Mendel University in Brno
Faculty of Business and Economics

Beer trade and consumption

Bachelor thesis

Thesis supervisor:
Ing. Miroslav Radiměřský

Stanislava Brindzová

Brno 2016

Hereby I would like to thank sincerely to my thesis supervisor Ing. Miroslav Radiměřský for his constant guidance,encouragement and support. His willingness and eagerness to help were accompanying meduring the entire thesis.

Declaration

Herewith I declare that I have written my final thesis "Beer trade and Consumption" by myself and all sources and data used are quoted in the list of references. I agree that my work will be published in accordance with Section 47b of Act No. 111/1998 Sb. On Higher Education as amended thereafter and in accordance with the Guidelines on the Publishing of University Student Theses.

I am aware of the fact that my thesis is subject to Act. No. 121/2000 Sb., the Copyright Act and that the Mendel University in Brno is entitled to close a licence agreement and use the results of my thesis as the "School Work" under the terms of Section 60 para. 1 of the Copyright Act.

Before closing a licence agreement on the use of my thesis with another person (subject) I undertake to request for a written statement of the university that the licence agreement in question is not in conflict with the legitimate interests of the university, and undertake to pay any contribution, if eligible, to the costs associated with the creation of the thesis, up to their actual amount.

In Brno on 23. 5. 2016 _____

Abstrakt

Brindzová, S. Obchod s pivom a jeho spotreba. Bakalárska práca. Brno: Mendlova Univerzita v Brne, 2016.
Táto bakalárska práca skúma trh s pivom, jeho vývoj a trendy pre zvolené krajiny, konkrétne pre Českú republiku, Nemecko a Slovensko. Okrem toho táto práca vystihuje určité znaky pre obchod s pivom, ktoré sú pre danú krajinu príznačné. Veľký dôraz sa kladie na skúmanie prípadnej konvergencii chuti pod vplyvom otvorenosti trhu. Vedľajší cieľ práce sa zaoberá pivným priemyslom, najmä určovaním hlavných činiteľov ovplyvňujúcich spotrebu piva ako aj jeho produkciu.

Kľúčové slová

konvergencia chutí, otvorenosť trhu, obchod s pivom, pivný trh, činitele spotreby a produkcie piva, Česká republika, Nemecko, Slovensko

Abstract

Brindzová, S. Beer trade and consumption. Bachelor thesis. Brno: Mendel University in Brno, 2016.
This bachelor thesis analyzes trends and developments of the beer markets within the selected countries, namely the Czech Republic, Germany and Slovakia. Furthermore, the paper inspects some specific features of beer trade in these countries individually. The impact of trade openness on possible taste convergence is particularly paid extra attention to. Finally, the thesis identifies the main determinants of the beer industry, especially those affecting the beer consumption and beer production.

Keywords

taste convergence, trade openness, beer trade, beer market, determinants of beer consumption and beer production, the Czech Republic, Germany, Slovakia

Table of contents

List of figures

List of tables

1 Introduction and aim of the thesis

1.1 Introdcution

The Czech Republic, Germany and Slovakia have one of the richest history in beer brewing among other European countries. Even though the Czech Republic and Germany are holding the status of "beer drinking countries" till nowadays (see definition in the chapter 3.1), Slovakia failed in keeping up with their trend. The drinking patterns and drinking preferences changed over the period of time and I decided to analyze these changes.

Thus, this thesis identifies determinants of beer consumption and beer production in the selected countries, their beer trade and possible taste convergence. The inseparable part consists of examining trends and developments on the beer markets. All of the concepts mentioned above are included in the three main chapters, discussion and conclusion.

Literature review is introduced in the chapter number 3 since it interprets basic and general features of beer along with determinants influencing its consumption. It also explains the principles of taste convergence and demonstrates the risks of free trade.

The chapter number 4 is divided into two different parts. The first part is devoted to finding what determinants and how they caused gradual decrease in the beer consumption, including analysis of beer import, beer export and development of breweries and microbreweries in the selected countries and their consequent comparison. On-trade and off-trade sectors are mentioned here as well. The second part deals with introducing the econometric model and the formula for taste convergence calculation using the data.

In the fifth chapter many tests are provided in order to prove the model's correctness and its different features. The results are individual for beer consumption and beer production. Additionally, there are the outputs of the taste convergence calculation compared along with the actual situations hapenning on the beer markets.

The chapter number 6 works with limitations regarding my research, although in the seventh chapter all the relevant findings are summarized.

1.2 Aim of the thesis

The aim of this Bachelor thesis is to investigate the impact of trade openness on the beer consumption convergence of the selected countries, namely the Czech Republic, Germany and Slovakia.

Additionally, the work characterizes the scope and structure of the beer industry for each country respectively, with special focus on the beer production and trade.

The partial aim is to identify the main determinants of the beer industry that are related to both the beer consumption and beer production.

2 Methodology

Theoretical background of this Bachelor thesis is contained in the chapter 3, where the synthesismethod of the secondary data of the studies is used for the most part. This chapter defines both beer as a commodity as well as the factors influencing the beer consumption. Additionally, the risks of trade liberalization and the impacts of trade openness in association with the taste convergence are discussed here, too.

Both the subsequent chapters 4 and 5 include methods of description, analysis, deduction and comparison. However, the chapter 4 is more focused on particular components forming beer markets of the selected countries during the observation period and factors influencing their behaviour.

Continuing with the chapter 5, results of the econometric model are tested for both the beer consumption and beer production. I used the Gretl program and regression analysis for calculating the results. Furthermore, I analyze the taste convergence by using calculations as well as investigating the relation between trade openness and beer share.

The chapter 7 includes all the information and knowledge gained from the thesis in a form of synthesis.

2.1 Econometric testing

The econometric model used in this thesis is based on a paperwork of the Czech researchers analyzing the Czech beer market (Dedina, Sanova and Samek, 2010). The aim of their research was to describe and analyze the determinants influencing the Czech beer production and consumption within the period of years 1995-2008.

The hypothesis was formulated as follows:

1. The Czech beer production is affected by its consumption within the country, its export and its consumer price.
2. The Czech beer consumption is affected by its production in the country, the consumers' income and a time factor.

Although their consumption function deals with the time factor and their analysis requires timeseries data, I decided to omit this variable and used a regression analysis instead, so the function forms are

$$y_1 = f(y_2, x_1, x_2),$$
$$y_2 = f(y_1, x_3).$$

2.2 Taste convergence

The study of Globalization And Taste Convergence: The Case Of Wine And Beer tested the taste convergence of wine and beer for 38 countries within the observation period 1963-2000 using time series (Aizenman and Brooks, 2005). I used their formula for calculating the taste convergence in the selected countries. On the left side, there is a percentage change in consumption regarding wine over beer. On the right side, there is a percentage change in the price of wine over beer. The authors claim that if the overall percentage change in the consumption is bigger than the overall percentage change in the prices, such behaviour therefore leads to the taste convergence.

3 Literature review

3.1 Features of beer

Over the centuries, beer has become more than just a drink. It is a part of our customs, traditions and rituals (Janda and Mikulasek, 2011). Moreover, it serves as a pleasant form of relaxation or as an excellent "excuse" to hang out with friends. It is obvious that the latter is mainly employed by the young adults.

From the economic point of view, beer is considered a normal good on which, however, one's income does not have a significant effect regarding its demand since it is inelastic (Colen and Swinnen, 2011). In other words, the demand for beer shall not increase along with increase in economy or an individual's real income and vice versa.

According to the study, people living in a "beer drinking country" and with a higher income drink more beer only up to a certain point, after which the higher the income, the lower the beer consumption per capita tendency has been observed. The same trend has not been recognized among the "non-beer drinking nations".

The reason why both the Czech Republic and Germany hold the status of "beer drinking nations" is because in both the countries the consumption of beer exceeds the consumption of wine or spirits whereas the Slovaks fall for spirits, thus, Slovakia is more commonly referred to as a "spirit drinking country" instead. However, it has not always been like this. According to the data from the study, back in 1965 Slovakia used to be overwhelmingly a "beer drinking country" but over the decades it turned into a "spirit drinking country". To speak more precisely, the turning year was in 2004.

Unfortunately, in their study neither they did focus on examining what circumstances led to such twist nor will I.

3.2 Factors affecting beer consumption

As everything has two sides of a coin, beer consumption is definitely not an exception. It might have some negative effects on economy, for instance, cross-border shopping, illegal trade due to alcohol quotas or excise duties, not leading to higher earnings (The Brewers of Europe, 2014). The excise duties are indirect taxes connected with consumption or use of a particular product. The cross-border shopping is truly harmful as the domestic beer sales decrease when the beer is purchased abroad. For example, such loss of government revenues in Nordic countries was calculated to the amount of 1 billion euros between the years 2008

and 2012, consequently almost 3,000 beer related jobs had to be canceled which hand in hand caused a financial loss of 42 million euros in income tax and social contribution revenues.

Besides, alcohol abuse, addiction and unnecessary medical treatment are associated with health issues. Yet, tax receipts, employment in brewing sector or attracting tourists are all within the scope of positive effects (Janda and Mikulasek, 2011).

As we can see, it is very important how the overall alcohol consumption is presented publicly to the end users. Various mass-media communication channels are used by companies in order to target the proper consumers.

However, the study analyzing the USA countries had a task to find out the importance of ban for advertising of alcohol beverages and for price advertising as well as changes in the minimum legal drinking age and state monopoly control of retail stores (Nelson, 2003). The results are utterly interesting as they vary based on the beverage type.

Firstly, billboard bans increase both the wine and spirits consumption but decrease the beer consumption. It was also proven that these billboards represent less than 10 % of the total alcohol advertising so their complete cancellation will not have a significantly negative impact on the overall alcohol demand. In case of long-standing billboard bans, they actually do not affect the alcohol consumption at all but there is not a unified claim proving that if they were not there that the consumption would increase.

On the contrary, bans of price advertising decrease the demand for both the wine and spirits but increase the demand for beer. Additionally, substitution effect has been observed since consumers preferred beer to wine or spirits.

Moreover, the higher the minimum legal drinking age, the lower the overall demand for alcohol.

Similarly, state monopoly control of retail stores of spirits decreases the demand for spirits and also the overall demand for alcohol, indeed. Another substitution effect has been observed that the spirits consumption has been replaced by an increase in wine consumption but the effect on beer is statistically insignificant.

The net effect is that total alcohol demand is positively affected by billboard bans and unaffected by price bans. The net effect on total alcohol consumption is never statistically significant, which reflects substitution effects of restrictive laws and regulations.

Having another study from the USA, 48 states within the period 1976-1979 were observed and analyzed regarding prohibition of both the price ads and the

ads in general, such as billboards or those in the press (Wilkinson, 1985). Mr. Wilkinson's results are similar to the ones in the previous research. He found out that the prohibited price ads significantly and negatively affect spirit consumption whereas the overall prohibited ads are quite opposite as they do not have any significant impact on the demand.

In the case of the Czech Republic, Germany and Slovakia the minimal legal drinking age is 18 years old unlike in the USA. Also there are many billboards or other forms of ads promoting alcohol products either including price information or not and their prohibition is currently not a question lying on a table. But again, I have not found any study analyzing the European Union's market with alcohol so it is hard to estimate its consumers' behaviour .

Naturally, there are just too many factors influencing the beer consumption and the studies vary from one another.

On one hand, we have got the macroeconomic perception which takes into account especially the exogenous factors that influence the whole nation's drinking habits, such as customs, climate, government, religion, trade and economic level of that country (Colen and Swinnen, 2011).

On the other hand, there is also the micro-economic perception, in which the impact is perceived rather from an individual's consumption's point of view. Such a consumption is shaped by a specific way of behavior and one's preferences. There is a study that describes four preference formations, selections and changes (Bala and Long, 2005).

Firstly, the biological sense is the most primitive one and it is easily observed in the animal kingdom but it is not that common among humans nowadays; the choice of preference has shifted to a more economically driven one and is therefore made based on either surplus or deficit.

Secondly, the researchers deal with imitation, which may occur due to the adaption or rather low prices.

Thirdly, there is the learning-by-doing phenomenon which basically means that if we have a wide-spread good, we can easily search for its various applications at quite low costs.

Fourthly, when children obtain their parents' lifestyle habits we talk about habit formation. It is even more likely to occur if the good is effortlessly accessible.

In the case of beer, the last alternative seems to be the most fitting.

Another study elaborates on two opposite types of behaviour (Aizenman and Brooks, 2005).

The first one is related to as “Keeping up with the Joneses” (Ryoo and Kim, 2014). In other words, families receiving lower income try to imitate the richer ones in order to keep up with their status. Such households even use their spare money for this purpose and thus expose themselves to the risk of limited maneuverability should a potential crisis occur, especially a financial one. The second type of behaviour is based on the assumption that our current pattern of consumption is formed by the previous pattern of consumption. After transforming this statement, they receive a result that the offsprings’ preferences are affected by their parents’. To support this statement, they explain that the alcohol consumption does not begin at the same point in time, given one’s age as with the other goods, hence, the parents’ drinking preferences set a standard for the consequent drinking habits.

In the model construction of their study they also incline to the opinion that the habit formation is even more accurate in the case of beer drinking.

Furthermore, an individual’s feeling of belonging to a certain culture, i.e. cultural identity, is actually a consequence of both associates’ and parents’ progressive community activity as well as preferences acquirement (Thoenig, Olivier and Verider, 2004). To speak more precisely, parents bring up their children with respect to a specific culture and their own preferences are acquired by the children through the surrounding. However, the preferences are too individual so the childrens’ consumption patterns are adapted accordingly. Nevertheless, such children can still obtain the feeling of cultural identity and regard themselves as “homo culturalis”. Eventually, entities attach themselves to such societies which are the most convenient for them, thereafter, this procedure leads to a country’s long-lasting well-being.

Not surprisingly, the study’s result is identical with the previous ones regarding parents’ influences on their off-springs.

3.3 Trade liberaliztion

Along with the European Union creation, both the Schengen Area and the Single European Act have been developing in order to create single market and to limit the quotas, tariffs and regulations so the conditions for trade could be more pleasant.

This issue is deeply analyzed in the two subsequent studies.

The more recent study actually elaborates on two specific models (Suranovic and Winthrop, 2014). The cultural externality model includes domestic as well as imported goods. Assuming that utilization of these goods is beneficial for a certain culture. Thanks to trade liberalization, the good imported may substitute the

consumption of a domestic good, and as a result, there is a decrease of cultural benefits and social well-being within the country. In addition to this, the domestic products should be preserved, such as music or movies. On the contrary, the cultural affinity model is not ruined by free trade and the national welfare rises. It demonstrates that employees working in an import-competing industry receive a non-pecuniary cultural benefit as opposed to workers at any other industry, even if they become old and retired.

In my case, further analysis is required for the German, the Czech and the Slovak nation separately.

To expand the topic of free trade, another model has been introduced comparing a small country to a large country in terms of free trade effect (Bala and Long, 2004). When the two countries are unequal in size and they trade freely, the bigger country with diverse preferences will eventually push its pattern through to the smaller country, which is overwhelmed and consequently fails in maintaining its cultural identity. Only in case that the countries produce different types of goods and the relative supply does not take extreme values, a non-homogeneous allocation of the goods may take place. Otherwise, in the long-run, the small country's economy will become identical to the one of the large country, with both countries preserving their respective sole preference. The one of the larger country. That is why some countries omit several (mainly culturally-related) goods from their free trade contracts.

This obstacles experienced the Czech Republic and Slovakia during both the World Wars (especially in military scope) while Germany had the leading economy.

3.4 Taste convergence and trade openness

There are several ways to reach the taste convergence. Although, it hasn't been always easy to trade, it is estimated that countries either neighbouring or in relatively short distance share common (drinking) preferences. Unfortunately, concerning the total production, the proportion of beer trade does not reach significant values and it has been like that over the centuries. However, the key is openness of economy, which is basically a sum of all imports and exports divided by GDP, since that invokes changes and may even help in the converging process because of its possible globalization influences (Colen and Swinnen, 2011).

Interesting findings are revealed in the study of Globalization And Taste Convergence: The Case Of Wine And Beer (Aizenman and Brooks, 2005). For example, the presumption that the French drink wine while the German drink beer only has been controverted since the researchers gained undeniable proof of taste convergence that there has been a decrease in wine consumption in France while

the German's wine consumption increased. One can find again the presence of habit formation and even though these two countries are integrated, the drinking pattern is slowed-down due to the cultural diversity. However, the higher the degree of integration, the faster the convergence happens.

Furthermore, the study mentioned in the first paragraph of this topic did reach identical results to the case of wine and beer described above (Colen and Swinnen, 2011). Because of globalization, however, increase in economy's openness actually led to decrease in beer share. Although, such a finding has been confirmed only among the "beer drinking countries". In other words, the researchers did not notice statistically significant values with increasing openness in "non beer drinking countries".

This issue is deeply analyzed in the chapter of results, where I am comparing two "beer drinking countries" and one "spirit drinking country".

Additional impressive result arises from the study of the cultural identity (Thoenig, Olivier and Verider, 2004). According to the investigators, due to the economic openness the domestic goods are no longer bought as the imported goods are sold at significantly lower prices compared to the domestic ones. This is especially true for the rather small countries, where this change constantly challenges its cultural sensitivity. On top of that, a positive effect of openness on the cultural well-being is present if price factors are firm enough.

In the case of the Czech Republic and Germany, the beer is considered a true national treasure.

4 Development of the beer markets

Closer look at the development of the beer markets with special focus on the Eastern European brewing industry is elaborated on the following study (Swinnen and Herck, 2010).

All the industries were centralized under the supremacy of the former communist system. Everything was highly controlled and checked on. After its fall Germany has been unified. Undoubtedly, during the 1990s, the political and economic changes led to profound fluctuations within the economy. Price liberalization, grants reduction, limitations in financial plans and poor legal system affected farming of malt and barley so severely that all of it combined altogether could easily have resulted in decrease in beer production. In proportion to this, beer consumption declined as well thanks to the households' low incomes and high inflation ratescoordination.

Blessing in disguise, Western Brewers were anxious for their boost and blossom and took their shot at the Eastern European's beer market. This market, with its long-lasting and rich beer heritage along with great households' drinking expenditures, cultural familiarity and short physical distance to the West, was irresistibly attractive. So, all the significant breweries were "saved" by the four greatest brewing corporations, namely, AB Inbev (Belgium), Carslberg (Denmark), Heineken (the Netherlands) and SAB Miller (England). The conditions for the investors could not have been any better since the recent privatization, the urge for technological improvements and better conditions for foreigners commencing business operations in a foreign country sounded all like excellent challenges.

Admittedly, everything did not work like clockwork and there were obstacles with poor barley and malt quality produced by the domestic farms. The initial idea of supplying these farms with the high-class Western grains did not last long as it was too costly, hence, the Westerns applied vertical coordination. The process of assuring that every step in supply chain (production, processing and marketing) is well-managed and interconnected to the following step so there are no doubts about what and how much is supposed to be produced) in management of the domestic farms in order to ensure the desired outputs and fulfilled requests. Such agreements were really beneficial for the farmers as they involved both technical and financial help. Finally, joining the European Union and ceaseless economic development resulted in income increase, improved performing of merchandise, financial grants for farms and subsequent recession of vertical.

For clearer picture though, I compared the beer markets of each selected country respectively and identify a few features which are characteristic and unique for thesemarkets.

4.1 The Czech Republic

What is more, the Czech beer market is rather diverse, having breweries of all sizes and technological conveniences. After the fall of communism some of the breweries were closed down but at the same time the smaller breweries, such as microbreweries and brewing pubs, were opened. The large breweries were financially supported and later taken over by InBev, Heineken or SABMiller, as already mentioned above. Even though a great modernization process had been done, a lot of breweries kept their own malting facilities. Still the Czech Republic sits at the top spot in the chart of the highest beer consumption per capita in the whole world and the Czech government made 174.94 millions of euro on excise duties in 2013 which was by 22.72% more than in 2008. In addition to that, there are very pleasant conditions in terms of export opportunities. All over the globe, the Czech beer is believed to be the cheapest, yet coming in with the finest taste (The Brewers of Europe et al., 2006).

Fig. 1 Beer trade in the Czech Republic

Source: The Brewers of Europe, 2014

The Czech Republic being a "beer drinking country", it is evident and not surprising that its beer export is significantly higher compared to the beer import. Nevertheless, during the observation period the beer import was increasing up to year 2010 in order to compensate for the decreasing beer production. Although the beer export never went below 3,000 hectolitres, it was experiencing a noteworthy downturn due to the market obstacles of its exporting countries, however, the recovery in 2013 did not surpass the amount of beer exported in 2008.

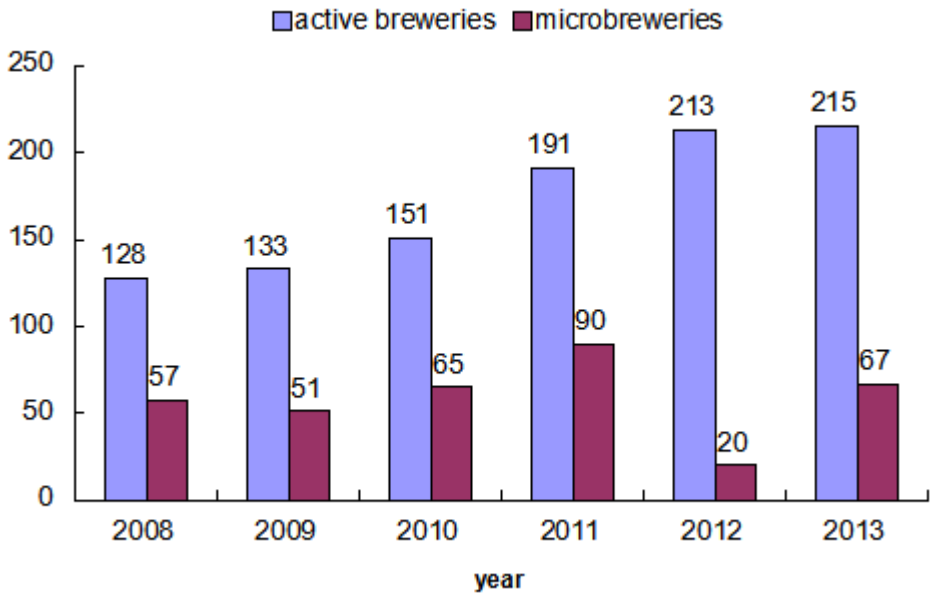

Fig. 2 The number of breweries in the Czech Republic

Source: The Brewers of Europe, 2014

As it is seen, there are still more and more breweries developing and improving the act of brewing, which also hand-in-hand ensures more job opportunities as well as higher revenues for the country. The difference between the years 2008 and 2013 can be interpreted as an increase by 67.97%.

As for the microbreweries, which are special brewery plants with beer production not exceeding 1,000 hectolitres per year, they experienced a significant drop in 2011 from 90 plants to 20 in the following year. The reason for such a drop is that plenty of the microbreweries grew in size and promoted themselves into a greater category, so the overall comparison between the years 2013 and 2008 gives us only a positive 17.54% change.

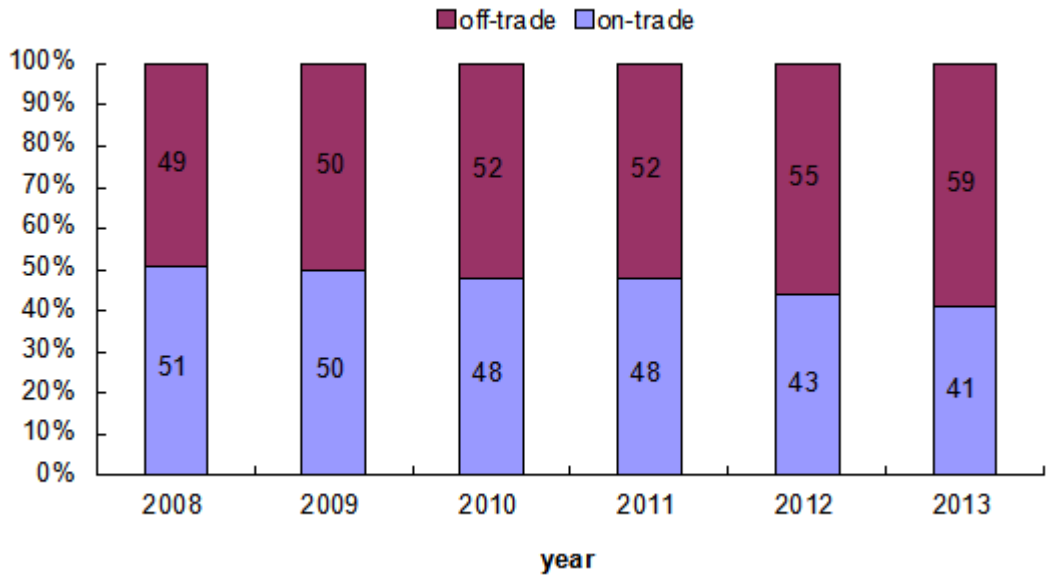

Fig. 3 Beer sales in the Czech Republic

Source: The Brewers of Europe, 2014

Beer sales are provided either on-trade or off-trade. Bars, clubs, pubs and restaurants with license for alcohol sale belong to the earlier, while the so called hospitality sector - wholesales and retail stores including shops, supermarkets and the likes - all belong to the latter, which is generally much cheaper (The Brewers of Europe, 2014).

The Czech hospitality sector experienced a 10% decrease in the beer consumption because the Czechs preferred to drink beer at home and preferably from the PET bottles rather than to spend more money in a pub or a restaurant. Also a healthier way of living has its own share concerning the overall decrease in the consumption.

Although the Czech Republic won the title of the country with the most beer consumed per capita several times over the past years, this number has been showing a declining tendency lately. In order to find out the factors influencing such tendency, 44 Czech breweries were contacted and interviewed on a basis of a rating scale, out of which 41 questionnaires (93% response rate) were returned fully completed (Kozák, 2012). The results were then verified by the managers of both the big breweries and the microbreweries. The factors were based on the order of significance as follows:
The single most significant factor on the list is increase in the excise beer tax. Basically, in 2010 the Czech government attempted at increasing income through

increase in the excise beer tax, however, the expectations were not met due to low consumption.
Secondly, alcohol testing at work is especially strict for the drivers whose penalty for alcohol consumption on duty is the most severe. This may also explain the ever so increasing trend in the alcohol-free beer popularity.
The youngsters' typical preferences are non-alcoholic drinks or drinks with high alcohol content.
Mandatory military service termination's side effect, with respect to drinking habits, means no more recruits indulging in beer-drinking feasts, that were so popular and came in great volumes.
A consequence of the Economic crisis and the increased costs also led to a crisis in tourism.
Breweries employ the profit-oriented approach.
Breweries' pursuit of maintaining the high beer price and inclining towards export fails, for example, you could buy a beer of the same trademark much cheaper in Germany than in the Czech Republic.
The target group is the largely male demographic of barflies with love for sports whereas the women are rather fond of beers, whose naturally bitter taste is suppressed by a sweeter one.
The so called "Euro-beer" rules the market now and the extraordinary Czech beer aspect is being pushed away of it.

On the other hand, managers of the pubs and microbreweries are dealing with different kinds of problems, namely:
Use of beer taps compensators and detergents for glass washing deprives of the beer quality.
Participants beer consumption on private parties in under constant family supervision.
Customers organize rather cheap summer parties with beer taps than going to a pub.

4.2 Germany

Germany comes with a few competitive beer brands allowing for enormous opportunities to export, a huge market share and the fact that most of the breweries are of rather small sizes. Nevertheless, brands offering beer much cheaper than premium brands make them lose control and status on the market and the number of these fashionable lower-priced beer pubs and restaurants only keeps increasing, also getting the other hospitality facilities under greater pressure. Additionally, the overall beer consumption is decreasing as well. At least the Germans try to help the industry by purchasing domestic supplies for beer production. Also, the labour costs are significantly higher compared to the other

countries since they tend to employ the most skilled for brewing beer of the finest quality. Despite all the difficulties, the government received an enormous amount of 699 million of euro on excise duties in 2013 and yet, it was still 5.09% less than in 2008 (The Brewers of Europe et al., 2006).

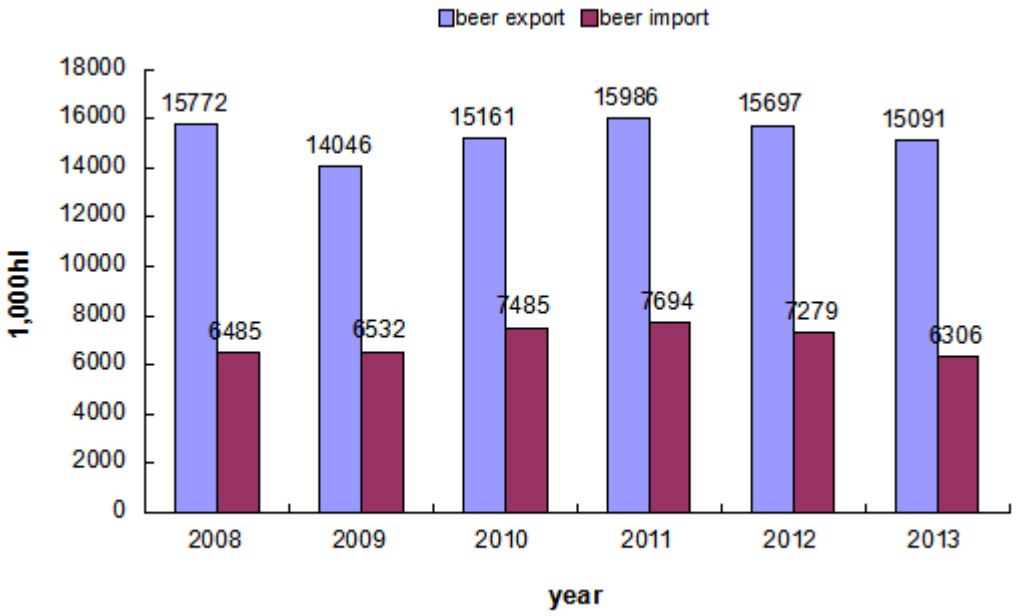

Fig. 4 Beer trade in Germany

Source: The Brewers of Europe, 2014

Germany is another "beer drinking country", so its amount of beer exported is quite large, however, the German's beer-purity law does not allow any experiments with raw materials needed for brewing, hence the amount of beer imported consists for the most part of taste-differentiated beers. Nevertheless, there are some exceptions to the materials used for brewing that shall be exported but the German inhabitants demand the beer specialties be offered on the German market as well. An 11% drop in 2009 was actually a fatal hit of the Economic Crisis. Fortunately, the recovery process did just fine, even the amount of beer exported in 2011 surpassed the one from 2008.

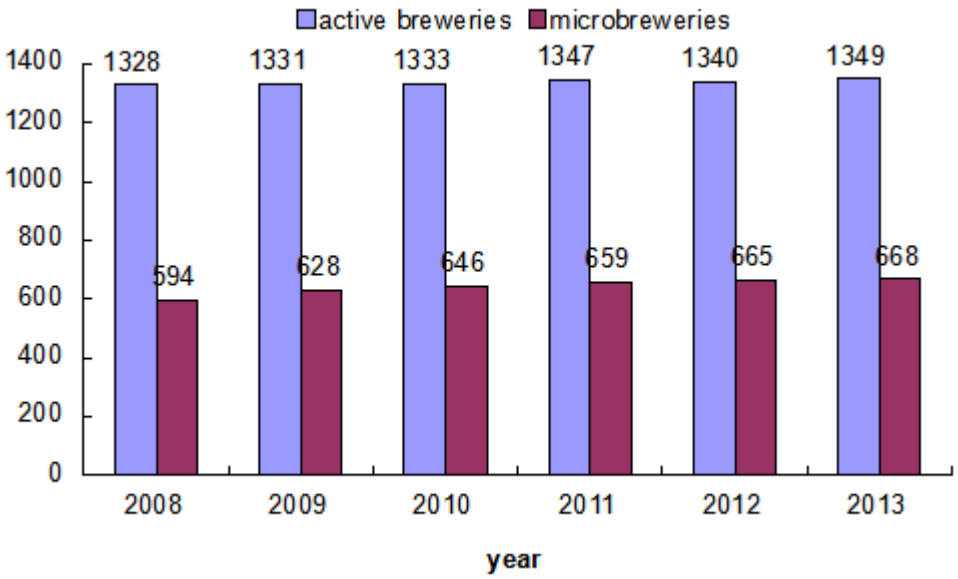

Fig. 5 The number of breweries in Germany

Source: The Brewers of Europe, 2014

There has been a positive 1.73% change in the number of active breweries as well as an increase by 12.46% in the number of microbreweries. Since the German beer market has almost reached its capacity, the development nowadays is rather slow.

Regardless of the saturation situation, the business with microbreweries keeps blooming.

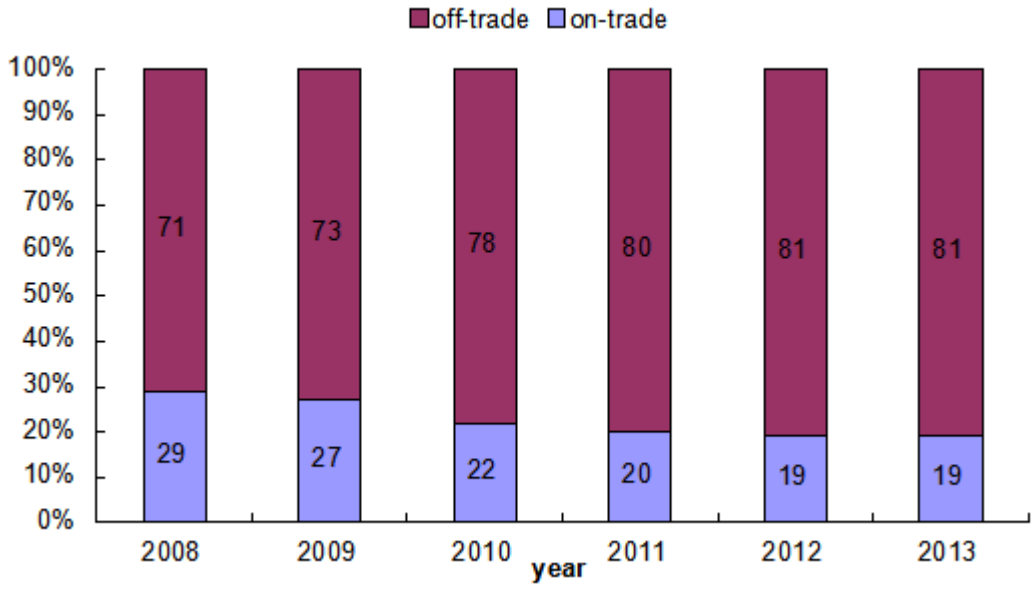

Fig. 6 Beer sales in Germany

Source: The Brewers of Europe, 2014

A 10% decrease occurred in the on-trade sector with beer as the German consumers are rather similar to the Czech ones. People have been preferring bottled beer from a cheaper store to a more expensive pub. Even though both the on-trade and off-trade beer prices increased, it is crucial for the German beer market to stay popular for the tourists to remain interested in the beer festivals, e.g. the Oktoberfest.

4.3 Slovakia

The Slovak beer production has been taken over by the two great brewing corporations and the market has become more stable. In addition to this, the corporations invested in modernization of the breweries and got rid of those that were redundant or did not work effectively and efficiently. Even though the Slovak beer market is the smallest among the analyzed sample in this paper, breweries manage to export the Slovak beer, mostly to the surrounding countries as well as the Eastern Europe and the government managed to earn 55 million of euro from the excise duties in 2013, which was 3 million less than in 2008 (The brewers of Europe et al., 2006).

Fig. 7 Beer trade in Slovakia

Source: The Brewers of Europe, 2014

Slovakia is the only "non beer drinking country" in the scope of my analysis. As a result, more beer is imported than exported. The year 2009 was severely hit and damaged by the Economic Crisis. Since then, both the import and export have been slowly increasing. Then the positive percentage change in import between the years 2013 and 2009 is 22% but in the export it was more than 90%.

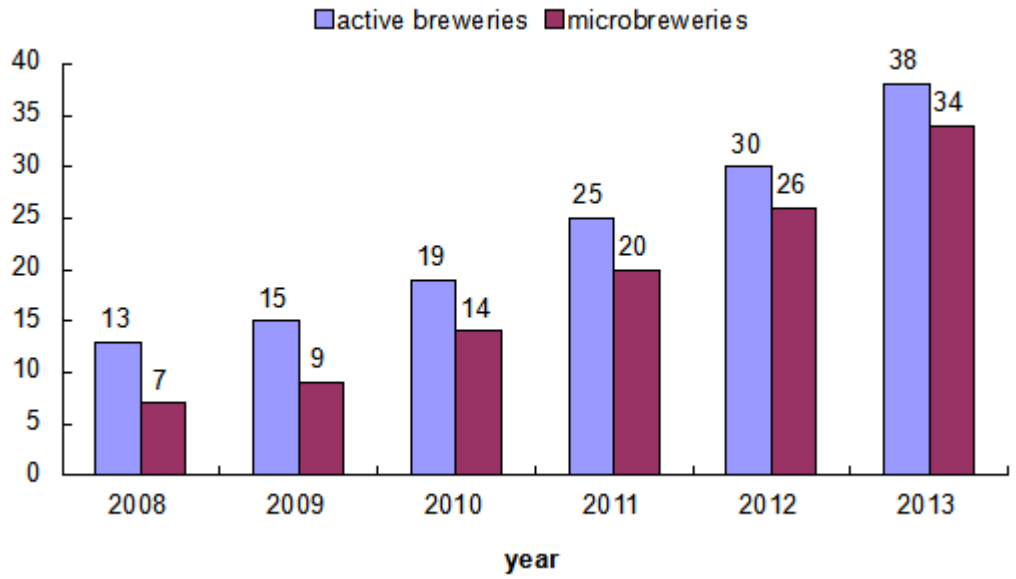

Fig. 8 The number of breweries in Slovakia

Source: The Brewers of Europe, 2014

In case of microbreweries, the jump from 7 plants to 34 plants throughout the years makes an enormous positive change of 385.71%. The huge demand for specialized beer as well as pleasant conditions for the entrepreneurship are strong motivations for more and more businessmen to open their very own microbreweries.

Moreover, the 192.31% increase in the number of breweries during the observation period was apparently caused due to both the foreign brewing corporations having modernized a few breweries and the increase in the number of microbreweries.

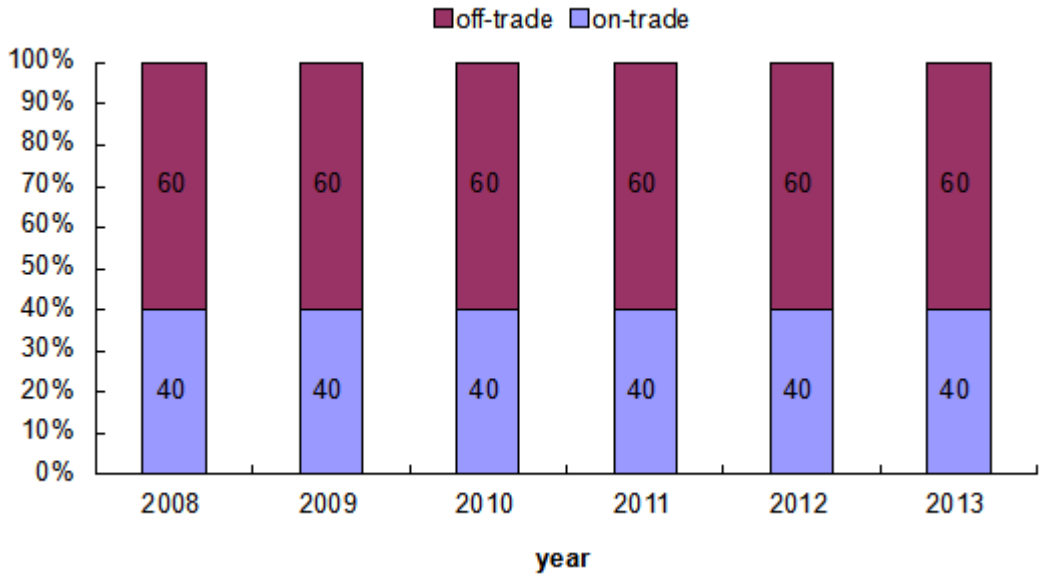

Fig. 9 Beer sales in Slovakia

Source: The Brewers of Europe, 2014

The prices of beer in the on-trade sector increased due to purchase of more expensive raw materials. On the contrary, the prices in the off-trade sector went down and the Slovaks took the opportunity and started buying even more PET bottles of beer. Though all in all, the on-trade and off-trade beer proportion in Slovakia remained unchanged.

The research examining the situation on the Slovak market came across additional impressive results (Savov et al., 2014). They discovered that the drop in beer consumption is happening because nowadays a consumer has multiple choices among beverages and also a higher income. For instance, wine – a common substitute for beer, had its consumption increased during their observation period 2003-2012. Moreover, the effort of consumers trying to live a healthier life impacted the water consumption accordingly. Still, the beer consumption per capita is more specific an indicator showing us that the different consumers' preferences, healthier way of living and also higher price for beer due to higher VAT all together result in the decrease of beer consumption. The beer production was decreasing in a similar fashion due to higher prices of raw materials but it was balanced out eventually by the increased import. Fortunately, minor increase in the consumption has been reported since 2011. Factors responsible for this growth are technological improvements and new types of beer, such as non-alcoholic beer, premium beer or Radler, particularly attractive to the female demographic of beer consumers. In addition to this, buying beer in retail stores has

never been more convenient and people took fancy to drink beer from PET bottles at home. Customers also demand high quality beer, however, with special taste and character. The more differentiated the taste from the "Euro-beer", the better. So entrepreneurs are starting their own independent businesses in microbreweries brewing in traditional style, especially in the "beer drinking countries" such as the Czech Republic or Germany, which easily solves the customers' demand, so they are willing to spend even more money on a specialized beer. All in all, big old breweries were either shut down or acquired by the greater brewing corporations. Microbreweries became stars on the market now and they are highly integrated so they regard themselves as a one huge family rather than a competition. Furthermore, there are various financial programs supporting the micro-brewing, hence, expected growth of microbreweries is anticipated in the future.

To partially sum up, I found from the studies the healthier lifestyle, the new beer products, the Economic Crisis, the cheaper PET bottles and the "Euro-beer" as the main factors influencing the beer markets in the selected countries.

But for the examination of the differences on the markets I used the comparison method, which is applied in the following subchapter.

4.4 Comparisonof the beer markets

The aim of the following observations is to compare the beer consumption per capita and beer production per capita in these countries. Although the original data were in 1,000 hectolitres of beer for the whole country, I have recalculated them and used the litres per capita unit instead as I found it much more comfortable and better for the comparison and orientation in the figures.

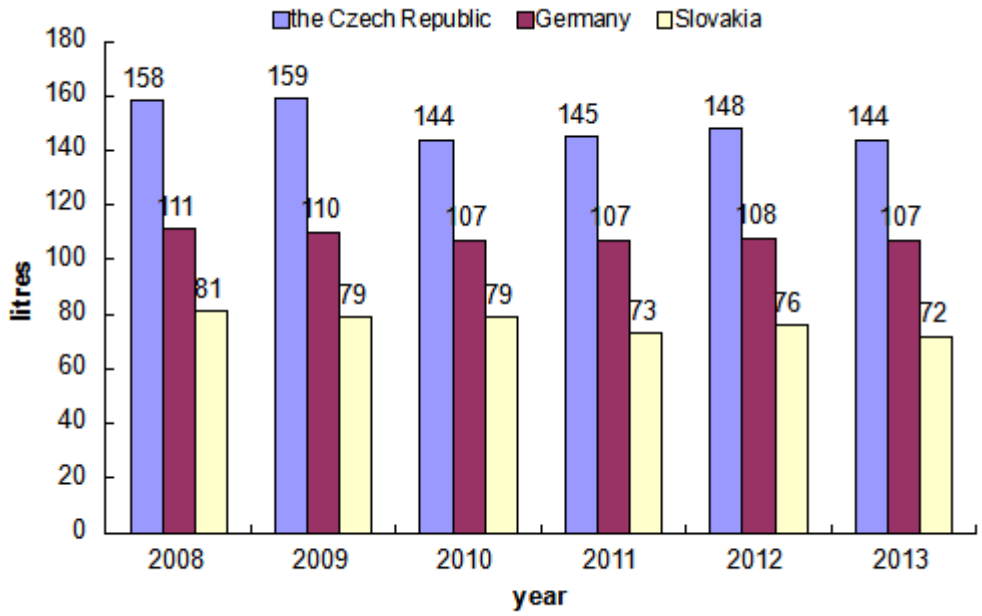

Fig. 10 Beer consumption per capita

Source: The Brewers of Europe, 2014

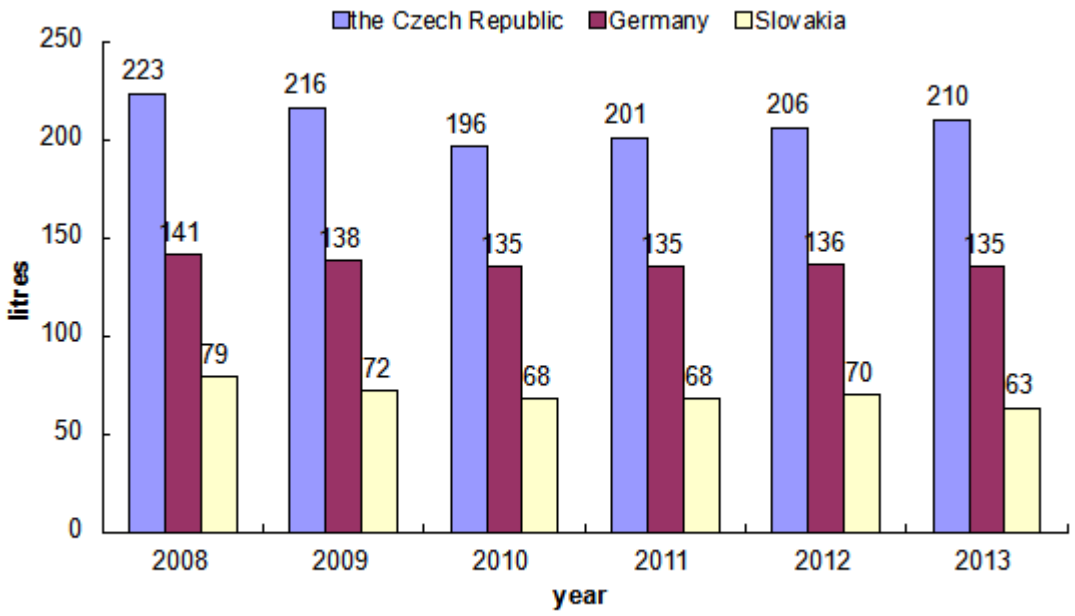

Fig. 11 Beer production per capita

Source: The Brewers of Europe, 2014

Starting with the Czech Republic, in the first two years both the consumption and production are pretty high though in 2010 a huge drop is visible as the government increased the beer excise tax. The government's assumption was to earn 2 billion of Czech crowns per year but the reality was far from its expectation because the real earnings were CZK 320 million since many people preferred to buy a cheaper wine, and as a result, the overall beer consumption decreased. However, from 2010 on, an increasing tendency is once again observed. The slight increase in beer consumption by the end of the observation period is due to the introduction of the new beer products.

Secondly, the German production and consumption are in a stage of slowly declining stagnation. This saturation present on the German market is caused by the German beer brewing history, which is the longest history among all of the European countries. Moreover, no further development of the brewing art was employed due to Reinheitsgebot, a beer-purity law prohibiting any experiments with the ingredients needed for brewing. From a historical point of view, its purpose was to ensure sufficient amount of grains so breads could be made and that all grains would not end up in beer brewing only. Nevertheless, the law has not been broken ever since and nowadays it inhibits the Germans from keeping up

with the latest brewing trends which is partially compensated for by the increasing tendency of imported beer with special tastes and flavours.

However, the Germans did not get discouraged and started to be creative instead about the ingredients allowed for brewing, so some German beer specialities,such as Frassbrause – the traditional lemonade, vintage beers and beers with higher percentage of hops, were available not only on the German market but also on the markets of its exporting countries(The Brewers of Europe et al., 2013).

Finally, Slovakia is noexception to the decreasing tendency in both the beer production and beer consumption, however, in the year 2012 a slight increase may be observed. Just like in the Czech Republic, new beer products entered the market that year such as various flavoured-beers (Radlers) or alcohol-free beers which targeted new consumer groups, for instance women, drivers and people living a healthier lifestyle.

Although the higher excise duties were a huge deal-breaker for the Czech Republic, Germany has been struggling with the beer-purity law and saturation whereas the Slovaks had to pay more for the raw materials but also tried to live a healthier lifestyle. Nevertheless, the situation on the Czech and Slovak market was partially saved by the new types of beer.

5 Results

5.1 The econometric model

The following functions of the regression model analyze the determinants and the extent to which they affect the beer production and beer consumption

$$y_1 = \beta_0 + \beta_1 y_2 + \beta_2 x_1 + \beta_3 x_2 + \varepsilon,$$

$$y_2 = \beta_0 + \beta_1 y_1 + \beta_2 x_3 + \varepsilon.$$

The dependent variables are

y_1 - beer production (1,000 hectolitres per year),
y_2 - beer consumption (1,000 hectolitres per year).

The independent variables are

β_n - a constant,
x_1 - beer export (1,000 hectolitres per year),
x_2 - average consumer price of beer (Euro per litre),
x_3 - mean monthly earnings (Euro),
ε - error term.

The observation period covers the years 2008 and 2013 as the basic data for my calculations were obtained from a Beer statistics paperwork, edition 2014 in which the researchers analyzed the European Countries within this very same period of time.

As for the regression analysis, I calculated the difference between these two years. Unfortunately, there was not enough data arising from such a calculation since my focus was only on the Czech Republic, Germany and Slovakia. In other words, there were more variables required for the econometric model than the amount of the data obtained. So I decided to include other European countries among the data in order to have their sufficient amount for further calculations.

The data of consumption, production and export were acquired from the Beer statistics as already mentioned above. The unit used for all three variables is 1,000 hectolitre of beer per year.

The data of average consumer price were acquired from The Contribution made by Beer to the European Economy edition 2013 report paper, written by The Brewers of Europe et al. since the latest data available were only for the year 2012, I used them as a substitute for the year 2013. Though the paper has divided the average consumer price between the on-trade and off-trade, I made a weighted arithmetic mean of these two aspects in order to get a unified price. The unit used is 1 liter of beer per capita in Euro.

Last but not least, the data of consumers' income were acquired from Eurostat as mean monthly earnings. However, the data available were only for the years 2006 and 2010 so I had to use them instead of years 2008 and 2013. The unit used is per capita in Euro, too.

Nevertheless, Ireland, Croatia and Malta had to be omitted from my calculations due to the lack of data. So, the final number of the countries that I am calculating with is 25. All the calculations are done in the Gretl program.

5.2 Beer production

Applying the Ordinary Least Square method for the function of the beer production I have received

$$y_1 = -90.8633 + 0.935809y_2 + 0.360865x_1 - 64.2512x_2.$$

The variable y_1 may be interpreted by the following statement:
If the beer consumption increases by 1,000 hectolitres and other values remain constant, the production increases by approximately 930 hectolitres of beer.

The variable x_1 may be interpreted by the following statement:
If the beer export increases by 1,000 hectolitres and other values remain constant, the production increases by approximately 360 hectolitres of beer.

The variable x_2 may be interpreted by the following statement:
If the average consumer price of beer increases by 1 euro per litre and other values remain constant, the production decreases by 64,000 hectolitres of beer.

The aim of the results is to have such fitted values of any random variable which are as close to the actual values as possible.

Tab. 1 Outputs of the beer production function

countries	fitted values	actual values
the average	-971.92	-976.29
the Czech Republic	-992	-208.68
Germany	-5545	-5273.41
Slovakia	-675	-195.065

The table above shows that the average values and the values for Germany are having the best fit. The deviation between the numbers is rather big in the case of Slovakia, while the Czech one is even bigger.

5.3 Tests of the beer production

5.3.1 Coefficient of determination and R2 adjusted

The value of the coefficient of determination has to be in the interval

$$R^2 \in \langle 0; 1 \rangle,$$

where the value of R^2close to 1 a indicates perfect description of the variability in the dependent variable$Y$ independent variable(s) in the design matrix$X$.R^2 close to 0 means that the model failed to describe the variability in$Y$in a better way than a simple model of constant.

However,$R^2 adjsuted$in contrast withR^2 does not increase when a nonsense explanatory variable is added to the model

$$R^2 adjusted < R^2.$$

After replacing the numbers for these two variables I have obtained the following result:

$$0.912170 < 0.923149.$$

Since the , $R^2 adjsuted$is indeed lower thanR^2, my results are correct.

5.3.2 Test of significance for the regression coefficients

For testing of significance for the regression coefficients, the t-test is used. I will test the coefficients for $\alpha = 0.05$.

The hypothesis:

H_0:$\beta_j = 0$ is non-significant,
H_1: $\beta_j \neq 0$ is significant.

The significance evaluation is done by comparing the p-values with the significance level. In case that

$$\alpha < coefficient$$

the null hypothesis is not rejected.

The results are as follows:

$$\beta_0: 0.6612 > 0.05,$$
$$\beta_1: 4.22e - 013 < 0.05,$$
$$\beta_2: 0.00105 < 0.05,$$
$$\beta_3: 0.8394 > 0.05.$$

Thanks to the p-values that were lower than 0.05 I rejected the null hypothesis and found the coefficients statistically significant. The exceptions were the constant and the average price of beer. Such finding implies that the beer price does not affect the beer production, which confirms the theory of the beer inelasticity.

5.3.3 Analysis of variance table and F-test of overall significance

Analysis of variance shows the variability. The regression sum of squares represents the variability explained by the regression model whereas the error sum of squares represents the variability which was not explained by the model. The total sum of squares is then the sum of the regression and the error components.

The hypothesis:

H_0: model is insignificant,
H_1: model is significant.

Tab. 2 ANOVA table of the beer production

	sum of squares	degrees of freedom	mean square
regression	9.69648e+007	3	3.23216e+007
error	8.07219e+006	21	384390
total	1.05037e+008	24	4.37654e+006
F(3, 21) = 84.0855 [p-value 7.27e-012]			

On thesignificance level, I verified the significance of the model using the F-statistic. The p-value in the ANOVA table is lower than 0.05, which is why I reject the null hypothesis and assume the model is significant.

5.3.4 Linearity test and RESET test

RESET test and LM test are used for finding out whether a model is correctly specified or not and whether its functional form is linear or not.

The hypothesis for RESET test:

H_0: model is correctly specified,
H_1: model is not correctly specified.

The hypothesis for LM test:

H_0: function form of the model is correct,
H_1: function form of the model is incorrect.

Tab. 3 RESET test and LM test of the beer production

model	test statistic	p-value
RESET test	1.23469	0.31323
LM test	14.2305	0.00260765

The p-value of the RESET test is bigger than 0.05, which means the null hypothesis is not rejected and the model is correctly specified. Nevertheless, the LM test's p-value is lower than 0.05. Thus, the null hypothesis is rejected and the model shall have an incorrect function form.

5.3.5 Analysis of the residuals

The White's test is used for calculating heteroskedasticity of a model and Chi-square test for calculating normal distribution of the error term.

The hypothesis for the White's test:

H_0: error term is homoskedastic,
H_1: error term is heteroskedastic.

The hypothesis for the Chi-square test:

H_0: normal distribution of error term,
H_1: abnormal distribution of error term.

Tab. 4 White's test and Chi-square test of the beer production

model	test statistic	p-value
White's test	21.6461	0.0100708
Chi-square test	2.65949	0.264544

From the table above, it is obvious that the p-value of the White's test is lower than α. As a result, the null hypothesis is rejected and the data do not have a constant variance of the error term. Additionally, comparing the p-value of the Chi-square test with the significance level of 5% results in not rejecting the null hypothesis and the random selected data have normal distribution.

5.4 Beer consumption

Applying the Ordinary Least Square method for the function of the beer consumption I have received

$$y_2 = -704.791 + 0.847978y_1 + 2.64464x_3.$$

The variable y_1 may be interpreted by the following statement:
If the beer production increases by 1,000 hectolitres and other values remain constant, the consumption increases by approximately 850 hectolitres of beer.

The variable x_3 may be interpreted by the following statement:
If the mean monthly earnings increase by 1 euro and other values remain constant, the consumption increases by approximately 2,640 hectolitres of beer.

Tab. 5 Outputs of the beer consumption function

countries	fitted values	actual values
the average	-1037.52	-1036
the Czech Republic	-1179	412.79
Germany	- 5244	-5251.09
Slovakia	-37	-645.19

Repeatedly, the best fits belong to the average values and those of Germany and the poor fits refer to Slovakia and the Czech Republic.

5.5 Tests of the beer consumption

5.5.1 Coefficient of determination and R2 adjusted

Calculating with the same relationship that

$$R^2 adjusted < R^2,$$

and by substituting the variables with numbers I received

$$0.916412 < 0.923378,$$

Where$R^2 adjusted$is smaller than R^2, so no redundant variable entered the model.

5.5.2 Test of significance for the regression coefficients

As for the beer consumption function the results are as follows:

$$\beta_0 : 0.0075 < 0.05,$$
$$\beta_1 : 4.10e - 011 < 0.05,$$
$$\beta_2 : 0.0058 < 0.05.$$

The null hypothesis is rejected and all the coefficients are statistically significant as all of the p-values I found lower than 0.05.

5.5.3 Analysis of variance table and F-test of overall significance

Tab. 6 ANOVA table of the beer consumption

	sum of squares	degrees of freedom	mean square
regression	1.00764e+008	2	5.0382e+007
error	8.36146e+006	22	380066
total	1.09125e+008	24	4.54689e+006
F(2, 22) = 132.561 [p-value 5.34e-013]			

Just like in the ANOVA table of the beer consumption, I found the p-value from this table lower compared to α, so the null hypothesis is rejected and the model is significant.

5.5.4 Linearity test and RESET test

Tab. 7 RESET and LM test of the beer consumption

model	test statistic	p-value
RESET test	6.29121	0.00759392
LM test	9.08233	0.010661

Unfortunately, both these tests have p-values lower than 0.05, which results in rejecting the null hypotheses, thus, the model is wrongly specified as well as its function form is wrong.

5.5.5 Analysis of the residuals

Tab. 8 White's test and Chi-square test of the beer consumption

model	test statistic	p-value
White's test	19.219707	0.001749
Chi-square test	4.204	0.12223

Lastly, the White's test and its p-value is lower compared to α, so the null hypothesis is rejected and thus heteroskedasticity occurs in the model. In addition to this, comparing the p-value with the significance level of 5% regarding the Chi-square test I do not reject the null hypothesis and the random selected data have a normal distribution.

5.6 Taste convergence

I have already demonstrated in the literature review that beer is an inelastic good, which the same is true for wine as well. I verified this statement by using the formula for inelasticity

$$\frac{\Delta Q}{\Delta P} < 1,$$

where

ΔQ- the percentage change in the quantity,
ΔP- the percentage change in the price.

Tab. 9 Elasticity of wine and beer

countries	wine	beer
the Czech Republic	0.06	-0.04
Germany	-0.01	-0.11
Slovakia	0.03	-0.06

Source: WHO, 2015; and own calculations

All the elasticities for both the beverages and for each country are lower than 1, which confirms the statement about these two beverages being inelastic. The negative values of beer indicate that beer is even more inelastic than wine.

5.6.1 Formula for calculation of the taste convergence

However, for the calculation of the taste convergence I used the formula demonstrated in the methodology. For the graphical depiction it takes the form

$$\frac{\Delta C_w}{\Delta C_b} > \frac{\Delta P_w}{\Delta P_b},$$

where

ΔC_w- % change in the consumption of wine,
ΔC_b- % change in the consumption of beer,
ΔP_w- % change in the price of wine,
ΔP_b- % change in the price of beer.

The formula is based on the assumption that if the price of beer decreases, the beer consumption increases but the wine consumption decreases and vice versa since this type of behaviour represents elasticity.

The price data of both alcohol beverages were used from Eurostat et al., The Brewers of Europe at al. and Statista.

The data related to the consumption of these two beverages were acquired from the WHO[1].

Even though the prices were in Euros per litre and the consumption was in litres per capita, I recalculated the data into percents not only to have one common unit but also due to the fact that the inelasticity calculations require percents. Each percentage change is then calculated as a difference between years 2013 and 2008, having the year 2013 set as the basic year.

5.6.2 Results of the taste convergence

Tab. 10 Taste convergence

countries	proportion inequation	simplified inequation
the Czech Republic	$\frac{0.97}{2.66} < \frac{3.44}{7.08}$	$0.36 < 0.49$
Germany	$\frac{-0.98}{0.62} < \frac{25.23}{3.15}$	$-1.58 < 8.01$
Slovakia	$\frac{4.41}{0.39} > \frac{7.72}{6.37}$	$11.3 > 1.21$

For the first two countries it is valid that a decrease in the price of beer may result in increase of its consumption, however, the amount by which the consumption changes is not greater than the change in the price. In other words, the Czech Republic and Germany truly are “beer drinking countries” as the price changes do not have any effect on their beer consumption.

On the contrary, Slovakia is showing a different result which means that it is sensitive to the price changes. If there is a drop in beer price, the Slovaks consume more beer and vice versa. Another reason why the behaviour of Slovaks is different might be the decreasing off-trade beer price within the observation period, unlike in the Czech Republic and Germany, where both the on-trade and off-trade prices of beer were increasing.

[1]the World Health Organization

Even though the Czech Republic and Germany fail at the taste convergence, Slovakia is supposed to show a sign of it, at least according to the calculation. The real situation on the beer markets is discussed in the subsequent subchapter.

5.7 Beer share and trade openness

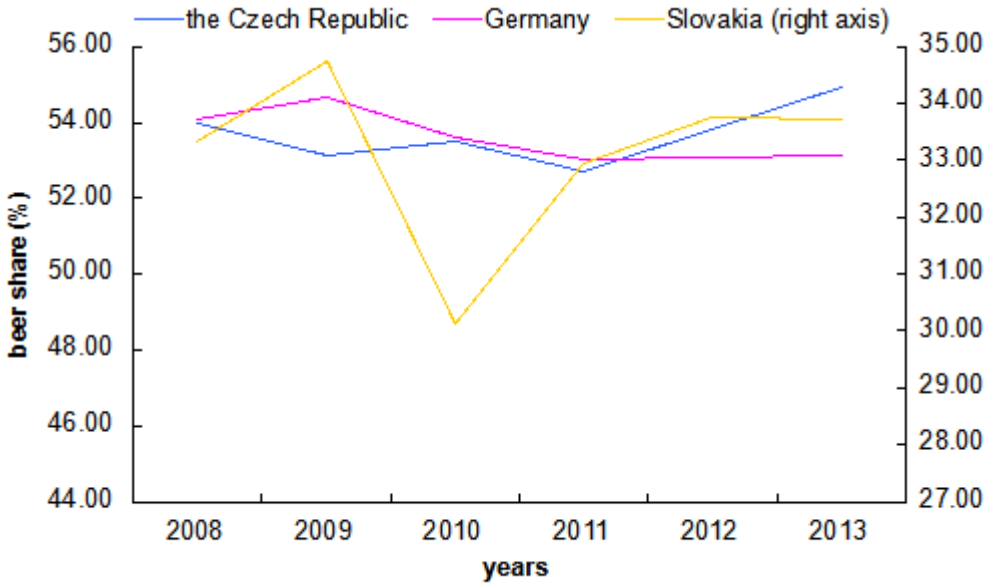

Fig. 12 Beer share of each country

Source: WHO, 2015

The figure above depicts the percentage share of beer on the market of each country individually. I put Slovakia on the secondary Y axis for better comparison since its beer share was the lowest among the observation countries. Though its slope is more dynamic than the Czech and German one, there is a clear evidence of taste convergence during the observation period among all the countries.

The following figures display the relation between the trade openness and beer share as in the study of "Beer Drinking Nations – the Determinants of Global Beer Consumption" wasdiscovered that the taste convergence in the "beer drinking countries" was caused by the increase in trade openness and a decrease in the beer share but statistically significant results were invalid for the "non beer drinking countries" (Colen and Swinnen, 2011). On each of the figures the green dot represents the year 2008, as a starting year of the observation period, and the black dot represents the final year 2013. Each dot in between stands for a particular year.

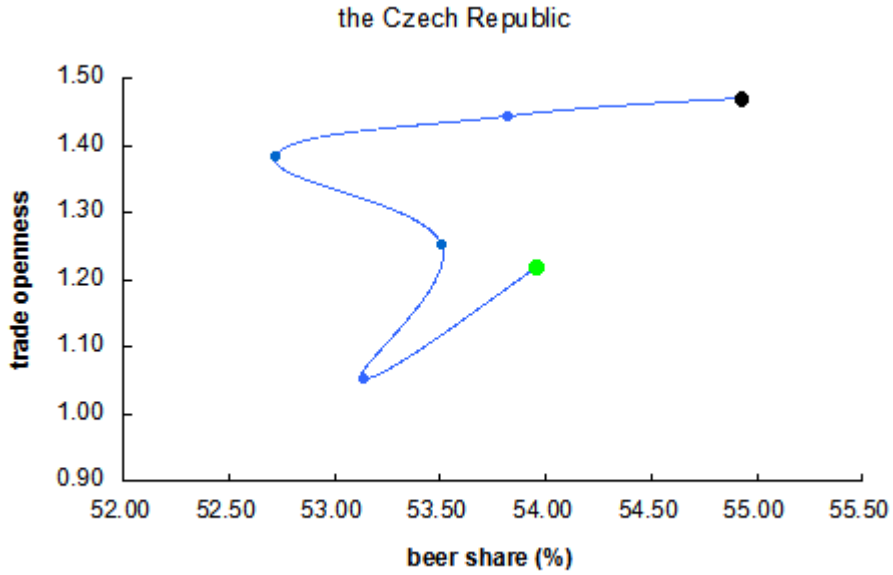

Fig. 13 the Czech beer share with respect to trade openness

Source: Eurostat, 2015; WHO, 2015

The Czech Republic behaves in conformity with the study up to year 2011. After that, the higher the trade openness, the higher the beer share. This "disobey" is, however, actually showing an onward taste convergence. The greatest export partner of the Czech Republic is Germany, so the Czechs are converging their drinking pattern to the Germans as another "beer drinking nation".

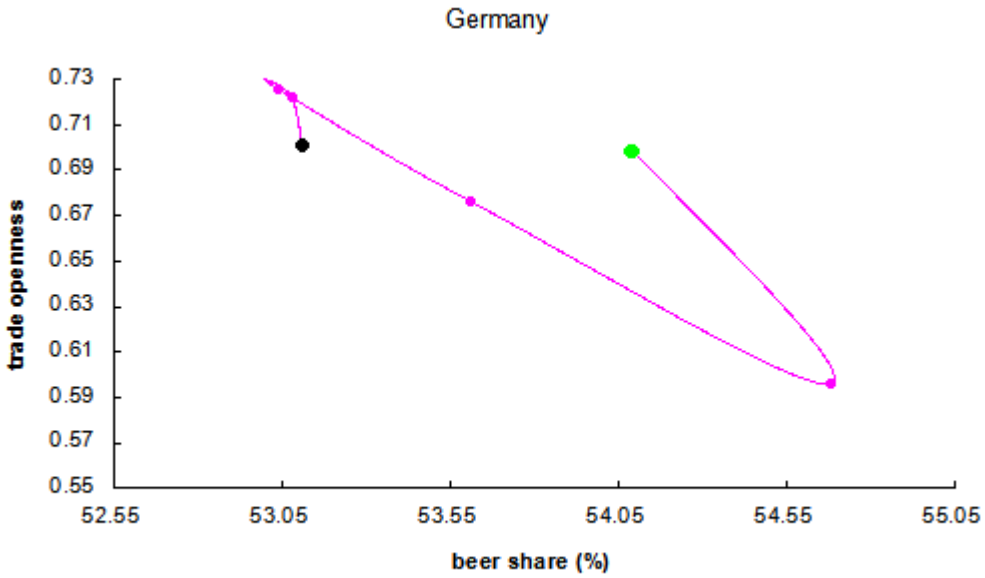

Fig. 14 the German beer share with respect to trade openness

Source: Eurostat, 2015; WHO, 2015

As for Germany, the results were exactely as expected. Its beer share decreased when the trade openness increased and vice versa. Since Germany trades with the rest of the world, especially the "non beer drinking countries", such as France or China, these countries have a great impact on the German taste convergence which results in lower beer share since Germany is adjusting to their lower beer consumption.

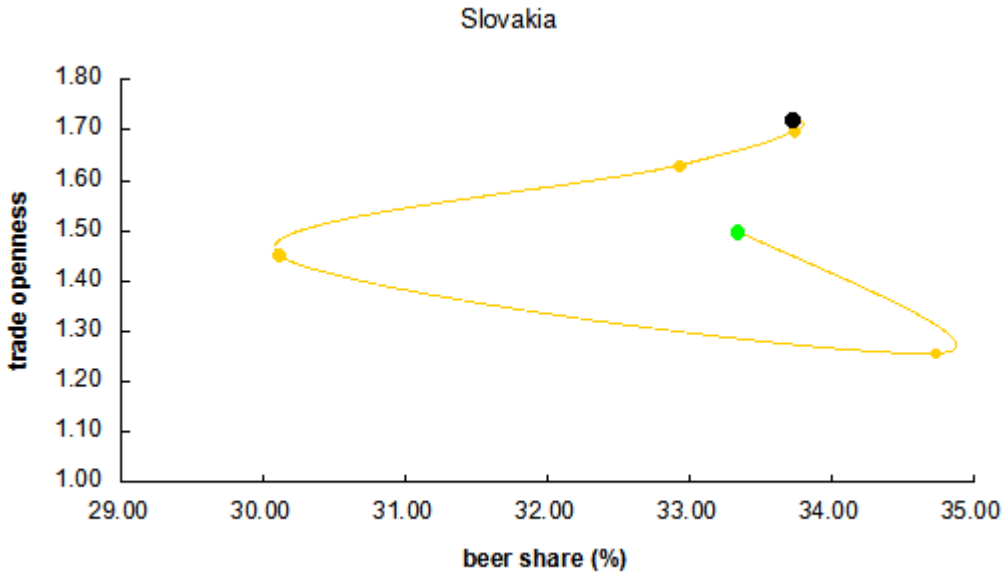

Fig. 15 the Slovak beer share with respect to trade openness

Source:Eurostat, 2015; WHO, 2015

Lastly, the two most important trade countries for Slovakia are indeed the Czech Republic and Germany. Thus, the more is the Slovak trade open, the more are the Slovaks converging in their taste towards the drinking patterns of the "beer drinking countries".

6 Discussion

This Bachelorthesis brought in some conclusions and insights that might be limited by some factors.

My calculations about the taste convergence are not in conformity with the real actions done on the beer markets because the calculations are static, whereas the markets are rather dynamic. Moreover, countries included in the study analyzing the impact of trade openness on beer share were taken from all over the world,while the scope of my analysis includes three countries only.

Unlikein the econometric model, where I had to add many other European countries to my calculation in order to have more data than independent variables, so I could get the desired results. The poor test results that I received from the LM test and the RESET test of both the beer functions are, however, the output of a negligence of a proper testing done by its authors. Additionally, I miss some country specific determinants which will positively influence and improve the results regarding the fitted and actual values.

Therefore, further investigation is required for a deeper and better analysis, which will target smaller areas or regions of a country in order to ease the research and focus on the details instead. Interesting results could be obtained if the analysis of the taste convergence would also investigate the nature and characteristics of the trading partners of the selected countries. Such results might be then interpreted to the government of each particular country, so that the valuable information can be used to improve the trade relations and policy-making as well as increasing the beer sales and microbreweries potential.

To conclude, out of all the factors influencing the Czech beer market from the study about the reasons responsible for the decreasing Czech beer consumption (Kozák, 2012), I found the higher excise duty, the Economic Crisis and the “Euro-beer” having the greatest impact on the real market situation. From the study analyzing the Slovak beer industry (Savov et al., 2014), however, I found the impacts ofthe more expensive raw materials, the healthier lifestyle and the rising number of microbreweries being in compliance with my findings.

7 Conclusion

The aim of this thesis was to analyze the taste convergence of the selected countries and the effect of trade openness on such convergence. Based on my calculation results I found the Czech Republic and Germany the true "beer drinking countries" since the price changes of beer did not significantly increase or decrease its consumption. On the contrary, the Slovaks are very sensitive to the price changes as the decrease of price of beer resulted in significantly higher consumption of this alcohol beverage. The explanation of this different type of behaviour might be the fact that Slovakia is a "spirit drinking country" with the lowest earnings among the observation countries, so once there is a price decrease in other alcohol beverage than spirits (in my case it is beer), the Slovaks are easy to turn their drinking pattern towards the new alcohol beverage. Additional factor responsible for the different behaviour of the Slovaks could be the fact that the off-trade price of beer was decreasing during the observation period on the Slovak market.

However, the taste convergence was proved by the mutual relation between the beer share and the trade openness. The assumption was that in a "beer drinking country" the increasing openness actually decreased the beer share but a statistically significant effect has not been observed in the "non beer drinking countries". Nevertheless, I found the taste convergence to be present on each of the beer markets that I have been analyzing. The great effect of trade partners from the "non beer drinking countries" all over the world make the German beer share decrease because of the Germans adjusting their drinking pattern to such countries where beer is not the most consumed alcohol beverage, which is totally in the conformity with the study. On the other hand, the most important trade partner of the Czech Republic is Germany. Since Germany is a "beer drinking country", the Czechs are converging to the drinking pattern of Germany, so the higher the Czech trade openness is, the higher the beer share. Although this effect has been observed after the year 2011. As for the taste convergence of the Slovaks, the biggest trade partners are actually the Czech Republic and Germany. So again, the more Slovakia trades with these two "beer drinking countries", the more are the Slovaks going to converge to their drinking pattern by increasing the overall beer share on the Slovak market.

Another essential aim was to examine the beer trade as well as its consumption and production in the selected countries. The production and the consumption were experiencing a decreasing tendency on each of the markets. However, the new beer products that entered the Czech and Slovak market until the end of the observation period have had a huge positive impact that resulted in increase in both the beer production and consumption. Although the year 2010

brought higher excise duties to the Czech beer market and the production decreased, the import of beer was increasing up to this year as a compensation for the loss caused by the higher excise duties. Export of the Czech beer was decreasing due to bad economy situations in the exported countries. Even though the Slovak beer import and beer export were mostly hit by the Economic Crisis in the year 2009, ever since then the beer trade has been in a process of recovery. The German beer market was showing signs of saturation in both the beer consumption and beer production but the beer-purity law has its own share regarding this stage of stagnation. Similarly as in Slovakia, the German import and export were strongly hit by the Economic Crisis in 2009, especially the export, but other than that the German beer trade is rather stable.

Moreover, one of the greatest findings of thisthesis refers to the performance of the microbreweries. Their initial idea is to experiment with the beer taste and to turn a brewing hobby into a profitable occupation. Since the European beer market is oversaturated with the "Euro-beer", the new innovative products, such as the flavoured beers, the beers with higher alcohol content and the non-alcoholic beers, changed the market positively by increase in the beer production, the beer consumption, beer shares as well as the sales, so the microbreweries have a great potential to keep expanding the beer market. Pleasant conditions for starting up with such business, for example various business grants or almost no excise duties, drive many entrepreneurs to open their very own microbrewery. Due to the huge amount of like-minded entrepreneurs, the number of microbreweries was increasing and is also expected to keep on increasing continuously. Not only is the label "locally produced" perceived as a quality stamp but the microbreweries also ensure new job positions and develop beer tourism.

As for the partial aim, I found multiple various determinants influencing the beer industry in general. On one hand, the function of beer production is influenced by beer consumption, beer export and average consumer price of beer per one litre. On the other hand, the function of beer consumption is influenced by beer production and mean monthly earnings.

8 References

AIZENMAN, J., BROOKS, E.L.*Globalization and taste convergence: the case of wine and beer* [online]. National Bureau of Economic Research, 2005 [cit. 18. 11. 2015]. Available at:http://www.nber.org/papers/w11228.pdf

BALA, V., VAN LONG, N. International trade and cultural diversity with preference selection [online]. *European Journal of Political Economy,* 2005, 21.1: 143-162 [cit. 5. 12. 2015]. Available at: http://www.cesifo-group.de/portal/page/portal/DocBase_Content/WP/WP-CESifo_Working_Papers/wp-cesifo-2004/wp-cesifo-2004-07/cesifo1_wp1242.pdf

COLEN, L., SWINNEN, J. FM. Beer Drinking Nations-The Determinants of Global Beer Consumption [online]. 2010 [cit. 18. 11. 2015]. Available at: http://poseidon01.ssrn.com/delivery.php?ID=769100067111073024006088021002083101005063061035027036094120121100090090095070001078024006023047020040034096066102109087006104008086008054041110122067095121007084064080060073019106014089005102013005020064122091001003097031027089111028009077086104106&EXT=pdf

DĚDINA, D., ŠÁNOVÁ, P., SAMEK, M. Determinants analysis of czech beer production and consumption. *Acta Universitatis Bohemiae Meridionalis*, 2012, 13.4: 21-26.

ELLIS, V., BOSWORTH, G. Supporting Rural Entrepreneurship in the UK Microbrewevry sector [online]. 2013 [cit. 26. 4. 2016]. Available at: http://www.emeraldinsight.com/doi/abs/10.1108/BFJ-12-2014-0412

EUROSTAT ET AL.*Consumer prices report: An experimental analysis into the measurement of indicative price levels for consumer products* [online]. 2009 [cit. 5. 5. 2015]. Available at: http://ec.europa.eu/eurostat/documents/272892/272992/04_METH_CPR_-_FEB_2009_WEB_0.pdf/aa046d8f-bf63-4ce2-bbaf-f9dbf5456c78

EUROSTAT ET AL.*Detailed average prices report* [online]. 2014 [cit. 5. 5. 2015]. Available at: http://ec.europa.eu/eurostat/documents/272892/272992/Consumer-Price-Research-2014.pdf/32da5ec2-23b4-4260-beda-5e823de3f072

EUROSTAT. Structure of earnings survey: monthly earnings*. Eurostat: Earnings* [online]. 2015 [cit. 18. 11. 2015]. Available at: http://ec.europa.eu/eurostat/web/labour-market/earnings/database

EUROSTAT.*International trade, by reporting country, total product* [online] 2015 [cit. 5. 5. 2016]. Available at: http://ec.europa.eu/eurostat/web/products-datasets/-/tet00002

JANDA, K., MIKOLÁŠEK, J. SUCCESS IN ECONOMIC TRANSFORMATION OF THE CZECH BEER INDUSTRY AND ITS SOCIAL COSTS AND BENEFITS [online].*Transformation in Business & Economics,* 2011, 10.3 [cit. 8. 11. 2015].Available at: http://eds.b.ebscohost.com/eds/pdfviewer/pdfviewer?sid=43a35681-e4be-42f3-916f-3b2336cfe955%40sessionmgr106&vid=1&hid=126

JANEBA, E.*International trade and cultural identity* [online]. National Bureau of Economic Research, 2004 [cit. 3. 12. 2015]. Available at: http://www.nber.org/papers/w10426

KOZÁK, V. Analysis of reasons for beer consuption drop in the Czech republic [online]. 2013 [cit. 10. 11. 2015]. Available at: http://www.ekonomie-management.cz/download/1404726184_33fa/2013_3+Analysis+of+Reasons+for+Beer+Consuption+drop+in+the+Czech+Republic.pdf

KUBIČKA, L. Alcohol use in the country with the world's highest per capita beer consumption–the Czech Republic [online]. *Addiction,* 2006, 101.10: 1396-1398 [cit. 30. 11. 2015]. Available at: http://onlinelibrary.wiley.com/doi/10.1111/j.1360-0443.2006.01530.x/epdf

NAEZISS, L. The German beer law [online]. *Journal of the Institute of Brewing*, 1984, 90.6: 351-358 [cit. 26. 4. 2016]. Available at: http://onlinelibrary.wiley.com/doi/10.1002/j.2050-0416.1984.tb04288.x/epdf

NELSON, J.P., ET AL: Advertising bans, monopoly, and alcohol demand: Testing for substitution effects using panel data [online]. *Unpublished paper, Department of Economics, Pennsylvania State University,* 2001. [cit. 1. 3. 2016]. Available at: https://www.researchgate.net/profile/Jon_Nelson2/publication/4896719_A

dvertising_Bans_Monopoly_and_Alcohol_Demand_Testing_for_Substitution_Effects_Using_Panel_Data/links/00463521b900e61226000000.pdf

OLIVIER, J., THOENING, M., VERDIER, T. Globalization and the dynamics of cultural identity [online]. *Journal of International Economics*, 2008, 76.2: 356-370 [cit. 5. 12. 2015]. Available at: ftp://139.82.198.57/pdf/thierry%20verdier.pdf

ORNSTEIN, S.I., HANSSENS, D.M. Alcohol control laws and the consumption of distilled spirits and beer [online]. *Journal of Consumer Research,* 1985, 200-213 [cit. 12. 3. 2016]. Available at: http://www.jstor.org/stable/254353

POLLAK, R.A. Habit formation and dynamic demand functions [online]. *Journal of political Economy,* 1970, 78.4: 745-763 [cit. 10. 12. 2015]. Available at: http://www.jstor.org/stable/1829929

RYOO, S., KIM, Y.K. Income distribution, consumer debt and keeping up with the Joneses [online]. *Metroeconomica,* 2014, 65.4: 585-618. [cit. 12. 3. 2015]. Available at: http://onlinelibrary.wiley.com/doi/10.1111/meca.12052/pdf

SAVOV, R., ET AL. Microbreweries as an emerging trend in slovak brewing industry. Quality or price? [online]. 2014 [cit. 30. 11. 2015]. Available at: http://www.fek.zcu.cz/tvp/doc/akt/tvp-3-2014-clanek-9.pdf

STATISTA. Price of wine in Germany from 2008 to 2014, by sales channel (in euros per liter*). Statista: The Statistic Portal* [online]. 2015 [cit. 5. 5. 2015]. Available at: http://www.statista.com/statistics/508446/wine-consumer-prices-by-sales-channel-germany/

SURANOVIC, S., WINTHROP, R. Trade Liberalization and Culture [online]. *Global Economy* Journal, 2014, 14.1: 57-78 [cit. 3. 12. 2015]. Available at:http://eds.b.ebscohost.com/eds/pdfviewer/pdfviewer?vid=7&sid=43a35681-e4be-42f3-916f-3b2336cfe955%40sessionmgr106&hid=126

SWINNEN, J. F.M., VAN HERCK, K. How the East Was Won: The Foreign Take-Over of the Eastern European Brewing Industry [online]. 2010[cit. 30. 11. 2015]. Available at: http://poseidon01.ssrn.com/delivery.php?ID=217116104122091030068127124097073103121046070053091056099116028109091025113119016081057056103059050003021085126019004118092085000085032086058066

012118120066002123052013082100115125118103088081107109014022021028076117116022070123001029067112079090069&EXT=pdf

THE BREWERS OF EUROPE. *Beer statistics: 2014 edition* [online]. 2014 [cit. 8. 11. 2015]. Available at: http://www.brewersofeurope.org/uploads/mycms-files/documents/publications/2014/statistics_2014_web_2.pdf

THE BREWERS OF EUROPE.*Economic effects of high excise duties on beer* [online]. 2014 [cit. 11. 12. 2015]. Available at: http://www.brewersofeurope.org/uploads/mycms-files/documents/publications/2015/Report%20on%20Economic%20Effects%20of%20High%20Excise%20Duties%20on%20Beer.pdf

THE BREWERS OF EUROPE ET AL. *The Contribution made by Beer to the European Economy* [online]. 2013 [cit. 19.3.2016]. Available at: http://www.ey.com/Publication/vwLUAssets/EY_-_The_Contribution_made_by_Beer_to_the_European_Economy/$FILE/EY-The-Contribution-made-by-Beer-to-the-European-Economy.pdf

THE BREWERS OF EUROPE ET AL.*The Contribution made by Beer to the European Economy: Employment, value added and tax* [online]. 2006 [cit. 1. 3. 2016]. Available at: http://www.brewersofeurope.org/uploads/mycms-files/documents/archives/publications/Country%20chapters%20Economic%20impact%20of%20beer.pdf

WHO. Levels of conumption: Recorded alcohol per capita consumption, from 2000. *WHO: Global Health Observatory data repository* [online]. 2015 [cit. 5. 5. 2015]. Available at: http://apps.who.int/gho/data/node.main.A1026?lang=en

WILKINSON, J. T. Alcohol and accidents: an economic approach to drunken driving.*Unpublished Ph.D. dissertation, Department of Economics, Vanderbilt University,* 1985.

Attachments

A Data for the econometric model

countries	production	consumption	export	earnings	consumer price
Belgium	273	-523	943	311	0.57
Bulgaria	-246	89	-25	139	-0.14
the Czech Republic	-992	-1179	2778	208	0.15
Denmark	-308	-736	-511	580	0.56
Germany	-5545	-5244	-681	63	0.125
Estonia	297	-15	288	178	0.45
Greece	-697	-684	25	181	0.32
Spain	-710	-523	615	178	0.13
France	-776	-407	2725	58	0.37
Italy	-17	-262	386	163	0.45
Cyprus	-74	40	1	165	1.735
Latvia	160	-6	355	142	-0.09
Lithuania	-188	-280	332	84	0.14
Luxembourg	-31	-30	-2	389	0.87
Hungary	-868	-1477	-50	121	0.25
the Netherlands	-3545	-1220	-2490	364	0.77
Austria	108	-141	258	164	0.32
Poland	2894	1527	1081	145	-0.08
Portugal	-885	-1263	338	96	0.66
Romania	-3560	-3893	333	112	0.12
Slovenia	-93	-218	229	272	0.53
Slovakia	-675	-37	175	239	0.1
Finland	-450	-193	-560	382	1.16
Sweden	-710	-187	189	299	0.69
United Kingdom	-7655	-9076	1425	-389	0.61

Source: The Brewers of Europe, 2014; The Brewers of Europe et al., 2013; Eurostat, 2015; and own calculations