TOBACCO TAX EVASION IN SOUTHEASTERN EUROPE

Tax Evasion Prevalence and Evasion Determinants

Institute of Economic Sciences

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Contents

Executive Summary

The current prevalence of adult tobacco smoking in the Southeastern Europe (SEE) region is very high at 37.6 percent, ranging from 24.7 percent in Albania to 48.9 percent in North Macedonia.[1] Tobacco taxation is an essential tool for reducing tobacco use, saving lives, and increasing government revenues. Tax avoidance and evasion undermine the primary goal of tobacco taxation, which is to make tobacco products less affordable in order to reduce consumption. Exaggerating the share of the illicit tobacco market and presenting its size as a direct consequence of high tobacco taxes is a strategy commonly used by the industry to oppose tax increases (Gallagher et al. 2019). However, previous research suggests that tax avoidance and evasion activities are enabled by a number of factors other than high tobacco taxes, including corruption and complicity of cigarette manufacturers, weak governance, ineffective customs and excise administration, and the presence of informal distribution channels.

This report analyzes tobacco tax evasion and avoidance in six SEE countries—Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia—by utilizing a unique data set from the Survey on Tobacco Consumption in Southeastern European countries (STC-SEE), conducted in 2019.[2] This research aims to objectively and independently estimate the size of the illicit tobacco market and capture the main determinants of tax avoidance and evasion activities in the SEE region. To the best of the researchers' knowledge, this is the first independent study to provide such evidence. STC-SEE respondents were asked to provide a pack of their last-purchased tobacco product and respond to questions related to the price, tax stamps, health warnings, and place of purchase in order to determine whether the pack is legal or the purchase represents an instance of tax evasion or avoidance.

The study finds that **20.4 percent of all current adult smokers[3] in SEE countries evade taxes on cigarettes,[4] with evasion being much more frequent among those who smoke hand-rolled (HR) tobacco—at 86.7 percent—than for those who smoke manufactured cigarettes (MC), at 8.6 percent**. Since most current smokers in the region smoke MC rather than HR (MC prevalence – 32.8; HR prevalence – 6.3 percent), the combined percentage of evading smokers of these two types of products is closer to share of evading MC users. Once

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[1] http://tobaccotaxation.org/cms_upload/pages/files/203_regional_report_-_demand_price_elasticity_-_topic_6_1410.pdf
[2] The analysis in this study includes the main findings on tobacco tax evasion and the investigation of determinants of tax evasion in the SEE region. The detailed findings on the characteristics of illicit packs (e.g., place of purchase, brands, type of health warning, etc.) are presented in six national studies. For more details on the national studies on tobacco tax avoidance and evasion in Albania, Bosnia-Herzegovina, Kosovo, North Macedonia, Montenegro, and Serbia, please visit: http://tobaccotaxation.org/research.php?cID=26&lng=srb.
[3] This study analyzes only tax evasion and avoidance on manufactured cigarettes and hand-rolled tobacco, as all other tobacco products have very low prevalence rates in the SEE region.
[4] "Cigarettes" includes manufactured and hand-rolled cigarettes.

differences in smoking intensity among smokers who use licit and illicit cigarettes are taken into account, **19.7 percent of cigarette consumption in SEE countries is illicit**. As smoking intensity for legal and illicit tobacco products is approximately equal, **the total market share of illicit MC and HR** tobacco roughly corresponds to the share of smokers who evade taxes—**8.1 and 88.5 percent, respectively**.

HR tobacco is predominantly illicit in all six countries. On the other hand, **MC are predominantly legal in four countries—Albania, Kosovo, North Macedonia, and Serbia**—where the share of MC smokers who evade tax is below six percent in each country. **Meanwhile in Bosnia and Herzegovina—and particularly Montenegro—MC evasion is much higher,** with 18.6 and 61.2 percent of smokers, respectively, evading tax. Tax avoidance in all six countries is very rare (less than one percent of current smokers in each country).

Besides analyzing the size within and the differences between countries, this report also utilizes cross-country variability to analyze MC evasion determinants. The main results from estimated evasion models are as follows:

1. **Countries that are more successful in preventing the sale of illicit MC at legal points of sale have lower levels of MC tax evasion.** The research suggests that statistical regions with higher share of illicit purchases at legal points of sale (in total illicit purchases) have more MC tax evasion.

2. **Smokers living in municipalities near the border of countries with high MC evasion rates have a higher likelihood of MC tax evasion.** This indicates a certain spillover effect, as the physical proximity to an area with a high level of tax evasion increases the likelihood of evasion.

3. **Smokers from low-income households, women, and the elderly tend to evade taxes more often.** This conclusion applies to both HR tobacco and MC.

Based on this research, the following policy recommendations could improve current tobacco control policy in SEE countries to address tax avoidance and evasion:

1. When increasing taxes as an instrument of tobacco control policy, which is necessary for the EU accession process, governments should put additional effort into **strengthening institutional capacities to tackle the illicit tobacco market**. Strengthening their capacities will not only increase fiscal revenues from tobacco but would also ensure that tax increases serve their intended purpose of reducing smoking prevalence.

2. Given that the possibility of purchasing illicit MC packs in legal places of purchase increases the likelihood of MC tax evasion, countries should particularly focus on **enforcing bans on the sale of illicit MC at legal points of sale**.

3. As residents of municipalities in close proximity to countries with high MC evasion are more likely to evade taxes on MC themselves, **improving regional coordination in the development and implementation of tobacco control policies—including**

prevention of the illicit market—is essential for reducing tax evasion in all SEE countries.

4. **All SEE countries should ratify and implement the FCTC Protocol to Eliminate Illicit Trade in Tobacco Products**. Albania, Bosnia and Herzegovina, and Kosovo should become Parties to the Protocol. Although North Macedonia has already signed the Protocol it has yet to become a Party, whereas Serbia and Montenegro in particular—as official Parties—need to invest more in efforts towards its strict implementation.

5. All SEE countries **should regulate and enforce excise tax stamp requirements on the HR tobacco market to a much higher degree**, as currently HR tobacco is predominantly illicit throughout the region. As the predominant place of purchase for HR tobacco is on the street or in open air or green markets, the governments should invest more efforts in **preventing unlicensed individuals selling HR tobacco products in these places and detecting the sources of illicit HR tobacco products**. In line with FCTC Protocol to Eliminate Illicit Trade in Tobacco, adoption of new measures to tackle illicit HR tobacco should also deal with other actors in the supply chain (growers, manufacturers, exporters/importers, and wholesalers).

1. Introduction

Tobacco tax avoidance and evasion are highly relevant policy issues in the Southeastern European (SEE) region for at least two reasons. Firstly, tax avoidance and evasion have numerous adverse implications for both public health and the economy. Joossens et al. (2010) estimated the illicit share of the global tobacco market of 11.6 percent and the annual global revenue loss to illicit tobacco of more than US$ 40 billion. The second reason stems from industry claims that tax avoidance and evasion activities arise primarily as the consequences of tax increases and differences in tax rates between countries (Smith, K. E., et al. 2013), as opposed to institutional deficiencies and complex tax structures.

Independent research should test the industry's claims by providing evidence on the real determinants of tobacco tax evasion. Existing literature suggests—and this study confirms—that there are many determinants of tax evasion other than tax policy, including tobacco products' affordability, corruption, and informal distribution networks (IARC, 2011).

Although technically legal, tax avoidance is also considered problematic as it diminishes the effects of tobacco control measures. However, the negative effects of tax avoidance are often much less problematic. Unlike with tax evasion, avoidance activities could only slightly reduce tax effectiveness. Moreover, data from this study provide no evidence of large-scale tax avoidance in the observed SEE countries.

Negative consequences of tobacco tax avoidance and evasion include decreases in government revenues; potentially higher risks for those who smoke illicit cigarette packs, since they usually do not present important information about the harmful effects of tobacco use (Joossens et al., 2014); and dilution of the tobacco taxation policy objective to make tobacco products less affordable (Guindon, 2014). Additionally, illicit tobacco products are often cheaper substitutes for legal ones, further diversifying the market supply. A well-designed and effective tobacco control policy should include measures to tackle the sources of the illicit tobacco market.

Illicit tobacco has been incorporated into the World Health Organization Framework Convention on Tobacco Control (WHO FCTC, Article 15), that stipulates the elimination of all forms of illicit trade (WHO, 2004). Since 2018, illicit trade issues have also been incorporated into the WHO FCTC Protocol to Eliminate Illicit Trade in Tobacco Products (WHO, 2013a). The Protocol includes guidance on supply chain control, law enforcement, and international cooperation. It has been signed by 62 parties so far, including Serbia and Montenegro among the SEE countries. North Macedonia signed the Protocol but has not yet become a Party, whereas Albania, Bosnia and Herzegovina, and Kosovo have not yet signed on.

In the literature, tobacco tax evasion includes all illegal activities that result in evading payment of some or all tobacco taxes. It could be in the form of smuggling of tobacco products across borders when (some) taxes are paid in a lower tax jurisdiction or completely evaded. Another form of tax evasion is counterfeiting, when tobacco products are produced without the authorization of the trademark owner (Ross & Blecher, 2019). Large-scale

evasion refers to smuggling that involves illegal transport over long distances, distribution, and sales of tobacco products. It is highly organized and related to criminal organizations (IARC, 2011). Small-scale evasion, usually called bootlegging, is often performed by individuals or small groups with an intention to profit through smuggling tobacco products from a tax jurisdiction with a lower tax to a jurisdiction with a higher tobacco tax rate. Tobacco tax avoidance refers to legal forms of avoiding taxes, often conducted by individuals. Tax avoidance activities include cross-border shopping, duty-free shopping, tourist shopping, internet, and other direct purchases (IARC, 2011).

Previous research indicates that increasing excise taxes is the single most effective tobacco control measure (Jha & Chaloupka, 2000; IARC, 2011; Chaloupka et al., 2011). Besides its effect on reducing demand, raising tobacco taxes has many other beneficial impacts documented in the literature including improvement of public health, increase of fiscal revenues, and addressing externalities by forcing tobacco consumers to contribute to the societal costs of tobacco use.

However, the tobacco industry is well aware that tax increases might also have an impact on their profitability. Therefore, the industry has developed many strategies to undermine the effects of raising taxes. One of the tactics often used by the industry involves overestimating the scale of the illicit tobacco market. Gallagher et al. (2018), for example, found that 31 out of 35 industry estimates were higher than independent estimates. By exaggerating the size of the illicit market, industry argues that tax evasion and avoidance are directly caused by tax increases, and their solution is advocating for the return to a lower tax (Ross et al., 2017). Some independent studies go even further, suggesting the industry is directly involved in illicit trade activities (Ross, 2018; Gilmore & Rowell, 2018). Independent research is, therefore, required for the objective estimation of the size and determinants of tax avoidance and evasion, with the ultimate aim of developing policies for the benefit of society.

Estimating the size of the illicit market and its determinants is of particular relevance for the SEE region. Firstly, all six SEE countries have a relatively high prevalence of tobacco use (Vladisavljević et al., 2020). Raising tobacco taxes is one of the measures that policy makers could use to deal with high prevalence, and it is also in line with WHO recommendations and the EU accession process. Taking into account experiences from other European countries—the latest EU member states in particular—it is expected that raising taxes as a part of tobacco control reform will be attacked by opponents of tobacco taxes as an ineffective and harmful policy measure that stimulates tax evasion and reduces fiscal revenues (Mikulić & Butorac, 2020), as it was the case prior to adoption of the EU Tobacco Products Directive (2014/40/EU)[5]. However, contrary to the arguments of the industry, global data show that illicit trade is higher in countries with a lower share of the tax margin, rather than in countries where tax is a high proportion of the price (Joossens et al., 2009).

Secondly, the SEE region has a rich history of illicit purchasing of tobacco products, particularly during the period of economic turmoil in the 1990s (Hajdinjak, 2002; Sorensen, 2003; Zaloshnja, 2010). In this regard, SEE residents are quite accustomed to black market

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[5] https://tobaccotactics.org/wiki/eu-tobacco-products-directive-revision/

purchase patterns and the channels of illicit trade. Thirdly, institutions and law enforcement that are crucial for the elimination of the illicit market in SEE countries are still underdeveloped (Richter & Wunsch, 2020; Simpson, 2020). Government authorities that are already not capable of controlling illicit trade may be reluctant to increase taxes out of a fear of rising tax evasion. Although public debate occasionally emerges over tobacco taxes and the illicit market in the region[6], the lack of objective and independent research to inform these debates is evident, as most current research and estimates of tobacco evasion are presented and/or funded by the tobacco industry[7].

Due to the illegal nature of activities associated with the illicit tobacco market, developing the methodology for measuring the size of the illicit tobacco market is quite challenging. Methodological approaches include direct observations of tobacco packs, comparison of sales and consumption databases, surveys, econometric modeling, expert opinions, and trade monitoring (NCI & WHO, 2016). The next paragraphs summarize results of the independent (non-industry funded) studies which used credible and rigorous research methodologies also being an important basis when developing research approach applied within this research.

Joossens et al. (2014) conducted the largest independent study on illicit trade in Europe, based on Pricing Policies and Control of Tobacco in Europe (PPACTE) data for 18 European countries.[8] They found no evidence to support a relationship between the price of tobacco products and the size of the illicit market. In fact, their findings indicate that the share of illicit trade is likely to be higher in countries where the prices are lower. In 2014, they estimated the level of illicit trade in Europe as below seven percent on average, varying significantly between countries, and with the larger share belonging to countries with a land or sea border with Ukraine, the Russian Federation, Moldova, or Belarus (Jossens et al., 2014).

Global Adult Tobacco Surveys (GATS) from Turkey, Romania, Greece, the Russian Federation, and Ukraine present findings on the source of cigarette purchases and the absence of tax stamps on cigarettes as an indicator of illicit trade. These surveys demonstrate that the lack of a health warning and tax stamp is a reliable indicator of illicit trade as well as street vendors as the place of purchase (WHO, 2012; WHO, 2013b; WHO, 2014; WHO, 2017; WHO, 2018). Stoklosa and Ross (2014) applied two observational methods (collection of packs shown by tobacco users and collection of packs discarded on the street) to estimate the share of non-taxed cigarettes in Poland. They found the illicit share of the tobacco market to be 14.6 percent and 15.6 percent, respectively—significantly lower than industry estimates amounting to 22.9 percent of the market. Their findings support the thesis that the industry tends to overestimate the size of tax evasion. The United Kingdom's experience also confirms that raising tobacco taxes does not have to be followed by an increase in tax evasion (Langley et al., 2019): the share of the illicit market in the UK decreased from 30.9 percent in

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[6] https://balkaninsight.com/2019/05/30/cigarette-smugglers-find-safe-harbour-in-montenegro-again/
[7] https://www.stopillegal.com/blog/detail/balkan-smugg-report-shows-there-s-no-room-for-complacency-over-illicit-trade-in-the-region
[8] Joossens et al. (2010) estimated the global share of the illicit tobacco market at 11.6 percent and the annual revenue lost at more than US$ 40 billion.

2000 to 21 percent in 2010, despite recorded tobacco tax increases (derived from UK Government reports: Measuring Tax Gaps 2000–2010[9], as cited in Ross & Blecher, 2019).

This study aims to provide independent and objective evidence on the size and sources of the illicit tobacco market in the SEE region by analyzing tobacco tax evasion[10] for the two products with the highest prevalence in the SEE region: manufactured cigarettes (MC) and hand-rolled (HR) tobacco. The study uses Survey on Tobacco Consumption in Southeastern Europe (STC-SEE) data collected during September and October 2019 in six SEE countries—Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia—as part of the project titled "Accelerating Progress on Effective Tobacco Tax Policies in Low- and Middle-Income Countries". The survey includes nationally representative samples of adults (18–85 years old) in each country. Tax evasion is identified based on information from the respondent's last-purchased tobacco pack and questions related to its price, tax stamp, health warning, and place of purchase.

According to STC-SEE data, 20.4 percent of all smokers in SEE countries evade taxes. Tax evasion is much more likely among HR smokers, at 86.7 percent, and it varies relatively little across countries. Research also indicates that illicit HR is predominantly sold on the streets or in open air or green markets, in 92 percent of the cases.

On the other hand, only 8.6 percent of MC smokers evade taxes, with striking differences between countries in the share of smokers who evade taxes. In Montenegro, the share of MC smokers who evade taxes is 61.2 percent, which is more than three times higher than the country with the second-highest share, Bosnia and Herzegovina, at 18.6 percent. In all other countries—Albania, Kosovo, North Macedonia, and Serbia—the share of MC smokers who evade is below six percent. Tax avoidance in all SEE countries is very rare (less than one percent in each of the countries).

In order to analyze the determinants behind these striking country differences in tobacco tax evasion, a tax evasion model was formulated utilizing the variation in tax evasion, prices and other measurable institutional factors across statistical regions (s-regions).[11] The model suggests that tobacco tax evasion is higher in the s-regions where the share of non-street illicit purchases of MC (total illicit MC purchases) is higher, as well as in municipalities in close proximity to borders with countries that have high evasion rates. Additionally, the results suggest that smokers from low-income households, women, and the elderly tend to evade tobacco taxes more.

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[9] https://www.gov.uk/government/statistics/measuring-tax-gaps
[10] Since STC-SEE only identified 1 percent of smokers as avoiding taxes, this analysis focuses only on tax evasion.
[11] Since the data on regions in STC-SEE are available at different levels of aggregation (NUTS 2 or other region levels, specific to each country), for the purpose of this research they are reorganized into 23 s-regions approximately equal in sample size. These regions are Albania (North Albania, Central Albania, South Albania); Bosnia and Herzegovina (BiH) (Brcko, Northeast Republika Sprska, West Republika Sprska, North FBIH, South FBIH); Kosovo (East Kosovo, West Kosovo); Montenegro (North MNE, Central MNE, South MNE); North Macedonia (West NM, East NM, Skopje, Vardar); Serbia (West Vojvodina, East Vojvodina, Belgrade, West Serbia, Central Serbia, and Southeast Serbia).

This report is structured as follows. After this introduction, the second section describes the data sources and explains the construction of the main variables: tax evasion and avoidance. The third section provides descriptive statistics including the main indicators of illicit markets in the SEE region and a discussion of potential determinants of tax evasion, while the methodology of the tax evasion modeling is explained in the fourth section. The fifth section discusses the main results of the analysis, whereas the sixth and seventh sections present conclusions and recommendations for policy makers.

2. Data and Definitions of Main Variables: Evasion and Avoidance

This study uses a unique data set from the STC-SEE, which was conducted in 2019, utilizing the same questionnaire in all countries surveyed. The sample size was 1,000 respondents per country, with the exception of Serbia where 2,000 respondents were interviewed.[12] Along with detailed information on tobacco consumption, tax stamps, health warnings, prices of cigarettes, and places of purchase, STC-SEE provides photographs of the last-purchased cigarette/tobacco pack, as well as specific sociodemographic characteristics of the respondents.[13]

In this research, tax evasion is defined in accordance with the rule that the pack is illicit if it has at least one of the following four characteristics (Joossens et al., 2014): 1) purchased from an illicit source, 2) without the appropriate health warnings, 3) without the appropriate tax stamp, or 4) purchased at a price lower than 70 percent of the lowest price.[14] Tax avoidance is defined as a pack purchased from authorized sellers but at a discounted price.[15] As legal definitions of tax evasion and avoidance can be different in different SEE countries, researchers from each country[16] were in charge of the definition of the tax evasion and avoidance variables. The observational method was applied in all countries; numerators took pictures of the last-purchased tobacco pack shown by tobacco users and recorded data on tax stamps, health warnings, place of purchase, and reported price per pack.[17]

In order to estimate the potential effect on tax evasion of being in close proximity to a neighboring country with lower prices or higher tax evasion rates, driving distances between each municipality in the country and all bordering countries (border crossings nearest to the municipality) were collected via Google Maps.

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[12] Data collection was coordinated by Deep Dive – a private, independent, full-service social and market research consulting firm. Deep Dive is an ESOMAR (European Society for Opinion and Marketing Research) member.

[13] Detailed information on the survey sampling and other technical details can be found in Vladisavljević et al. (2020).

[14] For hand-rolled tobacco the price of the cigarette pack was not available; therefore the definition of tax evasion was based only on the first three criteria.

[15] For a precise definition of tax evasion and tax avoidance see individual country reports available at: http://tobaccotaxation.org/.

[16] The authors of this report are grateful to the researchers from University of Banja Luka, Entrepreneurship and Technology Transfer Center, Banja Luka, Bosnia and Herzegovina; Analytica, Skopje, North Macedonia; Development Solutions Associates, Tirana, Albania; Democracy Plus, Prishtina, Kosovo; and The Institute of Socioeconomic Analysis, Podgorica, Montenegro for providing the definitions of the tax evasion and avoidance variables, as well as for the variable describing the distances between municipalities and bordering countries.

[17] If the respondent was not able to show the last pack purchased, she/he was asked to recall the pack and provide information on the tax stamp and health warnings.

3. Descriptive Statistics

3.1. *Consumption of HR and MC and illicit trade*

Table 3.1 presents total smoking prevalence and prevalence of MC and HR use, as well as the share of users of both tobacco products who purchase their products illicitly. Overall, North Macedonia has the highest smoking prevalence rate of all SEE countries, at 48.9 percent, while prevalence is the lowest in Albania, at 24.7 percent (Column 5). Since in all SEE countries smokers predominantly use MC, the sample for the estimation of MC tax evasion is much larger than for HR evasion.

The data in Column 2 of Table 3.1 suggest that there are striking differences across the SEE region in the share of MC users who purchase their products illicitly in each country. The share of MC tax evasion is highest in Montenegro (61.2 percent), where it is three times as high as the next highest share in Bosnia and Herzegovina (18.6 percent). In other countries MC tax evasion is relatively low—below 6 percent—the lowest being in North Macedonia at 1.9 percent. On average, the share of MC users who purchase their products illicitly in the SEE region stands at 8.6 percent, mainly due to high tax evasion in Montenegro and Bosnia and Herzegovina.

Table 3.1 Prevalence of smoking and share of smokers evading taxes (MC, HR, and total, in percent)

Country	Manufactured cigarettes		Hand-rolled tobacco		Total smoking prevalence[5]	Total tax evasion prevalence
	Smoking prevalence	Tax evasion prevalence[1]	Smoking prevalence	Tax evasion prevalence[1]		
	(1)	(2)	(3)	(4)	(5)	(6)
Albania	19.8	5.2	6.0	69.2	24.7	19.4
Bosnia and Herzegovina	33.9	18.6	9.7	93.3	41.9	35.3
Kosovo	35.6	4.2	1.4	79.3[2]	36.7	7.1
Montenegro	38.8	61.2	2.9	100[2]	41.0	62.6
North Macedonia	44.5	1.9	6.1	86.7	48.9	12.3
Serbia	32.8	2.6	6.3	88.2	37.4	14.8
SEE region	32.8[3]	8.6[4]	6.3[3]	86.7[4]	37.6[3]	20.4[4]

[1] Represents the percentage of smokes who evade tax on cigarettes
[2] Estimates are not reliable due to a small sample size (n<15).
[3] The average prevalence rate for the region is calculated as the number of smokers (MC + HR, based on national prevalence rates) divided by the total number of persons living in the SEE region.
[4] The average share of smokers who evade taxes for the region is calculated as the total number of smokers who evade in the SEE region (based on national tax evasion shares) divided by the total number of smokers in the SEE region.
[5] The sum of MC and HR prevalence does not add up to total prevalence, as some smokers use both products.
Source: Authors' calculations based on the STC-SEE data

On the other hand, HR tobacco tax evasion is very high in all countries (Column 4, Table 3.1). The share of HR users who evade taxes is the lowest in Albania (about 69.2 percent), while in all other countries the rate of tax evasion is higher than 80 percent. HR tobacco tax evasion is the highest in Montenegro, where all registered HR users are tax evaders (knowingly or unknowingly); however, due to the small sample size of HR users in Montenegro (13) this estimate is not reliable. In total, for both products, the average share of smokers who evade taxes in the SEE region amounts to 20.4 percent (Column 6), with the share being the lowest in Kosovo and the highest in Montenegro.

The share of users who avoid taxes is less than one percent for both products, with a total of 14 cases of MC tax avoidance and one case of HR tax avoidance in all six countries.[18]

In order to assess the overall size of evasion, besides the share of smokers evading taxes, smoking intensity, or how much smokers smoke, also must be taken into account. Table 3.2 indicates that smokers of legal and illicit tobacco products generally do not differ in the intensity of their smoking (Columns 1, 2, 4 and 5). Therefore, tax evasion rates (Columns 3 and 6), calculated as the ratio between the number of illicit cigarettes smoked and the total number of cigarettes smoked, roughly correspond to the share of smokers who evade taxes from Table 3.1.

Table 3.2. Smoking intensity of legal and illicit tobacco products and tax evasion rates (MC, HR, and total)

	Average number of MC smoked per day		MC evasion rate[2] (percent)	Average number of HR smoked per day		HR evasion rate[2] (percent)	Total evasion rate[2] (percent)
	legal	illicit		legal	illicit		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Albania	15.1	10.9	3.8	16.3	19.2	72.6	22.4
Bosnia and Herzegovina	14.6	14.1	18.1	8.7[1]	12.8	95.4	33.4
Kosovo	20.8	19.6	3.9	5.0[1]	18.6[1]	93.4	6.5
Montenegro	21.4	18.6	57.7	0.0	20.0	100.0	60.7
North Macedonia	14.8	10.4[1]	1.3	10.1[1]	11.6	88.2	9.7
Serbia	17.3	15.9	2.4	11.9	15.6	90.7	15.2
SEE region	16.6[3]	15.6[3]	8.1	11.3[3]	14.9[3]	88.5	19.7

[1] Estimates are not reliable due to a small sample size (fewer than 10 observations).
[2] Evasion rate (MC, HR, and total) is defined as the ratio between the number of illicit cigarettes smoked (average number of illicit cigarettes smoked multiplied by the number of smokers who evade taxes) and the total number of cigarettes smoked (average number of cigarettes smoked multiplied by the total number of smokers).
[3] The average number of cigarettes smoked in the SEE region for each column is obtained by calculating the total number of cigarettes smoked (for that type of product and tax evasion status) divided by the total number of smokers in the SEE region (for that type of product and tax evasion status).
Source: Authors' calculations based on the STC-SEE data

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[18] Due to the small sample, tax avoidance will not be analyzed in detail.

The MC tax evasion rate is the highest in Montenegro, at 57.7 percent, and Bosnia and Herzegovina, at 18.1 percent, while in other countries the rate is low, below four percent (Column 3). The average MC tax evasion rate for SEE countries is 8.1 percent. On the other hand, HR tobacco is predominantly illicit in all SEE countries, with an average HR tax evasion rate of about 88.5 percent (Column 6). The overall (MC + HR) tax evasion rate for the SEE region is 19.7 percent, ranging from 6.5 percent in Kosovo to 60.7 percent in Montenegro (Column 7).

3.2. *Tax evasion in SEE countries and other country characteristics*

As mentioned above, possible determinants of tobacco tax evasion include high prices of legal cigarettes, border proximity, and country or regional differences in applying tobacco tax regulations, as well as income and other sociodemographic characteristics. In this section these relationships are investigated in a descriptive fashion, while in Section 5 the independent effect of these variables is estimated in a regression model.

Table 3.3 Prices of legal vs. illicit MC and HR, and prevalence of tax evasion in the SEE region

Country	MC smokers who evade (%)	HR smokers who evade (%)	MC market prices (in €, 2019)		Average prices from STC-SEE (in €, 2019)[2]		
			Cheapest brand	Most-sold brand	Legal MC[3]	Illicit MC[3]	HR[4]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Albania	5.2	69.2	1.6	1.9	2.1	1.9[1]	0.9
Bosnia and Herzegovina	18.6	93.3	2.3	2.4	2.7	1.7	1.0
Kosovo	4.2	79.3[1]	1.7	2.1	2.0	1.7	0.9[1]
Montenegro	61.2	100.0[1]	1.9	2.3	2.5	1.5	0.6[1]
North Macedonia	1.9	86.7	1.3	1.5	1.5	1.4[1]	1.1
Serbia	2.6	88.2	1.7	2.1	2.3	1.7[1]	1.0

[1] Estimates are not reliable due to a small sample size.
[2] Simple average
[3] Self-reported price of the last pack purchased.
[4] Calculated as a median unit value for 20 HR cigarettes. Unit value is a ratio between total weekly expenditure on HR and weekly consumption of HR cigarettes.
Sources: Market prices: Albania – WHO Report on the Global Tobacco Epidemic (2019); B&H – Indirect Taxation Authority of Bosnia and Herzegovina; Kosovo – Agency of Statistics reports; Montenegro – Tobacco Agency of Montenegro; North Macedonia – Customs administration (not publicly available, obtained following a request); Serbia – Official Gazette of the Republic of Serbia (No27/2019 and 66/2019). Other data: Authors' calculations based on the STC-SEE data.

Table 3.3 presents shares of MC and HR smokers who evade taxes compared to the average prices of different tobacco products. According to both market and survey data, the most expensive MC purchased legally are in Bosnia and Herzegovina and Montenegro (Columns 3, 4 and 5). The prices of legal cigarettes are slightly lower in Serbia than in Kosovo or Albania, while the cheapest MC in the region are in North Macedonia. This suggests that in countries in which MC evasion is the highest cigarettes prices are also the highest. On the other hand, the differences in the average prices of illicit cigarettes are less pronounced and less reliably measured, as in three countries the average is based on fewer than 15 observations. Country-level HR prices[19] are also very similar in magnitude across the region, at least in the countries where they can be reliably measured (Column 7). Therefore, the only reliably measured and salient difference between the countries is in the prices of legal cigarettes, and this variable will be used in the model in Section 5.

Table 3.4 presents the differences in tobacco tax evasion between municipalities depending on their proximity to countries with lower cigarette prices or significantly (by 10 percentage points) higher MC tax evasion rates. Proximity to these countries is measured in terms of driving distance to the nearest border crossing, and municipalities are assumed to be in close proximity if their border is up to 50 kilometers away from a border crossing with a country that has lower prices or a higher tax evasion rate. Identification of the countries with lower prices is based on the information on the prices of the most-sold brand from Table 3.3, while the country differences in MC evasion rates are identified from Table 3.2.

Table 3.4 Shares of MC smokers who evade taxes (%), by proximity to border countries

Country	Overall	Proximity to a country with lower cigarette prices[1]		Proximity to a country with a higher tax evasion rate[2]	
		In proximity (less than 50 km)	Not in proximity (more than 50 km)	In proximity (less than 50 km)	Not in proximity (more than 50 km)
Albania	5.2	0.0	5.9	14.6	4.0
Bosnia and Herzegovina	18.6	31.8	15.5	38.6[4]	17.9
Kosovo	4.2	4.7	3.5	3.0	4.3
Montenegro	61.2	65.6	52.7	N/A[5]	N/A[5]
North Macedonia	1.9	N/A[3]	N/A[5]	N/A[5]	N/A[5]
Serbia	2.6	16.1	1.4	16.3	1.1

[1] Proximity to a country with lower cigarette prices is based on the driving distance to the nearest country with lower cigarette prices. Proximity is defined as being up to 50 kilometers from the nearest border crossing.
[2] Proximity to a country with a higher tax evasion rate is based on the driving distance to the nearest country with a significantly (by 10 percentage points) higher evasion rate. Proximity is defined as being up to 50 kilometers from the nearest border crossing to that country.
[3] There is no neighboring country with lower prices.
[4] Estimates are not reliable due to small sample size.
[5] There is no neighboring country with a significantly higher tax evasion rate.
Source: Authors' calculations based on the STC-SEE data

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[19] Due to the small sample sizes per country for legal HR (fewer than 17 in all countries) the unit values are not presented separately for illicit and legal HR tobacco. The median unit value of legal HR, 1.2 €, is slightly higher than the one for illicit HR, 0.87 €.

With regard to proximity to countries with lower prices, the results suggest that in all the SEE countries, apart from Albania (and North Macedonia, which is the country with the lowest prices in the region), the share of smokers who evade taxes is higher in the municipalities that are in close proximity to the border with a country that has lower prices. Similarly, in municipalities that are near the countries where tax evasion rates are higher, the share of smokers who evade taxes is higher. This applies for all the countries, apart from Kosovo where this share is approximately equal (and in Montenegro, which is the country with the highest tax evasion rate, and North Macedonia, which does not have a border with a country that has a significantly higher MC tax evasion rate).

Table 3.5 presents the share of non-street (i.e., legal-point-of-sale) purchases of illicit cigarettes among the total number of illicit purchases in the s-region. The indicator ranges from 0 (no illicit purchases occur at legal points of sale) to 100 percent (all the purchases are at legal points of sale), and a higher share may indicate that the government has a problem preventing legal establishments from engaging in non-legal tobacco-related activities in that s-region. The highest shares of illicit purchases at legal points of sale are in Kosovo and Montenegro[20] and the lowest in Albania and Serbia. Although the correlation is not as clear as for the prices, the figures in Table 3.5 indicate that countries with higher evasion rates also have higher shares of non-street illegal purchases.

Table 3.5 Prevalence of MC and HR tax evasion and percentage of non-street illegal purchases

Country	MC smokers who evade taxes (%)	HR smokers who evade taxes (%)	Non-street illegal purchases (%)[2]
Albania	5.2	69.2	10.4
Bosnia and Herzegovina	18.6	93.3	14.8
Kosovo	4.2	79.3[1]	68.9
Montenegro	61.2	100[1]	33.7
North Macedonia	1.9	86.7	14.2
Serbia	2.6	88.2	11.1

[1] Estimates are not reliable due to small sample size.

[2] Share of smokers who purchase illegally in places other than street or open market. The denominator in third column – total number of people who purchase their products illegally is different the denominator in columns one and two (total number of smokers).

Source: Authors' calculations based on the STC-SEE data

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[20] It is worth noting that the law in Kosovo does not specify the legal points of sale for tobacco, however this indicator is still relevant there as it shows the share of illegal purchases in the places where tax authorities typically have higher level of control of the products sold.

4. Methodology: Estimation of the tax evasion model in the SEE region

In order to estimate the independent effects of the abovementioned factors on tax evasion, a binary choice model of tax evasion is applied. Formally, the model can be represented in the following way:

$$P(evasion_i = 1) = f(\beta_1 p_r + \beta_2 NSIP_r + \beta_3'Proximity_m + \gamma'X_i + \delta'Country_i) \qquad (1)$$

where the probability of tax evasion (for MC, HR, or total tax evasion) is the function of the determinants on the right hand side of the equation: the average s-regional price of legally sold cigarettes (p_r), the s-regional percentage of non-street illegal purchases ($NSIP_r$), a set of dummy variables representing whether or not the municipality is in close proximity to another country ($Border_m$), and a set of socioeconomic (education, income group) and demographic variables (X_i). The s-regional variation of the price and non-street illegal purchases (NSIP) indicator within the region is utilized in order to estimate the model. Therefore, s-regional averages of prices and NSIP are used in the analysis.

The s-regional average legal prices are used for two reasons. Firstly, in order to estimate a tax evasion model, legal prices need to be observed for both smokers who purchase their cigarettes illicitly and legally. Secondly, prices at the s-regional level strengthen their exogeneity in comparison to the tax evasion decision. Persons living in s-regions with higher prices are expected to have higher incentives for tax evasion. The share of NSIP indicates the lack of control over legal establishments that would prevent them from engaging in non-legal activities, and as such higher levels of this indicator are expected to increase tax evasion.

In order to estimate the effect of the proximity to countries with lower cigarette prices and countries with significantly (by 10 percentage points) higher MC evasion rates, driving distances to the nearest border crossing are used. Municipalities are assumed to be in close proximity if their border is up to 50 kilometers away from the border crossing with a country that has lower prices or a higher MC tax evasion rate. Country differences in MC tax evasion are used rather than the overall tax evasion rates as HR products are typically illegal in all the SEE countries, and therefore they would only confound the differences in MC tax evasion rates. The border dummy variables take the value of 1 if the municipality is in close proximity to lower-price or higher-evasion border countries, and 0 if otherwise. Additionally, as the municipalities closer to the border may be less developed then central municipalities, an additional dummy variable is used as a proxy for living close to any border. This variable takes the value 1 if the municipality's driving distance to any border crossing is shorter than 50 kilometers, and 0 if otherwise. This approach is similar to Driezen et al. (2019) who investigate cross-border purchases in relation to the geographical location of the region.

Personal and household characteristics included in the model (X_i) consist of age, age squared, gender, level of education (three categories),[21] type of residence (rural versus urban), and

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[21] The three categories are: primary education (which includes ISCED groups 0 to 2), secondary education (ISCED groups 3 and 4), and tertiary education (ISCED groups 5 to 8).

household income per capita, in order to account for household differences in purchasing power.[22]

Finally, the model includes country-fixed effects (*Country$_i$*) to account for the remaining unobserved country heterogeneity (not controlled by other variables). The specifications are presented with and without full country-fixed effects, as their introduction can effectively replace model-relevant country variations in determinants. On the other hand, as evidenced in Table 3.1, cross-country differences in tax evasion are very pronounced (Montenegro has a rate three times higher than Bosnia and Herzegovina, which in turn has a rate at least three times higher than the other countries) and therefore failing to control for these outliers can also lead to biased estimates. Additionally, s-regional cluster-corrected standard errors are applied to account for the fact that prices and the percent of non-street illegal purchases are defined at higher levels of aggregation, while potential heteroscedasticity is controlled by calculating heteroscedasticity-robust standard errors. Finally, function *f* in the model is approximated by the logit function.

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[22] The master questionnaire includes a scale of 11 income categories and is expressed in euros. During the data collection process these intervals were transformed to local currencies, and the respondents chose based on local currency intervals. As the data contain a large number of missing values, intervals are imputed based on other personal and household characteristics in order to avoid sample attrition. As the income variable was recorded in intervals rather than exact amounts, the average of the interval was calculated and divided by the number of household members to obtain a household welfare measure. The variable obtained in this way was then divided into three equal groups (low-, middle-, and high-income households) in each country.

5. Results from the estimation of the tax evasion models

5.1. *MC tax evasion*

Table 5.1 presents the estimation of the MC tax evasion model in the SEE region. Several different specifications are presented, and conclusions are derived by comparing the results of the different models. In Model 1 a full set of country-fixed effects (CFE) is included. However, this model effectively neutralizes all cross-country differences in tax evasion, which represents an important source of variation in the model. Therefore, in Model 2 the insignificant CFEs are excluded, while dummy variables for Montenegro and Bosnia and Herzegovina are preserved in order to account for them as outlier countries. Model 3 utilizes the same model as in Model 1, but this time excluding Montenegro and Bosnia and Herzegovina as countries with significantly higher tax evasion rates. Finally, in Model 4, as a robustness check for proximity variables' effects, Model 1 is re-estimated, only instead of a threshold of 50 kilometers from the nearest border crossing to identify municipalities in proximity to other countries the threshold of 40 kilometers is used.

Table 5.1 MC tax evasion model

	Model 1		Model 2		Model 3		Model 4	
VARIABLES	coef	se	coef	se	coef	se	coef	se
Price (legal MC)	-0.412	(0.359)	-0.027	(0.068)	0.068	(0.126)	-0.571	(0.372)
% NSIP	0.138*	(0.084)	0.078	(0.053)	0.528***	(0.141)	0.159*	(0.089)
urban	-0.000	(0.013)	-0.002	(0.013)	0.015**	(0.008)	-0.001	(0.014)
Female	0.046***	(0.013)	0.044***	(0.015)	0.002	(0.009)	0.047***	(0.015)
Age	0.007***	(0.002)	0.007***	(0.002)	0.004***	(0.001)	0.007***	(0.002)
Age squared	-0.000**	(0.000)	-0.000	(0.000)	-0.000**	(0.000)	-0.000**	(0.000)
Low-income	Omit.							
Mid-income	-0.024	(0.021)	-0.027	(0.020)	-0.012	(0.012)	-0.027	(0.022)
High-income	-0.051**	(0.020)	-0.055***	(0.019)	-0.005	(0.011)	-0.053***	(0.019)
Border proximity	-0.025	(0.034)	-0.032	(0.034)	0.005	(0.009)	-0.011	(0.032)
Evasion border proximity	0.089***	(0.032)	0.088***	(0.033)	0.059***	(0.012)	0.055**	(0.024)
Low price border proximity	0.047	(0.033)	0.055	(0.035)	0.014	(0.011)	0.029	(0.029)
Serbia	Omit.							
Albania	0.071	(0.047)			0.068***	(0.024)	0.062	(0.060)
North Macedonia	-0.048	(0.065)			0.024	(0.048)	-0.091	(0.108)
Montenegro	0.558***	(0.063)	0.298***	(0.026)			0.534***	(0.105)
Bosnia and Herzegovina	0.387***	(0.117)	0.175***	(0.034)			0.414***	(0.054)
Kosovo	-0.030	(0.051)			-0.196***	(0.006)	-0.059	(0.085)
Observations	2,495		2,495		1,667		2,495	

* p<0.1, ** p<0.05, *** p<0.01

Notes: Figures in the table present the marginal effect of increasing the independent variable by one unit on the unit change in the dependent variable. Robust standard errors in parentheses.

Source: Authors' calculations based on the STC-SEE data

The first important result indicates that the higher the share of NSIP is the higher is the likelihood that an MC purchase is illicit. In other words, in s-regions where purchases of illicit MC at legal points of sale such as legal tobacco shops, cafes, and restaurants are more

common, tax evasion is also more likely. This effect is marginally significant in Models 1 and 4, where a 10-percentage-points-higher share of NCIP increases the likelihood of tax evasion by about 1.5 percentage points. The effect is the strongest in the case where countries with the highest tax evasion rates are excluded from the sample (Model 3). Therefore, s-regions that fail to prevent the purchase of illicit tobacco in legal shops have higher levels of illicit trade, which shows that the differences in institutional factors play a significant role in tax evasion.

The results further suggest that living in municipalities near countries with higher evasion rates increases the likelihood of tax evasion, confirming the trends observed in Table 3.4. This effect is significant in all the models, and the results suggest that living in close proximity to a country with a higher evasion rate increases the likelihood of tax evasion between 5.5 and 9 percentage points. On the other hand, the effect of living in municipalities that are in close proximity to countries with lower prices is not significant. Although the sign of the coefficient points towards the expected conclusion, the effects of proximity to countries with lower prices, observed in Table 3.4, is not significant in the regional tax evasion model. Furthermore, the effect of living in other border areas is also not statistically significant. Therefore, with respect to geographical location of the consumers, results suggest that smokers from municipalities bordering countries with high evasion rates are more likely to evade tobacco taxes.

Additionally, the results suggest that women, the elderly, and those with lower income have a higher likelihood of MC tax evasion. Women are about 4.5 percentage points more likely than men to evade taxes; and evasion increases with age, however, at a diminishing rate. People from households with high income are less likely to evade taxes by about 5 percentage points when compared to other income groups.[23] Finally, s-regional differences in prices of legal MC do not have an impact on MC tax evasion.

5.2. *HR evasion model*

Table A1 in the Appendix presents the estimation of the HR tax evasion model in the SEE region. Models corresponding to models 1 and 4 for the MC tax evasion are presented, as there are no clear outliers in terms of countries, and all CFEs are statistically significant.[24] The analysis suggests that the significant determinants of HR tax evasion in the SEE regional model are age and gender, with older HR users and women more likely to evade taxes; as well as household income per capita, with persons from high-income households less likely to evade taxes.

Contrary to the MC tax evasion model, share of NSIP and proximity to the border with a country that has a higher tax evasion rate (or any other country) are not significant predictors

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[23] After initial estimates, the effects of educational level were not significant in any of the models and were dropped to increase the number of degrees of freedom in the models.

[24] Since all HR products from Montenegro (13 observations) fall under the definition of evasion they are excluded from the estimation, as they would predict the positive outcome perfectly.

of HR evasion. This underlines the differences between HR and MC tax evasion. As illicit HR is almost completely purchased on the streets or in open air or green markets (92.0 percent, compared to 66.3 percent of illicit MC), institutional factors behind HR tax evasion cannot be described by the share of NSIP, and therefore this variable is not significant. It is also interesting to note that none of the variables describing municipalities that are in close proximity to other countries (with lower prices, with higher tax evasion rates, or any other country) are significant. This suggests that, unlike for MC, the HR tax evasion is not related to "import" of illicit products from other countries but that it can be found in all areas, as it is likely that it some of it originates from local farmers. Finally, while the current authors' previous research (Vladisavljević et al. 2020) showed that higher MC prices are relevant for the choice between MC and HR, in this research the price is not a relevant determinant of HR tax evasion. Therefore, although higher MC prices may push people towards using HR, they do not play a role in determining if the HR product will be illicit or not.

5.3. *Overall tax evasion model*

Table A2 in the Appendix presents the estimation of the overall tax evasion model in the SEE region. The results suggest similar conclusions to those for the MC tax evasion model, although the effect of non-street illicit purchases is not significant, due to the mixing of HR and MC products in one model. Similar to the MC tax evasion model, smokers from municipalities in close proximity to countries with higher evasion rates have a higher likelihood of tax evasion than other smokers. The results also suggest that women and older smokers are more likely to evade taxes and that smokers from middle- and high-income groups are less likely to evade than those from low-income households. Finally, this model confirms that HR users and smokers who use both HR and MC have a higher likelihood of tax evasion than exclusive MC users. All other things equal, MC users have about 40 percentage points' lower likelihood of tax evasion than the other two groups.

6. Discussion and Conclusions

Public data on tobacco tax avoidance and tax evasion in the SEE region are very limited and rarely transparent. In this study, unique data obtained from a recent survey on tobacco consumption in SEE countries are used to estimate the size of the illicit tobacco market and to assess the impact of different factors on the probability of tax evasion in six SEE countries. To the best of the researchers' knowledge, this is the first independent study that provides estimates of the size of the illicit tobacco market in the SEE region as well as the factors that affect it.

The results show that *every fifth smoker (20.4 percent) in the SEE region evades taxes*. In addition, 19.7 percent of all cigarettes consumption in the SEE region is illicit, as there are no significant differences in average smoking intensity between smokers of legal and illicit tobacco products. However, there is *a striking difference between tax evasion involving MC and HR: on average, 8.1 percent of MC consumption is illicit* (with 8.6 percent of MC users evading taxes), *while 88.5 percent of the HR market is illicit* (with 86.7 percent of HR tobacco users evading taxes).[25] The overall tax evasion rate is much closer to the one for MC, as MC has a significantly higher smoking prevalence (32.8 percent, as compared to 6.3 percent for HR). *For both products, women and older smokers are more likely to evade taxes, while smokers from high-income households are less likely to do so*.

There are also striking differences in MC tax evasion between SEE countries. MC tax evasion is the highest in Montenegro, where 61.2 percent of MC smokers evade taxes, and in Bosnia and Herzegovina, with 18.6 percent. In all other SEE countries—Albania, Kosovo, North Macedonia, and Serbia—less than six percent of MC users evade taxes. Results further illustrate that MC tax evasion is higher in s-regions with higher levels of non-street illicit purchases, indicating that *failing to prevent the sale of illicit tobacco in legal points of sale contributes to higher MC tax evasion*. Additionally, MC smokers from municipalities that are in close proximity to countries with significantly higher evasion rates (Montenegro and Bosnia and Herzegovina) are more likely to evade taxes. This shows that a certain spillover effect is at play, as the physical proximity to an area with a high level of tax evasion increases the likelihood of evasion. *Tighter customs inspections at the border could further reduce tobacco tax evasion in these border regions*.

On the other hand, HR tobacco tax evasion is very high, with 86.7 percent of HR users evading taxes on average. A high share is present in all SEE countries, the lowest being in Albania, with 69.2 percent, and the highest in Montenegro, where none of the HR tobacco smokers (although only a small number of them, only 13 cases, was observed) pays taxes. Previous research by the current authors[26] indicates that HR tobacco is used as a cheaper substitute for MC in SEE. The findings from this study indicate that at least part of the reason that HR tobacco is cheaper is the fact that smokers are not paying taxes on this product. Therefore, *enforcement of taxation on HR tobacco would increase its price and weaken its*

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[25] The tax avoidance rate for both MC and HR tobacco is less than one percent.
[26] available at http://tobaccotaxation.org/cms_upload/pages/files/203_regional_report_-_demand_price_elasticity_-_topic_6_1410.pdf

potential to be used as a cheaper substitute for MC. Results also suggest that HR tax evasion is present in all regions of SEE countries, regardless of their proximity to other countries or the local degree of strict control on legal points of sale, as the predominant place of purchase for HR tobacco (in 92 percent of the cases) is on the street or in open air or green markets.

The findings of this study represent a significant contribution to tobacco control activities in all countries in the SEE region. Evidence-based policymaking is a prerequisite for successful creation and implementation of measures to reduce tobacco consumption. Certainly, further independent and continuous monitoring of illicit trade utilizing a scientific approach, rigorous and transparent methodology, and publicly available data is needed to ensure a strong future for tobacco control in all six countries in the SEE region.

7. Policy Recommendations

> ### Strengthen institutional capacities to tackle the illicit tobacco trade.

When increasing taxes as an instrument of tobacco control policy, which is required for the EU accession process, governments should put additional effort into **strengthening institutional capacities to tackle illicit tobacco trade**. Law and fiscal enforcement institutions should ensure that all activities in the supply chain are adequately monitored, including production, distribution, and sales of tobacco products. Countries should particularly focus on **enforcing bans on the sale of illicit MC at legal points of sale, which this research identifies as a factor correlated with the size of the illicit market**. Strengthening institutional capacities will not only increase the fiscal revenues from tobacco but also ensure that tax increases serve their intended purpose of reducing smoking prevalence.

> ### Improve regional coordination in the development and implementation of tobacco control policies, including prevention of the illicit market.

As municipalities in close proximity to countries with high MC tax evasion are more likely to evade taxes on MC, **improving regional coordination in the development and implementation of tobacco control policies—particularly for prevention of the illicit market**—is essential to lowering the level of tax evasion in all SEE countries.

> ### All SEE countries should ratify and implement the FCTC Protocol to Eliminate Illicit Trade in Tobacco.

Albania, Bosnia and Herzegovina, and Kosovo should become Parties to the Protocol. North Macedonia needs to ratify the Protocol, while Serbia and Montenegro should invest more in efforts to adhere to its objectives. In the regional context, and taking into account provisions of the Protocol, the SEE countries analyzed in this study should be more transparent in terms of their interactions with the tobacco industry (in line with FCTC Article 5.3), minimizing any form of relationship with industry representatives; prevent, deter, detect, investigate, and prosecute illicit trade; improve cooperation and communication with each other and with relevant international institutions to eliminate illicit trade; and improve the capacities of the institutions in charge of tackling illicit trade, including the provision of greater financial support for the implementation of the Protocol.

> ### Implement strict tobacco control measures to address the illicit HR tobacco market, the prevailing form of illicit tobacco trade in SEE countries.

HR tobacco is the prevailing form of illicit tobacco products in the SEE region. Addressing illicit HR tobacco requires strict implementation of measures aimed at tackling illicit production, distribution, and sales. In countries where HR tobacco is produced, it is necessary to **implement measures that would stimulate farmers to replace production of tobacco with other plants**. Farmers who persist in producing tobacco should be strictly monitored with respect to the size of their fields, production quantity, and sales. All SEE countries

should regulate and enforce excise tax stamp requirements on the HR tobacco market to a much higher degree, as 88.5 percent of HR tobacco sales are illicit. As the predominant place of purchase for HR tobacco is on the street or in open air or green markets the governments should strengthen law enforcement and impose strict sanctions for unlicensed individuals selling HR tobacco products. In line with FCTC Protocol to Eliminate Illicit Trade in Tobacco adoption of new measures to tackle illicit HR tobacco should also deal with other actors in the supply chain (growers, manufacturers, exporters/importers, wholesalers, and retailers).

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Table A1. HR tobacco tax evasion model

VARIABLES	Model 1		Model 4	
	coef	se	coef	se
Price (legal MC)	0.984	(0.644)	1.061	(0.678)
% NSIP	-0.516	(0.517)	-0.548	(0.606)
Urban	0.011	(0.062)	0.011	(0.060)
Female	0.114*	(0.061)	0.112*	(0.060)
Age	0.006***	(0.002)	0.006***	(0.002)
Low-income				
Mid-income	-0.006	(0.038)	-0.010	(0.040)
High-income	-0.163**	(0.082)	-0.159*	(0.083)
Border proximity	0.030	(0.049)	0.011	(0.062)
Evasion border proximity	0.019	(0.090)	0.044	(0.111)
Low-price border proximity	0.057	(0.073)	0.049	(0.085)
Serbia				
Albania	0.118*	(0.065)	0.110*	(0.063)
North Macedonia	0.407***	(0.069)	0.405***	(0.071)
Montenegro	-		-	
Bosnia and Herzegovina	0.139	(0.136)	0.147	(0.145)
Kosovo	0.330*	(0.190)	0.342*	(0.198)
Observations	281		281	

* p<0.1, ** p<0.05, *** p<0.01

Notes: Figures in the table present the marginal effect of increasing the independent variable by one unit on the unit change in the dependent variable. Robust standard errors in parentheses.

Source: Authors' calculations based on the STC-SEE data

Table A2. Overall tax evasion model

VARIABLES	Model 1 coef	se	Model 2 coef	se	Model 3 coef	se	Model 4 coef	se
Product (HR = 1)	0.383***	(0.016)	0.387***	(0.015)	0.207***	(0.010)	0.382***	(0.018)
Price (legal MC)	0.046	(0.266)	-0.067	(0.051)	-0.098	(0.066)	-0.092	(0.303)
% NSIP	0.077	(0.083)	0.057	(0.036)	0.098	(0.044)	0.102	(0.103)
Urban	-0.004	(0.013)	-0.004	(0.012)	0.008	(0.010)	-0.006	(0.013)
Female	0.054***	(0.013)	0.053***	(0.014)	0.016	(0.011)	0.055***	(0.014)
Age	0.006***	(0.002)	0.006**	(0.002)	0.003*	(0.002)	0.006**	(0.002)
Age squared	-0.000	(0.000)	-0.000	(0.000)	-0.000	(0.000)	-0.000	(0.000)
Low-income	Omit.							
Mid-income	-0.031*	(0.018)	-0.031*	(0.018)	-0.016	(0.012)	-0.034*	(0.019)
High-income	-0.063***	(0.019)	-0.063***	(0.019)	-0.021	(0.017)	-0.065***	(0.018)
Border proximity	-0.014	(0.031)	-0.016	(0.030)	0.019*	(0.010)	-0.008	(0.029)
Evasion border proximity	0.088***	(0.028)	0.087***	(0.027)	0.050***	(0.018)	0.062**	(0.026)
Low-price border proximity	0.051	(0.031)	0.052	(0.032)	0.024	(0.014)	0.032	(0.028)
Serbia	Omit.							
Albania	0.019	(0.032)			0.085**	(0.042)	0.010	(0.035)
North Macedonia	0.032	(0.078)			0.308***	(0.110)	-0.010	(0.074)
Montenegro	0.446***	(0.080)	0.328***	(0.024)			0.486***	(0.071)
Bosnia and Herzegovina	0.171***	(0.066)	0.200***	(0.028)			0.217**	(0.110)
Kosovo	0.004	(0.036)			-0.074	(0.071)	-0.008	(0.046)
Observations	2,726		2,726		1,824		2,726	

* p<0.1, ** p<0.05, *** p<0.01

Note: Figures in the table present the marginal effect of increasing the independent variable by one unit on the unit change in the dependent variable. Robust standard errors in parentheses.

Source: Authors' calculations based on the STC-SEE data