of the MPB curve is further to the right, the higher the taxes on such beverages as beer and spirits (and the lower the elasticities of substitution between wine and alternative stimulants such as illicit drugs).

tax is imposed on those imports. Where a nation's climate rules out any likelihood of stimulating domestic wine production, the tariff could serve as an exact substitute for a wine excise or sales tax.

The above analysis applies equally to beer and spirits, using Figure 1(a) for craft products and Figure 1(b) for standard products. Since production of both beer and spirits is not climate-dependent, use of trade instruments such as an import tariff is likely to encourage excessive production in addition to curtailing domestic consumption.

Most countries also now have a value-added or goods-and-services tax system (VAT/GST). That instrument is unlikely to discourage excessive alcohol consumption if the same rate applies to all consumer products, but it is a further contribution to differences across countries in beverage retail price.

III. Empirical Methodology

There are various ways to report consumer taxes on wine and other beverages. Since measures include ad valorem taxes as well as specific taxes (either of the beverage or of alcohol per litre), and since prices to which they apply and the alcohol content per litre of beverage vary between beverage types, it is helpful for comparing across countries and over time to present the wine CTEs in two formats: US dollars per unit of alcohol (to which changes in foreign exchange rates also have an influence), and as a percentage of the wholesale pre-tax price at representative price points and alcohol percentages. It is also helpful to express the taxes in relative terms, so we show as well the ratios of the tax on wine to the tax on beer and on spirits.

Specifically, we express the CTE at the following average wholesale pre-tax prices for still wines: non-premium (\$2.50 per litre), mid-range commercial premium (\$7.50 per litre) and super-premium (\$20 per litre). Taxes are often different for sparkling wine, so their CTE is expressed separately, at \$20 per litre. The alcohol content of wine in volume terms is assumed to average 12% in 2008 and 12.5% in 2018. Throughout, wine refers just to grape wine. Since rice wine has a higher alcohol content than grape wine (or beer), it is considered as part of spirits.

The beer and spirits industries are now following the wine industry in offering premium products at much higher prices than for standard products, and production of craft beer and craft spirits is booming in many countries, albeit from very low bases

(Garavaglia and Swinnen 2017; Swinnen and Briski 2017; Cockx, Meloni and Swinnen 2019). The premium portion of those industries is thus still relatively small in terms of volume of sales, so it is not considered separately in what follows. Rather, the focus is on just standard-quality beer and spirits, at representative wholesale pre-tax prices of \$2 and \$15 per litre of beverage, respectively. Their alcohol contents in volume terms are assumed to average 40% for spirits and 4% for beer in 2008 and 4.5% in 2018.

When the CTE is defined as the percentage by which the pre-tax wholesale price has been raised by beverage taxes, that ad valorem CTE would be the same at the retail level if the wholesale-to-retail margin (like the VAT/GST) was ad valorem. If in fact the ad valorem equivalent of those margins is inversely related to the product price, however, then our wholesale-level ad valorem CTE will be an overestimate of the impact on consumers at the retail level. Similarly, the tax per litre of alcohol is an underestimate of the specific tax at the retail level to the extent that the wholesale-to-retail margin is positively related to the product's price, and more so the higher the ad valorem VAT/GST rate.

An ad valorem estimate of the combined set of taxes paid by the retail consumer can be found as follows, assuming the domestic product is a close substitute for the imported product and the wholesale-to-retail margin is ad valorem:

$$\text{CTE} = (1 + m)(1 + t)(1 + v)$$

where m is the import tariff, t is the excise tax and v is the value added tax. This is the method used to generate Table 3 below.

IV. Data Sources

The primary sources for excise tax data are the European Commission (2008, 2018) and the OECD (2008, 2018), plus national government websites.⁴ Here the focus is on

⁴ <http://www.bir.gov.ph/taxcode/2041.htm>;
http://www.kerala.gov.in/dept_excise/rates_duties.htm;
www.mof.gov.sg/budget_2008/speech_p4/annexb-5.pdf;
<http://www.excise.go.th/tax/eng-totaltax.html#e1>;
http://www.customs.gov.my/index.php?option=com_docman&task=cat_view&gid=33&Itemid=191;
http://www.customs.gov.hk/eng/major_dutiable_freeport_e.html;
<http://www.sars.gov.za/home.asp?pid=4139>;
<http://china-customs.com/customs-tax/22/>;
<http://www.receita.fazenda.gov.br/aliquotas/DownloadArqTIPI.htm>;
www.sii.cl;

the latest data (2018) and on rates a decade earlier. Data on import tariffs are from the WTO (2019) for 2018 and from the World Bank (2019a) for earlier years.

Unfortunately we do not have access to the tariff equivalent of non-tariff import restrictive measures on these beverages. Export subsidies have been used in the recent past by the European Union (and in Australia in the inter-war period, see Anderson (2015, Table 20)), but they have been only a minor source of market intervention in the EU and so are ignored here.⁵ Some countries impose ad valorem import tariffs on beverages, while others impose specific taxes per litre of product or per litre of alcohol in the product. The specific rates are converted to ad valorem rates at specified prices and alcohol contents.

Excise taxes are shown in Appendix Tables A1 to A4. Import tariffs are in Appendix Table A5. Shares of each of four wine types in the volume of wine consumed in each country are shown in Appendix Table A6. Those shares are used to calculate the national weighted average tax on overall wine consumption. Shares of wine, beer and spirits in the total volume of alcohol consumption are provided in Appendix Table A7: they are used to calculate weighted averages of taxes on all alcohol. The VAT/GST and nominal exchange rates are in Appendix Tables A8 and A9, respectively.

V. Results

The full set of CTE estimates for the various beverages in 2008 and 2018, expressed both in dollars and in percentages, are shown in Appendix Tables A1 to A4 for a large sample of 42 high- and middle-income countries. The following points can be drawn from them.

First, wine is taxed slightly less than beer and much less than spirits in this sample of countries. The unweighted average CTE across the 42 countries and over the two years 2008 and 2018 are US\$11.40 per litre of alcohol for wine compared with almost \$14 for beer and \$25 for spirits. As a percentage of the pre-tax wholesale price, wine's CTE averaged 22% behind beer at 29% and spirits at 75% (Table 1).

[Table 1 about here]

⁵ Meloni and Swinnen (2013, Table 2) provide estimates of assistance to the wine industry in the EU from 1985 to 2011. Throughout that period the extent of wine export subsidies amounted to less than 1% of the value of wine consumption at the pre-tax wholesale level and is now virtually zero. See also Jensen and Anderson (2016).

Table 1 also reveals that taxes on all three beverages have risen over the decade to 2018. The volumetric averages rose by one-ninth in the case of beer and by a little over one-quarter for both spirits and wine. In ad valorem terms, the average taxes on both wine and beer rose by more than one-third.

When the excise taxes are added to import taxes (whose averages changed little between 2008 and 2018), and the value-added tax (which rose slightly over that decade) is then also imposed, the combined taxes averaged around 50% for wine and beer in 2008 and 60% in 2018, and more than twice that for spirits. The weighted average across alcohol types of those combined taxes have risen by one-seventh on average over the decade to 2018 (Table 2).

[Table 2 about here]

Averages hide a great deal of diversity in tax rates across and within countries though. Northwest European countries have the highest overall rates of taxation of alcohol consumption, while the United States, Germany, Italy and Japan have among the lowest taxes. The CTE range is from less than 20% to more than 120% (Figure 2). The changes in the past decade also range widely, from small declines in a handful of countries to major increases in Nordic countries (Figure 3).

[Figures 2 and 3 about here]

The extent of overall taxation of the three main types of alcoholic beverages is shown for each country and both years in Table 3. Generally wine is taxed least (and almost zero in Europe's wine-producing countries and not at all in Argentina) and spirits most. The extent of those differences can be seen by the ratios of those taxes, shown in Figures 4 and 5, using the tax on commercial premium wine as an indicator. The wine/beer tax ratio is less than 0.5 for two-thirds of the 42 countries, and the wine/spirits tax ratio is less than 0.5 for the majority of the countries too.

[Table 3 and Figure 4 and 5 about here]

All the traditional wine-focused countries are in the bottom half of those charts, and mostly it is non-wine-producing countries near the top of those charts (although so is Chile). Since national per capita wine production and consumption volumes are highly correlated, that suggests there is a negative relationship between wine taxes and the share of wine in alcohol consumption. Figure 6 shows that this is indeed the case, even though the extent of correlation is not high.

[Figure 6 about here]

Finally, there are differences in the rates of tax on sparkling versus still wines and according to the type of tax. Specifically, four countries taxed their wine consumers with an ad valorem tax in 2018: Chile (20.5%), Mexico (26.5%), Australia (29%) and Korea (33%). As can be seen from Appendix Tables A1 and A2, that means their CET in terms of dollars per litre of alcohol, and hence per bottle, is very high for super-premium still and sparkling wines (nearly three times the 42-country average) and very low for non-premium wines (less than half the 42-country average).

VI. Discussion

The rise in alcohol taxes since 2008 is in part due to an alliance of government and temperance interests. Having largely won the anti-tobacco war in many countries, health lobbyists have turned their attention to alcohol. They argue that the negative effects of alcoholic drinking on individual consumers' health and their social behaviour, and the externalities that can impose on their household and on society more generally, require high taxes on alcohol consumption in addition to other regulations.

Governments, meanwhile, are always on the lookout for extra tax revenue. Evidently industry counter-lobbying has been uneven and/or has been successful in making the case that wine consumption is generally less harmful than other alcohol consumption, as taxes are generally lower on wine than on beer and even more so on spirits and, where the wine rates have risen since 2008, it is mainly in non-wine-producing countries.

Assuming richer people tend to consume premium relative to non-premium wines, ad valorem taxation could be seen as an income redistributive measure. Yet governments have far more efficient tax instruments available for redistributing income. More importantly, by encouraging quantity rather than quality consumption, it is the opposite of what an optimal wine tax structure should be to reduce the negative consumption externalities referred to earlier in the context of Figure 1(b). Ad valorem taxation, as distinct from specific taxes on the volume of alcohol in a bottle or can, also does not discourage producers from raising the level of alcohol in wine (Alston et al. 2015).

As well, ad valorem taxation has obvious implications for producers of lower- vs higher-priced wines. It also encourages (discourages) exports of premium (non-premium) wines from such countries, and has the opposite impacts on wine imports.

Designing optimal policies to curb the worst adverse impacts of alcohol consumption clearly is far from straightforward (Pogue and Sgontz 1989; Kendel 1996). But it is equally clear that ad valorem taxation is not likely to be the first-best tax instrument. It will be interesting to see when and where increased health lobbying is able to bring about a change from ad valorem to specific taxation of alcohol consumption.

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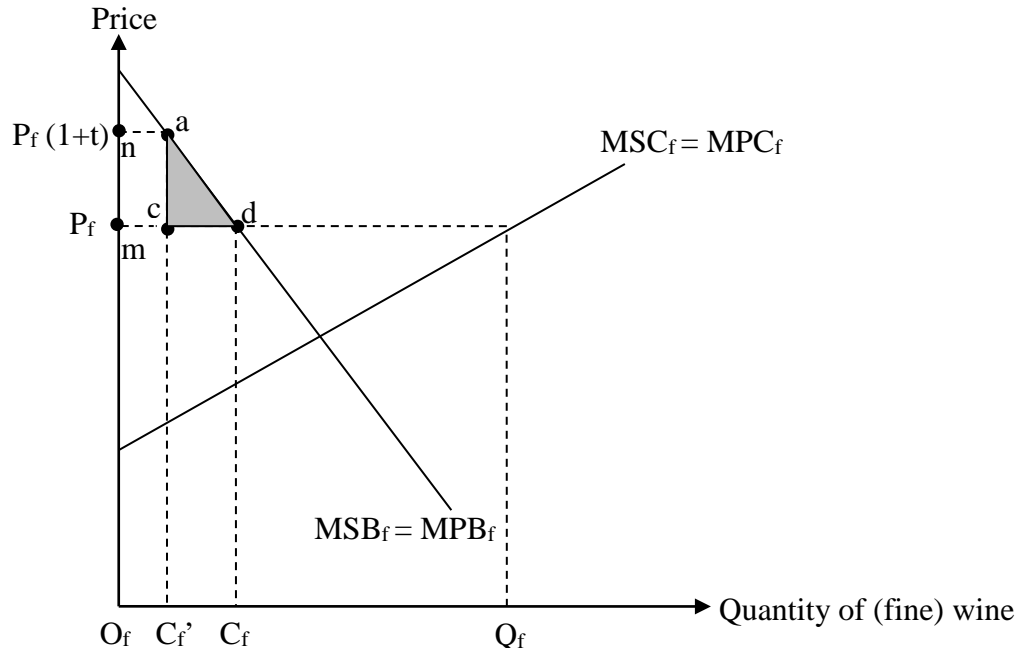
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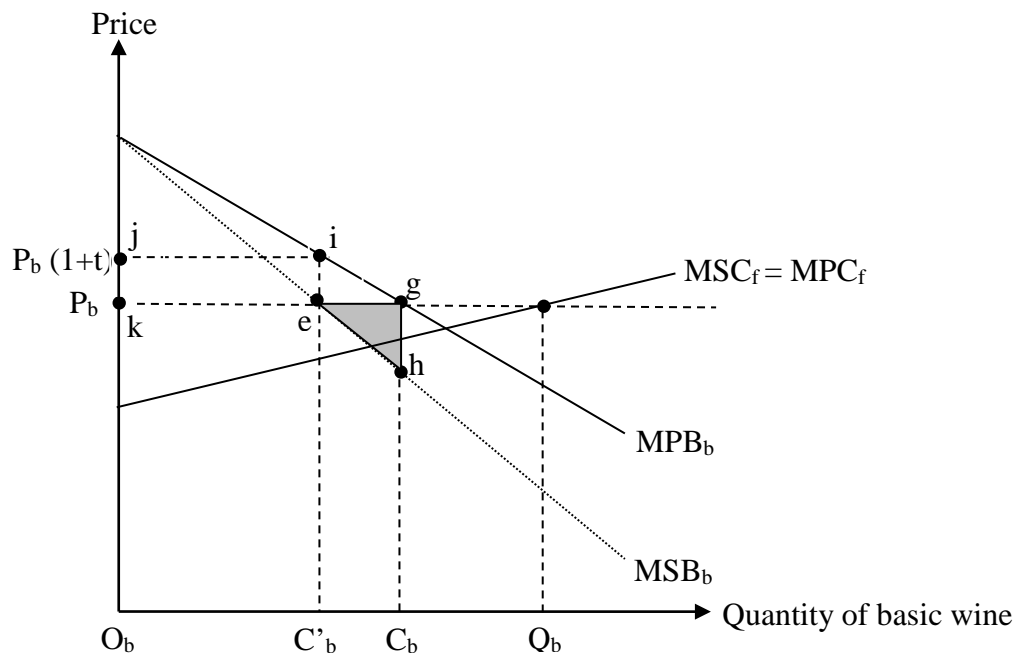
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Figure 1: The market for wine in a small, open, wine-exporting economy

(a) (fine) wine with no externalities



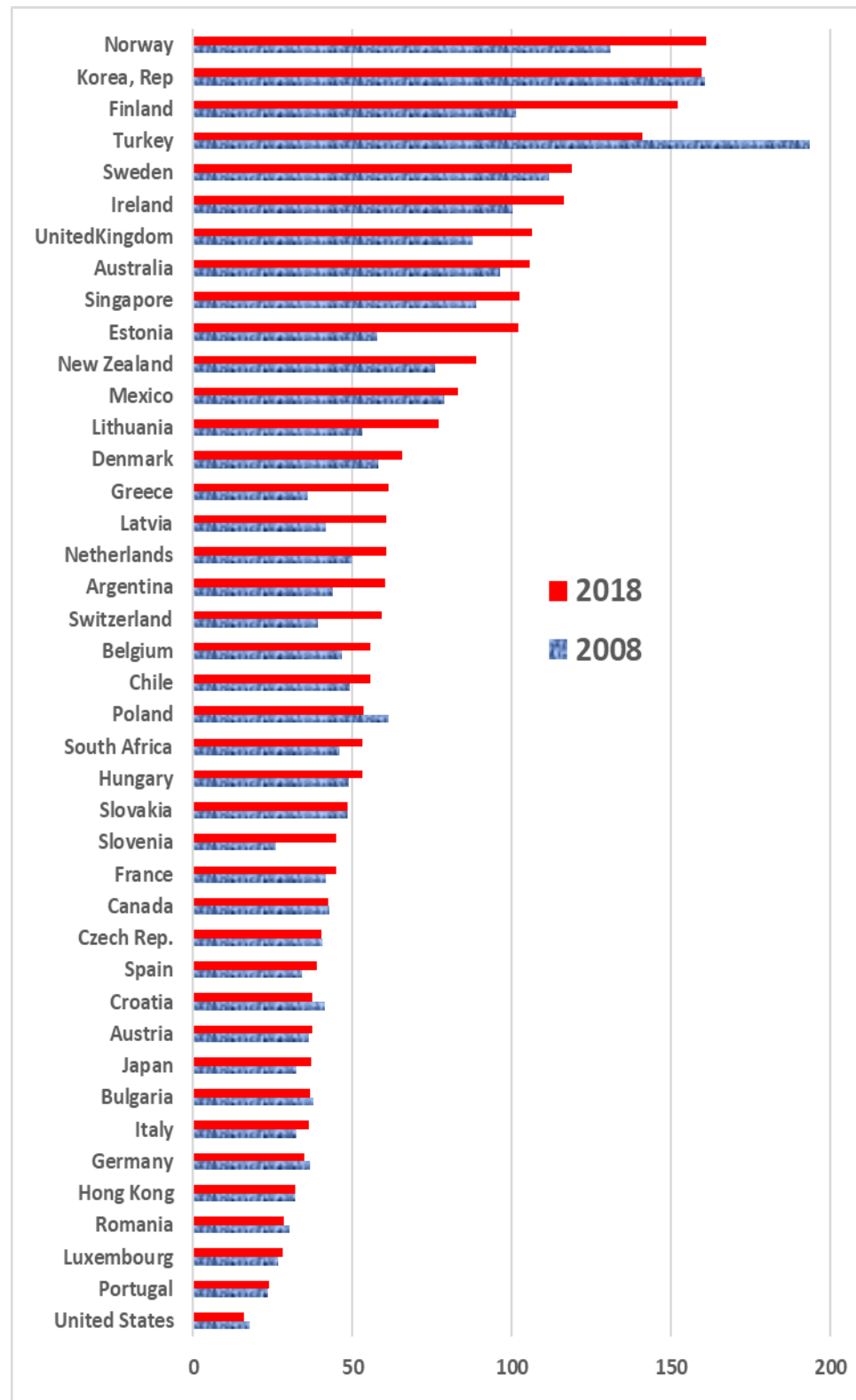
(b) basic wine with a negative consumption externality



Source: Anderson (2010).

Figure 2: Weighted average of combined ad valorem CTE of excise, import and value added taxes on the retail price of all alcohol (wine, beer and spirits), 2008 and 2018

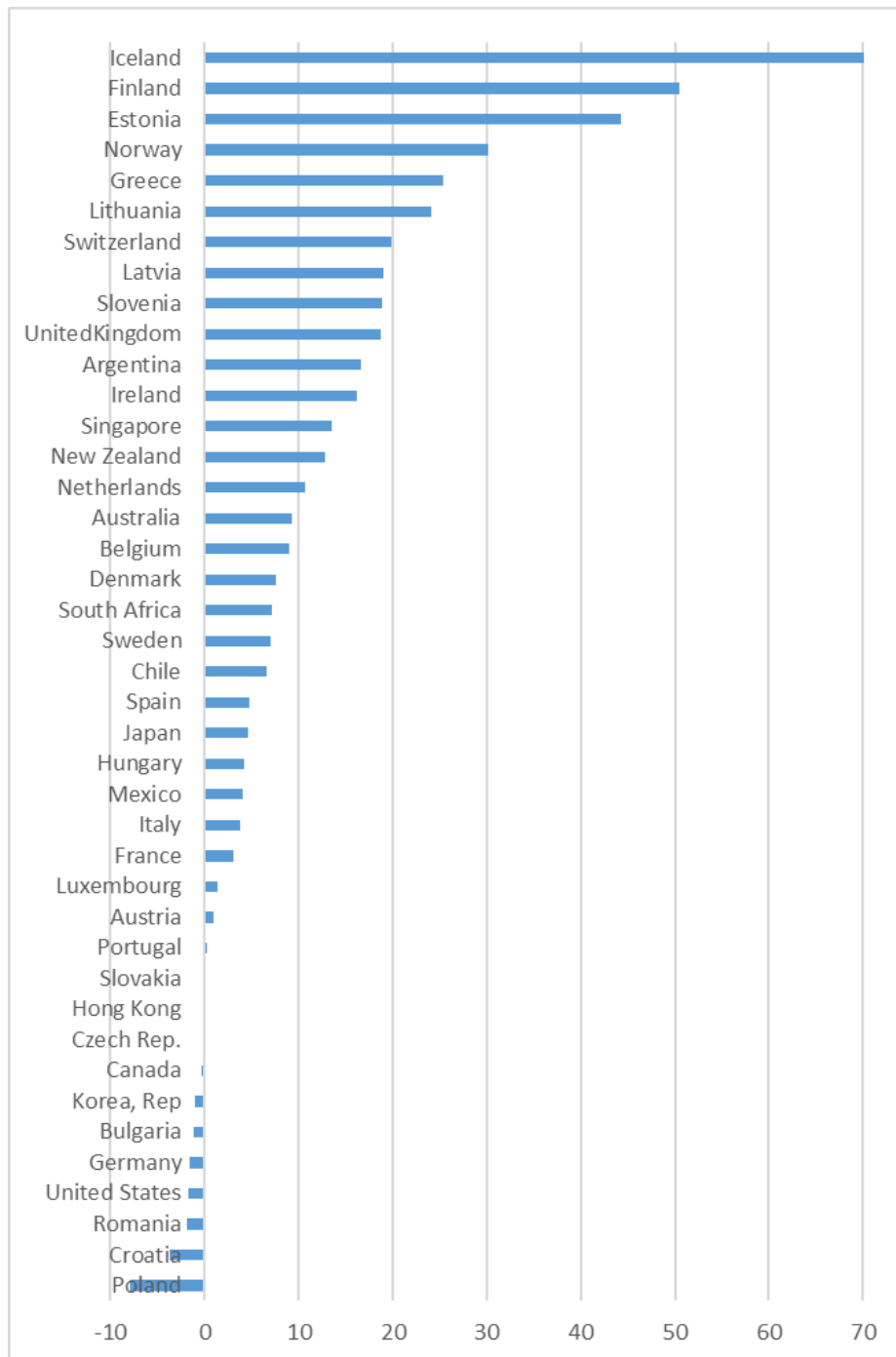
(% of wholesale pre-tax price, using 2014 volumes of alc. consumption as weights)



Source: Table 3 and Appendix Tables A7.

Figure 3: Change in combined ad valorem CTE of excise, import and value added taxes on the retail price of all alcohol, 2008 to 2018

(percentage points)^a



^a The extreme of Turkey, at -53%, is omitted.

Source: Appendix Tables A3 and A4.

Figure 4: Ratio of wine/spirits and wine/beer excise taxes in US\$ per litre of alcohol, 2008 and 2018

(at US\$ per litre product prices of \$7.50 for wine, \$2 for beer and \$15 for spirits)

(a) Wine/spirits

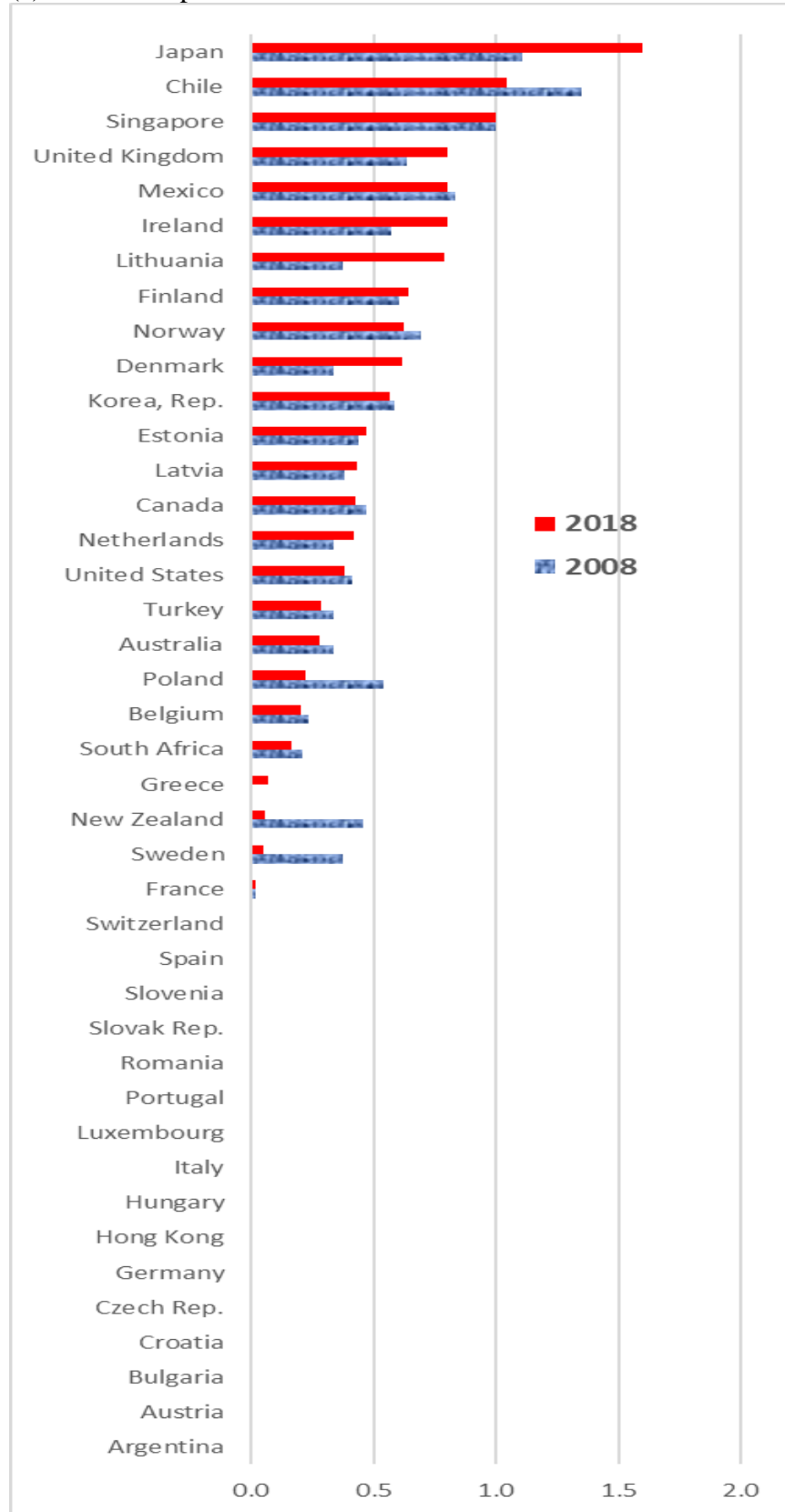
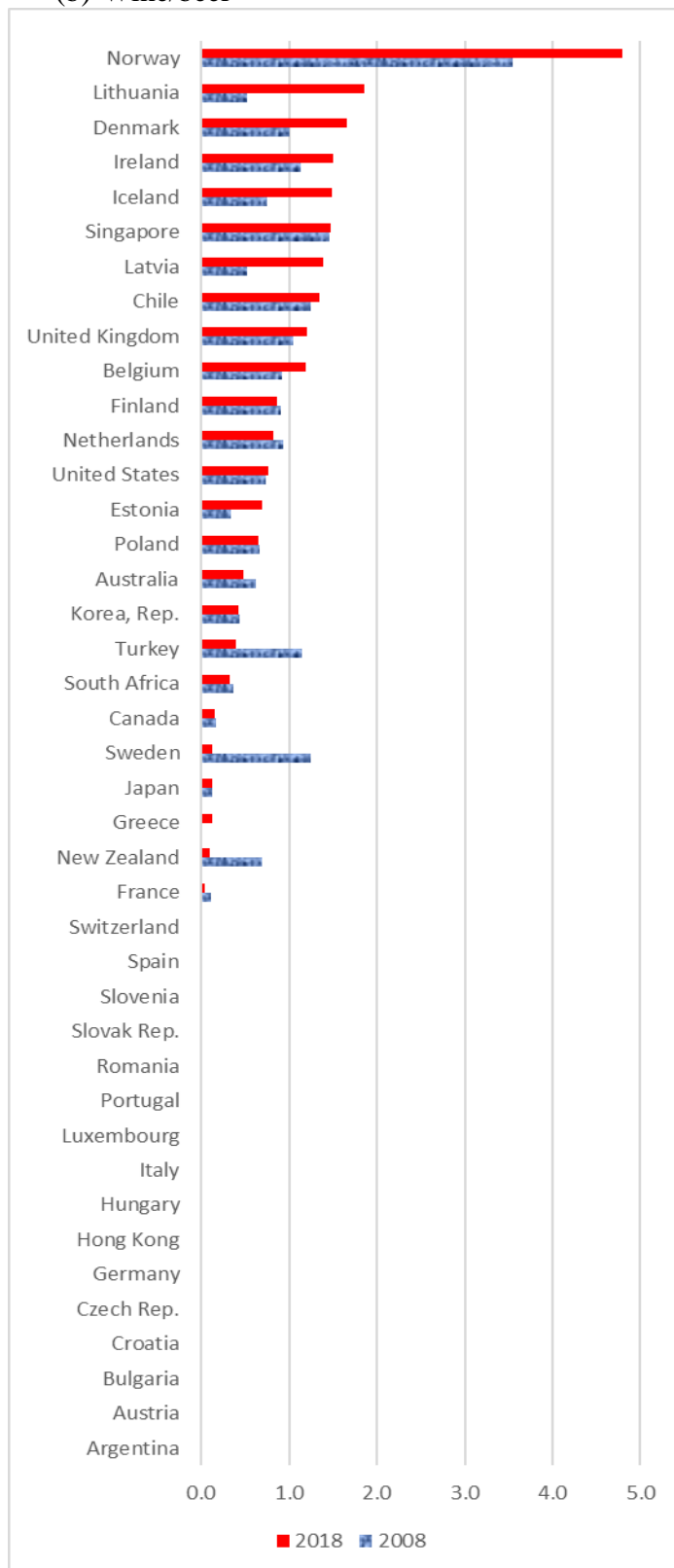


Figure 4 (continued): Ratio of wine/spirits and wine/beer excise taxes in US\$ per litre of alcohol, 2008 and 2018
 (at US\$ per litre product prices of \$7.50 for wine, \$2 for beer and \$15 for spirits)
 (b) Wine/beer



Source: Appendix Tables A1 and A2.

Figure 5: Ratio of wine/spirits and wine/beer percentage ad valorem excise taxes, 2008 and 2018

(at US\$ per litre wholesale prices of average-priced wine and \$2/litre beer)

(a) Wine/spirits

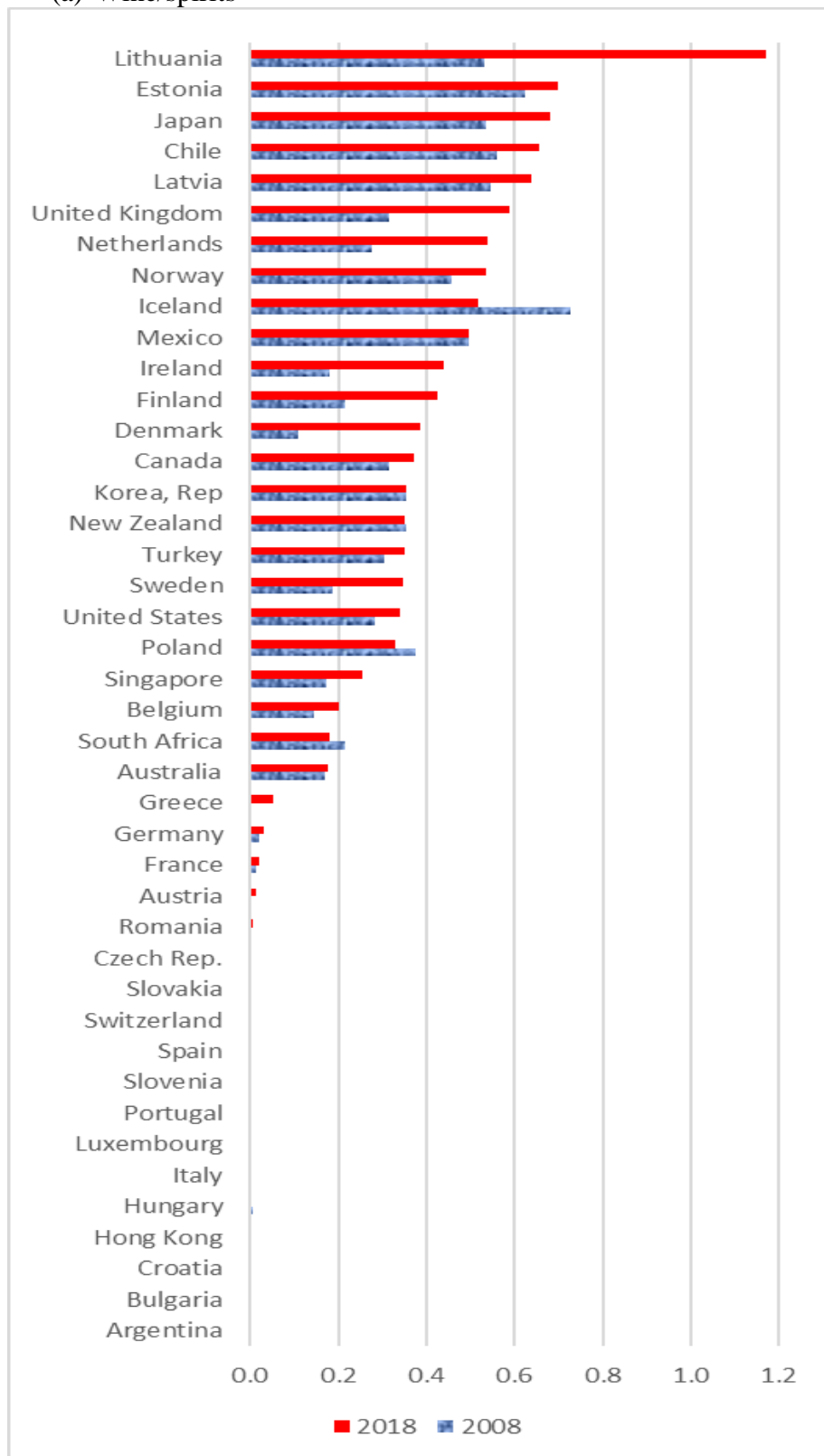
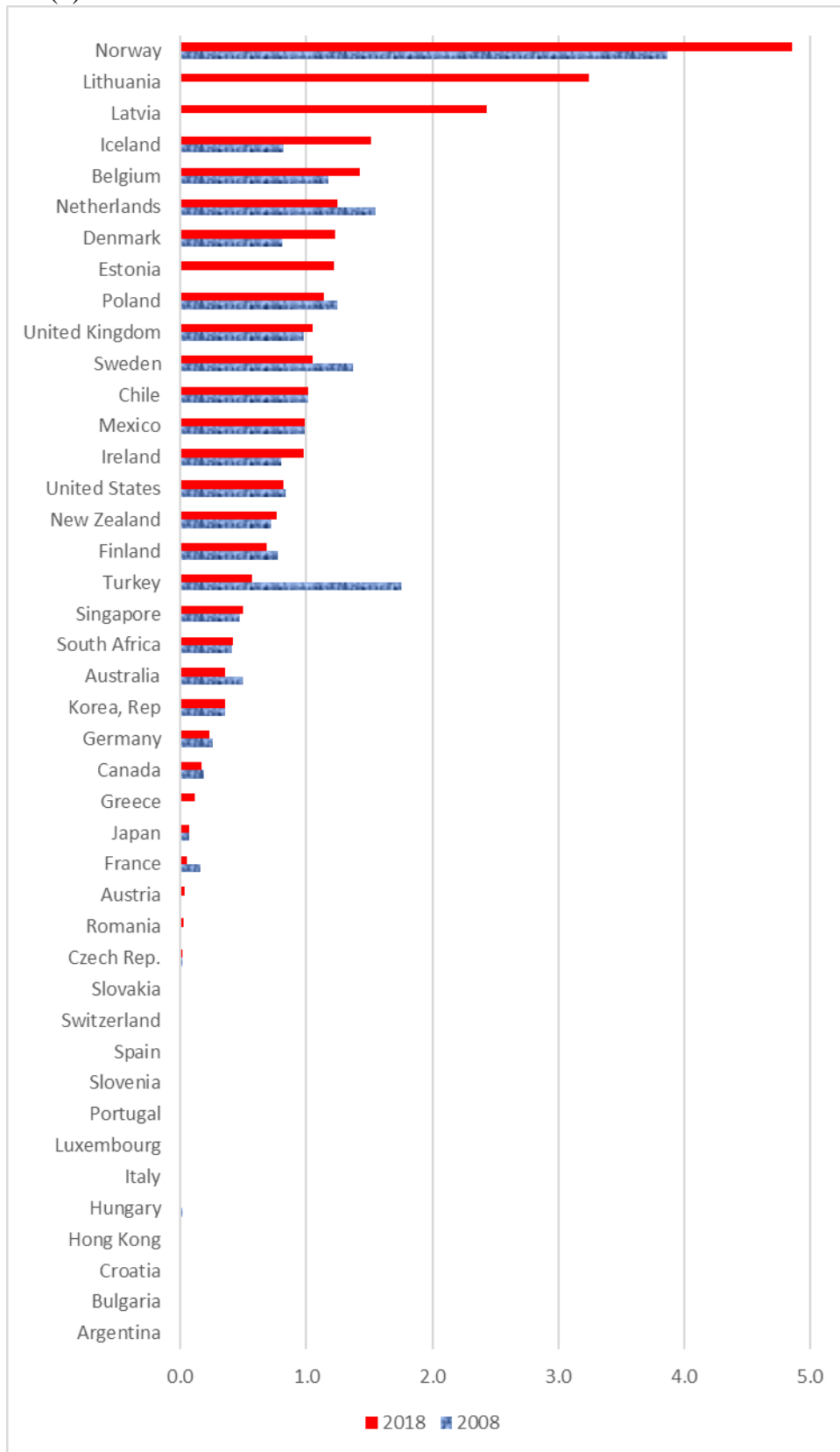
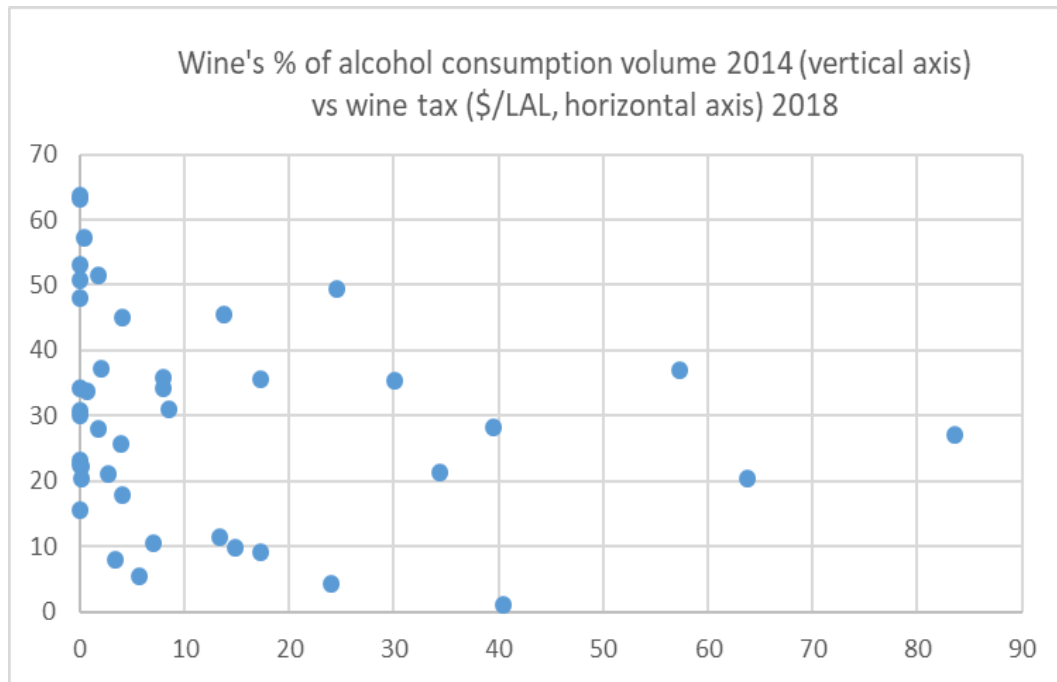


Figure 5 (continued): Ratio of wine/spirits and wine/beer percentage ad valorem excise taxes, 2008 and 2018
 (at US\$ per litre wholesale prices of average-priced wine and \$2/litre beer)
 (b) Wine/beer



Source: Appendix Tables A3 and A4

Figure 6: Correlation between wine's share of alcohol consumption volume and the average tax on wine in US\$ per litre of alcohol, 2008 and 2018



Source: Based on Appendix Tables A1, A3 and A7.

Table 1: Average excise taxes on wine, beer and spirits, US\$ per litre of alcohol and ad valorem (percent) equivalent, 2008 and 2018

(unweighted average over 42 countries and then the two years)

(a) US\$ per litre of alcohol

	Wine^a	Beer	Spirits
2008	10.0	13.2	21.8
2018	12.8	14.7	27.5
Average	11.4	14.0	24.7

(b) Percent of pre-tax wholesale price

	Wine^a	Beer	Spirits
2008	18.1	24.1	74.8
2018	24.9	33.1	74.8
Average	21.5	28.6	74.8

^a Weighted average over the four wine types, using as weights the 2009 shares in volume of total wine consumption, from Appendix Table A6.

Source: Appendix Tables A1-A4.

Table 2: Ad valorem CTE of excise, import and value added taxes^a on the retail price of wine, beer, spirits and all alcohol, 2008 and 2018

(unweighted average over 42 countries and then the two years)

(a) Ad valorem import tariff				
	Wine	Beer	Spirits	
2008	7.8	2.2	3.0	
2018	7.1	2.3	8.2	
Average	7.5	2.3	5.6	

(c) Combined ad valorem CTE of excise, import and value added taxes				
	Wine^a	Beer	Spirits	All alcohol^c
2008	50	48	173	62
2018	59	60	121	71
Average	55	54	147	67

^a The unweighted average of the VAT was 16.7% in 2008 and 18.0% in 2018. See Appendix Table A8.

^b Weighted average over the four wine types, using as weights the 2009 shares in volume of total wine consumption, from Appendix Table A6.

^c Weighted average over the three alcohol types, using as weights the 2014 shares in volume of total alcohol consumption, from Appendix Table A7.

Source: Appendix Tables A1-A8.

Table 3: Combined ad valorem CTE of excise, import and value added taxes on the retail price of wine, beer and spirits, 2008 and 2018 (% of wholesale pre-tax price)

	Wine 2008	Wine 2018	Beer 2008	Beer 2018	Spirits 2008	Spirits 2018
Argentina	40	45	45	69	57	96
Australia	49	49	74	100	213	206
Austria	26	25	34	35	73	76
Belgium	41	48	33	36	114	148
Bulgaria	26	24	30	26	50	52
Canada	15	15	60	63	38	31
Chile	45	52	45	52	60	66
Croatia	42	29	38	42	48	64
Czech Rep.	25	25	29	30	77	73
Denmark	43	59	40	49	136	117
Estonia	67	89	18	71	85	127
Finland	67	106	71	135	196	226
France	26	25	26	43	96	97
Germany	26	24	24	25	87	79
Greece	24	33	29	63	76	132
Hong Kong	0	0	0	0	100	100
Hungary	26	31	45	44	73	82
Iceland	142	260	168	180	181	480
Ireland	66	98	69	93	230	203
Italy	26	26	36	45	62	73
Japan	32	32	97	114	17	18
Korea, Rep	68	68	177	177	157	156
Latvia	50	60	18	35	64	88
Lithuania	56	98	18	43	76	96
Luxembourg	20	21	20	23	68	66
Mexico	72	76	73	76	107	113
Netherlands	47	59	33	47	98	97
New Zealand	54	63	68	77	119	142
Norway	140	188	55	59	278	331
Poland	56	44	44	37	95	86
Portugal	17	17	28	27	60	73
Romania	25	23	27	24	55	56
Singapore	42	53	80	100	207	189
Slovakia	25	24	36	31	68	72
Slovenia	26	26	20	59	57	84
South Africa	50	53	35	41	123	153
Spain	21	25	24	28	59	67
Sweden	88	101	65	92	318	252
Switzerland	37	62	26	35	67	93
Turkey	241	160	80	116	380	179
United Kingdom	69	96	63	86	157	157
United States	11	9	11	11	31	27

Source: Appendix Tables A3, A4, A5 and A8.

Appendix Table A1: Excise taxes on alcoholic beverages per litre of alcohol for wine, beer and spirits, 2008

(US\$ at the wholesale pre-tax prices shown in column heads)

	NP wine, ^a \$2.50/litre	CP wine, ^a \$7.50/litre	SP wine, ^a \$20/litre	Sparkling, \$20/litre	Beer, \$2/litre	Spirits. \$15/litre
Argentina	0.0	0.0	0.0	0.0	4.7	6.9
Australia	6.0	18.1	48.3	48.3	29.3	53.5
Austria	0.0	0.0	0.0	0.0	5.7	11.0
Belgium	4.4	4.4	4.4	15.0	4.8	18.8
Bulgaria	0.0	0.0	0.0	0.0	4.0	9.4
Canada	4.3	4.3	4.3	4.3	26.0	9.2
Chile	3.1	9.4	25.0	25.0	7.5	10.1
Croatia	0.0	0.0	0.0	0.0	6.0	7.9
Czech Rep.	0.0	0.0	0.0	13.6	4.2	18.2
Denmark	6.0	6.0	6.0	8.9	5.9	17.7
Estonia	9.4	9.4	9.4	9.4	28.0	21.4
Finland	18.2	18.2	18.2	18.2	20.1	30.2
France	0.3	0.3	0.3	0.8	2.9	16.2
Germany	0.0	0.0	0.0	12.9	2.2	13.9
Greece	0.0	0.0	0.0	0.0	4.0	15.6
Hong Kong	0.0	0.0	0.0	0.0	0.0	37.5
Hungary	0.0	0.0	0.0	7.8	10.4	18.7
Iceland	41.9	41.9	41.9	40.9	55.9	11.1
Ireland	22.3	22.3	22.3	45.1	19.7	38.9
Italy	0.0	0.0	0.0	0.0	6.8	9.5
Japan	5.4	5.4	5.4	5.4	43.6	4.9
Korea Rep.	6.9	20.6	55.0	55.0	46.8	35.1
Latvia	5.6	5.6	5.6	5.6	10.8	14.6
Lithuania	6.9	6.9	6.9	6.9	13.1	18.4
Luxembourg	0.0	0.0	0.0	0.0	2.2	10.6
Mexico	5.2	15.6	41.7	41.7	12.5	18.8
Netherlands	5.5	5.5	5.5	18.7	5.9	16.4
New Zealand	14.7	14.7	14.7	14.7	21.0	32.0
Norway	42.1	42.1	42.1	42.1	11.9	60.6
Poland	6.0	6.0	6.0	6.0	9.0	11.0
Portugal	0.0	0.0	0.0	0.0	7.3	5.2
Romania	0.0	0.0	0.0	2.9	3.5	11.3
Singapore	49.6	49.6	49.6	49.6	34.0	49.6
Slovak Rep.	0.0	0.0	0.0	11.6	7.2	16.5
Slovenia	0.0	0.0	0.0	0.0	0.0	11.6
South Africa	1.9	1.9	1.9	1.9	5.1	9.0
Spain	0.0	0.0	0.0	0.0	3.7	10.8
Sweden	20.1	20.1	20.1	20.1	16.1	53.8
Switzerland	0.0	0.0	0.0	0.0	3.1	16.4
Turkey	30.3	30.3	30.3	103.7	26.4	90.9
United Kingdom	20.1	20.1	20.1	28.2	19.3	31.6
United States	3.8	3.8	3.8	9.4	5.3	9.2
Unweighted ave.	8.1	9.1	11.6	16.0	13.2	21.8

^a NP, CP and SP refer to non-premium, commercial premium and super premium still wines whose wholesale pre-tax prices are assumed to be US\$2.50, \$7.50 and \$20 per litre of wine.

Sources: Compiled from European Commission (2008), OECD (2008) plus national websites.

Appendix Table A2: Excise taxes on alcoholic beverages per litre of alcohol for wine, beer and spirits, 2018 (US\$ at the wholesale pre-tax prices in column heads)

	NP wine, \$2.50/litre	CP wine, \$7.50/litre	SP wine, \$20/litre	Sparkling, \$20/litre	Beer, \$2/litre	Spirits, \$15/litre
Argentina	0.0	0.0	0.0	0.0	7.2	13.2
Australia	5.8	17.4	46.4	46.4	36.2	61.9
Austria	0.0	0.0	0.0	9.0	5.6	13.5
Belgium	6.7	6.7	6.7	23.1	5.6	33.6
Bulgaria	0.0	0.0	0.0	0.0	2.2	6.3
Canada	3.9	3.9	3.9	3.9	24.5	9.2
Chile	4.1	12.3	32.8	32.8	9.1	11.8
Croatia	0.0	0.0	0.0	0.0	6.0	7.9
Czech Rep.	0.0	0.0	0.0	8.0	3.4	12.2
Denmark	14.1	14.1	14.1	1.8	8.5	22.7
Estonia	13.3	13.3	13.3	13.3	19.0	28.2
Finland	34.4	34.4	34.4	34.4	39.9	53.8
France	0.3	0.3	0.3	0.8	8.3	19.6
Germany	0.0	0.0	0.0	12.2	2.2	14.6
Greece	1.8	1.8	1.8	1.8	14.0	27.5
Hong Kong	0.0	0.0	0.0	0.0	0.0	15.0
Hungary	0.0	0.0	0.0	0.0	5.9	12.1
Iceland	83.6	83.6	83.6	83.6	56.0	138.0
Ireland	38.2	38.2	38.2	76.4	25.3	47.8
Italy	0.0	0.0	0.0	0.0	8.5	11.6
Japan	5.7	5.7	5.7	5.7	44.5	3.6
Korea Rep.	6.6	19.8	52.8	52.8	46.8	35.1
Latvia	7.0	7.0	7.0	7.0	5.1	16.3
Lithuania	14.8	14.8	14.8	14.8	8.0	18.7
Luxembourg	0.0	0.0	0.0	0.0	2.2	11.7
Mexico	5.3	15.9	42.4	42.4	0.5	19.9
Netherlands	7.9	7.9	7.9	7.9	9.7	18.9
New Zealand	2.1	2.1	2.1	2.1	20.6	37.6
Norway	57.3	57.3	57.3	57.3	12.0	91.7
Poland	3.3	3.3	3.3	3.3	5.2	15.1
Portugal	0.0	0.0	0.0	0.0	5.3	15.6
Romania	0.0	0.0	0.0	0.9	2.0	8.1
Singapore	63.8	63.8	63.8	63.8	43.5	63.8
Slovak Rep.	0.0	0.0	0.0	7.2	4.0	12.1
Slovenia	0.0	0.0	0.0	0.0	13.5	14.8
South Africa	2.5	2.5	2.5	8.1	7.7	15.3
Spain	0.0	0.0	0.0	0.0	2.5	10.3
Sweden	3.1	3.1	3.1	3.1	23.6	60.3
Switzerland	0.0	0.0	0.0	0.0	5.8	29.3
Turkey	14.5	14.5	14.5	98.3	37.0	50.5
United Kingdom	29.6	29.6	29.6	37.9	24.5	36.8
United States	3.8	3.8	3.8	9.3	4.9	10.0
Unweighted ave.	10.3	11.4	14.0	18.3	14.7	27.5

Sources: Compiled from European Commission (2018) and the OECD (2018), plus national websites.

Appendix Table A3: Ad valorem consumer tax equivalent of excise taxes on wine, beer and spirits, 2008 (% of the wholesale pre-tax prices in column heads)

	NP wine, \$2.50/litre	CP wine, \$7.50/litre	SP wine, \$20/litre	Sparkling, \$20/litre	Beer, \$2/litre	Spirits, \$15/litre
Argentina	0.0	0.0	0.0	0.0	9.4	22.0
Australia	29.0	29.0	29.0	29.0	58.5	171.0
Austria	0.0	0.0	0.0	0.0	11.5	44.0
Belgium	21.0	7.0	2.6	9.0	9.6	77.0
Bulgaria	0.0	0.0	0.0	0.0	8.0	25.0
Canada	20.7	6.9	2.6	2.6	52.0	31.0
Chile	15.0	15.0	15.0	15.0	15.0	27.0
Croatia	0.0	0.0	0.0	0.0	13.5	21.1
Czech Rep.	0.0	0.0	0.0	8.2	8.4	49.0
Denmark	28.6	9.5	3.6	5.4	11.9	89.0
Estonia	45.1	15.0	5.6	5.6	0.0	57.0
Finland	87.5	29.2	10.9	10.9	40.1	143.0
France	1.5	0.5	0.2	0.5	5.7	64.0
Germany	0.0	0.0	0.0	7.7	4.5	57.0
Greece	0.0	0.0	0.0	0.0	8.0	48.0
Hong Kong	0.0	0.0	0.0	0.0	0.0	100.0
Hungary	0.0	0.0	0.0	4.7	20.8	44.0
Iceland	201.1	67.0	25.1	24.5	111.8	26.0
Ireland	106.8	35.6	13.4	27.0	39.3	173.0
Italy	0.0	0.0	0.0	0.0	13.6	35.0
Japan	25.8	8.6	3.2	3.2	87.2	11.0
Korea Rep.	33.0	33.0	33.0	33.0	93.6	93.6
Latvia	26.9	9.0	3.4	3.4	0.0	39.0
Lithuania	33.1	11.0	4.1	4.1	0.0	49.0
Luxembourg	0.0	0.0	0.0	0.0	4.3	46.0
Mexico	25.0	25.0	25.0	25.0	25.0	50.0
Netherlands	26.4	8.8	3.3	11.2	11.8	66.0
New Zealand	70.4	23.5	8.8	8.8	42.0	85.4
Norway	201.9	67.3	25.2	25.2	23.8	202.0
Poland	28.6	9.5	3.6	3.6	18.1	60.0
Portugal	0.0	0.0	0.0	0.0	14.5	43.0
Romania	0.0	0.0	0.0	1.7	7.0	30.0
Singapore	238.3	79.4	29.8	29.8	68.1	187.0
Slovak Rep.	0.0	0.0	0.0	6.9	14.5	41.0
Slovenia	0.0	0.0	0.0	0.0	0.0	31.0
South Africa	9.1	3.0	1.1	1.1	12.8	24.0
Spain	0.0	0.0	0.0	0.0	7.3	37.0
Sweden	96.4	32.1	12.1	12.1	32.1	234.0
Switzerland	0.0	0.0	0.0	0.0	6.2	55.0
Turkey	145.6	48.5	18.2	62.2	52.8	304.0
United Kingdom	96.4	32.1	12.1	16.9	38.6	119.0
United States	18.4	6.1	2.3	5.7	10.5	31.0
Unweighted ave.	38.8	14.6	7.0	9.6	24.1	74.8

Sources: Compiled from European Commission (2008), OECD (2008) plus national websites.

Appendix Table A4: Ad valorem consumer tax equivalent of excise taxes on wine, beer and spirits, 2018 (% of the wholesale pre-tax prices in column heads)

	NP wine, \$2.50/litre	CP wine, \$7.50/litre	SP wine, \$20/litre	Sparkling, \$20/litre	Beer, \$2/litre	Spirits, \$15/litre
Argentina	0.0	0.0	0.0	0.0	16.3	35.1
Australia	29.0	29.0	29.0	29.0	81.4	165.0
Austria	0.0	0.0	0.0	5.6	12.7	36.0
Belgium	33.7	11.2	4.2	14.4	12.7	89.7
Bulgaria	0.0	0.0	0.0	0.0	4.8	16.8
Canada	19.4	6.5	2.4	2.4	55.1	24.5
Chile	20.5	20.5	20.5	20.5	20.5	31.5
Croatia	0.0	0.0	0.0	0.0	13.5	21.1
Czech Rep.	0.0	0.0	0.0	5.0	7.7	32.5
Denmark	70.4	23.5	8.8	1.1	19.1	60.6
Estonia	66.4	22.1	8.3	8.3	42.8	75.1
Finland	172.1	57.4	21.5	21.5	89.9	143.4
France	1.7	0.6	0.2	0.5	18.8	52.2
Germany	0.0	0.0	0.0	7.6	5.0	39.0
Greece	9.0	3.0	1.1	1.1	31.6	73.4
Hong Kong	0.0	0.0	0.0	0.0	0.0	100.0
Hungary	0.0	0.0	0.0	0.0	13.3	32.4
Iceland	417.9	139.4	52.3	52.3	126.0	368.0
Ireland	190.9	63.6	23.9	47.7	57.0	127.6
Italy	0.0	0.0	0.0	0.0	19.1	30.9
Japan	28.5	9.5	3.6	3.6	98.1	9.6
Korea Rep.	33.0	33.0	33.0	33.0	93.6	93.6
Latvia	35.1	11.7	4.4	4.4	11.4	43.4
Lithuania	74.0	24.7	9.3	9.3	18.0	49.9
Luxembourg	0.0	0.0	0.0	0.0	5.0	31.2
Mexico	26.5	26.5	26.5	26.5	26.5	53.0
Netherlands	39.7	13.2	5.0	5.0	21.8	50.5
New Zealand	82.6	27.5	10.3	10.3	46.4	100.3
Norway	286.7	95.6	35.8	35.8	26.9	244.4
Poland	16.7	5.6	2.1	2.1	11.6	40.2
Portugal	0.0	0.0	0.0	0.0	12.0	41.6
Romania	0.0	0.0	0.0	5.8	4.5	21.5
Singapore	318.9	106.3	39.9	39.9	87.0	170.1
Slovak Rep.	0.0	0.0	0.0	4.5	9.1	32.4
Slovenia	0.0	0.0	0.0	0.0	30.6	39.6
South Africa	12.6	4.2	1.6	5.1	17.4	40.8
Spain	0.0	0.0	0.0	0.0	5.7	27.4
Sweden	122.5	40.8	15.3	15.3	53.2	160.8
Switzerland	0.0	0.0	0.0	0.0	13.1	78.1
Turkey	72.7	24.2	9.1	61.4	83.3	134.7
United Kingdom	148.0	49.3	18.5	23.7	55.0	98.3
United States	18.8	6.3	2.4	5.8	11.0	26.5
Unweighted ave.	55.9	20.4	9.3	12.1	33.1	74.8

Sources: Compiled from European Commission (2018) and the OECD (2018), plus national websites.

Appendix Table A5: Ad valorem consumer tax equivalent of import tariffs on wine, beer and spirits, 2008 and 2018 (% of the wholesale pre-tax price)

	Wine		Beer		Spirits	
	2008	2018	2008	2018	2008	2018
Argentina	20.0	20.0	13.0	20.0	10.0	20.0
Australia	5.0	5.0	0.0	0.0	5.0	5.0
Austria	4.6	3.3	0.0	0.0	0.0	8.1
Belgium	4.6	3.3	0.0	0.0	0.0	8.1
Bulgaria	4.6	3.3	0.0	0.0	0.0	8.1
Canada	0.0	0.0	0.0	0.0	0.0	0.0
Chile	6.0	6.0	6.0	6.0	6.0	6.0
Croatia	16.2	3.3	0.0	0.0	0.0	8.1
Czech Rep.	4.6	3.3	0.0	0.0	0.0	8.1
Denmark	4.6	3.3	0.0	0.0	0.0	8.1
Estonia	4.6	3.3	0.0	0.0	0.0	8.1
Finland	4.6	3.3	0.0	0.0	0.0	8.1
France	4.6	3.3	0.0	0.0	0.0	8.1
Germany	4.6	3.3	0.0	0.0	0.0	8.1
Greece	4.6	3.3	0.0	0.0	0.0	8.1
Hong Kong	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	4.6	3.3	0.0	0.0	0.0	8.1
Iceland	1.4	0.0	1.6	0.0	0.0	0.0
Ireland	4.6	3.3	0.0	0.0	0.0	8.1
Italy	4.6	3.3	0.0	0.0	0.0	8.1
Japan	19.1	15.0	0.0	0.0	0.0	0.0
Korea Rep.	15.0	15.0	30.0	30.0	20.7	20.1
Latvia	4.6	3.3	0.0	0.0	0.0	8.1
Lithuania	4.6	3.3	0.0	0.0	0.0	8.1
Luxembourg	4.6	3.3	0.0	0.0	0.0	8.1
Mexico	20.0	20.0	20.0	20.0	20.0	20.0
Netherlands	4.6	3.3	0.0	0.0	0.0	8.1
New Zealand	5.0	5.0	5.0	5.0	5.0	5.0
Norway	0.0	0.0	0.0	0.0	0.0	0.0
Poland	4.6	3.3	0.0	0.0	0.0	8.1
Portugal	4.6	3.3	0.0	0.0	0.0	8.1
Romania	4.6	3.3	0.0	0.0	0.0	8.1
Singapore	0.0	0.0	0.0	0.0	0.0	0.0
Slovak Rep.	4.6	3.3	0.0	0.0	0.0	8.1
Slovenia	4.6	3.3	0.0	0.0	0.0	8.1
South Africa	25.0	25.0	5.0	5.0	57.9	57.9
Spain	4.6	3.3	0.0	0.0	0.0	8.1
Sweden	4.6	3.3	0.0	0.0	0.0	8.1
Switzerland	27.0	50.0	10.7	10.7	0.3	0.3
Turkey	50.0	50.0	0.0	0.0	0.7	0.7
United Kingdom	4.6	3.3	0.0	0.0	0.0	8.1
United States	2.5	0.2	0.0	0.0	0.0	0.0
Unweighted ave.	7.8	7.1	2.2	2.3	3.0	8.2

Sources: WTO (2019) for 2018 and from the World Bank (2019a) for 2008.

Appendix Table A6: Shares of wine types in total volume of wine consumption, 2009 (%)

	Non- prem	Comm prem	Super prem	Spark- ling	TOTAL
Argentina	77	18	1	4	100
Australia	30	43	16	11	100
Austria	23	37	32	8	100
Belgium	32	51	9	8	100
Bulgaria	63	28	2	7	100
Canada	29	44	24	3	100
Chile	69	20	10	2	100
Croatia	69	28	2	2	100
Czech Rep.	69	28	2	2	100
Denmark	10	59	29	2	100
Estonia	69	28	2	2	100
Finland	14	51	28	8	100
France	44	31	13	12	100
Germany	67	15	3	15	100
Greece	20	55	25	0	100
Hong Kong	0	5	90	6	100
Hungary	70	16	7	7	100
Iceland	24	58	14	4	100
Ireland	5	58	34	3	100
Italy	67	24	5	4	100
Japan	0	50	41	9	100
Korea	0	34	63	3	100
Latvia	69	28	2	2	100
Lithuania	69	28	2	2	100
Luxembourg	32	51	9	8	100
Mexico	13	51	21	14	100
Netherlands	54	42	2	2	100
New Zealand	23	48	21	9	100
Norway	24	58	14	4	100
Poland	69	28	2	2	100
Portugal	64	30	5	1	100
Romania	88	9	1	2	100
Singapore	0	5	92	3	100
Slovak Rep.	69	28	2	2	100
Slovenia	69	28	2	2	100
South Africa	39	49	10	3	100
Spain	52	38	5	5	100
Sweden	24	58	14	4	100
Switzerland	19	48	29	5	100
Turkey	48	39	10	3	100
United Kingdom	10	84	2	5	100
United States	27	50	19	5	100

Source: Anderson and Nelgen (2011, Table 167).

Appendix Table A7: Shares of wine, beer and spirits in total volume of alcohol consumption, 2014 (%)

	Wine	Beer	Spirits	TOTAL
Argentina	45	47	8	100
Australia	36	43	22	100
Austria	34	52	14	100
Belgium	34	52	14	100
Bulgaria	16	40	44	100
Canada	26	49	26	100
Chile	31	43	26	100
Croatia	53	36	11	100
Czech Rep.	21	55	25	100
Denmark	46	38	17	100
Estonia	12	39	50	100
Finland	21	54	25	100
France	57	21	22	100
Germany	28	53	19	100
Greece	52	28	20	100
Hong Kong	22	45	32	100
Hungary	30	36	34	100
Iceland	27	62	11	100
Ireland	28	52	20	100
Italy	64	24	12	100
Japan	5	19	76	100
Korea, Rep	1	23	76	100
Latvia	11	45	44	100
Lithuania	10	36	54	100
Luxembourg	34	52	14	100
Mexico	4	74	21	100
Netherlands	36	46	18	100
New Zealand	37	37	26	100
Norway	37	43	20	100
Poland	8	60	32	100
Portugal	63	28	8	100
Romania	31	55	14	100
Singapore	20	67	13	100
Slovakia	22	31	47	100
Slovenia	51	42	8	100
South Africa	21	70	9	100
Spain	23	47	30	100
Sweden	49	37	14	100
Switzerland	48	33	19	100
Turkey	9	58	33	100
United Kingdom	35	41	24	100
United States	18	47	35	100

Source: Anderson, Nelgen and Pinilla (2017, Tables 40-42).

Appendix Table A8: VAT/GST rates, 2008 and 2018 (%)

	2008	2018
Argentina	21.0	21.0
Australia	10.0	10.0
Austria	20.0	20.0
Belgium	21.0	21.0
Bulgaria	20.0	20.0
Canada	5.0	5.0
Chile	19.0	19.0
Croatia	22.0	25.0
Czech Rep.	19.0	21.0
Denmark	25.0	25.0
Estonia	18.0	20.0
Finland	22.0	24.0
France	19.6	20.0
Germany	19.0	19.0
Greece	19.0	24.0
Hong Kong	0.0	0.0
Hungary	20.0	27.0
Iceland	24.5	24.0
Ireland	21.0	23.0
Italy	20.0	22.0
Japan	5.0	8.0
Korea, Rep	10.0	10.0
Latvia	18.0	21.0
Lithuania	18.0	21.0
Luxembourg	15.0	17.0
Mexico	15.0	16.0
Netherlands	19.0	21.0
New Zealand	12.5	15.0
Norway	25.0	25.0
Poland	22.0	23.0
Portugal	12.0	13.0
Romania	19.0	19.0
Singapore	7.0	7.0
Slovakia	19.0	20.0
Slovenia	20.0	22.0
South Africa	14.0	14.0
Spain	16.0	21.0
Sweden	25.0	25.0
Switzerland	7.6	8.0
Turkey	18.0	18.0
United Kingdom	17.5	20.0
United States	0.0	0.0
Unweighted Av	16.7	18.0

Source: European Commission (2019 and earlier) and OECD (2008 and 2018).

Appendix Table A9: Nominal exchange rates, 2008 and 2018 (LCU per US\$)

	2008	2018
Argentina	3.14	28.09
Australia	1.20	1.34
Austria	0.68	0.85
Belgium	0.68	0.85
Bulgaria	1.34	1.66
Canada	1.07	1.30
Chile	523.54	641.28
Croatia	4.94	6.25
Czech Rep.	36.47	30.27
Denmark	5.10	6.31
Estonia	0.68	0.85
Finland	0.68	0.85
France	0.68	0.85
Germany	0.68	0.85
Greece	0.68	0.85
Hong Kong	7.79	7.83
Hungary	172.11	270.21
Iceland	43.51	68.40
Ireland	0.68	0.85
Italy	0.68	0.85
Japan	103.39	110.42
Korea, Rep.	1100.86	1100.56
Latvia	0.68	0.85
Lithuania	0.68	0.85
Luxembourg	0.68	0.85
Mexico	11.15	19.24
Netherlands	0.68	0.85
New Zealand	1.43	1.45
Norway	5.64	8.13
Poland	5.13	5.03
Portugal	0.68	0.85
Romania	2.52	3.94
Singapore	1.41	1.36
Slovak Rep.	0.68	0.85
Slovenia	0.68	0.85
South Africa	8.26	13.25
Spain	0.68	0.85
Sweden	6.60	8.69
Switzerland	1.08	0.98
Turkey	1.30	4.70
United Kingdom	0.55	0.75
United States	1.00	1.00

Source: World Bank (2019b).