Global Wine Markets, 1860 to 2016

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The authors welcome comments on how to improve the quality and coverage of data and the way they have been summarized. Please send feedback to:

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Global Wine Markets, 1860 to 2016:

A Statistical Compendium

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Technical notes

This section provides definitions of products, indicators and measures used throughout the compendium and an explanation of how national and global wine markets are valued by quality categories.

Definitions of products

Grapes (FAO CODE 0560), both for fresh consumption and winemaking; processed products include dried grapes (FAO CODE 0561), grape juice (unfermented grape must, FAO CODE 0562), and (fermented) grape must (FAO CODE 0563). Grapes are the world's most valuable (unprocessed) horticultural product, according to the FAO gross value of production data.

Wine (FAO CODE 0564; SITC 112.12; Harmonised System Tariff Heading 2204)
Beverage wines of fresh grapes of all qualities, including still, sparkling, fortified and dessert wines. Beverage wines are sometimes divided into the following three sub-categories:

> *Bottled still wine* (Harmonised System Tariff Heading 220421)
> Still grape wines traded in containers of two litres or less (further sub-divided Into 'commercial premium' or 'CP' and 'super premium' or 'UP' wines in Sections VI and VII);
>
> *Bulk (or other) wine* (Harmonised system tariff headings 220429)
> Still grape wines traded in containers exceeding two litres (also called 'non-premium' or 'NP' wine in Sections VI and VII); and
>
> *Sparkling wine* (Harmonised System Tariff Heading 220410)
> Grape wines, sparkling.

Non-beverage wine
Grape wines used for distillation and industrial uses. Brandy, or "spirits obtained by distilling grape wine or grape marc" (Harmonised System Tariff Heading 220820) is important in a few countries and was more important during the earlier period of excessive wine production in early decades of the EU's common wine policy. In 2015 the value of brandy exports (net of re-exports) was 18% of the value of wine exports globally and 34% for France (down from 48% in 1994), 29% for Georgia, 24% for Moldova, and 7% for Spain (down from 18% in 1990), according to UN COMTRADE data.

Rice wine
Wine made from rice is of some importance in East Asia, especially China, Japan and Korea. It has a different name in each country (sake in Japan, mijiu in China, cheongju in Korea, …). Typically, it is at least 15% alcohol, is brewed differently than beer, and looks and is drunk like a clear spirit. For that reason, we include it in the spirits category throughout this compendium, with the exceptions of Sections VIII and X, which are based on Euromonitor International's 'Alcoholic Drinks' data that include rice and other fruit wines along with grape wine. This makes almost no difference except for China, Japan and Korea, where the wine numbers are overstated and the spirits numbers are understated somewhat. For

comparison, the indexes in Section IX are based on our standard wine definition and can therefore be compared with the volume indexes in Section X.

Definitions of indicators

GDP
Gross Domestic Product, the total market value of all goods and services produced within a country in a year.

Wine self-sufficiency
Calculated as the volume of wine production divided by beverage wine consumption, times 100 so as to be expressed as a percentage.

Exports of wine
Wine exports include re-exports of foreign wine.

Net imports of wine
Wine imports minus wine exports (including any re-exports of foreign wine).

Wine trade volume (value) specialization index
Calculated in volume (value) terms as the ratio of minus the net imports of wine to the sum of wine imports plus exports, so that the index ranges between –1 and +1.

Intra-industry trade volume (value) index
Calculated in volume (value) terms and expressed as a percentage, it is 100 minus 100 times the modular (i.e. ignoring any negative sign) of the trade specialization index, so that the index ranges between 0 and 100%.

Index of revealed comparative advantage in wine
Calculated in value terms as the share of a country's or region's wine exports in its total merchandise exports divided by the share of world wine exports in total world merchandise exports. Thus, the higher a country's index is above (below) 1, the stronger its comparative advantage (disadvantage) in wine, as revealed from the trade data assuming the government has not distorted producer or consumer incentives.

Unit value of wine exports (imports)
Calculated as the value of a country's wine exports (imports) by region divided by the volume of its wine exports (imports) by region, expressed in current US$ per litre.

Index of bilateral wine trade intensity
Calculated in volume or value terms as the share of country i's wine exports going to country j [x_{ij}/x_i] divided by the share of country j's imports (m_j) in world wine imports (m_w) net of country i's imports (m_i). That is, $[x_{ij}/x_i]/[m_j/(m_w - m_i)]$. If j is a country group and country i is part of country group j, it is necessary to subtract country i's imports from m_j (in the numerator of the second expression in square brackets). Where the exporter also is a region, the following adjustments are made to allow for intra-regional trade: (a) exclude only $1/n^{th}$ of i's imports from the denominator where n is the number of countries in the region, and (b) also multiply the numerator of the second expression in square brackets by (n-1)/n in the case where the index is for intra-regional trade.

Consumption volume (value) intensity index

Calculated in volume or value terms for country *i* as f_{im}/f_m where *m* is one of three beverages (wine, beer or spirits) and f_{im} is the fraction of wine, beer or spirits consumption in total national alcohol consumption volume or expenditure in country *i* such that $0 \leq f_{im} \leq 1$ and $\Sigma_m f_{im} = 1$. This is divided by the fraction for that same beverage in world total alcohol consumption, f_m, with $0 \leq f_m \leq 1$ and $\Sigma_m f_m = 1$. For weighted averages of intensity indexes for groups of countries, we use as weights each country's consumption of that beverage as a fraction of the group's total consumption of that beverage.

Consumption volume (value) similarity index

The similarity index uses vector representation to project combinations of variables with lengths determined by the shares of wine, beer and spirits in a country's total alcohol consumption volume or expenditure. The vector f_{im} is the fraction of beer, wine or spirits consumption in the national alcohol consumption volume or expenditure in country *i*, such that these fractions are between 0 and 1 and sum to 1. The index is defined as:

$$\omega_{ij} = \frac{\sum_{m=1}^{M} f_{im} f_{jm}}{\left(\sum_{m=1}^{M} f_{im}^2\right)^{1/2} \left(\sum_{m=1}^{M} f_{jm}^2\right)^{1/2}}$$

where *i* and *j* are countries, and *m* = 1,2,3 beverages corresponding again to wine, beer and spirits and so *M* = 3. This makes it possible to indicate the degree of beverage consumption mix "similarity" of any pair of countries. The index also can be generated for each country relative to the average of a sample of countries or of all of the world. In short, ω_{ij} measures the degree of overlap between f_i and f_j. The numerator will be large when i's and j's beverage mixes are very similar. The denominator normalizes the measure to unity when f_i and f_j are identical. Hence, ω_{ij} will be close to 0 for pairs of countries with little similarity in their beverage mix, and 1 for pairs of countries with identical beverage consumption mixes. For cases in between those two extremes, $0 < \omega_{ij} < 1$. This index is thus conceptually similar to a correlation coefficient and, like a correlation coefficient, is completely symmetrical in that $\omega_{ij} = \omega_{ji}$.

Consumption quality index

Calculated as the ratio of the national average retail price of a beverage to the world average retail price of that beverage. It is an imperfect quality index in that the prices include import, excise and value added taxes which vary greatly across countries and beverages.

Definitions of unit measures

Variable	*Unit (per year)*
Grape vine area	'000 ha
Volume of grape production	KT
Grape yield	tonnes/ha
Volume of grape production for wine	KT
Volume of wine production	ML

Volume of wine consumption	ML
Wine consumed per capita or per adult	L
Beer consumed per capita or per adult	L
Spirits consumed per capita (alcohol content)	LAL
Alcohol consumed per capita or per adult	LAL
Domestic wine sales	current local currency units and US$
Volume of wine exports and imports	ML
Value of wine exports and imports	current $US million
Unit value of wine exports and imports	current $US/L

Explanations of unit measures

Abbreviation	*Definition*	*Conversion*
ha	hectare	10,000 square metres or 2.471 acres
t	tonne	1,000 kilograms or 2,205 pounds
KT	kilotonne	1,000 tonnes
L	litre	1,000 millilitres or 0.2642 US gallons
LAL	litres of alcohol	Assumed 12% for wine, 4.5% for beer
KL	kilolitre	1 thousand litres or 10 hectolitres
ML	megalitre	1 million litres
US$	current US dollar	
US$m	million US dollars	
US$/L	US dollars per litre	
1 million	1,000,000	
1 billion	1,000,000,000	

Explanations of multi-year data

In Sections I and III, multi-year data are presented. For Section I they refer to 2014-16 and are the average of as many of those three years of data as are available. In section III they are decadal except for the most-recent period which is 2010-16, where again the average is shown for as many years as are available in each period. For data starting in the 1960s, for example, they may include data just nine years from 1961 if the source is the United Nations.

Geographical regions and their abbreviations

The compendium separately identifies the 47 most important individual countries in global wine markets plus 5 regional groupings of other countries. It also provides sub-totals for 8 regions (summing to the world) which have the following acronyms:

Wine regions of the world

WEX	Western European wine net exporters
WEM	Western European wine net importers
ECA	Central and Eastern Europe and Central Asia
ANZ	Australia and New Zealand
USC	United States and Canada
LAC	Latin America and Caribbean
AME	Africa and Middle East
APA	Asia and Pacific Islands

Individually reported countries in each wine region

WEX: France, Italy, Portugal, Spain
WEM: Austria, Belgium-Luxembourg, Denmark, Finland, Germany, Greece, Ireland, Netherlands, Sweden, Switzerland, United Kingdom
ECA: Bulgaria, Croatia, Georgia, Hungary, Moldova, Romania, Russia, Ukraine
ANZ: Australia, New Zealand
USC: Canada, United States
LAC: Argentina, Brazil, Chile, Mexico, Uruguay
AME: Algeria, Morocco, South Africa, Tunisia, Turkey
APA: China, Hong Kong, India, Japan, (Republic of) Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand

Residual country groups

Other Western European wine net importers (OWEM)
Andorra, Channel Islands, Cyprus, Faeroe Islands, Gibraltar, Greenland, Holy See, Iceland, Isle of Man, Liechtenstein, Malta, Monaco, Norway

Other Central and Eastern Europe and Central Asia (OECA)
Albania, Armenia, Azerbaijan, Belarus, Bosnia Herzegovina, Czech Republic, Estonia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Mongolia, Poland, Russia, Serbia, Montenegro, Slovakia, Slovenia, Tajikistan, Turkmenistan, Uzbekistan

Other Latin America and Caribbean (OLAC)
Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, British Virgin Islands, Cayman Islands, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Falkland Islands, French Guiana, Grenada, Guadeloupe, Guam, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Montserrat, Netherlands

Antilles, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Kitts and Nevis Islands, Saint Lucia, Saint Pierre & Miquelon, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands, U.S. Virgin Islands, Venezuela

Other Africa and Middle East (OAME)
Africa: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic of), Congo-Brazzaville, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, Saint Helena, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Western Sahara, Zambia, Zimbabwe
Middle East: Afghanistan, Bahrain, Gaza, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Occupied Territories, Oman, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen

Other Asia and Pacific Islands (OAPA)
American Samoa, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Cook Islands, Fiji, French Polynesia, Indonesia, Kiribati, (Democratic People's Republic of) Korea, Laos, Macao, Maldives, Marshall Islands, (Federated States of) Micronesia, Myanmar, Nauru, Nepal, New Caledonia, Niue, Northern Mariana Islands, Pakistan, Palau, Papua New Guinea, Pitcairn Island, Samoa, San Marino, Solomon Islands, Sri Lanka, Timor-Leste, Tokelau, Tonga, Tuvalu, Vanuatu, Vietnam, Wallis and Futuna Islands

Memo items: other country groups

European Union members as of March 2004 (**EU15)**
Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom

European Union members as of July 2013 (EU28)
Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

New World wine exporters (NWE7)
Argentina, Australia, Canada, Chile, New Zealand, South Africa, United States

Statistical sources

As with the earlier compendia, the key data drawn upon are the United Nations' agricultural and trade sources, namely FAOSTAT and COMTRADE, supplemented by the World Bank for GDP data and Euromonitor International for domestic alcohol beverage consumption and sales data, plus EUROSTAT and various national statistical agencies and wine industry organizations to check individual country data and to obtain winegrape plantings by grape variety. Where possible the latest available revised time series are used to replace former series. There have been some changes of data from previous editions due to changes in data availability and organizational developments affecting data providers. For example, the OIV is now deferring to the FAO on vineyard and wine statistics, although we continue to use OIV for estimates of the two most-recent years of global wine production, consumption and export volume data. Following the listing of key contemporary and then historical sources, notes are provided below for the various sections of tables in this Compendium.

For a much more detailed explanation of how the data from 1860 were assembled and the original sources for each country, see Anderson, K. and V. Pinilla, "Annual Database of Global Wine Markets, 1835 to 2016: Methodology and Sources", at https://www.adelaide.edu.au/wine-econ/pubs/working_papers/, November 2017. An Excel version of the annual data on which Part III of this Compendium is based is freely available as Anderson, K. and V. Pinilla (with the assistance of A.J. Holmes), *Annual Database of Global Wine Markets, 1835 to 2016*, Wine Economics Research Centre, at www.adelaide.edu.au/wine-econ/databases/global-wine-history, November 2017.

Key contemporary data sources

UN FAO (http://faostat.fao.org)
World Bank (http://econ.worldbank.org)
Euromonitor International, country beverage sector briefings (www.euromonitor.com)
International Organisation of Vine and Wine (OIV), State of the Vitiviniculture World Market Report in 2009, *Note on the World Situation*, March 2010 and earlier issues (www.oiv.int)
EUROSTAT (http://ec.europa.eu/eurostat)
Australian Bureau of Statistics, *Australian Wine and Grape Industry* (ABS Catalogue No. 1329.0). (www.abs.gov.au/ausstats/abs@.nsf/mf/1329.0)
Wine Australia (www.wineaustralia.com)
New Zealand Wine Growers, *Statistical Annual 2017* and earlier issues (http://wineinf.nzwine.com/statistics_outputs.asp?id=89&cid=6&type=n)
Wine Institute, California (www.wineinstitute.org/resources/statistics)
South African Wine Industry Information and Systems (www.sawis.co.za)
Wines of Argentina (www.winesofargentina.org/en)
Wines of Chile (www.winesofchile.org)

Key historical data sources (pre-1961)

1835-1989: Mitchell, B.R. (2007a), *International Historical Statistics: Europe 1750-2005* (6th Edition), New York and Basingstoke: Palgrave Macmillan; Mitchell, B.R. (2007b),

International Historical Statistics: Americas 1750-2005 (6th Edition), New York and Basingstoke: Palgrave Macmillan; and Mitchell, B.R. (2007c), *International Historical Statistics: Africa, Asia and Oceania 1750-2005* (5th Edition), New York and Basingstoke: Palgrave Macmillan.

1901-1938: International Institute of Agriculture, *Annuaire International de Statistique Agricole*, Rome: International Institute of Agriculture.

1939-1950: International Institute of Agriculture and Bureau de la FAO a Rome (1941-42 and 1945-46), *Annuaire International de Statistique Agricole*, Rome: International Institute of Agriculture.

1950-1960: FAO (various years), *Yearbook of Food and Agricultural Statistics*, Rome: UN Food and Agriculture Organization.

1835-1960: Maddison, A. (2013), for Statistics on World Population, GDP and GDP Per Capita, at http://www.ggdc.net/maddison/maddison-project/home.htm

1835-1938: Federico, G. and A. Tena-Junguito (2016), 'World Trade, 1800-1938: A New Dataset', EHES Working Paper No. 39, European Historical Economics Society, January, www.ehes.org, for statistics on national merchandise exports and imports and foreign exchange rates

1820-1900 Russia's wine import values: kindly provided by Ekaterina Khaustova from primary Russian archival sources in Moscow

Parts I to III:

Data on **grape vine area, yield/ha and production** are derived from FAOSTAT at: http://faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567#ancor

To get the **share of cropping land under vines**, grapevine area is divided by the total area of agricultural land (arable land and land used for permanent crops), as derived from FAO's ResourceSTAT database: http://faostat.fao.org/site/377/DesktopDefault.aspx?PageID=377

The FAO publishes the gross value of crop production for all crops and for individual crops such as grapes. **The share of grapes in gross value of all crop production** data refer to grapes for all purposes including wine-making.

The FAO only publishes total grape production, which includes grapes used for wine-making and grapes used for other purposes. **Grapes used for wine** data are estimated from the volume of wine production, assuming one tonne of wine grapes yields 750 litres of wine.

Estimates of **winegrape area by grape variety** are from K, Anderson (with the assistance of N.R. Aryal), *Which Winegrape Varieties are Grown Where? A Global Empirical Picture*, Adelaide: University of Adelaide Press, 2013 (which is also freely available as an e-book at www.adelaide.edu.au/press/titles/winegrapes).

FAO data on **wine production** have been updated for 2015 and 2016 from OIV and national sources.

The **wine, beer and spirits consumption** data for high-income countries from 1880 to 1936 are from the Institut national de la statistique et des études économiques, *Annuaire Statistique de la France* (Paris, 1938). From 1960 the default source is World Health Organization, http://apps.who.int/gho/data/node.main.A1022?lang=en except for wine for countries with reliable production and trade volume data, in which case apparent wine consumption is estimated as net imports plus the average of production in the current and two previous years (so as to allow for delays between production and final consumption and to smooth vintage weather fluctuations). All consumption data, like production data, are 'recorded', that is, no account is taken of informally produced or homemade (legal or illegal) alcoholic beverage production or consumption. The World Health Organization estimates that 29 percent of world alcohol consumption was unrecorded in 2005, and that estimate is 48 percent in low-income countries and 69 percent in South and Southeast Asia, compared with 11 percent in high-income countries (WHO, *Global Status Report on Alcohol and Health*, Geneva: World Health Organization, 2011, www.who.int).

Data from Euromonitor International are used to compile the **shares of off-trade in total wine consumption**. Off-trade refers to wine purchased and consumed off the premises and therefore includes sales from retail outlets including grocery and liquor outlets but not from restaurants, hotels, bars and pubs. Unlike in other tables, the off-trade figures include non-grape wine. Non-grape wine accounts for more than a 5 percent share of wine sales in seven of the featured countries. In 2009 it was higher than 50 percent in China, Japan, South Korea and Taiwan (made up predominantly from rice wine, sake and takju), was one-fifth in Azerbaijan, and was about one-eighth of wine sales in Austria (mostly fruit wines) and Hong Kong.

The **shares of the largest firms in total wine sales** are based on volumes of 'still light grape wine' as defined by Euromonitor International.

Data on the **world's most powerful wine brands** are sourced from Intangible Business (2016), *The Power 100: The World's Most Powerful Spirits and Wine Brands, 2015*, London: Intangible Business (www.drinkspowerbrands.com/The-Power-100-2015.pdf).

Population data by country was sourced from the FAO (http://faostat.fao.org). The share of the population that is adult (greater than 14 years of age) is from the United Nations. The **real GDP** data are in 1990 International Geary-Khamis dollars to 2010, and updated using purchasing power parity (PPP) estimates by the International Comparisons Program at http://www.worldbank.org/en/programs/icp. Taiwan's GDP, population and exchange rate data are from the Taiwan's Council for Economic Planning and Development publication, the *Taiwanese Statistical Data Book 2016* (www.ndc.gov.tw/).

Parts IV and V:

The UN Commodity Trade Statistics database (COMTRADE) is used to obtain bilateral **value and volume of trade** data for all countries (whose ratio provides the unit value, or average price). COMTRADE distinguishes sparkling wine, still wine in bottles of less than 2 litres (split into commercial- and super-premium as detailed at the end of the Technical Notes

section above), and other still wine (assumed to be equal to non-premium still wine). COMTRADE also is the source for the sum of all merchandise trade (http://comtrade.un.org). Taiwan's trade data are from http://cus93.trade.gov.tw/ENGLISH/FSCE and http://wits.worldbank.org/wits/.

The bilateral trade matrices are based on export data, but they would be very similar if they have been based on import data.

Part VI:

Wine and other alcohol taxes are very complex and thus difficult to summarize, because the excise and import taxes (but not VAT/GST) are typically per unit of beverage or of alcohol, and hence vary with the price and alcohol content of each beverage. They have been converted to an average ad valorem equivalent (AVE) rate using various assumptions in a paper by Anderson, K. "Excise and Import Taxes on Wine vs Beer and Spirits: An International Comparison", *Economic Papers* 29(2): 215-28, June 2010 and Anderson, K, "Excise taxes on wines, beers and spirits: An updated international comparison", Working Paper No. 170, American Association of Wine Economists, October, at http://www.wine-economics.org/aawe/wp-content/uploads/2014/10/AAWE_WP170.pdf. Thanks are due to Thithi Nguyentran for research assistance in generating these AVEs. Chief sources are OECD (2016), *Consumption Tax Trends 2016: VAT/GST and Excise Rates, Trends and Administration Issues,* Paris: OECD (and earlier biennial issues) and European Commission (2016), *Excise Duty Tables: Part 1: Alcoholic Beverages*, Brussels: European Commission.

Parts VII, VIII, and IX:

These **beverage consumption expenditure** are from Holmes, A.J. and K. Anderson, *Annual Database of National Beverage Consumption Volumes and Expenditures, 1950 to 2015*, Wine Economics Research Centre, University of Adelaide, at www.adelaide.edu.au/wine-econ/databases/alcohol-consumption. The **indexes of consumption intensity, similarity and quality** are defined and the estimates summarized in their article entitled "Convergence in National Alcohol Consumption Patterns: New Global Indicators", *Journal of Wine Economics* 12(2), 2017. The original data on expenditure are from Euromonitor International.

Part X:

British import data are from James, M.K. (1971), *Studies in the Medieval Wine Trade*, Oxford: Clarendon Press; the Appendix in Francis, A.D. (1972), *The Wine Trade*, London: Adams and Charles Black; and Ludington, C.C. (2013), *The Politics of Wine in Britain: A New Cultural History,* Basingstoke: Palgrave Macmillan.

British alcohol taxes are from Tena, A. (2006), 'Assessing the Protectionist Intensity of Tariffs in Nineteenth-Century European Trade Policy', in *Classical Trade Protectionism, 1815-1914*, edited by J.-P. Dormois and P. Lains, London and New York: Routledge; Great Britain Central Statistical Office, *Annual Abstract of Statistics*, London, various issues; and Table A1 of Ludington (2013), Ludington, C.C. (2013), *The Politics of Wine in Britain: A New Cultural History,* Basingstoke: Palgrave Macmillan.

French import taxes are from Pinilla, V. and M.I. Ayuda (2002), "The Political Economy of the Wine Trade: Spanish Exports and the International Market, 1890-1935", *European Review of Economic History* 6(1): 51-86, from data in Direction General des Douanes (1850-1938), (1848-1939), *Tableau du Commerce Exterieur de la France*. The French bilateral trade data are revised from earlier numbers in Pinilla, V. (2014), 'Wine Historical Statistics: A Quantitative Approach to its Consumption, Production and Trade, 1840-1938', AAWE Working Paper 167, August at www.wine-economics.org

Portugal port wine production and export volumes are from Martins, C.A. (1990). *Memória do Vinho do Porto*, Lisbon: Institntuto de Ciências Sociais, Table 68.

South African (Cape) vine area, wine production and wine exports are from the following:
1657-62: Jan van Riebeek's Diary (South African National Archives);
1658-95: Janse van Rensburg, J.I.J. (1954), Die Geskiedenis van die Wingerdkultuur in Suid-Afrika Tydens die Eerste Eeu 1652-1752 [The history of viticulture in South Africa during the first century 1652-1752], in Kieser, A., Venter, P.J., Franken, J.L.M. and Wiid, J.A. (eds.), *Archives Year Book for South African History*, Cape Town: National Commercial Printers;
1701-95: Van Duin, P. and R. Ross (1987), *The Economy of the Cape Colony in the 18th Century*, Leiden: Centre for the Study of European Expansion.
1798-1860: Van Zyl, D.J. (1975), *Kaapse wyn en brandewyn 1795-1860* [Cape wine and brandy 1795-1860], Cape Town: HAUM; and
1861-1935: Cape Colony Blue Books (South African Union Blue Books from 1910).

Greek raisin production and export data are from Meloni, G. and J. Swinnen (2017), 'Standards, Tariffs and Trade: The Rise and Fall of the Raisin Trade Between Greece and France in the Late Nineteenth Century', *Journal of World Trade* 51(4): 1–29.

In cases where information is not available, or where a number is not applicable for a particular country, na is inserted. Lack of information is mainly a problem for small and poor countries, especially ones that are not wine-focused. Their omission thus has almost no impact on the regional and especially global aggregates reported in those tables.

Authors' preface

This latest edition of our *Statistical Compendium* is the tenth version to be prepared since 1998. It has been compiled by the Wine Economics Research Centre of the University of Adelaide. It updates data to 2016 but also revises past data, and it expands on earlier editions in a number of ways. For example, we include many more tables to show wine's consumption relative to that of other beverages, from A.J. Holmes and K. Anderson, *Annual Database of National Beverage Consumption Volumes and Expenditures, 1950 to 2015*, at www.adelaide.edu.au/wine-econ/databases/alcohol-consumption, July 2017. As well, an extra century of historical data are included as ten-year averages, drawing on a new annual database that is freely available as K. Anderson and V. Pinilla (with the assistance of A.J. Holmes), *Annual Database of Global Wine Markets, 1835 to 2016*, Wine Economics Research Centre, at www.adelaide.edu.au/wine-econ/databases/global-wine-history, November 2017. This edition is thus a major improvement over previous editions, the pre-2009 ones of which were compiled by the Centre for International Economic Studies (CIES) at the University of Adelaide, and by the Centre of Policy Studies (CoPS) at Monash University, as follows:

- Anderson, K. and S. Nelgen (2011), *Global Wine Markets, 1961 to 2009: A Statistical Compendium*, Adelaide: University of Adelaide Press.
- Rothfield, J. and G. Wittwer (2007), *The Global Wine Statistical Compendium, 1961 to 2006,* Adelaide: Australian Wine and Brandy Corporation for CIES and CoPS.
- Wittwer, G. and J. Rothfield (2006), *The Global Wine Statistical Compendium, 1961 to 2005,* Adelaide: Australian Wine and Brandy Corporation for CIES and CoPS.
- Wittwer, G. and J. Rothfield (2005), *The Global Wine Statistical Compendium, 1961 to 2004,* Adelaide: Australian Wine and Brandy Corporation for CIES and CoPS.
- Wittwer, G. and Anderson, K. (2004), *The Global Wine Statistical Compendium, 1961 to 2003,* Adelaide: Australian Wine and Brandy Corporation for CIES and CoPS. Re-published in 2009 by the University of Adelaide Press.
- Anderson, K. and Norman, D. (2003), *Global Wine Production, Consumption and Trade, 1961 to 2001: A Statistical Compendium,* Adelaide: Centre for International Economic Studies.
- Anderson, K. and Norman, D. (2001), *Global Wine Production, Consumption and Trade, 1961 to 1999: A Statistical Compendium,* Adelaide: Centre for International Economic Studies.
- Berger, N., Spahni, P. and Anderson, K. (1999), *Bilateral Trade Patterns in the World Wine Market, 1988 to 1997,* Adelaide: Centre for International Economic Studies.
- Berger, N., Anderson, K. and Springer, R. (1998), *Trends in the World Wine Market, 1961 to 1996,* Adelaide: Centre for International Economic Studies.

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Japan?", Wine Economics Research Centre Working Paper 0517, November), to co-authors of previous editions, and to the contributors to the *Annual Database of Global Wine Markets, 1835 to 2016*, who are also contributors to K. Anderson and V. Pinilla (eds.) (2018), *Wine Globalization: A New Comparative History*, Cambridge and New York: Cambridge University Press.

Because that Cambridge University Press volume is being published simultaneously with this Compendium, there is no need to include an Introductory chapter here as in preceding issues of the Compendium. Instead, readers are referred to the empirically based analytical narratives in that multi-authored volume, particularly chapter 2 by K. Anderson and V. Pinilla, which provides a lengthy overview of wine globalization during the past 180 years. There are around 200 charts and tables in that volume, drawing on the data in this Compendium.

While the authors have made every effort to ensure the accuracy and currency of information within this compendium, we accept no responsibility for information which may later prove to be misrepresented or inaccurate, or for any reliance placed on the information by readers.