



tobaccotaxation

Economic Research Informing Tobacco Tax Policy

Accelerating Progress on Effective Tobacco Tax Policies in Low- and Middle-Income Countries

National Study - SERBIA

Economics of Tobacco and Tobacco Taxation

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Contents

Executive Summary	3
Supply of tobacco products	3
Demand for tobacco products	4
Tobacco taxation and pricing policies	4
The elasticity of tobacco products	5
Recommendations	5
1. Introduction	6
1.1. General information	6
1.2 The tobacco market	7
2. Supply of tobacco products	12
2.1 Tobacco farming	12
2.2 Manufacturing of tobacco products	15
2.3 Foreign trade of tobacco products	19
2.4 Employment in the sector	21
3. Demand for tobacco products	22
3.1 Smoking prevalence in the country	22
3.1.1 Youth Tobacco Use	24
3.2 Tobacco product consumption	26
4. Tobacco taxation and pricing policies	28
4.1 Institutional, policy and legal framework	28
4.1.1 Institutional framework for tobacco control	28
4.1.2 Policy framework for tobacco control	29
4.1.3 Relevant legislation for tobacco control	31
4.1.4 Tobacco control measures	33
4.2 Tobacco tax structure	36
4.3 Tobacco tax revenues	39
4.4 Pricing of tobacco products	41
4.5 Relationship of tobacco taxation, price and demand of tobacco products	42
5. Elasticity of tobacco products	44
5.1 Estimation of the price elasticity using the macro data	44
5.2 Estimation of the price elasticity using the micro data	45
6. Summary and recommendations	46
References	48
Appendix - Policy Dialogue	50

Executive Summary

Serbia is located in the Southeastern Europe region, classified as an upper-middle-income country according to the World Bank ranking. The country covers a total of 88,361 km² with a total population of 7,020,858 inhabitants and has one of the oldest populations in the world (average age of 42.9 years, mortality rate continually exceeding the birth rate). The tobacco market and industry in Serbia are highly regulated. There exist seven major groups in the sector: tobacco producers, tobacco processors, tobacco manufacturers, wholesalers, retailers, importers and exporters of tobacco, processed tobacco, and/or tobacco products.

Supply of tobacco products

Production of raw tobacco has a minor share in total agricultural production in Serbia.

- The harvested area under tobacco, tobacco leaf production and employment in the sector has been falling since 2000 as a result of changes in the agricultural policies, cheaper imported raw tobacco and reduction of customs duties.
- Domestically produced raw tobacco was replaced with imported products leading to a sharp rise in the tobacco leaf imports used in cigarette manufacturing.

The structure of the tobacco manufacturing industry significantly changed over the past few decades.

- The industry is characterized by three major privatizations and one Greenfield investment.
- Multinational tobacco companies and their brands dominate the Serbian market with a market share of over 90 per cent.
- The production of cigarettes in Serbia varied to a great extent over time. Starting in 2014, the production of cigarettes in Serbia recorded a significant growing trend. Almost all factories producing cigarettes have invested in expanding their production capacities.
- Currently, Serbia could be regarded as the hub for cigarette production in the region. In 2017, factories operating in Serbia produced 37.5 billion pieces of cigarettes.
- Investments in tobacco manufacturing, expanding production capacities and increasing the number of produced cigarettes, created a space for an increase in exports.
- Since 2004, the export of cigarettes from Serbia has increased by over ten-fold.
- An additional increase in Serbian production capacities and a long-term commitment of the international companies are expected.
- Even though the investments in production lines were substantial, the number of employees in the tobacco manufacturing sector has been significantly reduced.

Demand for tobacco products

Use of tobacco products mostly cigarettes in Serbia is widespread.

- The prevalence rate is declining over time, but still high (38% of the population smoke daily or occasionally).
- Smoking cessation is not common in Serbia, and only 13% of all smokers have successfully quit.
- The Law on Protection of Population from Exposure to Tobacco Smoke was introduced, but the data show that its impact is only moderate
- The prevalence rate is high among the youth with the overall level at 16.2% (boys 16.5% and girls 15.9%).
- Major concern about tobacco use among the youth is access and availability of tobacco products, even though the Law on Tobacco prohibits the sale of tobacco products to minors.

The consumption of cigarettes in Serbia decreased during 2002-2017, from the peak of 1,290 million packs to 671 million annually.

- Retail value of cigarettes sold is also declining from 274 billion RSD to around 150 billion RSD in 2017 in constant prices.
- Trends in consumption of roll-your-own cigarettes differ from those for factory-made cigarettes. Despite a significant increase in sales in 2014, a sharp decline in sales has followed since then.

Tobacco taxation and pricing policies

Policy makers lack dedication towards the creation of a national strategic framework for tobacco control.

- There are several national tobacco control policies, but they are outdated.
- The new *strategy of public health protection* is in the draft stage.
- Four national laws regulate tobacco market in Serbia: *Law on Tobacco*, *Law on Excise Duties*, *Law on Protection of Population from Exposure to Tobacco Smoke*, *The Law on Advertising*.

Serbia introduced a mixed excise tax system with an ad-valorem excise tax (based on retail prices) and a specific excise tax in 2005.

- Ad-valorem tax for each brand is imposed on a retail price, which is defined by companies and published in the Official Gazette after approval from the government.
- The specific tax has been increasing since 2005, while the ad valorem tax is at the level of 33%. Value added tax is at the level of 20%.

The years 2005-2017 have recorded growth in revenues from all excises in Serbia.

- Share of excise duties from tobacco market in GDP stand at the level of 2.2% at the end of 2017.

Mixed excise tax system resulted with:

- Price of a cigarette pack in Serbia ranges from 210 RSD up to 510 RSD.
- Excise taxes per pack range from 147 RSD (minimum excise set by the Law) for lower price/discounted brands, up to 235 RSD for premium brands.
- Total excise taxes accounted for 70.2% of the retail price for the cheapest brand, and 46.1% of retail prices of the most expensive brand.
- Total taxes, including value added taxes (VAT), were 86.8% for discount brands in contrast with only 62.8% for premium brands.

The elasticity of tobacco products

- Aggregate time-series data was used to estimate price and income elasticity of the cigarette consumption in Serbia. Results show a negative long-run price elasticity equal to -0.76 and positive long-run income elasticity equal to 0.33.
- Price elasticity of cigarettes, estimated based on the individual data from the Household Budget Survey data using Deaton's demand model, amounts to -0.45.
- These results mean that a 1% increase in cigarette price will decrease consumption of cigarettes per capita in the range of 0.46% to 0.76% in the long-run and 0.05% in the short-run. The results of estimating income elasticity in the long-run (0.33) and short-run (-0.01) show that if income per capita increases 1%, cigarette consumption will increase by 0.33% in long-run and decrease 0.01% in short-run.

Recommendations

Based on the research conducted in the study, it is feasible to revise tax policy in order to meet EU standards in the short term (increase to €90 per 1,000 cigarettes from current €62). The analysis of the national public policy documents related to the tobacco control show that they are outdated, and that there is a need to revise relevant national public policies in the field of tobacco control. This study also found a high level of regional trade among countries of tobacco products. It would be useful to encourage initiatives for coordination of excise policies in the region and to establish a multi-national system of tax monitoring. Finally, the research on tobacco taxation in the region is rather limited, and that there is a need for promotion of high-quality research on tobacco taxation among scholars and researchers.

1. Introduction

Serbia is currently a modern market-based economy, nevertheless built on the basis of a former socialist system. During the period of privatization and market liberalization, the inflow of foreign direct investments (including the ones in tobacco industry) has reached over €24 billion. In terms of income, Serbia belongs to upper-middle-income countries. Politically, Serbia is striving toward EU membership: the EU negotiation process officially started in 2015.

The tobacco market and process of tobacco production are highly regulated in Serbia. The value chain in tobacco industry consists of tobacco producers (around 1,000), processors (8 companies), tobacco manufacturers (4 operational factories), ten wholesalers, over 1,400 retailers of tobacco products and around 40 importers/exporters of tobacco, processed tobacco, and/or tobacco products.

1.1. General information

Serbia belongs to the region of South Eastern Europe. The country covers an area of 88,361 km² and borders 8 countries.

Serbia is divided in five statistical regions (NUTS 2), 29 districts, 147 municipalities and 27 cities. Districts are the first level administrative subdivisions of the country and are purely administrative divisions. Municipalities and cities are the basic local government units usually with more than 10,000 inhabitants.

Serbia has a total population of 7,020,858 (in 2017), with population density of 92.8 inhabitants per square kilometer (Statistics Office of Serbia). Serbia has one of the oldest populations in the world, with an average age of 42.9 years, and mortality rate constantly exceeding the birth rate. The average life expectancy in Serbia at birth is 74.8 years (Statistics Office of Serbia).

The economy of Serbia is service based. Nominal GDP in 2016 amounted to €34,616 billion, equaling to €4,904 per capita, while the real GDP growth was 2.8%. Final estimations for 2017 show GDP of €36,795 billion, or €5,226 per capita and real growth of 2.0%.

Serbia is fully committed to its strategic goal of EU accession which is the single most important political process in Serbia. In December 2013, the European Council adopted the negotiating framework for accession negotiations. Accession negotiations were launched in January 2014.

Serbia has signed a range of trade agreements: free trade agreement with the European Union; the Central European Free Trade Agreement (CEFTA) enabling exports without customs and other fees to Albania, Bosnia and Herzegovina, Macedonia, Moldova, Montenegro and Kosovo; the European Free Trade Association (EFTA) agreement with EFTA members (Switzerland, Norway, Iceland); and a free-trade agreement with Russia and Turkey. One of the major strategic goals and priorities of all Serbian governments is

attracting foreign direct investments and there are numerous incentives (administrative, financial and tax) for them.

Table 1 Latest data on general and macroeconomic indicators for Serbia

General info	Data
Region (2018)	SE Europe
Income Category (2018)	upper middle income
Population (2017)	7,020,858
Surface area (sq. km) (2014)	88,361
Capital city (2018)	Belgrade
Macroeconomic indicators	
Gross domestic product, (2017 in € millions)	36,795.4
Gross domestic product, per capita, (2017 in €)	5,226
Gross domestic product, real growth, (2017 in %)	2.0%
Inflation (2017)	3.0%
Unemployment according to LFS (2017 in %)	13.5
Net wages (2017 in €)	395*
Employment level, average (2017 in 000)	1,896

Source for general information: UN World Statistics Pocketbook, for macroeconomic indicators: Ministry of Finance, Republic of Serbia

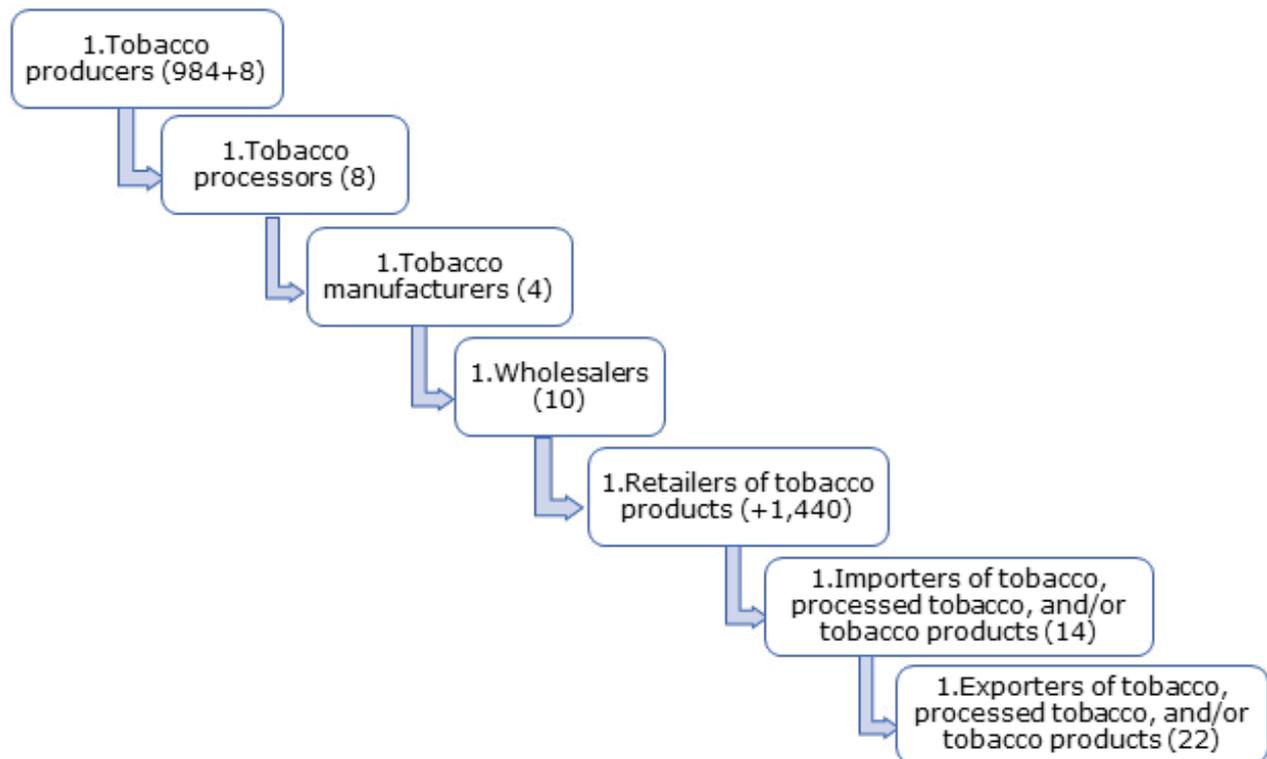
Note: * calculated at the average exchange rate in 2017 (121.34 RSD per €1)

1.2 The tobacco market

The tobacco market and process of tobacco production are highly regulated in Serbia. The structure and all other elements in the process of tobacco production, manufacturing, export/import are determined according to the specific regulation (Law on Tobacco). Beside the state as the main regulator and the buyers, there are several subjects that appear in the process of tobacco production in Serbia as regulated by the Law on Tobacco (Figure 1):

1. Tobacco producers
2. Tobacco processors
3. Tobacco manufacturers
4. Wholesalers
5. Retailers of tobacco products
6. Importers of tobacco, processed tobacco, and/or tobacco products
7. Exporters of tobacco, processed tobacco, and/or tobacco products

Figure 1 Subjects in the process of tobacco production in Serbia



Tobacco producers in Serbia are farms that produce different types of tobacco (Virginia, Burley, Oriental, and Semi-Oriental). In order to produce tobacco, farms have to comply with certain standards. They have to register and possess/lease/or in cooperation with an individual producer have at least 5 ha of arable land. Furthermore, they must have technical capabilities for agricultural production and other necessary activities. They produce tobacco in cooperation with a tobacco processor and are obliged to sign a preliminary agreement or an agreement with a tobacco processor. Once the process of tobacco production is finished, the producer is obliged to sell tobacco exclusively to a tobacco processor with the appropriate license. In June 2018, there were around 984 tobacco producers registered as natural persons (data for 2017) and 8 registered as legal entities.

1. Čoka
2. Tabex, d.o.o.
3. Copex, d.o.o.
4. JT International, a.d. Senta
5. Trgovine Boso, d.o.o.
6. Duvan, a.d. Ljubovija
7. Monus, d.o.o
8. Intabak, d.o.o.

Tobacco Processors operations include: shredding, fermentation, as well as other activities in the technological process of tobacco processing and packaging. The activities of producing and processing tobacco in Serbia are closely related, having half of the producing companies engaged in tobacco processing as well. Tobacco processors are allowed to trade processed tobacco, but exclusively with registered manufacturers of tobacco products. Processing companies are obliged to register with tobacco processors and to comply with the following standards:

- They must own premises for purchase of tobacco; storage of purchased (produced tobacco if they are also in the registry of tobacco producers) tobacco; arranging; processing and classification of tobacco;
- They must own equipment for tobacco processing; laboratory (or they need to sign a contract with an authorized domestic/foreign laboratory for the analysis and quality assessment of tobacco);
- They must have a signed agreement or a preliminary agreement with a manufacturer of tobacco products.

Tobacco processors perform quality assessment of tobacco in the technological process. In January 2018, there were 8 registered tobacco processors.

1. *JT International* a.d, Senta
2. *Alliance one Tobacco*, d.o.o.
3. *DIB* a.d
4. *Duvan* a.d.
5. *Duvanska industrija Čoka*,
6. *Bajinovac* a. d.
7. *Yumark*, d.o.o.
8. *Tabex* d.o.o.

Manufacturing of tobacco products may be performed by a company, which is licensed for the activity of manufacturing tobacco products (that is obtained through a public tender), and which is registered in the Register of Manufacturers of Tobacco Products. In order to manufacture tobacco products, companies have to comply with some strict standards.

- They must possess their own equipment for production of tobacco products in all phases.
- Their installed capacities for manufacturing cigarettes and other tobacco products must be at least 2,500,000,000 cigarettes per year.
- They must own a laboratory for analysis and quality assessment of tobacco products (or to sign a contract with an authorized laboratory).
- They must also possess adequate premises for production and storage of tobacco products and have an adequate and skilled workforce in production and quality control.

The manufacturer of tobacco products is required to trade its tobacco products exclusively through wholesalers entered into the Register of Wholesalers of Tobacco Products (unless

they are also entered into the Register of Wholesalers). As of July 2014, there are 4 registered companies for tobacco manufacturing in Serbia:

1. *Philip Morris Operations* a.d. Niš
2. *British American Tobacco Vranje* a.d. Vranje
3. *Monus*, d.o.o.
4. *JT International* a.d. Senta

Wholesalers are the only legal entities allowed to trade tobacco products in Serbia. They have to be in the corresponding register and fulfill certain requirements.

- To use adequate premises, allowing regular storage of at least 30 tons of cigarettes and other tobacco products;
- To have the means of transportation (must be clearly labeled for transportation of tobacco); and
- To sign a preliminary agreement or agreement for the supply of tobacco products with a manufacturer and/or importer of tobacco products.

Since they trade in tobacco products, they are obliged to carry out an inventory of cigarettes on stock upon each alteration of cigarette excise tax rates. As of August 2017, there are 10 registered wholesalers:

1. *Veletabak* d.o.o
2. *Mercata* d.o.o.
3. *British American Tobacco South-East Europe*, d.o.o.
4. *Dufry* d.o.o.
5. *Nelt co.* d.o.o.
6. *JT International* a.d. Senta
7. *Julieta*, d.o.o.
8. *Dinamic Tobacco* d.o.o.
9. *Centrosinergija* d.o.o.
10. *British American Tobacco* a.d. Vranje

There are more than 1,440 retailers of tobacco products in Serbia. They must be registered into the corresponding register and have a signed preliminary agreement or agreement with a wholesaler of tobacco products. All retailers are required to display a clearly visible warning sign: "*Selling cigarettes and other tobacco products to minors is prohibited.*"

Import and export of tobacco, processed tobacco, and/or tobacco products is highly regulated also and may be performed by a business entity which fulfills certain requirements. Both importers and exporters have to be registered into the corresponding register. In addition, importers must have a signed agreement with a foreign manufacturer, or with an authorized distributor of a foreign manufacturer for purchase of tobacco, processed tobacco, and/or tobacco products. They also have to be authorized by the foreign manufacturer and/or by the authorized distributor of the foreign manufacturer for distribution of these cigarettes on the Serbian market.

List of tobacco, processed tobacco, and/or tobacco products importers (April 2018):

1. *Philip Morris Operations* a.d. Niš
2. *British American Tobacco* a.d. Vranje
3. *Elmag*
4. *British American Tobacco South-East Europe* d.o.o
5. *Imperial Tobacco SCG* d.o.o.
6. *TDR*
7. *Monus* d.o.o.
8. *Julieta* d.o.o.
9. *Veletabak*
10. *JT International* a.d. Senta
11. *Dufry* d.o.o.
12. *Dinamic Tobacco* d.o.o.
13. *Mercata* d.o.o.
14. *Tobacco Team* d.o.o.

The list of tobacco, processed tobacco, and/or tobacco products exporters (June 2018)

1. *Philip Morris Operations* a.d. Niš
2. *British American Tobacco* a.d. Vranje
3. *British American Tobacco South-East Europe* d.o.o
4. *Monus* d.o.o
5. *JT International* a.d. Senta
6. *Copex* d.o.o.
7. *Duvanska industrija Čoka*, a.d.
8. *Tabex* d.o.o
9. *Intelli Consulting Corp* d.o.o.
10. *Trgovine Boso* d.o.o,
11. *Kompanija Stokić* o.d.
12. *Dunav eksport-import* d.o.o.
13. *Julieta* d.o.o.
14. *Reserve* d.o.o. Pančevo
15. *Duvan* a.d.
16. *Allpinnereid Unternehmensgruppe* d.o.o.
17. *BRD-PRO* d.o.o.
18. *Farmacop* d.o.o.
19. *Geadukt S* d.o.o.
20. *Tobacco Team* d.o.o.
21. *Uno Bgd 011* d.o.o.
22. *Intabak* d.o.o.

2. Supply of tobacco products

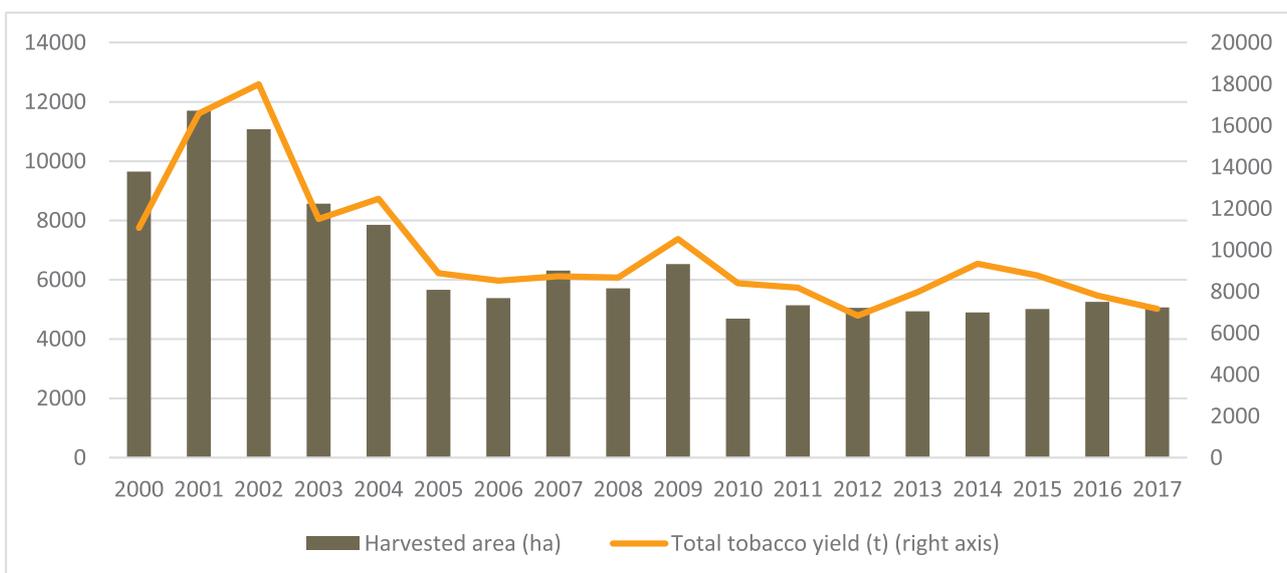
In this section, we have analyzed basic elements that determine the supply-side for tobacco products, including supply-side stakeholders (farmers and manufacturers), and addressed issues such as tobacco leaf production, trends in the manufacturing industry of tobacco products, exports and imports, and employment in the tobacco farming and manufacturing of tobacco products. Supply in the tobacco industry usually has a strong political influence, and supply-side stakeholders tend to form lobbies and influence policy-makers in introducing policy control measures that could threaten their interests.

2.1 Tobacco farming

In the structure of agricultural production in Serbia, tobacco has a marginal share. The level of tobacco production in Serbia has been falling since 2000. The area under tobacco and tobacco leaf cultivation fell from 11,706 ha in 2001 (when it reached its peak) to 5,069 ha in 2017 (lowest level was 4,691 ha in 2010).

The trend of constant and large drops in the tobacco acreage occurred in the period 2001 to 2006, where land under tobacco crops had decreased by half its size. Since 2006, tobacco growing in Serbia has remained at the stable level of slightly more than 5,300 ha per year on average. Decreased size of the land used for tobacco production lead to the decrease in the yields from tobacco production. Highest yields were recorded in 2002 (17,993 t), while the average for 2006-2017 equals to 8,417 tones (Figure 2).

Figure 2 Tobacco farming – harvested area and total tobacco yield

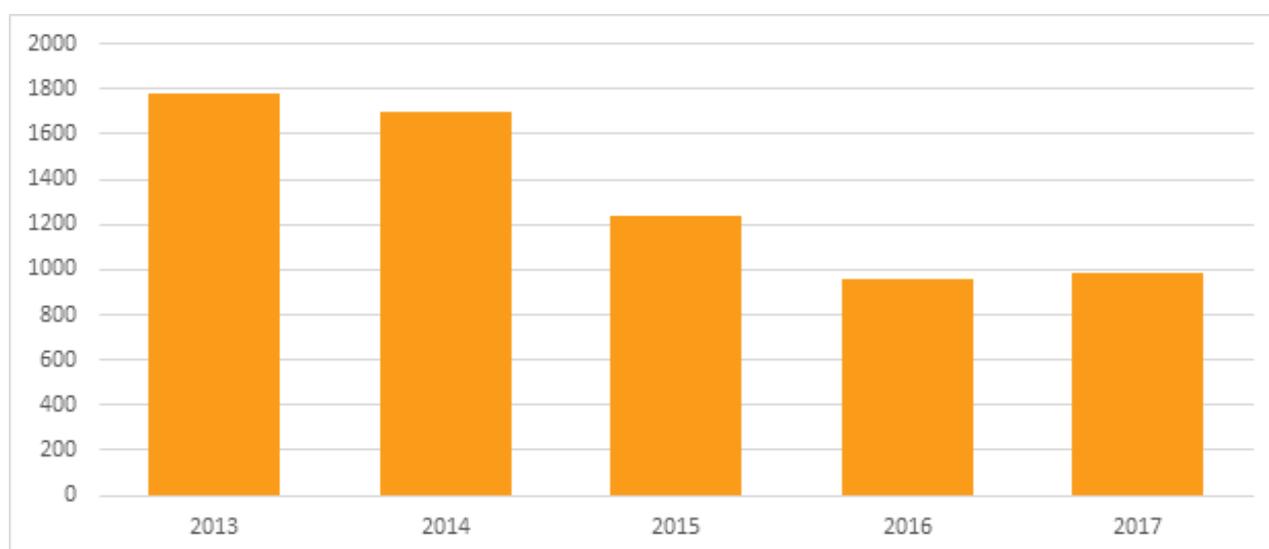


Source: Statistical office, Republic of Serbia

There were 984 tobacco leaf producers in 2017 in Serbia. The majority of tobacco leaf producers are natural persons, farms and several legal entities registered for tobacco leaf production. Tobacco producers can sell their products only to a licensed tobacco processor

(according to the Law on Tobacco). From 2013 to 2017,¹ there was an evident downward trend in the number of tobacco farmers in Serbia. During this period, the number of tobacco farmers dropped from 1,782 to 984 (Figure 3). Research shows that these figures are even more drastic, since there were 3,922 tobacco farms in 2006, but the average size of the farm grew from 1.6 ha to 3.56 ha (from 2006 to 2012) [3]. According to the same author, decline in tobacco growing in Serbia resulted from the change of agricultural policy measures, mainly abolition of subsidies for tobacco producers. The growth of the average size of tobacco farm significantly reduced the number of small-scale tobacco farms, whose livelihoods depend on tobacco growing.

Figure 3 Tobacco Leaf Producers



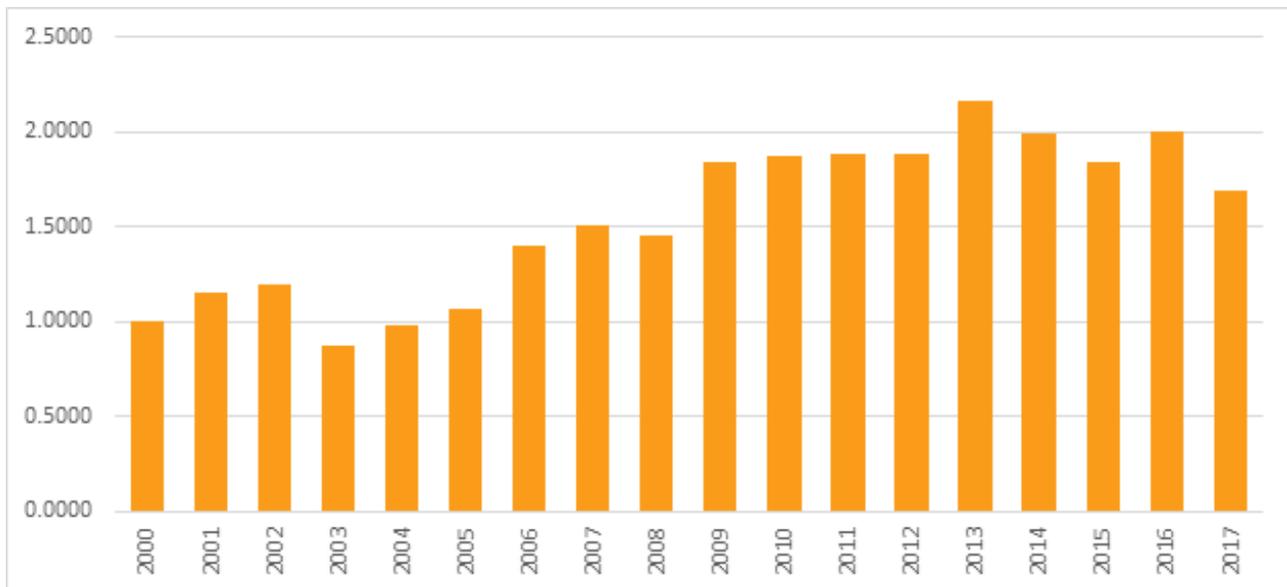
Source: Serbian Tobacco Administration

Special subsidies for tobacco leaf producers were abolished in 2009, and since then, tobacco farmers can only apply for standard subsidy for agricultural production. These include basic incentives for plant production at 4,000 RSD (€34) per hectare, half for plant production per hectare and half for fertilizers [16]. There are also subsidies for the insurance of planting, the incentive for the purchase of machinery, irrigation, favorable loans, etc.

Prices of tobacco in Serbia are rather high compared to the region. The price for high quality tobacco leaf is around €1/kg, while the average price of tobacco leaf in Serbia was €1.54/kg during 2000-2017 [19]. The price of tobacco leaf increased more than 100 percent, with the highest price in 2013 (€2.16/kg). The prices of tobacco leaf were quite unstable in the observed period, with variations from €0.88/kg to €2.16/kg imposing concerns related to the unstable market (Figure 4).

¹Serbian Tobacco Administration provided us with the data only for the period 2013-2017. Due to technical reasons, it could not provide the data for prior periods.

Figure 4 Average price of tobacco leaf per kg in €



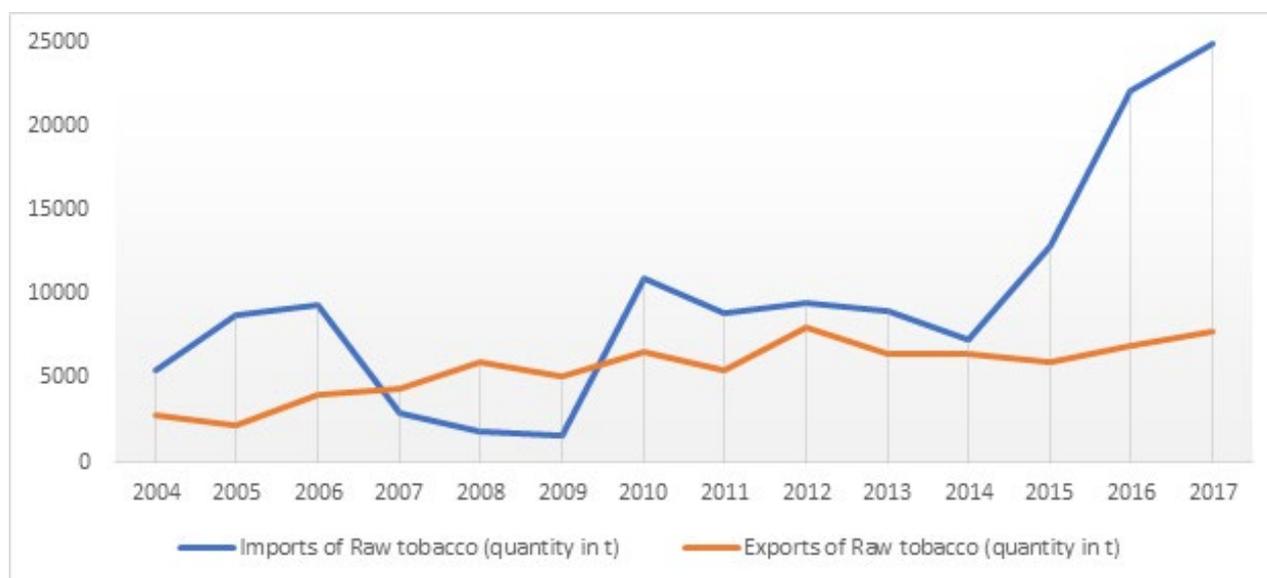
Source: Statistical office, Republic of Serbia

Note: Initial prices are in RSD. Values in € are calculated at annual exchange rate for €/RSD

On the other hand, since 2010 tobacco manufacturers have been exempted from paying customs duties for processed imported tobacco, for the quantity equal to that which they purchased from local producers in Serbia. According to the “decision on the conditions and manner of reducing customs duties on certain goods, i.e. exemption of certain goods from customs duties”, processed tobacco that is not produced in the Republic of Serbia in the required quantity and suitable quality and used by the beneficiary in its own production, is exempt from customs duties to the value corresponding to the total value of the tobacco produced or purchased in Serbia. Abolition of subsidies and a decline in tobacco farming, along with the exemption of the imported processed tobacco from custom duties, have led to a sharp rise in tobacco leaf imports into Serbia for use in cigarette manufacturing. The increase in imports of raw tobacco (Figure 5) corresponds to the removal of custom duties². In 2017, tobacco leaf was mainly imported from Brazil, Italy, Mozambique, China and Belgium.

² Only registered manufacturers are allowed to import tobacco leaf that is duty-free.

Figure 5 Export and Imports of Raw tobacco (quantity in t)



Source: Statistical Office, Republic of Serbia

2.2 Manufacturing of tobacco products

Trends in the tobacco products manufacturing industry in Serbia were affected by different factors. Disintegration of the country, imposition of the UN trade sanctions, economic transition, market liberalization and large-scale privatizations in the sector are some of the factors that shaped today's industry. Similar to trends in tobacco farming, the manufacturing industry in Serbia has gone under even more significant changes over the past few decades.

During the socialism era, there were several manufacturing factories in Serbia³: the largest in Niš, followed by Vranje, Zrenjanin, Novi Sad, Bujanovac and Senta. All companies were state-owned. Following the transition, companies were either privatized or closed. Two major actors in the market, Duvanska industrija Niš (DIN) and Duvanska industrija Vranje (DIV), were privatized in 2003 by Phillip Morris and BAT, respectively. Duvanska industrija Senta (DIS) was a tobacco processor of locally grown leaf, highly dependent on weather conditions and yields on tobacco leaf. It was acquired by JTI in 2006. The factory in Zrenjanin was closed, and consequently, the government had several unsuccessful attempts to sell the factory in Bujanovac in 2008 and 2009. Another important actor in the market was the Croatian cigarette producer, Tvornica Duhana Rovinj (TDR). Although they had no production in Serbia, they held significant market share, selling their own cigarette brands. In 2001, they unsuccessfully attempted to invest in a new facility in Novi Sad. In 2008, they purchased a stake in the Serbian distributor, Veletabak. Finally, BAT acquired TDR (in Croatia) in 2015, and thus increased their share in the Serbian

³ Here are listed only factories that operated in Serbia, with an exception of the factory in Podgorica (now Montenegro), since the two republics, Serbia and Montenegro, constituted a state until 2006.

market. A local manufacturer, Monus, entered the market as a green-field investment in 2005 (Table 2).

Imperial Tobacco entered the market in 2003. They do not manufacture tobacco products locally but are the largest importer of tobacco products for Serbia. Since their establishment, the company expanded their portfolio to over 35 products and 6 brands. In addition to cigarettes, they also import other products, such as cigars and cigarillos, and the most popular brand of “roll-your-own” tobacco in Serbia.

Table 2 Acquisitions and Greenfields in tobacco manufacturing industry in Serbia

Acquisitions		
<i>Target Company</i>	<i>Acquirer</i>	<i>Year of privatization</i>
Duvanska industrija Niš	Philip Morris	2003
Duvanska industrija Vranje	BAT	2003
Duvanska industrija Senta	JTI	2006
Greenfield		
Monus		2005

Multinational tobacco companies dominate the Serbian market with only one local actor. Table 3 presents market shares of the companies operating in Serbia. PMI (formerly DIN) has lost a great amount of market share in favor of JTI, BAT and local importers that increased market shares over time. BAT’s market share was basically declining over time (from 21 in 2002 to 15.5 in 2015), until it acquired TDR, when its market share increased to 26%. JTI, on the other hand, has recorded the highest increase in market share. This increase occurred one year after JTI acquired the factory in Senta. During the observed period, Imperial Tobacco, acting only as an importer, increased its market share from zero to more than 10% of the market. Monus has had a stable market share since 2013.

Table 3 Market share of tobacco manufactures and tobacco importers in Serbia

	PMI	JTI	BAT	Imperial Tobacco	TDR	Monus	Other
2002	62.00	4.40	21.00	0.00	0.00	0.00	12.60
2003	67.00	4.50	21.00	0.00	0.00	0.00	7.50
2004	57.00	5.70	19.10	2.00	5.00	0.00	11.20
2005	56.00	6.00	19.00	2.00	5.00	0.00	12.00
2006	54.01	7.00	19.00	2.00	5.00	0.00	13.00
2007	53.49	9.80	18.60	2.00	9.30	0.00	6.80
2008	51.00	13.00	18.01	2.68	9.41	0.00	5.90
2009	48.50	10.50	18.60	3.00	7.90	9.20	2.30

2010	45.70	11.90	17.70	5.00	8.80	8.50	2.40
2011	43.70	13.20	17.00	6.50	8.10	8.00	3.50
2012	41.70	15.00	16.10	8.00	7.60	7.80	3.80
2013	40.70	16.50	15.20	9.20	8.70	6.50	3.20
2014	38.00	18.00	14.10	10.70	11.00	6.10	2.11
2015	36.50	18.53	15.50	10.50	10.50	6.00	1.49
2016	35.02	20.98	26.00	10.49	0.00	6.00	1.51

Source: National Tobacco Administration estimates and own calculations

According to data from the National Tobacco Administration, the most popular brands during the period 2013-2017 are presented in Table 4. The dominance of the multinational tobacco companies and their brands is strong, with all three current leading brands belonging to multinational companies. They replaced local brands, such as *Classic*, that was the most popular brand for years. *Winston 100's red* was a leading brand in the Serbian tobacco market for the last two years. Changes in the top-selling brands of cigarettes are common, indicating the local market's variability and sensitivity to price or other factors. DRUM Original dominates the roll-your-own tobacco market in Serbia, whereas changes in other popular brands of smoking tobacco are frequent.

Table 4 Three top-selling brands of cigarettes and tobacco in Serbia 2013-2017

Year	Brand of cigarettes	Brand of smoking tobacco
2013	Best Export (red, soft) *	DRUM ORIGINAL
	Classic (gold)*	Bond Street (red cut - S)
	Classic (blue 100's) *	Bond Street (red cut - L)
2014	Winston 100's red (gold)	DRUM ORIGINAL
	Marlboro (gold)	Filter 57 Regular (cut)
	Best Export (red soft) *	Bond Street (red cut - L)
2015	Marlboro (red)	DRUM ORIGINAL
	Lucky Strike (Original Red King Size)	Bond Street (red cut - L)
	Winston 100's red (gold)	Viceroy Red (cut)
2016	Winston 100's red (gold)	DRUM ORIGINAL
	Bond Street (Red Selection 100's)	Bond Street (red cut - L)
	Lucky Strike (Original Red King Size)	Bond Street (blue cut - L)
2017	Winston 100's red (gold)	DRUM ORIGINAL
	Bond Street (Red Selection 100's)	Pall Mall Red (cut - L)
	Lucky Strike (Original Red King Size)	Pall Mall Blue (cut - L)

Source: National Tobacco Administration

Note: (*) Blue color denotes local brand

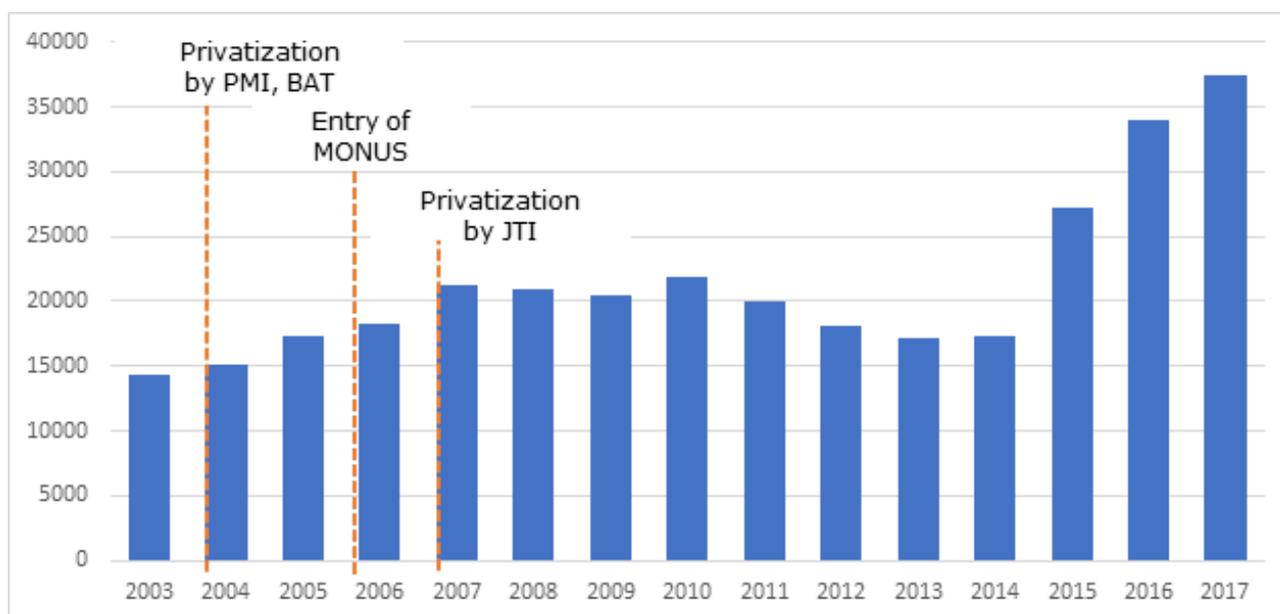
The production of cigarettes in Serbia does not have a unique pattern and has varied to a great extent over the years. Factors such as privatization, entry of new competitors to the market and their business policies of expanding production capacities had significant influence, but the free trade agreement and possibilities for export also contributed significantly (primarily CEFTA and free trade agreement with the EU). A favorable national regime and dedication of the Serbian government to the creation of a stable and predictable business environment for all areas of business, including tobacco industry, were among the reasons tobacco manufactures decided to expand their production in Serbia.

Since 2014, the production of cigarettes in Serbia has recorded a significant growing trend. Aside from the initial investments through privatization, all factories have invested in expanding their production capacities. During 2014, JTI had three major investments: in new machinery for the production of super slim cigarettes, a new line for the processing of tobacco materials, and expansion of storage capacities. In May 2016, BAT launched a new production line and moved part of its production facility from Croatia to Vranje. Thus, BAT increased their capacities in Serbia by 40%, and became the production center for CEFTA member countries. Additionally, in 2017, BAT increased their production capacities by investing €3 million and launching a new line for packaging cigarettes in Vranje. Following its competitors, in 2018, JTI launched a new production line at a plant in Senta aiming to expand its operations worth \$7 million (USD). Currently, JTI is focused on exports to neighboring markets of Montenegro, Bosnia & Herzegovina, Macedonia, Croatia and Albania, as well as the export of tobacco and cigarettes to the EU. In the last two years, it had a significant growth of exports to Japan and Hong Kong.

The initial production growth of cigarettes was recorded during the period 2003 to 2007. The period from 2007 to 2014 was characterized by a volatile production of around 19.5 billion cigarettes. The investments made in the tobacco industry as of 2014 resulted in an increase in production, from 17.3 billion cigarettes in 2014 to 37.5 billion in 2017 (Figure 6). Production more than doubled only in the period 2003 to 2017. Currently, Serbia could be regarded as the hub for cigarette production in the region.

Keeping in mind recent investments of tobacco manufactures, it is reasonable to expect additional increases in production capacities in Serbia and a long-term commitment from the international companies operating in Serbia. However, even though the investments in the production lines were significant, the number of employees in the tobacco manufacturing plants did not increase (more on this in the following chapters).

Figure 6 Total Annual Number of Cigarettes Produced (mil pcs)

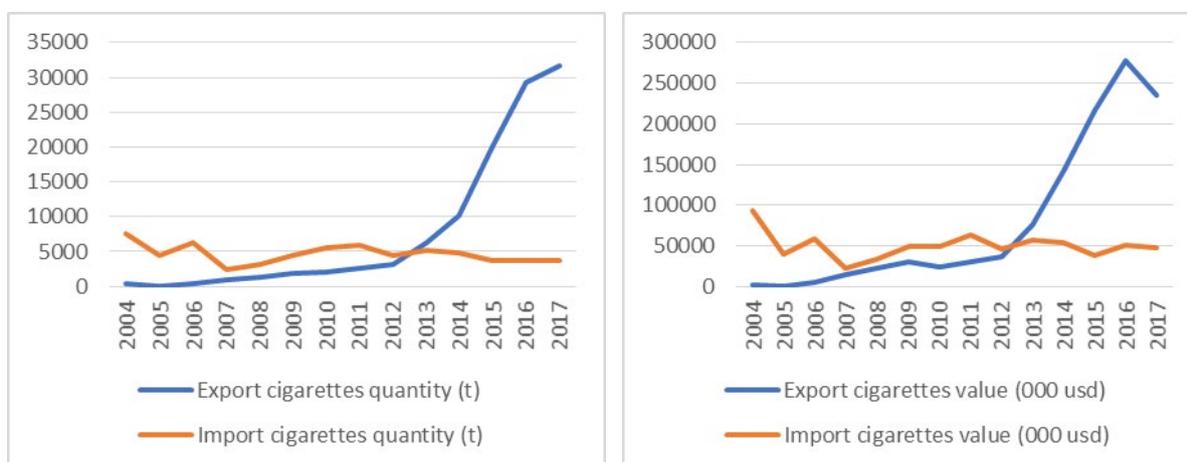


Source: Statistical office, Republic of Serbia

2.3 Foreign trade of tobacco products

Imports and exports of cigarettes recorded variations in trends from 2004 to 2017. Imports halved both in terms of quantities and values. Since BAT was the leading importer of cigarettes in Serbia, and the fact that it made two acquisitions (one local DIV, and TDR in Croatia), it had a strong impact on foreign trade balance. Investments in the tobacco manufacturing and expanding production capacities created a base for the increase of exports. Exports of cigarettes from Serbia increased from 300.7 tons (\$2.5 million US) to 31,671.2 tones (\$ 235.1 million US) (Figure 7).

Figure 7 Export and import of cigarettes in Serbia in 2004-2017 (quantities and values)



Source: Statistical office, Republic of Serbia

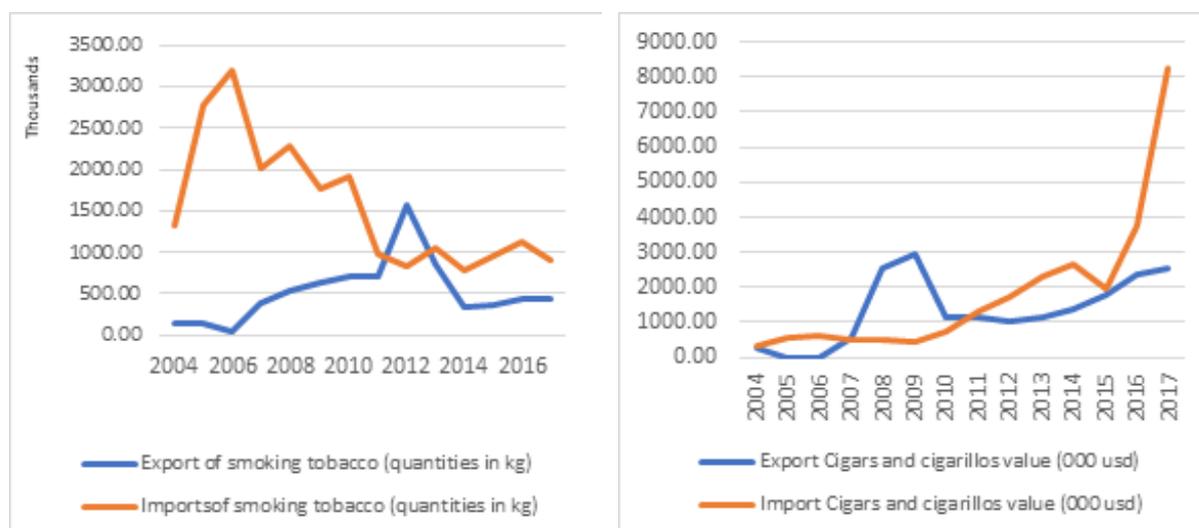
The highest exports from Serbia in 2017 were to CEFTA countries (mostly Bosnia & Herzegovina and Macedonia) Japan, Hong-Kong, Tunisia, Turkey, United Arab Emirates, EU (28), Kyrgyzstan (Table 5).

Table 5 Exports of manufactured tobacco products in Serbia in 2017

	Quantities in t	Value in 000 US\$
CEFTA countries	4,408.1	42,711.0
Japan	6,673.3	41,771.8
Hong-Kong	2,689.1	21,457.2
Tunisia	3,159.0	19,530.0
Turkey	2,656.9	19,519.0
United Arab Emirates	2,242.6	19,370.4
EU (28)	1,842.9	17,198.6
Bosnia & Herzegovina*	2,410.1	17,094.2
Kyrgyzstan	2,014.2	12,960.0
Macedonia*	1,338.1	12,915.0
* CEFTA members		

Since the consumption of tobacco products in Serbia is mainly in the form of cigarettes, the volume of other tobacco products (including smoking tobacco, cigars and cigarillos) is much lower compared to the foreign trade of cigarettes. Imports exceed exports for smoking tobacco, cigars and cigarillos (Figure 8).

Figure 8 Export and import of smoking tobacco; cigars and cigarillos in Serbia in 2004-2017



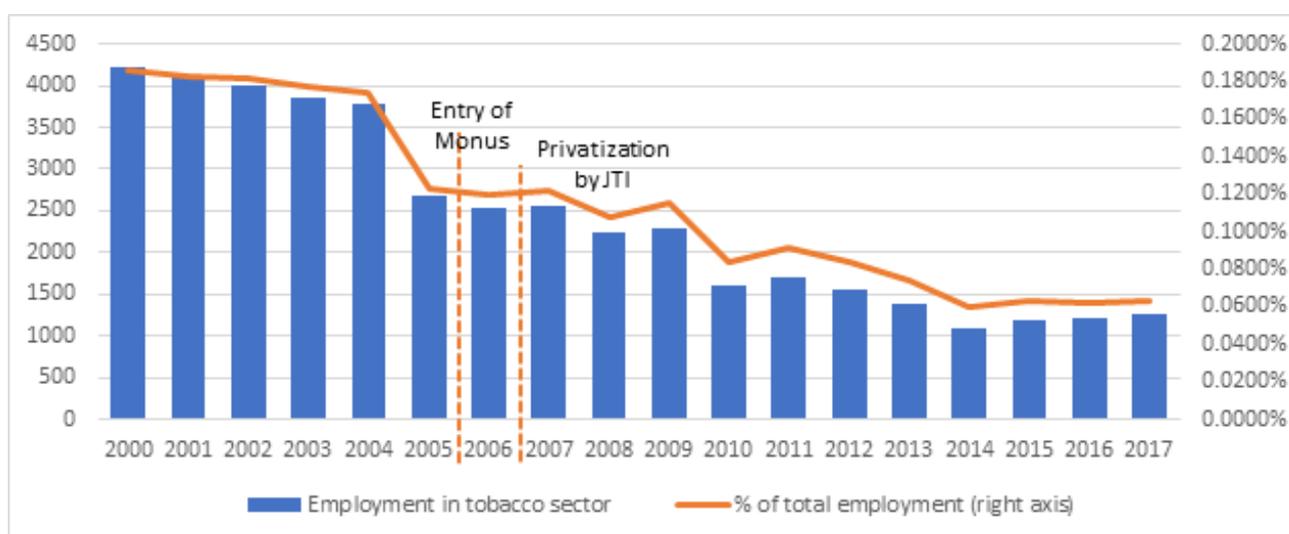
Source: Statistical office, Republic of Serbia (for cigars and cigarillos) and Customs Administration of Serbia (for smoking tobacco)

2.4 Employment in the sector

Since 2000, the number of employees in cigarette manufacturing in Serbia has been severely reduced. Two sharp reductions occurred from 2004 to 2005, one year after the two major privatizations. A new local company that opened in 2005 did not contribute to the significant increase in employment, and from 2005 to 2006, the number of employees further decreased in the tobacco manufacturing sector. A second decrease occurred from 2009 to 2010 as a consequence of massive layoffs in PMI. The company decided to outsource most of the activities that were not directly related to the cigarette manufacturing (i.e. restaurant, maintenance, and packaging).

The constant decrease of employment in the tobacco industry was the result of new investments in production facilities, automatization and capital-intensive nature of production. Historically speaking, the tobacco manufacturing industry was never very labor intensive, since the highest share of total employment in the country was 0.19% in 2000. In 2017, employment in the tobacco manufacturing industry in Serbia accounted only for 0.06% of total employment (Figure 9). However, it is possible that employment is higher, because the industry engages a number of seasonal workers, which are not included in the official statistic.

Figure 9 Employment in tobacco sector in Serbia 2000-2017



Source: Statistical Office, Republic of Serbia

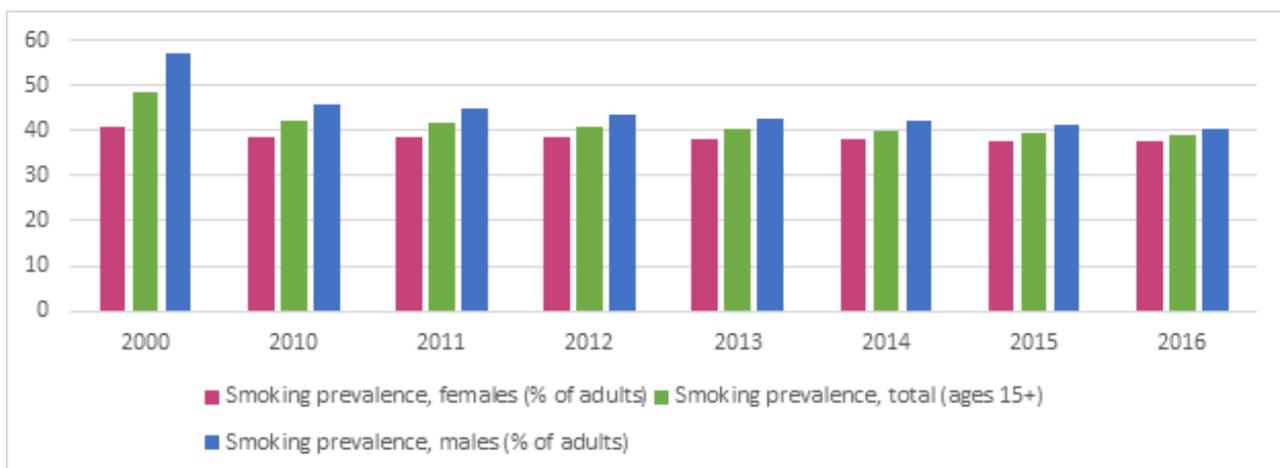
3. Demand for tobacco products

Demand elasticity of tobacco products is more volatile than supply elasticity, since it is determined by the consumers' willingness and ability to consume tobacco products. Economic analysis of demand for tobacco products is determined by the need to better understand certain patterns in order to affect the demand. Tobacco market is characterized by three market failures that result in economic inefficiencies and may therefore justify public intervention: a) "information asymmetry" about the smoking health risks; b) "information asymmetry" about the addictive nature of tobacco consumption, and c) smoking imposes negative externalities to non-smokers [23]. A detailed overview of demand for tobacco products could be found in the research by Chaloupka et al, 2000 [1].

3.1 Smoking prevalence in the country

The use of tobacco products in Serbia is widespread, primarily consisting of consumption of cigarettes. According to the yearly survey conducted by the Institute of Public Health of Serbia (IZJZS), more than one half of total population consumed tobacco products in their lifetime [4]. The 2017 survey estimates that as much as 33%⁴ of the population of Serbia consumed at least one cigarette per day, and there are 2,456,896 active smokers (Tobacco Control Fact Sheet, Serbia). According to the data from the World Bank presented in Figure 10, tobacco use in Serbia has been decreasing since 2000, but it remains high compared to other European Union countries. Prevalence rates for men have continuously declined, while rates for women have not changed as much, resulting in a reduced gap in prevalence rate between men and women.

Figure 10 Smoking prevalence in Serbia



Source: World Bank Database

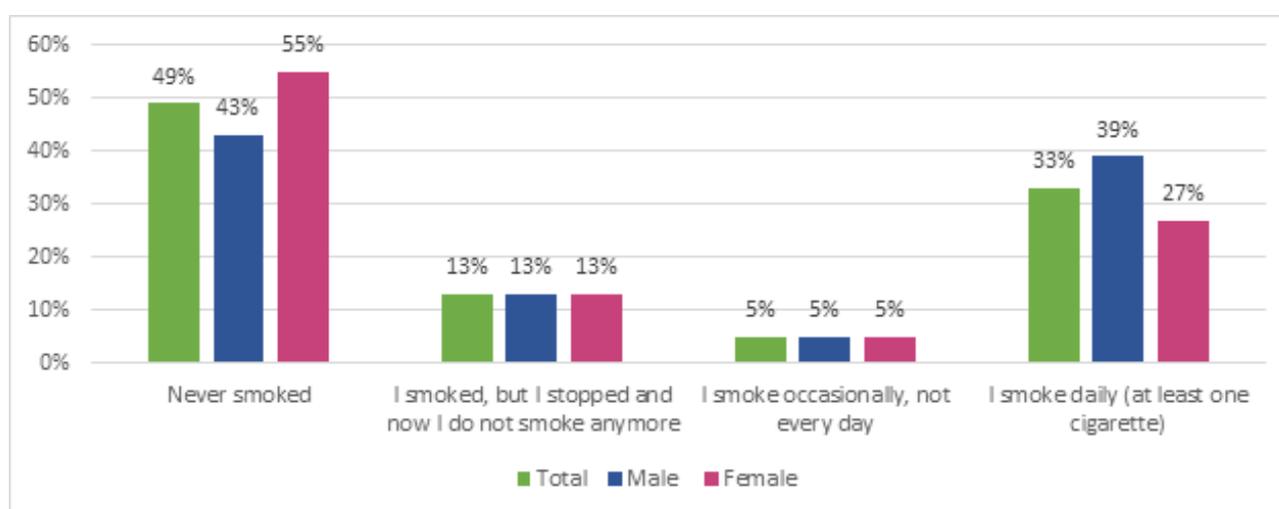
<http://databank.worldbank.org/data/reports.aspx?source=2&series=SH.PRV.SMOK.FE&country=SRB>

⁴ Prevalence rates provided by WB and the local Institute of Public Health may vary. Data from IZJZS are provided based on national survey, while WB and World Health Organization (WHO) prepare estimates in accordance with epidemiological models and statistical standards. These variations are lower than 5%.

Note: Prevalence of smoking is defined as the percentage of men and women ages 15 and above who currently smoke any tobacco product on a daily or non-daily basis. It excludes smokeless tobacco use. The rates are age-standardized.

A survey on the effects and attitudes toward the Law on Protection of the Population from Exposure to Tobacco Smoke (2017) shows that 33% of population consumes at least one cigarette per day, and 5% smoke occasionally. There are differences in smoking behavior between women and men. Most of never-smokers are female, while an equal percentage of men and women opted for cessation (Figure 11).

Figure 11 Smoking habits, total and by gender in 2016



Source: IZJZS-Batut, 2017

According to research from IZJZS-Batut (2017), smoking prevalence in Serbia varies based on different socioeconomic and demographic factors. Smokers account for 41% of the middle-aged population (45-59) and 39% of population aged 30-44. Lowest smoking prevalence of 23% is for the eldest cohort (60+), followed by 28% for the youngest (18-29). The oldest population (60+) has the highest likelihood of cessation, as prevalence rates increase until the age of 60 and then start to decline. Employment appears to have a significant impact on smoking rates, as prevalence among the unemployed and the employed are 44% and 38%, respectively. The lowest prevalence is among students (18%), while housewives and the retired population most frequently quit smoking (18%). Having in mind different socioeconomic and demographic factors, a typical smoker in Serbia is unemployed, aged 45-59.

On average, men are heavier smokers and consume more tobacco products than women. Almost one quarter of the male population smokes more than one pack of cigarettes per day. On the other hand, women are much more moderate smokers, and more than half smoke between 11-20 cigarettes per day. Smoking cessation is not common in Serbia, and only 13% of all smokers have successfully quit. Cessation rate are equal for both men and women at the level of 13%. This is in accordance with the general trend of decreasing total prevalence rate in Serbia. The latest data show that 19% of smokers



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show determination to stop smoking. However, it is very disappointing that 52% of smokers express no interest in quitting.

The Law on Protection of the Population from Exposure to Tobacco Smoke was introduced in 2010 to regulate measures for limiting the use of tobacco products, and thus protect the population from exposure to tobacco smoke and control the smoking ban. However, the intention of the policy was also to influence general population and smokers above all in decreasing the prevalence rate. Data from the IZJZS-Batut (2017) survey show that this control measure did not have any significant impact. Only 3% of the respondents reported quitting, while 18% decreased the number of cigarettes used daily. The law did not have any impact on 74% of respondents in changing their smoking habits and behavior.

Interestingly, survey respondents declare flavor of tobacco (86%) and price (78%) as important factors for choosing a brand of cigarettes. However, when it comes to reality, the most important determining factor in their decision of what brand of cigarettes to buy is price (48%), followed by the flavor of tobacco (25%).

Research conducted by Marinković [10] showed that smoking has been the most frequent risk factor for many diseases and premature mortality in Serbia. Marinković used the Peto-Lopez method and established a clear link between tobacco consumption and population health, estimating that almost a quarter of total mortality is associated with smoking. However, his research showed that smoking-related mortality is lower in females. Another important factor identified in this research showed the upward trend of smoking-related mortality rates in the last two decades. On the other hand, WHO data⁵, based on the current adult smoking rate in Serbia, shows that premature deaths attributable to smoking are projected to be as high as 1.2 million of 2.5 million smokers alive today, and may increase in the absence of stronger tobacco control policies. Consequently, this could impose major health and economic cost and would be a good topic for further research.

3.1.1 Youth Tobacco Use

In the childhood and adolescence stage, young people are more prone to experimenting and using substances, especially tobacco products [13]. Since they usually do not understand or underestimate the nature of addiction, there is a great risk that an adolescent goes straight from the experimental phase to the stage of regular use and addiction. Tobacco use among youth is a significant health, social and socio-medical problem that has a major impact on the number of smokers in total population. Tobacco use among youth is widespread throughout the world and is rapidly increasing in many countries. However, youth tobacco use still greatly varies among nations and societies. It is well known that the vast majority of smokers begin smoking by 18 years of age, and many of them became lifetime tobacco users. The reduction and control of youth tobacco use is a necessary effort to reduce the effects of smoking on society (total number of smokers, diseases, deaths related to smoking and direct public health expenditures).

⁵ <http://rs.one.un.org/content/unct/serbia/en/home/un-agencies/who/who-news/strong-tobacco-control-policies-in-serbia-can-avert-535-000-deat.html>

Since 2002, research has referred to tobacco smoking among youth as to both a “pediatric disease” and a “pediatric epidemic” because of the increasing levels of use and grave public health implications [22].

The latest research, Global Youth Tobacco Survey (GYTS) [14], as part of the Global Tobacco Surveillance System (GTSS) on youth tobacco use in Serbia, was conducted in 2017 by the Institute of Public Health of Serbia. The survey systematically monitors tobacco use among youth and the key indicators of tobacco control. According to data from the 2017 GYTS Serbia, overall prevalence of tobacco smokers was 16.2% (boys 16.5% and girls 15.9%). Tobacco consumption of manufactured cigarettes is 11.0%, with slightly higher values for girls (11.2%) than boys (10.9%), while roll-your-own tobacco is consumed by 15.5% of boys, and 15.2% of girls. The percentage of boys who declare to have used any tobacco product is 41.9% (cigarettes 36.6%), while 41.3% of girls stated they have used any tobacco product (cigarettes 36.8%) [14].

Cessation among youth is more common than in other populations. Young smokers are relatively more price elastic and are more likely to reduce or stop smoking altogether, before they reach the level of addiction of older smokers. More than half of all young smokers tried to stop smoking in the previous year (61% - the rates among boys and girls are similar), with almost half of them reporting they seriously want to stop smoking. However, only 11.3% of smokers among youth received professional help or advice in their attempt to quit smoking. Young people in Serbia tend to underestimate the addictiveness of smoking, since just 30% of them think it is going to be difficult to quit smoking.

The access and availability of tobacco products for youth in Serbia is a major problem. Even though the Law on Tobacco (Article 71, first paragraph) prohibits the sale of tobacco products to minors, 70.5% of respondents reported that they obtained cigarettes from a store, shop or kiosk, while 82.6% of them did not have any problem of buying cigarettes even though they were minors. Selling “loosies” (single cigarettes) is prohibited in Serbia, but 10.7% of young smokers still managed to buy them.

The estimated youth prevalence rates are changing over time. Current youth prevalence is at the same level as it was in 2003. From 2003 to 2008, prevalence fell to 9.3%, and then again rose to the 2003 level in 2013. If we compare 2013 and 2017, prevalence for all tobacco products rose from 15% to 16.2%. On the other hand, the prevalence for cigarette smoking fell from 13% in 2013 to 11% in 2017. The share of those who have ever smoked cigarettes is constantly falling, at a faster pace in the first wave from 2003 to 2008 (from 51.8% in 2003 and 42.7% in 2008) than in the second wave from 2008 to 2013 (from 42.7% in 2008 to 40.4% in 2013). In 2017, youth smoking prevalence was at 36.8%.

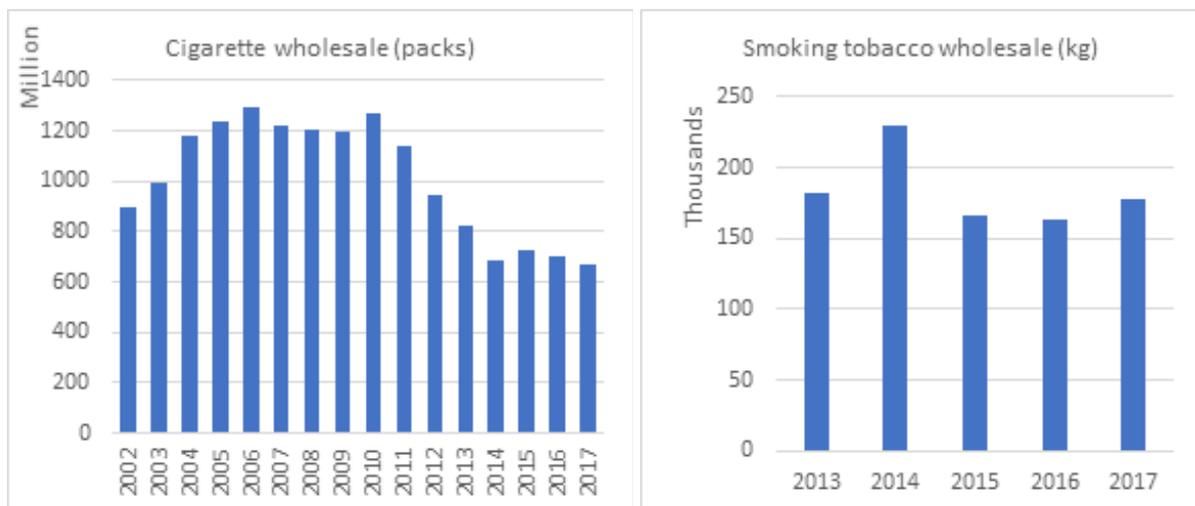
Trends in smoking cessation decreased from 2003 to 2008 but rose again in later periods (80.5% in 2003, 52.5% in 2008, 59.7% in 2013, and 61% in 2017). Access and availability are almost constant over time (share in 2003 and 2013 is almost the same, but slightly higher in 2017, 70.5% of young smokers bought cigarettes in store/shop), meaning that the Law on Tobacco and ban on sale of cigarettes to minors do not have effects in practice.

Different patterns exist among regions in Serbia. Research conducted in 2007 on 1,280 primary and secondary school students aged 15 in Šumadija and West Serbia (City of Kragujevac) showed that 79.4% of respondents did not consume cigarettes, while 20.6% of them did. Prevalence did not differ among boys and girls. Most of them stated that they started consuming cigarettes at the age of 15 [11]. Another study from the same region in the City of Čuprija [5] conducted among secondary school students ages 15-19 years, shows that prevalence of smokers was 55.8% for boys and 57.1% for girls (during the last 12 months at 41.9% and 46.4%, and during the last 30 days at 32.6% and 36.9%). About one-third of boys and girls smoked their first cigarette at the age of 12-14, 33% of them had their first cigarette at the age of 15, and others at between the ages 16 and 18 [5]. Research from the region of South-Eastern Serbia (City of Knjaževac) surveyed 400 children in elementary and secondary schools. The results showed 51.5% of respondents consumed cigarettes; about 45% of respondents think that youth use tobacco (and other substances) in order to draw attention, 4.9% think they will thus solve important problems, and 49.75% think that the reason is curiosity. The average age for smoking cigarettes for the first time was 13.5 [15].

3.2 Tobacco product consumption

Along with prevalence rate, the consumption of cigarettes in Serbia dropped from 2002 to 2017 by 20%,⁶ from 900 million to 671 million packs annually. In the observed period, there was an initial significant increase in the level of sales by 2006, when it peaked at 1,291 million packs. The period from 2006 to 2010 demonstrated a three-year drop in sales and then increased in 2010. After 2010, a constant decrease in the level of sales was evident with the biggest falls in 2012 and 2014. A small increase occurred in 2015, followed by decreases in 2016 and 2017. The latest data from 2017 show that 671 million of packs are sold at the cigarette market (Figure 12, on the left).

Figure 12 Level of cigarette and tobacco wholesale in Serbia, 2002-2017

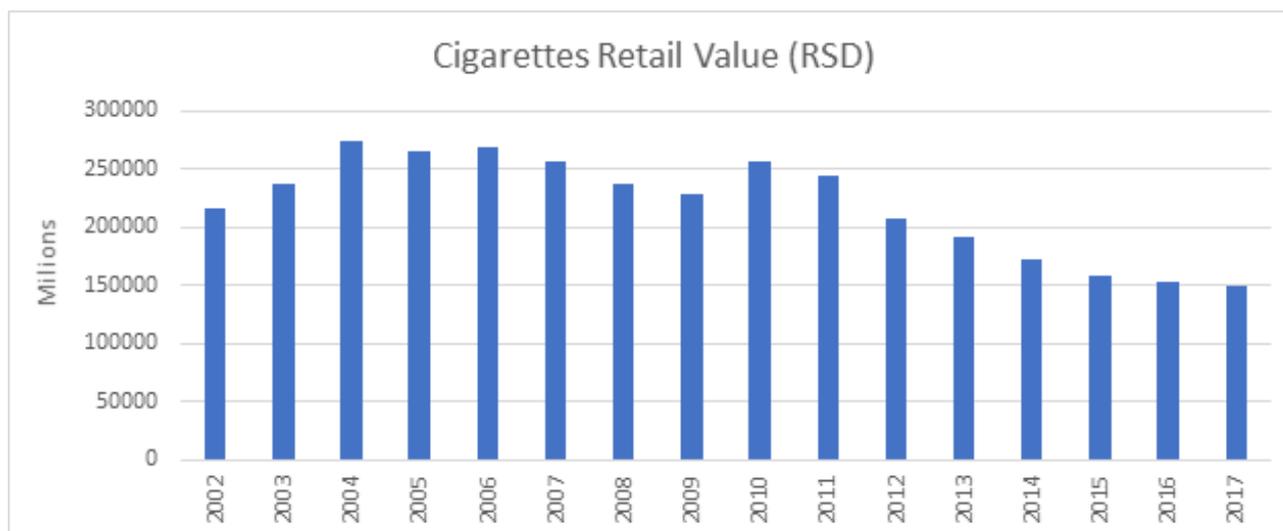


Source: Serbian Tobacco Administration for 2013-2017 and Euromonitor for 2002-2013

⁶ There are no precise data for the period prior to 2013 from Serbian official sources. The only available data on sales and consumption are from 2013.

Trends in roll-your-own sales differ from the ones for cigarettes. There was a major increase in sales in 2014 from 183,000 tons to 229,000 tons (in contrast to the decrease in cigarette sales). A sharp decline in smoking tobacco sales to 166,000 tons occurred in the following year, and was followed by a slight rise to 177,000 tons in 2017 (Figure 12, on the right).

Figure 13 Value of cigarettes retail market in Serbia 2002-2017



Source: Author's calculations based on official reports
 Note: Values in constant prices 2016

The total retail value of the market in RSD (constant prices from 2016) shows similar trends as the market is observed through sales per pack. The market is shrinking too, according to the revenues realized on the market. The market had ups and downs from 2002 to 2017, with the steady decrease starting from 2010. The retail value of cigarettes sale has fallen by more than 40% since 2010 (Figure 13).

4. Tobacco taxation and pricing policies

4.1 Institutional, policy and legal framework

Value chain in the tobacco industry shows that different state institutions appear as actors in the tobacco market. In Serbia, the government issues licenses for manufacturers and decides on the public calls and tenders. The government also has the right to make decisions related to the tobacco sector, such as to increase tobacco taxes, or to remove custom duties on imported raw tobacco. The Ministry of Agriculture, Forestry and Water Management is in charge of defining agricultural policies, including subsidies for tobacco leaf producers (if any such measure exists). Depending on the defined policies, the state can stimulate or destimulate tobacco leaf producers. A similar case in Serbia showed that the abolition of subsidies for tobacco leaf producers lead to a decrease in production. This has had severe consequences in the tobacco value-chain. Tobacco leaf processors also decreased production of processed tobacco and the import of processed tobacco increased to a large extent.

Instruments for tobacco control can be in variety of forms, such as national or international policies, specific legislation (tobacco products regulation, regulation related to the advertising & sponsorship), public health programs, and various campaigns.

4.1.1 Institutional framework for tobacco control

The Ministry of Finance (MoF) is in charge of excise and other tax policies, and thus directly influences the final price of the tobacco products and indirectly the decision to quit smoking. "Department of excise duties in MoF performs normative tasks related to the preparation of laws and regulations governing the system and policy excise duties related to issuing, monitoring and control of excise stamps, providing excise licenses, research and analytical activities, giving opinions in the application of the aforementioned regulations, monitoring of comparative law and other activities from the mentioned areas." [12].

The VAT department performs normative tasks related to the preparation of laws and regulations governing the system and policy of VAT and taxes on premiums in non-life insurance, research, and analytical activities in these areas. It also gives opinions in the implementation of those regulations, including regulations in the field of sales tax, monitoring of comparative law, and other activities in these areas.

Under the Ministry of Finance, the Tobacco Administration is in charge of issuing permits for production, processing, importing and exporting of tobacco and/or processed tobacco; keeping registers and evidence lists of production, processing and distributing tobacco and tobacco products; as well as producing and distributing tobacco products; monitoring markets; processing and distributing tobacco, processing tobacco and tobacco products; and participating in drafting of regulations and other bylaws in the field of tobacco industry⁷. The Tobacco Administration is established under the Law on Tobacco.

⁷ Official website of Serbian Tobacco Administration, <http://www.duvan.gov.rs/o-nama/nadleznost>

“The Budget Department of the Republic of Serbia carries out normative and study-analytical tasks in drafting of the Law on the Budget of the Republic of Serbia, other laws and regulations related to the Budget of the Republic of Serbia; performs study-analytical tasks related to the planning, preparation and adoption of the budget of the Republic of Serbia ...”. [12].

The Customs Administration is an administrative body within the Ministry of Finance that performs state administration and professional tasks related to: customs clearance of goods, customs supervision and other tasks of controlling passengers and goods and services abroad, as well as other activities determined by law (Law on Ministries, Official gazette RS No. 44/2014, 14/2015, 54/2015, 96/2015 – other Laws 62/2017)

The Ministry of Health is in charge of creating and implementing tobacco control policies, among others; the Strategy for the Prevention and Control of Chronic Noncommunicable Diseases; and the Strategy of Public Health Protection and Tobacco Control Strategy. Together with the Institute of Public Health, it implements public national campaigns on the Prevention of Smoking.

4.1.2 Policy framework for tobacco control

Global and EU Conventions and Reports

The *Framework Convention on Tobacco Controls of the World Health Organization* is ratified in Serbia (Official Gazette 16, 2005). A part of the WHO FCTC is related to the measures for the reduction of demand for tobacco products. Article 6 defines prices and tax measures to reduce tobacco demand. Signatories of the Convention recognize that prices and tax measures are effective and significant means of reducing the consumption of tobacco in various layers of the population, especially among the youth. Without prejudice to the sovereign right to determine and adopt national tax policies, the Serbian government has committed to apply tax and price policy on tobacco products in order to contribute to health objectives aimed at reducing tobacco consumption.

The EU Progress Report for Serbia 2018 states in section 28: Consumer and health protection “no progress was made on the preparation of a new strategy on *tobacco control*, the implementation of pictorial warnings or an increase in the price of cigarettes. There has been a small increase in the percentage of smokers among women and teenagers in the reporting period. In May 2017, Serbia adopted a law on the confirmation of the protocol to eliminate illicit trade in tobacco products, in line with the WHO Framework Convention on Tobacco Control. Tobacco control legislation is partly aligned with *acquis*, and the use of tobacco in public places is not aligned with EU recommendations” [18]. Interestingly, since 2013, the European Commission in Progress report for Serbia comments about the creation of the new strategy on *tobacco control and that the control measures for tobacco control are not adequate*.

National strategies and plans

1. *The Plan for the Development of Serbia’s Health Care* introduced in 2010, mentions smoking only as a risk factor.

2. *The strategy for the prevention and control of chronic non-communicable diseases (CNB) 2009 - 2016.* The main goals of the Strategy are to significantly reduce the disease burden and mortality rate in Serbia's population from the CNB, to improve their quality of life and reduce inequalities in health. Smoking has been recognized as a leading risk factor for the development of the CNB in the Republic of Serbia (the leading risk factors for the development of CNB include: smoking, hypertension, hypercholesterolemia, alcohol, obesity, malnutrition and physical inactivity). Specifically, goal 2.5 is related to the Implementation of an adequate tax policy for tobacco products. Within this goal, several activities are planned, such as: raising and maintaining high prices of tobacco products; prohibition of sales of tobacco products without taxes and customs, as well as promotional sales; use of money raised from tobacco taxes for the prevention programs.

3. *The strategy of public health protection in Serbia, introduced in 2009, recognizes smoking only as a risk factor and does not contain goals and activities related to smoking.* However, the new proposal of the Public Health Strategy in the Republic of Serbia, for the time period from 2016 to 2025 contains several provisions related to smoking. Specifically, objective 1, improving health and reducing inequalities in health, has several activities related to the prevention and the abuse of smoking. Activity 4.1.3 is directed to the "prevention and suppression of smoking and exposure to tobacco smoke, harmful use of alcohol and drug abuse of the population of Serbia (so that the proportion of adult population and those under the age of 18 who smoke daily or occasionally, are exposed to tobacco smoke in the workplace and in a public place, and excessively drink alcohol and abuse drugs to decrease by 5% by 2020)". the plan is to create and implement a Tobacco Control Strategy and have an Action Plan for its implementation continuously, and to support established intersectoral bodies significant in tobacco control.

4. *The Strategy of Tobacco Control 2007-2015* contains a number of tobacco-control solutions, including tax policy issues: measures to reduce demand for tobacco products. Tax policy and pricing of tobacco products should contribute to achieving health goals aimed at reducing tobacco use in the following way:

- "Raising and maintaining high prices and tax rates for tobacco products;
- Increasing tax rates of tobacco products above the level of inflation rate;
- The prohibition or restriction of the sale of tobacco products exempt from tax and customs duties;
- Stable allocation of funds for tobacco control programs;
- Harmonization of taxes and prices for all tobacco products in order to avoid the possibility of replacing one product with others."

Table 6 Strategies related to the Tobacco control in Serbia

Document	Stakeholder	Status
The strategy for the prevention and control of chronic non-communicable diseases	Ministry of Health	Expired
The strategy of public health	Ministry of Health	Expired, proposal for new one for the period 2016-2025 is created
The Strategy of Tobacco Control 2007-2015	Ministry of Health	Expired

4.1.3 Relevant legislation for tobacco control

The *Law on Tobacco* governs the requirements and methods of production, processing, and trade of tobacco and processed tobacco, as well as of production, classification, and trade of tobacco products. It also governs the keeping of registers, lists of records, and records; establishes the types of data related to the contents and labeling of the tobacco products; establishes the Tobacco Administration Office; and governs the supervision of the implementation of this Law. The Law defines all elements related to tobacco and establishes Tobacco Administration Office as a governing body within MoF. Requirements for all the subjects in the value chain are defined according to the Law on Tobacco. Managing the technological process and assessment of the quality of tobacco is also defined within this Law. The specifics of the procedure of public tender for entering into the tobacco manufacturing are defined according to this law (preparation of the tender documentation, public call, submission and receipt, opening and evaluation of the bids, establishing the list of the bidders, and forming the final tender list).

Law on Excise Duties regulates excise taxation for the products determined by this Law. Products subject to taxation are:

- Oil derivatives
- Biofuels and bioliquids
- Tobacco products, including tobacco products which are heated but not combusted
- Alcoholic beverages
- Coffee
- Fluids for filling electronic cigarettes
- Electricity for final consumption.

According to the Law on Excise Duties, tobacco products (cigarettes, cigars, cigarillos, smoking tobacco and other tobacco products) are subject to the excise duty determined by the provisions of this law. The law also determines the minimal excise duty semi-annually, until February 15th or July 31st of the current year, as well as the average weighted retail price. The weighted retail price is determined once a year by February 15, and is calculated by correlating total value of all cigarettes that were put into the

market at retail prices and total quantity of cigarettes released into the market in the Republic of Serbia in the previous calendar year.

Table 7 Excise duties on cigarettes

Date	Amount in RSD per pack
January 1 to June 30, 2017	64.00
July 1 to December 31, 2017	65.50
January 1 to March 16, 2018	67.00
March 17 to June 30, 2018	67.67
July 1 to December 31, 2018,	69.19
January 1 to June 30, 2019	70.70
July 1 to December 31, 2019	72.22
January 1 to June 30, 2020	73.73
as of July 1 st , 2020	75.25

Table 8 Excise duties on cigars, cigarillos and smoking tobacco

Date	Amount
cigarettes and cigarillos	22.58 RSD/piece
smoking tobacco and other tobacco products	
by 31 December 2012	35%
January 1 to December 31, 2013	37%
January 1 to December 31, 2014	39%
January 1 to December 31, 2015	41%
as of January 1 st , 2016	43%

In addition to the specific excise shown in the table above, there is ad valorem excise tax at the rate of 33% for all cigarettes.

The basis for calculation of excise duty is the retail price of cigarettes, which is determined by the manufacturer or importer of cigarettes. The amount of excise is harmonized with the annual consumer price index.

Excise duty for cigarettes and cigarillos is 22.58 RSD/piece.

The basis for excise tax calculation for excise duty on smoking tobacco and other tobacco products is the retail price per kilogram. The retail prices of smoking tobacco and other tobacco products are determined by the manufacturers or importers of these tobacco products. Retail prices of tobacco products, producers or importers must report to the Tobacco Administration and publish them in the "Official Gazette of the Republic of Serbia" with the written approval of the Administration. According to the provision of the Law on Excise Duties, sales of tobacco products at retail prices that are different from those specified by the manufacturer or importer are not allowed. The retail prices must

be indicated in the retail store so that they are clearly visible to consumers of tobacco products.

The Law on Protection of Population from Exposure to Tobacco Smoke regulates measures for limiting the use of tobacco products in order to protect the population from exposure to tobacco smoke and control of the smoking ban. The Law introduces the Office for Prevention of Smoking as an organizational unit of the Public Health Institute, established for the territory of the Republic of Serbia. The office implements measures and activities for the preservation and improvement of health, detection and suppression of the risk factors for the emergence of diseases and acquires knowledge and habits of a healthy lifestyle, i.e. for the prevention and suppression of smoking.

The Law on Advertising prohibits advertising of tobacco products. It is forbidden to advertise tobacco and tobacco products, including any logos and other marks of the manufacturers of such products. It is also forbidden to distribute free tobacco products to consumers. It is not allowed to advertise trademarks or other marks of the manufacturer of tobacco and tobacco products in an advertisement not related to the tobacco products including advertisement announcing the sponsored activity. Display of smoking or imitation of smoking, or the use of tobacco products, as well as tobacco smoke, is forbidden in the advertisements.

4.1.4 Tobacco control measures

Although Serbia has made progress in introducing tobacco control measures, it is not of top priority for the country. Even when control measures are applied, they do not translate the results into practice. Even though the Law on Tobacco prohibits the sale of tobacco products to minors, the vast majority of them are still buying these products from a store, shop, or kiosk. The Law on Protection of Population from Exposure to Tobacco Smoke is intended to protect the population from exposure to tobacco smoke and control of the smoking ban, and to reduce the prevalence rate. However, data show that the Law has had a very small impact on the prevalence rate and smoking habits, while non-smokers are still exposed to tobacco smoke to a large extent.

Even though prevalence rate in Serbia is rather high and smoking cessation is not common, almost 90% of active smokers are aware that tobacco smoke is harmful to the non-smokers. The same percentage of them thinks that they should consider where to smoke in order not to endanger the health of non-smokers. Also, 86% of smokers are aware of the health consequences of smoking, such as malignant diseases, heart attack and other heart diseases.

In order to determine the level of tobacco control measures that are in action in Serbia we will use the MPOWER model introduced through WHO Framework Convention on Tobacco Control (WHO FCTC), the world's first public health treaty on tobacco control. Basically, MPOWER is a technical package of six evidence-based tobacco control measures that are proven to reduce tobacco use and save lives:

- Monitor tobacco use and preventing policies
- Protecting people from tobacco smoke
- Offering help to quit tobacco use
- Warning about the dangers of tobacco



COGNOSCERE EST MUTARE

- Enforcing bans on tobacco advertising, promotion and sponsorship
- Raising tobacco taxes.

Monitoring tobacco use and prevention policies is a way of strengthening the evidence base for tobacco control and giving the evidence to policy makers. Tobacco control monitoring includes: monitoring tobacco use indicators; monitoring exposure to tobacco smoke; and monitoring policies designed to reduce tobacco use or exposure to tobacco smoke [25]. National Institute of Public Health of Serbia (IZJZS) conducted a yearly survey on monitoring tobacco use and control policies. IZJZS has also conducted a GYTS survey in 2017. In the WHO report on global tobacco epidemic [24], an indicator related to monitoring has the best score and is qualified as "*Recent, representative and periodic data for both adults and youth*".

Protection from tobacco smoke is mainly implemented through smoke-free laws and serves as a way to reduce exposure to second-hand smoke at home or at work. In Serbia, smoking is prohibited in all closed areas, business and public areas. Smoking is prohibited in areas which are not considered public, but which constitute a functional part of an area designated for the provision of health care, education, public child care, social care, including all garden areas and open areas used for theatrical, cinema and other types of events. Smoking is also prohibited on public transportation including buses, trams, trolleybuses, minibuses, taxis, funicular cabins, airplanes, trains, boats, catamarans, ferryboats, rafts and others. However, smoking is not completely prohibited in catering facilities, such as cafes and restaurants providing food and drink and hotels. Having in mind the limitations on smoking bans, the 2017 WHO report on the global tobacco epidemic rated the smoke-free environment in Serbia with a medium score as "*Three to five public places completely smoke-free*". According to the Survey of the Institute of Public Health of Serbia (IZJZS) for 2017 [14], about three quarters of adult citizens of Serbia, smokers and non-smokers are exposed to tobacco smoke at home (either theirs or their friend's) and more than one third of the population (34%) stated that they are exposed to tobacco smoke at work despite the ban on smoking in the workplace.

Knowing that tobacco is highly addictive, designing and implementing effective programs and offering help to quit tobacco use can be effective tools to decrease tobacco prevalence. Investing in these programs long-term can reduce the cost of health care system related to tobacco use. Currently, there is neither a free telephone service that can provide help to quit smoking nor a live call available to discuss cessation. There are certain medications that are legally sold on market that can be used to reduce or quit smoking. However, their costs are not covered by national health insurance plans. On the other hand, certain healthcare institutions have cessation programs and can provide support to smokers. These programs are included in the national health insurance plan. Having in mind the level of current support for cessation programs, the 2017 WHO report on global tobacco epidemic rated this indicator as above average with "*Nicotine replacement therapy and/or some cessation services (at least one of which is cost-covered)*".

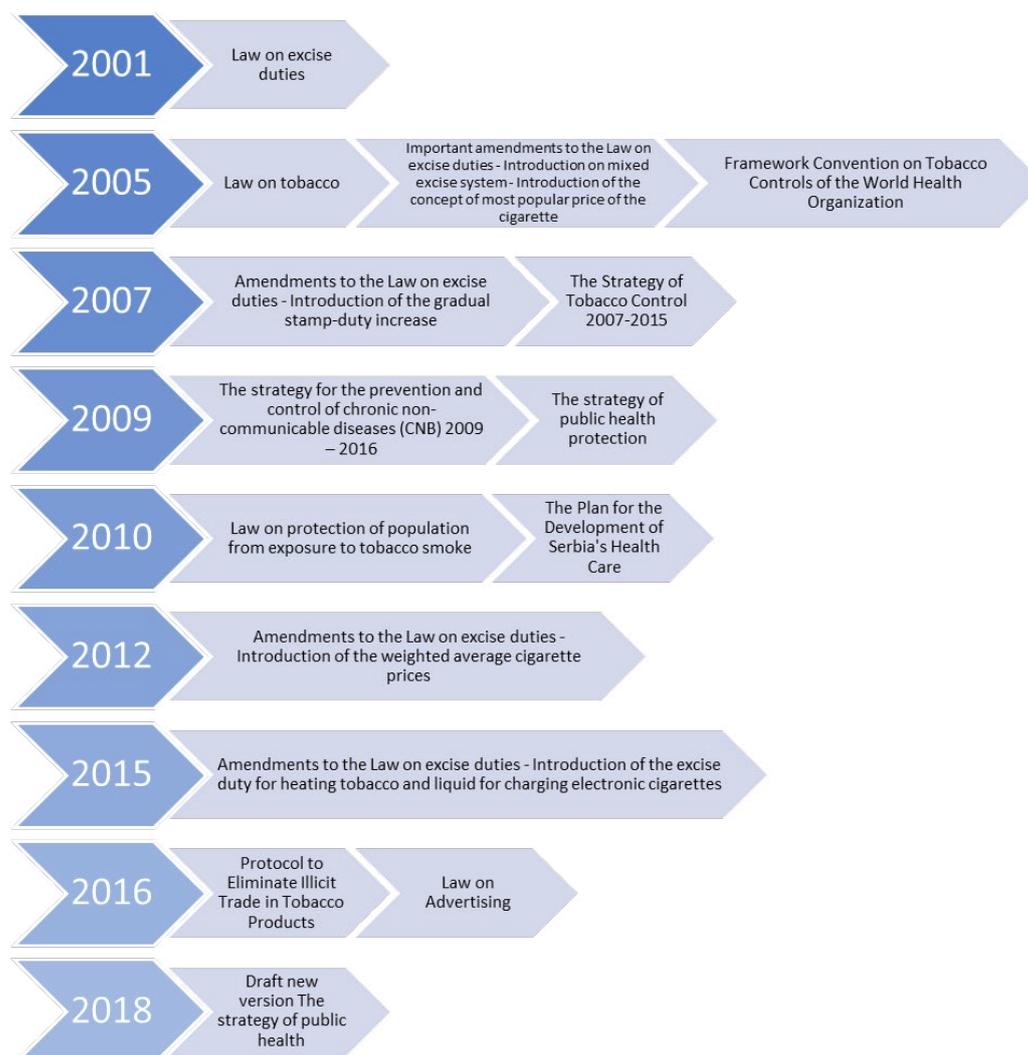
Warnings about the dangers of tobacco consumption raise awareness on the health risks for smokers and non-smokers and increase the likelihood of quitting or reduction of tobacco use. The Law on Tobacco imposes placing warnings on the tobacco products. The mandatory warning is "Smoking kills. Tobacco smoke is harmful to persons around you," and must be printed on the front of each pack and package of tobacco products and cover at least 30% of the front surface of the pack/package. In addition to this there are 11 different special warnings that also must be printed on the tobacco products. There

is no obligation to include photographs or graphic imprints. A 2017 WHO report on the global tobacco epidemic characterized this measure as *"Medium size warnings missing some appropriate characteristics OR large warnings missing many characteristics"*. The Institute of Public Health of Serbia (IZJZS) and Office for the Prevention of Smoking regularly create publications and local anti-smoking campaigns. However, there was no national anti-smoking campaign.

Bans on tobacco advertising, promotion and sponsorship can reduce the level of tobacco epidemics. In Serbia, the Law on Advertising prohibits the advertising of tobacco products or distributing free tobacco products to consumers. Display of smoking or imitation of smoking, or the use of tobacco products as well as tobacco smoke, is forbidden in the advertisement. Having in mind that the Law on Advertising does not cover all forms of direct and indirect advertising, WHO report on the global tobacco epidemic, 2017 rated this measure as *"Ban on national TV, radio and print media as well as on some but not all other forms of direct and/or indirect advertising"*.

Figure 14 presents all public policies, regulation and bans related to the tobacco control in Serbia.

Figure 14 Timeline of tobacco related control documents



4.2 Tobacco tax structure

Serbia has implemented a mixed excise tax system with an ad-valorem excise tax (based on retail prices) and a specific excise tax. The basis for the ad-valorem tax for each brand sold is a retail price defined by companies and published in the Official Gazette after the approval from the government.

Following the structural changes in 2000, the new Law on Excise Duties was adopted in Serbia in 2001. It implemented several reforms, made significant changes in excise policies, and introduced administrative improvements compared to the previous law. Also, a full control over the procedure for issuing control excise stamps was established. The Law on excise duties has changed numerous times as a consequence of the need to increase tax revenues, but also as the need to adjust to long-term excise policies related to specific products (such as long-term excise tax policy on tobacco products, that changed in 2003).

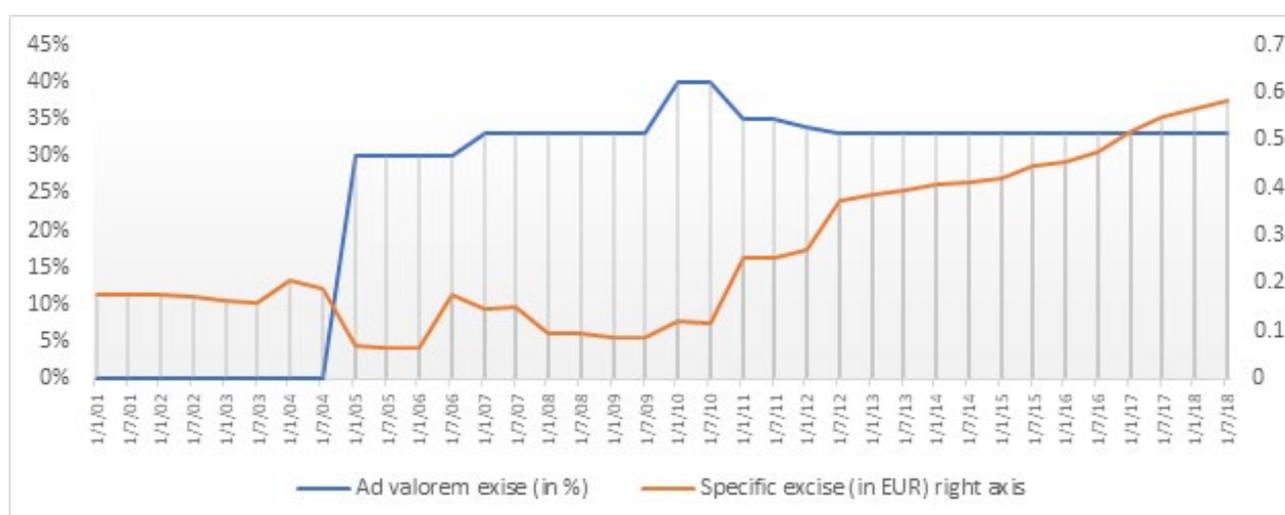
Before the entry of the first multinational company to the Serbian market, only domestic state-owned factories were involved in the production of cigarettes. They produced two types of cigarette brands: domestic brands (developed in-house) and licensed brands (produced in Serbia under the license of foreign company). In addition to domestic cigarettes, other brands that were not produced in Serbia under the license were imported. The structure of the market imposed a tobacco tax system. The excise duty was paid based on the classification of cigarettes in quality groups. Excise duty for cigars and cigarillos was charged as specific per piece, while the duty for different types of tobacco (cut, chewing and for pipe) was charged as specific at different rate per kilo. During the amendments in 2004, excise duty on cigars and cigarillos was changed and charged as ad valorem at the rate of 30% of retail price.

A mixed system of tobacco taxation was introduced in 2005, with both specific and ad valorem taxes on cigarettes. The amendment to the Law from 2005, also introduced the concept of most popular price of the cigarette, as the retail price that has the highest turnover in the Republic of Serbia in the past half-year. Following the introduction of amendments, the specific excise had two levels and was charged differently on imported cigarettes and the ones produced in the country. The system was created to protect domestically made cigarettes. Gradual increases in specific excise for domestically made cigarettes was planned, and they were supposed to be equal as of 2010. Ad valorem was introduced at the level of 30% from January 1st, 2005 to December 31st, 2006. A gradual increase was planned as follows: 40% from January 1st, 2007 to December 31st, 2009, and 50% from January 1st, 2010. Excise duty for cigars, cigarillos and other tobacco product also changed and was unified for these types of tobacco products. A multi-level system was introduced with gradual increase in the tax rate. Until the end of 2006, it was supposed to be at the level of 30%, and gradually increase to the level of 50% as of 2010.

During 2007, additional amendments to the Law on excise were introduced. The so called "excise calendar" as a planned level of gradual increases of excise duty was introduced. For roll-your-own tobacco only ad-valorem was applied. Excise tax for domestic and imported cigarettes was at a unique rate from 2008, with gradual increase planned

once a year until 2012. The increase of ad valorem excise taxed planned in 2005 was delayed and the amount was reduced, with the anticipation of reaching 43% as of 2012. Amendments that followed further decreased the planned amounts for ad valorem excise, as it is now set to 33%. In contrast to this, the amount of specific excise tax rate had constant growth (Figure 15). In 2015, the Law on Excise introduced excise duty for heating tobacco and liquid for charging electronic cigarettes. Excise duty for heated tobacco (heat-not-burn) is paid per kilogram of tobacco mixture in the amount of 40% of the minimum excise on 1,000 pieces of cigarettes based on average weighted retail price of cigarettes. Excise duty on liquid for-charging electronic cigarettes is 4.00 Serbian dinars per milliliter. Amendments in 2018 canceled ad valorem excise duty for cigars and cigarillos and levied specific excise duty at the level of RSD 23.26 per piece.

Figure 15 Specific and ad valorem excise in Serbia 2001-2018



Source: Serbian Excise Law

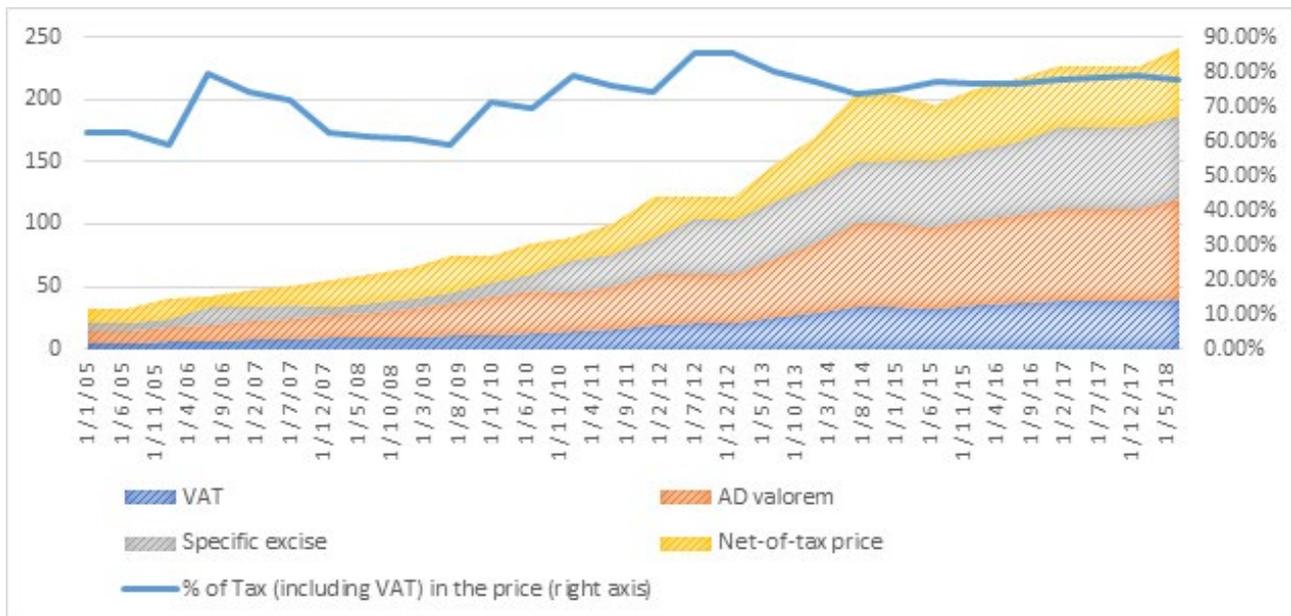
Note: Specific excise (in €) calculated with 6-month average exchange rate €/RSD; data from the National Bank of Serbia. Specific excise is paid per pack of 20 cigarettes. If the package is more than 20 cigarettes, excise duty is paid in proportion to the package.

Figure 16 shows a sharp increase in the excise stamp duties on cigarette in Serbia.

Serbia is fully committed to its strategic goal of EU accession, and as a country candidate is subject to aligning domestic regulation with the EU's tobacco tax directive (Council Directive 2011/64/EU), which sets standards for cigarette and other tobacco product excise taxes. Tobacco tax legislation is partly aligned with the *acquis*. The Law on Excise contains both a specific and ad valorem component of the tax on cigarettes, which are defined in compliance with the *acquis*. A specific component of the excise stamp duty currently ranges from 20.92% to 39.11% in Serbia, which is in line with the EU demand (between 7.5% and 76.5% of the total tax burden (TTB) - expressed as a fixed amount per 1,000 cigarettes). Legal alignment remains to be completed with regards to the use of EU pictorial warnings. Advertising of tobacco products is prohibited in general with a few minor exceptions (i.e. trade publications). Legislation is also aligned with the recommendation on smoke-free environments.

However, the definition of tobacco products and the level of minimum taxation of cigarettes need to be further aligned with the *acquis*. Serbia does not meet standards regarding the demands that the overall excise rate must be at least €90 per 1,000 cigarettes (it is much lower in Serbia) and at least 60% of the weighted average retail selling price. In 2016, Serbia adopted amendments to Law on Excise Duty with a plan to gradually increase the excise rates on tobacco and approximately to the level of minimum taxes on cigarettes in the EU.

Figure 16 Cigarette Taxes per Pack in Serbia 2005-2018 (amounts in RSD)



Source: Serbian Excise Law and Official Gazette for retail price of tobacco products.

Notes: Ad valorem and value added tax calculated based on price of most popular brand through the end 2011, and on weighted average cigarette prices starting from 2012.

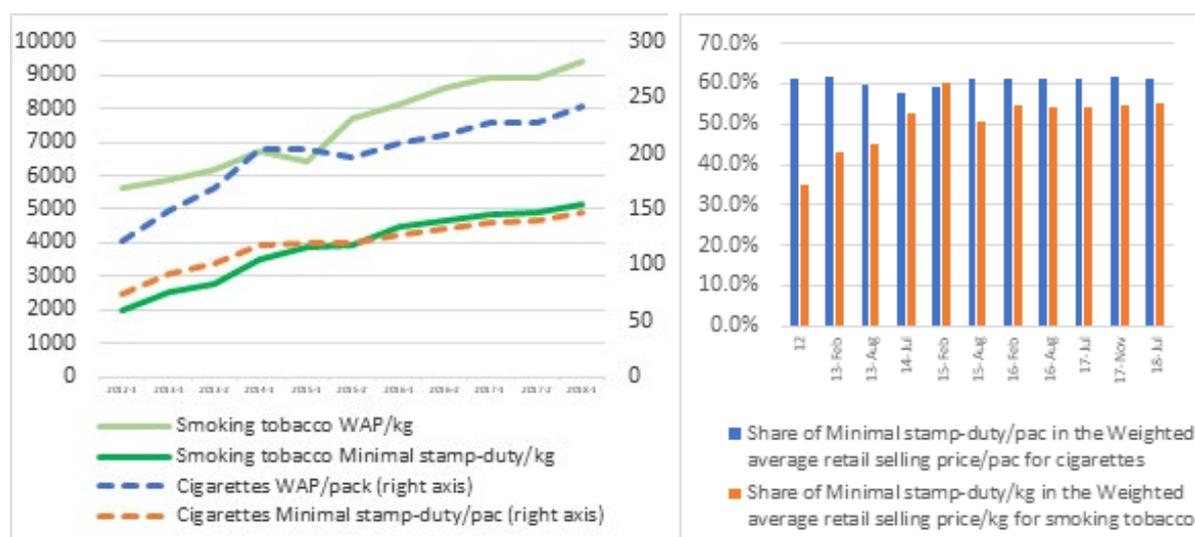
The excise duty on other tobacco products is also partially compliant with the *acquis*. Tax on cigars and cigarillos is compliant with the minimum taxation levels in the *acquis*, while the tax on fine cut tobacco is calculated in the same way as in the EU, but the Serbian rates and minimum excise levels are lower. Excise duties for roll-your-own tobacco have also risen over time, even though there is no specific excise on these products. In 2005, ad valorem excise duty on roll-your-own was at 30%. By 2017, it rose to 43%, growing annually by 2% until 2016. Excise duty policies for cigars and cigarillos changed during the period, going from specific to ad valorem and back to specific. However, they are compliant with the EU minimum standards.

In addition to the excise taxes, Serbia applies VAT to tobacco. The VAT in Serbia was introduced on January 1st, 2005 with the standard VAT rate of 18%. Starting from October 1st, 2012, the standard VAT rate increased to 20%, which included tobacco products.

The share of the stamp-duty in tobacco differs among products. Figure 17 shows the difference between the share of minimal stamp-duty in the weighted average retail selling

price for cigarettes and smoking tobacco. In 2012, the share of minimal stamp-duty in the weighted average retail selling price was 61.2% for cigarettes and 35% for smoking tobacco. Until July 2018, this difference was reduced, and the share of minimal stamp-duty in the weighted average retail selling price for cigarettes remained stable at the level of 61%, while this share for smoking tobacco was increased to the level of 55%.

Figure 17 Tobacco taxation of different products



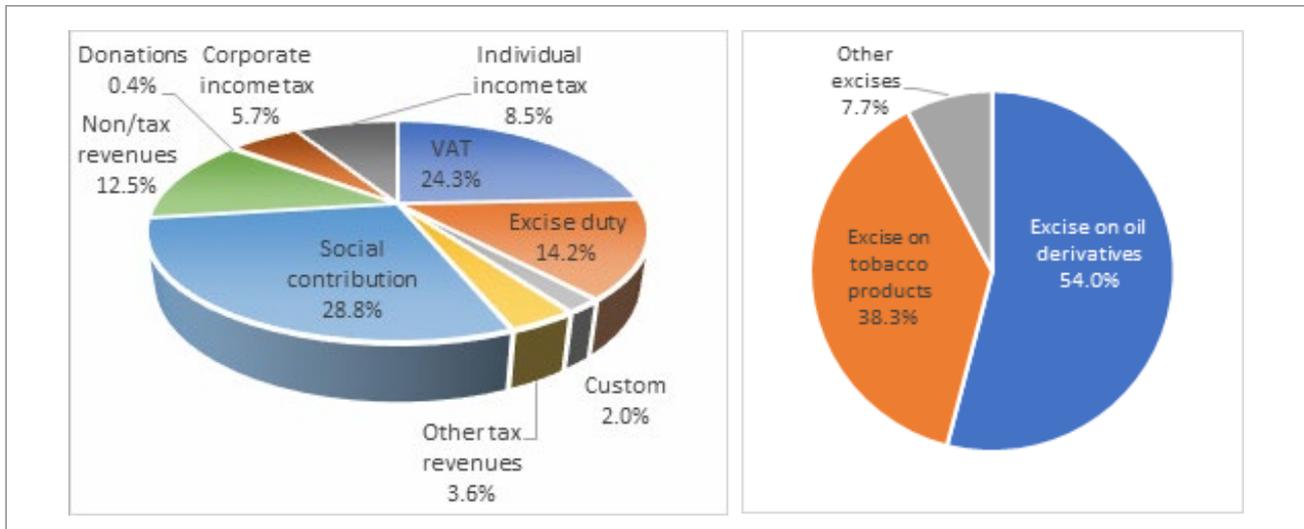
Source: Serbian Excise Law and Official Gazettes.

Note: Left axis refers to smoking tobacco, right axis to cigarettes price (WAP and minimal excise). On the horizontal axes of left chart, -1 and -2 refer to the period of the year when the change happened.

4.3 Tobacco tax revenues

From 2005 to 2017, nominal and real growth of public revenues was recorded in the Republic of Serbia. The structure of public revenues in 2017 shows that the highest participation was exercised by social contribution, with 28.8%, followed by VAT with 24.3%. Excise duty is in third place and accounts for 14.2% of total public revenues (Figure 18).

Figure 18 Structure of public revenues in 2017



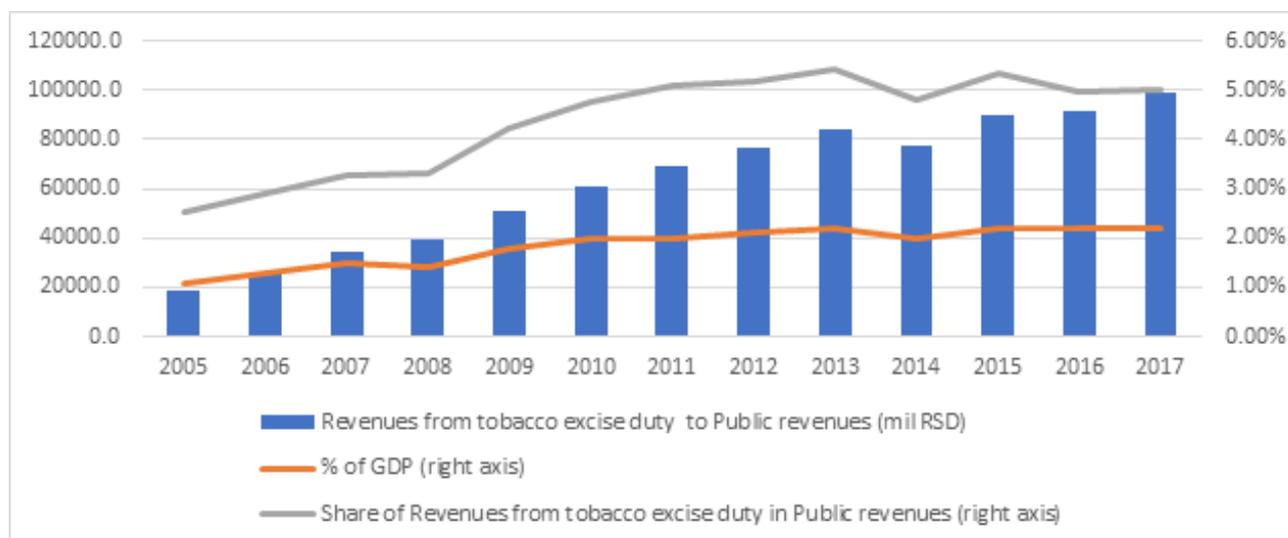
Source: Ministry of Finance, Bulletin of Public Finance

The structure of excise duty shows that in terms of public revenues, petrol and tobacco products by far have the biggest contribution. Petrol accounted for 54% of total excise duty revenues in 2017, while tobacco products brought 38.3% of total excise duty revenues to the national budget. Share of excise duties from tobacco in GDP stand at the level of 2.2% at the end of 2017.

Revenues generated from excise duty on tobacco products had an annual growth during the period 2005-2017, and in 2017 generated RSD 99,082.2 million⁸. The only exception was 2014, when there was a small drop in revenues generated from excise duties compared to 2013. The steady increase in tobacco duties has led to an increase in revenues to the national budget of the Republic of Serbia. In this period, the total amount of excise duties from tobacco products increased more than five times in absolute terms. In 2005, tobacco products excise duties generated more than 19 billion RSD. By 2017, cigarette excise duty contributed almost 100 billion RSD to Serbian national budget (Figure 19). However, despite the steady nominal growth, the share of tobacco excises in total revenues has still not reached the level of 2013, suggesting a slower growth of tobacco excises than other taxes in the Serbian budget.

⁸ Equals €816 million at the average exchange rate for 2017

Figure 19 Revenues from tobacco excise duties to Serbian public revenues 2005-2017



Source: Ministry of Finance, Bulletin of Public Finance

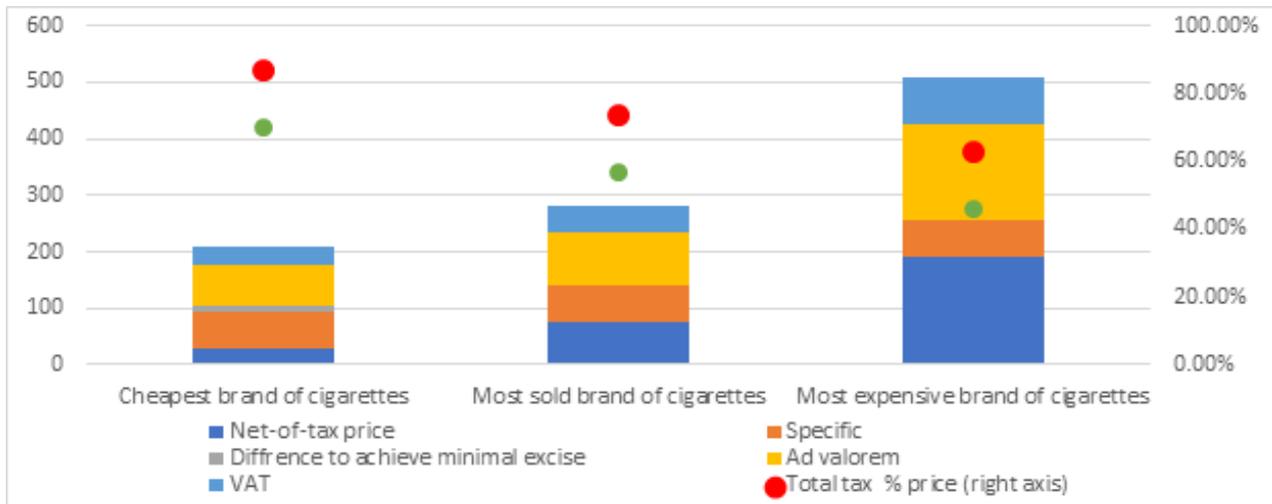
The decrease in revenues in 2014 could be explained by a “war” on the tobacco market caused by an extremely high competition on the tobacco market and the struggle of the tobacco industry for the market share. The epilogue of this tobacco market “war” in Serbia was lower cigarette prices and lower revenues from ad valorem part of the excise (but also from VAT). During this period, the price of certain cigarettes fell by 30 Serbian dinars per pack, while the most popular and sold cigarettes had a drop in price on average by about 20 Serbian dinars, representing more than 10% of their retail price (for example the price of Lucky Strike Original Red King Size Box decreased in 2014 from 220 Serbian dinars to 200 and finally to 190). Following the multinational companies, regional and domestic producers had also lowered their prices.

4.4 Pricing of tobacco products

Mixed excise duty system for cigarettes in Serbia results in differences in the taxes applied to different cigarette brands, given that the ad valorem excise tax and the VAT vary based on price of the pack of cigarettes. In 2017, the price range was between RSD 210 (the cheapest brand) and RSD 510 (the most expensive brand), while the price of the most popular brand was RSD 280.

Depending on the price of the cigarette pack, the total excise stamp duty (without VAT) ranged from RSD 147 (minimal excise set by the Law) for lower price/discounted brands, up to RSD 235 for higher priced brands/premium ones. The share in retail price decreased with price per pack. Thus, total excise taxes accounted for 70.2% of the retail price for the cheapest brand, and 46.1% of retail prices of the most expensive brand. Total taxes, including VAT were 86.8% for discount brands in contrast with only 62.8% for premium brands (Figure 20). Excise taxes for most sold brand of cigarettes are collected at the level of 56.9%. If VAT is included, total taxes account for 73.6% of retail price (currently at the level of RSD 280 or €2.37).

Figure 20 Cigarette Taxes and Prices in Serbia 2018



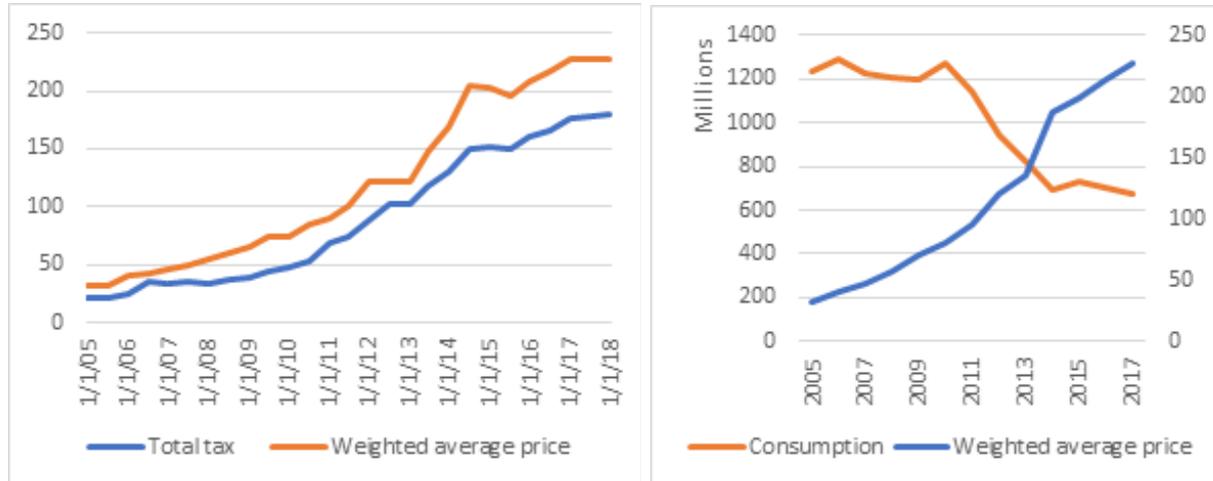
Source: Serbian Excise Law and Official Gazette for retail price of tobacco products.

Many scholars, academicians and international organizations advocate excise tax levels of at least 70% of the retail prices for tobacco products (Chaloupka et al, 2012; Ross et al, 2010, WHO, 2010). In the EU, this level is set to be at least 60% of the weighted average retail selling price, unless total excise exceeds €115 per 1000 cigarettes. Total cigarette stamp duties in Serbia calculated for weighted average retail selling price are slightly above this level at the rate of 62.52%. Nevertheless, for more expensive cigarettes, Serbia collects excise taxes at the lower levels and the level of excise stamp duty for most sold brand of cigarettes is 56.9%.

4.5 Relationship of tobacco taxation, price and demand of tobacco products

There have been multiple attempts to identify the impact of tobacco taxation on the demand and the price of tobacco products. As an addition to a more sophisticated model for measuring price and demand elasticity of cigarettes, we are presenting an infographic with data on the basic relationship between the price of tobacco products and demand. The infographic uses the price of the most popular brand through the end of 2011, and weighted average (WAP) prices starting from 2012, since the methodology changed and WAP replaced the price of the most popular brand as the benchmark. Figure 21 (on the left) presents analysis of the impact of the taxation on the price, based on semi-annual data collected from Serbian Excise Law and other by-laws regulating the price of most popular brand and weighted average price. On the right of the same Figure, there is demand analysis with averaged semi-annual data.

Figure 21: Tobacco taxation and the demand/price of tobacco products in Serbia



Source: Serbian Excise Law and other by-laws regulating the price of most popular brand and weighted average price.

Note: Ad valorem and value added tax calculated based on price of most popular brand through the end 2011, and on weighted average cigarette prices starting from 2012.

5. Elasticity of tobacco products

5.1 Estimation of the price elasticity using the macro data

In order to estimate the price and income elasticity of cigarette demand in Serbia, we used aggregate data on cigarette consumption, cigarette prices, income and public policies from 2002 to 2016 and time series econometric methods. According to available data, we estimated cigarette demand based on two different models in linear functional form. The first model includes two independent variables- real tobacco CPI and real GDP per capita as a measure of real income—while the second model includes tobacco control policy - *Law on Advertising* besides two initial variables. Additionally, other control variables (tertiary education, average employment) were tested. However, the results demonstrated that their impact on cigarette consumption per capita is not statistically significant, so we did not include them in further analyses in this part of the study.

Applying Engle-Granger two-step method to estimate long-run and short-run elasticity showed that cigarette consumption per capita, real tobacco CPI, real GDP per capita and tobacco control event are integrated at same order - $I(1)$, so we use their first differences. Results of Dickey-Fuller test show values of $Z(t) = -3.029$ (consumption per capita), $Z(t) = -3.278$ (real tobacco CPI) and $Z(t) = -3.492$ (real GDP per capita); all statistically significant at 5% level. Test of cointegration between variables shows that cointegrating relationship exists (values of Z statistics are $Z(t) = -3.323$ for model 1; $Z(t) = -3.671$ for model 2, statistically significant at 1% level) so the analysis is continued with an error-correction model (ECM).

Error correction parameters values are -0.738 and -0.958 for models 1 and 2, respectively⁹. It can be inferred from these that a 73.8% to 95.8% deviation from long-run equilibrium will be corrected the following year. The following table shows long-run and short-run price and income elasticity of cigarette demand in Serbia.

Table 9: Price and income elasticity estimates

	Model 1	Model 2
Price elasticity		
Long-run	-0.76*	-0.62*
Long-run bootstrapped	-0.78*	-0.60*
Short-run	-0.05 ¹⁰	-0.05 ¹¹
Income elasticity		
Long-run	0.33*	0.36*
Long-run bootstrapped	0.34*	0.39*
Short-run	-0.01	-0.01
Coefficient on lagged residual	-0.738	-0.958

Note: * statistically significant at 5% level

⁹ Error correction parameters are statistically significant on 5% and 1% level, respectively.

¹⁰ In short-run ECM model with real tobacco CPI and real GDP per capita, price is statistically significant at 5% level, but income is not statistically significant.

¹¹ In short-run ECM model with real tobacco CPI, real GDP per capita and tobacco control policy are statistically significant at 5% level, while income is not statistically significant.

The cigarette demand models resulted in long-run and short-run price elasticity -0.76 and -0.05, respectively. It means that a 1% increase in cigarette price will decrease consumption of cigarettes per capita by 0.76% in the long-run and 0.05% in the short-run. The results of estimating income elasticity in the long-run (0.33) and short-run (-0.01) show that if income per capita increases 1%, cigarette consumption will increase by 0.33% in long-run and decrease 0.01% in short-run. It should be noted that price and control policies have influence on cigarette consumption per capita in Serbia in short period of time, while income is not so important for short-run decisions about tobacco consumption.

5.2 Estimation of the price elasticity using the micro data

In order to estimate the price elasticity of the cigarette consumption, we also used data from the Household Budget Survey (HBS) from 2012 to 2016, and applied the Deaton (1997) model of price elasticity. The Deaton model uses unit values of cigarettes (calculated as the ratio of cigarettes expenditure to number of cigarettes packs bought), as a proxy for price and a weak separability assumption, which implies that market prices vary only between, but not within, the territory unit, and relies on the regression analysis which is performed on the cluster level. Clusters are typically defined as territory units, and Deaton, in his original papers, uses villages.

For Serbia, we define clusters based on the information on municipalities and years (i.e. the cluster is defined as a municipality x in the year t). According to this definition, we generate 763 clusters, which on average include about 74 households¹². In total, 9,990 households were included in the sample for the estimation.

In first stage regressions, we purged the effects of the household characteristics, such as household income, household size and structure (by gender, education, age and economic activity) from the unit value and budget shares of cigarettes. The results indicate expected results: unit value is higher for households with higher income, but lower for larger households, with significant effects of the household structure variables.

In the second stage regression, we additionally purged the regional (NUTS 2) effects due to differences between the regions in the level of development, which could influence consumption preferences. Results of the estimation indicate a negative price elasticity of cigarettes, which amounts to -0.45. Standard error of the elasticity calculated via bootstrapping procedure (1000 replications) indicates that the elasticity is significantly lower than zero ($\xi = -0.450$; $SE\xi = 0.065$, $t = -6.923$).

¹² No cluster has less than 2 households, which is condition to estimate the Deaton's model.

6. Summary and recommendations

This study proposes the following key action areas:

Serbia is fully committed to its strategic goal of EU accession and it has to align regulation with the EU's ones (tobacco tax directive).

- **REVISE** tax policy. Level of taxation has to be raised in order to meet EU standards - the overall excise rate should reach at least €90 per 1,000 cigarettes (it is much lower in Serbia, and currently slightly above €62). Currently adopted excise calendar does not increase total (or excise) tax burden sufficiently and will not lead to comply with the level of minimum taxes on cigarettes in the EU in the near future.

National public policy documents related to the tobacco control are outdated.

- **REVISE** relevant national public policies in the field of tobacco control. Improved coordination among key stakeholders is needed (Ministry of Finance, Ministry of Health, Ministry of Youth) in order to adopt and revise public policies related to tobacco control. All public policy documents in the field of tobacco control are outdated, while the strategy of public health protection is at the draft stage.

Regional trade of tobacco products is at a high level and is increasing.

- **ENCOURAGE** initiatives for coordination of excise policies in the region and for establishing a multi-national system of tax monitoring that should regularly collect data on tobacco product taxes and prices, tax avoidance and evasion, and tax administration and enforcement activities. All states have the sovereign right to determine their tobacco taxation policies related to their geographical and economic circumstances, and national public health and fiscal objectives. However, the study shows that the level of foreign trade of tobacco product in the CEFTA countries is rapidly increasing, whereas Serbia is acting as the regional production hub. Regional tax policies should impact future legal and contraband sales.

Currently, there are no designated funds for tobacco-control programs.

- **INCREASE** transparency of distribution of collected tobacco-related excise taxes. There is a dynamic growth of public revenues from tobacco products in the observed period. On the other hand, there are no open data on how and where these revenues are invested/spent. In line with the Article 26.2 of the WHO FCTC (Serbian Official Gazette 16, 2005), there is a need to create dedicating funds for tobacco-control programs (offering help to quit tobacco use, nicotine replacement therapy, cessation service and other health programs, awareness raising, etc.)

Research on tobacco taxation in the region is rather limited.

- **PROMOTION** of high-quality research on tobacco taxation among scholars and researchers could provide leverage for policy-makers in implementing more effective tax policies. Emphasis should be placed on the selection and use of the

highest quality research data with the aim to substantially improve the practice of ensuring continuity in the implementation of public policies and measures related to tobacco taxation and increasing transparency.

National public policies related to tobacco control are outdated

- REVISE relevant national public policies in the field of tobacco control. Improved coordination among key stakeholders is needed (Ministry of Finance, Ministry of Health, and Ministry of Youth) in order to adopt and revise public policies related to tobacco control. All public policy documents in the field of tobacco control are outdated, while the strategy of public health protection is at the draft stage.

There is no regional approach in changes of excise policies

- ENCOURAGE initiatives for coordination of excise policies in the region, since the study shows that the level of foreign trade of tobacco product in the CEFTA countries is rapidly increasing, whereas Serbia is acting as the regional production hub.

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Appendix - Policy Dialogue

To date, the tobacco consumption issue has been tackled by the WHO, Ministry of Health, and a negligible number of civil society organizations that mainly tried to raise awareness of the existing problem in Serbia. Potential fiscal tools for smoking reduction have been rarely discussed being a “black box” for the most of interested stakeholders. A national tobacco control strategy has expired, while the excise policies seem to be set without influence of any stakeholder outside the Ministry of Finance. Meanwhile, tobacco industry companies have developed a reputation of being the socially responsible government partners praised as investors, tax payers, employers, exporters and donors. Similar to other policies, tobacco control policy lack unbiased, evidence-based approaches, which are the most important drivers for initiation of open communication between interested stakeholders.

The overall tobacco taxation policy has been transparent, but without a clear evidence-based policy approach. The status quo has been favored by the industry indicating the potential existence of the regulatory capture. Government, society and other stakeholders are not aware of the potential costs/benefits resulting from policy changes, while the media has been largely influenced by the industry officials and related research.

During our research we managed to identify the following stakeholders particularly interested in the tobacco excise policy. The Ministry of Finance is the most powerful stakeholder. Tobacco Administration is relatively autonomous with regard to its operations. Other state institutions have reasonably less political power when compared to the Ministry of Finance: Ministry of Health and Tobacco Control Council did not have important role in shaping excise policy. The UN WHO and Institute for Public Health are interested in supporting policy changes that would result in public health improvements. The institution representing the EU in Serbia is a very powerful stakeholder who may influence significant policy changes. SIPRU and National Convent for the EU are perceived as allies since they in general promote culture of open dialogue and evidence-based policy making. International financial institutions (WB, EBRD) did not demonstrate their interest in tobacco taxation issues so far. Since they are important source of financing for government activities, the ideal situation in a medium term would be to involve the tobacco taxation issue as a requirement for the future grants approval in the field of health. Citizens have been an underrepresented and mostly divided player in the current and future policy debates.

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