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The Evaluation of Competitiveness of the Hungarian Wine Sector

In the last few decades the global wine market has undergone several changes. These changes have considerably influenced the competitiveness of major European wine exporter countries and the Hungarian wine industry as well.

Based on empirical studies the most popular way to assess the international wine competitiveness is the different formula of Balassa indices. According to Balassa (1965), the comparative advantage is manifested by high while the comparative disadvantage by low export market shares. In the work of Balassa (1965), Vollrath (1991), Hoen and Oosterhaven (2006), Yu et al. (2009) suggested several types of modified competitiveness indices.

This study analyses the international competitiveness of Hungarian wine trade by the help of revealed comparative advantage and competitiveness indices (RCA, ARCA, NRCA, RTA, RC) between 2000 and 2013. It investigates the changes of indices in terms of world and regional point of view. The stability of indicators is tested by Markov transition probability matrix.

INTRODUCTION

In the last few decades the global wine market has undergone several changes. New World wine producer countries have appeared beside the traditional European wine producers and they have gained a considerable place in the world wine market. The New World wine producers have increased their vineyards by new plantations and this accounts for the notable boost of their wine export. Furthermore, the traditional wine producing countries with high levels of consumption show a fast decrease in domestic demand while emerging countries with traditionally lower consumption levels show an increase (Bianco et al., 2013.). The wine consumption has been falling especially in southern European countries, where changing consumption

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habits (e.g. substitution of others beverages, outdoor drinking) have affected the overall demand (OIV 2012.). This market re-arrangement influences the competitiveness of major European wine exporters thus the competitiveness of the Hungarian wine trade.

This paper was motivated to investigating how the competitiveness of Hungarian wine sector has been altered due to these world wine market trends. I evaluate the international competitiveness of Hungarian wine trade comparing to the regional and European wine producers. To assess the competitiveness of Hungarian wine sector I analyze the wine trade by several comparative advantage and competitiveness indices.

EMPIRICAL STUDIES ON COMPETITIVENESS OF WINE TRADE

Concerning the wine sector a few studies already exist which investigate competitiveness and comparative advantage of the wine trade.

Anderson (2013) dealt with the Georgian wine industry analysing the determinants of comparative advantage with revealed comparative advantage index (RCA). Anderson and Wittwer (2013) modelled the global wine market to 2018 by considering the impact of real exchange rate changes on competitiveness. Van Rooyen et al. (2010) assessed the competitive performance of the wine industry in South Africa by using relative trade advantage (RTA) index formula. Vlahović et al. (2013) researched the world wine export, the current world trends and explored export structure on the international wine market.

Bozsik (2005) conducted research on the evaluation of Hungarian wine competitiveness on foreign markets by relative export advantage (RXA), relative import advantage (RMA), relative trade advantage (RTA) and revealed competitiveness (RC) indices.

MEASURING COMPETITIVENESS

The most widely used indicator of competitiveness is the revealed comparative advantage index, developed by Balassa Béla (1965); the index is defined as follows:

$$B_{ij}\ (RCA) = (Xij / Xit) / (Xnj / Xnt) \qquad (1)$$

where X represents exports, i is a country, j is a commodity, t is a set of commodities, and n is a set of countries, which are used as the benchmark export markets for comparisons.

It measures a country's exports of a commodity relative to its total exports and to the corresponding export performance of a set of countries. If B > 1, then a country's agri-food comparative export advantage on the global market is revealed.

Vollrath (1991) offered an alternative specification of revealed comparative advantage, known as the relative trade advantage index (RTA), which accounts for exports and imports as well.

$$RTA = RXA\text{-}RMA \quad (2)$$

where RXA = B (RCA)

$$RMA = (Mij / Mit) / (Mnj / Mnt) \quad (3)$$

$$RTA = [(Xij / Xit) / (Xnj / Xnt)] - [(Mij / Mit) / (Mnj / Mnt)] \quad (4)$$

where X represents export and M the imports, i is a country, j is a commodity, t is a set of commodities and n is a set of countries.

If RTA>0, then a relative comparative trade advantage is revealed, i.e. a sector in which the country is relatively more competitive in terms of its trade.

Vollrath suggested a second type of RCA index, which is simply the logarithm of the relative, export advantage (lnRXA) and relative import advantage (lnRMA) indices and his third measure is called revealed competitiveness (RC), are calculated as:

$$RC = ln\ RXA - ln\ RMA \quad (5)$$

The advantage of this index is that it becomes symmetric through the origin. Positive values of Vollrath's indices reveal a comparative or competitive advantage whereas negative values indicate comparative disadvantage.

Hoen and Oosterhaven (2006) introduce an additive index of revealed comparative advantage:

$$ARCA = (Xij / Xit) - (Xnj / Xnt) \quad (6)$$

The ARCA index ranges between -1 and +1 with 0 demarcation point.
Yu et al. (2009, 2010) adopted an alternative measure to assess the dynamics of comparative advantage called NRCA index to improve certain aspects of original RCA index. Yu et al. (2009) define the NRCA as follows:

$$NRCAij=Eij/E - EjEi/EE \quad (7)$$

where E denotes total world trade, E_{ij} describes country i's actual export of commodity j in the world market, Ei is country i's export of all commodities and Ej denotes export of commodity j by all countries. If NRCA>0, a country's

agri-food comparative advantage on the world market is revealed. The NRCA ranges from –1/4 to +1/4 with 0 being the comparative-advantage-neutral point.

Using these indices is often problematic because the real trade patterns can be distorted by government policies and may therefore misrepresent underlying comparative advantage (Fertő and Hubbard 2002).

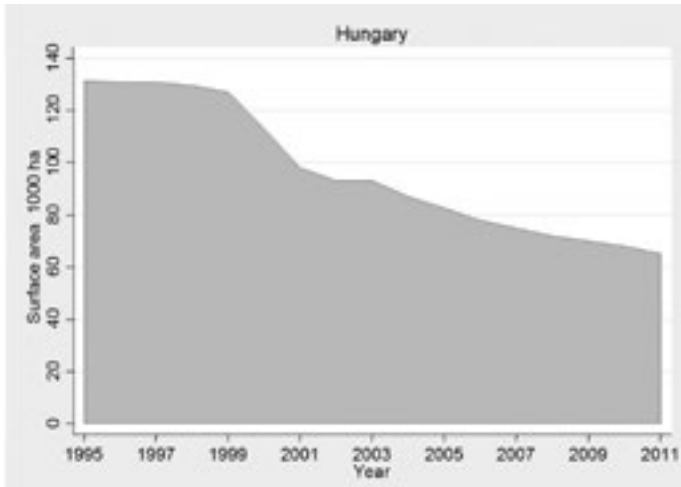
DATA AND SAMPLING

The sample of the study consists of 33 wine exporter countries including Hungary (appendix 1). Wine trade data are based on World Bank World Integrated Trade Solution (WITS) database in HS-6 level, product code 2204. The data of grape area harvested, wine production and consumption derived from the Organisation Internationale de la Vigne et du Vin (OIV) database. The trade indices are calculated from the wine export and import data of WITS database.

THE HUNGARIAN WINE SECTOR

Grape and wine production in the Carpathian basin dates back thousands of years. The Romans brought vines to Pannonia, and by the 5th century AD, there are records of extensive vineyards in Hungary. Tokaji aszú (the world-famous dessert wine) is mentioned in a document of 1571, and it was famously christened by Louis XIV of France "Vinum Regum, Rex Vinorum". The 18th and 19th centuries, Hungary was among the greatest producers of European wine. The evidence of Hungarian winemaking history is that the region of Tokaj-Hegyalja was the world's first classified vineyard in 1772. Hungary has 22 wine regions and more then 10 000 companies are involved in the wine industry. Hungary is able to export 400-800 thousands hl wine annually. However, the Hungarian grape area harvested has been decreasing for two decades (Figure 1). The grape growing territories, which had reached 135 thousand ha in 1995, was reduced to 69 thousand ha for 2013. The decrease was mainly due to the Common Agricultural Policy measures of European Union (e.g. grubbing-up program, prohibition of new plantings).

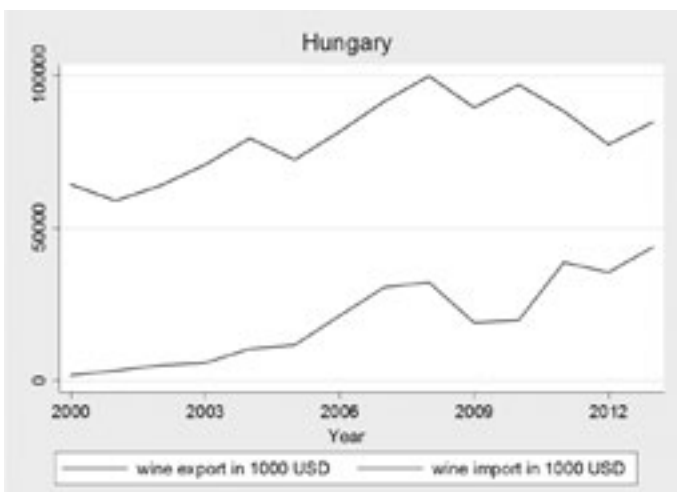
Figure 1: Hungarian grape area harvested (1995–2011)



Source: author's own based on OIV database.

On the other hand the value of wine export shows an increasing tendency, accounting for 64 million USD in 2000 and 85 million USD in 2013 (Figure 2). However, the quantity of exported wine declined 803 thousand hl to 544 hl from 2000 to 2013. These changes could be caused by the grubbing-up program and higher wine prices.

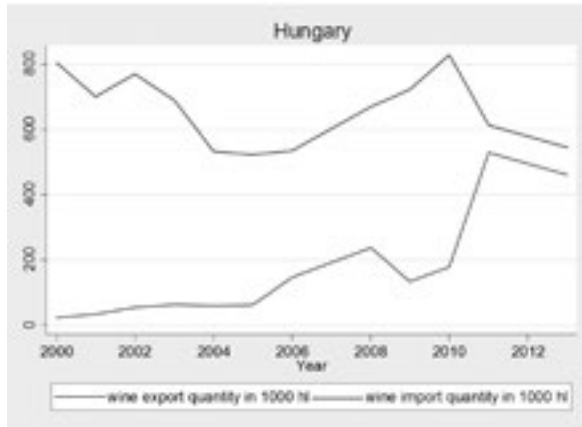
Figure 2: Hungarian wine trade in USD (2000–2013)



Source: author's own based on World Bank WITS database.

Furthermore, Hungarian wine imports have grown in accordance with this declining wine export in quantity. Although the wine import was only 1.9 million USD in 2000 in turn it reached 43.9 million USD in 2013 (Figure 2).

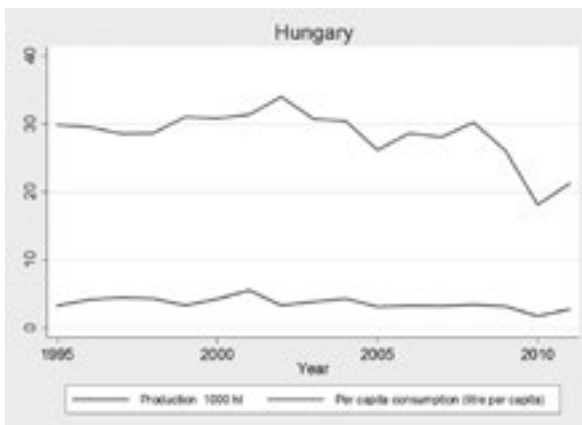
Figure 3: Hungarian wine trade in 1000 hl (2000–2013)



Source: author's own based on OIV database.

The imported wine also increased in quantity 23.8 thousand hl to 461.1 thousand hl between 2000 and 2013 (Figure 3). Hungarian wine imports consist mainly of cheap low-grade Italian wines that can endanger the market condition of Hungarian wine producers. Hungarian wine production fluctuates between 3-3.5 million hectolitres on average annually. The average annual per capita wine consumption ranges between 30-32 litres, although it also shows a downward trend falling to 26 litres in 2011 (Figure 4).

Figure 4: Wine production and per capita consumption in Hungary (1995–2011)

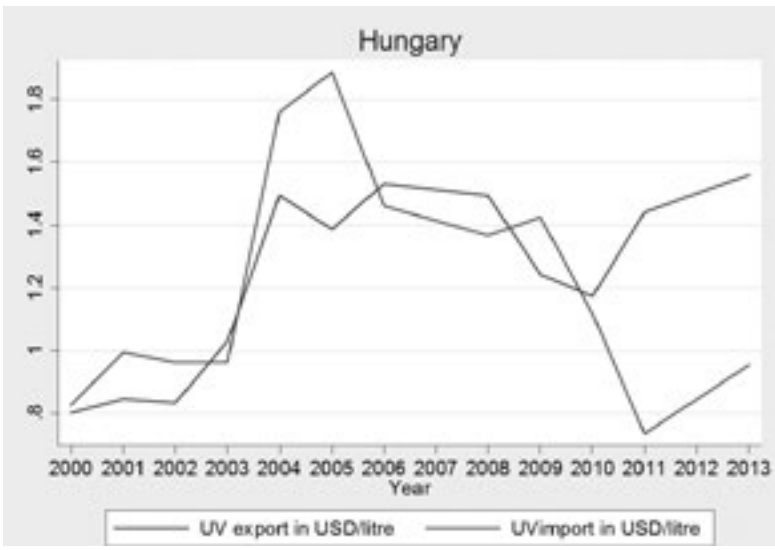


Source: author's own based on OIV database.

The unit value of Hungarian wine exports (calculated as follows: traded value of wine in USD divided by traded quantity of wine in litre) doubled between 2000 and 2013 (it increased 0.8 USD/litre to 1,6 USD/litre for 2013) while the unit value of wine import fell below 1 USD/litre in 2010 (Figure 5). It confirms that Hungarian wine prices are growing on international markets.

In summary the Hungarian wine trade pictures a shrinking domestic and international market position contemporaneously growing export prices while incoming wine import to Hungary is increasing.

Figure 5: Unit value of Hungarian wine trade (2000–2013)

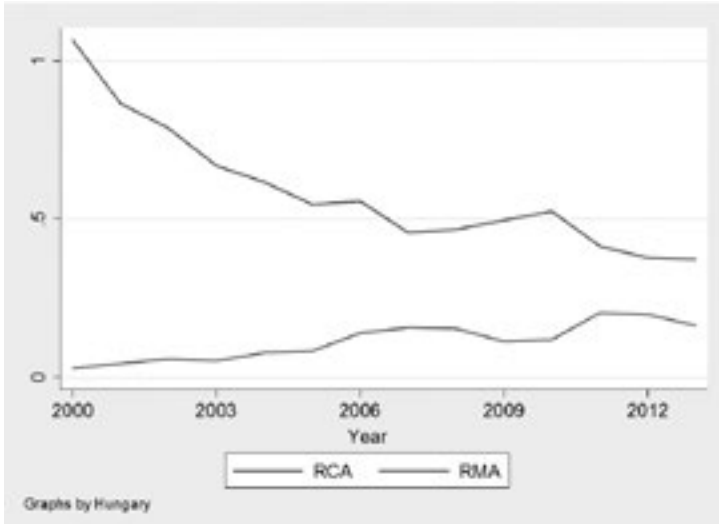


Source: author's own based on World Bank WITS database.

EVALUATION OF COMPETITIVENESS OF HUNGARIAN WINE SECTOR

The value of RCA index of Hungary decreased between 2000 and 2013. It was 1.06 in 2000 and reduced to 0.37 in 2013. The RCA indices below 1 indicate a competitive disadvantage since 2001. It means that the Hungarian market share of wine export has been declining compared to world wine exports (Figure 6). Simultaneously, RMA indices have increased in accordance with imported wine (as a result of the strong presence of cheaper Italian and New World wines on the Hungarian market).

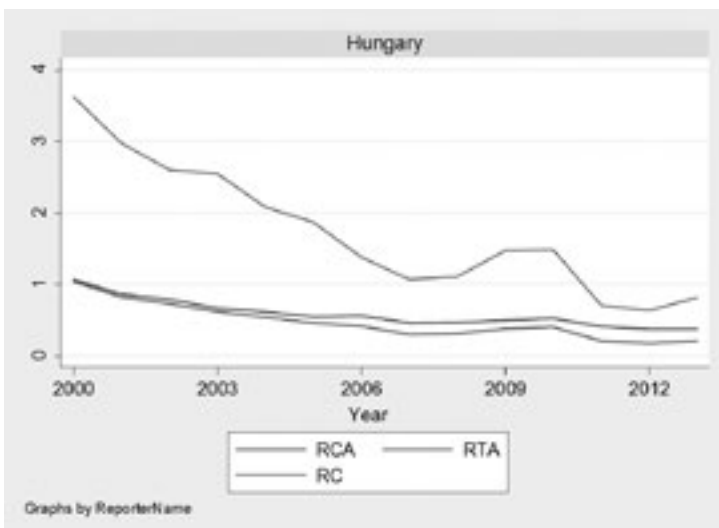
Figure 6: RCA and RMA indices of Hungarian wine trade (2000–2013)



Source: author's own based on World Bank WITS database.

The values of RTA and RC indicators fell during the analysed period; however, their values remained positive. These indices show that Hungary still has a competitive advantage in terms of the wine trade, but this advantage is continuously declining (Figure 7).

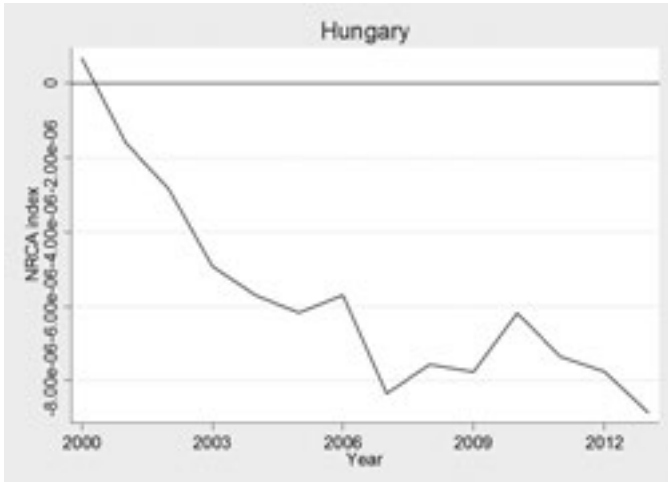
Figure 7: RCA, RTA, RC indices of Hungarian wine trade (2000–2013)



Source: author's own based on World Bank WITS database.

Concerning the NRCA indices (it ranges between -1/4 and +1/4 and its positive values denote competitive advantage) their values were still above zero at the beginning of the analysed period and showed a comparative advantage in 2000. It turned negative afterwards (Figure 8).

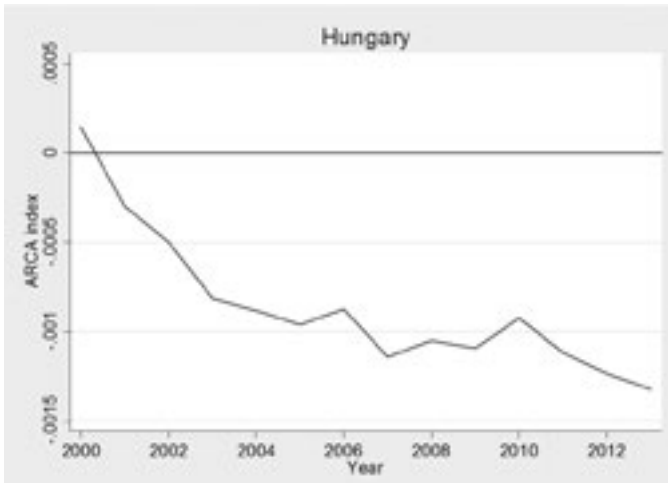
Figure 8: NRCA indices of Hungarian wine trade (2000–2013)



Source: author's own based on World Bank WITS database.

The changes of ARCA indices show a similar evolution to the NRCA indices, it also turned negative after 2001 (Figure 9).

Figure 9: ARCA indices of Hungarian wine trade (2000–2013)

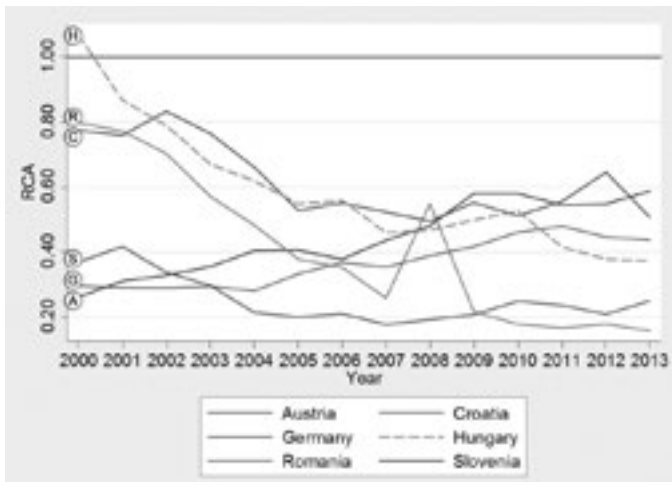


Source: author's own based on World Bank WITS database.

REGIONAL AND WORLD COMPARISON OF HUNGARIAN WINE TRADE

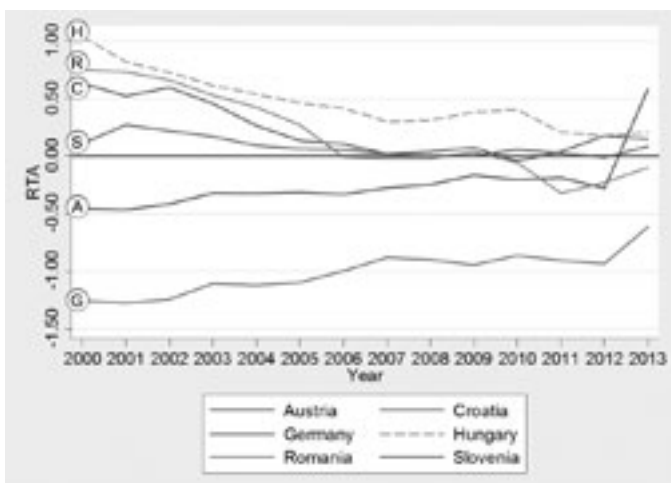
Based on the regional comparison of Balassa type indices Austria, Croatia and Germany preceded Hungary between 2011 and 2013. Regional comparisons of RTAs illustrate that the Croatian and Austrian wine industry could be considered strong competitors of Hungary. Moreover the RCA and RTA indicators ranked Romania and Slovenia behind Hungary (Figure 10 and 11).

Figure 10: Regional comparison of RCA indices (2000–2013)



Source: author's own based on World Bank WITS database.

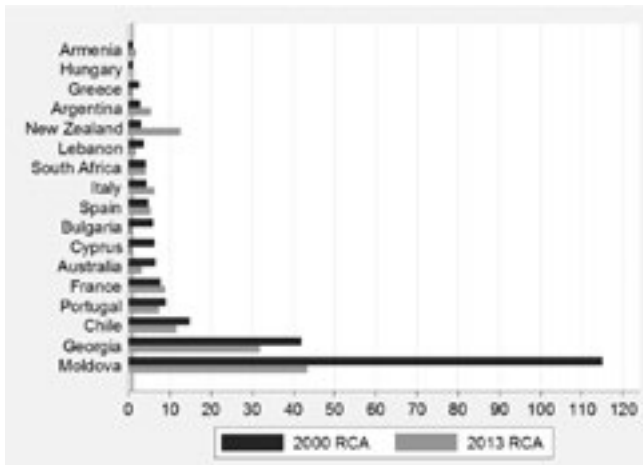
Figure 11: Regional comparison of RTA indices (2000–2013)



Source: author's own based on World Bank WITS database.

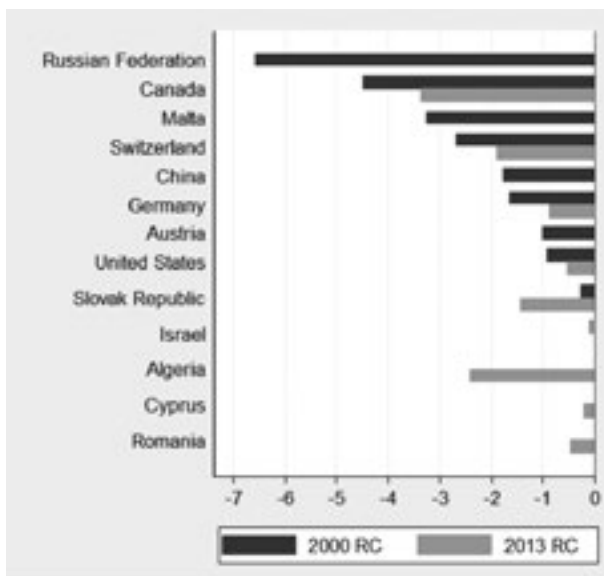
Regarding the worldwide comparison the RCA and RC indices ranked Hungary among the competitive wine producers in 2000 (Figure 12). Hereafter, Hungary experienced a significant decline in 2013 (its RCA index fell below 1). As regards the RC indices, Hungary remained still competitive in 2000 and in 2013 and did not appear among uncompetitive wine producers (Figure 13).

Figure 12: Regional comparison of countries with competitive RCA indices (RCA>1)



Source: author's own based on World Bank WITS database.

Figure 13: Regional comparison of countries with uncompetitive RC indices (RC<0)



Source: author's own based on World Bank WITS database.

Table 1 presents the Markov transition probabilities for RCA indices indicating probability of remaining or becoming competitive to non-competitive between 2000 and 2013.

Table 1: Markov matrix for RCA indices of 33 wine exporters

RCA indices	Comparative disadvantage (0)	Comparative advantage (1)	Total
Comparative disadvantage (0)	95,9%	4,1%	100%
Comparative advantage (1)	4,6%	95,4%	100%
Note:1 denotes comparative advantage, 0 disadvantage (1 if RCA>1; 0 if RCA<1)			

Source: author's own based on World Bank WITS database.

The diagonal elements of the Markov matrix indicate probability of remaining non-competitive (95,9 %) or competitive (95,4 %) referring to wine export. There is a small chance for competitive wine exporters to became non-competitive (4,1 %) and inversely (4,6%). The Markov matrix shows the strong position of competitive and non-competitive wine exporter countries as well.

CONCLUSION

Wine plays an important role in Hungary; therefore an evaluation of competitiveness of the Hungarian wine sector is always timely.

Based on the empirical competitiveness studies the most popular way to analyse the international competitiveness of wine sector is the use of various Balassa indices. Therefore I analysed the competitiveness of Hungarian wine trade by the revealed comparative advantage and its additional indices. I investigated the changes of the indices in terms of world and regional point of view. I tested the stability of RCAs by Markov matrix.

The result shows that the Hungarian wine industry was competitive during the last millennium although it has become less competitive in recent years. Hungary accounted for increasing wine import, decreasing wine export and per capita consumption between 2000 and 2013 which depict a weakening domestic market and diminishing international export competitiveness of the sector.

In a worldwide comparison, Hungary was still ranked among the middle competitive wine producers at the beginning of the analysed period and experienced a significant decline at the end of the period. The Markov transition

probability matrix of RCA indices suggests a small chance for competitive wine exporters to became non-competitive and inversely.

It should be noted that this study has several limitations. The results are measured at a macro level and did not take into consideration the quality of wine. The calculated indices assume that wine products across countries are homogenous. The effects of trade policy distortions on competitiveness indices were not taken into account.

Further research is needed to investigate the drivers of competitiveness with the help of econometrical methods.

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Appendix 1: List of 33 wine exporters

Algeria	Cyprus	New Zealand
Argentina	France	Portugal
Armenia	Georgia	Romania
Australia	Germany	Russian Federation
Austria	Greece	Slovak Republic
Azerbaijan	Hungary	Slovenia
Bulgaria	Israel	South Africa
Canada	Italy	Spain
Chile	Lebanon	Switzerland
China	Malta	Turkey
Croatia	Moldova	United States

HUNGARIAN SUMMARY

Az elmúlt évtizedekben a világ borpiaca jelentős változásokon ment keresztül. A végbement változások mind az európai mind a magyar borágazat versenyképességét jelentős mértékben befolyásolták, átrendezték. Ennek fényében fontos annak számba vétele, hogy hogyan alakult Magyarország borkereskedelmi versenyképessége az utóbbi évtizedben. Az empirikus kutatásokban a kereskedelmi versenyképesség értékelésének legnépszerűbb módszere a Balassa Béla által kifejlesztett komparatív előny indexek elemzése (Balassa 1965, Vollrath 1991, Hoen and Oosterhaven 2006, Yu et al. 2009).

Tanulmányomban a magyar borágazat versenyképességét elemeztem Balassa mutatók és annak továbbfejlesztett változatainak (RCA, ARCA, NRCA, RTA, RC) számítása alapján regionális és világpiaci összehasonlításban, 2000 és 2013 közötti időszakban. A mutatószámok értékelése alapján megállapítható, hogy míg a magyar borágazat 2000-es években még az alsó középmezőnyhöz tartozott export versenyképesség tekintetében, regionális viszonylatban, 2013-ra jelentős versenyhátrányba került a csökkenő szőlőültetvények, borexport, hazai borfogyasztás illetve a növekvő borimport hatására.