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# The Amount of Excise Tax and its Effect on the Consumption of Alcohol and Cigarettes in European Countries

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## BACKGROUND

Tobacco smoking and alcohol consumption are widespread practices that are legal and socially accepted in many societies. One of the common tools to reduce the consumption of these legal drugs is increasing prices. The prices for customers include taxes (value added tax and excise tax). Hundreds of studies from around the world are interested in the impact of taxes and prices on the demand for tobacco products. This topic is also relevant for governments of all countries trying to regulate consumption. **AIM:** The aim of the paper is to describe the amount of excise tax on legal drugs (alcohol, cigarettes) and compare their consumption in Europe and the countries of the European Union. **METHODS:** The sources of data for this research were publicly available from the World Health Organization (*WHO*), Global Information System on Alcohol and Health (*GISAH*), Tax Foundation, and Eurostat. In the paper selected scientific methods are used (analysis, synthesis, induction, and deduction). For the literature review Scopus and Web of Science (*WoS*) were used. **SAMPLE:** Data from Europe was used to examine alcohol and its taxation; a total of 31 countries were examined. All 27 countries of the European Union were examined for the assessment of cigarette consumption and its taxation. **RESULTS:** The overview shows that low taxation can lead to high alcohol consumption (Estonia, France). On the other hand, even relatively high taxation may not lead to low alcohol consumption (Germany, Slovenia, Czechia, and Austria). However, a very high excise tax can lead to a reduction in alcohol consumption, for example in Norway, Iceland, Sweden, and also in Finland. In Finland and Denmark, it was confirmed that a high excise tax (Finland €6.14 and Denmark €5.27) leads to lower consumption of cigarettes (Finland 9.9% and Denmark 11.7%). In Bulgaria the data shows that a low excise tax (€1.81) leads to a large number of people who smoke cigarettes daily (28.7%). As many as 12.9% of people smoke more than 20 cigarettes a day, which is the highest value in the European Union. If we compare it with the average (6%), it is a very high value. **CONCLUSIONS:** In many countries, e.g. Finland, Bulgaria, Sweden, Denmark, Norway, and France, it has been confirmed that the amount of consumption tax leads to greater or lesser consumption of legal drugs (alcohol, cigarettes).

**Keywords:** Europa, European Union (EU), WHO, Eurostat, alcohol, excise tax, cigarettes, consumption

## 1 INTRODUCTION

Tobacco smoking and alcohol consumption are widespread practices that are legal and socially accepted in many societies (Ohlrogge, 2022). Drinking alcohol has multidimensional connotations. Many studies show that alcohol consumption is affected by social, religious, and cultural norms. These norms can influence availability, affordability, and acceptability (WHO, 2022b). Many studies have identified cigarettes and alcohol as complementary products and suggested that regulation of one item may lead to a decline in demand for the other (Zhang & Zheng, 2020). Tobacco is the second leading cause of death and disability worldwide, accounting for 6.3% of the total burden (Ng et al., 2014). Evidence shows that tobacco kills 8.7 million people each year and causes tens of millions more to suffer from avoidable illnesses (WHO, 2021). The global smoking epidemic resulted in 100 million deaths in the 20th century, and unless effective measures are put in place, tobacco will kill a billion people in the 21st century. In 2020 22.3% of the global population used tobacco (WHO, 2022c). The harmful use of alcohol causes approximately three million deaths every year and the overall burden of disease and injuries attributable to alcohol consumption remains unacceptably high (WHO, 2022a). In 2018, the worldwide total consumption of alcohol was equal to 6.2 litres of pure alcohol per person aged 15+. Unrecorded consumption accounts for 26% of the worldwide total consumption (WHO, 2022a). Millions of people could be spared disease and early death if effective policies were put in place. In 1979, the *WHO* initiated a programme focusing on alcohol-related problems. The *WHO* has created many reports and strategies to reduce excessive alcohol consumption (Monteiro, 2011).

The losses are not only in lives, but also economic. There is an increase in expenses for the treatment of diseases caused by smoking and harmful alcohol consumption. Therefore, it is necessary to work on reducing this consumption. Alcohol policies can exist at the global, regional, international, national, or subnational levels (Jones-Webb et al., 2014). The *WHO* has identified ten ways in which governments can reduce the harmful use of alcohol: (1) leadership, awareness, and commitment; (2) health services' response; (3) community action; (4) drink-driving policies and countermeasures; (5) the availability of alcohol; (6) the marketing of alcoholic beverages; (7) pricing policies; (8) reducing the negative consequences of drinking and alcohol intoxication, (9) reducing the public health impact of illicit alcohol and informally produced alcohol, and (10) monitoring and surveillance (WHO, 2019a). Many European countries have implemented a range of policies to limit alcohol consumption, including taxation, restrictions on the availability of alcohol, bans on alcohol advertising, and public health campaigns (OECD, 2015). Scientific papers point out that consumption taxes are generally higher in European countries and the Scandinavian welfare states (Monica & Yingying, 2009). The *WHO* has established the main approaches to tobacco control and reduction: (1) price increases through higher taxes; (2) advertising and promotional bans; (3) smoking restrictions; (4) consumer education campaigns, and (5) smoking cessation therapies (Gilbert & Cornus, 2003). Governments in *OECD* countries use a mix of policies, including increased taxes on tobacco products, smoking bans in indoor public places, restrictions on purchases of tobacco by young people, advertising restrictions, plain packaging of tobacco products, and greater investment in education about the health consequences of tobacco to reduce tobacco consumption (OECD, 2020b). WHO member states adopted the *WHO* Framework Convention on Tobacco Control (WHO FCTC) in 2003. Currently, 182 countries have ratified this treaty (WHO, 2022d).

One of the common tools to reduce the consumption of alcohol and tobacco is increasing prices. Prices are constructed on the basis of supply and demand. The prices also include taxes for the final customer, among other things. The governments of individual countries therefore have the opportunity to influence the price through the level of taxation. Value added tax and excise tax are typical for these goods. Excise taxes have a number of advantages. They are easy to administer, can generate high

revenue with few discretionary effects, and can be used to discourage the consumption of harmful goods. These taxes can thereby reduce the health expenditure burden on individuals and the government (Maskaeva et al., 2022). Two justifications are commonly advanced to support excise taxes in terms of efficiency. First, selective taxes can be imposed on goods that generate negative externalities, and second, the quantities of such goods that are demanded decline in percentage terms by less than the corresponding percentage increase in the tax-ridden price (Hoffer et al., 2018)

The aim of the article is to find a connection between alcohol and cigarette consumption and the level of excise taxes in European countries. The paper is structured into several parts - theoretical background, research objective and methods, results, conclusions, and discussion.

## **2 THEORETICAL BACKGROUND**

Many countries impose excise taxes on alcohol, cigarettes, petrol, and environment-related goods (DeCicca et al., 2013). According to the WHO, health taxes are levied on products that have a negative public health impact, for example tobacco, alcohol, and sugar-sweetened beverages (*SSBs*). These taxes are considered win-win-win policies because they save lives and prevent disease while advancing health equity and mobilising revenue for the general budget. In low- and middle-income countries increasing prices by 20% would reduce the use of tobacco by 4-16% and that of alcohol by ~13%. Excise taxes are the most effective tax measure for promoting health because they change the price of a harmful product relative to other goods and can easily be increased over time (WHO, 2022e).

In many countries there is an increase in diseases as a result of the consumption of alcohol, tobacco, etc., and these result in an increase in healthcare costs. A large and growing number of studies state that excise taxes reduce the consumption of these products and thereby diminish their adverse health consequences. Although such taxation has historically been motivated primarily by revenue generation, now governments are increasingly using these excise taxes to discourage unhealthy consumption by their inhabitants (Chaloupka et al., 2019).

Hundreds of studies from around the world have estimated the impact of taxes and prices on the demand for tobacco products (NIH, 2016). According to experts, limiting the use of tobacco products is more beneficial for a state economy than tax revenues from their consumption. Tobacco taxation is highly cost-effective; there is a massive impact, with a low implementation cost. The economic benefits from tobacco taxation have proved to be several times higher than the cost of this measure (WHO, 2019b). Nearly all *OECD* countries have taxed tobacco products for many decades and even for centuries in some cases. Tobacco products are subdivided into a number of categories, i.e. cigarettes, cigars, cigarette rolling tobacco, and pipe tobacco (OECD, 2020a). Studies refute the idea that revenues to the budget will cover the costs of treating diseases caused by smoking. In particular, the WHO's guide on best practices recommends that total taxes on tobacco products should be at least 75% of the retail price, but this suggestion is rarely implemented (Cruces et al., 2022). The total number of countries that have raised tobacco taxes to a level at or above 75% of the price of the most widely-sold brand of cigarettes was 40 in 2020. But the number of people protected by this level of tax is only one billion. (WHO, 2021)

Since the early 1980s, a growing number of economists have examined the impact of the price of alcoholic beverages on alcohol consumption (Chaloupka et al., 2002). Alcohol taxation increases are an effective and cost-effective policy option to reduce overall alcohol consumption (Babor et al., 2010). Given the long history of alcohol taxation, several methods and measures have been developed over time for assessing the alcoholic content of a product. The alcohol content by volume is now the

standard measure of the level of alcohol contained in an alcoholic beverage (OECD, 2020b). According to EU legislation, the following are subject to excise tax: (1) beer or mixtures of beer with non-alcoholic drinks; (2) wine; (3) other fermented drinks, such as cider; (4) intermediate products such as sherry or port, and (5) ethyl alcohol/spirits (European Commission, 2019).

Chaloupka et al. (2019) summarise that excise taxes are a powerful tool for reducing tobacco use and excessive drinking. The demand for these products is sensitive to prices, and governments that have raised or introduced taxes have seen reductions in consumption and, with tobacco and alcohol tax increases, improved health outcomes.

### **3 RESEARCH OBJECTIVE AND METHODS**

The paper focuses on the two main legal addictive substances which are consumed in Europe or the European Union. The research was carried out in 2022 and primary data was obtained for alcohol from the year 2018 or later and for cigarettes from 2022 and 2019. The method of quantitative study of secondary data was applied to fulfil the research aim.

The aim of the paper is to describe the amount of excise tax on legal drugs (alcohol and cigarettes) and compare their consumption in Europe and the countries of the European Union. Data from Europe was used to examine alcohol and its taxation; a total of 31 countries were examined. All 27 countries of the European Union were examined for the assessment of cigarette consumption and its taxation.

One partial aim of the research was to examine the relation between excise tax on alcoholic beverages and the level of alcohol consumption in Europe in 2018 or later. Data from the *WHO* Global Information System on Alcohol and Health (GISAH) was used. Value added taxes were also added to the context of the whole analysis. This is because these two taxes affect the price for the end customer.

**Research Question 1:** Does a relationship exist between the amount of excise tax on alcohol and alcohol consumption in European countries?

A second partial aim of the research was to examine the relation between excise tax on cigarettes and the daily smoking of cigarettes in the European Union (*EU*). Data from the Tax Foundation and Eurostat was used. The data about excise tax and VAT is from 2022 and that about the consumption of cigarettes is from 2019. For a better understanding of the context, the average selling price of cigarettes, as well as the percentage of tax in the total selling price and also the percentage of excise tax in the total selling price, was also added to the analysis.

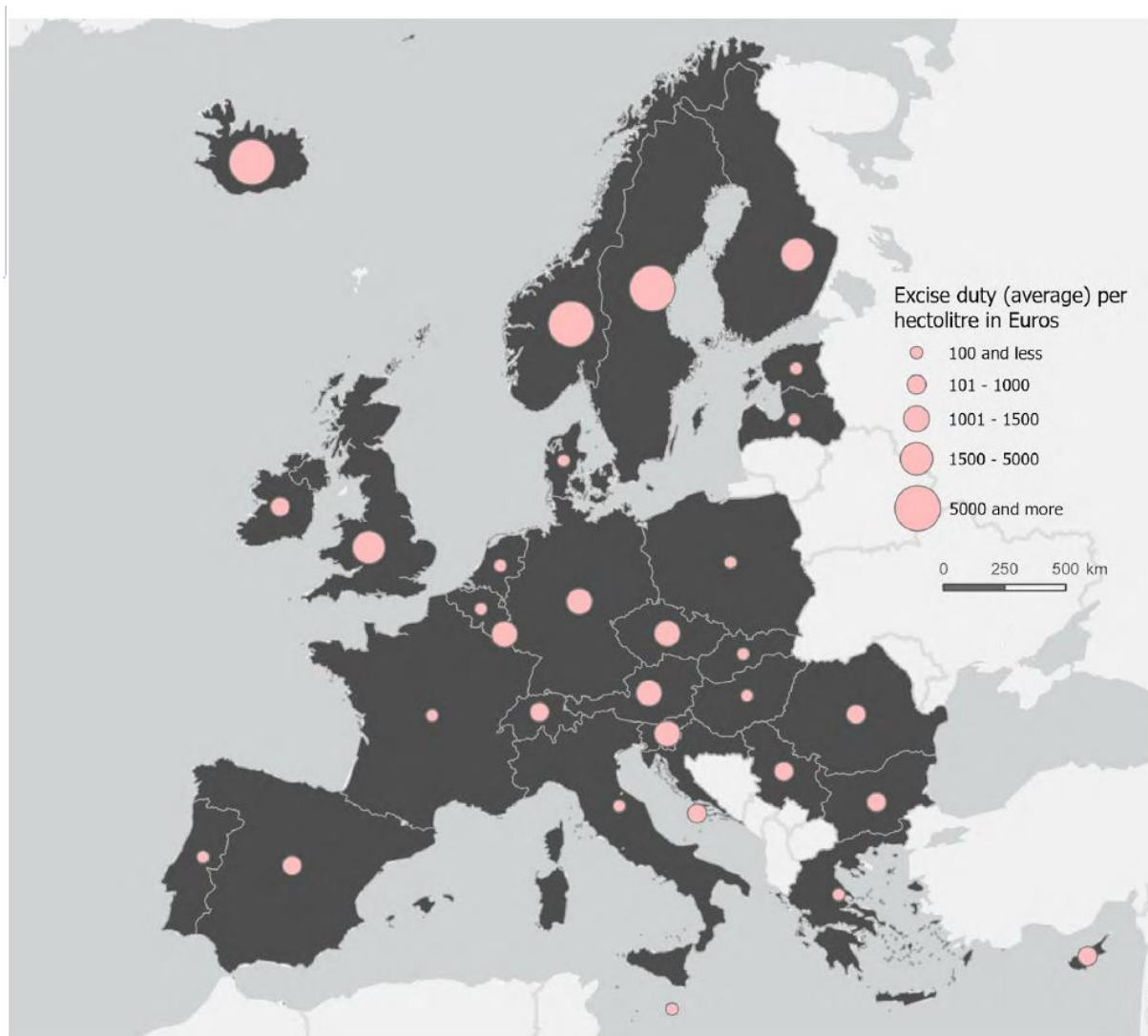
**Research Question 2:** Does a relationship exist between the amount of excise tax on cigarettes and the daily smoking of cigarettes in the European Union?

### **4 RESULTS**

In this part of the paper, we focus on the excise tax on alcohol and the amount of consumption in Europe, as well as the amount of excise tax on cigarettes and the consumption of cigarettes in the countries of the European Union. Data from the *WHO* was available for the analysis in the case of alcohol and in the case of cigarettes the data is available on the Tax Foundation and *OECD* websites.

#### 4.1 Alcohol consumption and excise tax

The Global Information System on Alcohol and Health (*GISAH*) is an essential tool for assessing and monitoring the health situation and trends related to alcohol consumption, alcohol-related harm, and policy responses in countries. The data is from 2018 or later and this is the average for three categories (wine, beer, and spirits). In **Figure 1** we can clearly see that the Nordic countries - Norway (8,587), Sweden (5,378), and Finland (4,785), plus Iceland (6,825) - have the highest rate of excise taxes. Furthermore, higher taxation is evident in the United Kingdom (3,250), as well as in Central Europe (Germany, Austria, Czechia, etc.) and Spain and Southern (Italy, Portugal) and Eastern Europe then have the lowest excise tax rates. The lowest level of excise tax is in Greece (5), Slovakia (3.59), and Italy (3.02). For more information see **Figure 1**.

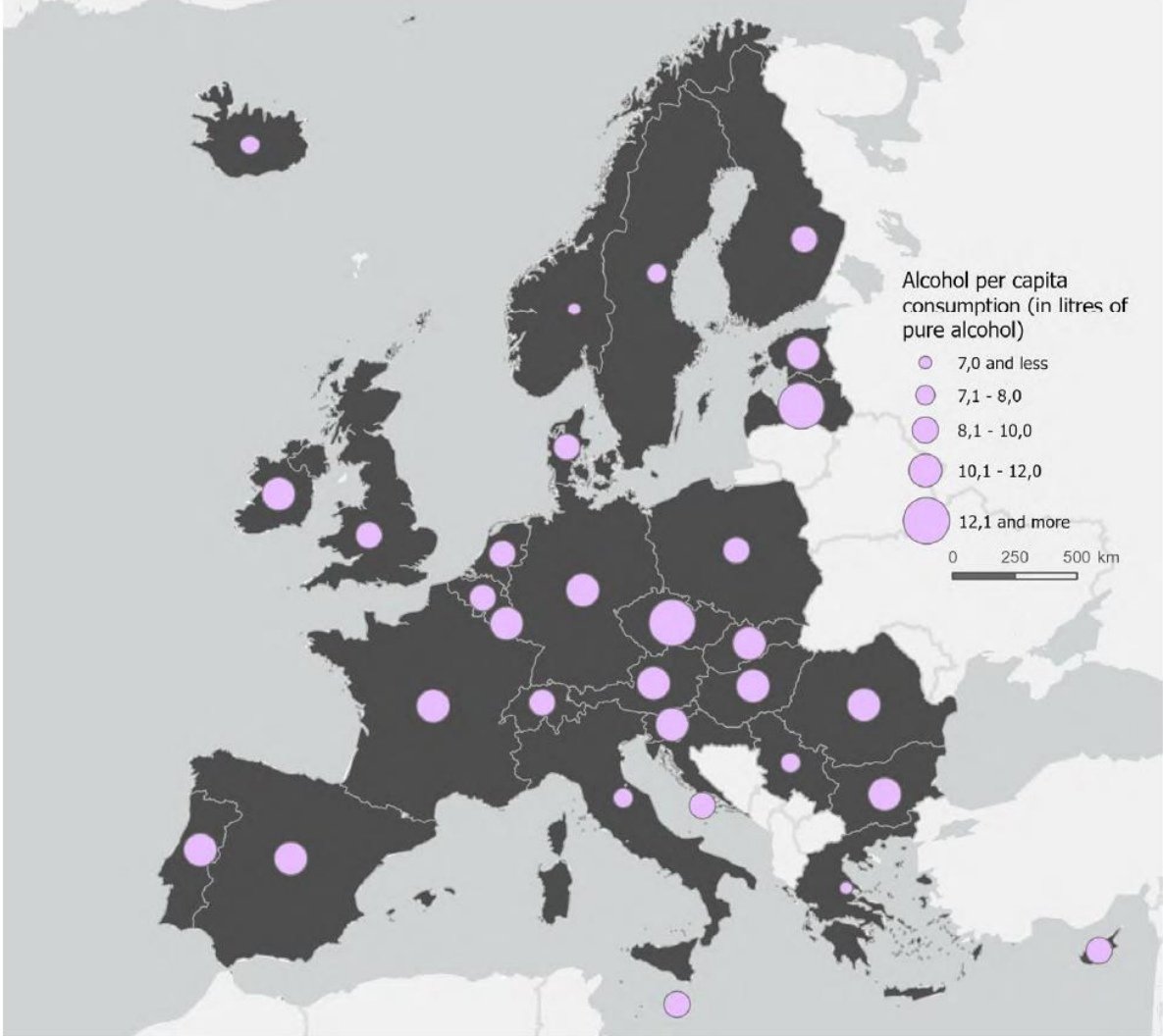


**Figure 1.** Excise duty (average) per hectolitre in Euros (Source: WHO, 2022a)

In **Figure 2** we can see alcohol consumption in Europe (recorded per capita consumption 15+ in litres of pure alcohol) The highest consumption is in Latvia (12.9), Czechia (12.73), Austria (11.9), Estonia (11.65), and France (11.44). High consumption is also seen in Bulgaria, Slovenia, and Luxembourg. On the other hand, the lowest consumption of alcohol in Europe is in Sweden (7.1), Greece (6.33), and Norway (6.05). For more information see **Figure 2**.

**Table 1** shows taxation and the amount of alcohol consumption in European countries. The level of consumption was analysed by “recorded alcohol per capita (15+) consumption (in litres of pure alcohol)” and as an economic aspect we used the index “excise duty (average) per hectolitre in Euros”. This is the aggregated average data for wine, beer, and spirits; the data is from 2018 or later. Countries with a high rate of taxation are marked with a dark colour, while countries with a low rate of excise taxes are marked with a light colour. The same designation applies to high alcohol consumption, with the five countries with the highest alcohol consumption in Europe being marked with a dark colour, while low alcohol consumption is marked with a light colour. We can see that low taxation can lead to high alcohol consumption (Estonia, France). On the other hand, even relatively high taxation may not lead to low alcohol consumption (Germany, Slovenia, Czechia, and Austria). However, a very high level of excise tax can lead to a reduction in alcohol consumption, for example in Norway, Iceland, Sweden, and also in Finland.

In addition to all these findings, we must take into account the fact that excise tax is not the only tax and that the final price of the product also includes, among other things, the amount of value added tax. The amount of value added tax can be seen in the table in the third column. Values are at different levels in Europe, although the European Union has an agreement on a minimum value added tax (VAT) rate of 15% on most goods and services.



**Figure 2.** Alcohol consumption recorded per capita (in litres of pure alcohol) (Source: WHO, 2022a)

Exceptions relating to lower rates or complete exemption from tax for certain goods are also allowed here. As we can see, for example, Switzerland is not part of the European Union and applies a lower tax rate (8%). As we can see, Hungary applies an excise tax but has the highest rate of value added tax (27%) in Europe. Other states, such as Croatia, Denmark, Sweden, and Norway, have value added tax at 25%. Finland and Iceland, which have among the highest rates of excise tax in Europe, also have very high value added tax (24%). The lowest *VAT* rates are in Luxembourg (17%) and Portugal (17.5%).

#### 4.2 Cigarettes

Because a common market exists in the European Union, European law sets a minimum excise duty on cigarettes. The minimum overall excise duty is £1.80 (US \$2.13) per 20-cigarette pack and 60 per cent of an *EU* country's weighted average retail selling price (certain exceptions apply). As the map in Figure 3 shows, most countries levy much higher excise duties on cigarettes than are legally required.

The maps shows that Ireland (£8.85) and France (£6.88) have the highest excise duties per 20-cigarette pack on cigarettes in the *EU*. This compares to the *EU* average of £3.44. The lowest tax is in Bulgaria (£1.81) and Poland (£2.03). **Table 2** shows the excise and total tax on cigarettes valid in July 2022.

Furthermore, the table also shows the indicators "Tax as a share of the weighted average retail selling price", "Excise tax as a share of the Weighted Average Retail Selling Price", and "Weighted Average Retail Selling Price". The table also shows the percentage of smokers in the population. The table shows these three indicators: "Daily smokers of cigarettes in total", "Daily smokers of less than 20 cigarettes", and "Daily smokers of 20 or more cigarettes". The highest values for excise tax and also the total daily smokers of cigarettes are recorded in a dark colour.

Conversely, the lowest values in both the indicators that were monitored are recorded in a light colour. We assume that countries that have a high excise tax have a lower number of smokers. The five highest and five lowest values were always selected and highlighted. In Finland and Denmark, it was confirmed that a high excise tax (Finland £6.14 and Denmark €5.27) leads to lower consumption of cigarettes (Finland 9.9% and Denmark 11.7%). In Bulgaria the data shows that a low excise tax (€1.81) leads to a large number of people who smoke cigarettes daily (28.7%). 12.9% of people even smoke more than 20 cigarettes a day, which is the highest value in the European Union. If we compare it with the average (6%), it is a very high value. Also, the final price (£2.77) of cigarettes is the lowest in Europe and is well below the *EU* average (£5.39). However, it should be emphasised that the level of taxation in the final price of the product is at the level of 82%, which is even above the *EU* average. It is very important to monitor the share of consumption tax in the final price and how this fact is reflected in the consumption of cigarettes. In Denmark, Finland, and the Netherlands, it has been confirmed that a high proportion of tax (76.05%, 71.4%, 67.46%) on the price will have a positive effect on lower consumption of cigarettes (11.7%, 9.9%, 14.6%).



**Table 2.** Excise and total tax on cigarettes and daily smokers of cigarettes in EU countries (Source: Tax Foundation, 2022; Eurostat, 2022)

Location	Excise tax (€)	Total Tax (Excise Duty and VAT) (€)	Weighted Average Retail Selling Price (Including Excise Duty and VAT) (€)	Tax as a Share of the Weighted Average Retail Selling Price (%)	Excise tax a share of the Weighted Average Retail Selling Price	Total	Less than 20 cigarettes per day	20 or more cigarettes per day
Denmark (DK)	5.27	6.66	6.93	96.10%	76.05%	11.7	8.6	3.1
Finland (FI)	6.14	7.8	8.6	90.70%	71.40%	9.9	7.1	2.8
Estonia (EE)	3.17	3.91	4.47	87.50%	70.92%	18.9	13.5	5.4
France (FR)	6.88	8.57	10.19	84.20%	67.52%	17.8	13.8	4.1
Netherlands (NL)	4.83	6.08	7.16	84.90%	67.46%	14.6	11.7	2.9
Latvia (LV)	2.53	3.19	3.79	84.10%	66.75%	22.1	14.9	7.2
Slovakia (SK)	2.29	2.86	3.46	82.80%	66.18%	20.4	15.1	5.3
Ireland (IE)	8.85	11.37	13.43	84.60%	65.90%	13.8	9.8	4.1
Greece (GR)	2.74	3.55	4.19	84.70%	65.39%	23.6	12.8	10.8
Bulgaria (BG)	1.81	2.27	2.77	82.00%	65.34%	28.7	15.8	12.9
Lithuania (LT)	2.43	3.08	3.76	81.90%	64.63%	18.4	13.2	5.2
Slovenia (SI)	2.45	3.13	3.81	82.20%	64.30%	16.6	10.7	5.9
Portugal (PT)	2.68	3.56	4.17	75.60%	64.27%	11.5	7.5	4
Belgium (BE)	4.4	5.61	6.93	80.90%	63.49%	14.6	9.7	4.9
Malta (MT)	3.4	4.28	5.39	78.30%	63.08%	19.4	12.9	6.6
Poland (PL)	2.03	2.63	3.22	81.70%	63.04%	18.4	9.8	8.6
Czech Republic (CZ)	2.85	3.64	4.54	80.10%	62.78%	19.3	13.9	5.4
Spain (ES)	2.8	3.59	4.53	79.30%	61.81%	19.7	14.8	4.9
Austria (AT)	3.14	3.99	5.15	77.60%	60.97%	20.2	12.1	8.2
Croatia (HR)	2.43	3.24	4.02	80.50%	60.45%	21.8	10.2	11.6
Italy (IT)	3.09	4.02	5.16	77.80%	59.88%	16.5	11.8	4.7
Hungary (HU)	2.36	3.2	3.95	81.00%	59.75%	19.3	12.8	6.5
Cyprus (CY)	2.58	3.28	4.36	75.20%	59.17%	21.2	11.6	9.7
Romania (RO)	2.28	2.9	3.91	74.30%	58.31%	18.7	13.3	5.4
Luxembourg (LU)	2.63	3.32	4.78	69.50%	55.02%	10.5	7.5	3
Germany (DE)	3.4	4.39	6.18	71.00%	55.02%	21.9	14.1	7.8
Sweden (SE)	3.26	4.51	6.1	73.90%	53.44%	6.4	5.3	1
<b>Average</b>	<b>€3.44</b>	<b>€4.39</b>	<b>€5.39</b>	<b>80.8%</b>	<b>63.42%</b>	<b>17.62%</b>	<b>11.64%</b>	<b>6.00%</b>

## 5 CONCLUSIONS

The research work deals with the consumption of alcohol and cigarettes in relation to the amount of excise tax in Europe or the countries of the European Union. The main objective of this research work was to describe the relationship between the consumption of legal drugs and the amount of the excise tax. The amount of value added tax was also included in the context. Secondary data from *WHO*, Eurostat, and Tax Foundation were analysed.

On the basis of the literature review, two research questions (RQ1, RQ2) were determined. Descriptive statistics were also used for comparison. In Europe, the average level of alcohol consumption per capita was 9.69 litres and the average taxation on one litre of pure alcohol is 1,311 euros. As is generally known, the Nordic countries (specifically Finland and Sweden) have a high rate of excise tax and this

also leads to the lowest alcohol consumption in Europe (7.1 and 6.05 litres). Regarding the consumption of cigarettes, the average excise tax on one pack of cigarettes in the European Union is 3.44 euros and makes up 80.8% of the average selling price. On average, 17.62% of the inhabitants of the European Union smoke cigarettes daily, and 6% even more than 20 cigarettes every day. The highest excise tax is 8.85 euros; in Czechia it is 2.85 euros and is below the average. On the contrary, the consumption of cigarettes in Czechia is above average (19.3%).

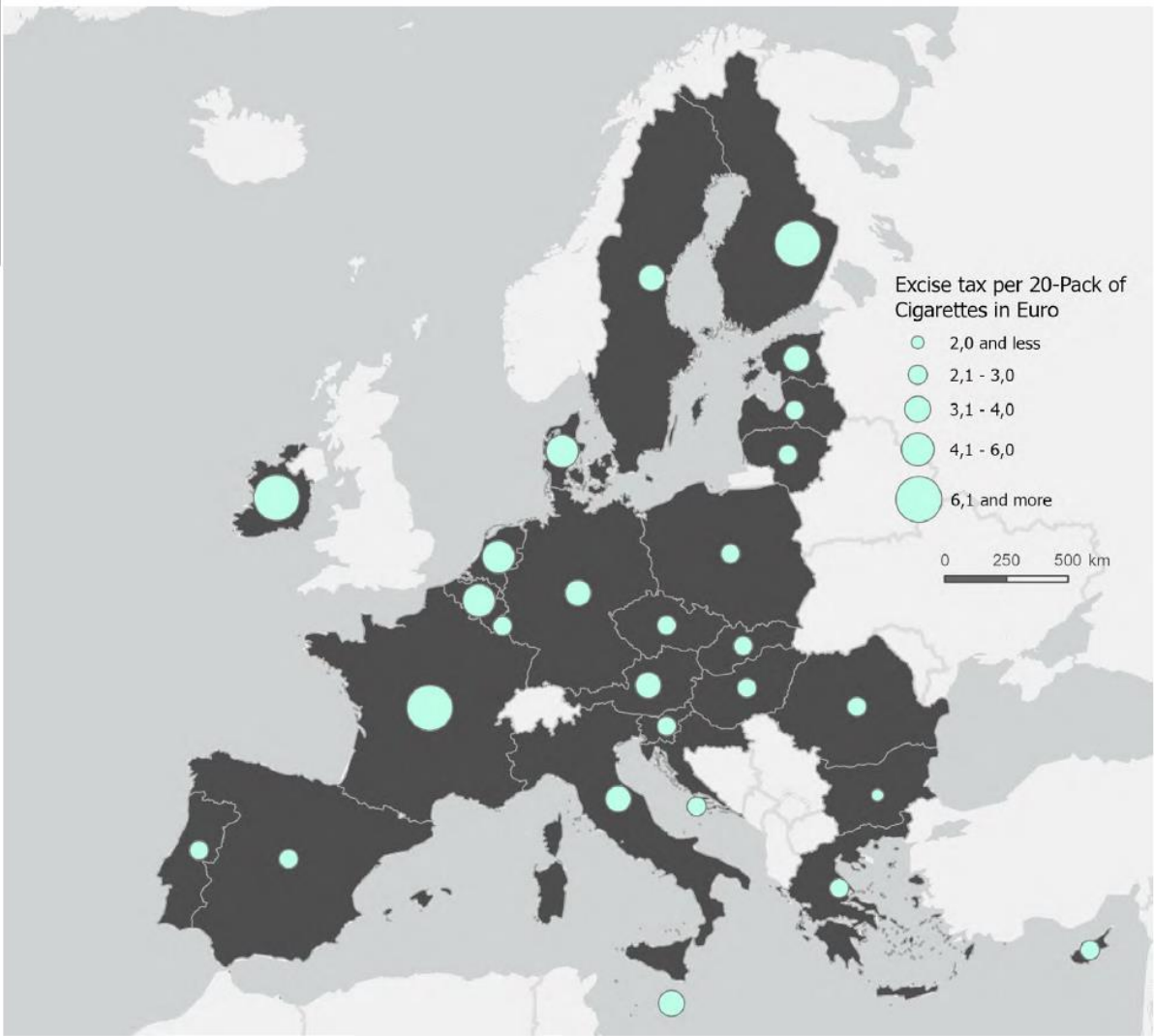


Figure 3. Excise Tax per Pack of 20 Cigarettes in Euro in the EU in July 2022 (Source: Tax Foundation, 2022)

In many countries, e.g. Finland, Bulgaria, Sweden, Denmark, Norway, and France, it has been confirmed that the amount of consumption tax leads to greater or lesser consumption of legal drugs (alcohol, cigarettes). However, it is important to realise that excise tax is not the only tax that affects the price and therefore the demand for these two legal drugs. However, the excise tax should lead to a reduction in the consumption of alcohol, cigarettes, tobacco, or sugar. This excise tax should regulate the amount of this commodity sold and also serves as income for the state budget. Another reason for the tax application is that the consumption of legal drugs brings additional costs for the state (health care costs resulting from diseases caused by consumption, but also the reason why excise taxes on income resulting from loss of sickness, etc. are caused).

## 6 DISCUSSION

Many current scientific studies (Chaloupka et al, 2002; Rehm et al., 2021; Rovira et al, 2022; Horáková et al. 2020; Kolářová et al., 2019) deal with the area of the taxation of legal drugs in the context of consumption. It is a very topical issue, even considering that a large number of governments are dealing with the problem of the consumption of these legal drugs. Governments perceive that the excessive use of legal drugs is a social problem that leads to health problems, but also has major economic consequences. Therefore, it is necessary to deal more deeply with this topic.

The research has certain limits; among other things, it does not address the amount of tax in the context of the purchasing power parity of individual countries. A better understanding of the relative taxation levels may therefore be gained by calculating the excise tax burden as a share of the total retail selling price (RSP) of a given product to the final consumer. Another limitation is the lack of more recent data on cigarette consumption. Furthermore, social, demographic, and other differences in the countries that were monitored were not considered.

For further research, it would be appropriate to use exploratory and confirmatory analysis to gain a deeper understanding of the connection between the amount of excise tax and the consumption of legal drugs. Furthermore, the research could focus on the analysis of time series, i.e. on the connection between the amount of excise tax and consumption in selected countries.

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