



**tobaccotaxation**

Economic Research Informing Tobacco Tax Policy

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

# **National Study - CROATIA**

## **Economics of Tobacco and Tobacco Taxation**

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## Executive Summary

The Republic of Croatia is geographically situated in the southeastern part of Europe and has a population of 4.1 million. However, since the mid-20th century, the population in Croatia has been decreasing. With the average population density of 73.8 per km, Croatia is one of the more sparsely populated European countries. According to the World Bank country classifications by income level, Croatia is considered to be a high-income country.

### *Supply of tobacco products*

The Croatian tobacco market is oligopolistic - controlled by few global companies dictating market conditions. The domestic producer, Tvornica duhana Rovinj (TDR), was the leading independent cigarette manufacturer in Central Europe with a leading market position in Croatia and a position of scale in Bosnia and Serbia over the decade, until September 2015, when it was acquired from Adris Grupa by British American Tobacco (BAT). After the acquisition, BAT became the market leader in Croatia with a share of around 58%. Along with Philip Morris International that held 34.5% of market share in 2015, they could significantly affect the market conditions.

### *Demand for tobacco products*

The prevalence of smoking in Croatia measured by the number of smokers has stabilized over time and shows a notable decline in recent years. With regard to consumption of tobacco products by category, cigarettes sales still account for more than 95% of overall annual volume sales. While total cigarettes volume sales continue to decline, value sales are rising due to increased prices. Although public opinion on smoking in Croatia has changed over time, with growing number of smokers considering quitting and decreasing social acceptance of smoking, the smoking rates of about 30% of the total adult population are still quite high.

### *Tobacco taxation and pricing policies*

Smoking and consequently the demand for tobacco products have been slowly declining in popularity in Croatia due to continuously more restrictive tobacco regulations. Croatia became a Party to the WHO Framework Convention on Tobacco Control (WHO FCTC) on October 12, 2008. Furthermore, by joining the EU in 2013, Croatia adopted EU regulations; thus, the Directive 2014/40/EU was incorporated in the national acts. Tobacco and related products are covered under several laws and regulations and the Croatian government, through the Ministry of Finance - Customs Administration, provides the framework for the effective tobacco taxation. an important element of tobacco control.

Taxation of tobacco products in Croatia is in accordance with EU Directive 2011/64, and according to Excise Duty Act (Official Gazette, No. 22/2013, 32/2013, 81/2013, 100/2015, 120/2015 and 115/2016). Excisable products and amounts of excise duties on tobacco products are:

- Cigarettes - Specific excise: approx. 41 EUR (310 HRK) /1,000 items + Ad valorem excise: 34% of retail selling price; Minimum excise approx. 93 EUR (696 HRK)/1,000 pieces.
- Cigars and cigarillos – Specific excise: approx. 80 EUR (600 HRK) /1,000 items
- Fine cut smoking tobacco and other smoking tobacco - Specific excise: approx. 80 EUR (600 HRK) /1 kg of product

### *The elasticity of tobacco products*

The results of the research carried out within this project indicate that in Croatia, the demand for tobacco is price-sensitive. The aggregate time-series analysis suggests that a 10% increase in prices would result on the average reduction in long-term demand for cigarettes by between 4.4% and 6.1%. In addition to aggregate time-series analysis, data obtained from household budget surveys (HBS) are used to estimate cigarette price elasticity. Estimated results of analysis based on Deaton's (1988) model indicate that a 10% increase in cigarette price would lead to a 10.7% decrease in cigarette consumption.

### *Recommendations*

Based on the evidence from our research, cigarette price policy could be used as a very effective government tool for reducing tobacco use Croatia. The government should increase taxes on tobacco and related products, especially the portion of specific excise duties in order to raise their price so that tobacco products will become less affordable over time. Moreover, increased excise duties should result in increased budget tax revenues, healthcare savings, and improving the health of the population. Collected budget funds should be strategically allocated to the healthcare and education system to compensate for the negative effects and costs caused by smoking. Also, a commitment to regional harmonization of fiscal policies is needed to limit incentives for cross-border transactions, both with EU countries as well as with western Balkan countries. This is mainly because Croatia is highly threatened by illicit trade and illicit import of tobacco and related products due to its geo-communication position.

## 1. Introduction

The Republic of Croatia is geographically situated in southeastern Europe. With a surface area of 56,594 km<sup>2</sup> it has 4.1 million of inhabitants, which ranks Croatia on 127th place in the world by population. The greatest population concentration is in the capital city of Croatia, Zagreb, where 18% of the population currently resides. However, from the mid-20th century, Croatia has been facing depopulation as the birth rate has been constantly falling and death rate has been rising simultaneously. With the average population density of 73.8 per km, Croatia is one of the more sparsely populated European countries.

### 1.1. General info

According to the World Bank country classifications by income level, Croatia belongs to the Europe and Central Asia region and has been assigned an upper-middle income category, which means that average Gross National Income (GNI) per capita ranges from 3,301 EUR (3,956 USD) to 10,209 EUR (12,235 USD). However, as of July 1<sup>st</sup> 2018, the new thresholds for classification by income were determined for the World Bank's 2019 fiscal year, and Croatia has been moved from upper-middle to high-income category with the average GNI higher than 10,059 EUR (12,055 USD) (World Bank Blogs, 2018). Some basic information about Croatia in 2017 are presented in Table 1.1.

**Table 1.1.: Croatia country profile (2017)**

<b>Region</b>	<b>Europe and Central Asia</b>
<b>Income Category (2017-2018)</b>	Upper-middle
<b>Population (proj., 000)</b>	4,125
<b>Surface area (sq km)</b>	56,594
<b>Capital city population</b>	Zagreb; 802,338

Source: <https://data.worldbank.org>; [https://www.dzs.hr/eng/Publication/cro\\_in\\_fig.htm](https://www.dzs.hr/eng/Publication/cro_in_fig.htm)

In 2017, the economy in Croatia was stable, with increased economic activity supported by favorable EU and global economic environment. Croatia enjoys a fairly stable inflation rate in recent years that tended to decrease. In 2017, the average inflation rate in Croatia amounted to about 1.1% compared to the previous year.

The Gross Domestic Product (GDP) in Croatia was worth 44.114 million EUR in 2017, and the GDP per capita recorded in Croatia in same year was 11,880 EUR. After a six-year recession and negative economic growth, Croatia has finally returned to positive growth with GDP growth rates of 1.6% in 2015, 3.0% in 2016 and 2.8% in 2017. In July 2013, in the midst of recession, Croatia became a member of the European Union (EU). Access to EU single market has helped Croatian economy recover; therefore, a positive trend of GDP growth rate is expected to prevail in the future years. Nevertheless, GDP growth will probably slow down to a predicted value of 2.6% in 2018, following an expected fall in private consumption due to the end of the favorable tax reform effects and slowing wage growth (World Bank Country Overview, 2018).

The economic recovery resulted in rising employment, which coupled with high levels of emigration, led to a notable decline in the unemployment rate. According to the Labor Force Survey (LFS), the unemployment rate in Croatia has been constantly decreasing in the last four years, so the average annual number of unemployed persons has decreased to 193,967 in 2017 from 328,187 in 2014. In the same period, the employment rate and average number of persons in employment have been continuously increasing, as expected. The average annual number of employed persons has increased to 1,407,000 in 2017 from 1,342,000 in 2014.

The average monthly gross wage was approximately 1,040 EUR between 2012 and 2016, and has increased to 1,080 EUR per person employed in 2017. However, it is important to note that the changes in gross wages are not equal to trends of net wages. According to the Croatian chamber of economy (Hrvatska gospodarska komora, 2018), the growth of gross wages was faster than the net salary growth due to the impact of the changes in income tax rates and thresholds of taxable income. Moreover, since 2016, the dynamics of wage growth is not comparable to previous years, due to the change in methodology or transfer to the new source of data (JOPPD form), which ensures a more complete coverage of the wage data compared to the earlier statistical research (RAD-1 form).

All these facts described above, especially the recession and unemployment, are main causes of poverty in Croatia. The at-risk-of-poverty rate for 2017 is not available, but data show that approximately 20 % of people in Croatia were living in households where the equalized total disposable household income is below the at-risk-of-poverty threshold.

Overview of Croatian economic profile in the 2012-2017 period is presented in Table 1.2.

**Table 1.2.: Croatia economy outlook**

Macroeconomic indicators	2012	2014	2015	2016	2017
Gross domestic product, in millions EUR	44,022	43,416	45,251	46,309	44,114
Gross domestic product, per capita, EUR	10,312	10,249	10,586	11,161	11,880
Gross domestic product, real growth, in %	-2.2	-0.1	1.6	3.0	2.8
Average consumer prices inflation	3.4	-0.2	-0.5	-1.1	1.1
Number of unemployed persons, average	324,324	328,187	285,906	241,860	193,967
Unemployment rate according to the LFS (in %)	15.9	17.3	16.2	13.1	11.2
Gross wages (average monthly, in EUR)	1,046	1,042	1,055	1,030	1,080

<b>Employment rate according to the LFS (in %)</b>	43.2	43.3	44.2	44.6	45.8
<b>Persons in employment, average in 000</b>	1,395	1,342	1,356	1,390	1,407
<b>At risk of poverty rate (in %)</b>	20.4	19.4	20.0	19.5	n/a

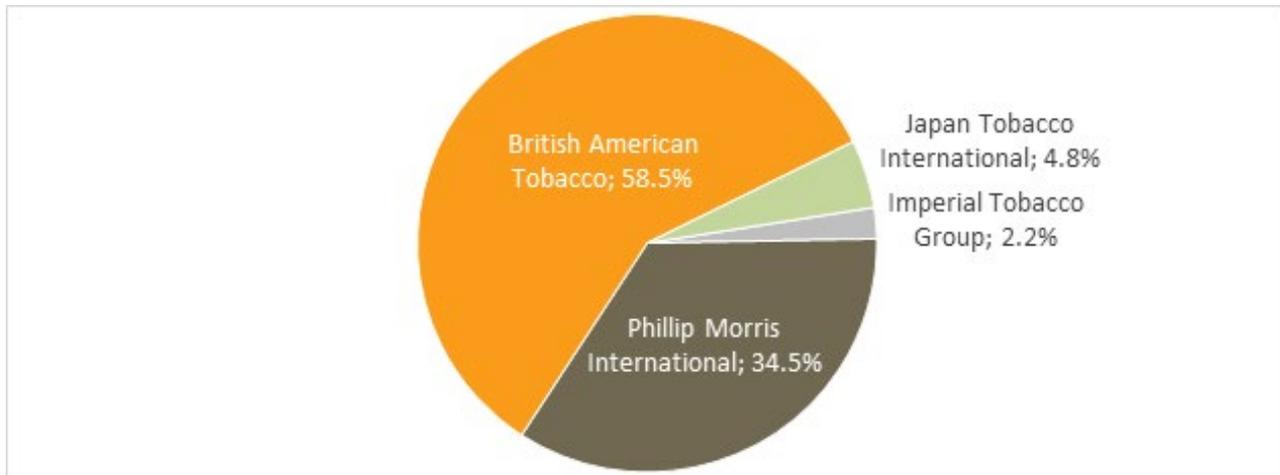
Source: <https://data.worldbank.org> ;

[https://www.dzs.hr/eng/Publication/cro\\_in\\_fig.htm](https://www.dzs.hr/eng/Publication/cro_in_fig.htm)

## 1.2. The tobacco market

The Croatian tobacco market is oligopolistic - controlled by few global companies dictating market conditions. The domestic producer, Tvornica duhana Rovinj (TDR), was the leading independent cigarette manufacturer in Central Europe with a leading market position in Croatia and a position of scale in Bosnia and Serbia over the decade. That was until September 2015, when it was acquired from Adris Grupa by British American Tobacco (BAT). Besides TDR, BAT has also bought all tobacco sector companies of Adris Grupa (raw tobacco producer Hrvatski duhani, packaging producer Istragrafika and retail chains e-Novine and Oprese) for a total enterprise value of 550 million EUR (<http://www.bat.com/newsrelease>). After the acquisition, BAT became the market leader in Croatia with a share of around 58.5 %, and together with Philip Morris International, they held 34.5% of the market share in 2015, and could significantly affect market conditions (Bajo and Jurinec, 2016). Detailed tobacco market structure is shown in Figure 1.1.

**Figure 1.1. Croatian tobacco market shares structure in 2015**



*Source: Adapted from Nielsen, 2015 in Bajo and Jurinec, 2016*

According to Euromonitor (2017) research, cigarettes continue to dominate as tobacco products in Croatia, accounting for more than 95% of overall volume sales. While cigarettes volume sales continue to decline, value sales are rising at the same time due to increased prices. However, Euromonitor (2018) notes that tobacco companies in Croatia have reported negative net incomes for the first time. Usually a very lucrative business, despite high tobacco taxation, the industry is reporting losses because of the negative financial result from BAT Hrvatska Ltd.

Another characteristic of the Croatian tobacco market is frequent changes in tobacco regulations, especially in the process of its joining to EU in 2013. To become a member of the EU, Croatia was supposed to meet the Copenhagen criteria and implement EU rules and regulations in all areas, which caused frequent changes to laws and regulations on tobacco and related products. This applies in particular to the minimum rates and amounts of excise duty that Croatia should apply.

EU member states have agreed on common EU rules to make ensure excise duties are applied in the same way and to the same products throughout the EU, which helps to prevent trade distortions in the Union single market, ensures fair competition, and reduces administrative burdens for companies.

At the end, it is important to mention the financial meltdown of the Croatian agro-food giant, Agrokor, in March 2017. In the retail sector, Agrokor has two companies in Croatia: Konzum - chain of grocery stores which is the biggest retailer in Croatia and Tisak - a network of 1,300 outlets, mostly newspapers kiosks, that is also among the five biggest retailers. Moody's and S&P's downgraded Agrokor's rating because of its significant debt. After that, the number of Agrokor's subsidiaries had solvency problems. In 2017, value of Konzum's indebtedness ratio was 98.88% and that of Tisak was 80.37% (Njavro et al, 2018). Given that Agrokor (i.e. Konzum and Tisak) is one of the strongest retail channels for tobacco products, the potential consequences of its financial problems for tobacco companies and the tobacco market in general are clear: tobacco companies are suppliers whose payments had been delayed for months; they cannot avoid possible liquidity and solvency problems caused by the Agrokor's debt.

## 2. Supply of tobacco products

Practices and policies affecting the production of raw tobacco and manufacturing of cigarettes and other tobacco products can have an important effect on the characteristics and patterns of tobacco product use. Trends in the economic and market structures of tobacco-growing and tobacco product manufacturing can also impact tobacco control efforts. However, tobacco control policies targeting the supply side of the market are less widely used than those targeting the demand side. Thus, less is known about the impact of these policies on tobacco use. In addition, the increasing role of low- and middle-income countries (LMICs) in global tobacco growing and tobacco product manufacturing has raised new challenges for tobacco control policy.

The first part of this chapter discusses the role of tobacco farming, and the second part covers the related subject of production of tobacco products. Tobacco-related employment is discussed in detail in the third part, and exporting and importing manufactured tobacco in the fourth part of this chapter. We conclude this chapter with the most recent trends in the tobacco industry.

### 2.1. Tobacco farming

The volume of tobacco production has risen worldwide, from 6,285,959 tons of tobacco in 1995 to 7,490,661 tons in 2012. The quantities of tobacco produced in Croatia increased at the same time, from 8,548 to 11,800 tons, according to FAOSTAT data. In the European Union, production has almost halved, falling from 456,306 to 244,953 tons (Table 2.1).

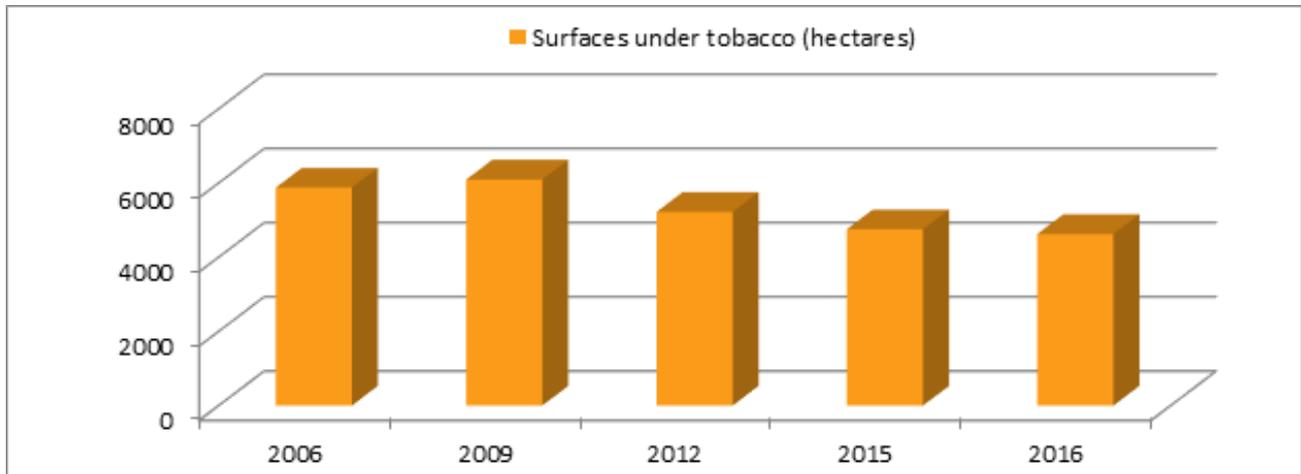
**Table 2.1. Quantity of tobacco produced in tons**

YEAR	WORLD	EU	CROATIA
1995	6,285,959	456,306	8,548
2000	6,737,541	448,494	9,714
2005	6,757,733	438,046	9,579
2010	6,892,832	266,624	8,491
2012	7,490,661	244,953	11,800

Source: FAOSTAT, according to Tušek: *Analysis of the tobacco market in Croatia*, 2016, p. 30

If the data of the Association of Croatian tobacco producers – *Krupan list* (Tušek, 2016) are analyzed, the highest amount of tobacco was produced in 2009 on 6,093 hectares, while in 2016 the production fell to 4,623 hectares (Figure 2.1). The Association estimates that the production of tobacco will decrease by around 50% in the coming years because of the 2017 abolition of tobacco production subsidies.

**Figure 2.1. Surfaces under tobacco (hectares) in Croatia, 2006 -2016**

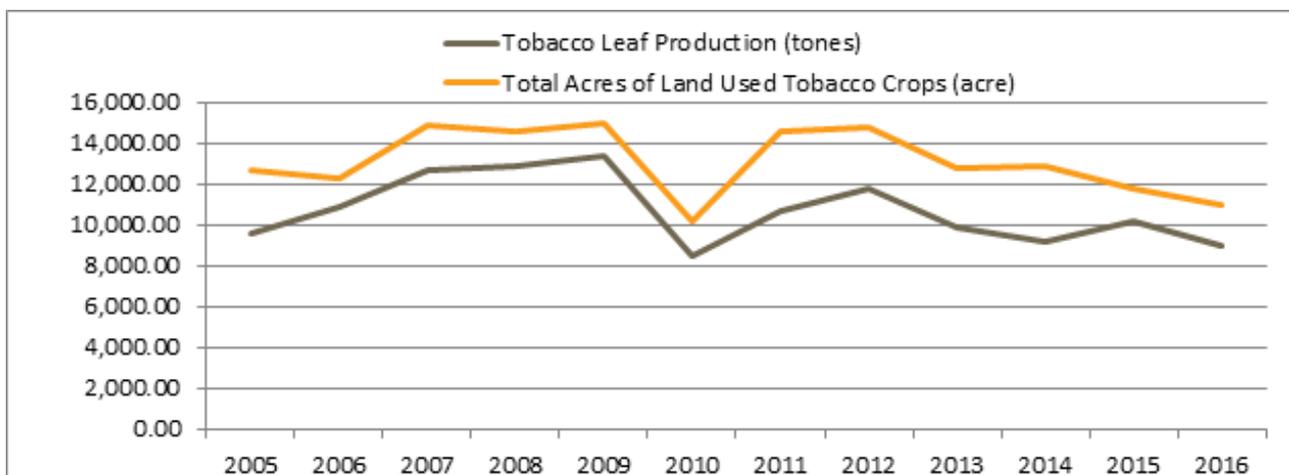


Source: Association of Croatian tobacco producers – Krupan list, according to Tušek: Analysis of the tobacco market in Croatia, 2016, p. 28

The tobacco production subsidies has been a source of contention within the public health community for years, with most health professionals believing that the subsidies encouraged tobacco growing and thereby smoking. The subsidies to farmers and craftsmen in Croatia amounted 487 million EUR in 2016 (<http://www.mfin.hr/hr/proracun>), which represents approximately 3% of total budget expenditures. However, the problem is that there are no disaggregated data, so it is difficult to determine what portion of these subsidies refers to the tobacco industry.

Tobacco production in Croatia was at 13.3 million kilograms of tobacco in 2009. Since then, production has declined every year (with the exception of 2011), reaching 9 million kilograms of tobacco in 2016 (Figure 2.2). Given the announced abolition of subsidies for tobacco production, an additional reduction in production is expected in 2018 and 2019, as a large number of manufacturers could give up production.

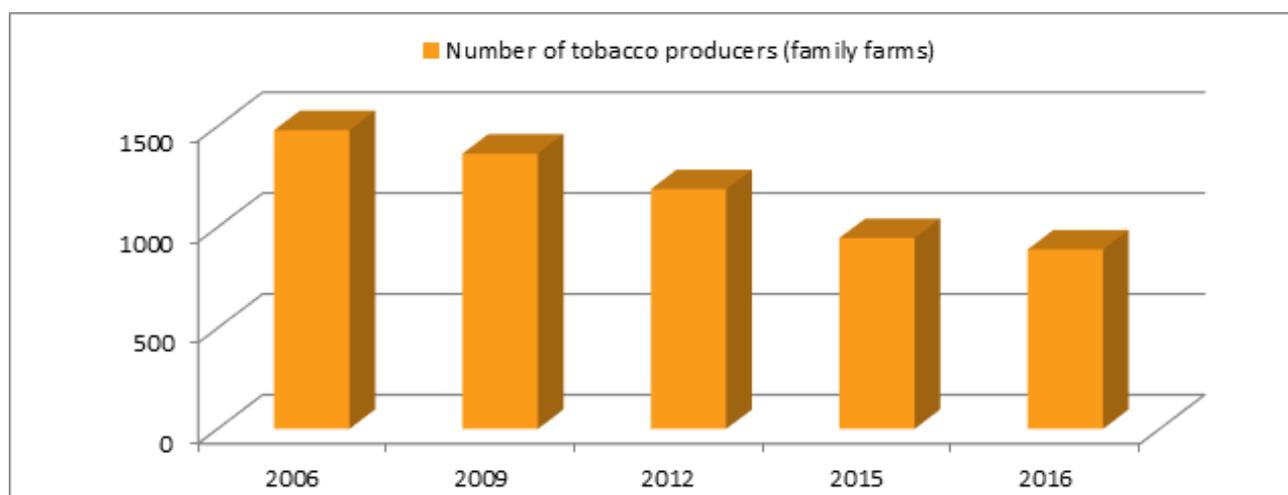
**Figure 2.2. The amount of tobacco produced in Croatia, 2005-2016**



Source: Euromonitor International (2017)

With the same reduction in the number of production areas under tobacco as well as the amount obtained, the number of tobacco producers organized in small family farms is also decreasing. During the 2005-2016 period, the highest number of tobacco producers in Croatia was recorded in 2006 at 1,481 producers. By 2016, as a result of low purchase prices and high production costs, it had dropped to 890 manufacturers (Figure 2.3). According to the Association of Croatian tobacco producers, it is estimated that in 2018 there would only be 400 manufacturers.

**Figure 2.3. Tobacco producers (family farms) in Croatia, 2006-2016**



Source: Association of Croatian tobacco producers – Krupan list, according to Tušek: *Analysis of the tobacco market in Croatia, 2016.*, p. 30

Croatia produces non-aromatic types of tobacco - Virginia (dried on hot air), Berley (shredded) and Herzegovinian tobacco (dried on sun). The two main producers are: *Hrvatski duhani Ltd.* from Virovitica, and *Agroduhan Ltd.* from Slatina. *Hrvatski duhani* holds 80% of the tobacco market, and *Agroduhan* holds 20% (Bajo and Jurinec, 2016). *Hrvatski duhani* are the leading producers of flue cured Virginia and Burley tobacco on the Croatian market. By June 2015, they were part of *Adris* group, which owned the *Tvornica duhana Rovinj*. *Agroduhan* deals with the production of flue cured Virginia in cooperation with individual farms. *Agroduhan* was founded in 1996 as a subsidiary of *Duhan*, for production, purchase and tobacco sales. Tobacco production is organized through ownership and lease of small agricultural producers (family farms). Available quantities of tobacco for sale are for domestic, European or markets from the former Soviet Union.

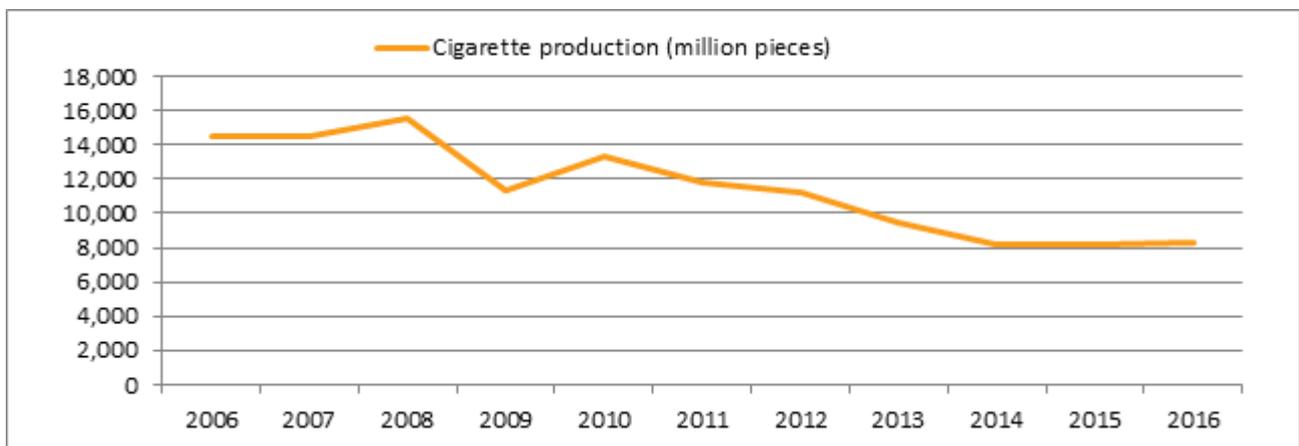
## 2.2. Production of tobacco products

In Croatia, the cigarette industry is a classic example of an oligopoly, taking into account a small number of producers operating in this industry. Manufacturers are interdependent of each other and have a direct influence on each other. There is a strong barrier on new producers entering the market, because manufacturers already have developed brands and loyal customers. Due to the favorable geographic position of Croatia and its

developed domestic tobacco production (as mentioned in previous section), Croatia is of interest to global tobacco companies.

The current trend in surfaces under tobacco and the amount of tobacco produced can also be seen in the production of tobacco products. If we look at the production of cigarettes in Croatia, we can see that the maximum amount was produced in 2008 (15.586 million), followed by a decreasing trend (with the exception of 2010). In the last three years of the analyzed period, production stabilized in 2016 as well, amounting to 8.342 million cigarettes (Figure 2.4).

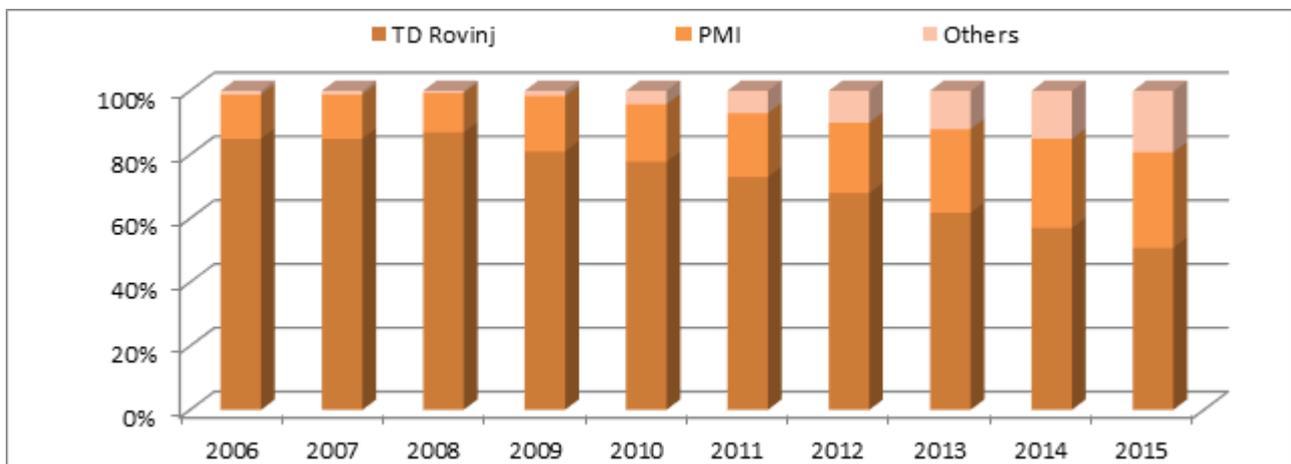
**Figure 2.4. Cigarette production (million pieces) in Croatia, 2006-2016**



Source: Euromonitor International (2017)

In the observed period, the tobacco market has attracted the largest multinational tobacco companies, especially after 2015 when British American Tobacco (BAT) bought the domestic company *Tvornica duhana Rovinj* (TDR). From 2006 to 2015, TDR reduced its market share from 85 to 54.8%, while in the same period Philip Morris International increased its share from 13.8% to 30% (Figure 2.5).

**Figure 2.5. Manufacturer's Percentage Share of Volume in Croatia, 2006-2016**



Source: Euromonitor International (2017)

After a formal takeover in October 2015, BAT became the market leader with a share of 58.5%, and together with Philip Morris, it can affect market conditions. As a consequence, *BAT Hrvatska Ltd* is the major producer in the country and is also a major exporter to other Balkans countries (and increasingly to EU countries, such as Slovenia, Austria and Italy). About 70% of products from the Kanfanar facility are exported, with the factory being Croatia's largest exporter of agricultural products. BAT also owns the only significant producer of raw tobacco - *Hrvatski Duhani* in Virovitica - all in three parts of Eastern Croatia – Virovitica, Kutjevo and Pitomaca. It is estimated that two thirds of the tobacco is used for domestic production and one third is exported, with buyers being renowned global tobacco producers.

### 2.3. Employment in the sector

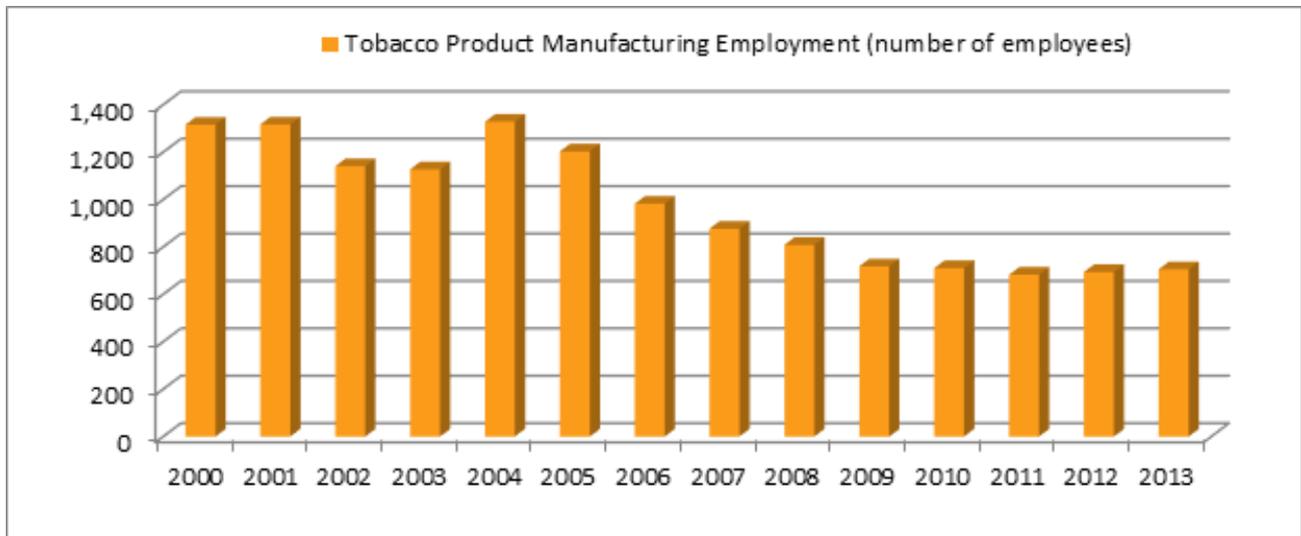
Tobacco is a labor-intensive crop that provides work and income to millions of people in the major tobacco-producing countries. However, estimating the number of people working in tobacco growing and the extent of their dependence on this employment is challenging, and data to support such estimates are limited, especially in less developed countries such as Croatia.

Jobs in tobacco growing and manufacturing, often referred to as core-sector employment, are the primary focus of this part of the chapter. In most countries, the share of tobacco-manufacturing employment as a percentage of total employment was less than 0.5%; this was true in Croatia where tobacco product manufacturing employment reached 0.1% of total employment (Croatian Bureau of Statistics, 2018).

In line with the trends described above in tobacco production as well as in the number of tobacco producers, the declining trend is also present in the direct employment of tobacco producers in Croatia (Figure 2.6). The highest number of employees was recorded in 2004 and amounted to 1,329. After 2004, that number declined continuously until 2011 when it amounted to 683, after which employment stabilized. It should be noted that employment in the manufacturing of tobacco products has never exceeded 1% of total employment in the manufacturing sector.

After 2011 the number of employees in the tobacco industry recorded a slight increase, with the largest increase in 2016 when the number of employees grew by 17.7% (CBS, 2017). Average net earnings in tobacco manufacturing amounted to 911 EUR in 2014, which is 20% more than the average net wage in Croatia.

**Figure 2.6. Tobacco product manufacturing employment (number of employees), 2000-2013**



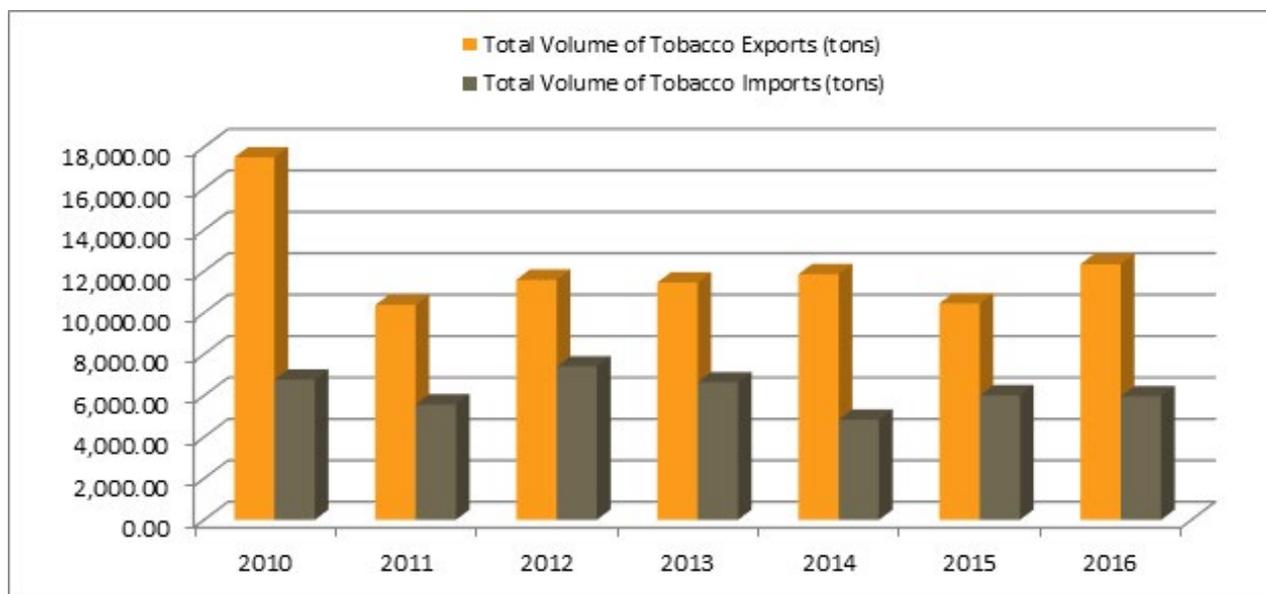
Source: Euromonitor International (2017)

Apart from the high costs of tobacco production, which include seedling costs, land lease, soil treatment, sowing, crop cultivation and tobacco drying, a high share of costs is currently occupied by seasonal workers. Seasonal workers are hired for sowing, harvesting crops, slicing flowers, tearing crops and harvesting. Fifteen years ago, the minimum wage of seasonal workers amounted to 6.7-10.7 EUR (Tušek, 2016, p. 10). Today, the price is almost three times higher. Under the new law, the manufacturer is also obliged to buy and give so-called stamps with the price of 2.7 EUR and pay an additional tax on workers, about 4 EUR per payer per day. It is expected that a significant part of the shadow labor market will be legalized in this way. Temporary and occasional employment on seasonal jobs in agriculture is governed by the Employment Promotion Act (Official Gazette, 57/12), the Ordinance on the content and form of seasonal labor contracts in agriculture and the Decree on the Lowest Salary of Seasonal Workers in Agriculture for 2012 (Official Gazette, 64/12). The longest term of seasonal work in agriculture is 90 days in one calendar year, regardless of whether the worker has worked continuously or with breaks. Unfortunately, there are no official estimates for Croatia of how many seasonal workers are engaged annually in manufacturing of tobacco products.

## 2.4. Export and import for tobacco products

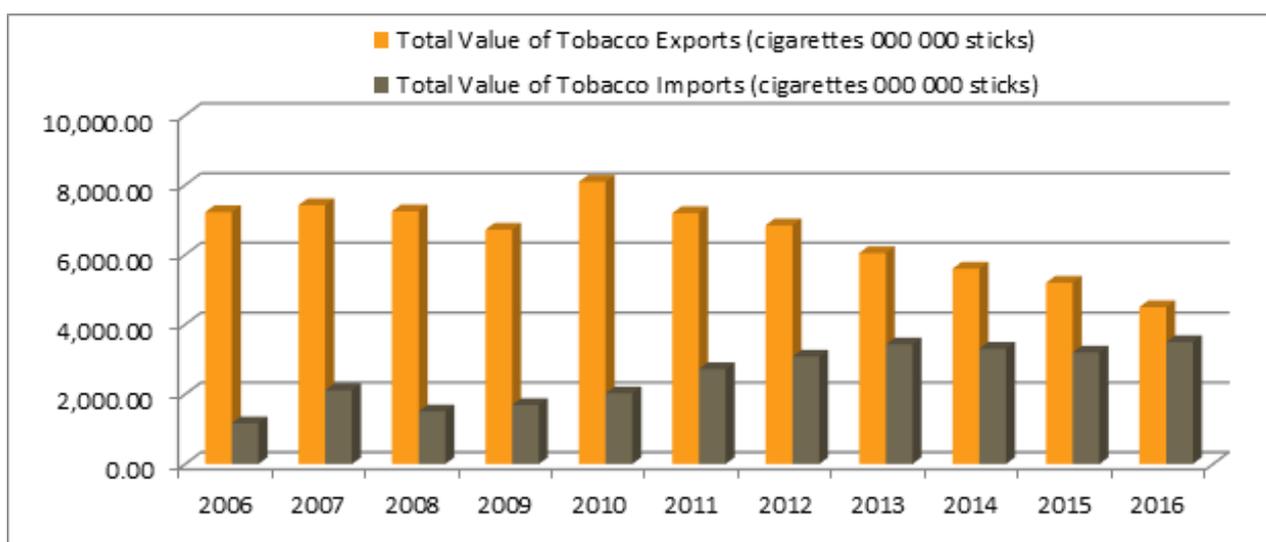
The export of tobacco products (measured in tons) in Croatia in the analyzed period stabilized after the maximum of 17,506 reached in 2010. In 2016 it was 12,348 tons. Imports in the same period were constantly lower than exports, and amounted to 5,967 tons in 2016 (Figure 2.7).

**Figure 2.7. Total volume of tobacco export and import (tons) in Croatia, 2010-2016**



Trends are different if we look at the number of cigarettes. Exports recorded a constant decline since 2010 when it was 7.226 million sticks until 2016 when it reached 4.500 million sticks. In the same period, net exports grew steadily and reached 3.500 million units in 2016 (Figure 2.8).

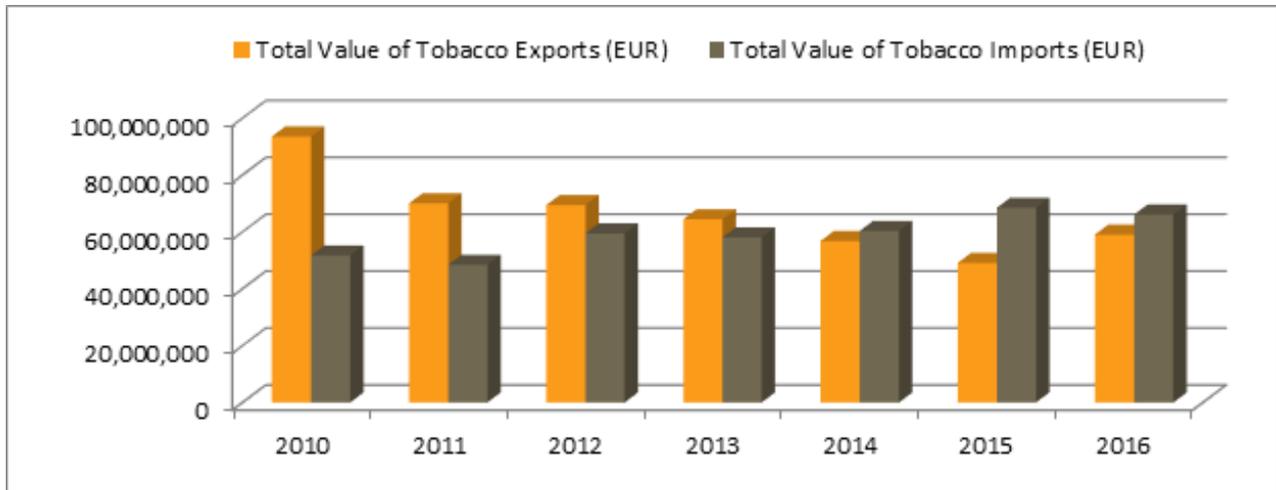
**Figure 2.8. Total volume of tobacco export and import (cigarettes mil. sticks) in Croatia, 2006-2016**



Source: Euromonitor International (2017)

The most accurate insight into the state of exports and imports of tobacco products (i.e. the balance of foreign trade) will be obtained if the values are observed in euros (Figure 2.9).

**Figure 2.9. Total value of tobacco export and import (EUR) in Croatia, 2010-2016**



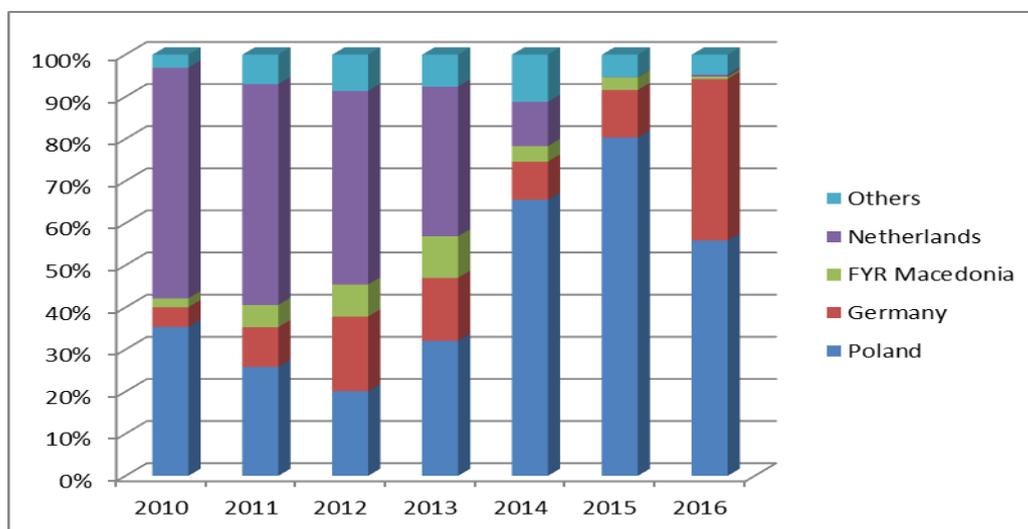
Source: Croatian Bureau of Statistics

In 2016, the export of tobacco products from Croatia was 59.030 million EUR, which is 17% higher than in 2015, while tobacco imports amounted to 66.089 million EUR in 2016, which represents a decrease of 3.5% compared to 2015. So, the total foreign trade of tobacco products of the Republic of Croatia amounted to 0.3% of GDP in 2016. In the analyzed period, Croatia recorded the trend of declining exports (with the exception of 2016). The highest export of tobacco products from Croatia was recorded in 2010 (93.537 million EUR), while the smallest was recorded in 2015 (49.047million EUR). On the other hand, Croatia recorded a steady trend of increasing imports of tobacco products, where the highest was in 2015 (68.488 million EUR). Based on the data presented, it can be seen that Croatia recorded a negative foreign trade balance of tobacco products from 2013 to 2016, while the positive foreign trade balance was recorded from 2010 to 2013 when exports surpassed imports. Some of the possible reasons for the negative foreign trade balance of tobacco products in the last three years are: reduction of tobacco production, i.e. areas or surfaces under tobacco and declining tobacco yields. Possible reason for the reduction of exports is the intensive harmonization of excise duties since 2013 with European excise systems. At that stage, Croatia had to significantly increase excise taxes, which also reflected on tobacco products sales.

The structure of cigarette imports in Croatia by country of origin significantly changed during 2010-2016 (Figure 2.10). From 2010 to 2012, the highest number of cigarettes in Croatia were imported from the Netherlands (54.8% in 2010) and Poland (35.4% in 2010), while in 2016 the largest imports were from Poland (55.9%) and Germany (38.3%). Croatia has maintained a high share of imports of cigarettes from Poland at 80.4% of total cigarette imports in 2015.

The major tobacco importers are: Philip Morris International, Japan Tobacco International, Imperial Tobacco Group and British American Tobacco.

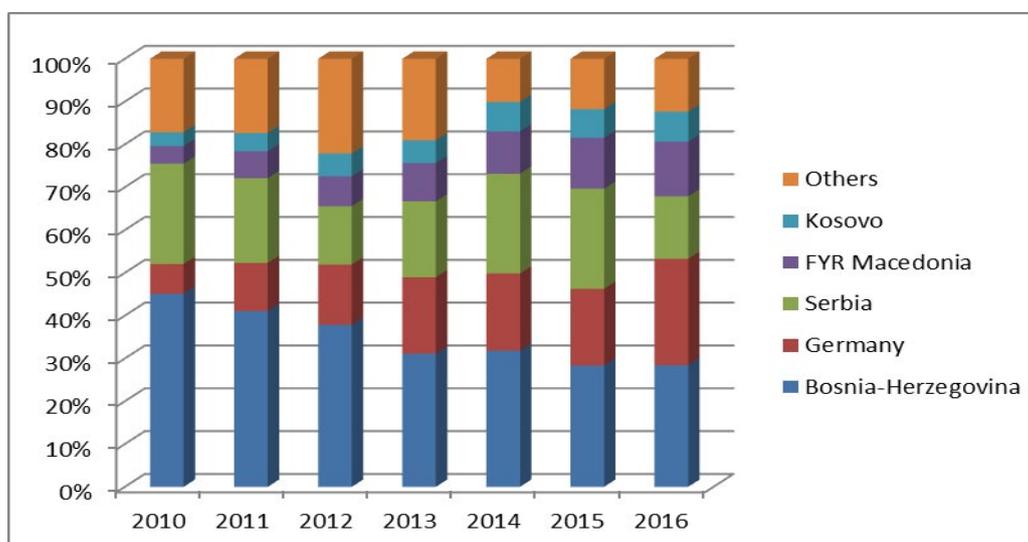
**Figure 2.10. Imports of cigarettes in Croatia by country of origin (percentage shares,) 2010-2016**



Source: Euromonitor International (2017)

The structure of cigarette exports from Croatia by country of destination showed much more stability in the analyzed period (Figure 2.11). Bosnia and Herzegovina is the main export market for tobacco products. The share of exports to that country was 44.7% in 2010 and 28% in 2016. The share of exports to the German market has increased significantly, from 6.9 % in 2010 to 24.5 % in 2016. Of other foreign trade partners, Croatia records significant exports to the markets of former Yugoslavia. In 2016, 14.4% of total tobacco products were exported to the Serbian market, 12.6% to FYR of Macedonia, 6.9% to Kosovo, 2.7% to Montenegro and 2.5% to Slovenia. Again, it should be noted that the major Croatian tobacco exporter is *Tvornica duhana Rovinj*.

**Figure 2.11. Exports of cigarettes from Croatia by country of destination (percentage shares,%) 2010 -2016**



Source: Euromonitor International (2017)

## 2.5. Most recent trends in tobacco industry

According to the latest data from the Financial Agency (FINA), tobacco entrepreneurs in 2017 had a total net loss of almost 10.7 million EUR, compared to 2016 when they had a total net profit of 2.2 million EUR (*Lider* magazine, May 2018).

The 2017 financial report was submitted by three tobacco product entrepreneurs employing 672 workers, and two entrepreneurs mainly engaged in tobacco cultivation and employing 70 workers.

For the first time since 2008, entrepreneurs operating in the tobacco production sector recorded a negative operating result. Most of this was affected by the *TDR*'s loss. These entrepreneurs realized consolidated total revenues of 182.7 million EUR, which is 38.7 million EUR less than in 2016. The average monthly net salaries of employees in this sector last year amounted to 1,623 EUR. The largest tobacco producer in Croatia, *TDR*, recorded gross revenues of 158.7 million EUR in 2017 and operated at a loss of 11.7 million EUR. It employed 498 workers. The second largest entrepreneur was *Hrvatski duhani*, with a revenue of 22.4 million EUR and a net profit of 1.1 million EUR. It employed 154 workers. *Tvornica duhana Udbina* achieved 1 million EUR in total revenue and loss of 46,400 EUR, while employing 20 workers.

In 2017, entrepreneurs whose main activity was tobacco cultivation accounted for 7.1 million EUR of total revenue, which is 34.2% more than in the previous year, and they operated with a net profit of 85,333 EUR.

The Act on Restrictions on the Use of Tobacco and Related Products (Official Gazette, No. 45/2017) has had a major impact on the financial results of a very small number of entrepreneurs in the tobacco business since its introduction in March 2009. This is confirmed by the fact that in 2008 there were four entrepreneurs/companies in Croatia, who reported total net profit of 81.7 million EUR. However, in 2009, there were three entrepreneurs with a total net profit of 67.4 million EUR. Their total profits continued to decline each year, and for the first time in the past 10 years, they had a negative result in 2017.

Between 2008 and 2017, the total income of entrepreneurs in tobacco industry recorded a steady ten-year decline of 40.3%, from 306.7 million EUR in 2008 to 173.3 million EUR in 2017. Similarly, their reported total expenditures followed the same trend, aside from an increase in 2016, returning in 2017 to almost the same level as in 2008.

The causes of such business movements in the tobacco business and the reduction of revenues are due to various regulatory and tax changes, i.e. increases in excise duties. In addition, this is also affected by changes in consumer habits, rising tobacco prices, and health education.

### 3. Demand for tobacco products

In latest decade, the prevalence of smoking in Croatia, measured by number of smokers, has stabilized and showed a notable decline. As smoking prevalence is slowly declining, volume sales also show a downward trend. However, demand for tobacco products measured by the value of sales is rising while the volume of sales is declining because of increased prices.

Although public opinion on smoking in Croatia has changed over time, with growing number of smokers looking to quit and decreasing social acceptance of smoking, the smoking rates of about 30% of the total adult population is still quite high.

#### 3.1. Smoking prevalence

According to Special Eurobarometer 458 survey (2017) on attitudes of Europeans towards tobacco and electronic cigarettes, 35% of the adult population in Croatia are smokers. The results of Padjen et al. (2012) show that the overall smoking prevalence in Croatia decreased by 5.2% from 1994 to 2005, by 32.6% between 1994 and 1998, by 30.3% between 1999 and 2001, and by 27.4% between 2002 and 2005. In the period from 2002 to 2017, the average percentage of smokers in the adult population was less than one third, the lowest being 27.70% in 2016 and the highest being 37% in 2005. However, these numbers should be interpreted with caution, because they are collected from different sources (stated below the table) and thus may vary because of differences in data collection and statistical methodology.

Smoking trends can also be tracked through the number of tobacco smokers, but changes in the number of smokers are not aligned with changes in smokers-to-population ratio. Besides the discrepancy due to different methodologies and sources, the possible reason could be a population decrease in Croatia. The fact is that the total number of smokers has been reduced by 100,000 in the observed period of fifteen years and especially from 2013 when the number of smokers constantly decreased. Legislation contributed to these trends with tobacco control policy measures that were implemented and strengthened (e.g., tobacco restrictions, smoking ban, etc.) especially after the Croatian access to EU in 2013.

Detailed information about the total number of smokers in Croatia in the 2002-2017 period are presented in Table 3.1.

**Table 3.1. Tobacco smoking status and prevalence in Croatia in 2002-2017 period**

<b>year</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Number of Tobacco Smokers (in 000)	1,046.10	1,055.30	1,064.60	1,079.20	1,099.60
Smokers as percentage of Adult Population(%)	29.80%	31.40%**	30.30%	37.00%#	33.00%#

<b>year</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Number of Tobacco Smokers (in 000)	1,140.60	1,127.60	1,095.30	1,075.20	1,051.10
Smokers as percentage of Adult Population(%)	32.40%	32.10%	33.00%#	30.70%	30.10%

<b>year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Number of Tobacco Smokers (in 000)	1,028.10	985.30	971.30	965.20	954.90	n/a
Smokers as percentage of Adult Population(%)	29.50%	28.30%	33.00%##	31.10%##	27.70%	35.00%#

Source: Euromonitor International; \*\*Croatian Institute of Public Health; #Eurostat; ##WHO; 2017

The Euromonitor International report (2017) documented that smoking prevalence in 2016 was higher among men (585,000 smokers or 36% of adult men) rather than women (370,000 thousand or 20% of adult women). These results are in compliance with European Commission (2010) findings that in all EU countries, except Sweden, smoking prevalence is higher among men than among women. Furthermore, data from Latvia shows the widest gender gap of 29%, while a small difference between male and female smoking prevalence of less than 10% can be found in 11 mostly Western European countries.

Tobacco smoking status and prevalence of men and women in Croatia in 2011-2016 period is presented in Table 3.2.

**Table 3.2. Smoking prevalence by gender in Croatia in 2011-2016 period**

<b>MALE</b>	<b>year</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Number of Tobacco Smokers (in 000)		615.4	609.7	605.8	593.9	591.1	585.4
Smokers as percentage of Adult Population(%)		37.1%	36.8%	36.7%	36.0%	35.9%	35.7%

<b>FEMALE</b>	<b>year</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Number of Tobacco Smokers (in 000)		435.7	418.4	379.6	377.4	374.0	369.5
Smokers as percentage of Adult Population(%)		23.8%	22.9%	20.8%	20.7%	20.6%	20.5%

Source: Euromonitor International (2017) from official statistics

The results show that number of female smokers was lower than male smokers, both declining over the observed period. Euromonitor International (2017) reports that the number of female smokers has been declining faster than the number of male smokers (3% negative compound annual growth rate in female group over the review period, versus 2% negative compound annual growth rate in male group).

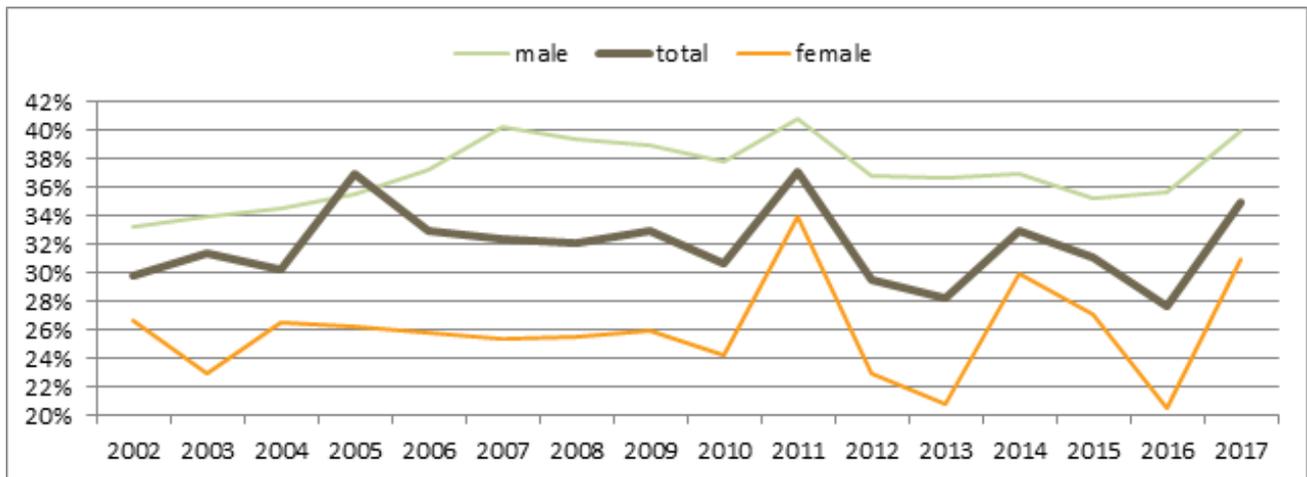
However, if the new law restricts more sales of flavored tobacco products, it would decrease the smoking prevalence among women because women were a particular target for "light" and "mild" flavored cigarettes, especially when delivered as "slim" or "thin" cigarettes (Hirschhorn, N. & WHO Tobacco Free Initiative, 2005). According to U.S. Department of Health and Human Services (2012), cigarettes with brand names containing words such as "thins" and "slims" have been manufactured to be longer and slimmer than traditional cigarettes to appeal directly to women. Croatia was supposed to introduce new legislation to ban flavored tobacco by May 20<sup>th</sup>, 2016 to comply with regulations imposed by the EU directive. Article 7 paragraph 1 of Directive 2014/40 prescribes that member states shall prohibit the placing on the market of tobacco products with a characterizing flavor. But, in the preamble to paragraph 17, it is stated that this requirement does not preclude the use of individual additives outright, but obliges manufacturers to reduce the additive or the combination of additives to such an extent that the additives no longer result in a characterizing flavor. However, the ban on flavor affects only cigarettes and smoking tobacco, with other tobacco categories being excluded for now and there is no evident impact of the flavor ban on the number of smokers yet.

Besides the significant difference in absolute numbers of male and female smokers, it can be noticed that between 2002 and 2017 smokers-to-population ratio of women was always lower than the ratio of total smokers in Croatia. Smoker-to-population ratio by gender in Croatia from 2002 to 2017 is presented at Figure 3.1.

The trend line of female prevalence ratio is aligned with trend line of total prevalence ratio, with the exception of 2003, where smoker-to-population ratio of women group

had the opposite direction than male and total ratio. On the other hand, male prevalence ratio exceeds the value of total smokers in all years reported and its trend line does not follow other two lines.

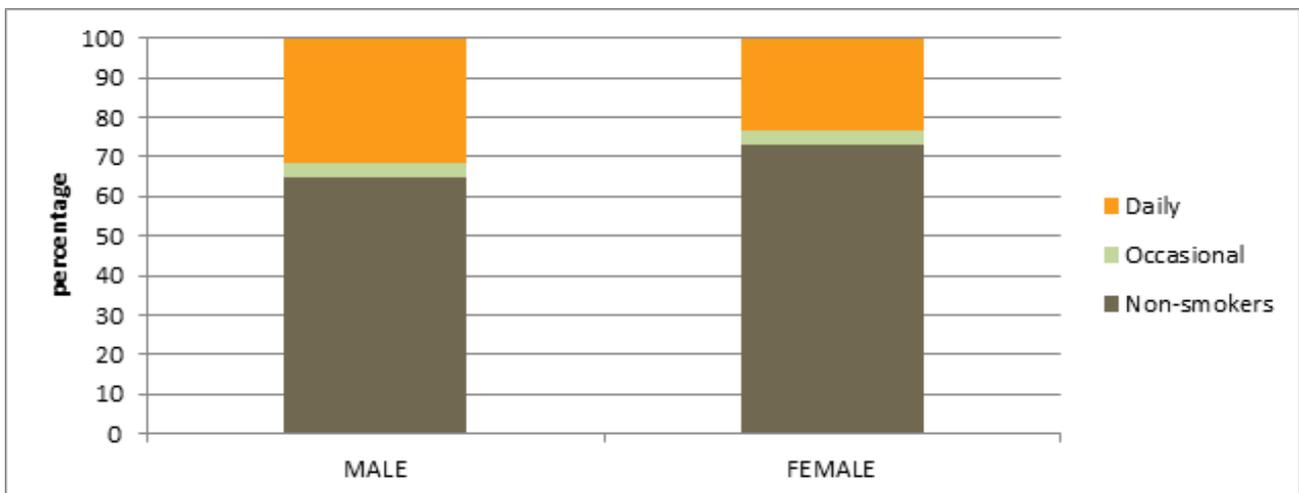
**Figure 3.1. Smokers-to-population ratio by gender in Croatia in 2002-2017 period**



Source: Euromonitor; Croatian Institute of Public Health; Eurostat; WHO (2018)

The latest survey by the Croatian Institute of Public Health on the use of tobacco in the adult population of Croatia (Dečković-Vukres et al, 2016) found that the total of 31.1% of smokers in population can be divided to 27.5% of daily smokers and 3.6% of occasional smokers. Out of occasional smokers, 43.9% are former daily smokers, while 56.1% have never been daily smokers. Also, there are 35.3% smokers among men (31.8% daily smokers and 3.5% occasional smokers), while among women there are 27.1% smokers (23.4% daily smokers and 3.7% occasional smokers). These findings are presented in Figure 3.2.

**Figure 3.2. Current smoking status according to gender**



Source: Croatian Institute of Public Health survey (Dečković-Vukres et al, 2016)

### 3.1.1. Youth tobacco use

The well-being of youth is of special concern throughout societies, so there are constant efforts to analyze and reduce tobacco consumption by young people. In 2016, another survey from the Croatian Institute of Public Health was conducted on the sample of younger students in the age group between 13 and 15 years in Croatia as a part of Global Youth Tobacco Survey (GYTS). The results show that (Mayer et al, 2017):

- 47.2% of students aged 13-15 years have used tobacco products at least once
- 15.9% currently use tobacco products (they have used tobacco products at least once in the last month) and 16.7% of them are boys and 15.1 are girls
- 14.6% of students that currently use tobacco products are using cigarettes, while 3.8% use other tobacco products (usually e-cigarettes)
- 60.9% of students are exposed to second-hand smoke in public places, and 60.1% are exposed to second-hand smoke at home.
- 61.8% of students who smoke buy cigarettes at the store, and 56.9% of those were not prevented from buying because of their age despite the legal obligation.

A comparison of the results of the surveys conducted in 2003, 2007, 2011 and 2016 shows that the percentage of students who have tried cigarettes is decreasing.

The European Monitoring Centre for Drugs and Drug Addiction (2015) conducted a survey on alcohol and other drugs. It is one of the largest empirical surveys in Europe, providing data on 96,043 students from 35 European countries who turn 16 in the calendar year of survey. With regard to Croatia, results from the research show that:

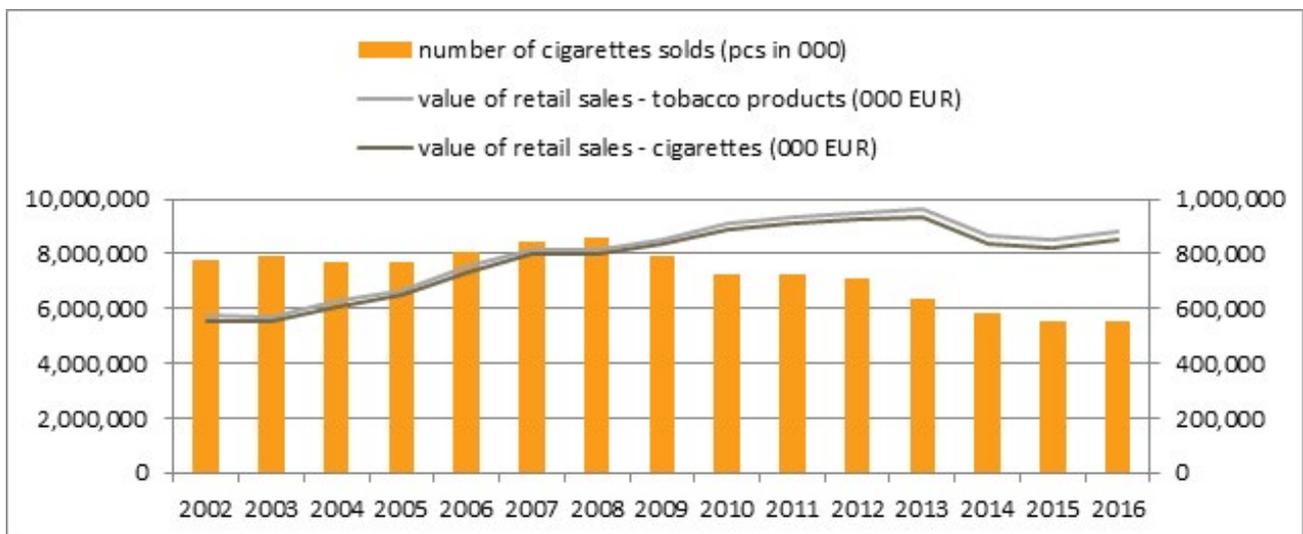
- Croatia almost has the highest rate of the students in the ESPAD countries that had used cigarettes during the last 30 days, at 33%
- The lifetime smoking prevalence rate is 62% and puts Croatia in third position among 35 countries by number of the students who had tried smoking at least once.
- Croatia has the second highest number of daily smokers among students (23%, ESPAD countries average 12%).
- The proportion of Croatian students who have tried cigarettes at the age of 13 or younger is 32% (ESPAD countries average is 23%).

In general, it can be concluded that Croatian students reported considerably higher prevalence rates compared to ESPAD countries on average for most key variables. With regard to national patterns, Croatia stands out with the second highest prevalence of smoking (33%), indicating that every third student is currently smoking. This is particularly concerning in the proportion of students who have tried cigarettes at the age of 13 or younger because of relatively high addictive potential of nicotine.

### 3.2. Tobacco product consumption

Euromonitor International (2017) data on value of retail sale of tobacco products by category in Croatia in 2002 to 2016 showed that cigarettes were the main tobacco product used in Croatia, accounting for more than 95% of overall tobacco products volume sales in all years. Thus, trend lines of retail sale value of cigarettes and overall tobacco product are narrow and generally demonstrate an upwards trend, as shown in Figure 3.3.

**Figure 3.3. Volume and value of sales of tobacco products and cigarettes in 2002-2016 period**



Source: Euromonitor International (2017)

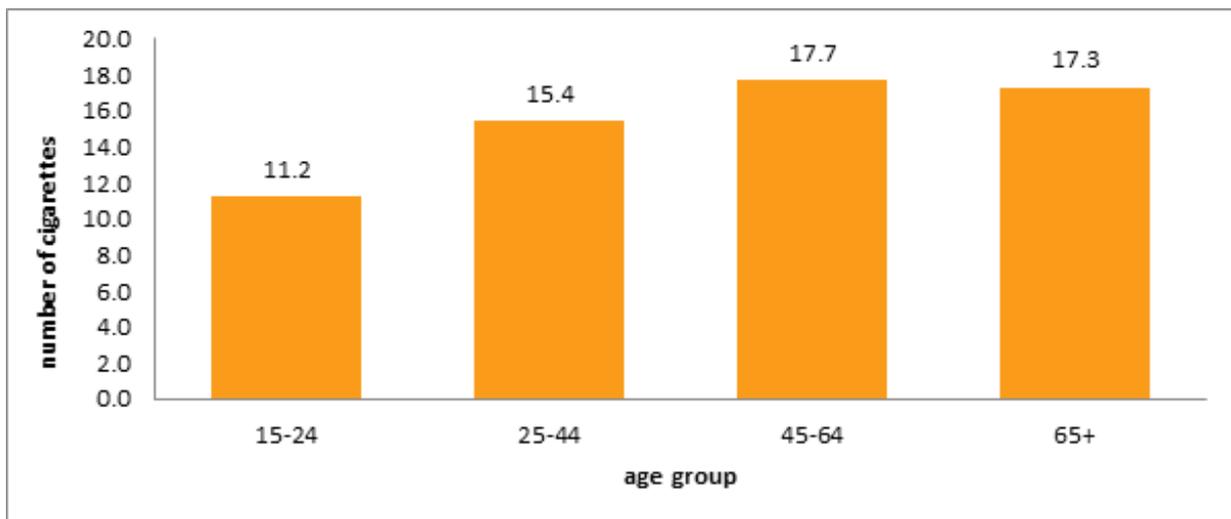
However, rising trends in cigarettes value sales with descending trends in volume sales simultaneously can be explained with increasing cigarettes prices as a result of taxation and excise duties. Also, a seasonal tourist migration is a very important contributor to the volume and value of sales of tobacco products. In 2017, 18.5 million tourists visited Croatia and generated a total of 102 million overnight stays. Although most tourists bring their own cigarettes, some buy cigarettes in Croatia, mostly global well-known brands as they are not familiar with local brands.

The national Survey on the use of tobacco in the adult population of Croatia from 2015 conducted by Croatian Institute of Public Health has documented that 27.8% of all respondents smoke manufactured cigarettes (31.1% of male and 24.8% of female), while hand-rolled cigarettes are smoked by 2.7% of all respondents only (31.1 % of male and 24.8 % of female). This survey provided more insights into the habits of smokers of manufactured cigarettes as follows (Dečković-Vukres et al, 2016):

- The number of manufactured cigarettes smoked on average per day among respondents is 15.9. The number of manufactured cigarettes smoked on average per day is 18.9 among male smokers and among female smokers.

- Smokers in the 15-24 age group smoke the lowest number of manufactured cigarettes on average per day (11.2), while smokers in the 45-64 age group smoke the highest number (17.7), very close to the average number per day of smokers in the over 65 age group (17.3). In 25-44 age group, number of smokers of manufactured cigarettes on average per day is 15.4. These findings are presented in Figure 3.4.

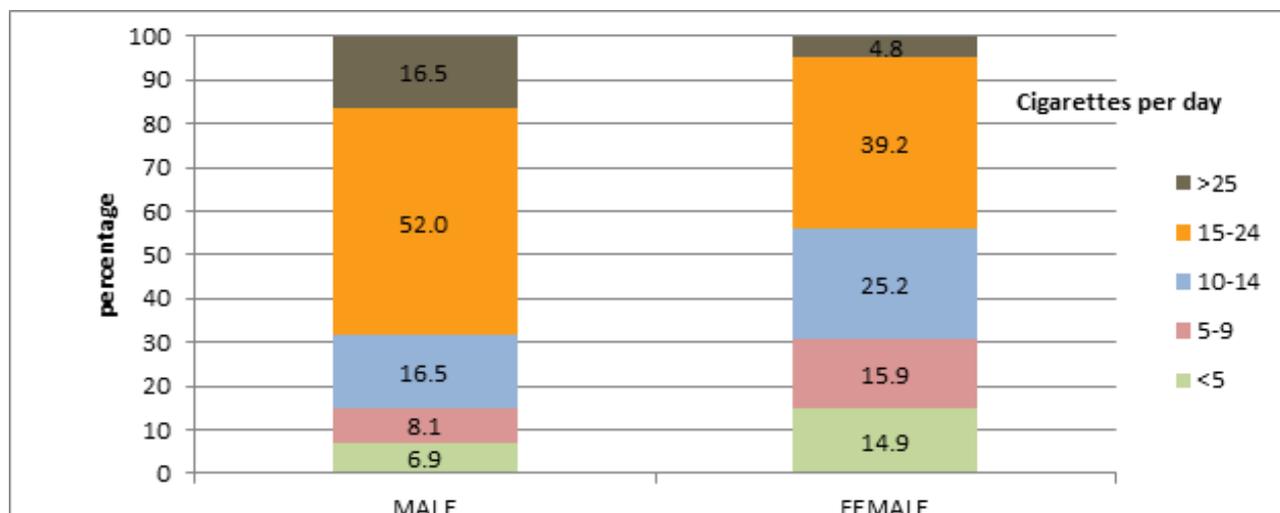
**Figure 3.4. Number of cigarettes smoked according to the percentage in age group**



Source: Croatian Institute of Public Health survey (Dečković-Vukres et al, 2016)

- According to the average number of manufactured cigarettes smoked per day, almost half of smokers (i.e. 46%) smoked 15-24 cigarettes per day, similar to the share of this group among men (52%). Women reported rather lower share of smokers of more than 15 cigarettes per day (39% in the 15-24 age group and 5% in the over 25 age group) They can be generally classified as light smokers - daily smokers with a level of consumption lower than one pack (i.e. 20 cigarettes). Detailed structure with regard to gender and the number of cigarettes smoked per day is presented in Figure 3.5.

**Figure 3.5. Structure of number of cigarettes smoked per day according to gender**



Source: Croatian Institute of Public Health survey (Dečković-Vukres et al, 2016)

More detailed information on the value of retail sale of tobacco products by category in Croatia in the 2002-2016 period are presented in Table 3.3.

**Table 3.3. Value of retail sales of tobacco products by category in Croatia in 2002-2016 period**

Value of retail sales (000 EUR)	2002	2003	2004	2005	2006
<b>Tobacco products</b>	573,359.90	570,772.50	625,296.90	666,743.30	752,962.00
<b>Cigarettes</b>	555,285.60	551,819.40	606,169.40	648,405.70	733,332.80
<b>Cigars &amp; Cigarillos</b>	6,503.40	7,708.10	7,349.90	8,020.20	8,492.00
<b>Smoking tobacco</b>	11,570.90	11,245.00	11,777.60	10,317.40	11,137.20
Value of retail sales (000 EUR)	2007	2008	2009	2010	2011
<b>Tobacco products</b>	816,258.50	817,306.10	852,038.90	908,585.00	931,254.90
<b>Cigarettes</b>	796,536.50	798,761.50	833,395.00	889,768.40	911,264.70
<b>Cigars &amp; Cigarillos</b>	8,488.20	8,441.40	8,242.20	7,654.00	8,428.60
<b>Smoking tobacco</b>	11,233.80	10,103.20	10,401.70	11,162.60	11,561.60

Value of retail sales (000 EUR)	2012	2013	2014	2015	2016
<b>Tobacco products</b>	951,386.40	964,483.60	863,564.40	851,811.10	884,915.00
<b>Cigarettes</b>	926,639.30	935,233.30	833,324.30	821,824.90	855,161.10
<b>Cigars &amp; Cigarillos</b>	9,154.10	10,902.00	11,401.40	11,790.90	12,142.00
<b>Smoking tobacco</b>	15,593.00	18,348.30	18,838.70	18,195.30	17,611.90

*Source: Euromonitor International (2017) from official statistics, trade associations, trade press, company research, store checks, trade interviews, trade sources*

A significant increase in the value of retail sale of smoking tobacco is evident especially in the last six years (i.e. from 2011). In the context of decline in number of cigarettes sold, this growth can be assigned to a group of smokers who substituted cigarettes with smoking tobacco as roll-your-own for cost reasons. Cigars and cigarillos have the smallest and steady value of sales, as they have a different target consumer group and are not popular in Croatian national smoking patterns. The number of cigars and cigarillos smokers in Croatia is scarce, and these tobacco products are treated more like a status symbol or a sign of sophistication and authority.

## 4. Tobacco taxation and pricing policies

Over the last decade, there has been a growing awareness of the harmful effects of smoking worldwide. In order to reduce tobacco consumption, the World Health Organization (WHO) set the guidelines known as The Framework Convention on Tobacco Control (FCTC), which was adopted by the World Health Assembly in May 2003 and entered into force on February 27<sup>th</sup> 2005. Croatia ratified the WHO FCTC on July 14<sup>th</sup> 2008, and it entered into force in the same year on October 12<sup>th</sup>.

### 4.1. Institutional setting and policy framework for tobacco control

The medical profession is one of the most important interest groups exerting pressure on the government to act, while on the other hand, the hospitality industry (one of the main industries in Croatia) is strongly opposing the smoking ban due to its impact on sales. Among the institutions with the greatest influence on tobacco control in Croatia, the most prominent are the Croatian Institute of Public Health (CIPH) and Andrija Štampar Teaching Institute of Public Health (AŠTI). CIPH is a central public health institute in Croatia. It was founded in 1893 with the aim of promoting health and welfare of the population. AŠTI was founded in 1949 as the Public Hygiene Institute, a professional and research institution covering all issues in the field of hygiene and preventive medicine. Several valuable initiatives came from those institutions. Since CIPH deals with public health, health promotion and education, disease prevention, microbiology, environmental health, school medicine, mental health care and addiction prevention, their website regularly features research on the effects of tobacco use. It also promotes cessation. The program, "Non-smoking School," implemented by experts from AŠTI - Department of Mental Health and Addiction Prevention fights against addiction and promotes healthy lifestyles. The School is based on the application of psychotherapeutic and educational models of smoking cessation with the aim to help participants stop smoking. The School is being conducted continuously throughout the year in the AŠTI in Zagreb. Also, they established Croatian Non-smoking Day, which has been celebrated since 2003 to remind the public of the importance to stop smoking. With World No Tobacco Day (WHO) celebrated around the world every year on May 31<sup>st</sup>, Croatia also celebrates the national Non-smoking Day, which falls on the first day of the Catholic holiday of fasting. Since this is a specific period of the year when a lot of people think about giving up of something that they enjoy during the year, a day without smoking is the day to urge smokers to quit.

Although the aforementioned institutions in Croatia promote smoking cessation, the overall institutional support needs to be more comprehensive. The newly adopted regulation - the Act on Restrictions on the Use of Tobacco and Related Products (Official Gazette, No. 45/2017) has led to the improvement in tobacco control involving much more institutions and providing supervision (sanitary inspectors, health inspectors, education inspectors, labor inspectors, market inspectors, electricity and heating inspectors and authorized customs officers) within the respective powers vested in them by the law.

## 4.2. Tobacco control measures

All the activities listed in the Action Plan for Strengthening Tobacco Control by Croatian Ministry of Health should be operationalized. Most of them are prescribed by the law (Restrictions on the Use of Tobacco and Related Products) but some of them are covered by specific programs and initiatives.

Croatia is involved in three international tobacco control programs: The World No Tobacco Day, the health care campaign "Quit and Win," and the WHO FCTC. Croatia also has several national health care initiatives for smoking cessation: "Say YES to non-smoking", "White Phone", "Non-smoking School," "Dentists against smoking- education of the educators" and several mass media campaigns. Also, the Croatian Ministry of Health supports physicians to advice the patients to stop smoking.

National projects that encourage smoking cessation had some positive impacts. "Say YES to non-smoking" was highly promoted by mass media and resulted in several positive outcomes. The Ministry of Health has established a project known as "White Phone". Since January 2017, every box of cigarettes as well as other tobacco products displays the White Phone number (0800 7999). This phone line can be used by citizens who want to stop smoking. Dialing this number, people can get basic information on smoking hazards, counselling and psychological support for smoking cessation. Also "Non-smoking School" was established by the experts from AŠTI.

## 4.3. Relevant legislation for tobacco control

Tobacco and related products are covered under several laws and regulations: Tobacco Act (Official Gazette, No. 69/1999, 14/2014), Act on Restrictions on the Use of Tobacco and Related Products (Official Gazette, No. 45/2017), Occupational Safety Act (Official Gazette, No. 71/2014), Excise Duty Act (Official Gazette, No. 22/2013 to 115/2016), Ordinance on Excise Duties (Official Gazette, No. 1/2017, 14/2017) and Ordinance on Processing of Tobacco, Manufacturing and Branding Tobacco Products (Official Gazette, No. 69/2006).

**Tobacco production** in Croatia is regulated by the **Tobacco Act** (Official Gazette, No. 69/1999, 14/2014). It also regulates the purchase, processing and the trade of tobacco and tobacco products in Croatia. Tobacco products are non-aromatic tobacco types: Virginia warm air-dried, Burley dried in shade and Herzegovina tobacco dried in the sun. The other tobacco types can be produced in Croatia under conditions and in the manner prescribed by Tobacco Act. According to this Act, production of tobacco is considered to be the production of tobacco crops, tobacco production in the field, harvesting, drying, sorting and packaging of tobacco at the producers while the production of tobacco products refers to industrial processes of manufacturing and packaging of tobacco products intended for smoking, chewing or sniffing. Tobacco treatment is considered to be industrial sorting and industrial fermentation of tobacco, and other activities in the technological processing and packaging of tobacco. This act also regulates the tobacco production contract (concluded between tobacco producers and tobacco processors) which must include: data on the cadastral plot and the area of agricultural land on

which to sow tobacco, the name of the type and variety of tobacco to be sown, the way in which the Contracting Parties provide seed or tobacco seedlings, obligations regarding the application of measures to control plant diseases and pests on tobacco, and the application of other mandatory breeding measures, the price of manufactured tobacco per class which the tobacco processor will pay to the producer, the producer's obligation to deliver the manufactured tobacco to the tobacco processor within the contractual period, and the obligation of the tobacco processor to take over and pay for the manufactured tobacco, and the tobacco producer's declaration that he did not conclude tobacco production contract with the other tobacco processor for the same area and the same period.

***Ordinance on Processing of Tobacco, Manufacturing and Branding Tobacco Products*** (Official Gazette, No. 69/2006) defines the conditions to be met by tobacco processors, and the content, form and manner of keeping the Tobacco Developer's Record, the conditions to be met by tobacco product manufacturers, and the content, form and manner of keeping the Tobacco Producers' Record, the manner of establishing and verifying the characteristics of tobacco products on the basis of the criteria laid down in the Tobacco Act where cigarettes are grouped and the content, form and manner of keeping the Register of Marks on Tobacco Products Placed on the Market in Croatia, the content, form and manner of keeping the Register of Importers and Exporters of Tobacco and Tobacco Products, the content, form and manner of keeping records as well as the report on the changes that have been made in the course of the year, which are mandatory for tobacco manufacturers, producers of tobacco products and importers of tobacco and tobacco products.

**Tobacco consumption** in Croatia is prohibited in places of work according to the ***Occupational Safety Act*** (Official Gazette, No. 71/2014), which is in line with the ***Act on Restrictions on the Use of Tobacco and Related Products***.

A few directives of the European Union are transposed into the legal order of Croatia by the Occupational Safety Act. Its purpose is a systematical improvement of safety and health protection of employees and persons at work; and prevention of injuries at work, occupational diseases and other work-related diseases. In article 57, this act prescribes to employers measures that protect non-smokers from tobacco smoke. Smoking in the workplace and during work-related meetings is prohibited. Employers may allow smoking only in a designated room or area with a smoking permitted sign.

The Act on Restrictions on the Use of Tobacco and Related Products (Official Gazette, No. 45/2017) lays down measures to reduce and restrict the use of tobacco and related products. It includes listing the harmful ingredients of tobacco and related products, mandatory labels on the packaging of tobacco and related products, preventive measures against smoking, and supervision of the implementation of this Act, with a view to protecting human health, especially for young people, and meeting the obligations under the WHO FCTC. This Act is in line with Directive 2014/40/EU of the European Parliament and of the Council of April 3<sup>rd</sup>, 2014 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco and related products and other EU related regulations. This Act prescribes the maximum emission levels for tar, nicotine, carbon monoxide and other

substances. Health warnings (a warning concerning the adverse effects on human health of a product or other undesired consequences of its consumption, including text warnings, combined health warnings, general warnings and information messages) are also regulated. This Act prescribes that each unit packet of a tobacco product and any outside packaging must carry the health warnings (in the Croatian language and Latin script). These health warnings must cover the entire surface of the unit packet or outside packaging, and they cannot be commented on, paraphrased or referred to in any form. According to the Act on Restrictions on the Use of Tobacco and Related Products (Article 9, Paragraph 3), the health warnings on a unit packet and any outside packaging must be irremovably printed, indelible and fully visible, including not being partially or totally hidden or interrupted by tax stamps, price marks, security features, wrappers, jackets, boxes, or other items. On packets of tobacco products other than cigarettes and roll-your-own tobacco in pouches, the health warnings may be affixed by means of stickers, provided that such stickers are irremovable. The health warnings must remain intact when opening the unit packet other than packets with a flip-top lid, where the health warnings may be split when opening the packet, but only in a manner that ensures the graphical integrity and visibility of the text, photographs and cessation information. Thus, the health warnings must not hide or interrupt the tax stamps, price marks, tracking and tracing marks, or security features on unit packets. On the other hand, the health warnings can be combined (made of a combination of a text warning and a corresponding photograph or illustration) following many details prescribed by this Act regarding dimensions, content and layout. Thus, manufactures must ensure that the text warning and cessation information are left aligned and centered vertically and printed in Neue Frutiger using uniform font size. The text of the health warnings is clearly defined as follows: Smoking causes 9 out of 10 lung cancers; Smoking causes mouth and throat cancer; Smoking damages your lungs; Smoking causes heart attacks; Smoking causes strokes and disability; Smoking clogs your arteries; Smoking increases the risk of blindness; Smoking damages your teeth and gums; Smoking can kill your unborn child; Your smoke harms your children, family and friends; Smokers' children are more likely to start smoking; Quit smoking – stay alive for those close to you; Smoking reduces fertility; Smoking increases the risk of impotence.

The layout and shape of the combined health warnings is strictly prescribed. The photograph (from the picture library set by this Act) must occupy at least 50% of the surface area of the combined health warning, the text warning at least 30%, and the cessation information at least 10% but no more than 12% of the surface area of the combined health warning inside the outer black border. Manufacturers are obliged to ensure that none of the three elements of the combined health warning is split upon opening of the unit packet.

In Croatia, it is strongly forbidden to directly or indirectly **promote and advertise tobacco and tobacco products**. According to the Act on Restrictions on the Use of Tobacco and Related Products (Official Gazette, No. 45/2017), it is prohibited to sponsor the events, activities or individuals with the aim, effect or likely effect of, directly or indirectly, promoting tobacco and related products, including smokeless tobacco products and herbal products for smoking, electronic cigarettes, refill containers and single use cartridges. Needless to say, it is forbidden to sell tobacco and related products, including

smokeless tobacco products and herbal products for smoking, electronic cigarettes, refill containers and single use cartridges to persons under 18 years of age.

Many different measures for tobacco related products restriction and reduction are defined. As previously mentioned, it is prohibited to smoke and consume tobacco and related products, including smokeless tobacco products, electronic cigarettes and herbal products for smoking, during public performances or to show persons smoking or consuming the products referred to in this paragraph on television. Also, publishing photographs or drawings of persons smoking in the press (for promotional purposes) is banned. This Act strongly forbids smoking of tobacco and related products or herbal products, and to use nicotine-containing or non-nicotine-containing electronic cigarettes and water pipes in all indoor public places and in the area situated less than 20 meters away from the entrance to a healthcare facility and educational establishment.

In order to enhance the prevention against smoking, the Croatian government has set different measures. The Act on Restrictions on the Use of Tobacco and Related Products (Official Gazette, No. 45/2017) prescribes that educational institutions (during their regular education activities) should promote awareness of the harmful effects of use of tobacco and related products on the health of children and youth of all ages. Inspectional supervision of the implementation of this Act shall be carried out by sanitary inspectors, health inspectors, education inspectors, labor inspectors, market inspectors, electricity and heating inspectors and authorized customs officers, within the respective powers vested in them by the law.

**Tracking tobacco and tobacco products is quite strict in Croatia.** The Ordinance on Excise Duties (Official Gazette, No. 1/2017 and 14/2017) prescribes the records of tobacco and tobacco products import and sale. Those records are kept to ensure all the data on tobacco products required for the calculation and payment of excise duty, in particular the data on quantities produced, quantities in production, warehouses or other business premises, quantities of raw tobacco and tobacco products received in warehouses from another EU Member State and/or third country or third territory, the quantities of products released for consumption for which the obligation to calculate and pay excise duties has been incurred according to the prescribed heights and amounts, the quantities of tobacco products dispatched to exports or to another Member State, the quantities of tobacco products for own consumption within the warehouse, dispatched quantities of tobacco products in the system of postponement of excise duty between the warehouse of the same producer or excise warehouse of the same authorized excise warehouse keeper, amounts charged and paid excise, and stock status.

**Taxation of tobacco products** in Croatia is regulated by Excise Duty Act (Official Gazette, No. 22/2013, 32/2013, 81/2013, 100/2015, 120/2015 and 115/2016) and Ordinance on excise duties (Official Gazette, No. 1/17 and 14/17). Those regulations mainly incorporate European excise institutes into the legislation of Croatia and harmonize Croatian excise duties with the minimum amounts of excise rates prescribed in EU directives. According to Excise Duty Act (Official Gazette, No. 22/2013 to 115/2016) the subject of taxation is tobacco products that are consumed in Croatia, which include: cigarettes, cigars, cigarillos and smoking tobacco (fine cut smoking tobacco and other smoking tobacco). Economic entities wishing to carry out the activity of production,

import, receipt and delivery of tobacco products should be registered in Croatia as an authorized warehouse-keeper, registered consignee, or occasionally registered consignee and importer or obtain the approval of the competent customs office for one of these statuses, depending on the business needs. Tobacco products between EU Member States can only move in the system of postponement of excise duty payments using the EMCS system. In addition, the consignor and the consignee must have the appropriate approval for dispatch or receipt of tobacco products in the system of postponement of excise duty.

## **4.4. Impact of tobacco taxation on the price of the tobacco products**

### *4.4.1. Tax structure types*

Croatia joined the EU on July 1<sup>st</sup>, 2013, continuing the process of harmonizing tobacco taxation with EU regulations. Croatia implemented the EU Directive 2011/64 that defined the tobacco product categories, structure and minimum rates for excise duties on manufactured tobacco. EU countries use mixed uniform excise tax structure. EU excise duty rules broadly differentiate between cigarettes and other tobacco products. According to the EU Directive, excise duty on cigarettes must consist of two components: a specific component (i.e. a fixed amount per 1000 cigarettes) and an ad valorem component (i.e. a percent of the retail selling price). These two components must be the same for cigarettes of all price categories. The Directive prescribes the minimum rates which Member States must respect but they can set the greater rates as well. For other tobacco products (cigars, cigarillos, fine cut smoking tobacco) Member States can choose between a specific duty or an ad valorem duty, or may apply a mixture of the two. Minimum rates for cigars, cigarillos and fine cut smoking tobacco are set out by the same Directive and Member States are free to apply national rates above these minimums.

### *4.4.2. Tobacco tax structure and effects on prices*

Member States have to levy a minimum rate of excise duties on cigarettes and this minimum rate must consist of a specific component of between 7.5% and 76.5% of the total tax burden (TTB) - expressed as a fixed amount per 1,000 cigarettes, and an ad valorem component - expressed as a percentage of the maximum retail selling price.

In addition, the overall excise rate must be at least EUR 90 per 1000 cigarettes and at least 60% of the weighted average retail selling price. It should be mentioned that EU Member States that apply an excise duty of EUR 115 or more, however, does not need to comply with the 60% criterion mentioned above<sup>1</sup>.

Taxation of cigarettes in Croatia is presented in Table 4.1, while the taxation of cigars and cigarillos, fine cut smoking tobacco (intended for rolling the cigarettes) and other smoking tobacco is shown in Table 4.2.

<sup>1</sup> Note: EU legislation only sets harmonised *minimum* rates. Member States are free to apply excise duty rates above these minima, according to their own national needs.

**Table 4.1. Taxation of cigarettes**

Specific excise (per 1000 cigarettes)			Ad valorem excise in % (as % of TIRSP)	VAT in % (as % of TIRSP)	Ad valorem excise +VAT (as % of TIRSP)	Total tax (as % of WAP)	Current MPPC per 1000 cigarette (EUR)	WAP per 1000 cigarette(EUR)	Excise yield (EUR per 1000 cigarettes of the WAP)	Minimum excise duty (EUR per 1000 cigarette)	Overall minimum excise duty (Specific +ad valorem) (as % of WAP)
EUR	As % of WAP	As % of total tax (specific +ad valorem +VAT)									
41.35	27.1	33.41	34	20	54	81.1	180.07	152.59	93.23	92.84	61.1

Source: European Commission (2018), Excise Duty Tables (Part III- Manufactured Tobacco)

*Note: TIRSP = Tax included retail selling price (all taxes included); MPPC = Most popular price category; WAP = Weighted average price (where WAP is calculated as: Total value of all cigarettes released for consumption (TIRSP) in 2017 / Total quantity of cigarettes released for consumption in 2017)*

**Table 4.2. Taxation of cigars and cigarillos, fine cut smoking tobacco (intended for rolling the cigarettes) and other smoking tobacco**

Specific Excise per 1,000	Specific Excise per kg	Ad Valorem Excise	VAT%	Ad Valorem Excise + VAT	Minimum Duty	
EUR	EUR	(as % of TIRSP)	(as % of TIRSP)	(as % of TIRSP)	EUR/1000 pcs	EUR/kg
80.03	-	0	20	20	-	-

Source: European Commission (2018), Excise Duty Tables (Part III- Manufactured Tobacco)

The taxation of tobacco products in Croatia is completely in accordance with EU Directive 2011/64 and according to Excise Duty Act (Official Gazette, No. 22/2013, 32/2013, 81/2013, 100/2015, 120/2015 and 115/2016). Excisable products and amounts of excise duties on tobacco products are:

- Cigarettes - Specific excise: approximately 41 EUR (310 HRK) /1,000 items + Ad valorem excise: 34% of retail selling price; Minimum excise approx. 93 EUR (696 HRK)/1,000 pieces.<sup>2</sup>
- Cigars and cigarillos – Specific excise: approximately 80 EUR (600 HRK) /1,000 items

<sup>2</sup> Note: In the calculation of the specific excise, a cigarette is deemed to be a role of tobacco the length of which exclusive of tip or filter is up to 8 cm, two cigarettes will be deemed to be constituted by cigarettes from 8 to 11 cm, and three from 11 to 14 cm, i.e. every additional 3 cm of length of a roll of tobacco without a filter will represent an increase of one cigarette.

- Fine cut smoking tobacco and other smoking tobacco - Specific excise: approximately 80 EUR (600 HRK) /1 kg of product

All tobacco products that have been taxed are marked with fiscal control stamps of the Ministry of Finance (MoF). The printed stamps are kept in the main vault of the MoF in the Central Office of the Tax Administration and are delivered to the auxiliary vaults of the producers or directly taken over by the taxpayers. The person who takes over the stamps is the excise taxpayer and is obliged to pay the calculated excise amount to customs within a period of 30 days.

Although it is not in compliance with EU *acquis*, the following tobacco products are subject to excise duties from the beginning of 2017 in Croatia:

E-liquids - Specific excise: approximate 0 EUR (0 HRK) /1 ml of product

- Heated tobacco products (e.g. IQOS-heat sticks, Ploom tobacco capsules) - Specific excise: approximately 80 EUR (600 HRK) /1 kg of product
- New tobacco products (e.g. Hookah Squeeze steam paste, Ice Rockz steam stone, Ice Frutz Hookah gel) - Specific excise: approximately 80 EUR (600 HRK) /1 kg of product.

The changes in taxation of tobacco products can be seen in Table 4.3, where the data regarding specific and ad valorem excise duties, VAT, total tax burden and the average retail prices are indicated for the years 2012, 2014 and 2017.

**Table 4.3: The changes in taxation of tobacco products and their retail prices**

Tobacco product	Tax structure and retail price	2017	2014	2012
Cigarettes	Specific excise (value) (EUR per 1,000)	41.55	27.52	23.94
	Specific excise (value) (EUR per pack of 20)	0.83	0.55	0.48
	Specific excise (as a % of retail price )	26	19	19
	Ad valorem excise (%)	34	37	33
	VAT (as a % of retail price)	20	20	20
	Total Tax Burden, as a % of Price ("premium price band")	80	76	72
	<i>Weighted Average Price</i>		3.21	2.90

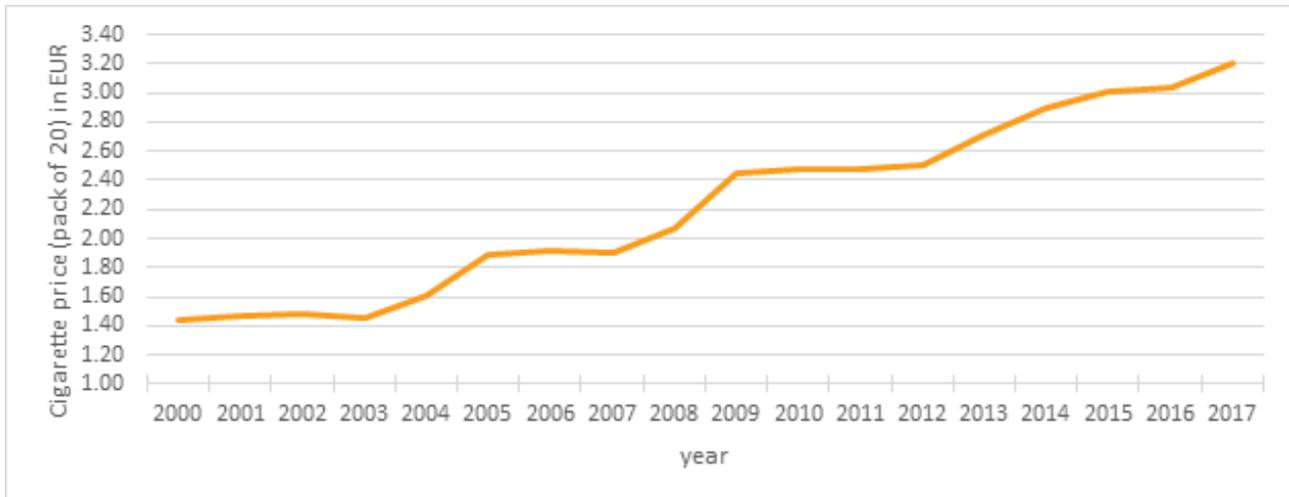
Cigars and cigarillos	Specific excise (value) (EUR per 1,000)	80.43	78.64	146.33; 29.27*
	Specific excise (value) (EUR per 1 unit)	0.08	0.08	0 . 1 5 ; 0.03
	Specific excise (as a % of retail price -cigars)	n/a	n/a	n/a
	Specific excise (as a % of retail price -cigarillos)	n/a	n/a	n/a
	Ad valorem excise (%)			
	VAT (as a % of retail price)	20	20	20
	Total Tax Burden, as a % of Price of cigars	n/a	n/a	n/a
	Total Tax Burden, as a % of Price of cigarillos	n/a	n/a	n/a
	<i>Average price of cigars</i>	n/a	n/a	n/a
	<i>Average price of cigarillos</i>	n/a	n/a	n/a
Fine cut smoking tobacco	Specific excise (value) (EUR per 1 kg)	80.43	68.15	31.13
	Specific excise (as a % of retail price )	55	n/a	n/a
	Ad valorem excise (%)			
	VAT (as a % of retail price)	20	20	20
	Total Tax Burden, as a % of Price	75	n/a	n/a
	<i>Average price EUR per 1 kg</i>	146.91	<i>n/a</i>	<i>n/a</i>
Other smoking tobaccos	Specific excise (value) (EUR per 1 kg)	80.43	58.98	19.42
	Specific excise (as a % of retail price )	36	n/a	n/a
	Ad valorem excise (%)			
	VAT (as a % of retail price)	20	20	20
	Total Tax Burden, as a% of Price	56	n/a	n/a
	<i>Average price EUR per 1 kg</i>	223.19	<i>n/a</i>	<i>n/a</i>

Note: \*different excise amounts for cigars and cigarillos in the year 2012

Source: Croatian customs administration (2018)

From 2013, significant changes in tobacco taxation occurred, which resulted in a higher tax burden especially on cigarettes. In 2012, specific excise duty per 1,000 cigarettes in Croatia was 23.93 EUR, while in 2017 it was 41.55 EUR (increased approximately 73 %). This increase affected the average retail price of the pack of cigarettes, which was 2.50 EUR in 2012, 2.90 EUR in 2014 and 3.21 EUR in 2017.

**Figure 4.4: Retail selling price of the most popular pack of cigarettes in 2000-2017 period**



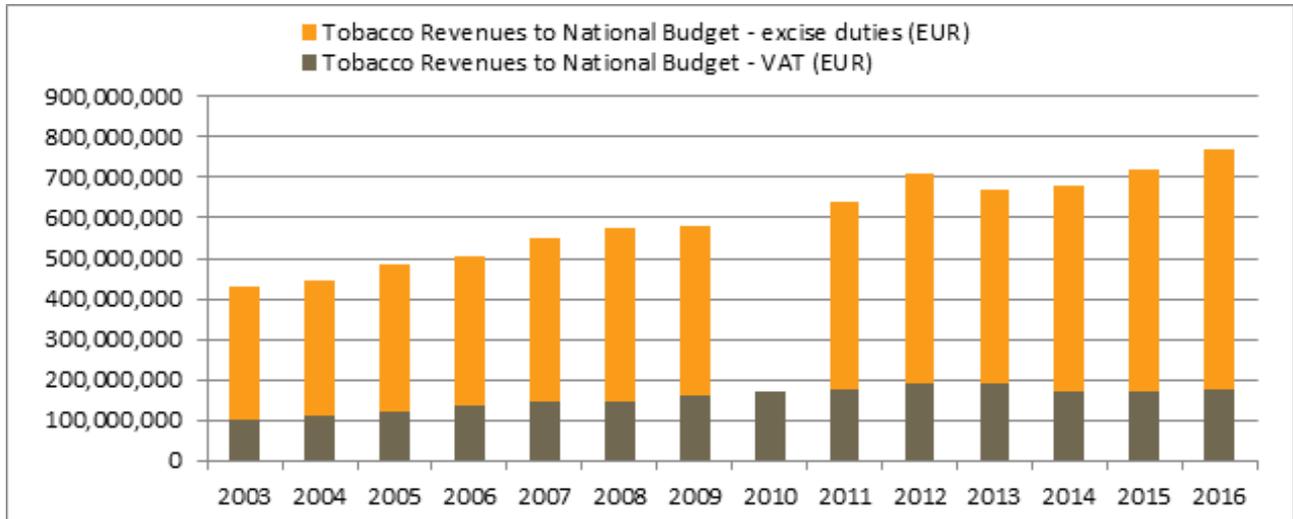
Source: Statista and Croatian customs administration (2018)

Over the past 18 years (between 2000 and 2017), the retail selling price of cigarettes (using the price of one pack containing 20 sticks of the most popular type) increased by 2.229 EUR (from 1.44 EUR to 3.21 EUR), and the main reason was taxation. The changes in tobacco taxation policies (during the observed period) with the emphasis to taxation harmonization to EU regulation resulted in significant increase of cigarettes prices as shown in Figure 4.4.

#### 4.5. Tobacco tax revenues

Value added tax (VAT) in Croatia was introduced in 1998 and the standard VAT rate was 22% until August 1<sup>st</sup> 2009 when it increased on 23%. The latest change of the standard VAT rate (which is also used for tobacco products taxation) was in 2012 when it increased to 25%. These changes reflecting an increase in tobacco VAT revenues are presented in Figure 4.5. The rise of the standard VAT rate in 2009 and further increase in 2012 corresponds with the growth of tobacco tax revenues from VAT which peaks in 2013 (192.8 million EUR). Although governmental tobacco revenues from VAT decreased after 2013, the overall tobacco revenues slightly increased because of the new regulation regarding excise duties (Excise Duty Act, Official Gazette, No. 22/2013 to 115/2016). From the year 2013 (when Croatia joined EU), excise duty tax on tobacco products became a more efficient fiscal tool in generating governmental revenues than VAT. Excise duty tax on tobacco products was 447.8 mil EUR in 2013, which increased by 32.7% in 2016 when the Croatian government collected 594.3 mil EUR.

**Figure 4.5. Tobacco tax revenues from VAT and excise duties, 2003-2016**

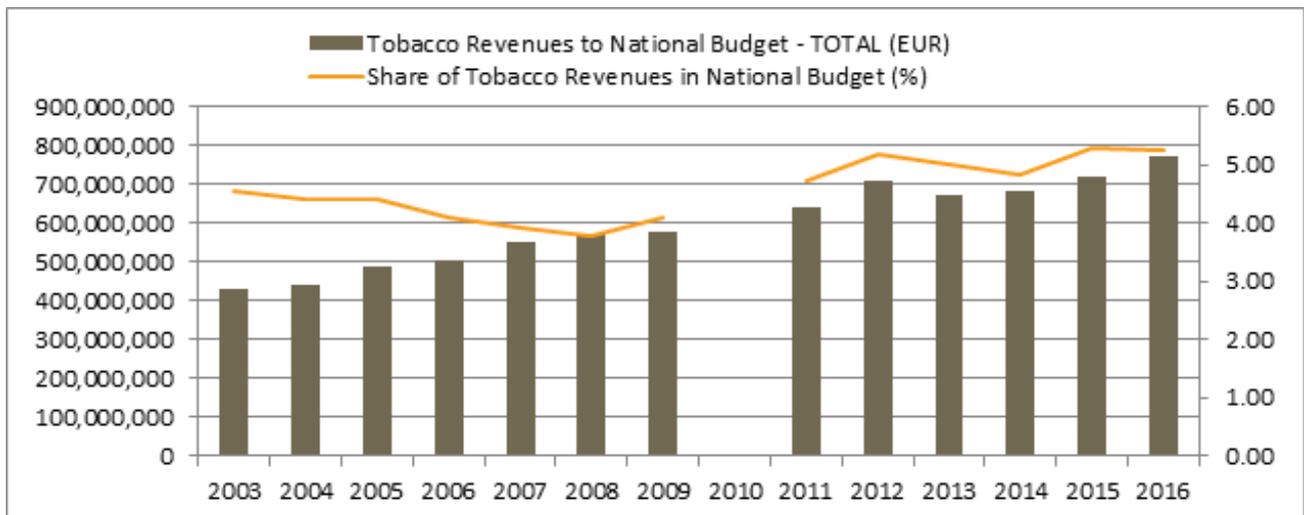


Source: Authors' calculation according to data from Ministry of Finance of Republic of Croatia (2018)

Note: 2010 year data (excise duties) is missing

The total amount of budget revenues gained from the sale of tobacco products and the share of the total tobacco tax as a percentage of revenues of the Croatian national budget is shown in Figure 4.6. Although the data for 2010 is missing, it can be noticed that amount of total tobacco tax revenues is increasing from 2003 to 2016, while the share of tobacco revenues in national budget does not follow this trend. During the observed period the share of tobacco tax revenues in national budget varied from lowest 3.77% in 2008 to 5.29% in 2015. The last recorded percentage in 2016 remains at similar level of 5.26%.

**Figure 4.6. Total Tobacco tax revenues and share of tobacco tax revenues in national budget, 2003-2016**



Source: Authors' calculation according to data from Ministry of Finance of Republic of Croatia (2018)

Note: 2010 year data is missing

## 5. Elasticity of tobacco products

### 5.1. Estimation of the price elasticity using the macro data

Having an estimated cigarette price elasticity of demand for a specific country is very useful for planning purposes and it enables precise estimation of how much a tobacco tax increase will affect government revenues and tobacco use. In order to estimate the price and income elasticity of cigarette demand in Croatia, we used aggregate time series data on cigarette consumption, cigarette prices, income and smoking restriction policies from 2000 to 2017. After specifying conventional cigarette demand model in linear functional form, we applied both Error Correction Model (ERM) and Autoregressive Distributed Lag (ARDL) cointegration framework to examine the short-run and long-run characteristics of cigarettes demand. We applied both cointegration techniques, because identifying the correct model is not so straightforward, especially in the case of a small sample such as ours.

Based on data availability, we estimated cigarette demand model using three different measures of cigarette prices: real tobacco consumer price index (CPI), real weighted-average retail cigarette prices and real cigarette prices of the most sold cigarette brand. Our model of cigarette demand was controlled for the impact of income and the tobacco regulatory environment. Namely, we used average real gross wages as a proxy of available income and constructed a tobacco policy index to control for smoking restrictions. However, our correlation analysis indicated that the tobacco policy index variable was highly correlated with the price proxies, so we left it out of our analysis.

Because selected variables were not integrated at the same order, before estimating the demand function, we tested for cointegration relationship among them. First, we applied Engle-Granger (1978) two-step method. Although we found evidence of cointegration in the first step, the lagged residuals from the first step (i.e. an error correction term) were marginally significant and positive in the second step. Therefore, we did not rely on the results obtained from ECM and proceeded applying ARDL cointegration technique.

ARDL allows mixed orders of integration, so we estimated four versions of our conventional model using all available proxies of cigarette prices. Namely, in Model 1 we used real tobacco CPI, in Model 2 and in Model 3 we used real cigarette prices of the most sold cigarette brand, and in the Model 4 we used real weighted-average retail cigarette prices. We estimated only those dynamic versions of the models for which we found evidence of cointegration applying Bound test. The long-run estimates showed that there is a significant negative price and income effect on the demand for cigarettes in all estimated models. Based on the results obtained, we calculated long-run price and income elasticities that are reported in Table 5.1.

**Table 5.1. Long-run price and income elasticities**

	Model 1	Model 2	Model 3	Model 4
Price elasticity	-0.44196	-0.60324	-0.60547	-0.49336
Income elasticity	-0.91472	-0.50004	-0.58435	-0.38809

Our results indicate that in Croatia, cigarette demand is price sensitive, with price elasticity in range with the results of previously conducted studies in middle-income countries. Namely, the estimated long-run price elasticity ranges from -0.44 to -0.61, which suggests that a 10% increase in price would result in a 4.4 to 6.1% decrease in the long-run cigarette demand. The income elasticity is also negative, ranging from -0.39 to -0.91, which suggests that in the long-run a 10% increase in income would lead to a 3.9 to 9.1% decrease in cigarette consumption. The short-run model was difficult to estimate because of further reduction in the degrees of freedom. Therefore, we considered short run coefficients less reliable.

## 5.2. Estimation of the price elasticity using the micro data

In addition to aggregate time-series analysis, we used data obtained from household budget surveys (HBS) for three years (2010, 2011 and 2014) to estimate cigarette price elasticity in Croatia. Since market price is not observed directly, we applied the Almost Ideal Demand System (Deaton and Muellbauer, 1980) to obtain consistent estimation of the cigarette price elasticity. Deaton (1988) uses unit values of cigarettes as a proxy for price and a structure imposed by the weak separability assumption to impute the extent of the quality substitution in estimating price elasticity. The estimation of the model consists of two stages. In the first stage, within-clusters variations are used to budget share and unit value equations. In the second stage, between-clusters variations are used to estimate spatial price elasticities of demand.

For Croatia, we define clusters as combination of municipality – year (i.e. the cluster is defined as a municipality  $x$  in the year  $t$ ). According to this definition, we have generated 652 clusters which on average included about 12 households, while the full sample consisted of 7,825 households.

In the first stage, within-cluster information on household demand, income, and unit value is used to obtain estimates of the quality effect, while other household characteristics are controlled for. Estimated coefficients from the unit value equation suggest that the expenditure elasticity of quality is at 0.07, and household size, education and household type also have a significant effect on unit value. Regarding budget share regression, results indicate that only male ratio, adult ratio and household type are significantly related to the cigarettes budget share.

The second stage of the AIDS model uses between-clusters variations and exploits the information obtained from the variables at cluster-means to derive a consistent estimate of the price elasticity. Results indicate negative own-price elasticity of -1.07 and positive income elasticity of 0.91. This means that if cigarette prices in Croatia increase by 10%, the demand for cigarettes will decrease by 10.7% and that a 10% income increase would

raise cigarette consumption by 9.1%, respectively. Standard error of the price elasticity, calculated via bootstrapping procedure (1,000 replications) indicates that the value of the price elasticity is significantly different from and lower than zero ( $\xi = -1.067$ ;  $SE\xi = 0.368$ ,  $t = -2.899$ ).

The estimated price elasticity of -1.07 is on the high side, but this is not unusual. In fact, the elasticity estimates based on the HBS data are often higher than the estimates based on the other types of data, as they take into account price responses of both tobacco-spenders and non-spenders. In addition, the high estimated elasticity may be possibly explained by the potential endogeneity of price due to the cluster size. In other words, the smaller the clusters, the more endogenous is the price measure, leading to higher elasticity estimated. Finally, other factors may have influenced the high estimate, such as the potential downward substitution to cheaper types of tobacco (such as cut tobacco), which is not observed due to lack of data, or significant changes in affordability of cigarettes in Croatia during the years observed in analysis, which was the period of Croatia's accession to the EU.

## 8. Summary and recommendations

Tobacco use has devastating global impact on health and economic prosperity. Although global smoking rates have decreased in the past 30 years, especially in high-income countries (HICs), many smokers in low- and middle- income countries (LMICs) do not have access to education, prevention, or assistance. Regardless of the constant government efforts aiming to reduce tobacco consumption and its devastating effects on human health, the economy, and society, smoking prevalence in Croatia and other Western-Balkan countries is still amongst the highest in Europe.

Practices and policies affecting the production of raw tobacco and the manufacturing of cigarettes and other tobacco products can have an important effect on the characteristics and patterns of tobacco product use. In recent decades, the prevalence of smoking in Croatia measured by number of smokers has stabilized and shows a significant decline. From 2002 to 2017, average percentage of smokers in adult population is fewer than one third, ranging from the lowest 27.70% in 2016 to the highest 37% in 2005. Young people's well-being is of special concern, so there are constant efforts to reduce tobacco consumption for this age group.

The Croatian government through the MoF - Customs Administration provides the framework for the effective tobacco taxation, which is an important element of tobacco control. Besides the government, many different institutions are involved in tobacco control activities. The medical profession is one of the most important interest groups exerting pressure on the government to act while, on the other hand, the hospitality industry (one of the main industries in Croatia) is strongly opposing the smoking ban due to its impact on sales. Although those institutions promote smoking cessation, the overall institutional support should be more comprehensive. The Act on Restrictions on the Use of Tobacco and Related Products (Official Gazette, No. 45/2017) leads to the improved tobacco control involving much more institutions and providing supervision (sanitary inspectors, health inspectors, education inspectors, labor inspectors, market inspectors, electricity and heating inspectors and authorized customs officers, within the respective powers vested in them by the law). While it can be concluded that Croatia is making progress, there is much to do in order to achieve better results in smoking cessation and tobacco use prevention.

Since price policy is one of the most effective tools for reducing tobacco consumption, the responsiveness of cigarette demand to price increases is estimated in this study. Research results indicate that in Croatia, cigarette demand is price sensitive, with price elasticity in range with previous estimates in LMICs.

In aggregate time-series analysis model, the estimated long-run price elasticity ranges from -0.44 to -0.61, which suggests that a 10% increase in price would result in a 4.4 to 6.1% decrease in the long-run cigarette demand. The income elasticity is also negative, ranging from -0.39 to -0.91, which suggests that in the long run a 10% increase in income would lead from 3.9 to 9.1% decrease in cigarette consumption. In addition to aggregate time-series analysis, data obtained from HBS are used to estimate cigarette price elasticity in Croatia. Estimated results of the research analysis based on Deaton's (1988) model indicate that cigarette price elasticity in Croatia is -1.07 and cigarette

income elasticity is 0.91. This means that a 10% increase in cigarette price would lead to a 10.7% decrease in cigarette consumption and a 10% income increase would raise cigarette consumption by 9.1%, respectively. According to these findings, cigarettes are still perceived to be a superior good in Croatia since there is a positive significant impact of income on consumption, which is contrary to results obtained in aggregate time-series analysis model. However, this could be explained by the difference in time-frame of analyses, as in aggregate time-series model secondary data from 2000 to 2017 were used, while in Deaton's model data for only three years (2010, 2011 and 2014) were available.

Concerning price elasticities results described above, if we assume that GDP in Croatia will increase next year by 2.8% and cigarette prices will stay the unchanged, then an increase in cigarette consumption by 2.55% and the same percentage of increase of tax revenues can be expected. However, according to our model estimations if specific excise increases by 10%, this would lead to 0.51% decrease in cigarette consumption but total tax revenues would increase by 3.2% (total excise revenues growth of 3.50% and VAT revenues growth of 2.34%).

In conclusion, based on the facts and evidence presented in previous chapters, this monograph advocates for reducing tobacco use in Croatia in two ways: by reducing smoking initiation, and reducing the smoking prevalence rate. The first goal of the smoking reduction initiation is primarily targeted at young people, especially students, whose well-being is of special concern to society. In order to make tobacco and related products less accessible and less affordable to young people, the following activities can be undertaken: raising the unit price of tobacco and related products, mass media anti-smoking campaigns, education (e.g. smoking curricula in schools and universities), smoke-free policies (e.g. tobacco bans in public places), more restrictive tracking of law enforcement, imposing penalties on retailers who sell tobacco and related products in violation of the law, especially in the part of the prohibition of their sale to persons under 18 years of age. All these activities can also be used to achieve the second goal, which is to reduce smoking prevalence rate in Croatia.

Based on the evidence from our research described in previous chapters, as well as on the evidence from the other research in LMICs (U.S. National Cancer Institute and WHO, 2016), cigarette price policy could be used as a very effective government tool for reducing tobacco use Croatia. To be more specific, **the government should increase taxes on tobacco and related products, especially the specific excise duty (because it has a relatively higher impact on the consumption than ad valorem tax and it is easier to administer) in order to increase tobacco prices.** This is in compliance with WHO recommendations that countries should establish their tax policies in such a way as to ensure that tobacco products become less affordable over time. Also, the WHO (2017) estimates that, on average, tobacco tax revenues are 269 times higher than public expenditure on tobacco control interventions. Increased excise duties on tobacco and related products should result in increased budget tax revenues, healthcare savings, and improving the health of the population. Following the increased budget revenues from raised excise duties, our recommendation is **targeted allocation of collected funds from excise duties to the healthcare system and education system**, primarily for the smoking prevention actions, like mass media anti-smoking

campaigns to raise awareness on harmful effects of smoking, promotion of strong smoke-free policies, inclusion of smoking curricula in schools and universities, etc.

Also, due to its geo-communication position (Adriatic, Central European country and part of the Danube valley; several pan-European transport corridors and their branches that pass through Croatia [e.g. Corridor X and Corridor V]); Croatian seaports have traditionally been points of exit for Austria, Hungary, Slovakia, Czech Republic, Bosnia and Herzegovina, etc. Croatia is highly threatened by illicit trade and moreover by the illicit import of tobacco and related products. For this reason, activities for **regional harmonization of fiscal policies** should be undertaken to limit incentives for cross-border transactions, both with European Union countries as well as with western Balkan countries.

The short-term goal of the project, Accelerating Progress on Tobacco Taxes in Low-and-Middle Income Countries, will be completed with the publication of Croatian national research report: raising awareness on the importance of reducing tobacco use as well as established co-operation and dialogue between decision-makers and academia in order to put tobacco taxation issues on the political agenda. Developed recommendations from the project should result in sustainable and systematic policy change in order to achieve the long-term goal, which is to create an effective tobacco control policy and to develop a strategic plan to reduce the damage caused by the use of tobacco in the Republic of Croatia.

## Appendix – Policy Dialogue

The policy dialogue of all relevant stakeholders (representatives of Ministry of Finance - Customs Administration, Ministry of Science and Education, Ministry of Tourism, Academia and Students' Union and health care professionals) on efficient tax policies was very productive. All the stakeholders were engaged in discussion in our policy dialogue roundtable with the aim to identify specific barriers and potential solutions for tobacco control policies in Croatia. Furthermore, they identified three main obstacles:

1. Non-efficiency of the criminal justice system – non-compliance of different laws that regulate the restrictions on the use of tobacco and related products, especially in the part of imposed penalties on those who violate laws;
2. Illicit trade – due to its geo-communication position (Adriatic, Central European country and part of the Danube valley; several pan-European transport corridors and their branches pass through Croatia (e.g. Corridor X and Corridor V); Croatian seaports have traditionally been points of exit for Austria, Hungary, Slovakia, Czech Republic, Bosnia and Herzegovina, etc.) the Republic of Croatia is highly threatened by illicit trade and moreover by illicit import of tobacco and related products.
3. Harmful effects of smoking and passive smoking to children's and youth's health as well as human health in general. Consequently, the health care system is overburdened with costs of treatment of diseases that are caused by active or passive smoking.

However, there are opportunities to improve tax policy, primarily by further increasing excise duties on tobacco products that should result in increased tax revenues, healthcare savings, and improving the health of the population. Their recommendations could be summarized as follows:

1. Stakeholders support presented research findings and recommend further increase in excise duties that will result with a higher retail price of cigarettes. In their opinion, that kind of tax policy could be an effective tool for reducing the initiation and prevalence of smoking in the Republic of Croatia, as it will decrease the prevalence rate of smoking among adults. Moreover, it will make tobacco and related products less accessible for young people and should have a positive impact on reducing the number of adolescent smokers.
2. Following the increased budget revenues from raised excise duties, the stakeholders suggest targeted allocation of collected funds to the healthcare system and education system primarily for the smoking prevention actions, like mass media anti-smoking campaigns to raise awareness on harmful effects of smoking, promotion of strong smoke-free policies, inclusion of smoking curricula in schools and universities, etc.

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