

Management of wine production with regard to its implementation into the wine markets of the Czech Republic

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Abstract: The Czech Republic is a country, in which the production of wine covers approximately one third of the total demand. The current production potential of the Czech Republic is 19 633.45 hectares of vineyards. Since 1960, the production potential of Czech vineyards has increased approximately three times. This increase equals the optimum production of 90 million litres of wine. Two thirds of the total demand for wine must be covered by imports. This paper analyses the development of the wine market within the period of the campaign years 2004/2005 to 2011/2012 and tries to predict the development in 2012/2013. The authors analyse developmental trends in the sales of this commodity with regard to the home production of wine after the entry of the Czech Republic into the European Union. In the Czech Republic, the wine trading is oriented nearly exclusively to seven EU member countries. The highest volumes of wine are imported from Italy and Hungary. Exports are mostly directed to Slovakia and (with a great gap) Poland. As far as the prices are concerned, this corresponds to CZK 3.5 bill. got for 170 million of sold litres. The management of wine production involves the restructuring of the varietal assortment in vineyards caused by a changing demand for white, rosé and red wines.

Key words: wine, market, production, bottled wine, barrel wine, prices, volumes

In the Czech Republic (CR), the wine-growing industry passed through a period of significant changes within the period of 1990–2012. Besides the changes in ownership and the abolition of the governmental monopoly in the domain of wine production, there were also several gradual legal/technological changes that markedly influenced the quality of Czech wine and thus increased the interest of consumers in this commodity. Moreover, the wine-growing industry also contributes to the competitiveness of the individual regions not only within the Czech Republic but also in the context of the Lisbon strategy (Melecký and Staníčková 2011). Problems concerning this industry and the development of wine per capita consumption were investigated and analysed by Chládková et al. (2011). In 1995, the parliament passed the Act no. 321/1994, Coll., on viticulture and wine growing, which significantly contributed to the improvement of the quality of Czech and Moravian wines. Another important steps were the establishment of the Czech Wine Fund in 2002, the controlled planting of grapevine plants prior to the accession of the Czech Republic to the EU, and, last but not least, also this

accession *per se*. The current production potential of the Czech Republic is 19 633.45 hectares and it can be said that it has increased three times since 1960. All these changes contributed significantly to wine production, imports, and consumption. After 1990, the incoming economic changes influenced also the wine business, which has developed intensively in the following years. Verner (2011) monitored and analysed the relationships between economic growth and the quality of life. The period of production stabilisation began after the accession of the CR to the EU. In 2004, this accession caused significant changes also in the Czech wine business and started the period of its development. Problems concerning wine production were studied and analysed also in some countries with small volumes of wine production, such as Denmark (Bentzen and Smith 2009), but also in Poland, Belgium and the United Kingdom. In Armenia, the effects of foreign trade and imports of wine on the home production of wine were studied by Marquardt and Hanf (2012). The importance of agricultural commodity studies was emphasised by Svatoš and Smutka (2012). Multilateral business

contacts may also influence the economies of scale, and the firm performance Gimeno and Woo (1999). Pro-market reforms and enterprise profitability in developing countries with the implanted market economy were studied by Cuervo-Cazura and Dau (2009) who emphasised the necessity of changes in these countries. As mentioned by Škorpíková (2004), it is necessary to monitor and evaluate the effects of the common market organisation (CMO) for wine. The effects of the CMO for wine are solved not only in the CR but also in Spain. In this country, the effects of the CMO on wine production were studied by Mollevi Bortoló (2009). It is necessary to monitor and control by the means of decision-making processes the developmental trends in wine industry (Ciaschini et al. 2006). When evaluating these trends, it is possible to use the experiences of producers competing in the markets of other products (Anand et al. 2009). Risks associated with the production of wine and the tools used for their management were studied by Garcia (2006). Belis-Bergouignan et al. (2008) studied the methods of the wine industry strategic management in the period of a long-term economic recession as well as the possibilities of strengthening the market competitiveness of wines produced in the Bordeaux wine region. Basing on the aforementioned short survey of literature, this study tries to analyse the development of the wine foreign trade in the Czech Republic within the period of the wine business fiscal years 2004/2005–2011/2012. As in the wine industry the last fundamental changes took place after the accession of the CR to the EU, we decided to use for this comparison the wine business fiscal year 2004/2005 (i.e. the period beginning on July 1, 2004) because in this time period, all the actual European Union wine regulations were already in force as in the year 2012. Within the framework of this objective, the relationships between wine production on the one hand and the imports/exports and consumption were evaluated, and export prices of wine as well as the import prices of imported products (either bulk or bottled) were ascertained. The obtained data and results of this survey can be used for decision making in the field of wine industry.

MATERIAL AND METHODS

In this comparison, data originating from the individual fiscal years were used due to the fact that the data for calendar years are not so tightly related to the relationship “production–consumption”. In spite of this, even the fiscal year of wine business does not express this relationship quite explicitly because a part

of the total produced volume of wine is stored and thus it appears in reserves. This, of course, concerns not only the home production but also the imported wine. The analysed data originated exclusively from surveys performed by the Wine-Growers Association of the Czech Republic, which were continuously recorded within a period of more than 15 years, the data published by the Czech Statistical Office (from the custom data), and the data published by the European Union. The data published by the Wine-Growers Association of the Czech Republic concerned natural volumes of the harvested grapes and their average prices in the individual years, the data from the Czech Statistical Office (CSO) informed about the natural volumes and prices of the imported and exported wine from/to the CR, and the data originating from the European Commission characterised the wine trade between the European Union and third countries. All these data were thereafter processed and analysed. The weight of the harvested grapes was converted to juice (wine) using the coefficient 0.7. The study period involved the fiscal years 2004/2005–2012/2013. Imports and exports of wine were evaluated also on the base of the package volumes, i.e. up to 2 litres (bottled wine) and above 2 litres (bulk wine). To predict the future development, the collected data were processed using the method of linear trends. The obtained results were visualised by the means of polygons and frequency histograms (Hindls et al. 1999). The paper was based also on the methodology of the finished research project MSM 6215648904, solved at the Faculty of Business and Economics, Mendel University in Brno till the year 2011, and the methodology of the research project of the Ministry of Agriculture of the CR (QF3276), which was finished in 2007. The applied analysis involved the managerial control function, which was used for decision-making of such subjects as the Wine-Growers Association of the Czech Republic and the Czech Wine Fund when planning production subsidies and sales of wine in some selected wine markets abroad. This enabled the above institutions to support actively the sustainability of the Czech wine industry.

RESULTS AND DISCUSSION

The Czech Republic belongs to the wine-producing countries that are predominantly dependent on imports of this commodity. Approximately one third of the consumed wine volume originates from the home production of the Czech Republic and two thirds are imported. In the recent years, exports of wine from the CR represented approximately 10% of

the imported volume of wine. In the Czech Republic, the total consumption of wine is constantly increasing (and it is expected that this trend will continue) while the home production more or less stagnates. The volumes of the produced wine markedly increased after the moment when the new vineyards, planted before the accession of the CR to the EU began to produce, i.e. since the year 2007. It is estimated that in the optimum years the production potential may be up to 90 million litres while the consumption already exceeds 200 million litres.

For the period of eight fiscal years (Figure 1), the increase in the Czech wine consumption may be characterised by the means of a linear equation $y = 5.1262x + 167.83$ (correlation coefficient $R^2 = 0.9143$); this means that the reliability is relatively good so that it can be expected that in the CR, the wine consumption will exceed the limit of 210 million litres in the fiscal year 2012/2013.

An optimum situation would be if the wine imports could be regulated mostly with regard to the home production, consumption, and exports. However, the real situation is as follows: The development of the produced, imported and exported volumes of wine in the individual fiscal years after the accession of the CR to the EU is illustrated in Figure 2. In the CR, the maximum production potential is determined by the total area of vineyards and by agricultural technologies used in these vineyards. In the individual year, the production of grapes is significantly influenced by weather so that the harvested volumes are subjected to marked annual fluctuations. Regarding the fact that the export of Czech wine is relatively small, it is possible to conclude that from the viewpoint of wine growers, it would be very suitable to organise

and control imports on the base of the home production. As shown in Figure 2, this was true with the exception of the fiscal year 2007/2008 when the home production increased twice and the import of wine increased by as much as 15%. On the other hand, wine exports are completely independent on the volume of home production and continuously increase although according to the quadratic equation $y = -0.3548x^2 + 6.6x - 5.4536$, the growth of exports is decelerating. It is very probable that the Czech wine export will be higher than 25 million litres in the fiscal year 2012/2013. Figure 2 also indicates that, as compared with the home production, the exported wine cannot originate from the CR but that it must be mostly re-exported.

A comparison of production and imports of bulk and bottled wine is presented in Figure 3. The relationship existing between the production and the total imports of wine has been already explained. As far as the imports of bulk and bottled wine are concerned, it is not obvious that they would be dependent on the volume of home production. Imports of the bottled wine continuously increase while those of the bulk wine decrease. It can be said that this increase is governed by the polynomial equation $y = 0.4381x^2 + 1.9952x + 43.55$ with a very high coefficient of reliability. This increase is more dynamic than the linear one and there are annual plus or minus fluctuations; this means that slight surpluses or deficits occurring in the Czech market are reduced in the following years. In the fiscal year 2012/13, it can be expected that the total volume of imports of bottled wine will be approximately 97 million litres, i.e. that they will be higher than the production potential of the CR. Imports of bulk wine are relatively stable and fluctu-

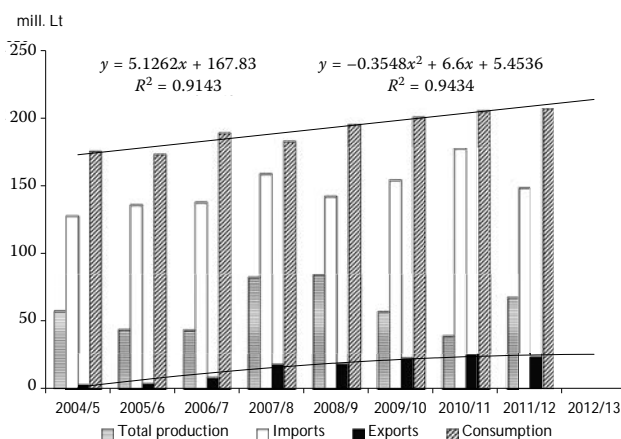


Figure 1. Balance of wine production and consumption in the Czech Republic within the period of the wine business fiscal years 2004/2005–2011/2012

Source: Wine-Growers Association of the CR and the Czech Statistical Office

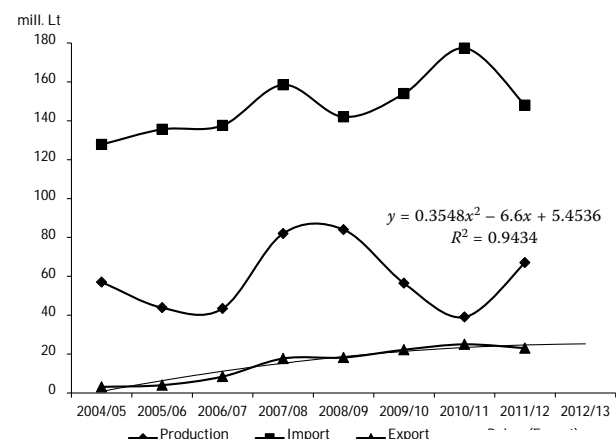


Figure 2. Development of production, imports and exports of wine

Source: Association of Wine Growers of the CR, CSO, own computations

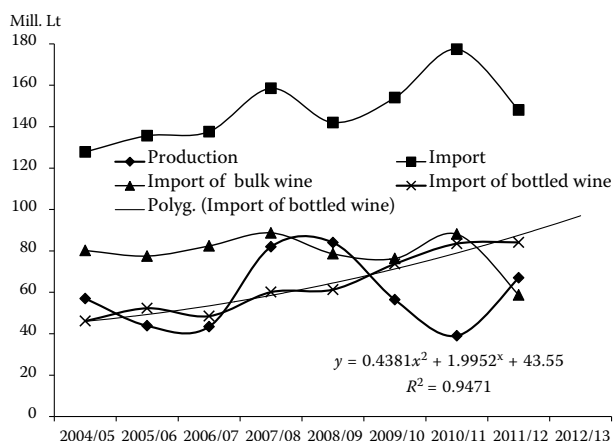


Figure 3. Development of production and imports of wine

Source: Association of Wine Growers of the CR, CSO, own computations

ate about 80 million litres. Their annual fluctuations do not react too much to the total volume of home production of wine. However, the import of bulk wine markedly decreased in the recent year (probably due to higher prices of grapes in the whole Europe). This indicates that the market wine deficits resulting from the annually fluctuating harvests of grapes are obviously regulated by the means of imports of wine in bottles. This consideration is based on the fact that wine consumption is continuously increasing, the harvests are not stable (but limited by the existing opportunities), and the imports of bulk wine oscillate around 80 million litres while the imports of bottled wine are continuously increasing so that they compensate the increasing demand and consumption of wine in the CR. Within the period of the first six years after the accession to the EU, the volume of the

bottled wine imports nearly doubled and reached the same level as the imports of bulk wine. In the fiscal year 2011/2012, it was even markedly higher than that of the bulk wine.

It was already mentioned above that wine exports are continuously increasing. So, let us have a more detailed look at their structure, i.e. which are the volumes of bottles and bulk wine. The development of the bottled wine exports and its comparison with the home production of wine is illustrated in Figure 4.

It is obvious that the volume of production is not linked with the exports of both bottled and bulk wine. Exports of bulk wine began to increase as late as in the fiscal year 2007/2008 and now this increase is almost quicker than that of the wine in bottles. In the fiscal year 2012/2013, it can be expected that the volume of wine exported in bottles will be more than 10 million litres. In 2011/2012, the exports of bulk wine reached the limit of 13 million litres, i.e. one fifth of the total volume of grapes harvested in that year. For that reason, it probably is not true that bulk wine is mostly re-exported (a part of the imported wine is re-exported to Slovakia). The fact that the exports of bulk wine were not produced in the CR indicated also by the comparison of the average prices (Figure 5).

As shown in Figures 4 and 5, the exports of bulk wine from the CR began as late as in the fiscal year 2006/2007. At the same time, however, its price was lower by one fifth (CZK 4/Lt) than the average price of Czech grapes (converted to juice by the coefficient 0.7). In the following years, this price difference made CZK 5/Lt (i.e. lower by $\frac{1}{4}$) and in the fiscal year 2010/2011 even by CZK 11/Lt lower than the average price of Czech juice. Besides, this

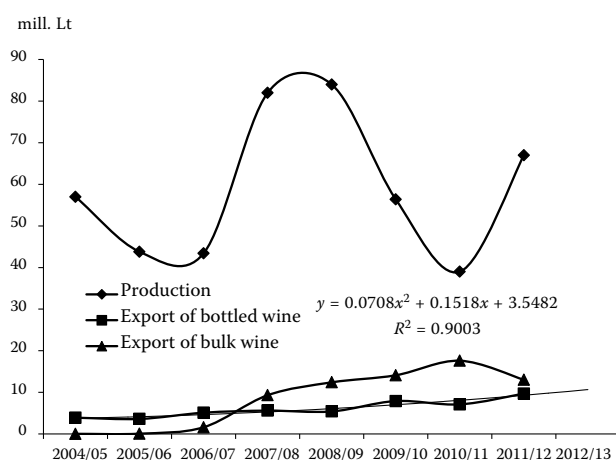


Figure 4. Relationship existing between the volumes of wine production and exports

Source: Association of Wine Growers of the CR, CSO, own computations



Figure 5. Development of export prices of wine as compared with home prices of wine juice in CZK per litre

Source: Association of Wine Growers of the CR, CSO, own computations

comparison concerned bulk wine and juice (without the expenses for processing juice to wine and with the expected yield of 70% including losses). It is obvious from both points of view (i.e. as far as the volume of the exported bulk wine and its price were concerned) that bulk wine had to be re-exported and that its price was determined with regard to the price of bulk wine in the countries neighbouring with the Czech Republic. The development of this price can be nearly perfectly expressed by the polynomial equation

$$y = 0.4839x^2 - 5.5804x + 27.475 \quad (R^2 = 0.9435)$$

Although the average export price of bottled wine corresponds with the average price of juice produced in the Czech Republic, it does not copy it. For that reason, it can be concluded that this decrease in average prices was caused more probably by the world economic crisis. In general, the prices of the exported Czech bottled wine are higher than those of the imported products.

As shown in Figures 6, the prices of the imported bulk wine are lower than those of the bulk wine made from Czech juices. In other words, as compared with wine made of Czech juice, the quality of the imported bulk wine is lower. Every year, the price difference between Czech juices and the imported bulk wine ranges from CZK 5/Lt to CZK 8/Lt; this is approximately 50% of the price of the imported bulk wine. In fiscal years 2010/2011 and 2011/2012, this difference was even more than CZK 12/Lt. this means that the Czech juice was more than two times more expensive than the imported bulk wine.

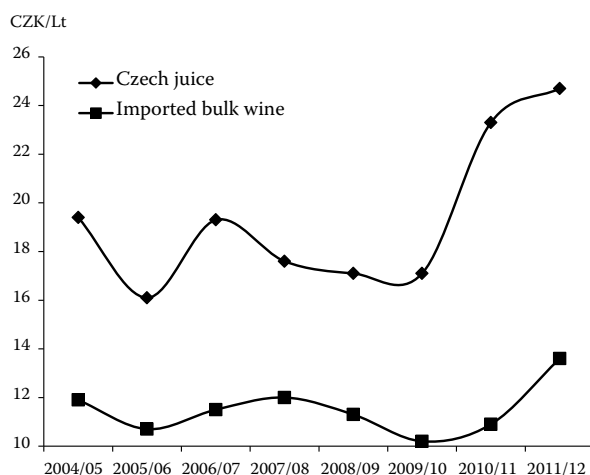


Figure 6. Comparison of Czech juice prices and those of the imported bulk wine (CZK/Lt)

Source: Association of Wine Growers of the CR, CSO, own computations

In 2010, a steep increase in prices of Czech juices was caused partly by the low yields and partly by the fact that it was impossible to replace the losses in the categories of regional wine, quality wine and quality wine with predicate.

From where is wine imported?

Approximately 90% of the total volume of is imported from the following nine countries: Italy, Hungary, Spain, Slovakia, France, Germany, Macedonia, Serbia, and Moldavia. With only some exceptions, the Czech foreign trade with wine are oriented at the EU countries. Nearly 1/3 of the total volume is imported from Italy, approximately 1/3 from another three countries (Hungary, Spain, and Slovakia) and approximately 1/3 from other countries. The development of wine imports from the individual countries is illustrated in Figure 7. It is obvious that immediately after the accession of the CR to the EU, the structure of three groups mentioned above was quite different. The EU common market organisation for wine and for several years the unsatisfied expectations of some countries caused jointly marked changes in wine imports into the CR. This caused that the volume of wine imported from Italy nearly doubled and returned to the approximately initial position as late as in 2011/2012. This increase was to the detriment of imports from Austria, which decreased to 1/10. At the same time, imports from Slovakia increased approximately three times and those from Germany and France increased by 50%. A significant reason of the increased wine imports from these two countries was the introduction of the duty-free trade after the accession of the Czech Republic to the European Union. This development clearly illustrates the effect of

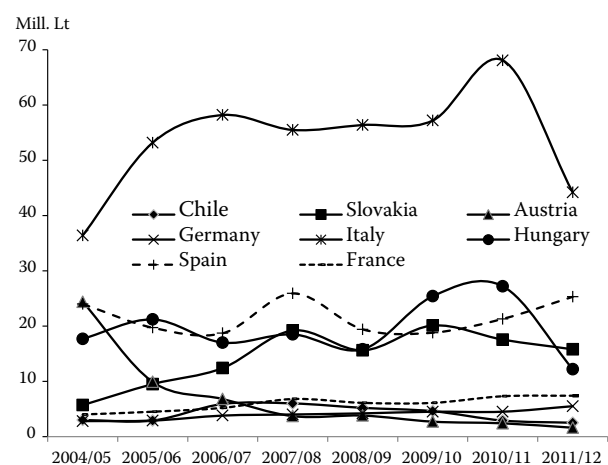


Figure 7. Volumes of wine imported from individual countries (in millions Lt)

Source: CSO, own computations

the targeted CMO for wine on market priorities in the individual EU member countries. A similar situation can be observed also in Figure 8 that illustrates the development of value/prices of wine imported from the individual countries.

Since the accession of the CR to the EU, the average prices of wine imported from the individual countries have considerably changed. When comparing the fiscal years 2004/2005 and 2011/2012, the total value of the imported wine increased from CZK 2.6 to 3.6 billion. The share of Italy increased from 20% to 30%. During this period, France occupied the second position and its share constantly oscillated about 15%. At the beginning, Spain and Austria occupied similar positions but later on Spain “fell” to a lower group (less than 10%) and Austria’s share dropped to nearly negligible 1%. On the other hand, however, wine imports from Hungary and Slovakia reached the level of Spain. As far as Germany was concerned, there was a slow but continuous increase in sales. Imports from Chile culminated in the fiscal years 2007/2008 and 2008/2009.

Nevertheless, it is not enough to monitor only wine imports because in some cases their information value is not very high. Although the obtained average data concern the commodity as a whole, however, as mentioned above, their information value is low because the comparison concerns two incomparable products – a semi-finished product (i.e. bulk wine) with a finalised product (i.e. bottled wine). If we want to understand the Czech wine trade, it is necessary to analyse and evaluate wine imports separately, i.e. that of bulk wine and that of bottled wine with regard to their volumes and prices as imported from the individual countries. As mentioned above, approximately 90% of the total

imported wine originates from only 9 countries. This means that for a good understanding of the wine trade development after the accession of the CR to the EU, it is sufficient to compare only 8 countries, of which 7 are members of the European Union. Imports from Serbia, which is the 9th important trading partner, increased rapidly (to 11.4 million litres) as late as in the last year.

It is possible to start this analysis with a semi-finished product (bulk wine). The development of the volume of bulk wine imported from the individual countries is illustrated in Figure 9.

The highest volumes of bulk wine are imported to the CR from Italy. In the first year after the accession of the CR to the EU, the imports from this country were only slightly higher than those from Austria but in that period Austria reduced its exports of cheap semi-finished products; in the recent years, this country exports to the CR similar volumes of bulk wine as Spain, Chile, Germany and France. Recently, only 10% of the total imports of bulk wine originate from these five countries. In the fiscal years 2004/2005–2006/2007, the role of Austria was “diminishing” and this country as a trading partner was replaced by Italy. In general, it can be concluded that more than 80% of the total volume of imported bulk wine originated from Italy, Austria, Hungary and Slovakia within the period under study. Imports of bulk wine from Hungary, and Slovakia, which in the past were nearly the same as those from Italy, are permanently significant. At the same time, however, both of them had to import wine in the recent years. This means that the imports from Italy have been decreasing during the whole analysed period.

After the involvement of freight costs and the prospective import duty, the average prices of bulk wine

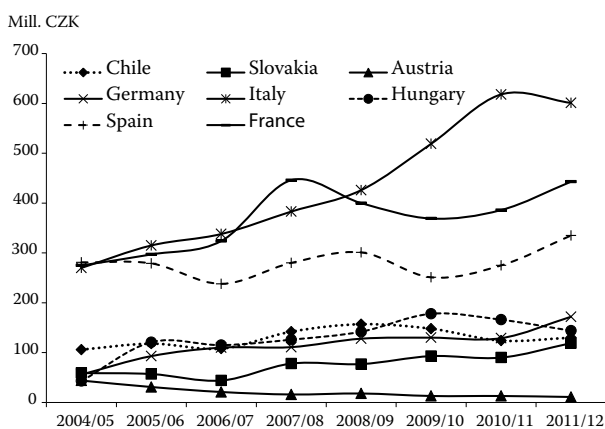


Figure 8. Development of value/prices of wine imported from the individual countries (in millions CZK)

Source: CSO, own computations

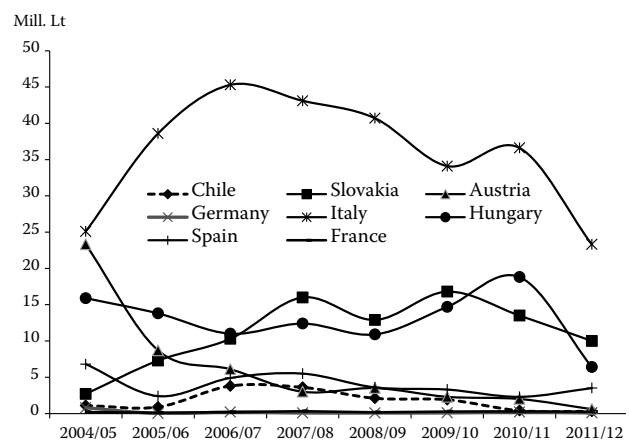


Figure 9. Development of the volume of bulk wine imported from the individual countries (in millions Lt)

Source: CSO, own computations

imported to the CR from the individual partner countries are practically the same. Also this fact evokes considerations about the real origin of imported bulk wine through the pathway Italy-Hungary-Slovakia-Czech Republic. Similarly as in the other EU countries, the custom statistics record “transports” of bulk wine from one country to the other regardless of the place of its origin. This means that it is possible to record without problems the imports of wine directly from Italy and Hungary (but originating from Italy) or from Slovakia (but originating from either Italy or Hungary). It is obvious that a part of wine recorded in this way originates from the exporting country. In this context, it is necessary to mention that this is a legal procedure in case that the actual place of its origin is declared at the label of this imported wine and/or if it is presented (when mixed with other kind of wine) as a “mixture of wines originating from the EU”.

A similar problem can be also with the bottled wine but in this case the distortion is not so great. The development of the volume of bottled wine imported from the individual countries is illustrated in Figure 10.

As far as the total volume of bottled wine imported to the CR from eight aforementioned countries is concerned, nearly 90% of these imports are in bottles up to the volume of 2 litres. More than one half of the total volume of bottled wine is imported only from Italy and Spain. In the course of the first year after the accession of the CR to the EU, the volume of imports of bottled wine from the remaining six countries was approximately the same, but later on Hungary and France became more important and at present their common share is nearly 20%. From Germany, Slovakia and Chile, the individual imports are lower than 5 million litres and Austria has

practically resigned to the exports of bottled wine to the CR since the fiscal year 2007/2008. Quite on the contrary, the imports of bottled wine from Italy increased nearly three times since the accession of the CR to the EU till the fiscal year 2010/2011. In the fiscal year 2011/2012, however, a slight decrease could be observed.

From the financial point of view, the highest amounts of money are paid for the imports of bottled wine from Italy and France, viz. CZK 1 billion (of the total of more than CZK 2.2 billions). At the moment of accession of the CR to the EU, this group involved also Spain, but the exports from this country are still on the same level while those from Italy and France are gradually increasing. The remaining five countries play only a supplementary role; however, with the exception of Austria, they also increasing the volume of their exports. Within the period of the last six years, Italy has increased the financial volume of the bottled wine exports to the CR more than two times (Figure 11).

The quality of wine imported in bottles from the individual countries can be measured indirectly also on the base of the average import prices (Figure 12).

As shown in Figure 12, the most expensive bottled wine is imported from France and Chile; its average price is CZK 55/Lt. Next are Germany (CZK 37/Lt), Hungary (CZK 26/Lt), Italy (CZK 24/Lt), and Slovakia (CZK 21/Lt). The cheapest bottled wine is imported from Spain (CZK 14/Lt). In all these countries, the prices of bottled wine were decreasing, probably due to the economic crisis and the overall recession. The exceptions are Spain with relatively stable prices (but lower ones, so it is difficult to imagine) and Germany with gradually increasing average prices of bottled wine. The average export price of Czech bottled wine (CZK 37/Lt) is presented here for comparison

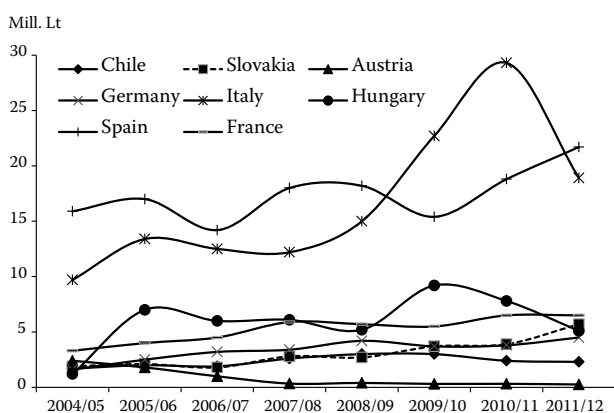


Figure 10. Development of the volume of bottled wine imported from the individual countries (in millions Lt)

Source: CSO, own computations

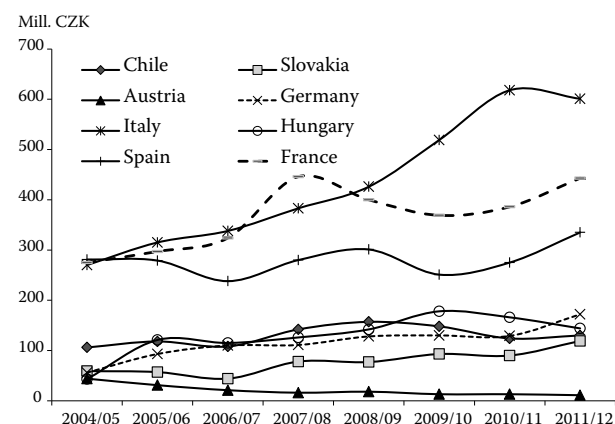


Figure 11. Development of the value of bottled wine imported from the individual countries (in millions CZK)

Source: CSO, own computations

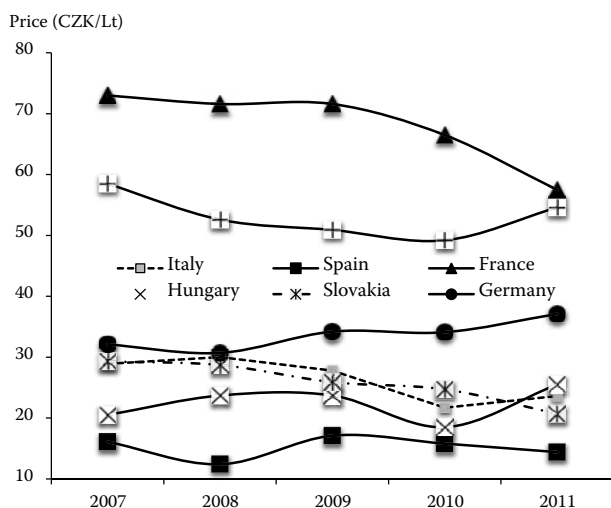


Figure 12. Average prices of the imported bottled wine (in millions CZK)

Source: CSO, own computations

(2011/2012) and it can be said that it is comparable with the prices paid for bottled wine imported from Germany. From Slovakia, Italy, Hungary and Spain, only a cheaper bottled wine is imported to the CR; in the case of Spain and Slovakia the import prices are approximately only one half of the prices of Czech wine exported in bottles.

The average price of wine imported to the CR fluctuates about CZK 24/Lt. The average price of wine imported from the EU countries is approximately 1.8 Euro/Lt (i.e. CZK 43/Lt). Even when considering the high percentage of bulk wine in the total Czech imports, it can be expected that the imported wine will not be competitive as far as the quality of Czech wine is concerned.

The average price of wine exported from the CR is CZK 24/Lt, i.e. 3.3 Euro/Lt (or CZK 80/Lt). This fact indicates that it is possible to expect a period of gradual development; however, it is also necessary to take into account that the major part of the Czech wine foreign trade takes place in the form of a semi-finished product, i.e. bulk wine. This means that the necessary trends of the future development are quite clear: the trade with bulk wine should be reduced while that with bottled wine expanded.

CONCLUSIONS

The Czech Republic is a wine-growing country, in which the wine consumption is approximately three times higher than its production. For that reason, about two thirds of consumed wine must be

imported. For the time being, the volume of wine exported from the CR equals to approximately 10% of wine imports. The volume of the imported wine is influenced by the home production while that of exports is not and it gradually increases year-by-year (although the increase is slower and slower). Exports and imports of the bottled wine increase while the volume of the imported bulk wine stagnates and is not directly dependent on the home production of grapes.

Exports are directed nearly exclusively to the Slovak Republic and to Poland (10%). The volumes of the exported both bulk and bottled wine increase but those of the former are higher. However, the bulk wine is mostly re-exported; this is documented also by the export price that is already by more than CZK 10/Lt (i.e. more than 50%) lower than the price of Czech juice. The average export price of bottled wine corresponds with the price of Czech juice and the costs of its processing, but it does not copy it directly. As compared with the average EU export prices paid by customers from third countries, the Czech ones are approximately only one half of them. On the other side, however, they are higher than the average prices of bottled wine imported into the CR. For higher average prices, the bottled wine is imported only from France and Chile.

The foreign trade of the CR with wine is oriented predominantly at the EU member countries. Nearly 85% of the total volume of wine is imported from only seven countries, viz. from Italy, Spain, Hungary, France, Slovakia, Germany, and Chile. The total annual imports are already higher than 170 million litres and their total value is CZK 3.6 billion. One third of wine is imported from Italy and its total value is nearly CZK 1 billion. As far as the price of the imported wine is concerned, France occupies the second position with CZK 594 million although its total volume is smaller and this country occupies only the 7th position.

The comparison of prices of the imported and exported wine indicates that the quality of wine imports is lower than that of exports. The average price of the imported wine is even lower than the average price of Czech juice

Such detailed regular analyses of Czech exports of wine as well as the monitoring of imports to the Czech Republic can be used by the Wine-Growers Association of the Czech Republic and the Czech Wine Fund to decide, which wine markets are prospective and accessible. This concerns above all the decisions about supporting various promotion events and the participation in the international wine fairs that can be attended by the individual wine growers

from Moravia and Bohemia. At present, the main attention is paid above all to Slovakia and Poland.

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