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DISSERTATION ABSTRACT

of a dissertation for the award of the educational and scientific degree "Doctor" (PhD in Economics) under the doctoral program "Finance, Monetary Circulation, Credit and Insurance" (Finance) on the topic:

PREVENTION OF TAX FRAUD IN THE TRADE OF FUELS AND PETROLEUM PRODUCTS IN BULGARIA

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The dissertation was discussed and approved for public defense at a meeting of the Departmental Council of the Department of Finance and Credit at the Faculty of Finance of D. A. Tsenov Academy of Economics – Svishtov.

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The defense materials are available at the Department of Doctoral Studies and Academic Development.

CONTENTS OF THE ABSTRACT

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I. General Characteristics of the Dissertation

1. Relevance of the Topic

The relevance of this scientific research stems from the fact that approximately EUR 1 trillion in public funds is lost annually within the European Union due to tax fraud. This widespread phenomenon represents an unprecedented challenge for the European Union and its Member States and seriously calls into question the methods and means of cooperation not only in taxation and the customs union, but also within the framework of freedom, security, and justice as envisaged by the Treaty of Lisbon.

Schemes related to fuels are generally divided into two categories: tax evasion and subsidy abuse. In some cases, both are committed simultaneously. The price difference between highly taxed fuels and subsidized low-cost fuels creates a significant temptation for criminals. Fuel fraud usually involves blending high-priced fuels with cheaper products or products subject to lower taxation. Subsidized fuels are often converted into substitutes for highly taxed fuels. When this occurs, government revenue is stolen twice: taxes are evaded, and subsidy expenditures end up in the hands of criminals instead of financing their intended beneficial purposes.

2. Object and Subject of the Research

The object of the dissertation is cases of unlawful actions in tax practices related to the trade of fuels and petroleum products.

The subject of the research is the methods for limiting and preventing tax fraud in the fuel and petroleum products trading sector.

3. Research Thesis

The research thesis defended in the dissertation is that “the prevention of tax fraud in the trade of fuels and petroleum products contributes to reducing the share of the shadow economy and increasing the collection of tax revenues from the taxation of fuel and petroleum product transactions, which constitute one of the main sources of revenue in the state budget.”

4. Purpose and Objectives of the Dissertation

The purpose of the dissertation is to study and identify instruments for the prevention of tax fraud in the trade of fuels and petroleum products.

To achieve this objective, the following tasks must be accomplished:

- to characterize the theoretical foundations of taxes, taxation, and excise duties;
- to examine the instruments for preventing tax fraud in the trade of fuels and petroleum products;
- to analyze the benefits of improving the collection of taxes on fuel and petroleum product transactions in Bulgaria.

5. Research Methodology

The dissertation employs scientific research methods such as analysis and synthesis, the comparative method, inductive and deductive methods, as well as methods for studying and evaluating publicly available data related to the subject matter in order to substantiate the author's thesis.

6. Structure of the Research

The dissertation consists of 167 standard pages and is structured into three chapters as follows:

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7. Approbation of the Dissertation

The dissertation was discussed and approved for defense at a meeting of the Department of Finance and Credit at D. A. Tsenov Academy of Economics – Svishtov. Separate parts of the research have been published in specialized academic journals.

II. Main Content of the Dissertation

CHAPTER ONE

THEORETICAL ASPECTS OF TAXATION OF FUEL AND PETROLEUM PRODUCT TRANSACTIONS IN BULGARIA

Chapter One presents a theoretical review of the organization of taxation in Bulgaria and an assessment of the possibilities for optimizing the tax burden on taxable persons.

From this perspective, the source of tax collection is analyzed, which represents the source of the tax system. Such a source may be:

a) household income from employment;

b) income arising from the corporate activities of individual economic entities;

c) the assets of households and corporate entities within the national economy.

Taxation within these three groups may be either direct or indirect.

On the other hand, indirect taxation is imposed on various goods and services and is usually reflected through value added tax or excise duties included in the price of products. This includes charges such as VAT or excise duties on tobacco and alcoholic beverages.

Direct taxation is applied directly to income or property, whereas indirect taxation refers to tax measures imposed on various products or services.

Table 1.1
Key Characteristics of the Tax System in a National Economy Functioning under Market Principles and Market Mechanisms

	Taxation of Income	Taxation of Profit
Direct Taxation	Reduction in monetary income	Reduction in net profit
Indirect Taxation	Reduction in real income	Reduction in profit generation

In this regard, we will identify the main requirements that a tax system must observe and satisfy in order to be considered rational, efficient, and relatively stable, and therefore one that will not need to undergo fundamental changes at frequent intervals. This does not mean that partial modifications cannot be made.

A rational tax system should respect the fact that taxes generally have both a fiscal and a non-fiscal purpose. With regard to their fiscal purpose, taxes are used to cover and fulfil the revenue side of the state budget (Eurostat, 2018). From a non-fiscal perspective, they are used as a means of potentially influencing the behaviour of economic entities operating within the national economy, so that the structure of household incomes and the structure of assets are deliberately adjusted towards greater equity.

Historically, the structure of the EU legislative framework for the excise taxation of energy products has been based on "economic" criteria, with the primary objective of ensuring the smooth functioning of the Single European Market. This objective has mainly been achieved through the establishment of minimum tax rates, below which EU Member States are not permitted to tax energy products. Another major measure includes the introduction of special tax regimes, rules, and rates for specific activities and sectors.

The currently applied taxation regime is primarily based on the tax burden according to certain volumes (quantities) of excise goods. In practice, this approach favours polluting fossil fuels because it does not provide significant incentives for innovation towards more sustainable products. Environmental and health considerations still remain of secondary importance, and Member States do not, in practice, implement substantial tax policies in this direction.

The first energy taxes were introduced in EU Member States approximately one century ago: Denmark was the first Member State to introduce taxes on transport fuels in 1917, followed by Sweden in 1924. Since then, energy taxes have been applied in all Member States. As of 2019, energy taxes accounted for 4.7% of total tax revenues in the EU-27 and 1.9% of GDP, respectively (BNB, 2020).

Fuel taxes, the greater part of which consist of excise duties, are collected in all countries. In some countries (i.e., Denmark, Finland, France, Ireland, Luxembourg, Portugal, Slovenia, and Sweden), a specific carbon or CO_2 tax is applied to road transport as part of fuel excise duties and electricity taxes.

Petroleum products are taxed in several ways. Imported petroleum may be subject to customs duties, domestic refineries may be subject to excise taxation, wholesale or retail sales may be subject to VAT, and profits derived from a state monopoly on the sale of petroleum products may be transferred, wholly or partially, to the government. In addition, there may be explicit levies allocated to extra-budgetary

funds. A number of countries provide exemptions or reduced tax rates for the use of gasoline or diesel in certain sectors, including government, military activities, agriculture, and fisheries. Such exemptions may result in significant tax evasion and revenue losses, particularly where tax rates are high and the capacity to prevent leakage is weak.

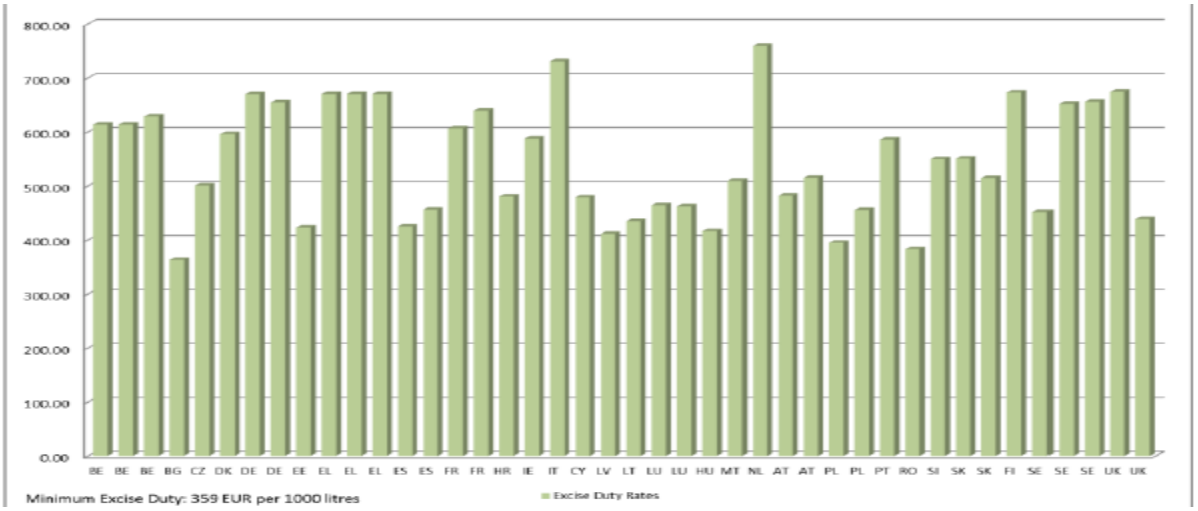
An important consideration is the establishment of an appropriate basis for the application of petroleum taxes. Whenever final petroleum products are imported, the actual import costs (including insurance and freight) should serve as the basis for domestic pre-tax prices.

Excise duties on fuels have been successfully used in developed countries as an instrument for providing price signals reflecting the cost of negative externalities caused by greenhouse gas emissions and local pollutants from fuel energy, as well as road congestion, accidents, and noise. The development of this type of environmental taxation plays an important role among the measures designed to rationalise the production processes, distribution, and consumption of energy resources developed by the OECD and the IEA.

In recent years, the regulatory function of energy excise duties has attracted increasing attention from scholars. This tax, traditionally regarded as a purely fiscal instrument, has also become a means of influencing consumer behaviour. The fiscal function of excise duties is evident in the fact that, in most EU countries, taxes on motor fuels constitute an important source of tax revenue, intended and used for financing road infrastructure.

The harmonisation of Bulgarian legislation with EU legislation under Council Directive 92/82/EEC began in 2004 with the transition from taxation in Bulgarian levs per tonne to taxation in Bulgarian levs per 1,000 litres (Dimitrova, 2014).

Within the EEC, the applicable minimum excise duty rate for leaded petrol is EUR 421 per 1,000 litres (EEC, Directive 92/82). In Bulgaria, the rate has reached the minimum level established under the Excise Duties and Tax Warehouses Act, as the current rate is set at BGN 830 per 1,000 litres (EUR 424). Romania and Slovenia apply rates close to those in Bulgaria, namely EUR 421, while in other EU Member States excise duties follow the same pattern as for unleaded petrol but are correspondingly higher. In absolute terms, the Netherlands (EUR 831), the United Kingdom (EUR 787), and Sweden (EUR 756) apply the highest excise duty rates.

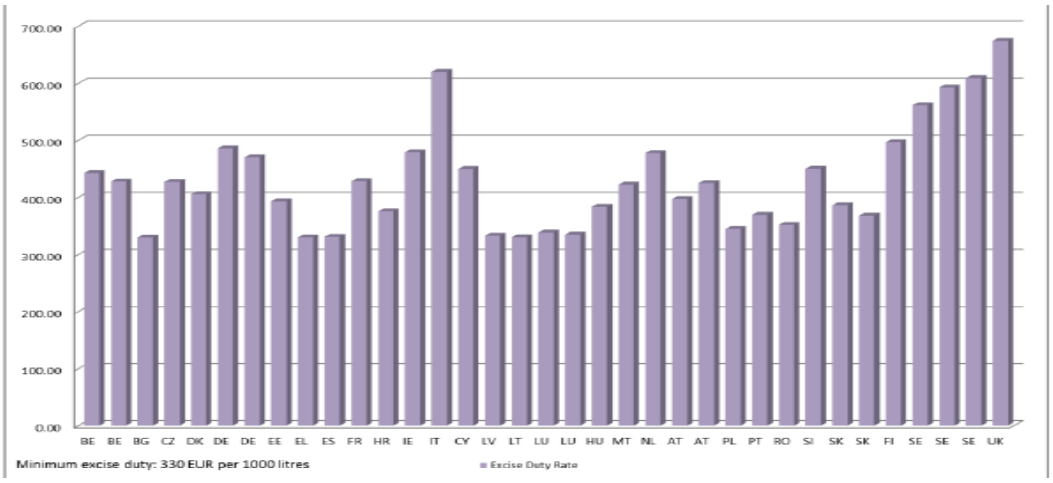


Source: European Commission, 2022

Figure 1.1. Excise Duty on Unleaded Petrol in the EU

The excise duty rate applicable to gas oil (diesel fuel) in Bulgaria is EUR 329.79, compared to the EU minimum rate of EUR 330 per 1,000 litres. Latvia, Lithuania, Greece, Spain, and Luxembourg apply similar minimum excise duty rates. The highest excise duty rates are applied in the United Kingdom (EUR 674), Italy (EUR 617), and Sweden (slightly above EUR 600).

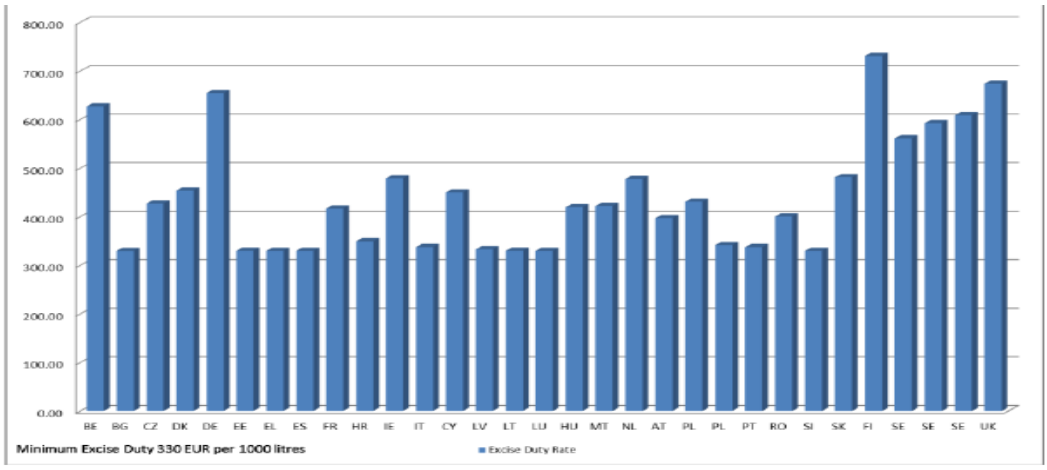
There are significant differences with regard to the excise duties imposed on goods depending on their geographical location, as higher effective excise burdens are observed in countries where the absolute excise rate is at the minimum level but nominal income remains relatively low (Bulgaria, Romania, Lithuania, and Latvia) (Mihaylova-Goleminova, 2020).



Source: European Commission, 2022

Figure 1.2. Excise Duty on Gas Oil (Diesel Fuel) in the EU

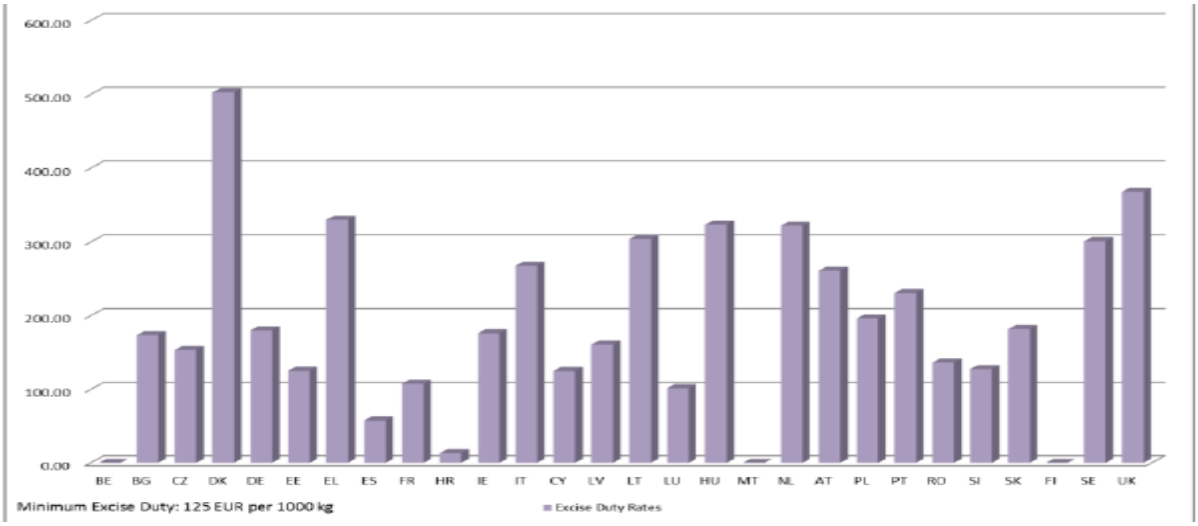
For kerosene, the minimum excise duty rate in the EU is EUR 330, while the rate applicable in Bulgaria (BGN 645) is below this level. In Estonia, Croatia, Lithuania, Latvia, Slovenia, as well as in Luxembourg, Italy, Spain, Greece, Slovakia, and Portugal, the rate is also set at or close to the minimum level. Finland (over EUR 700), the United Kingdom (EUR 675), Denmark, and Belgium apply the highest excise duty rates (Mihaylova-Goleminova, 2020).



Source: European Commission, 2022

Figure 1.3. Excise Duty on Kerosene in the EU

Bulgaria introduced an excise duty on liquefied petroleum gas (LPG) used as motor fuel through an amendment to the Excise Duties Act, which entered into force on 1 January 2002. Currently, the minimum excise duty rate on liquefied petroleum gas (LPG) under Council Directive 92/82/EEC is EUR 125 per 1,000 kg, while in Bulgaria the rate is BGN 340 per tonne (EUR 174). Among the EU Member States, Belgium, Malta, and Finland apply a zero excise duty rate to this commodity. In contrast, Denmark (EUR 500), the United Kingdom, and Greece (between EUR 300 and EUR 400) apply the highest excise duty rates on liquefied petroleum gas (Mihaylova-Goleminova, 2020).

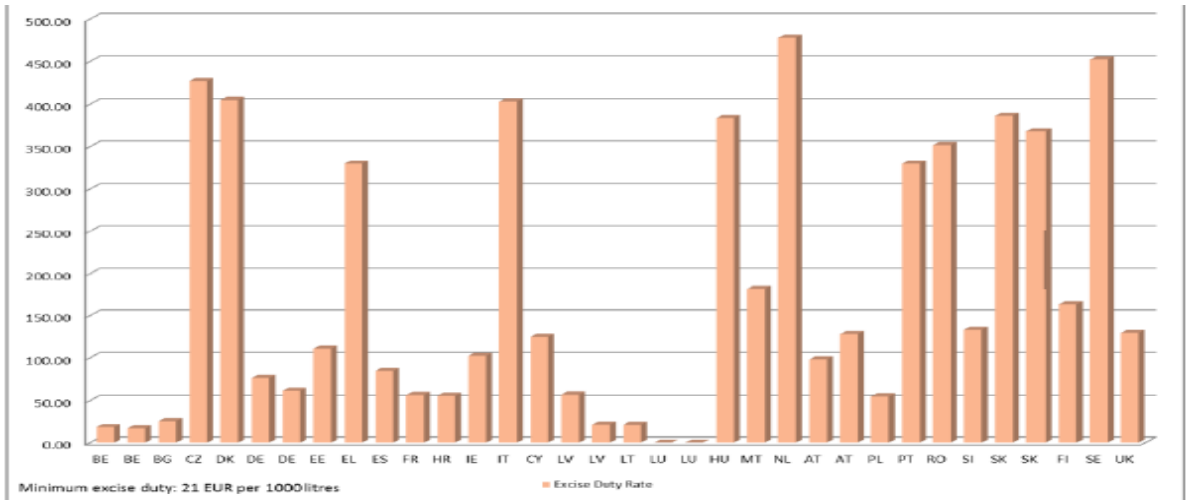


Source: European Commission, 2022

Figure 1.4. Excise Duty on Liquefied Petroleum Gas (LPG) in the EU

Gas oil intended for heating purposes in Bulgaria is taxed at BGN 50 (EUR 25.56) per 1,000 litres, compared to the EU minimum rate of EUR 21 per 1,000 litres. Belgium, Latvia, and Lithuania apply similar minimum rates, while Luxembourg does not impose an excise duty on this commodity.

The highest excise duty rates (over EUR 400 per 1,000 litres) are applied in the Netherlands, Sweden, and the Czech Republic, followed by Denmark and Italy with excise duty rates of approximately EUR 400 (Mihaylova-Goleminova, 2020).

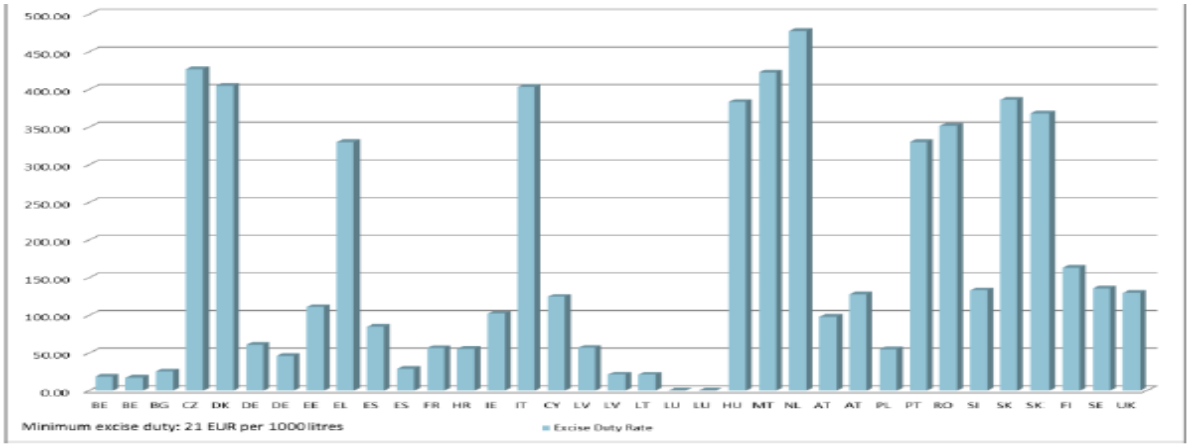


Source: European Commission, 2022

Figure 1.5. Excise Duty on Gas Oil Intended for Non-Business Use in the EU

For gas oil intended for heating purposes (business use), the minimum EU excise duty rate is EUR 21 per 1,000 litres, and Bulgaria applies an identical rate. Belgium, Lithuania, and Latvia apply similar minimum excise duty rates, as is the case for gas oil intended for heating purposes (non-business use), while in Luxembourg it is exempt from taxation.

The highest excise duty rates are applied in the Netherlands, the Czech Republic, and Malta (over EUR 400 per 1,000 litres), followed by Denmark and Italy with excise duty rates of approximately EUR 400 per 1,000 litres.



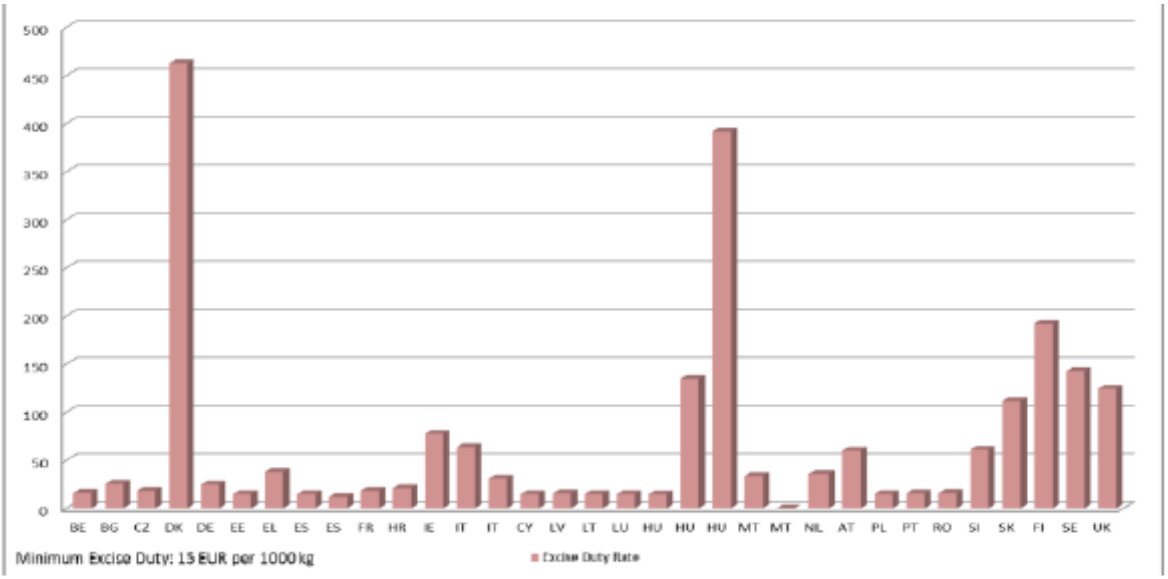
Source: European Commission, 2022

Figure 1.6. Excise Duty on Gas Oil Intended for Business Use in the EU

The minimum Community excise duty rate applicable to liquefied petroleum gas (LPG) is EUR 0 per 1,000 kg. In Bulgaria, the Excise Duties and Tax Warehouses Act (effective as of 1 July 2006) introduced a zero excise duty rate on liquefied petroleum gas (LPG) intended for non-business heating purposes.

For heavy fuel oils and heavy oils other than lubricants, intended for both business and non-business purposes, a minimum excise duty rate of EUR 15 per 1,000 kg has been established (Council Directive 92/82/EEC). In Bulgaria, heavy fuel oils are subject to an excise duty of BGN 50 per tonne (EUR 25.56), approximately the same rate as in Germany, where the rate is EUR 25 per tonne.

Among the EU Member States, Malta does not apply an excise duty on this commodity for business purposes, while the countries applying the highest excise duty rates are Denmark, with more than EUR 450 per 1,000 kg, and Hungary, with nearly EUR 400 per 1,000 kg.



Source: European Commission, 2022

Figure 1.7. Excise Duty on Heavy Fuel Oils Intended for Business Purposes in the EU

Unlike heavy fuel oils intended for business purposes, their use for non-business purposes is taxed in all EU Member States at similar excise duty rates, which fluctuate around the established minimum and are applied in more than 50% of the countries. The highest rates are applied in Sweden and Denmark (over EUR 450 per 1,000 kg) and Hungary, where the excise duty rate is nearly EUR 400.

There are fundamental differences; for example, the excise duty rate in Bulgaria is higher than the applicable rates in several Central and Eastern European countries.

Kerosene intended for heating purposes is a commodity for which no minimum excise duty rate has been established within the EU; however, it is still subject to taxation and, in many cases, the rate is the same as that applied to kerosene for business purposes. In Bulgaria, the excise duty rate is set at EUR 25.56 (BGN 50) per 1,000 litres.

The Excise Duties and Tax Warehouses Act establishes an excise duty rate on natural gas for business purposes of BGN 0.60 per gigajoule, while for non-business use the rate is BGN 0 per gigajoule. The United Kingdom, Lithuania, and Belgium apply a zero excise duty rate on natural gas for business purposes, unlike Denmark (over EUR 10 per gigajoule) and the Netherlands (almost EUR 6 per gigajoule), which are the countries applying the highest excise duty rates compared to the other EU Member States.

In addition to Bulgaria, France, Lithuania, and the United Kingdom also apply a zero excise duty rate on natural gas for non-business purposes. The EU countries with the highest rates are Denmark and Sweden, at approximately EUR 10 per gigajoule.

Global energy consumption increased significantly in 2018, as did energy-related CO_2 emissions, which reached a new all-time record. This is a cause for concern, as achieving the goals of the Paris Agreement will require substantial reductions in emissions.

Well-designed fuel taxation systems encourage citizens and investors to favour clean energy sources over polluting ones. Fuel excise duties and carbon taxes are simple and cost-effective instruments for mitigating climate change, but carbon pricing policies often prove challenging to implement. Taxes on energy use also contribute to reducing the health impacts of local pollution, which is an important policy concern in an increasingly urbanised world (Todorova, 2020).

Too many energy users do not pay the energy and carbon taxes necessary to limit dangerous climate change, even when carbon price signals are compared with a low-end carbon benchmark of EUR 30 per tonne of CO_2. This benchmark is unlikely to reflect the actual climate damage caused by one tonne of CO_2 emissions at present and will not be sufficient to achieve the objectives of the Paris Agreement.

Table 1.2

Average Fuel Excise Duties and Explicit Carbon Taxes in 44 OECD Countries and Selected Partner Economies, as well as in International Aviation and Maritime Transport

	(1) Average Fuel Excise Tax (BGN per gigajoule)	(2) Average Explicit Carbon Tax	(3 = 1+2) Average Effective Carbon Tax
Coal and other solid fossil fuels	0.61	0.13	0.73
Fuel oil	3.50	0.46	3.96
Diesel	70.65	3.11	73.76
Kerosene	4.27	0.34	4.61
Gasoline	84.34	1.50	85.83
Gas	10.23	0.89	11.12
Natural gas	4.08	1.19	5.26
Other fossil fuels	0.38	0.31	0.69
Non-renewable waste	0.05	0.02	0.08
Biofuels	4.52	0.12	4.64

Excise duty rates are charges applied to specific goods such as alcohol, tobacco products, fuels, and others. These charges are often determined based on the quantity or type of the product and are intended either to regulate consumption or to generate government revenue. In the case of fuels, excise duty rates vary depending on the type of fuel involved—for example, whether it is gasoline, diesel, or another type of fuel. These charges are usually levied upon the purchase or import of the fuel and form part of its final price.

The data indicate that tax structures are not well aligned with the pollution profiles of energy sources. In general, taxes are not used to provide meaningful carbon price signals for all fuels, particularly coal, which is the most polluting fossil fuel. The average effective carbon tax rate is close to zero across the 44 OECD countries and selected partner economies (Table 1.2). Even if emissions trading systems were included in the analysis, carbon price signals for coal would still remain very low in almost all jurisdictions (Barrios, 2017).

The tax rate structures of most EU Member States differ depending on whether the fuel is diesel or gasoline. With the exception of the United Kingdom and Belgium, which equalized the tax rates on diesel and gasoline in 2011 and 2018

respectively, all EU Member States apply lower tax rates to diesel than to gasoline, thereby reducing the environmental effectiveness of fuel taxation.

Table 1.3 presents transport fuel consumption for each EU Member State in 2022. Gasoline consumption amounted to 107.94 billion litres, while diesel consumption reached 323.07 billion litres. This consumption pattern, in which diesel fuel consumption significantly exceeds gasoline consumption, is attributable, among other factors, to tax biases in favour of diesel, combined with rebates granted to diesel-consuming companies (transport operators) in several EU Member States, resulting in environmentally counterproductive rebound effects.

The largest fuel consumers in absolute terms are Germany, France, and the United Kingdom, followed by Italy and Spain. Fuel consumption per capita is highest in Luxembourg, followed by Cyprus and Belgium.

Transport Fuel Consumption in EU Member States, 2022
Table 1.3

Country	Diesel Consumption		Gasoline Consumption		Total Fuel Consumption	
	(billion litres)	(litres per capita)	(billion litres)	(litres per capita)	(billion litres)	(litres per capita)
EU 28	323.072	636	107.936	213	431.008	849
Austria	8.821	1032	2.205	258	11.026	1290
Belgium	13.057	1165	1.751	155	14.798	1320
Bulgaria	1.915	265	0.580	80	2.495	345
Croatia	1.915	452	0.754	178	2.669	630
Cyprus	0.754	884	0.470	551	1.224	1436
Czech Republic	5.165	491	2.089	198	7.254	689
Denmark	4.584	812	1.799	319	6.383	1131
Estonia	0.870	661	0.325	247	1.195	909
Finland	4.758	871	2.031	372	6.790	1243
France	55.071	832	9.401	142	64.472	974
Germany	62.673	774	24.895	307	87.568	1081
Greece	4.933	453	3.366	309	8.298	762
Hungary	3.424	347	1.741	176	5.165	523
Ireland	3.888	835	1.567	336	5.455	1171
Italy	32.961	542	11.896	196	44.857	738
Latvia	1.103	553	0.279	140	1.381	693
Lithuania	0.453	154	0.267	91	0.720	246
Luxembourg	2.321	4172	0.418	751	2.739	4923
Malta	0.435	1001	0.099	228	0.534	1220
Netherlands	9.807	582	5.107	303	14.914	884
Poland	14.159	372	4.817	127	18.976	499
Portugal	5.571	536	1.451	140	7.022	675
Romania	5.281	265	1.741	87	7.022	353

Slovakia	1.857	343	0.754	139	2.611	482
Slovenia	1.915	929	0.580	281	2.495	1210
Spain	33.600	723	6.209	134	39.809	856
Sweden	6.209	640	3.946	407	10.155	1047
United Kingdom	35.573	551	17.409	269	52.982	820

Source: Eurostat.

A fuel tax at the EU level, partially replacing the current national contributions to the EU budget, would generate at least a double dividend. First, it would create fiscal space for Member State governments to reduce other national taxes, particularly the high taxes imposed on labour. Second, it would enhance the environmental effectiveness of taxation within the European Union. Moreover, an EU fuel tax could be viewed positively from a tax compliance perspective, as fuel taxes are transparent, cost-effective, and easy to collect. Last but not least, the fuel tax surcharge proposed in this paper would address—albeit to a limited extent—the current problem of significant differences in fuel tax rates among countries and the undesirable tax competition that these differences create. Overall, an EU fuel tax, levied as an additional tax or surcharge on the national tax rates of Member States, represents an interesting tax-based own resource option (Todorova, 2018).

Energy policy is aimed at the sustainable development of the country's energy sector, the efficient use of energy and energy resources, meeting society's needs for electricity, heat energy, natural gas, and fuels, establishing cleaner and more efficient energy production through the rational use of conventional and renewable energy sources (RES), minimizing the environmental impact of energy production, transmission, and consumption, and improving the management of natural resources. The prevailing trend is to ensure a secure, safe, and sustainable energy supply.

In order to mitigate the economic consequences of the sudden instability in electricity and natural gas prices, several compensation programmes were developed in 2021. These included the Programme for Compensation of Non-Household Final Electricity Consumers, the Programme for Compensation of Transmission and Distribution Network Operators for the Purchase of Electricity Quantities Consumed as Technological Losses, the Programme for Compensation of Household Natural Gas Consumers and District Heating Companies Using Natural Gas as Their Main Fuel through Fixed Support per MWh, and the Programme for Compensation of Unforeseen Electricity Costs Incurred by Water Supply and Sewerage Companies.

The programmes established a mechanism for supporting non-household final consumers through electricity traders, suppliers of last resort, electricity producers selling directly to non-household end-users, and the operator of the organized electricity exchange market. Through these programmes, all non-household final consumers received support in coping with the consequences of substantial and adverse fluctuations in electricity prices, while natural gas consumers were assisted in addressing the repeated increases in natural gas prices.

Approximately 633,000 non-household final consumers benefited from the programmes. They received support through a fixed amount per MWh, provided by compensating the quantities of active electrical energy subject to the "public service obligation" charge. The compensation reduced the amount payable by non-household final consumers. In implementing these programmes, the funds disbursed in 2021 amounted to BGN 860.0 million, while the amount allocated for 2022 reached BGN 1,320.0 million. Consequently, the effect of these programmes was an increase in expenditure of BGN 460.0 million, equivalent to 0.31% of forecast GDP.

Based on the theoretical review of the taxation of transactions involving fuels and petroleum products, the following key conclusions can be drawn:

First. A rational tax system should recognize that taxes serve not only a fiscal purpose but also a non-fiscal one. Regarding their fiscal purpose, taxes are used to finance and support the revenue side of the state budget. From a non-fiscal perspective, they serve as a means of influencing the behaviour of economic agents operating within the national economy, so that the structure of household income and asset ownership can be intentionally adjusted towards greater equity. From both theoretical and practical perspectives, the tax system should be recognized as having national-economic, fiscal, and social dimensions. With regard to the national-economic dimension, it is necessary to understand the effects that changes or reforms in the tax system have on macroeconomic and microeconomic processes and on the behaviour of economic agents—namely enterprises, households, and the state—since the behaviour of these entities drives and, to a considerable extent, determines economic development and, above all, sustainable and appropriate economic growth.

Second. The primary economic rationale for fuel taxation is the correction of externalities associated with fuel consumption. Fuel economy itself does not generate externalities; however, it indirectly determines gasoline consumption, which affects local air quality, energy security, and global climate change. The purpose of fuel taxation is to encourage consumers to internalize these externalities by increasing the cost of fuel inefficiency.

Third. Excise duty, as a form of indirect tax revenue, is one of the most important instruments of fiscal policy in Bulgaria. In this context, the issues related to the excise policy implemented in Bulgaria remain relevant and are of particular interest to the European Union, legislative and executive authorities, the financial administration, taxpayers, and consumers of excise goods. At the end of 2019, excise duty revenues accounted for 26% of total tax revenues, making excise duties the second most important tax after Value Added Tax (VAT). Excise duties are considered one of the most profitable forms of revenue because they are imposed on consumption and their collection is generally presumed and ensured.

INSTRUMENTS FOR THE PREVENTION OF TAX FRAUD IN THE TRADE OF FUELS AND PETROLEUM PRODUCTS

Chapter Two analyses energy geopolitics, Bulgaria's energy balance, and several effective instruments for the prevention of tax fraud in the trade of fuels and petroleum products.

Bulgaria has a relatively well-organized energy balance (see Table 2.1). The main source of energy is coal (36%), followed by oil and petroleum products (24% in total), nuclear energy (21%), natural gas (12%), and renewable energy sources (6.5%). Almost all imports of oil, natural gas, and nuclear fuel originate from Russia. In addition, Russian companies are major players in the Bulgarian oil market and are also important participants in Bulgaria's gas and nuclear sectors.

Table 2.1

Energy Balance of Bulgaria for 2021

Data in thousand tonnes of oil equivalent	Gross Inland Consumption	Primary Production	Imports	Exports
Coal	6,319	4,560	1,702	5
Gas	2,162	13	2,131	–
Fuels and Petroleum Products	4,364	25	7,828	3,166
Renewable Sources and Geothermal Energy	794	752	–	–
Electricity from Renewable Sources	318	318	–	32
Nuclear Energy	3,878	3,878	–	–
Heat	42	42	–	–
Electricity	436	–	229	665
Total	**17,482**	**9,588**	**11,939**	**3,868**

Source: *National Statistical Institute (NSI).*

Data on imports, exports, and apparent net consumption of crude oil and refined petroleum products during the period 2017–2022 are presented in Table 2.2.

Table 2.2

Imports, Exports and Apparent Net Consumption of Oil in Bulgaria (million tonnes)

	2017	**2018**	**2019**	**2020**	**2021**	**2022**
Imports	8.97	9.05	9.55	8.05	9.26	7.10
Exports	4.45	4.57	4.80	3.54	4.27	2.85
Apparent Net Consumption	4.52	4.48	4.25	4.51	4.99	4.25

Source: *Eurostat*

Bulgaria imports, on average, approximately 8 million tonnes of crude oil and petroleum products annually. The majority of imports originate from Russia (approximately 85%). The Russian corporation LUKOIL is the key player in the Bulgarian oil market, and its subsidiary, Lukoil Bulgaria, is one of the largest companies in Bulgaria (Lukoil, 2017). LUKOIL controls Neftochim Burgas, the only refinery in Bulgaria and the largest refinery in the Balkans (with an annual capacity of 9.5 million tonnes of crude oil), as well as the Rosenets oil terminal (with a capacity of 10 million tonnes of oil per year). LUKOIL also holds approximately 25% of the Bulgarian fuel retail market through its extensive network of filling stations (Lukoil, Fact Book, 2022).

The level of preparedness for the gas and energy crisis varies among the countries of Central and South-Eastern Europe. This is related to several factors: their differing degree of dependence on Russian supplies and varying levels of diversification of gas sources and supply routes; their differently developed gas infrastructure, both domestic and cross-border; the varying share of natural gas within their overall energy mix, particularly the different shares of gas used in electricity and heat generation; and finally, the differing economic wealth of individual countries and their capacity to counteract the negative consequences of the crisis, including—above all—the increase in energy prices (Ministry of Energy, 2021) (see Table 2.3).

Table 2.3

Imports of Fuels and Petroleum Products, 2022

Solid Fossil Fuels	Natural Gas	Fuels and Petroleum Products	Renewable Energy and Biofuels	Non-Renewable Waste	Nuclear Heat	Electricity (Net Imports)	Other
23.9%	14.0%	24.5%	14.2%	0.4%	24.2%	-1.6%	0.4%

Source: *Eurostat*

Over the last five years, the main supplier of crude oil to Lukoil Neftochim Burgas AD ("Neftochim") has been Russia. During the period 2014–2022 (Table 2.4), imports of Russian crude oil accounted for an average of 73% of total imports, followed by Egypt with 13%.

Table 2.4. Imports of Crude Oil (CN Code: 2709), 2014–2023 (Q1), Share of Total Quantity

Importing Country	2023 Q1	2022	2021	2020	2019	2018
Libya	0%	0%	2%	2%	0%	0%
Iraq	0%	2%	0%	0%	1%	3%
Egypt	0%	0%	8%	19%	24%	18%
Israel	0%	0%	8%	2%	0%	0%
Turkey	0%	0%	0%	0%	1%	0%
Georgia	0%	0%	0%	2%	1%	1%
Cyprus	0%	0%	2%	2%	4%	4%
Romania	0%	0%	0%	0%	0%	0%
Russia	100%	85%	61%	62%	65%	69%
Others*	0%	13%	19%	13%	3%	5%

Source: *Eurostat*

In addition to being the largest importer of crude oil, Russia ranks second in imports of petroleum products, whether finished products or products used as feedstock, into Bulgaria. During the period 2014–2022, petroleum products originating from Russia accounted for an average share of 36%, closely following Romania, the leading exporter to Bulgaria, with 37% (Table 2.5). Since the beginning of the war in Ukraine, a significant increase in Russian imports has

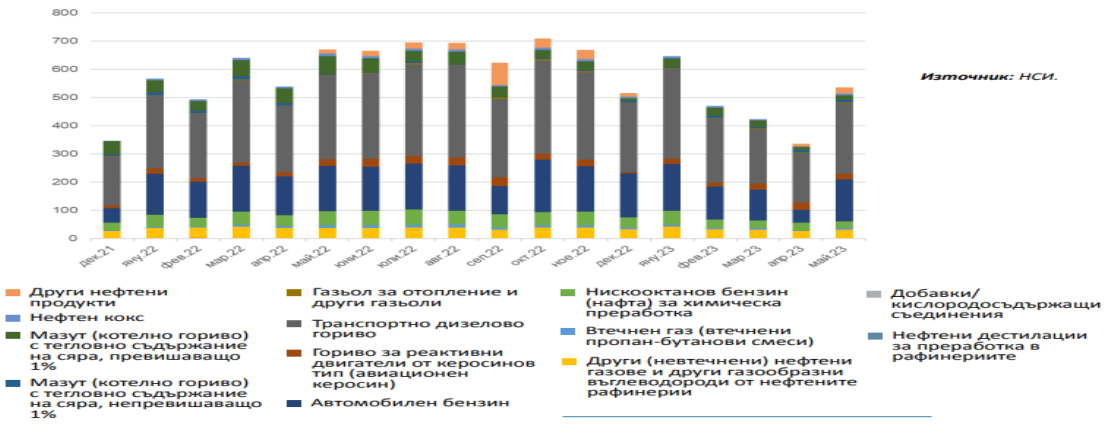
been observed, and they now account for approximately half of all imported petroleum products.

Table 2.5. Imports of Petroleum Products, 2014–2023 (Q1), Share of Total Quantity*

Importing Country	2023 Q1	2022	2021	2020	2019	2018
Russia	49%	53%	42%	36%	39%	33%
Romania	27%	30%	34%	41%	44%	43%
Greece	13%	7%	10%	12%	7%	9%
Italy	0%	3%	5%	0%	1%	2%
Serbia	6%	3%	3%	5%	5%	8%
Germany	1%	1%	0%	0%	0%	0%
Belgium	1%	1%	0%	0%	1%	1%
Turkey	1%	1%	1%	0%	0%	1%
France	0%	0%	0%	0%	0%	0%
Poland	0%	0%	0%	0%	0%	0%
Others	2%	2%	3%	4%	3%	3%

Source: *Eurostat*

The production of fuels and petroleum products in Bulgaria is carried out by 13 companies, of which two are of particular importance in terms of sector turnover and employment: “Neftochim” and “INSA OIL” Ltd. In 2021, “Neftochim” generated 54.8% of the sector’s commercial turnover, while “INSA OIL” accounted for 37.6%.



Nature of Tax Fraud in the Trade of Fuels and Petroleum Products

Following the entry into force of the derogation, Bulgaria imported nearly 20 million barrels of Russian crude oil (2.6 million tonnes) during the period January–July 2023. As demonstrated by the analysis of fuel prices in Bulgaria and other European Union countries presented below, the derogation did not contribute to a significant reduction in fuel prices on the Bulgarian market. The economic benefits arising from the exemption from the European sanctions on imports of Russian crude oil into Bulgaria appear to have been reflected mainly in excess profits for "Litasco", a subsidiary of the Russian company LUKOIL registered outside Bulgaria.

Between 2021 and the end of 2022, Litasco operated under a transfer pricing scheme through which it controlled the entire supply chain, from crude oil extraction to the sale of refined petroleum products. During this period, the refinery in Burgas operated under a toll-processing arrangement, refining crude oil at a fixed profit margin. Since the beginning of 2023, Litasco has resumed control over the refinery, restoring the pre-pandemic model under which "Neftochim" acts as the principal seller of final products on the Bulgarian and regional markets.

In fact, Neftochim has the technical capability to process crude oil grades imported from sources other than Russia. It is a fact that (a) Urals crude can be blended with many other crude oil grades and (b) Neftochim can operate entirely on non-Russian crude oil.

The removal of the derogation would not have a substantial impact on final fuel prices, which would remain among the lowest in the entire European Union after taxes. This is due, on the one hand, to the relatively low taxes and excise duties, which are on average one-third lower than those in the European Union, and, on the other hand, to the expected insignificant increase in pre-tax fuel production costs.

An examination of other markets with a similar crude oil import structure before the introduction of the European embargo on Russian oil and fuel imports, such as Poland, Germany, the Czech Republic, Latvia, Slovakia, and Slovenia, demonstrates that in the absence of a special exemption or where the derogation was not utilized (for example, in the cases of the Czech Republic and Slovakia), pre-tax fuel prices are between 6% and 8% higher than those in Bulgaria. This difference corresponds to the reduction in profit margins maintained by LUKOIL in Bulgaria in order to maximize its wholesale market share.

In a globalized economy, establishing fair tax systems has increasingly become an international rather than a purely national challenge. As companies and

individuals increasingly operate across borders, tax systems must adapt to this reality and go beyond national regulations. However, the measures undertaken remain insufficient and lag behind economic developments. As a result, loopholes arising between different jurisdictions—sometimes deliberately created by certain governments—are exploited by economic actors to significantly reduce their tax burden.

Anti-fraud controls, such as internal audits, vigilant managers and colleagues, and anti-fraud procedures, are not sufficiently strong, and the problem continues to grow. Even where controls are robust, fraudsters often circumvent or override them. Various detection mechanisms therefore come into play, including whistleblowers, reporting systems, and vigilant customers and suppliers, particularly in monitoring executives who possess excessive authority (Petev, 2020).

Worldwide, there are four principal ways in which criminals can profit from fuel-related activities (Georgiev, 2020):

• **Smuggling:** If a country with high fuel taxes borders a country with low fuel taxes, criminal groups may attempt to smuggle low-tax fuel across the border and sell it illegally.

• **Diversion:** Criminals redirect fuel supplies, which can subsequently be sold illegally through fuel stations.

• **Abuse of Subsidies and Rebates:** In countries with developing infrastructure or valuable mineral deposits, fuel used in these industrial sectors often benefits from tax reliefs or subsidies. Criminals may gain access to such projects and illegally sell the subsidized fuel.

• **Dilution:** In some countries, kerosene is distributed at reduced prices to support rural communities. This is often used to adulterate diesel fuel, resulting in poor engine performance and environmental damage.

Tax avoidance practices that increasingly transcend national borders undermine social cohesion within countries and weaken the sense of solidarity between them. Such practices are particularly employed by large multinational corporations that possess both significant incentives and sufficient human and financial resources to invest in aggressive tax planning. As a result, their contribution to financing public expenditure is reduced, and the resulting shortfall must be compensated by other taxpayers. This may contribute to growing inequality and perceptions of injustice among citizens. Furthermore, the practices of certain countries that facilitate tax avoidance undermine integrity in international relations (Alstadsæter, *Tax Evasion and Tax Avoidance*, 2021).

Moreover, tax fraud is widely recognized as one of the most effective means of financing organized crime and terrorism. The resources involved are effectively concealed from public authorities, making them particularly useful for financing illegal activities without attracting the attention of state institutions. The transnational nature of these financial flows and the activities they support justifies the determination of European Union Member States to combat this phenomenon on a global scale.

Tax fraud can affect both direct taxes—such as corporate profit taxes—and indirect taxes, notably Value Added Tax (VAT), which is particularly vulnerable to widespread fraud within the European Union (Stoykova, 2019). VAT fraud is especially associated with organized crime; according to representatives of Europol, 2% of criminal groups are responsible for 80% of VAT fraud linked to trade between European Union Member States (Petev, 2019).

Tax fraud occurs when an individual or business entity intentionally falsifies information in order to reduce its tax liability. In other words, the taxpayer deceives the state in order to pay less tax than legally required (Kostova, 2020).

Despite the complexity of its definition, two principal categories of tax fraud can be distinguished (Petev, *Tax Fraud – A Threat to Security*, 2020):

• Tax fraud committed by individuals;

• Tax fraud committed by companies or business entities.

Although corporate tax fraud receives significant media attention, it is often the most difficult form to understand. In this area, the distinction between tax avoidance and tax evasion is particularly narrow, given the various schemes and strategies adopted by business entities. Multinational corporations can clearly benefit from differences in tax rates and policies among the countries in which they operate. However, where a company reduces its tax burden through lawful means, taking advantage of tax treaties concluded between states, no offence has been committed.

Nevertheless, fraudulent tax avoidance is often easier for companies than for individuals. Businesses may establish subsidiaries or branches in different jurisdictions in response to legal and regulatory changes, thereby creating opportunities for aggressive tax planning (Kostova, 2020).

Over the past several years, the tax planning structures employed by large multinational corporations have attracted considerable media attention. Arrangements such as the so-called “Double Irish” and “Dutch Sandwich,” used

by well-known companies including Google, Amazon, and Microsoft, generated substantial public criticism, despite not necessarily constituting tax fraud.

Within the European Union, VAT fraud remains one of the most widespread forms of tax fraud. The reason lies in the indirect nature of VAT: taxpayers may fail to remit VAT owed or claim tax credits and refunds to which they are not entitled (National Assembly, 2018). The overall VAT gap—the difference between the VAT actually collected and the total VAT theoretically due—reached €168 billion in 2018 across 26 EU Member States. VAT accounts for approximately 20% of Member States' tax revenues and around 12% of the European Union budget. Consequently, these levels of fraud are particularly alarming, and reducing the VAT gap remains a significant policy objective (Schenk, 2007).

The latest annual figures cited by Bloomberg regarding tax revenues lost due to fuel fraud are striking: the United Kingdom confiscated £1.1 billion, Poland lost USD 943 million, and Greece failed to collect €600 million in tax revenues.

In addition, a study conducted by Bloomberg (Bloomberg, 2013) found that untaxed fuel accounts for a very significant share of the domestic fuel market in certain Eastern European countries. Government data from the Czech Republic indicate that 20% of the fuel consumed in the country remains untaxed due to smuggling, counterfeiting, theft, mislabeling, and other criminal methods of tax evasion.

In addition to fuel-related tax evasion, many countries are affected by the abuse of fuel subsidies, which diverts public funds into the hands of criminals. The harmful consequences of subsidy abuse are further exacerbated when oil prices on the open market rise, as governments are forced either to increase subsidy expenditures to maintain existing prices or risk social unrest associated with higher prices for subsidized products.

To make matters worse, fuel fraud not only causes enormous financial losses but also inflicts significant environmental damage. Tax evasion schemes and subsidy abuse often replace high-quality fuels with inferior products or waste by-products.

Table 2.5

Methods of Fuel Tax Fraud

Tax Evasion	Subsidy Abuse
Taxable fuels are diluted with products subject to lower taxes or no taxes at all, such as:	Subsidized fuels are diverted from their intended supply chain and are:
• Fuels smuggled from other countries	• Used domestically as fuel fraud involving higher-tax fuels
• Subsidized petroleum products	• Smuggled into higher-priced markets in other countries
• Duty-free transit fuels	
• Stolen petroleum products	
• Lower-quality products such as solvents, used oils, etc.	

These fuel-related criminal activities have devastating consequences not only for society as a whole but also for individual consumers, who are ultimately the final victims. Although fuel fraud takes many forms—including substitution, dilution, smuggling, and outright theft, to name only a few—when it comes to fraud against the state, the objectives of criminals can be reduced to two principal categories: tax evasion and subsidy abuse (see Table 2.5). Through tax evasion and subsidy abuse, criminals divert financial resources from where they should be used within the economy and redirect them to activities that actually harm economic development.

Price differences among various petroleum products inevitably give rise to numerous illegal tax evasion schemes. Criminals avoid paying taxes while depriving governments of legitimate revenue. A common tax evasion scheme occurs when taxable fuels, such as motor gasoline or diesel fuel, are diluted with petroleum products that are subject to lower taxation or are entirely tax-free. The resulting diluted fuel is then sold at the full taxable retail price. The criminal pockets the difference, while the government fails to collect the revenue it expected.

The financial incentive for criminals is greatest when the adulterant consists of stolen fuel or another substance acquired at little or no cost. As the difference between the retail market price of taxable fuel and the illegally obtained substitute narrows, the financial incentive for fraud also decreases. The offender's risk

follows a similar trend. As expected, the greater the risk, the greater the illegal reward.

Large price differences between neighboring countries can also act as a catalyst for tax evasion. In a country with high fuel taxes, fuel smuggling is likely to flourish because inexpensive fuel can be transported across the border and sold illegally in a more attractive, higher-priced market. The ultimate outcome is that both countries suffer losses (OECD, 2020).

Governments subsidize fuels in order to improve citizens' living conditions by reducing the costs of fuels used for cooking, heating, electricity generation, or transportation. Subsidies may also be directed toward supporting specific industries such as agriculture and fisheries. These subsidy programmes artificially affect fuel prices within the supply chain by creating price differences between subsidized and non-subsidized fuels.

Criminals exploit these price differences through subsidy abuse schemes that divert government subsidy expenditures into their own pockets instead of benefiting the economy, vulnerable groups, or other legitimate public programmes. In countries where such entitlement and subsidy programmes are widespread, subsidy abuse may have a negative financial impact several times greater than that caused by tax evasion.

In many cases, the largest price difference between subsidized fuel and open-market fuel prices for the same product exists between neighboring countries. Under such circumstances, even when the risks and penalties are severe, smugglers transport inexpensive subsidized fuel from one country into a neighboring country where prices are considerably higher. The low-cost subsidized fuel is simply resold in the destination country at higher prices. Consequently, government expenditures on fuel subsidies benefit smugglers rather than law-abiding citizens.

A common form of fuel fraud often combines both subsidy abuse and tax evasion. In such cases, taxable fuel is diluted with an adulterant that consists of subsidized fuel. Here, the low-cost subsidized fuel does not even need to leave the country in order to be incorporated into the fraud scheme. This type of fraud is particularly widespread when the same type of fuel is sold both as a fully taxed market-priced fuel and as a low-cost subsidized fuel (Petrov, 2016).

For example, diesel fuel may be sold on the open market at unsubsidized prices while simultaneously being sold at lower subsidized prices to agricultural producers. The diesel itself is identical, but one product is taxed while the other is subsidized in support of a specific government objective. Similar fuels, such as kerosene and diesel, also create challenges. Kerosene is often subsidized in order

to assist low-income households with cooking and heating fuel needs. Criminals may dilute highway diesel fuel with up to 20% kerosene without causing immediate damage to the vehicle. The kerosene-diluted diesel can then be sold at a substantial profit.

When this occurs, the consequences for government are as follows:

• Low-income households are likely deprived of access to affordable fuel;

• Government expenditures on fuel subsidies are wasted because they end up in the hands of criminals, creating additional and unplanned public expenditures;

• Excise duty revenues from the sale of legitimate fuels are lost to the government;

• The environment is damaged through the use of lower-quality fuels.

Taxation of profits in the jurisdiction where those profits are actually generated—or, more precisely, in the jurisdictions where profit-generating activities take place—should be the fundamental principle underlying tax systems in the global economy. The more globalized economic relations become, and the larger the share of global GDP represented by multinational enterprises, the more important this principle becomes for maintaining the integrity of tax systems.

However, not all countries, including some European Union Member States, adhere to this principle. Multinational corporations take advantage of this situation by artificially shifting their profits to low-tax jurisdictions, thereby reducing their tax liabilities (Petrov, 2016).

Artificial profit shifting by multinational enterprises has a significant negative impact on public revenues in most EU Member States. In total, EU Member States lose more than EUR 60 billion in tax revenues annually as a result of artificial profit shifting. The largest losses are incurred by Germany (EUR 18 billion), France (EUR 11 billion), and the United Kingdom (EUR 14 billion).

In terms of Corporate Income Tax (CIT) revenues, EU Member States lose, on average, 13% of their current tax revenues. This proportion ranges from 20–30% in Germany, Hungary, France, and the United Kingdom to approximately 10% in certain Central and Eastern European countries characterized by relatively low corporate tax burdens—namely Bulgaria, the Czech Republic, Slovakia, Slovenia, and Romania.

European countries continue to face the persistent problem of wealth being transferred by their citizens to international financial centers. Due to increasing financial globalization, it has become much easier for individual taxpayers to

make and hold investments outside their country of residence, either in their own name (such as deposits or portfolio assets) or through shell companies and screening organizations. The estimated value of offshore wealth held by citizens of EU Member States amounts to EUR 1.5 trillion, representing nearly 10% of the EU's GDP.

Germany, France, the United Kingdom, and Italy are the countries with the largest amounts of offshore wealth. The value of transferred wealth ranges from EUR 142 billion in Italy to EUR 331 billion in Germany. In terms of GDP share, Cyprus, Malta, Bulgaria, and Greece are the countries whose citizens transfer the largest amounts of wealth abroad, ranging from 29% of GDP in Bulgaria to nearly 50% of GDP in Cyprus and Malta.

Building a fair tax system is now not only a challenge for individual EU Member States but also an increasingly significant challenge for the European Union as a whole. In this paper, we have shown that EU Member States lose a substantial portion of their tax revenues due to tax avoidance and tax evasion across national borders. Artificial profit shifting by multinational corporations between different jurisdictions, wealth transfers by wealthy individuals to international financial centers, and cross-border VAT fraud collectively account for approximately EUR 170 billion in lost public revenues for EU Member States. This loss must be compensated by other taxpayers, ultimately leading to growing inequality and a sense of injustice among European citizens.

Within the EU, there are tax havens that exacerbate the problem of tax evasion through their specific legislative frameworks. These include the Netherlands, Ireland, Belgium, Luxembourg, Malta, and Cyprus. In particular, these countries benefit from the process of artificial profit shifting within the EU; in addition, they are often used by multinational enterprises as channels for the further transfer of profits to traditional tax havens. Such practices by a small number of countries undermine the sense of solidarity across the European Union.

In recent years, several measures have been proposed to improve tax systems, but their effectiveness remains questionable. This is particularly true with regard to corporate income taxation. Despite numerous resolutions and recommendations issued by EU institutions and other international organizations (such as the OECD), as well as a range of anti-abuse provisions that have been introduced (both general and specific), tax avoidance remains a significant problem. There are two main reasons for this situation.

First, current recommendations lack sufficient force to compel countries to implement them in the desired manner—or to implement them at all. As a result, some countries introduce provisions in such a way that their actual legal effect becomes practically insignificant. Second, national regulations are often unable

to cope with increasingly sophisticated tax avoidance schemes; therefore, solutions that reform the tax base at the international level are required. Taxpayers seek to imitate legitimate economic justifications for transactions whose real purpose is tax avoidance, making it increasingly difficult for tax administrations to prove bad faith. This does not mean that ad hoc anti-tax-avoidance policies are pointless—some models of international tax avoidance have already been eliminated entirely, while others have been significantly restricted. Nevertheless, reforming the tax base at the international level can address the root causes of the problem rather than merely treating its symptoms.

Opportunities for Preventing Tax Fraud in the Trade of Fuels and Petroleum Products – Types of Instruments

All countries experience some level of criminal activity, but governments can effectively reduce fuel fraud and minimize fuel-related tax evasion and subsidy abuse by adopting programs that strengthen the integrity of fuel supply chains. Increasing government tax revenues without raising tax rates can accelerate economic growth, which in turn will generate even higher public revenues. Greater overall tax revenues will improve or expand public services, leading to greater social stability, increased trust in government, and a stronger sense of satisfaction among citizens.

For decades, fuel-marking programs have helped countries mitigate fuel fraud associated with tax evasion and subsidy abuse. Through these programs, governments have collected billions of dollars in additional tax revenues and prevented even larger amounts of subsidy expenditures from being misappropriated. Beyond these financial benefits, significant environmental protection has also been achieved.

Following a situational analysis, various instruments and technologies should be examined and evaluated to determine which best practices meet the specific requirements of the situation and will result in the lowest total cost of ownership for the program.

Several general examples of how program objectives influence operational requirements are presented in the table below (see Table 2.6).

Table 2.6

Examples of Program Objectives in the Fuel Marking Program

Program objectives	Operational requirements	Special notes
Providing a "national marker" indicating fully tax-paid fuel	Quantitative detection of dilution and any adulterants added to the supply chain, providing definitive evidence of tax evasion	The confidentiality of marker identity and secure logistics with regular audits and reconciliations are critical to program integrity
Attempted removal of markers is not a problem, as it would render the fuel illegal	In combination with the "national marker" scheme above, additional marking of the largest volume of potential illicit products to quickly identify the source of fraud	All-encompassing approach combined with the national marker simultaneously ensures robust and rapid elimination of tax evasion and subsidy abuse
Anti-washout marker technology must be considered	Prevention of subsidy abuse of kerosene intended for low-income households for cooking and heating	Detection of subsidized fuels at very low concentrations anywhere outside the authorized supply chain. Markers must not contain halogens, as incomplete combustion may release harmful substances that could endanger human health, for which the subsidy is intended
Anti-washout marker technology must be considered	Prevention of subsidy abuse in cases of attempted smuggling of subsidized gasoline and diesel across borders	Detection of subsidized fuels at very low concentrations at border checkpoints. Markers must remain detectable even if smugglers attempt to mix or conceal subsidized fuels

After the completion of the situational analysis, the overall description of the objectives, and the outline of operational requirements, the plan for the fuel marking program will take into account all operational details as well as the results of its implementation.

Operational considerations include the overall management of the program, personnel, audit procedures and frequencies, as well as the scale of coverage and the depth of the program. Most countries decide to outsource many, if not all, of the operations of their fuel marking programs. This can provide a greater degree of security, certified and audited test results, and third-party objectivity across the entire program.

The central operational activities of a fuel marking program begin when the program is implemented. Best practice standards require that the team responsible for ongoing operations also implement the technologies and processes in the early phases of the program, as this team is the most invested in effective execution. Once the program is fully operational, best practices define a three-tier model that reduces costs and increases the efficiency of sampling and testing. Although the return on investment is compelling, the government must plan and budget cash expenditures to finance the implementation of the fuel marking program and the first six to twelve months of operation. Depending on the complexity of the implementation, the financial benefits for the government will certainly begin to accumulate within the first year. By the second year, the program will not only become self-financing but will also achieve a significant return on investment.

To demonstrate this point in a scalable format that can be tailored to the specific situation of each government, the following table shows the significant return on investment provided by fuel marking programs, even using conservative data and assumptions: (See Table 2.7.)

Table 2.7
Examples of return on investment from the implementation of a fuel marking program

Graph		ROI
1	Example impact of a fuel marking program on excise revenue collection for low-tax and high-tax cases	2.8X – 12.6X
2	Example impact of a fuel marking program adding reduction of subsidy abuse to the low-tax case	6.5X
3	Actual case of the impact of a fuel marking program on excise revenue collection and reduction of subsidy abuse	5.7X
4	Example impact of a fuel marking program on subsidy abuse	7.6X

In order to recover excise revenues lost through fuel fraud, the fuel marking program is a sound investment, regardless of annual fuel volumes or the size of the applied tax.

The fuel trade is assessed as a high-risk economic sector and is therefore monitored and controlled by various regulatory authorities in the Republic of

Bulgaria – the Ministry of Interior, the Customs Agency, the National Revenue Agency, the Maritime Administration Executive Agency, the Metrological and Technical Surveillance State Agency, the Road Transport Administration Executive Agency, the Bulgarian Institute of Metrology, the State Agency for National Security, etc.

The control activities of the National Revenue Agency (NRA) include:
• Classifying fuels as goods with high fiscal risk, with all resulting control actions
• Monitoring the movement of fuels from excise tax warehouses to gas stations
• Controlling the activity of gas stations, including through level-measuring systems and electronic fiscal devices (EFDs). See more: Electronic System with Fiscal Memory and Measuring Devices /ESFM/
• Conducting inspections and audits of persons engaged in this sector

For the implementation of its control functions, the NRA has developed and uses the information system "Fuel Control" – an electronic system for submitting data on deliveries of liquid fuels by suppliers/recipients of liquid fuels, in accordance with Art. 118(10) of the VAT Act (ZDDS).

Through Art. 176v of the VAT Act, a mechanism has been introduced whereby, when trading in liquid fuels, a mandatory security must be provided in cash, government securities, or an unconditional and irrevocable bank guarantee, each valid for a period of one year, to the competent territorial directorate of the NRA (determined by the place of registration). The securities are submitted via an application to the relevant NRA territorial directorates/offices of registration of the entities.

Based on the above, the following main conclusions can be drawn from Chapter Two:

First. The Bulgarian energy markets remain highly monopolistic at all levels and, in practice, there is no price discovery on free markets in the country. Prices are regulated, reference-based, or formula-driven, indicating very low levels of competition in the energy sector. Proven domestic petroleum resources are very limited (around 15 million barrels), and production is negligible. Imports, exports, and trade in crude oil and refined products are fully liberalized. All crude oil and significant quantities of refined products are imported from Russia. Imports from Bulgaria to Russia, on the other hand, are negligible, leading to a significant imbalance in bilateral trade and in Bulgaria's external accounts. Net imports of mineral fuels, oil, and electricity amount to around 2 billion annually. Natural gas distribution is carried out by "Bulgartransgaz"/"Bulgarian Gas" (Булгаргаз), which supplies larger customers directly from the national high-pressure pipeline grid via branches, and by private distribution companies that hold exclusive rights in their respective regions granted on a licensing basis. The largest private gas

distribution company is 50% controlled by Gazprom. The liberalization of domestic gas markets is an example of how difficult it can be to introduce market competition when the entire market is supplied from a single source and a single foreign supplier beyond the reach of Bulgarian and EU laws and regulations. Genuine liberalization of the market, opening it up and introducing competition in Bulgaria's gas market, will likely occur only after real diversification of gas supply sources, routes, and suppliers.

Second. Anti-fraud controls (such as internal audit, whistleblowers and colleagues, and anti-fraud processes) are not sufficiently strong, and the problem is growing. Tax evasion practices, which increasingly cross national borders, undermine social cohesion within countries and the sense of solidarity among them. Such practices are used especially by large multinational companies, which have both significant motivation (interest) and sufficient resources (human and financial) to invest in aggressive tax planning. As a result, their contribution to financing public activities decreases, and the loss must be compensated by other taxpayers. This can drive growing inequality and a sense of injustice among citizens. Moreover, practices in some countries that facilitate tax evasion undermine integrity in international relations. Tax fraud – also referred to as tax evasion, as it aims to avoid paying taxes – consists of taking advantage of the benefits and infrastructure of the state without fulfilling civic responsibilities. Tax fraud can affect direct taxes such as profit taxes as well as indirect taxes such as value added tax (VAT), which suffers from widespread fraud within the European Union. A common form of fuel fraud typically involves both subsidy abuse and tax evasion. That is, taxable fuel is diluted with a falsifying substance that is subsidized fuel. To recover excise revenues lost through fuel fraud, a fuel marking program is a sound investment, regardless of annual fuel volumes or the size of the applied tax.

Third. Effective fuel fraud prevention programs are designed and implemented to reveal the quality and condition of the supply chain. Often, simply shedding light on the various stages that make up the supply chain improves fuel flow in the country by deterring fraudulent activities that thrive in secrecy. For decades, fuel marking programs have helped countries mitigate fuel fraud related to tax evasion and subsidy abuse. In this process, governments have collected billions of dollars in additional tax revenues and prevented even larger amounts of misappropriated subsidy expenditures.

CHAPTER THREE
BENEFITS OF IMPROVING TAX COLLECTION FROM TRANSACTIONS IN FUELS AND PETROLEUM PRODUCTS IN BULGARIA

Dynamics of revenues from the taxation of transactions with fuels and petroleum products in favour of the state budget

The European Union and its excise legislation define excise administration as a national responsibility of each EU Member State. This responsibility is specifically expressed in the fiscal function of excise duty, namely that excise revenues go to the budget of the Member State where the excise goods are consumed. The control function includes inspections and audits of licensed warehouse keepers, persons registered under excise legislation, end users exempt from excise duty, as well as all other persons engaged in activities with excise goods.

Excise control, in addition to its fiscal importance, also has its social and environmental role, expressed in the protection of the population and the environment through limiting the consumption of excisable goods. Through excise administration and the application of its control effect, the supervisory authorities facilitate the possibility for excise revenues to be used to cover damages caused by the use of excisable goods.

The formation of state budget revenues and their optimal allocation has long been in the focus of researchers and remains relevant not only for countries where public finances are undergoing reform, but also for countries with stable financial relations, including in terms of budget policy.

Measures to improve tax systems in order to increase budget revenues and ensure the competitiveness and financial stability of EAEU member states should include the creation of a unified identification system for foreign trade operators (UISFTO), improvement of electronic services, automation of information exchange between tax and customs authorities, as well as the introduction of new tax administration mechanisms in digital trade (Antov, 2016).

In addition to the general potential effects of fuel taxation on improving sustainability, coordination of fuel taxation in Bulgaria would help overcome the shortcomings of the EU fuel taxation system: the tax bias in favour of diesel and the “under-taxation” of fuels compared to the nominal minimum tax rates provided for in the ETD, which is caused by the lack of regular inflation adjustment.

In principle, there are different options for designing tax-based own resources for financing the budget. Raddatz and Schick (Raddatz, 2003) discuss three possible

designs. In the so-called linked system, the tax would be levied based on full harmonisation of both the tax bases and tax rates, with direct EU participation in tax revenues. The additional levy system would require harmonisation only of the tax base; the EU would impose an additional tax on top of existing national tax rates, which would not be harmonised, and would receive the revenue from this surcharge. The split system would allow the EU to introduce a specific tax that would not be applied by any of the EU Member States and to collect its revenue.

Departing from this classification, we propose that a fuel tax be introduced within a surcharge system – i.e., in addition to existing excise duties on petrol and diesel imposed in all EU Member States. Such a scheme would avoid additional administrative costs for establishing a new tax authority in Bulgaria. Moreover, a fuel tax could be imposed on an already established and harmonised tax base. Last but not least, given the fact that all Member States impose fuel taxes at quite different tax rates, generating significant revenues, neither a linked system nor a split system appears politically acceptable for Bulgaria.

New taxes should be designed that can gradually replace fuel duties. They should reflect at least the distance travelled and ideally vary depending on when and where the journeys take place. Those who drive in congested areas would pay more, but the majority of trips would be taxed less than they are currently (Pargov, 2022).

Excise duty is an indirect tax and one of the significant fiscal instruments of the state (see Table 3.1), generating revenues for the treasury between 3.8 and 4.1 billion BGN for the period 2015–2019, and it can be seen that there is an upward trend. Alongside its role as a revenue source, excise duties aim to limit the consumption of harmful goods such as alcohol, cigarettes, and others.

Table 3.1
Tax revenues for the period 2015–2019 for Bulgaria
(in million BGN)

Categories of tax revenues	**2015**	**2016**	**2017**	**2018**	**2019**
Tax revenues (million BGN), including	14358	13500	14467	15290	15621
Corporate tax	1617	1243	1356	1395	1497
Taxes on dividends, liquidation quotas and local income and income of foreign legal entities	145	111	140	83	56
Taxes on income of natural persons	2030	2013	2162	2282	2334

Value added tax	6433	6267	6612	7152	7367
Excise duties (million BGN)	3845	3568	3860	4048	4056
Customs duties	122	119	131	118	146
Other fees	167	180	184	187	143

Source: Ministry of Finance

At the end of 2019 (see Figure 3.1), the share of excise revenues as part of total tax revenues was 26%, making it the second most significant tax after value added tax (VAT). Excise duties are considered one of the more profitable forms of revenue, as they are levied on consumption and their collection is generally ensured. For the period 2015–2019, excise revenues accounted for over 25% of total tax revenues. Only VAT revenues, at over 45%, exceeded excise revenues in the state budget.

Direct taxes on income – corporate tax and personal income tax – accounted for values between 9%–12% and 14%–17% of total tax revenues over the period.

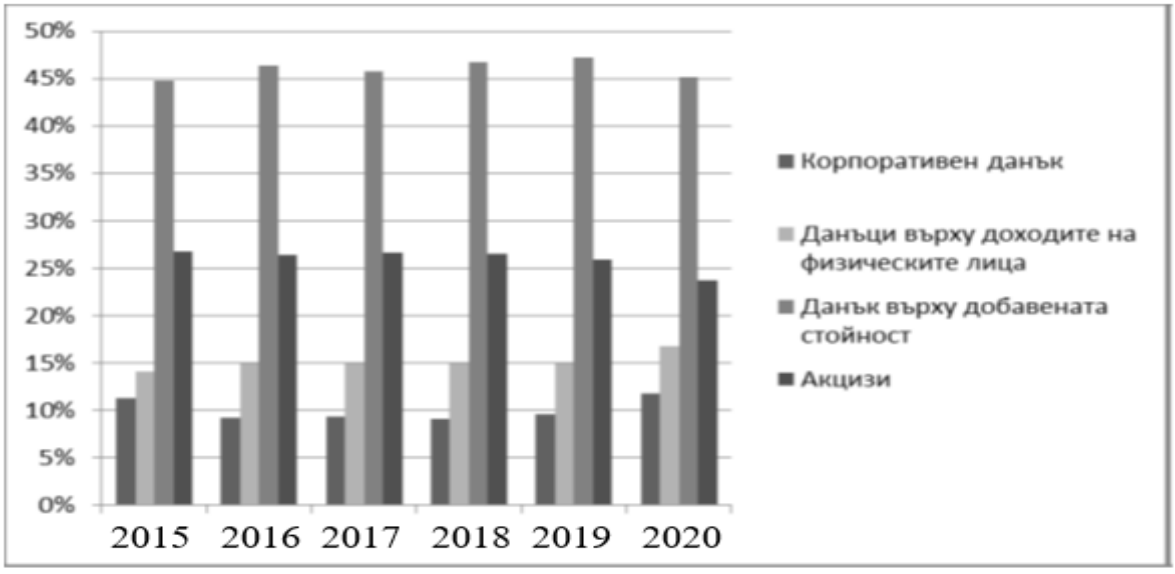


Figure 3.1. Groups of tax revenues, presented as a percentage of total tax revenues for the period 2015–2020

Regarding the activity of the Customs Agency in connection with the implementation of the State Budget Act, the available data reflecting the execution of the state budget, included in the section "Excise Revenues" for the period 2015–2019 (see Table 3.2), show that the forecast values, as indicated, were achieved at levels between 90% for 2015 (i.e., 10% underperformance) and 102% in 2017 (i.e., 2% overperformance). In the last two fiscal years (2018 and 2019), the values range between 98% and 99%. At the end of June 2020, excise revenues in the budget amounted to 42%.

Table 3.2
Execution of the state budget in the section "Excise Revenues" for the period 2015–2019

Categories	2015	2016	2017	2018	2019
Forecast excise revenue values according to the State Budget Act of Bulgaria (million BGN)	4260	3900	3800	4130	4115
Reported values regarding the execution of the State Budget Act of Bulgaria (million BGN)	3845	3568	3860	4048	4056
Execution rate according to the law (%)	90%	92%	102%	98%	99%

Source: Ministry of Finance

Table 3.3
Excise revenues by groups for the period 2015–2019 (million BGN)

Excise revenue categories	2015	2016	2017	2018	2019
Excise duties on fuels	1794	1782	1871	1933	1949
Excise duties on tobacco products	1788	1521	1694	1803	1805
Excise duties on alcoholic beverages and beer	188	226	263	268	264
Revenues from other excise goods	75	40	32	44	38
Total excise revenues	3845	3568	3860	4048	4056

Source: Ministry of Finance

For the period 2015–2019 (see Table 3.3 and Figure 3.2), the largest shares of total excise revenues come from fuels (47–50%) and tobacco products (43–47%), with an increasing trend, respectively between BGN 1.8–1.9 billion for fuels and BGN 1.5–1.8 billion for tobacco products. Alcoholic beverages generated revenues for the treasury between BGN 188 million in 2015 and BGN 268 million in 2019,

accounting for 5–7%, while revenues from other excisable goods ranged between BGN 32 million in 2016 and BGN 75 million in 2015, representing 1–2% of total excise revenues.

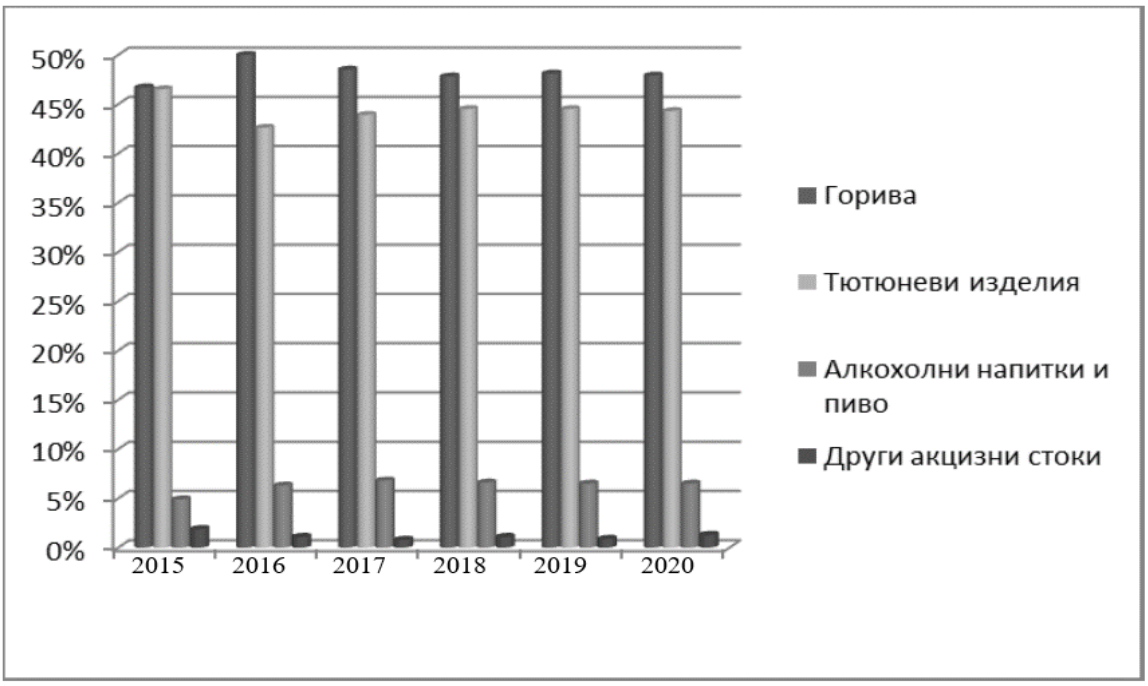


Figure 3.2. Share of excise revenues by commodity groups for the period 2015–2020, Bulgaria

All excisable goods are subject to taxation, except in cases where they are under "suspension of excise duty payment", as follows:
• when they are produced in the country;
• when they are imported into the territory of the country from the territory of another Member State;
• when they are imported into the territory of the country.

Regardless of the predominant fiscal function of excise duties, Bulgaria implements a coordinated policy regarding the harmonisation of indirect taxes within the EU and compliance with international agreements. In this regard, the applicable legislation provides for cases in which grounds for exemption from excise duty exist and establishes procedures for excise duty reimbursement.

The aim is to analyse fuel taxation as one of the options for sustainability-oriented tax-based own resources for financing the EU budget. In addition to the contribution of fuel taxation to various EU sustainability goals and strategies, it

would help address two specific problems inherent in the current EU fuel taxation system.

An EU fuel tax, designed as an additional tax on national fuel taxes, would reduce the existing tax bias in favour of diesel, since the surcharge would be applied equally to both petrol and diesel with lower taxation. Furthermore, by increasing national fuel tax rates, an additional tax – depending on its level – would mitigate or even eliminate the "under-taxation" of fuel in relation to the minimum fuel tax rates provided in several Member States, which is due to the lack of regular inflation adjustment of nominal fuel tax rates.

An EU fuel tax that partially replaces current national contributions to the EU budget would bring at least a double dividend. First, it would create fiscal space for Member State governments to reduce other national taxes, especially high labour taxes. Second, it would strengthen the environmental efficiency of taxation in the EU.

Moreover, an EU fuel tax can be positively assessed from the perspective of tax compliance, as fuel taxes are transparent, cost-effective, and easy to collect. Last but not least, the additional surcharge on fuel taxation in the proposal presented in this paper would address – albeit to a limited extent – the current problem of significant differences in fuel tax rates across countries and the undesirable tax competition they cause. Overall, an EU fuel tax levied as an additional tax on Member States' national fuel taxes is presented as an interesting tax-based own resource.

Comparison between expected and actual revenues from taxation of transactions in fuels and petroleum products in Bulgaria

Our estimates of the revenue potential from a fuel tax in Bulgaria are based on four different levels of surcharges imposed in addition to existing fuel excise duties: €0.03, €0.05, €0.1, and €0.2 per litre of transport fuel. The simulated surcharges are applied to total transport fuel consumption using data from the Ministry of Finance for 2019. Fuel demand is quite inelastic in the short term, while long-term fuel elasticity, and especially diesel demand, can be expected to be slightly higher.

As a first step, we use the latest price elasticity estimates of demand obtained from the meta-analyses of Havranek and Kokes (Havranek, 2015) for petrol and from Labandeira, Labeaga and Lopez-Otero (Labandeira, 2017) for diesel fuel, in order to estimate the decline in fuel demand caused by price changes resulting from a uniform fuel tax surcharge in Bulgaria.

An additional surcharge (Schratzenstaller, *Tax-based Own Resources to Finance the EU Budget*, 2019) on fuel tax between €0.03 and €0.20 would increase the price of petrol, which averages €1.29 in 2019, by between 2.36% (for a €0.03 surcharge) and 15.5% (for a €0.20 surcharge). Assuming that the price elasticity of petrol demand is -0.1 in the short term and -0.23 in the long term (Havranek, 2015), petrol consumption in the EU would decrease by between 0.3% (with a €0.03 surcharge) and 2% (with a €0.20 surcharge) in the short term, and by between 0.69% (with a €0.03 surcharge) and 4.6% (with a €0.20 surcharge) in the long term (see Table 3.4).

Overall, the reduction in petrol demand due to price increases through the imposition of an additional fuel tax would be quite moderate in both the short and long term. Accordingly, the revenue potential from the additional fuel tax in Bulgaria would be significant in the long term.

Table 3.4
Estimation of the reduction in petrol consumption due to tax-induced price increases

	Average petrol price (2019) in €	**Price elasticity of petrol demand**	
		Short term	*Long term*
	1.29	-0.1	-0.23
Simulated fuel taxes in €	**Tax-induced price increase (%)**	**Reduction in consumed quantity (%)**	
0.03	2.326	-0.3	-0.69
0.05	3.876	-0.5	-1.15
0.10	7.752	-1	-2.3
0.20	15.504	-2	-4.6

Source: Own calculations

Table 3.5
Estimation of the reduction in diesel fuel consumption in the EU due to tax-induced price increases

	Average diesel price (2019) in €	**Price elasticity of diesel demand**	
		Short term	*Long term*
	1.20	-0.153	-0.443
Simulated fuel surcharges in €	**Tax-induced price increase (%)**	**Reduction in consumed quantity (%)**	
0.03	2.500	-0.459	-1.329
0.05	4.167	-0.765	-2.215
0.10	8.333	-1.53	-4.43
0.20	16.667	-3.06	-8.86

Source: Own calculations

A fuel surcharge in the EU would increase revenues between €12.93 billion (for a €0.03 surcharge) and €86.2 billion annually (for a €0.2 surcharge). It is evident that the largest fuel consumers in the EU, especially the large "old" EU Member States, would make the greatest contribution (Tables 3.6, 3.7 and 3.8).

Table 3.6

Road diesel consumption and potential revenues from an additional fuel tax on diesel fuel

Country	Diesel consumption 2019	Additional fuel tax			
		0.03	0.05	0.10	0.20
	Billion litres	Billion Euro			
Bulgaria	1.915	0.057	0.096	0.191	0.383

Table 3.7

Consumption of unleaded petrol and potential revenues from a fuel tax surcharge on petrol in the EU

Country	Petrol consumption 2019	Additional fuel tax surcharge			
		0.03	0.05	0.10	0.20
	Billion litres	Billion Euro			
Bulgaria	0.580	0.017	0.029	0.058	0.116

Table 3.8

Total transport fuel consumption in EU-28 countries and potential revenue from an EU fuel tax surcharge

Country	Fuel consumption 2019	Additional fuel tax surcharge			
		0.03	0.05	0.10	0.20
	Billion litres	Billion Euro			
Bulgaria	2.495	0.075	0.125	0.250	0.499

In Table 3.9, we compare the potential revenues from a fuel tax surcharge with own-resource revenues in 2019. We find that the lowest fuel tax surcharge of €0.03 would cover 73% of VAT-based own resources, 13% of GNI-based own resources, and 9% of Bulgaria's total revenues. A surcharge of €0.20 could replace 64.8% of total own resources. A full replacement of total own resources would require a fuel tax surcharge of €0.31, of total national contributions €0.27, and of total revenues €0.33.

In order to fully replace total EU revenues, the EU fuel tax surcharge would need to be increased to €0.33 per litre (see Table 3.9). Table 20 shows the impact of a €0.33 surcharge on excise rates for petrol and diesel. A €0.33 surcharge would increase the average excise rate for petrol by 62.41% and the average excise rate for diesel by 77.57%.

Equalising tax rates for petrol and diesel by increasing diesel tax rates accordingly, in order to remove the tax bias in favour of diesel, would generate €35.83 million (see Table 3.9).

Table 3.9

Potential revenues from equalising tax rates for diesel and petrol in the 28 EU Member States

	Road diesel consumption in 2019	**Potential revenue from equalising the nominal tax rate for diesel with the tax rate for petrol**
	Billion litres	Million euros
Bulgaria	1.915	0.063

Clearly, an equal additional surcharge on national fuel taxes would ignore the different levels of economic development and purchasing power of EU-28 Member States. To correct these differences, we adjust the four potential EU fuel tax surcharges according to the GDP of Member States expressed in Purchasing Power Standards relative to the EU average GDP = 100, in order to achieve fairer surcharges that take into account regional income disparities. For example, the average fuel tax surcharge of €0.03 would be multiplied by a factor of 2.66 for Luxembourg, whose GDP in PPS is 2.66 times higher than the EU average GDP. Accordingly, Luxembourg would apply an EU fuel tax of €0.0798 per litre of

transport fuel instead of the base rate of €0.03. These adjustments would not significantly change the overall revenue potential at EU level, as total revenues would increase by only 6.5% compared to the first set of simulations.

The purpose of this comparison is to analyse fuel taxation as one of the options for sustainability-oriented tax-based own resources for financing the budget. In addition to the contribution of fuel taxation to various sustainability-related goals and strategies, it would help address two specific problems inherent in the current fuel taxation system. A fuel tax designed as an additional tax on national fuel taxes would reduce the existing tax bias in favour of diesel, as the surcharge would be imposed equally on both petrol and lower-taxed diesel. Furthermore, by increasing national fuel tax rates, an additional tax – depending on its level – would mitigate or even eliminate the "under-taxation" of fuel in relation to the minimum fuel tax rates provided in the EU ETD in several countries, which is due to the lack of regular inflation adjustment of nominal fuel tax rates (Customs Agency, 2023).

A fuel tax that partially replaces current national contributions to the budget would bring at least a double dividend. First, it would create fiscal space for governments to reduce other national taxes, especially high labour taxes. Second, it would strengthen the environmental efficiency of taxation in the EU. Moreover, fuel taxation can be positively assessed from a tax compliance perspective, as fuel taxes are transparent, cost-effective, and easy to collect. Last but not least, the additional surcharge on fuel tax would address – albeit to a limited extent – the current problem of significant differences in fuel tax rates across countries and the undesirable tax competition they cause. Overall, fuel taxation imposed as an additional tax on national fuel taxes is presented as an interesting tax-based own resource.

Expected effect of tax-based prevention of transactions in fuels and petroleum products on the revenue side of the state budget

The state budget is the main instrument of fiscal policy in every country. It is the most important part of government, whose main function is to finance public goods. Taxes are an essential part of state budget revenues, and value added tax (VAT) constitutes the largest share of tax revenues in Bulgaria (Biserova, 2018).

Fiscal policy is an important economic instrument through which the government of each country influences economic development. It can be seen as a tool through

which the government affects the relative size of the public and private sectors, which in turn influence aggregate demand and the level of economic activity (O'Sullivan, 2003). The main instrument of state fiscal policy is the state budget, which accumulates public revenues and transforms them into public expenditures. The state budget is the most important part of public finances, whose main mission is to finance public goods. At the same time, however, it is also an important instrument in the hands of the state that intervenes in the functioning of the economy. The state intervenes in the functioning of the economy by affecting aggregate demand and aggregate supply (Todorova, 2017).

Taxes account for the largest share of state budget revenues. The total share of taxes should be between 50% and 80%. In addition to taxes paid by individuals and legal entities, state budget revenues also include revenues from fees, contributions, customs duties, import and export surcharges, levies, revenues from the sale of government securities, etc.

The majority of taxpayers, from individuals and small businesses to the largest companies, already pay their fair share for our essential public services. This government recognises its obligation to this compliant majority to build a fair tax system and, through this system, to ensure that those attempting to cheat the treasury in any way are caught and made to pay what is due (Alm, 2006).

As new technologies change business models, lifestyles, and working practices, it is important that the tax system also adapts. The government is committed to ensuring that businesses and individuals pay the taxes they owe and that we have the tools necessary to collect the revenues that finance our essential public services.

With regard to fiscal matters, in developed economies customs revenues account for a small share of supporting or increasing the national budget, but this does not apply to developing economies, including Bulgaria's economy, where customs revenues have the greatest impact on increasing the state budget. In countries in transition, customs revenues have an even greater impact on increasing and stabilising the national budget. In these countries, customs revenues are very high and are intended to provide funds for financing household activities, services, and assets, as the state budget can only be sustained if it is based on a fiscal system with a comprehensive base of non-productive payers – taxpayers and customs duties (Antov, 2016).

For the proper functioning of state authorities, funds must be provided which, after collection in the context of budget approval, are directed toward financing social activities. In Bulgaria, due to the low level of economic development, customs revenues also have an important fiscal character. In addition, at the time of revenue collection, alongside the application of regular taxes, special taxes such as various types of excise duties are also collected, since the collected revenues play a dominant role in the formation of the state budget. The same occurs in most Balkan countries, where in war-torn economies such as Croatia, Bosnia and Herzegovina, as well as those resulting from political transition such as Albania and North Macedonia, customs revenues have a fiscal character and play a dominant role in increasing and stabilising the respective national budgets in these countries.

Value added tax (VAT) is the most significant source of state budget revenues and the second most important source of public administration budget revenues. The functioning of the VAT system is quite prone to tax evasion, which places VAT, in combination with a large volume of domestic and international transactions, among high-risk taxes. The presented methodology is based on the first estimate of the tax gap, which was processed in 2012. Subsequently, the methodology was moderately revised. In 2014, a more detailed assessment of the sectoral gap was included in the tax gap assessment portfolio in cooperation with the International Monetary Fund (Saxunova, 2018).

According to a preliminary estimate, the VAT tax gap in 2018 reached 26.9% of potential VAT in Bulgaria. Compared to 2012, when the VAT tax gap reached its peak, it decreased by more than one third. In nominal terms, the difference between potential and actual VAT revenues was €2.3 billion (2.6% of VAT) last year.

The VAT tax gap is the difference between potential tax revenues that would be collected if all economic agents complied with the law and the actual tax collected. The VAT tax gap in Bulgaria is assessed both in aggregate and by sector, using a top-down approach. The assessment is based on different approaches using various data and assumptions. Both approaches are part of the methodology. The tax gap is subsequently divided into unidentified VAT and the tax collection gap (Figure 3.3).

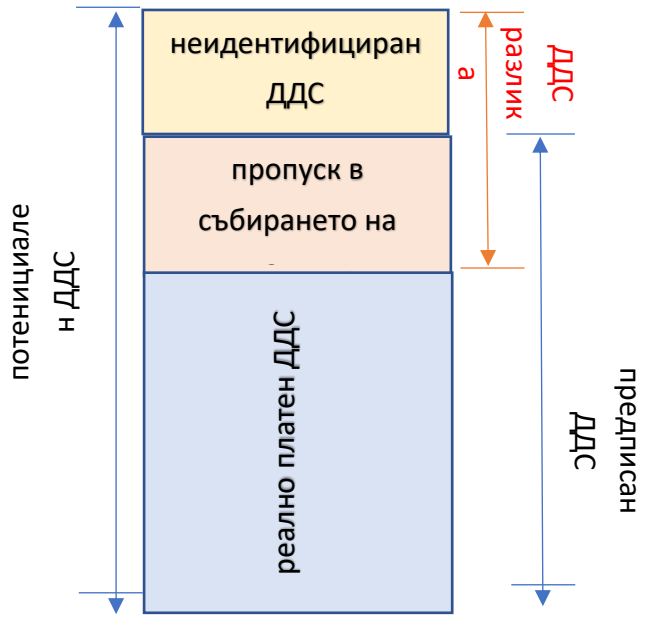


Figure 3.3. Structure of potential VAT revenues

Potential VAT revenues are calculated as the difference between the theoretical VAT base and the VAT actually paid, multiplied by the average projected VAT rate. The theoretical base is the sum of all macroeconomic aggregates subject to VAT. Unidentified VAT is the part of the gap that taxable entities have intentionally or unintentionally failed to remit and, at the same time, has not been identified by the Bulgarian Financial Administration during audits. It is calculated as the difference between potential and assessed tax. The tax collection gap is the difference between assessed tax and the tax actually paid. It also includes additional assessed tax liability after tax control that has not been paid. Assessed tax includes the tax declared by VAT taxpayers in their tax returns and additional tax assessed during audits by the Financial Administration (the term “assessed tax” refers both to additional individual tax assessments and to the reduced value of unjustifiably claimed deductions).

Assessed tax is calculated as the sum of individual tax liabilities from all tax declarations and the VAT paid at customs, reduced by the amount of excessive deductions during the tax period.

The calculation takes into account the most recently valid tax declaration. The actual tax paid arises from transactions between the Financial Administration of Bulgaria and taxpayers. Transactions are allocated to the relevant tax periods, which makes it possible to calculate the exact amount of tax to be assessed (the

tax amount corresponding to the tax period in which the activity occurred from which the tax arises).

The National Revenue Agency estimates the VAT gap resulting from organised VAT fraud schemes (such as missing trader fraud and carousel fraud) at approximately €360 million for 2017, based on the identification of high-risk economic entities (CSD, 2018) (see Table 3.12). However, these estimates do not include the gap from unorganised/conventional tax avoidance and tax evasion aimed at reducing tax liabilities arising from real transactions. Around 30% of all organised fraud schemes occur in the construction sector, 15% in the services sector (including advertising), followed by agricultural goods and food production (13%). Unorganised fraud is most prevalent in the distribution of fuels and petroleum products (CSD, 2018).

Table 3.12
VAT from organised fraud (2015–2020)

VAT Gap	2015	2016	2017	2018	2019	2020 (June)
VAT Revenue (billion EUR)	2.4	2.9	3.3	3.8	3.27	3.3
Organized VAT Fraud Gap (million EUR)	246	244	349	504	413	358
Fraud Loss / Total VAT Revenue	10%	8.2%	10.3%	13%	12.6%	11.1%

Source: Bulgarian Serious and Organised Crime Threat Assessment 2016–2017, based on the National Revenue Agency's tax gap analysis (CSD, 2018).

It should be noted that the boundaries between organised and unorganised tax fraud are blurred, while the same economic actors may be involved in both types of fraud, even within the same scheme. However, for the purpose of assessing the share of the undeclared economy, it is important to distinguish between VAT credit fraud claimed through fictitious transactions and traders, and tax evasion on due taxes on real products and services delivered by real economic actors. The latter category, aimed at reducing tax liability, would fall under the definition of the undeclared economy in the eyes of the authorities. Organised abuse of VAT credit is more a form of organised crime than tax evasion (Pashev, 2006).

Therefore, it is difficult to use traditional tax gap estimates to draw conclusions about the size of real but undeclared economic activity, since they usually include not only tax avoidance and evasion but also tax fraud based on fictitious economic transactions. The National Revenue Agency estimates the total tax gap (including VAT), but the data are not publicly available.

Schneider and Williams (2013) define the undeclared economy as "all market-based legal production of goods and services that is deliberately concealed from public authorities" in order to avoid payment of taxes, social security contributions, as well as compliance with labour market standards and administrative regulations.

The following undeclared economic activities deserve special attention, as they significantly contribute to the country's value added, although they are not reflected in national accounts:

- Smuggling of excisable goods such as cigarettes, alcohol, and petroleum products (undeclared import and export of legally produced goods in order to avoid VAT and excise duties), as well as smuggling of certain "high-risk" food products (sugar, meat, grain).
- Production of counterfeit cigarettes, alcohol, and other goods.

In addition, these activities, although characterised by the involvement of organised crime groups, create numerous opportunities for shadow employment and are also marked by the participation of legitimate (often large) economic actors, which creates an environment prone to corruption and encourages a culture of informality, undermining the competitiveness of companies operating within the rules.

VAT and excise evasion in the petroleum products market is a serious problem in Bulgaria, as this is the largest legal market in the country, with excise and VAT revenues being the largest contributors to the state budget (between 47% and 50% of all excise revenues) (CSD, 2018). Therefore, unregistered production and sales in this sector represent a significant risk to fiscal stability. The Bulgarian Serious and Organised Crime Threat Assessment (SOCTA) for 2015–2016, conducted by CSD, found, for example, that between 2015 and 2016 the gap between officially registered diesel sales and actual consumption ranged between 32% and 39% (CSD, 2018). Estimates of the size of the undeclared fuel market are based on data from the Customs Agency, the National Revenue Agency, and energy consumption data from the National Statistical Institute.

Table 3.13

Estimation of undeclared fuel production (2017–2018)

	Consumption	Diesel fuel (thousand litres)	Petrol (thousand litres)
2016	Actual	2,557,617	627,505
	Declared	1,726,000	597,000
	% undeclared	32,5%	4,9%
2017	Actual	2,816,161	655,988
	Declared	1,730,000	598,000
	% undeclared	38,6%	9,7%
2018	Actual	2,485,257	624,619
	Declared	1,697,000	616,000
	% undeclared	31,7%	1,4%

Source: Threat Assessment of Serious and Organised Crime (CSD, 2018)

Budget revenues influence the economy through the transmission mechanism. The state mobilises part of the economy's financial resources to maintain the state apparatus and to develop investments. The ratio of revenues to GDP has important consequences for economic development (see Figure 3.4). Reasonable rates will encourage investment and fuel revenue resources for the state budget. If the mobilisation ratio is too high, enterprises will consider withdrawing their investments or redirecting investments to other countries in order to secure the expected profit. Conversely, if the ratio is low, it will be difficult to mobilise sufficient financial resources to cover the needs of the state. The government must consider and determine an appropriate ratio not only to mobilise resources to meet expenditure needs, but also to encourage enterprises to invest and expand production and business.

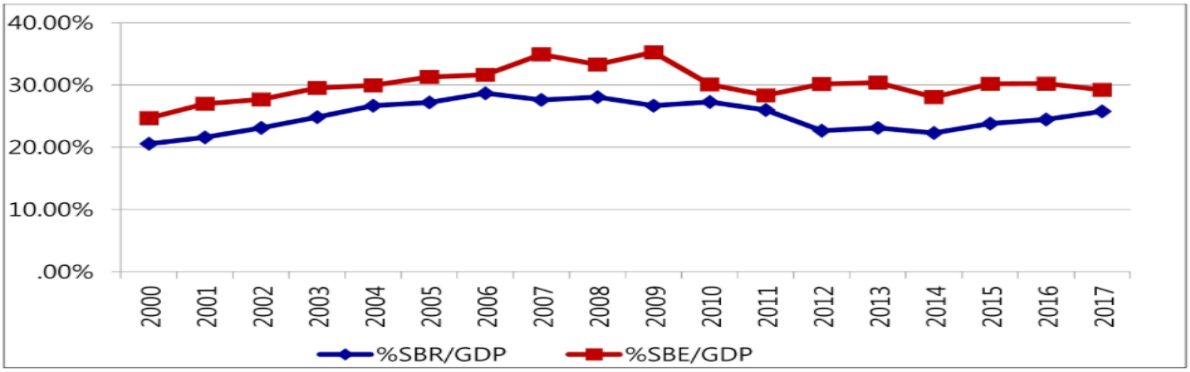


Figure 3.4. Ratio of state budget revenues and expenditures to Bulgaria's GDP

Source: Ministry of Finance

It is possible to analyse tax revenues collected in the budget from excise duties on consumed goods in the country, as well as from the import of excise goods. The period under review is five years (2013–2017), as there are no data for 2018 and 2019 (see Table 3.14).

Table 3.14

Excise tax revenues for the period 2013–2017 (million BGN)

	2013	2014	2015	2016	2017
Excise tax revenues	4 055	4 038	4 524	4 806	4 984

Source: Ministry of Finance

The data illustrate the amount of revenues received in the state budget, which is equivalent to about 25% of tax revenues in central and local budgets (Ministry of Finance, 2013–2017). There is a significant difference between excise revenues from domestic production and those from imports of excise goods. On this basis, it can be stated that the fiscal interest of the state budget comes mainly from the production and sale of excise goods in the country.

The second point that can be noted is the slow but relatively steady growth of revenues (by nearly BGN 200 million annually). The exception is 2014, when revenues decreased by about BGN 15 million compared to 2013. The reasons for this decrease may be linked to increased illegal activities involving cigarettes and alcohol (capital.bg link), as well as existing weaknesses in the Bulgarian Excise Centralised Information System (BAXIS), for which in 2015 the Bulgarian Petroleum and Gas Association filed a complaint with the Ministry of Finance and the Customs Agency (Biserova, 2018).

Control actions of customs authorities over excise goods are regulated by the Tax and Social Insurance Procedure Code (2020). For this reason, control over excise goods has the character of tax proceedings. Control activity includes inspections and audits (Zhelev, 2020) of licensed warehouse keepers, persons registered under excise legislation, end users exempt from excise duty, as well as all other persons engaged in activities with excise goods.

A new element in control activities is the introduction of a monitoring (surveillance) system for licensed warehouse keepers. The rationale in the draft amendments to the Excise Duties and Tax Warehouses Act notes that numerous violations of excise legislation have been identified. The aim is to minimise the risk of unauthorised loading and/or unloading of vehicles in tax warehouses, as

well as the risk of possible unauthorised interference and manipulation of measuring and control equipment.

The business community, represented by the Bulgarian Industrial Association (BIA), supported by sector organisations such as the National Organisation of Customs Agents (NOCA), objected to the proposed amendments. According to them, several reasons are cited: inability to ensure personal data protection; lack of a clearly defined problem; lack of a clear strategy; lack of methodology and a clearly defined final result; and lack of responsibility for the storage and destruction of collected data.

In conclusion, excise duties as one of the main taxes are of essential importance for the budget. Their fiscal function has made them a desirable instrument for generating revenue. For this reason, in the implementation of the two main directions of excise policy – fiscal and protective – there is a trade-off between them. In practice, if one direction is prioritised, the other is neglected.

Excise control, in addition to its fiscal importance, also has a social and environmental role, expressed in protecting the population and the environment by limiting the consumption of excisable goods. Through excise administration and its control effect, authorities facilitate the possibility that revenues collected from excise duties are used to cover damages caused by the use of excisable goods.

In this way, sustainable development of the role of excisable goods and their importance for the state budget is formed. At the same time, control measures must be adequate to the conditions of the time in which they are applied in order to counter deviations from regulatory provisions.

According to the government, fuel adulteration has led to an annual loss of EUR 40 million, while industry experts estimate the actual loss at EUR 100 million. Losses suffered by major oil companies operating in Bulgaria are considered to be of similar magnitude.

Recognising evidence of illegal fuel trade in Bulgaria and its impact on state revenues—and equally importantly the secondary negative effects of poor fuel quality—the Ministry of Energy, Development and Environmental Protection issued a decree at the end of 2013 stating that from 2014 all road fuels must be marked with advanced chemical markers before being released for consumption on the market. Under the decree, the Ministry required oil companies to be responsible for procuring and paying for marking services from government-designated providers. Samples must be taken at retail outlets, and those found to contain unmarked fuel or evidence of diluted fuel are subject to fines and bans from operating for 6 months to 3 years.

Following the launch of the programme, the ministry initiated a large-scale media and public relations campaign to inform the public about the fuel marking programme, how it works, and its expected benefits. The initial plan was to set a six-month period to allow fuel marker concentrations to reach appropriate levels throughout the supply chain (i.e. unmarked fuel would be flushed through the system and retail storage tanks through normal sales processes as it is replaced by marked fuel), and to allow adequate training of inspectors and government staff.

Between February and June 2019, more than 930 million litres of fuel were marked and the government saw significant evidence of the programme's effectiveness even before enforcement began. Oil companies welcomed the introduction of the marking system, observing an 18% increase in diesel sales and a 14% increase in petrol sales—at a time when the government expected sales to decline due to weak economic growth. Based on excise collection since the programme's launch, the government expects an increase of EUR 60 million in excise revenue as a result of fuel marking. In summary, the Bulgarian programme delivers an annual return on investment of 6–7 times.

European legislation on liquid fuel quality has been transposed into Bulgarian law through the Clean Ambient Air Act, the Renewable Energy Sources Act, and the Regulation on the requirements, conditions, procedure and method of control of liquid fuel quality. These acts introduced the requirements of EN 228 and EN 590. The Renewable Energy Sources Act sets minimum requirements for blending transport liquid fuels with bio-components. According to Article 47 of the Renewable Energy Sources Act, entities placing liquid fuels on the market are obliged, when releasing them for consumption, to provide diesel fuel with a minimum of 6% (V/V) biodiesel and at least one volume percent biofuel, and petrol with a minimum of 9% (V/V) bioethanol or ethers produced from biomass.

The empirical research on the benefits of improving the collection from transactions in fuels and petroleum products leads to the following conclusions:

First. The European Union and its excise legislation define the administration of excise duties as a national responsibility of each EU Member State. Therefore, we propose that a fuel tax be introduced within a surcharge system – i.e. in addition to the existing excise duties on petrol and diesel imposed in all EU Member States. Such a scheme would avoid additional administrative costs for establishing a new tax authority in Bulgaria. In addition, a fuel tax could be levied on an already established and harmonised tax base. Last but not least, given the fact that all Member States impose fuel taxes at significantly different rates that generate substantial revenues, neither a linked system nor a splitting system appears politically acceptable for Bulgaria. An additional tax would avoid the need for

compensation payments for Bulgaria. Obviously, the disadvantage of such a surcharge model is that it would not fully solve the problem of tax competition between EU Member States, as differences in tax rates between countries would remain. Despite the predominant fiscal function of excise duties, Bulgaria pursues a coordinated policy regarding the harmonisation of indirect taxes within the EU and compliance with international agreements. In this regard, current legislation provides cases in which there are grounds for exemption from excise duty and establishes procedures for excise refunds. The aim is to analyse fuel taxation as one of the options for sustainability-oriented tax-based own resources to finance the EU budget.

Second. Our estimates of the revenue potential of a fuel tax in Bulgaria are based on four different levels of surcharges imposed in addition to the existing excise duties on fuels: €0.03, €0.05, €0.1 and €0.2 per litre of transport fuel. The simulated surcharges are applied to total transport fuel consumption using data from the Ministry of Finance for 2019. Fuel demand is fairly inelastic in the short term, while the long-term elasticity of fuel demand, and especially diesel demand, can be expected to be somewhat higher. Obviously, a uniform additional surcharge on national fuel taxes would ignore the different levels of economic development and purchasing power across EU-28 Member States. Moreover, a fuel tax can be positively assessed from a tax compliance perspective, as fuel taxes are transparent, cost-efficient, and easy to collect.

Third. The state budget is the main instrument of fiscal policy in every country. It is the most important part of government, whose main function is to finance public goods. Taxes are an essential part of state budget revenues, and Value Added Tax (VAT) accounts for the largest share of tax revenues in Bulgaria. Fiscal policy is an important economic instrument through which the government of each country influences economic development. It can be seen as a tool through which the government affects the relative size of the public and private sectors, which in turn influence aggregate demand and the level of economic activity. The largest share of state budget revenues is made up of taxes. The total share of taxes should be between 50 and 80 percent. In addition to taxes paid by natural and legal persons, state budget revenues also include revenues from fees, contributions, customs duties, import and export surcharges, levies, revenues from the sale of government securities, etc. It should be noted that the boundaries between organised and unorganised tax fraud are blurred, while the same economic actors may be involved in both types of fraud, even within the same scheme. However, for the purpose of estimating the share of the undeclared economy, it is important to distinguish between VAT credit fraud claimed from fictitious transactions and traders, and the concealment of taxes due on real products and services delivered by real economic actors. The latter category, aimed at reducing tax liability, would fall under the definition of the undeclared economy by the authorities. Organised

misuse of tax credits is more a form of organised crime than tax evasion. According to our government, fuel adulteration has led to annual losses of EUR 40 million, while industry experts estimate the actual loss at EUR 100 million. The losses suffered by major oil companies operating in Bulgaria are considered to be of a similar magnitude. Between February and June 2019, more than 930 million litres of fuel were marked, and the government saw significant evidence of the programme's effectiveness even before enforcement began. Oil companies welcomed the introduction of the marking system, reporting an 18% increase in diesel sales and a 14% increase in petrol sales – at a time when the government expected sales to decline due to weak economic growth. Based on excise revenue collection since the start of the programme, the government expects an increase of EUR 60 million in excise revenues as a result of fuel marking. In summary, the Bulgarian programme provides an annual return on investment of 6–7 times.

III. Guidelines for future research on the dissertation topic

As future research directions on this topic, I see the possibility of a specific analysis and assessment of the effect that changes or reforms in the tax system may have on macroeconomic and microeconomic processes and on the behaviour of economic agents – namely enterprises, households, and the state – since it is the behaviour of these entities that leads to and to some extent determines economic development and, above all, appropriate and sustained economic growth.

IV. Summary of scientific and applied contributions of the dissertation

1. The role and importance of indirect tax revenues as important instruments of fiscal policy in Bulgaria have been studied. In this context, issues related to excise policy in Bulgaria remain relevant and are of special interest to the EU, legislative and executive authorities, financial administration, taxpayers, and consumers of excisable goods.
2. A critical analysis of the scientific literature on the tax system has been carried out, which has national-economic, fiscal, and social dimensions. In terms of the national-economic dimension, it is necessary to understand the effect that changes or reforms in the tax system have on macroeconomic and microeconomic processes and on the behaviour of economic agents – namely enterprises, households, and the state – since it is the behaviour of these entities that leads to and to some extent determines economic development and, above all, appropriate and sustained economic growth.
3. Anti-fraud controls are not sufficiently effective, and the problem is growing; the contribution of fuel and petroleum product traders to financing

state activities is decreasing, and the loss must be compensated by other taxpayers; therefore, we propose the design and creation of a new effective programme for preventing fraud with fuels and petroleum products in Bulgaria.

4. Based on the analysis of real data on excise legislation, we propose the introduction of a fuel tax within a surcharge system – i.e. in addition to the existing excise duties on petrol and diesel imposed in all EU Member States. Such a scheme would avoid additional administrative costs for establishing a new tax authority in Bulgaria. In addition, a fuel tax could be imposed on an already established and harmonised tax base.

V. List of the Doctoral Student's Publications

Articles:

1. The nature of tax fraud in fuel and petroleum product trade – Issue XIV – 2021, Book 17, Annual Almanac "Scientific Research of Doctoral Students", ISSN: 1313-6542 – printed edition
2. Benefits of improving tax collection from transactions with fuels and petroleum products in Bulgaria – Issue XV – 2022, Book 18, Annual Almanac "Scientific Research of Doctoral Students", ISSN: 1313-6542 – printed edition

Reports:

1. Participation in the international scientific-practical conference "Sustainable Development and Socio-Economic Cohesion in the 21st Century – Trends and Challenges." Publication of a report on the topic "Tools for the prevention of tax fraud in fuel and petroleum product trade" – p. 496, ISBN 978-954-23-2067-8 (print); ISBN 97-954-23-2068-5 (online)
2. Participation in the international scientific-practical conference "THE CIRCULAR ECONOMY IN THE CONTEXT OF INDUSTRY 4.0 – SOCIETY 5.0 RELATIONSHIP," organized by the Academy of Economics "D. A. Tsenov" – Svishtov. Publication of a report on the topic "Taxation of transactions with fuels and petroleum products in Bulgaria" – p. 152, ISBN 978-954-23-2067-8 (print); ISBN 97-954-23-2068-5 (online)

VI. Statement of Compliance with the Minimum National Requirements under the Regulations for the Implementation of the Act on the Development of the Academic Staff in the Republic of Bulgaria

National requirement in points: 30.00

Number of articles published in non-refereed peer-reviewed journals, or in edited collective volumes: 2 items
Author's points: 20.00

Number of reports published in non-refereed peer-reviewed journals, or in edited collective volumes: 2 items
Author's points: 20.00

Total points: 40.00 > 30.00

VII. Participation of the Doctoral Student in Scientific Forums

1. Participation in the Doctoral Scientific Session – 2021, Academy of Economics "D. A. Tsenov", Svishtov, and presentation in the Annual Almanac "Scientific Research of Doctoral Students", AI Tsenov, ISSN: 1313-6542
2. Participation in the Doctoral Scientific Session – 2022, Academy of Economics "D. A. Tsenov", Svishtov, and presentation in the Annual Almanac "Scientific Research of Doctoral Students", AI Tsenov, ISSN: 1313-6542
3. Participation in the international scientific-practical conference "Sustainable Development and Socio-Economic Cohesion in the 21st Century – Trends and Challenges."
4. Participation in the international scientific-practical conference "THE CIRCULAR ECONOMY IN THE CONTEXT OF INDUSTRY 4.0 – SOCIETY 5.0 RELATIONSHIP," organized by the Academy of Economics "D. A. Tsenov" – Svishtov

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VIII. Declaration of Originality of the Dissertation

With this declaration I confirm that the dissertation of 167 pages entitled *"Prevention of Tax Fraud in Fuel and Petroleum Product Trade in Bulgaria"* is an authentic and original scientific work, entirely prepared by me. It includes my own ideas, texts, and visual materials such as graphs, diagrams, tables, and

formulas, all in compliance with copyright requirements. All external sources are properly cited and referenced in the dissertation.

1. The conclusions and results achieved in the dissertation are unique and have not been copied from other studies or publications in which I have not participated.
2. The information presented through copies of documents, publications, and compiled references is objective and reflects the truth.
3. The bibliography comprehensively and correctly cites all scientific results used, described, or published by other authors.

Date: 30.01.2026

Doctoral candidate: ……
/Stefan Peshov/