

Ithaca 2018 Abstract Submission

Title

THE EUROPEAN WINE EXPORTS CYCLE

I want to submit an abstract for:

Conference Presentation

Corresponding Author

Sofia Gouveia

E-Mail

sgouveia@utad.pt

Affiliation

University of Trás-os-Montes and Alto Douro (UTAD)

Co-Author/s

Name	E-Mail	Affiliation
Leonida Correia	lcorreia@utad.pt	University of Trás-os-Montes and Alto Douro (UTAD)
Patrícia Martins	smartins@utad.pt	University of Trás-os-Montes and Alto Douro (UTAD)

Keywords

Wine, international trade, synchronization, European Union

Research Question

This paper analyses and compares the cycles of wine exports for the 10 main wine-producing countries in European Union (EU) with the aggregate cycle of these EU member states.

Methods

The cycles of wine exports are obtained using detrending techniques. To analyze the synchronization and interaction between cycles the Spearman's rank correlation, concordance indices and Granger causality tests are calculated.

Results

The results reveal a great heterogeneity in the degree of cyclical association with the European wine cycle and expressive changes across sub periods and in terms of volume and value.

Abstract

Over the last decades, the growth of the international wine trade has been fostered by the trade liberalization process. This is an outcome of the abolition of trade barriers by the establishment of integrated economic areas, of which the most relevant to the wine trade are the European Union (EU), North America Free Trade Agreement (NAFTA), Mercado Común del Sur (MERCOSUR) and Zealand Closer Economic Agreement (ZCERTA). Also the role of the World Trade Organization (WTO) towards a general and progressive reduction of tariffs and more effective regulation of non-tariff barriers contributes to increase the wine trade (Mariani et al, 2012).

The EU is the world's largest wine-producing and exporting region. According the most recent data available in the International Organization of Vine and Wine (OIV) Database, in 2014 the EU represented about 60% of the world's wine produced and 64% of the world's export market for wine. The United States is the world's second-largest

wine-producing region, accounting for about 10% of global production. The remaining 30% of global wine production is from new wine producers and exporters, which have emerged as major producers and exporters since the 1990s, namely, Australia, Argentina, South Africa, Chile, China, Russia and New Zealand.

One aim of the research is to analyze whether or not there exists a European wine exports cycle and, if so, to examine how it evolves over the period under study. The choice of the initial year corresponds with the inception of the European Economic Community (EEC) in 1957. Since then it has evolved both by deepening (from a custom union to a monetary union) and by widening (from six to the present 28 member states). The first enlargement of the European Economic Community was in 1973 with the entrance of Denmark, Ireland, and the United Kingdom. Greece joined in 1981, with Portugal and Spain following in 1986, all three of which were wine producing. In 1995, Austria, Finland, and Sweden joined the EU. In 2004, the EU registered its biggest enlargement when ten countries (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) became EU members. In 2007, Bulgaria and Romania joined the Union. In 2013, Croatia became the 28th EU member state. The process of European integration required an integrated wine policy at the European level. Among the initial six members of the EEC, four of them were wine producing (France, Italy, Luxembourg, and West Germany). France and Italy together produced 96% of the total of the EEC (Germany the remaining 4%), but adopted different pre-EEC wine policies, with French tariffs higher than the Italian ones. While France's wine market was highly regulated, Italy had more liberal policies (Newsletter on the Common Agricultural Policy, 1969).

The Common Market Organization (CMO) for the wine sector was established in 1962 to collect data and impose regulation on production potential and quality, according to region. As such, the CMO was concerned with tariffs and taxation with third party trade, as well as with production and planting regulation. Specific provisions were given for wines distinguished by their region of origin. In 1999 major changes were introduced by removing the price regime and simplifying distillation measures. With the CMO reforms in 2008 and 2013 the policy on wine changed from one based on subsidizing production and the protection of domestic markets from non-European producers, to a policy that aims to stimulate quality production and the competitiveness of the wine sector on the international market.

Given the importance of the European wine industry over a long period of time, this paper analyses and compares the wine exports cycles for the ten most important wine-producing countries in the EU: Austria, Bulgaria, France, Germany, Greece, Hungary, Italy, Portugal, Romania and Spain. These ten countries are each of great importance to the wine industry. Data from the OIV database reveals that, since the creation of the euro in 1999 until 2014, these ten countries dominated, on average, 98% of the EU28 production and 96% of the volume of exports.

In this context, the approach taken allows us to characterize the degree of association between the wine exports cycles of these countries and the European aggregate (EU10), calculated as the sum of these 10 individual countries' exports as well as their dynamics during the period between 1957 and 2016. Identification of these characteristics plays an important role in anticipating wine export cycles and could be an important tool in supporting the decision-making process of public and private wine industry related organizations.

The data on annual wine exports for the 10 above mentioned countries used in this paper come from the database recently published by Anderson & Pinilla (2017). The reference variable considered as representing European wine exports en bloc is the EU10 wine exports aggregate, calculated as the sum of the 10 individual countries' exports. This choice results from the fact that this aggregate represents almost all of EU28 wine exports.

Specifically, in volume, the annual time series for the 10 countries and the aggregate EU10 (all in kiloliters) are examined for the period 1957-2016. The evolution of wine exports (in volume) for these 10 countries since the Treaty of Rome (Figure 1) reveals the predominance of France, Italy and Spain, which represented approximately, on average, 76% of the EU10 exports in volume, with each of these 3 countries disputing the first place over the years.

In value, the series analyzed refers to annual wine exports data expressed in thousands of US dollars at constant prices. To convert nominal prices into real prices, the consumer price index deflator was employed.

The methodology used in this article is based on the decomposition of wine (log) exports time series in trend and cycle components. In order to make our results robust, we used two of the most widely applied techniques: the Hodrick-Prescott (HP) filter (Hodrick and Prescott, 1997) and the Baxter-King band-pass (BK) filter (Baxter and King, 1999).

After filtering the series, we analyzed the synchronization between the wine exports cycles of each country and the EU10 aggregate (with and without the specific country) based on two methods: the Spearman's correlation coefficients and the concordance indices.

The correlations describe the degree of association between pairs of cycles. We calculated the contemporaneous correlations with leads and lags. We specified a window of a maximum of 2 years of leads and lags, and the

maximum correlation from among the five correlations was chosen.

The concordance indices show the periods in which two series are in the same cyclical phase. They are based on binary series (0-1) for each country, in which the unit represents the expansion periods (above the trend) and zero represents periods below the trend. Since the introduction of the indices of concordance by Harding and Pagan (2002) they have been increasingly used in literature as a complement of the correlation coefficients.

The sample was divided into two equal sub-periods, from 1957 to 1986 and from 1987 to 2016. The break corresponds with an important mark in the dynamics of the international wine trade (with the intensification in the growth of wine exports) and in the process of European integration (with the signing of the Single European Act in 1986 which was the first major revision of the 1957 Treaty of Rome, completing the internal market).

Since we are interested not only in the degree of cyclical association but also in its evolution over time, we have also computed correlations/concordance coefficients for rolling periods of 12 years. Finally, we have developed a Granger causality analysis in order to examine the interaction between cycles in greater detail, so as to allow us to conclude whether a country's lagging wine export cycle presents significant information to explain the European wine exports cycle and vice-versa.

The results for wine exports in volume over the whole period sampled reveal, in general, a lower cyclical association with the European cycle for the majority of the countries, with Italy and Spain being the only countries who display a strong correlation. However, when the aggregated cycle without the respective countries is considered, the coefficients loose significance (Italy) or became weak (Spain).

The analysis carried out for sub-periods suggests important changes from the first to the second sub period.

During the first three decades, only 4 countries display a significant association with the European exports wine cycle (Austria, Italy, Romania and Spain). In the second, with the exception of Portugal, the cycles of all the countries have some association with the European cycle but there is a great deal of heterogeneity. Some countries exhibit a countercyclical behavior (Austria, Germany, Greece and Hungary), some others increased their association substantially (Bulgaria, France and Romania) while others decreased theirs (Italy and Spain). There is also evidence of lead and lag cycles.

In terms of volatility, from among the cycles of wine exports of the EU10 aggregate, Germany and Portugal present the lowest fluctuations. In contrast, Austria, Greece and Romania display the highest cyclical dispersion in the whole period and in the first sub period; in the second sub period, in the group of the three more volatile cycles, Bulgaria appears instead of Greece. In general, there is a decrease in the amplitude of cycles in the second sub period, with Bulgaria, Hungary and Portugal being the exceptions.

Regarding the series in value, the preliminary results suggest a great difference relative to the evidence obtained for the exports in volume, with almost all the countries showing a significant degree of association with the European wine cycle, half of them very strong.

This heterogeneity of results should be addressed in the context of policy making for the European wine industry. The policy implications will be addressed in detail.

In terms of structure, after an introduction the paper presents some facts about the process of European integration and the dynamics of the wine industry in European Union, followed by a section that includes data, methods and results. Finally some concluding remarks and policy recommendations are presented.

File Upload (PDF only)

- [Gouveia-Sofia-2018_The-European-Wine-Exports-cycle.pdf](#)

THE EUROPEAN WINE EXPORTS CYCLE

Leonida Correia

Department of Economics, Sociology and Management (DESG), Centre for Transdisciplinary Development Studies (CETRAD), University of Trás-os-Montes and Alto Douro (UTAD), Quinta de Prados, 5001-801 Vila Real, Portugal, Email: lcorreia@utad.pt

Sofia Gouveia

Department of Economics, Sociology and Management (DESG), Centre for Transdisciplinary Development Studies (CETRAD), University of Trás-os-Montes and Alto Douro (UTAD), Quinta de Prados, 5001-801 Vila Real, Portugal, Email: sgouveia@utad.pt

Patrícia Martins

Department of Economics, Sociology and Management (DESG), Centre for Transdisciplinary Development Studies (CETRAD), University of Trás-os-Montes and Alto Douro (UTAD), Quinta de Prados, 5001-801 Vila Real, Portugal, Email: smartins@utad.pt

Funding

This work was supported by the project NORTE -01-0145-FEDER-000038 (INNOVINE & WINE – Innovation Platform of Vine & Wine) and by European and Structural and Investment Funds in the FEDER component, through the Operational Competitiveness and Internationalization Program (COMPETE 2020) [Project No 006971 (UIC/SOC/04011)]; and national funds, through the FCT – Portuguese Foundation for Science and Technology under the UID/SOC/04011/2013.

Research Question

This paper analyses and compares the cycles of wine exports for the 10 main wine-producing countries in European Union (EU) with the aggregate cycle of these EU member states.

Methods

The cycles of wine exports are obtained using detrending techniques. To analyze the synchronization and interaction between cycles the Spearman's rank correlation, concordance indices and Granger causality tests are calculated.

Results

The results reveal a great heterogeneity in the degree of cyclical association with the European wine cycle and expressive changes across sub periods and in terms of volume and value.

Keywords

Wine, international trade, synchronization, European Union.

Abstract

Over the last decades, the growth of the international wine trade has been fostered by the trade liberalization process. This is an outcome of the abolition of trade barriers by the establishment of integrated economic areas, of which the most relevant to the wine trade are the European Union (EU), North America Free Trade Agreement (NAFTA), Mercado Común del Sur (MERCOSUR) and Zealand Closer Economic Agreement (ZCERTA). Also the role of the World Trade Organization (WTO) towards a general and progressive reduction of tariffs and more effective regulation of non-tariff barriers contributes to increase the wine trade (Mariani *et al*, 2012).

The EU is the world's largest wine-producing and exporting region. According the most recent data available in the International Organization of Vine and Wine (OIV) Database¹, in 2014 the EU represented about 60% of the world's wine produced and 64% of the world's export market for wine. The United States is the world's second-largest wine-producing region, accounting for about 10% of global production. The remaining 30% of global wine production is from new wine producers and exporters, which have emerged as major producers and exporters since the 1990s, namely, Australia, Argentina, South Africa, Chile, China, Russia and New Zealand.

One aim of the research is to analyze whether or not there exists a European wine exports cycle and, if so, to examine how it evolves over the period under study. The choice of the initial year corresponds with the inception of the European Economic Community (EEC) in 1957. Since then it has evolved both by deepening (from a custom union to a monetary union) and by widening (from six to the present 28 member states). The first enlargement of the European Economic Community was in 1973 with the entrance of Denmark, Ireland, and the United Kingdom. Greece joined in 1981, with Portugal and Spain following in 1986, all three of which were wine producing. In 1995, Austria, Finland, and Sweden joined the EU. In 2004, the EU registered its biggest enlargement when ten countries (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) became EU members. In 2007, Bulgaria and Romania joined the Union. In 2013, Croatia became the 28th EU member state.

The process of European integration required an integrated wine policy at the European level. Among the initial six members of the EEC, four of them were wine producing (France, Italy,

¹ OIV database: <http://www.oiv.int/en/databases-and-statistics/statistics>.

Luxembourg, and West Germany). France and Italy together produced 96% of the total of the EEC (Germany the remaining 4%), but adopted different pre-EEC wine policies, with French tariffs higher than the Italian ones. While France's wine market was highly regulated, Italy had more liberal policies (Newsletter on the Common Agricultural Policy, 1969).

The Common Market Organization (CMO) for the wine sector was established in 1962 to collect data and impose regulation on production potential and quality, according to region. As such, the CMO was concerned with tariffs and taxation with third party trade, as well as with production and planting regulation. Specific provisions were given for wines distinguished by their region of origin. In 1999 major changes were introduced by removing the price regime and simplifying distillation measures. With the CMO reforms in 2008 and 2013 the policy on wine changed from one based on subsidizing production and the protection of domestic markets from non-European producers, to a policy that aims to stimulate quality production and the competitiveness of the wine sector on the international market.

Given the importance of the European wine industry over a long period of time, this paper analyses and compares the wine exports cycles for the ten most important wine-producing countries in the EU: Austria, Bulgaria, France, Germany, Greece, Hungary, Italy, Portugal, Romania and Spain². These ten countries are each of great importance to the wine industry. Data from the OIV database reveals that, since the creation of the euro in 1999 until 2014, these ten countries dominated, on average, 98% of the EU28 production and 96% of the volume of exports.

In this context, the approach taken allows us to characterize the degree of association between the wine exports cycles of these countries and the European aggregate (EU10), calculated as the sum of these 10 individual countries' exports as well as their dynamics during the period between 1957 and 2016. Identification of these characteristics plays an important role in anticipating wine export cycles and could be an important tool in supporting the decision-making process of public and private wine industry related organizations.

The data on annual wine exports for the 10 above mentioned countries used in this paper come from the database recently published by Anderson & Pinilla (2017). The reference variable considered as representing European wine exports *en bloc* is the EU10 wine exports aggregate, calculated as the sum of the 10 individual countries' exports. This choice results from the fact that this aggregate represents almost all of EU28 wine exports.

² According Anderson & Pinilla (2017), in the EU28 production ranking in 2016 Italy stands in the first position, then France, Spain, Germany, Portugal, Romania, Greece, Austria, Hungary and Bulgaria.

Specifically, in volume, the annual time series for the 10 countries and the aggregate EU10 (all in kiloliters) are examined for the period 1957-2016. The evolution of wine exports (in volume) for these 10 countries since the Treaty of Rome (Figure 1) reveals the predominance of France, Italy and Spain, which represented approximately, on average, 76% of the EU10 exports in volume, with each of these 3 countries disputing the first place over the years.

In value, the series analyzed refers to annual wine exports data expressed in thousands of US dollars at constant prices. To convert nominal prices into real prices, the consumer price index deflator was employed.

The methodology used in this article is based on the decomposition of wine (log) exports time series in trend and cycle components. In order to make our results robust, we used two of the most widely applied techniques: the Hodrick-Prescott (HP) filter (Hodrick and Prescott, 1997) and the Baxter-King band-pass (BK) filter (Baxter and King, 1999).

After filtering the series, we analyzed the synchronization between the wine exports cycles of each country and the EU10 aggregate (with and without the specific country) based on two methods: the Spearman's correlation coefficients and the concordance indices.

The correlations describe the degree of association between pairs of cycles. We calculated the contemporaneous correlations with leads and lags. We specified a window of a maximum of 2 years of leads and lags, and the maximum correlation from among the five correlations was chosen.

The concordance indices show the periods in which two series are in the same cyclical phase. They are based on binary series (0-1) for each country, in which the unit represents the expansion periods (above the trend) and zero represents periods below the trend. Since the introduction of the indices of concordance by Harding and Pagan (2002) they have been increasingly used in literature as a complement of the correlation coefficients.

The sample was divided into two equal sub-periods, from 1957 to 1986 and from 1987 to 2016. The break corresponds with an important mark in the dynamics of the international wine trade (with the intensification in the growth of wine exports) and in the process of European integration (with the signing of the Single European Act in 1986 which was the first major revision of the 1957 Treaty of Rome, completing the internal market).

Since we are interested not only in the degree of cyclical association but also in its evolution over time, we have also computed correlations/concordance coefficients for rolling periods of 12 years. Finally, we have developed a Granger causality analysis in order to examine the interaction between cycles in greater detail, so as to allow us to conclude whether a country's

lagging wine export cycle presents significant information to explain the European wine exports cycle and vice-versa.

The results for wine exports in volume over the whole period sampled reveal, in general, a lower cyclical association with the European cycle for the majority of the countries, with Italy and Spain being the only countries who display a strong correlation. However, when the aggregated cycle without the respective countries is considered, the coefficients lose significance (Italy) or became weak (Spain).

The analysis carried out for sub-periods suggests important changes from the first to the second sub period. During the first three decades, only 4 countries display a significant association with the European exports wine cycle (Austria, Italy, Romania and Spain). In the second, with the exception of Portugal, the cycles of all the countries have some association with the European cycle but there is a great deal of heterogeneity. Some countries exhibit a countercyclical behavior (Austria, Germany, Greece and Hungary), some others increased their association substantially (Bulgaria, France and Romania) while others decreased theirs (Italy and Spain). There is also evidence of lead and lag cycles.

In terms of volatility, from among the cycles of wine exports of the EU10 aggregate, Germany and Portugal present the lowest fluctuations. In contrast, Austria, Greece and Romania display the highest cyclical dispersion in the whole period and in the first sub period; in the second sub period, in the group of the three more volatile cycles, Bulgaria appears instead of Greece. In general, there is a decrease in the amplitude of cycles in the second sub period, with Bulgaria, Hungary and Portugal being the exceptions.

Regarding the series in value, the preliminary results suggest a great difference relative to the evidence obtained for the exports in volume, with almost all the countries showing a significant degree of association with the European wine cycle, half of them very strong.

This heterogeneity of results should be addressed in the context of policy making for the European wine industry. The policy implications will be addressed in detail.

In terms of structure, after an introduction the paper presents some facts about the process of European integration and the dynamics of the wine industry in European Union, followed by a section that includes data, methods and results. Finally some concluding remarks and policy recommendations are presented.

References

Anderson, K. and V. Pinilla (2017). *Annual Database of Global Wine Markets, 1835 to 2016*. Wine Economics Research Centre, University of Adelaide, August (freely available in Excel files at www.adelaide.edu.au/wine-econ/databases).

Baxter, M. and King, R. (1999). Measuring Business Cycles: Approximate Band-Pass Filters for Economic Time Series. *The Review of Economics and Statistics*, 81, 575-593.

Hodrick, R. and Prescott, E. (1997). Postwar U.S. Business Cycles: An Empirical Investigation. *Journal of Money, Credit and Banking*, 29, 1-16.

Harding, D. and Pagan, A. (2002). Dissecting the cycle: a methodological investigation. *Journal of Monetary Economics*, 49: 365-81.

European Commission (1969). *The Commission's memorandum on the reform of agriculture in the Community*. Newsletter on the Common Agricultural Policy No. 1, January 1969. Available at: http://aei.pitt.edu/view/eusries/AGRICULTURE=3ANewsletter_on_the_Common_Agricultural_Policy.html

European Commission - EC (2014). *Study on the Competitiveness of European wines*. Written by COGEA. Available at: https://ec.europa.eu/agriculture/sites/agriculture/files/external-studies/2014/eu-ines/exec-sum_en.pdf.

Mariani, A., Pomarici, E. and Boatto, V. (2012). The international wine trade: Recent trends and critical issues. *Wine Economics and Policy* 1, 24-40.

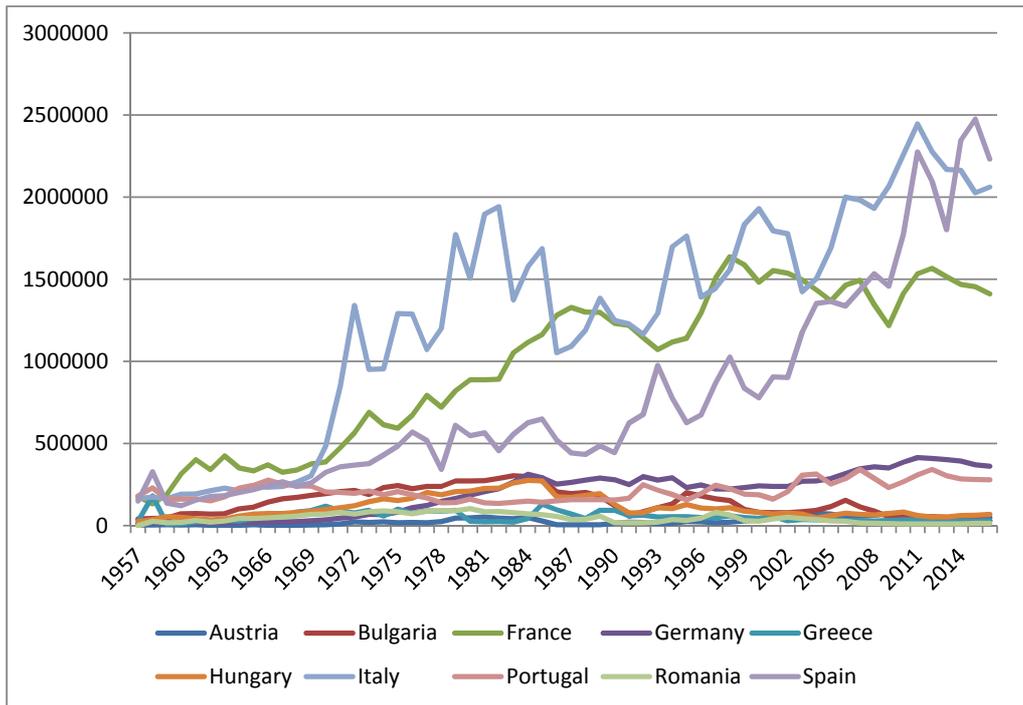


Figure 1 – Exports of wine EU10 main european producers, volume (kiloliters)