



tobaccotaxation
Economic Research Informing
Tobacco Taxation Policy

Tobacco Tax Evasion in Albania and Its Determinants

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TABLE OF CONTENTS

ACKNOWLEDGMENTS.....	2
LIST OF FIGURES.....	4
LIST OF TABLES.....	5
EXECUTIVE SUMMARY	6
CHAPTER 1. INTRODUCTION.....	9
CHAPTER 2. DATA AND METHODOLOGY	13
CHAPTER 3. RESULTS.....	18
3.1. Descriptive analysis results	18
3.2. Factors affecting probability of tax evasion or avoidance.....	24
CHAPTER 4. DISCUSSION AND POLICY RECOMMENDATIONS	32
REFERENCES.....	35
APPENDIX A. SAMPLE CHARACTERISTICS	38
APPENDIX B. DESCRIPTIVE ANALYSIS RESULTS.....	39
APPENDIX C. FACTORS AFFECTING PROBABILITY OF TAX EVASION.....	Error! Bookmark not defined.

LIST OF FIGURES

- Figure 1. The majority of MC packs are purchased in grocery stores, while packs of HR tobacco are purchased on the street/open air market
- Figure 2. The majority of HR tobacco packs do not have health warning labels
- Figure 3. The majority of HR tobacco smokers consume cigarette packs without the appropriate tax stamp
- Figure 4. The majority of HR smokers purchase unbranded tobacco from independent producers and in the open air market
- Figure 5. The majority of HR tobacco smokers use illicit tobacco
- Figure 6. Male smokers are relatively more likely than females to use illegal MC, while for HR tobacco the situation is reversed
- Figure 7. Older smokers are more likely to use illicit cigarette/tobacco packs than younger ones
- Figure 8. The higher the smoker's level of education, the lower the percentage of smokers who purchase illicit packs of MC/HR tobacco
- Figure 9. Smokers from poorer families (households earning less than €400 per month) use illicit tobacco packs more than other smokers

LIST OF TABLES

- Table 1. Estimated results of determinants of tax evasion (using full sample of smokers)
- Table 2. Estimated results of determinants of tax evasion (using MC sample)
- Table A1. Percentage distribution of smokers by cigarette pack shown/not shown
- Table A2. Number and percentage distribution MC and HR tobacco smokers in the study sample, by selected demographic and socioeconomic characteristics
- Table B1. Percentage distribution of MC and HR tobacco smokers, by place of purchase
- Table B2. Percentage distribution of smokers of MC and HR tobacco, by presence of health warning label
- Table B3. Percentage distribution of smokers of MC and HR tobacco, by presence of tax stamp
- Table B4. Percentage distribution of smokers of MC and HR tobacco, by brand
- Table B5. Main descriptive data on price of cigarette packs/tobacco packs, by type of tobacco product (MC and HR)
- Table B6. Percentage distribution of smokers who evaded tax on their last purchased pack of MC and HR, by selected demographic and socioeconomic characteristics
- Table B7. Percentage distribution of smokers who avoid tobacco taxes (total and by tobacco product)
- Table B8. Number and percentage distribution of current smokers of MC who avoid tax overall and by selected demographic and socioeconomic characteristics
- Table B9. Percentage distribution of MC and HR cigarette packs by place of purchase and presence of health warning label
- Table B10. Percentage distribution of MC and HR cigarette packs by place of purchase and presence of tax stamp
- Table B11. Percentage distribution of MC and HR cigarette packs by presence of health warning label and tax stamp
- Table B12. Percentage of illegal MC and HR tobacco packs according to two and three criteria simultaneously

EXECUTIVE SUMMARY

Although evidences from countries in every part of the world demonstrates that significantly increasing tobacco taxes is the most effective policy for reducing tobacco use, policy makers are often reluctant to commit to larger tax increases, mainly due to the tobacco industry argument that increased taxation leads to increased illicit tobacco trade. These industry arguments are strategic, as higher taxes hurt their profits. The evidence, however, shows that taxation is not the main factor contributing to illicit trade; the more relevant factors are structural elements in the environment that enable illicit tobacco trade (Jha *et al.*, 2000; Chaloupka *et al.*, 2012). Illicit tobacco trade undermines the effectiveness of tax policies, reduces the tax base, results in lower revenue for governments, and undermines the public health objective of tobacco tax policy through lowering prices for smokers and increased tobacco use.

Estimates of illicit tobacco consumption in Albania date back to 2009 when Zaloshnja *et al.* (2010) estimated that around 23 percent of adults (19 percent in urban areas and 27 percent in rural areas) suspect that some of cigarette packs purchased by them were illicit.¹ Findings of this study indicate a slightly lower share of smokers using illicit tobacco in Albania. However, as Zaloshnja *et al.* (2010) applied a different methodology to this study, the estimates are not fully comparable, so it could not be confidently concluded that improvements in illicit trade control have occurred over the past decade.

There are several approaches that can be used to estimate illicit trade. These include analysis of the trade gap between exports and imports, observation of tax operators, estimation of the gap between tax-paid sales and total consumption, and cigarette or hand-rolled tobacco pack examination (Ross, 2015; Stoklosa *et al.*, 2020). This report aims to contribute to the literature focusing on Albania, a country with high smoking prevalence (24.8 percent of adults currently smoke tobacco)² and a large informal economy. The study is based on the Survey on Tobacco Consumption in Southeastern European (STC-SEE) countries, which was conducted in 2019 and included 1,000 Albanian adults from 18 to 85 years old.³ The questionnaire was comprised of a set of questions on smokers' profiles and behaviors, including details on their last-purchased cigarette pack. To estimate tobacco tax evasion and avoidance, the study makes use of pack inspection and applies both descriptive and regression analyses to data collected from 198 smokers of manufactured cigarettes (MC) and 60 smokers of hand-rolled (HR) tobacco.

The study results show that 19.4 percent of smokers in Albania use products that evade tax (5.6 percent of MC smokers and 68.3 percent of HR tobacco smokers). When controlling for differences in smoking intensity between smokers who use licit and illicit products, it is estimated that 29.3 percent of cigarette consumption in Albania is illicit (6.4 percent of MC and 74.0 percent of HR tobacco consumption). Overall, the majority of smokers of HR tobacco purchase tobacco from illicit sources (that is, on the street and in the open air market⁴ from

¹ WHO (2007) reported that between 40 percent and 50 percent of tobacco market in Albania was illicit, but no further discussion on the source and methodology was reported.

² For more details see Gjika *et al.* (2020a).

³ For more details see Gjika *et al.* (2020a).

⁴ "Open air market" refers to a designated marketplace where food or merchandise is sold. Vendors in these markets are usually exempt from several national taxes, by only paying some local taxes to local governments. These markets are located at the center of municipalities or populous areas.

independent sellers – 68.3 percent), without the appropriate tax stamp (46.7 percent), or without the appropriate health warning label (40.3 percent). A small percentage of MC smokers purchase packs from illicit sources (4.5 percent), without the appropriate tax stamp (0.5 percent), or without the appropriate health warning label (1.5 percent).

Results obtained from regression analysis suggest that a smoker's gender, residence, education, income, and labor status are important factors influencing their decision to engage in tax evasion. These findings are also supported by the descriptive analysis. Male smokers are relatively more likely to evade tobacco taxes compared to female smokers. Unemployed smokers are also more likely to evade taxes compared to employed smokers. Additionally, smokers with lower household income and those living in urban areas are more likely to engage in tax evasion.

Based on the study findings, this report offers the following policy recommendations:

1. Significantly increase monitoring and enforcement efforts for effective tobacco taxation

The study reveals that the share of illicit cigarette consumption in Albania is large and that a considerable share of smokers in Albania consume illicit cigarettes. Therefore, stronger monitoring, enforcement, and awareness efforts should be made. The Government of Albania should take further steps to simultaneously increase excise taxes on tobacco and address illicit trade. The government should also follow the implementation of the excise schedule in order to reach the European Union (EU) minimum excise tax rate. This would further increase government budget revenues, decrease consumption, and reduce tobacco-related mortality and morbidity without seriously increasing illicit trade.

2. Pair tobacco tax increases with intensive health awareness campaigns (cessation promotion)

The government should make an intensive and structured schedule of health awareness campaigns related to tobacco cessation, to increase the likelihood that those who are most affected by a price increase (for example, poorer households) will quit rather than switch to illicit tobacco consumption. According to Gjika *et al.* (2020a), 12.5 percent of smokers in Albania declared they switched from MC to HR (which is often illegally purchased) and 1.6 percent switched to illegal packs due to price increases. In addition, tobacco cessation services should be made available and easily accessible to vulnerable populations. The government could consider following the example of many countries that earmark a portion of tobacco tax revenues for tobacco cessation services. A common and coordinated set of actions can be carried out by inspection (by the State Health Directorate) and education (by the Institute of Public Health and Regional Directories of Education) agencies to intensify consumer awareness of the harms of tobacco use and the benefits of cessation, especially when increases in taxation (and prices) are to be introduced.

3. Regulate tobacco retail sales and adopt relevant legislation

HR tobacco comprises a major share of illicit trade, as it is mainly purchased from illicit sources (that is, on the street and in the open air market from independent sellers). The Ministry of Health and Social Protection should adopt the licensing of retail units. Such measure is

included in the draft law⁵ amending the law on tobacco. The Parliament of Albania also has a role to play in adoption of the act and the accompanying measure that obliges the licensing of retail points of sale of tobacco products.

For HR tobacco, interventions and monitoring are needed at both the farm and market levels. Licenses should be required not only for tobacco manufacturing but also tobacco growing, wholesaling and transporting. Legal measures should be enacted by the Ministry of Agriculture and Rural Development to register and monitor the use and output of areas planted with tobacco and regulate the supply chain by requiring reporting from both the seller and the licensed buyer to enable cross-validation. The government should also implement a cigarette tracking and tracing system by coordinating the work of the Customs Directory with State Police.

4. Become a party to the international Protocol to Eliminate Illicit Trade in Tobacco Products

If small increases in illicit trade are observed after tax increases, the controlling institutions can follow the existing roadmap for addressing illicit trade contained in the World Health Organization (WHO) Protocol to Eliminate Illicit Trade in Tobacco Products. Albania is one of the few countries in the region that have not yet acceded to this treaty. Membership in the Protocol could contribute to controlling the supply chain of locally produced HR tobacco, including farmers.

⁵ Ministry of Health and Social Protection (2019). Some additions and amendments to law no. 9636, dated 6.11.2006. "On the protection of health from tobacco products," as amended.

CHAPTER 1. INTRODUCTION

Significantly increasing taxes on tobacco products is considered to be the most effective and cost-effective policy to reduce tobacco use among adults (Chaloupka *et al.*, 2000; Chaloupka *et al.*, 2011; Joossens & Raw, 2012). One of the most significant barriers to tobacco tax increases, however, is the occurrence of illicit trade (Ross & Blecher, 2019). Box 1 presents definitions and explanations of concepts of tax evasion and tax avoidance in the context of tobacco products. Some studies and actors – especially those representing the tobacco industry – claim that high tobacco taxes lead to illicit trade of tobacco (see, for example, Smith *et al.*, 2013). Indeed, illicit tobacco trade is of concern to policy makers because it undermines the effectiveness of tax policies and results in lower revenue for governments, lower prices for smokers, and increased tobacco use (West *et al.*, 2008; Joossens *et al.*, 2009; Joossens & Raw, 2012). As smuggling results in cheaper cigarette prices, the poor, young people, and children are more susceptible to smoking (as legitimate traders are not allowed to sell tobacco products to minors, they may be more likely to buy it from illegal sources such as street sellers). As a result, illicit trade increases health care costs, worker productivity losses, and the growing global death toll from tobacco use – currently at eight million deaths per year.

In addition to its public health impacts, illicit tobacco trade is also a major threat to governments' tax base, inducing enormous costs to national budgets. It is reported that 11.6 percent of all internationally traded cigarettes in 2009 were illicit, which accounts for US\$ 40.5 billion in lost government revenues worldwide (Joossens *et al.*, 2009). Additionally, in 2010 it was estimated that the illicit cigarette trade comprised 9.9 percent of the total market in the EU (KPMG, 2011). In 2017 the volume of illicit cigarettes consumed globally was 456 billion sticks, with an estimated tax revenue loss for governments of around US\$ 40 billion (Euromonitor International, 2018).⁶

Thus, addressing illicit trade requires a careful analysis not only of tax-related factors for their impact on illicit trade but also non-tax factors including weak governance, high level of corruption, poor government commitment to tackling illicit tobacco, ineffective customs and tax administration, and prevailing informal distribution channels for tobacco products (Acharya *et al.*, 2016). Indeed, recent research shows that both price differentials and weak governance remain key drivers of illicit trade on both the demand and supply sides of tobacco products (Euromonitor International, 2018).

Data on the share of illicit cigarettes in Albania vary by source and year. For instance, Zaloshnja *et al.* (2010) estimates that, in 2009, 23 percent of adults in Albania (19 percent from urban areas and 27 percent from rural areas) used illicit cigarettes. Moreover, the same study references an industry report whose results show that, up to 72 percent of the total cigarette market in Albania was illicit in 2001 (Tobacco Reporter, 2001). There has been a lack of recent estimates of the share of the illicit cigarette market in Albania, even though

⁶ Euromonitor International estimated the level of illicit trade in 2017 at 10.0 percent (excluding China), valued at more than US\$ 60 billion in losses to countries around the world (Euromonitor International, 2018). Euromonitor International is a private company that publishes periodic reports on the global (and regional) illicit tobacco markets; however, several studies have challenged the reliability of its estimates (Calderoni, 2014).

Euromonitor International (2014) ranked Albania among the countries with the highest share in 2008.⁷

Few studies have attempted to analyze and estimate the share of smokers who consume illicit packs of cigarettes in Albania. For instance, Zaloshnja *et al.* (2010), through a comparative analysis of two nationally representative household surveys, analyzed the tobacco market overall (without specifying by type of tobacco), while Joossens *et al.* (2014) used a cross-sectional survey to compare data on 18 countries including Albania for HR tobacco. These studies suggest that only 7 percent of smokers in 2009 and 8.1 percent⁸ in 2010 consumed illicit cigarettes (Zaloshnja *et al.*, 2010; Joossens *et al.*, 2014), according to missing or inappropriate tax stamps or health warnings in Albanian on the purchased pack of cigarettes. While the above figures neglect other types of tobacco tax evasion (i.e., packs bought from an illicit source, packs bought with a price lower than 70 percent of the lowest price of cigarettes, etc.), such low levels of illicit trade in Albania might be explained by underreporting of illicit cigarettes by smokers. For HR tobacco, Joossens *et al.* (2014) report that 6.5 percent of HR tobacco smokers reported tobacco packs with inappropriate health warnings, 2.8 percent reported an inappropriate tax stamp on purchased HR tobacco packs, and 1.3 percent reported an extremely low price of cigarette packs.

As for determinants influencing smokers' decision to purchase illicit packs of tobacco and evade tax, empirical studies indicate several potential factors. Theoretically, price and tax differences between countries or jurisdictions may create financial incentives to avoid or evade taxes (Acharya *et al.*, 2016). However, an enabling structural and policy environment also plays a role in adult smokers' decision to purchase tobacco through tax avoidance and evasion. Recent studies in developed countries indicate that the type of tobacco smoked as well as the smoker's age, household income, and education level are strongly associated with the likelihood of engaging in cigarette tax avoidance or evasion (see for example Guindon *et al.*, 2014; Prieger & Kulick, 2019). Studies of lower-income countries imply that young, less-educated, and lower-income people are most likely to be affected by the availability of lower-priced, smuggled cigarettes (Jha & Chaloupka, 1999). Nevertheless, the extent of cigarette tax avoidance or evasion varies between countries and across time. A recent study (Gjika *et al.*, 2020a) shows that almost four in five smokers in the lowest-income group (up to €400) in Albania purchase HR tobacco, which is typically informally traded and cheaper when compared to MC. Therefore, lower-income groups are far more exposed to the purchase of informal tobacco in Albania when compared to higher-income groups, where this ratio is much lower.

There is an ongoing debate regarding the impact of tax increase on tobacco purchasing behavior – to what extent it results in lower consumption vs. higher illicit purchase. Previous empirical study on Albania have shown that around 49.2 percent of smokers reacted by changing their smoking behavior after the last price increase (16.5 percent switched towards cheaper brands, HR cigarettes or illegal / smuggled cigarettes, and 14.1 percent reduced the cigarette consumption) (Gjika *et al.*, 2020a). Gjika *et al.* (2020b), shows that increasing the tax burden on cigarettes (the main factor behind price increases) would have a significant positive impact on the reduction of cigarette demand in the long run (if prices would increase by 10

⁷ Source and methodology used to produce this estimate is not provided.

⁸ This share is only for smokers of HR tobacco as the study did not find any case of tax evasion in analyses of MC tobacco packs (see Joossens *et al.*, 2014).

percent, the cigarette demand would decrease by 5.7 percent). Different income groups react differently to price and income changes. More specifically, the empirical results suggest that low-income households are highly affected by price increases. For the low-income group, a 25 percent price increase would lead to a sharp reduction of cigarette consumption by 27.1 percent (DSA, 2019).

This analysis is based on data from the regional Survey on Tobacco Consumption in Southeastern European (STC-SEE) countries conducted in 2019 and presents results for Albania. The aim of this study is to provide, based on the research findings, a set of policy recommendations to Albanian policy makers to strengthen and improve the effectiveness of tobacco control policies, with a particular focus on fiscal policies. While previous research focused on defining smoking prevalence and its characteristics in Albania (Gjika *et al.*, 2020a), the focus of this report is to explore tax evasion and avoidance and the factors affecting them (including both tax and non-tax factors).

Current literature and debates⁹ reflect different views on the impact of taxation on tobacco consumption and trade, especially illicit trade. Some – including the tobacco industry – blame high taxes and differences in tax rates between countries for illicit trade; while others present a more complex view, emphasizing non-tax factors – namely “enabling factors” – as more important contributors to illicit trade.

Albania is a middle-income country with one of the highest prevalence rates of tobacco consumption in the Western Balkan region. Tobacco consumption is a major problem among youth, especially for males (Gjika *et al.*, 2020a). Furthermore, Albania is ranked among the most corrupt countries in Europe, characterized by weak rule of law – corruption is a phenomenon transcending all economic sectors and political persuasions (Harri *et al.*, 2020; Zhllima *et al.*, 2018). Other than taxation, corruption and weak rule of law are considered to be key factors contributing to the illicit trade of tobacco. For these reasons, the case of Albania is of particular interest. Indeed, Albania applies a low tax burden on tobacco as compared to other SEE countries (IES, 2019), therefore tax burden is not a major determinant of illicit trade in Albania – clearly other factors are at play.

⁹ These debates also occurred in the roundtables organized previously by DSA in the context of this project.

Box 1. Definitions of main concepts regarding illicit trade of tobacco products

According to the WHO (2013), **illicit trade** is defined as “*any practice or conduct prohibited by law and which relates to production, shipment, receipt, possession, distribution, sale or purchase, including any practice or conduct intended to facilitate such activity*”.

Illegal methods of circumventing tobacco taxes are called **tax evasion**, as they intend to evade paying all or some tobacco taxes. The following are types of tobacco tax evasion:

1. **Smuggling** tobacco products is the movement across borders without paying tax in the jurisdiction of intended consumption.
2. **Under-invoicing** is the act or practice of stating the price of a good on an invoice as being less than the price actually paid, occurring if the importer and/or exporter wishes to reduce a tariff.
3. **Counterfeit** cigarettes are manufactured cigarettes without authorization from the trademark owner, with the intent to deceive consumers as to their origin and to avoid paying taxes.
4. **Illicit white cigarettes** are MC brands in one jurisdiction, often legally in the jurisdiction of manufacture, but smuggled and sold in another jurisdiction without all applicable duties being paid.
5. Unbranded tobacco is often sold as **finely cut loose** tobacco.

Tax avoidance involves legal mechanisms to avoid paying taxes and may often only be available as a result of poor policy or administration. The following are types of tax avoidance:

1. **Cross-border shopping** is when consumers purchase tobacco products from lower-tax jurisdictions within the allowable amount or make duty-free purchases.
2. **Forestalling** is when manufacturers produce larger amounts of products before a tax increase in order to avoid paying a higher rate of tax in the future. Other mechanisms of tax avoidance by manufacturers include changing the attributes of products in response to tax increases.

All these tax avoidance activities, despite being legal, deprive the government of tax revenue and increase the affordability of tobacco products, thus undermining tobacco taxation as a public health and fiscal measure.

Source: Ross & Blecher (2019)

The following chapters explain methods of analyses and data collection, results, and a discussion of the main findings with corresponding policy recommendations.

CHAPTER 2. DATA AND METHODOLOGY

This study uses individual-level data for Albania from the Survey on Tobacco Consumption in Southeastern European countries (STC-SEE), which provides information on tobacco use among adults (18–85 years old) in Albania and other SEE countries. The survey includes a set of questions adapted from the Global Adult Tobacco Survey (GATS), the International Tobacco Control (ITC) Project, and Pricing Policies and Control of Tobacco in Europe (PPACTE) questionnaires. The survey was conducted in 2019 and included a sample of 1,000 adults who consider Albania to be their primary place of residence. The sampling procedure, based on the most recent Census of Population and Housing in Albania (INSTAT, 2012), enables the sample to be nationally representative regarding gender, region, age group, education, and type of residence.¹⁰

As described in Gjika *et al.* (2020a), STC-SEE includes data on tobacco use, prevalence and type of products consumed, secondhand smoke exposure, and attitudes towards tobacco control policies. The focus of the present study is to estimate the share (percentage) of smokers in Albania who evade and avoid tobacco taxes, and to evaluate the contributing determinants. The study includes 198 smokers of MC and 60 smokers of HR tobacco (see the following section for an overview of the main characteristics of the study sample).

The study analysis followed a two-step procedure. In the first step, the authors thoroughly reviewed the legal issues of tobacco trade in Albania. In the second phase the information in the data set, either self-reported by the respondents or based on pack inspection using photographs of the packs, was analyzed. In Albania a cigarette pack is considered illegal if it does not have an appropriate tax stamp and a health warning label in the Albanian language under the transparent paper of the package and does not provide emission levels of tar, nicotine and carbon monoxide for cigarettes, among others (Box 2).

Box 2. Legal background of tobacco production and trade in Albania

There are two main constitutive laws dealing with 1) production and trade of tobacco products and 2) health protection from tobacco products in Albania, originating in 2000 and 2006 with some additions and amendments in 2013 and 2019.

The supervision and control of the production and trade of tobacco products is carried out by the National Food Authority (NFA) (inspection functions)¹¹ and the Ministry of Agriculture and Rural Development (MARD), while the Ministry of Finance and Economy inspects the fiscal side. Meanwhile, the Ministry of Health and Social Protection has the obligation to inform the public about tar, nicotine, and carbon monoxide impact on health; as well as any effect that causes or is thought to be causing the user to become addicted to the tobacco product.

¹⁰ More details on the methodology, conceptual framework, and results are presented in Gjika *et al.* (2020a).

¹¹ Inspection of the implementation of mandatory requirements, according to the Law No. 8691, dated 16.11.2000, and its bylaws and Law No. 9636, dated 6.11.2006, and its bylaws is in the competence of the NFA. The NFA is the responsible institution for the national management of food safety, consumer protection, plant protection, and animal health in Albania.

Regarding trade, manufacturers and importers of tobacco products in Albania must register their brands in the Trademark Bulletin (that is, brand register). Tobacco products, of domestic or imported origin, present in the Albanian market are traded only with a fiscal stamp, affixed to the packaging, under the transparent paper of the package. Moreover, natural and legal persons who trade tobacco products must place in the trading environment signs in the Albanian language saying: “Cigarettes,” “Tobacco products,” “Smoking harms your health,” etc. Additionally, the selling of cigarettes out of the pack (open pack/single sticks), of unknown origin and manufacturer, or with damages and defects that impair the quality of cigarette packs in Albania is prohibited.

In 2019, as specifically stated in the respective draft law, one pack of cigarettes must contain at least 20 cigarettes while a unit pack of HR tobacco must contain not less than 30 grams of net tobacco.¹² Moreover, each package of the tobacco product, must also show written in Albanian:

a) the name of the product; b) name, address and certificate of the manufacturer; c) the number of units of the tobacco product in the package or pack; d) emission level of nicotine; e) emission level of tar; and f) emission level of carbon monoxide. Regarding the presence of the health warning label, which is obligatory in Albania, each packaging of a tobacco product should contain warning messages about health harms caused by the use of tobacco. These messages must be written in the Albanian language; must be clear, visible, and legible; and such label should occupy 50 percent or more of the pack surface displayed, but not less than 30 percent of the front and back side of the pack.

Moreover, Law no. 9636, dated 6.11.2006, On the Protection of Health from Tobacco Products, Article 10, stipulates that: “The sale of tobacco products is prohibited: a) in health institutions; b) in educational institutions; c) in sports institutions; d) in automatic vending machines; e) by self-service; f) on the street by street vendors; g) through the postal service.”

Source: Law No. 8691, dated 16.11.2000, For the production and trade of tobacco and cigarettes; Law no. 9636, dated 6.11.2006, On the Protection of Health from Tobacco Products; Draft-Law 2019, On some additions and amendments to the law No. 9636, dated 6.11.2006, On the protection of health from tobacco products, amended.

Based on the legal background in Albania and empirical literature on tobacco tax evasion and avoidance (see for example Guindon *et al.*, 2014), this study focuses its analyses on indicators such as: type of tobacco product (last cigarette pack/tobacco product used – MC and HR), presence of proper health warning labels and presence of proper tax stamp, price of the cigarette pack, place of purchase (official tobacco shops, open air market, or other), and tobacco brand and origin (country). These indicators enable the identification of tax evasion and avoidance behavior among Albanian smokers.

In this study, tax evasion is identified if a cigarette pack is either (i) purchased from an illicit source such as on the open air market, on the street, or without a legal brand (according to the list of legal cigarette brands in the country); or (ii) without the appropriate health warning label, where health warnings on a pack purchased domestically are either missing or in a

¹² Each 25 grams (one ounce) of tobacco is approximately equivalent to 50 cigarettes.

foreign language; or (iii) without the appropriate tax stamp, such as a pack bought domestically but the tax stamp is in a foreign language or it does not have a tax stamp at all; or (iv) purchased at a price lower than 70 percent of the lowest price of cigarettes in the country (with the exception of packs bought in duty-free shops or abroad). The above characteristics are used to identify tax evasion in the case of MC, whereas for HR cigarettes only the first three indicators are used, given the uncertainty in properly defining the price of HR packs.

Regarding tax avoidance, this study determines it based on the place of purchase. If a pack is purchased in a duty-free shop or in a foreign country that has lower prices, it is considered tax avoidance. The same methodology is used for both MC and HR cigarettes.

Respondents were asked first to show the package of their last-purchased tobacco product (MC or HR), and the interviewer was instructed to take a picture of the cigarette pack. Afterwards, the interviewer had to register if the cigarette pack had the proper tax stamp and health warning label. The respondents were asked to report the price they paid for the pack (MC pack or pack of HR tobacco) and the place where it was purchased (when the cigarette pack was bought in other countries, the respondent had to declare the country where it was purchased and the brand of the tobacco). By means of these indicators, pack inspection was made possible for each respondent. If any respondent refused to show their last-purchased pack, they were asked to answer questions regarding characteristics of that pack including brand, type of tax stamp, and health warning labels.

In total, 77.9 percent of smokers showed their last-purchased cigarette pack (79.8 percent of MC smokers and 71.7 percent of HR tobacco smokers) (refer to Table A1 in Appendix A). Meanwhile, 22.1 percent did not show their cigarette pack (20.2 percent of MC smokers and 28.3 percent HR tobacco smokers). However, in all the cases where respondents refused to show the cigarette packs, the source of tax evasion, both for MC and HR tobacco, was clearly identified, as such, ruling out the possibility of having tax evasion from the lack of tax stamp or health warning labels, where both cases a visual inspection of the pack is needed.¹³

The methodological procedure follows two main approaches: 1) descriptive analysis and 2) empirical analysis.

Through the descriptive technique of cross-tabulation, the percentage distribution of respondents is first analyzed by place of purchase, tax stamp, and health warning label presence on the cigarette pack (whether or not the pack was shown). Second, the identification of illicit packs of MC/HR tobacco is carried out (inspection based on multiple criteria indicated as percentage distribution of smokers who evade/avoid and number of illicit cigarettes packs). In addition, this study calculates the prevalence of illicit cigarette consumption by reporting the number of illicit MC and HR cigarettes, weighted by the number of current smokers. Third, the report describes the demographic and socioeconomic profile of smokers who evade and avoid tobacco taxes. Fourth, the report presents the criteria of tax evasion through two-way cross-tabulation techniques for percentage distributions of packs by: a) place of purchase and tax stamp presence, b) place of purchase and health warning label presence, and c) all three criteria simultaneously.

¹³ Out of four MC smokers and twelve HR smokers who refused to show their pack, all of them purchased their packs from an illicit source such as in the open air market, on the street, or without a legal brand (according to the list of legal cigarette brands in the country).

Through empirical means, the study analyzes the determining factors of evasion and avoidance of tobacco taxes among Albanian smokers. Methodologically, tax evasion and tax avoidance are defined as binary variables, taking the value 1 if there is a case of tax evasion/avoidance and 0 otherwise (Equation 1). Hence, the estimation is based on the method of maximum likelihood, where interest lies in the response probability (Wooldridge, 2013), namely estimating the conditional probability of a set of explanatory variables, as shown in Equation (2).

$$y_i = \begin{cases} 1, & \text{if tax evaded/avoided} \\ 0, & \text{otherwise.} \end{cases} \quad (1)$$

$$\Pr(Y_i = y_i) = f(X\beta) \quad (2)$$

Where X denotes a matrix of explanatory variables affecting the probability to evade or avoid, and β represents a vector of model coefficients.

To examine the factors affecting the probability to evade or avoid taxes, different variables related to socioeconomic status are used, as shown in Table C1 in Appendix C¹⁴. In addition, the literature (Guindon *et al.*, 2014; Joossens *et al.*, 2014; Driezen *et al.*, 2019) suggests the importance of considering country-specific contextual factors such as proximity to borders with the neighboring country or countries¹⁵.

Lastly, regional differences within the country are taken into consideration in this study (northern, central and southern regions). The research also considers other variables such as age squared, smoking intensity (number of cigarettes smoked per week), a dummy for the capital city, and a variable that considers self-reported packs (that is, a dummy variable taking the value of 1 if the respondent showed the pack of MC, and 0 otherwise). However, as these variables resulted to be insignificant throughout all specifications (see specifications in tables 1 and 2), this study does not consider them in the preferred specifications.

¹⁴ First, income, defined as personal income or household income, is expected to influence the likelihood to engage in tax evasion and/or tax avoidance. Monthly household incomes are categorized into three groups (less than €400, between €401 and €1,200, and more than €1,200). Similarly, education (measured in years of education), age, gender (female and male), labor status categories (unemployed, employed, self-employed, and pensioners), smoking status (daily and less than daily), and household size (measured as number of family members) are considered important control variables affecting the likelihood to evade or avoid taxes (Guindon *et al.*, 2014; Joossens *et al.*, 2014; Driezen *et al.*, 2019).

¹⁵ Three different options are considered in measuring border proximity for this study. First, a dummy variable is included in the model to account for municipalities that are close to the border, taking the value of 1 for municipalities that are close to the border, 0 otherwise. According to the administrative-territorial reform in Albania, the NUTS4 (e.g. Local Administrative Units) denotes the municipal level (INSTAT, 2020). Second, three dummy variables are considered in the model, accounting for the municipalities close to all bordering countries, namely Montenegro, Kosovo and North Macedonia. Accordingly, if a smoker lives in a municipality closer to the border, the likelihood to evade and/or avoid taxes is likely higher when compared to smokers living far from the border. In addition to the land borders, this study considers municipalities living close to the coastal border. However, given the insignificance of this variable across all specifications, the coastal border dummy is not included. Third, the distance in kilometers from each municipality to the closest land border is used in this study to measure the incentive to evade taxes. It is expected that the shorter the driving distance from a municipality to the border with a neighboring country that has the cheapest tobacco price, the greater the incentive for border crossing to purchase cheaper tobacco.

To make sure that the probabilities of evading or avoiding taxes lie between zero and one, Equation (2) is specified either as a logit or probit model (Wooldridge, 2013, p. 585; Horowitz & Savin, 2001, p. 43). Both models can be derived from an underlying latent variable model but differ when it comes to the assumed distribution. A binary response model is referred to a probit model if it has a cumulative normal distribution function, which differs from the logit model that has a cumulative logistic distribution function (Wooldridge, 2013). More precisely, considering the sample of this study (198 MC smokers and 60 HR smokers), this study uses both the Penalized Maximum Likelihood (PML) and Maximum Likelihood (ML).

As argued by Long (1997, pp. 53-54) and Rainey & McCaskey (2019), in small samples, the maximum likelihood estimates are substantially biased away from zero, thus behaving quite poorly. As a solution, the literature suggests the use of the PML (Firth, 1993; Rainey & McCaskey, 2019) as an alternative of the usual maximum likelihood estimation. A Monte Carlo simulation comparing the distribution of PML and the conventional ML found out that the former exhibits less bias in small samples, while also reducing substantially the variance substantially. However, given the inability of PML to calculate the marginal effects and use clustered standard errors, this study will rely on both estimates, namely ML and PML.

Study sample size and characteristics

The study sample size, as mentioned above, includes two groups of (current) smokers categorized by type of tobacco product (MC versus HR tobacco packs). The descriptive analyses are based on these two groups separately, which comprise 198 MC tobacco users/packs inspected and 60 HR tobacco users/packs inspected.

MC smoking is dominated by males – 84.6 percent of MC smokers are men and only 15.4 percent are women (Table A2 in Appendix A). A significant share of MC tobacco smokers is young (20.9 percent are between 18 and 24 years old and 25.8 percent are between 25 and 34 years old). The type of residence of MC tobacco smokers reflects the demographic structure (57.1 percent of the smokers are in urban areas and 42.9 in rural areas). Most MC smokers have lower or primary education levels and belong to the lowest income group (household income of less than €400 per month). About 43.4 percent smoke more than 20 cigarettes per day and 70.6 percent of MC smokers spend 20.0 percent of their monthly household income on tobacco.

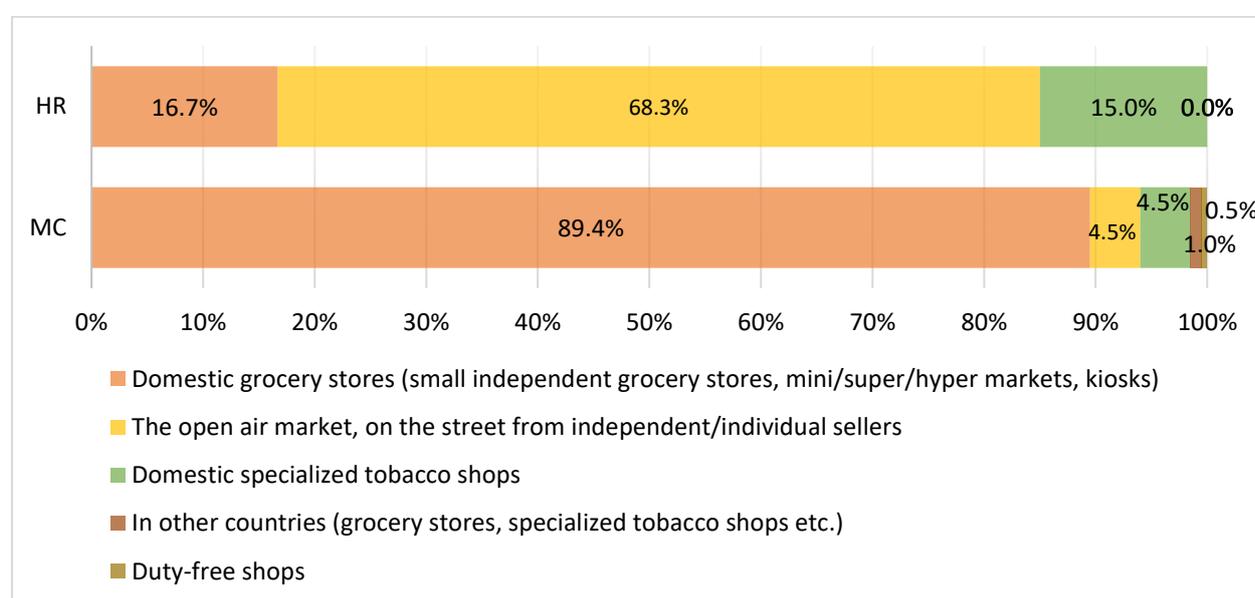
As for HR tobacco users, the majority are males (89.0 percent), have a primary level of education (69.7 percent), belong to the lowest income group (76.6 percent), and have a high smoking intensity (48.3 percent smoke more than 20 cigarettes per day) (for more characteristics see Table A1 in Appendix A).

CHAPTER 3. RESULTS

3.1. DESCRIPTIVE ANALYSIS RESULTS

As described above, if a cigarette pack is purchased from an illicit source in Albania (that is, not a legally registered brand or purchased from an individual selling cigarette independently at a local market or on the street) it is likely to be an illicit cigarette pack. In this regard, results show that a high percentage of HR tobacco smokers (68.3 percent) and a small percentage of MC smokers (4.5 percent) buy tobacco from illicit sources (that is, on the street and in the open air market from independent sellers) (see Figure 1 and Table B1 in Appendix B).

Figure 1. The majority of MC packs are purchased in grocery stores, while packs of HR tobacco are purchased on the street/open air market

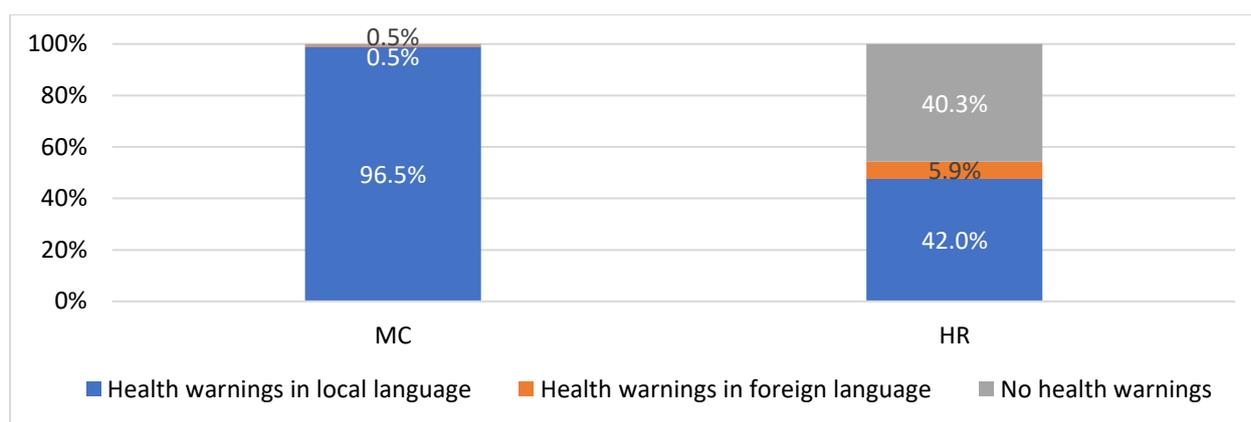


Note: Sample size = 198 for MC and 60 for HR packs

Source: Authors' calculations based on STC-SEE data for Albania

Health warning labels in the Albanian language should be present on every cigarette pack, otherwise the pack is considered illegal. The results on the presence of health warning labels (Table B2 in Appendix B and Figure 2, below) show that only a small percentage of MC packs do not have health warning labels (0.5 percent). For HR packs, the results are quite different: 40.3 percent of purchased HR tobacco packs do not have health warning labels. This finding indicates that 40.3 percent of HR tobacco smokers consume illicit packs of cigarettes (based only on the indicator of health warning label presence).

Figure 2. The majority of HR tobacco packs do not have health warning labels

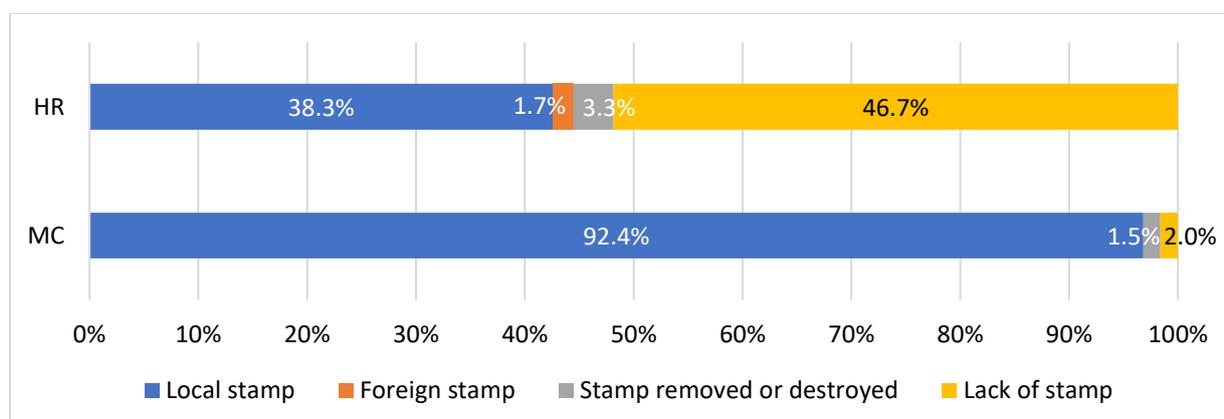


Note: Sample size = 198 MC packs and 60 HR packs

Source: Authors' calculations based on STC-SEE data for Albania

In Albania, every cigarette pack must be sold with a local tax stamp, otherwise it is illicit. Results regarding the presence of tax stamps on tobacco packs show that for MC smokers this is not an issue – only 1.5 percent of MC tobacco smokers use cigarette packs with a removed or destroyed tax stamp or without a tax stamp (Figure 3 and Table B3 in Appendix B).

Figure 3. The majority of HR tobacco smokers consume cigarette packs without the appropriate tax stamp



Note: Sample size = 198 MC packs and 60 HR packs

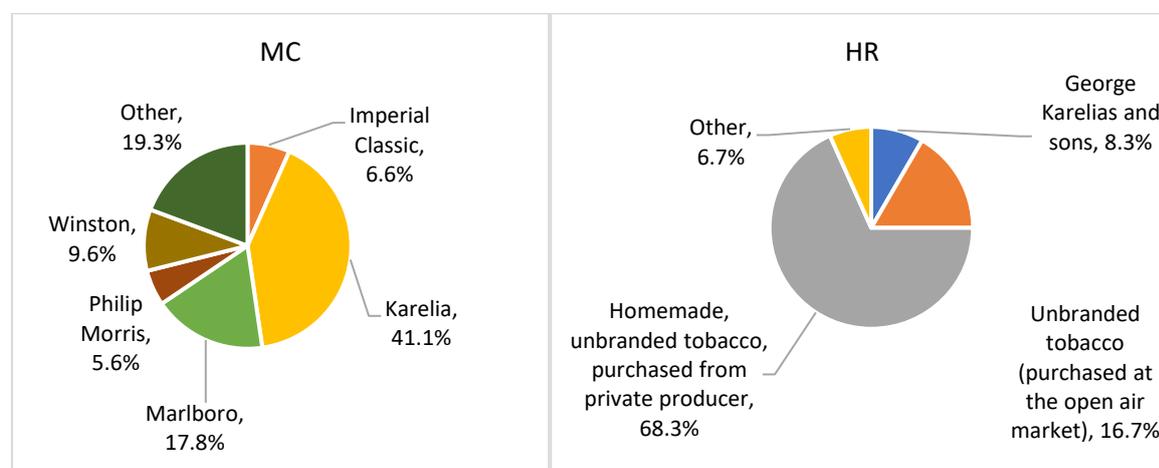
Source: Authors' calculations based on STC-SEE data for Albania

In the case of HR tobacco smokers, results show that the lack of tax stamp on tobacco packs is a widespread phenomenon: 46.7 percent of HR tobacco smokers smoke tobacco packs without a tax stamp (see Figure 3 and Table B3 in Appendix B), which means that these smokers use illicit tobacco packs (based only on the indicator of tax stamp presence).

Information regarding tobacco brands used by Albanian smokers shows that, for the case of HR tobacco users, 68.3 percent purchase unbranded tobacco (homemade) from private producers and 16.7 percent purchase it in the open air market (unbranded tobacco) (Figure 4

and Table B4 in Appendix B). Meanwhile, in the case of MC smokers this is not an issue as all brands used by smokers in the survey were legal¹⁶.

Figure 4. The majority of HR smokers purchase unbranded tobacco from independent producers and in the open air market



Note: Sample size = 198 MC packs and 60 HR packs. The category “Other” for MC packs includes brands such as “Guri i zi,” “Leggera,” “Maxim,” “Ibiza,” “White Diamond,” and “Durres Special”; and for HR packs it includes brands such as “Grand” and “Old Holborn.”

Source: Authors’ calculations based on STC-SEE data for Albania

In terms of price, results show that among 198 MC tobacco smokers, only one pack was purchased at a price lower than 70 percent of the lowest price of cigarettes in the country, namely €1.06 (a cigarette pack that was bought in a grocery store). There were no such cases among HR tobacco smokers (refer to Table B5 in Appendix B).

Cross-tabulations reveal that 40.3 percent of total HR packs without a health warning label and 46.7 percent of HR tobacco packs without a tax stamp are sold in the open air market (tables B9 to B11 in Appendix B). In addition, 0.5 percent of MC packs without a health warning label and 0.5 percent of packs without a tax stamp are sold in grocery stores. Moreover, 36.7 percent of HR packs are sold in the open air market neither with a tax stamp nor a health warning label (Table B12 in Appendix B). Also, 2.5 percent of MC packs are sold in an illegal place of purchase but have a tax stamp/health warning label; meanwhile in the case of HR packs 10.8 percent are sold in the open market with a tax stamp and 12.3 percent with a health warning label (Table B12 in Appendix B).

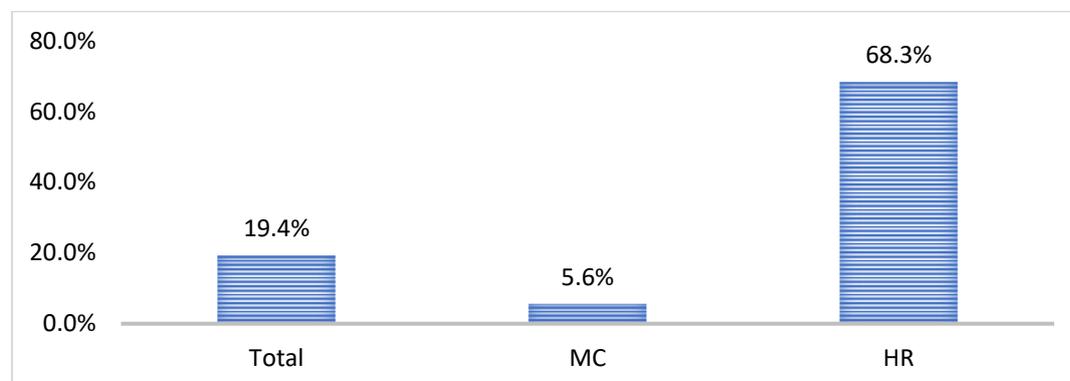
Factors impacting smokers’ decision to evade tax

Overall, the tax evasion indicator sourced by the abovementioned indicators (that is, place of purchase, tax stamp and health warning label presence, price, and brand) is calculated grouped by tobacco product. First, this study reports the prevalence of illicit cigarettes and the percentage of smokers who smoke illicit cigarettes. The prevalence of tax evasion, which represents the percentage of smokers who consume illicit packs, is 19.4 percent (see Figure 5 and Table B6 in Appendix B), with 68.3 percent of HR tobacco smokers and 5.6 percent of MC smokers.

¹⁶ See Figure 4 and Table B4 in Appendix B for MC brands used by Albanian smokers.

When differences in smoking intensity among smokers who use licit and illicit products are accounted for, 29.3 percent of cigarettes consumed in Albania are illicit, where the majority of illicit cigarettes is from HR tobacco (74.0 percent) as opposed to MC (6.4 percent).

Figure 5. *The majority of HR tobacco smokers use illicit tobacco*



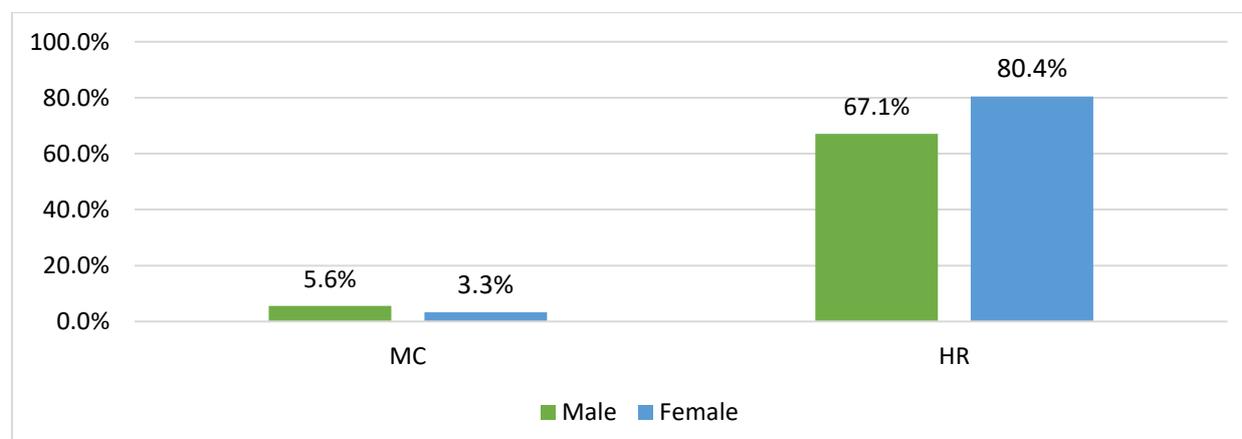
Note: Sample size = 198 MC packs and 60 HR packs. Total number of smokers is 248 adults (ten adults smoke both MC and HR).

Source: Authors' calculations using STC-SEE data for Albania

The socioeconomic and demographic profile of smokers who purchase illicit tobacco products is given in the following figures. Overall, more male smokers use illicit cigarette/tobacco packs than female smokers: 19.3 percent of male smokers and 16.7 percent of female smokers in Albania purchase illicit cigarette/tobacco packs (Table B6 in Appendix B).

In the case of HR tobacco smokers, it is the contrary: more females than males buy illegal packs of HR tobacco. Specifically, 80.4 percent of female smokers of HR tobacco smoke illicit tobacco (compared to 67.1 percent of male smokers). For MC smokers, the results are the same as the overall, with more male smokers evading taxes than female smokers – 5.6 percent of male smokers of MC smoke illicit tobacco and only 3.3 percent of female smokers consume illicit packs of MC (Figure 6 and Table B6 in Appendix B).

Figure 6. *Male smokers are relatively more likely than females to use illegal MC, while for HR tobacco the situation is reversed*

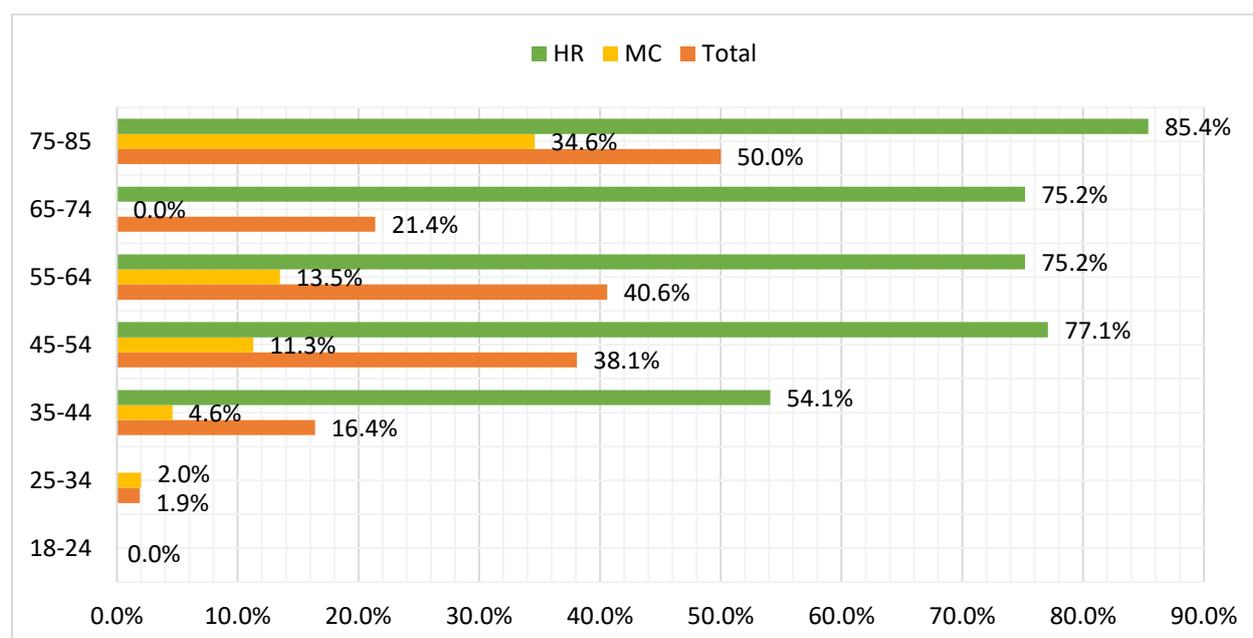


Note: Sample size = 198 MC packs and 60 HR packs

Source: Authors' calculations using STC-SEE data for Albania

In terms of smokers' age, the data collected reveal that tobacco tax evasion is more widespread among older smokers than younger smokers (Figure 7 and Table B6 in Appendix B). The percentage distributions shown in Table B6 in Appendix B and Figure 7 indicate that more than 75.2 percent of each age group starting from 45–54 years old purchase illicit packs of HR tobacco. Meanwhile, the age group of MC tobacco smokers who evade taxes more is between 75 and 85 years old (34.6 percent) (Figure 7 and Table B6 in Appendix B).

Figure 7. Older smokers are more likely to use illicit cigarette/tobacco packs than younger ones

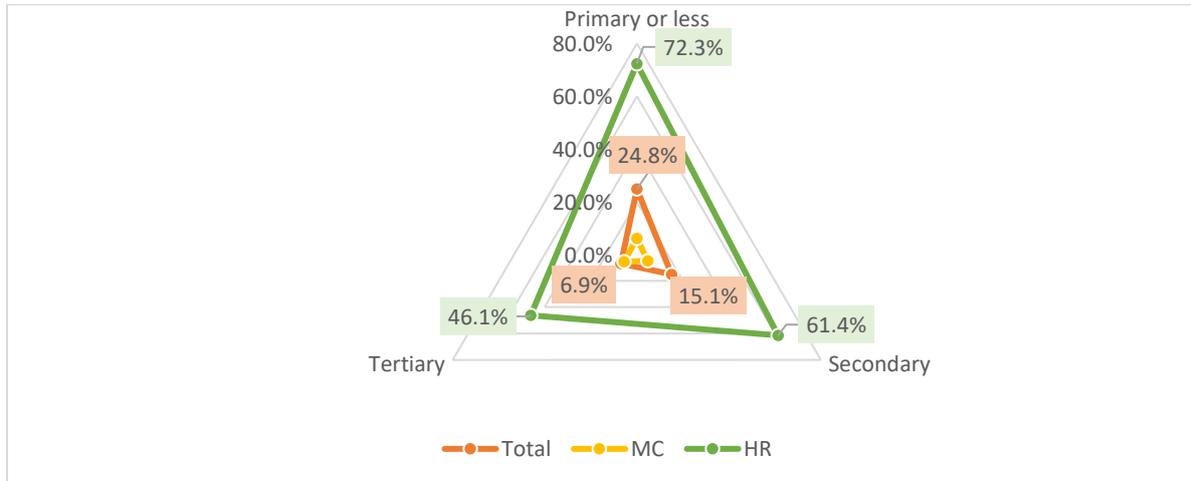


Note: Sample size = 198 MC packs and 60 HR packs. Total number of smokers is 248 adults (ten adults smoke both MC and HR).

Source: Authors' calculations using STC-SEE data for Albania

Small differences are shown regarding type of residence: smokers living in urban areas tend to evade taxes slightly more than those living in rural areas. Overall, 20.4 percent of urban smokers and 17.9 percent of rural smokers buy illicit cigarette/tobacco packs (Table B6 in Appendix B). Data regarding the level of education among smokers who evade taxes reveal that 5–6 percent of MC smokers with each level of education smoke illicit MC packs. Data for illicit HR tobacco users reveal a distinctive pattern: the higher the level of education, the lower the percentage distribution of smokers who evade taxes (Figure 8 and Table B6 in Appendix B). In total, however, the percentage distribution is the same as in the case of HR tobacco: smokers with primary or less education evade taxes more than others (24.8 percent) (Figure 8 and Table B6 in Appendix B). In conclusion, tax evasion among less educated MC/HR tobacco smokers in Albania is a phenomenon occurring more in urban areas than in rural areas.

Figure 8. The higher the smoker’s level of education, the lower the percentage of smokers who purchase illicit packs of MC/HR tobacco

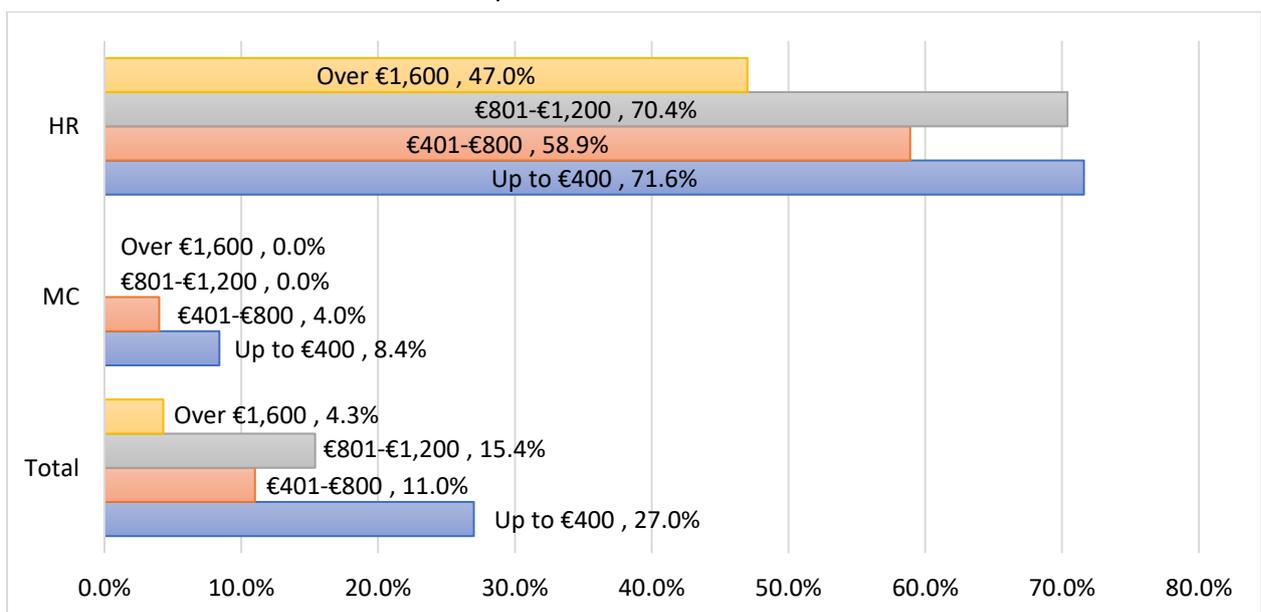


Note: Sample size = 198 MC packs and 60 HR packs

Source: Authors’ calculations using STC-SEE data for Albania

Regarding income levels, the data do not reveal any particular increasing or decreasing trend, but it seems that smokers from poorer families tend to evade tobacco taxes relatively more (Figure 9). Overall, 27.0 percent of smokers who belong to households earning up to €400 per month smoke illicit tobacco. According to type of tobacco product, more HR tobacco smokers in the lowest three income groups evade taxes than in the two highest income groups: 71.6 percent of smokers with less than €400 per month of household income evade taxes and 58.9 percent of smokers with monthly household incomes between €401 to €800 purchase illicit packs of HR tobacco (Table B6 in Appendix B). For MC, it appears that poorer smokers evade tobacco taxes more (refer to Table B6 in Appendix B for other characteristics).

Figure 9. Smokers from poorer families (households earning less than €400 per month) use illicit tobacco packs more than other smokers



Note: Sample size = 198 MC packs and 60 HR packs

Source: Authors' calculations using STC-SEE data for Albania

Tax avoidance

Overall, results show that only a small percentage of smokers (0.4 percent) purchase cigarette packs through tax avoidance (Figure 10 and Table B7 in Appendix B), which represents 0.5 percent of all MC smokers and no HR tobacco smokers (see Table B8 in Appendix B for further details).

3.2. FACTORS AFFECTING PROBABILITY OF TAX EVASION OR AVOIDANCE

Due to the fact that only one case of tax avoidance was identified, this section presents only the empirical results from tax evasion. Moreover, given the small number of identified cases of tax evasion in both MC and HR samples, this study combines both data sets and investigates the factors affecting the probability of tax evasion irrespective of the type of tobacco smoked. Therefore, Table 1 reports the results from the combined data set, whereas Table 2 reports the results from only the MC sample, given the relatively larger number of observations (MC smokers).

In both cases of tax evasion, the empirical results from the two preferred estimators (logit and PML) are reported in Table 1, with the first three models estimated using logit, whereas Models 4 and 5 are estimated by PML. Models 1 and 4 and Models 2 and 5 have the same specification differing only by the estimation method. Model 3, however, is estimated only by logit given the inability to find a correct specification with the PML estimator.

Table 1. Estimated results of determinants of tax evasion (using full sample of smokers)

VARIABLES	Model 1 - Logit		Model 2 - Logit		Model 3 - Logit		Model 4 - Logit		Model 5 - Logit	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
HH Income per month (€)										
less than €400										
between €400-€1,200	0.351	(0.595)	-0.313	(0.609)	0.090	(0.575)	0.635	(0.839)	0.205	(0.820)
over €1,200	-1.364*	(0.742)	-1.116	(1.006)	-0.780	(0.649)	-0.466	(1.391)	-0.643	(1.220)
Years of education	0.067	(0.117)	0.095	(0.162)	0.054	(0.011)				
Age	0.684***	(0.204)	0.715***	(0.217)	0.633***	(0.177)	0.378**	(0.155)	0.377**	(0.156)
Age squared	-0.006***	(0.002)	-0.006***	(0.002)	-0.005***	(0.002)	-0.003**	(0.002)	-0.003**	(0.002)
MC smoker	-6.423***	(1.100)	-7.916***	(0.959)	-7.216***	(1.019)	-5.163***	(0.782)	-5.336***	(0.877)
Border										
Border with Kosovo										
Border with North Macedonia	1.075	(1.295)	0.896	(1.501)	1.323	(1.221)	0.674	(1.941)	0.623	(1.514)
Border with Montenegro	2.429***	(0.943)	1.642	(1.153)	2.502***	(0.811)	2.084**	(0.983)	1.835*	(1.106)
Employment status										
Unemployed										
Employed	0.858	(1.310)	0.838	(0.971)	1.166	(1.328)	0.901	(1.001)	0.971	(1.047)
Self-employed	-0.498	(0.946)	-0.969	(0.934)	-0.698	(1.094)	-0.529	(1.068)	-0.383	(1.054)
Pensioners	0.991	(1.397)	0.955	(1.390)	0.410	(1.263)	0.749	(1.233)	0.574	(1.324)
Regions										
North Albania										
Central Albania			-0.851	(1.225)					0.201	(0.829)
South Albania			-2.945**	(1.264)					-0.788	(0.976)
Residence										
Rural										
Urban			1.546**	(0.654)	2.007**	(0.805)			0.438	(0.672)
Smoking status										
Less than daily										
Daily			-0.317	(1.793)					0.875	(1.097)
HH size					0.028	(0.140)				

Tobacco Tax Evasion in Albania and Its Determinants

VARIABLES	Model 1 - Logit		Model 2 - Logit		Model 3 - Logit		Model 4 - Logit		Model 5 - Logit	
	Coefficient	Standard error								
Tirana					-1.253*	(0.667)				
Constant	-17.108***	(5.763)	-15.793***	(4.086)	-16.593***	(5.039)				
Observations	231		231		231		231		231	
AIC	80.417		79.081		79.170		71.305		74.419	
BIC	121.726		1341601		127.364		112.614		129.498	
Log Likelihood	-28.208		-23.540		-25.585		-23.652		-21.209	
Pseudo R2	0.7704		0.8090		0.7924					

Robust standard errors in parentheses

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

Before interpreting the results, several diagnostic tests were conducted and then the main findings of the preferred models were discussed (see Table C1 in Appendix C for the link test, Table C3 in Appendix C for the Hosmer and Lemeshow test, and Table C5 in Appendix C for the multicollinearity test).

The results presented in Table 1 suggest income, labor market status, age, region and capital city, type of tobacco, border proximity, and type of residence are important factors affecting smokers' decision to engage in tax evasion. More precisely, the results suggest that smokers of high-income households have a lower probability to evade taxes compared to those in low-income households. However, the results should be interpreted with caution given the insignificant association with tax evasion when moving to Models 2–5.

In terms of education levels, the results suggest that there is no statistically significant association between a smoker's years of education and propensity for tax evasion.

When controlling for type of tobacco smoked (MC versus HR cigarettes), the results suggest that MC smokers have lower probability of engaging in tax evasion than those smoking HR tobacco. While illicit MC packs are less accessible in the open air market, illicit HR packs are easily accessible; as such the probability of HR smokers evading taxes is higher compared to MC smokers. Another potential factor may be affordability, as HR tobacco is cheaper compared to MC.

Regarding the potential diminishing effect of age, the results strongly suggest throughout all five models that age is statistically associated with tobacco tax evasion. However, age's effect on tobacco tax evasion is not linear; on the contrary it exhibits an inverse U-shaped trend with a positive association up to age 55–65 (depending on the model), and then the association between age and tax evasion becomes negative. In other words, as smokers grow older, they are more likely to evade taxes until they reach age 55–65 (depending on the model), at which point, they become less likely to engage in tax evasion as they get older.

Illicit packs are expected to be more frequent among smokers from South Albania compared to those from North Albania. When controlling for the likelihood of evasion of those living in the capital city (Tirana) it seems that smokers are less likely to evade in Tirana, where law enforcement tends to be stronger, thus making illicit packs less accessible. Lastly, the type of residence of the smoker (urban versus rural) is considered a statistically significant determinant of tax evasion. More precisely, the results suggest that illicit packs are more frequent among urban smokers than those from rural areas. However, the results must be interpreted with caution given that in the PML estimator the effect fades away.

Labor market status is not considered a significant determinant of tax evasion throughout all the specifications. Irrespective of the estimation method (logit or PML), none of the categories of labor market status is statistically associated with tax evasion.

Finally, the results suggest that smokers living in municipalities close to the border with Montenegro are more likely to evade taxes compared to those in close proximity to Kosovo. No significant results are found for smokers living close to North Macedonia.

In addition to the results with both MC and HR smokers combined, it would be ideal to investigate the determinants of tax evasion separately for MC and HR smokers. However, due to the small number of observations of HR smokers, empirical results could be provided only

for MC smokers (Table 2). Cases of tax avoidance were difficult to identify, making the sample very sensitive to the number of observations.

Table 2. Estimated results of determinants of tax evasion (using MC sample)

VARIABLES	Model 1 - Logit		Model 2 - Logit		Model 3 - PML		Model 4 - PML	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
HH Income per month (€)								
less than €400								
between €400-€1,200	-0.799	(0.655)	-0.5216	(0.699)	0.087	(0.814)	0.208	(0.886)
over €1,200					-1.606	(1.607)	-1.328	(1.566)
Years of education	-0.066	(0.121)	-0.085	(0.126)	-0.083	(0.086)	-0.076	(0.083)
Age	0.411***	(0.117)	0.415***	(0.118)	0.178	(0.142)	0.225	(0.132)
Age squared	-0.003***	(0.001)	-0.003**	(0.001)	-0.001	(0.001)	-0.001	(0.001)
Border								
Border with Kosovo								
Border with North Macedonia					0.594	(1.805)	0.850	(1.808)
Border with Montenegro	2.251**	(1.035)	1.922	(1.1395)	1.826	(1.263)	1.753	(1.237)
Employment status								
Unemployed								
Employed	-1.100	(0.679)	-0.922	(0.695)	0.445	(0.969)	0.807	(0.947)
Self-employed	-		-		-1.684	(1.651)	-1.623	(1.584)
Pensioners	-1.058	(1.329)	-0.630	(1.348)	-0.017	(1.313)	0.434	(1.225)
Gender								
Female								
Male	1.868	(1.214)	1.595	(1.227)	0.635	(0.925)	0.625	(0.883)
Region								
North Albania								
Central Albania	1.409	(1.188)	1.404	(1.608)	1.196	(0.966)	0.861	(0.951)
South Albania	-3.037*	(1.601)	-3.197**	(1.569)	-0.239	(1.233)	-0.513	(1.244)
Smoking status								
Less than daily								
Daily	0.474	(0.318)	0.423	(0.310)	0.249	(0.307)	0.007	(0.100)
Residence								
Rural								
Urban	3.700**	(1.241)	3.420**	(1.193)	1.022	(0.764)		
HH size			-0.226	(0.185)			-0.043	(0.223)

Tobacco Tax Evasion in Albania and Its Determinants

VARIABLES	Model 1 - Logit		Model 2 - Logit		Model 3 - PML		Model 4 - PML	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
Constant	-30.772***	(10.6612)	-27.872**	(10.649)	-15.166*	(8.435)	-8.359**	(3.813)
Observations	146		146		196		196	
AIC	66.840		68.506		66.387		65.615	
BIC	105.627		110.277		118.837		118.065	
Log Likelihood	-20.420		-20.253		-17.193		-16.807	
Pseudo R2	0.458		0.493					

Robust standard errors in parentheses

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

Although the model specifications in this case are not identical to the one reported in Table 1, based on the link test (see Table C2 in Appendix C) the results suggest that the significant determinants of tax evasion are similar to the full sample – namely age, border with Montenegro, type of residence, and region (with the results suggested from Models 1 and 2 estimated by logit).

Similar to the first set of results, illicit packs are expected to be more frequent among urban smokers and those living close to the border with Montenegro, whereas they are expected to be less frequent among smokers from South Albania (compared to those living in the north). Also, age shows the same nonlinear relationship with evasion as the full sample, with a positive association up to 68–69 years old, after which the association becomes negative.

CHAPTER 4. DISCUSSION AND POLICY RECOMMENDATIONS

Following the criteria established at the methodology section on tobacco tax evasion, this study employs a descriptive and empirical analysis of data regarding the use of illicit cigarette packs among adult smokers in Albania. The results indicate that 19.4 percent of smokers in Albania consume illicit cigarette/tobacco packs. Specifically, by type of tobacco product, data reveal that 68.3 percent of HR tobacco smokers and 5.6 percent of MC smokers use illicit cigarettes. However, when illicit tobacco use is weighted by smoking intensity, the data show that the use of illicit cigarettes among Albanian smokers is high: the estimated share of illicit tobacco consumed by adult smokers in Albania is 29.3 percent, with 74.0 percent from HR cigarettes and 6.4 from MC.

Overall, the majority of smokers of HR tobacco packs purchase them from illicit sources (that is, on the street and in the open air market from independent sellers – 68.3 percent), without the appropriate tax stamp (46.7 percent), and without the appropriate health warning label (40.3 percent). Regarding MC packs, a small percentage of smokers purchases this type of tobacco from illicit sources (4.5 percent), without the appropriate tax stamp (0.5 percent), or without the appropriate health warning label (1.5 percent).

Information regarding tobacco brands used by Albanian smokers show that 68.3 percent of HR tobacco smokers purchase unbranded tobacco (homemade) from private producers and 16.7 percent purchase it in open air markets (unbranded tobacco), while no illegal brands were identified among MC smokers/packs.

Tax avoidance is not a broad phenomenon among Albanian smokers – among 198 MC tobacco smokers, only one cigarette pack had been purchased at a price lower than 70 percent of the lowest price of cigarettes in the country (a cigarette pack that was bought in a grocery store). There are no identified cases of tax avoidance among HR tobacco smokers.

Overall, 19.3 percent of male smokers and 16.7 percent of female smokers in Albania purchase illicit cigarette/tobacco packs. Older smokers use more illicit cigarette/tobacco packs than younger ones. In terms of residence, 20.4 percent of urban smokers and 17.9 percent of rural smokers buy illicit cigarette/tobacco packs. Distinctively, the higher the level of education, the lower the percentage distribution of smokers who evade taxes. Among household income groups, smokers of poorer families (earning less than €400 per month) use illicit tobacco packs more than smokers in other groups.

In the empirical investigation, the results suggest that smokers from high-income households smoking MC and living in southern Albania are less likely to engage in tax evasion. Similar results are found both when using a full data set (with MC and HR smokers) and MC smokers only.

Due to the small number of observations, conducting an empirical investigation for HR smokers is not possible. Similarly, as no tax avoidance cases were identified, there is no empirical investigation conducted for tax avoidance, neither for MC nor HR smokers.

Based on the findings of this study, the following recommendations are offered to policy makers to address the illicit trade of tobacco in Albania.

1. Significantly increase monitoring and enforcement efforts for effective tobacco taxation

Results show that the share of illicit cigarette consumption in Albania is large and that a considerable share of smokers in Albania consume illicit cigarettes. Therefore, stronger monitoring and enforcement efforts should be made. To address illicit trade of tobacco in Albania, the government should take further steps to simultaneously increase excise taxes on tobacco, and by default implementing an excise schedule for reaching the EU minimum excise tax rate. This would further increase government budget revenues, decrease consumption, and reduce tobacco-related mortality and morbidity.

2. Pair tobacco tax increases with intensive health awareness campaigns (cessation promotion)

The government of Albania should make an intensive and structured schedule of health awareness campaigns related to tobacco cessation, to increase the likelihood that those who are most affected by a price increase (for example, poorer households) will quit rather than switch to illicit tobacco consumption (12.5 percent of smokers in Albania declared they switched from MC to HR (which is often illegally purchased) and 1.6 percent switched to illegal packs due to price increases)¹⁷. In addition, tobacco cessation services should be made available and easily accessible to vulnerable populations. The government could consider following the example of many countries that earmark a portion of tobacco tax revenues for such support. A common and coordinated set of actions can be carried out between inspection (by the State Health Directorate) and education (by the Institute of Public Health and Regional Directories of Education) agencies to intensify consumer awareness of the harms of tobacco use and the benefits of cessation, especially when increases in taxation (and prices) are to be introduced.

3. Regulate tobacco retail sales and adopt relevant legislation

Study results show that majority of HR tobacco is mainly purchased from illicit sources (that is, on the street and in the open air market from independent local sellers). Therefore, the priority for enhancing tobacco control with regard to the informal market of tobacco should focus on HR tobacco. The main source for HR tobacco is local production, as farmers may sell directly to consumers or via middlemen, making it difficult to spot and control. Tobacco farmers in Albania have faced difficulties in accessing the market, considering the lack of local industry, while the reliance on export markets (foreign buyers) has proven unreliable for several years. Under such circumstances, some farmers may quit tobacco farming while others may attempt to engage in the short value chain or direct sales to final consumers, making HR tobacco more easily available or and at a lower cost for final consumers.

There have been made efforts to regulate retail tobacco sales, but currently there are no restrictions in place. In March 2019, through a draft law¹⁸, the Ministry of Health and Social Protection has required to adopt a legal act for licensing the retail units of tobacco products. Additionally, the Parliament of Albania plays an important role in adoption of the act and the accompanying measures related with tobacco trade.

¹⁷ Please refer to Gjika *et al.* (2020a).

¹⁸ Ministry of Health and Social Protection. (2019). Some additions and amendments to law no. 9636, dated 6.11.2006 "On the protection of health from tobacco products", as amended.

Interventions and monitoring for HR tobacco are needed at both farm and market levels. There are numerous measures that have been applied in other transitioning countries (Balwicki *et al.*, 2020) that Albania could consider emulating as well. Following the examples of other countries such as Poland, farmers could be required to report the size of their tobacco fields and the weight of their crops to the state authorities. Additionally, as well as each purchase within the supply chain can be reported by both the seller and the buyer to enable cross-validation (*ibid*). Therefore, licenses should be required not only for tobacco manufacturing but also tobacco growing, wholesaling, and transporting. Legal measures should be enacted by the MARD to register and monitor the use and output of areas planted with tobacco and regulate the supply chain by obliging parties (both sellers and buyers) to report after being registered. The government should also implement a cigarette tracking and tracing system by coordinating the work of the Customs Directory with State Police.

Moreover, considering its complexity, further research is needed to analyze the Albanian HR tobacco supply chain in Albania in order, to identify and recommend the best entry points for policy makers.

4. Become a party to the international Protocol to Eliminate Illicit Trade in Tobacco Products

The controlling institutions can follow the existing roadmap for addressing illicit trade contained in the WHO Protocol to Eliminate Illicit Trade in Tobacco Products. The Protocol to Eliminate Illicit Trade in Tobacco Products, is an international treaty that lists the measures a country should take to control illicit market of tobacco. Several countries in the Balkan region have already adopted the Protocol, and Albania is one of the few countries in the region that have not yet acceded to this treaty. Membership in the Protocol could contribute to controlling the supply chain of locally produced HR tobacco, including farmers.

REFERENCES

- Acharya A, Angus K, Asma S, Bettcher DW, Blackman K, Blecher E, Borland R, Ciecierski C, Commar AA, Cui M, da Costa e Silva VL, David AM, Delipalla S, Emery S & Hastings G (2016) *The Economics of Tobacco and Tobacco Control*. Chaloupka F (Editor), Fong G (Editor) & Yürekli A (Editor) NCI Tobacco Control Monograph Series, 21. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, and World Health Organization.
- Balwicki, Ł., Stokłosa, M., Balwicka-Szczyrba, M., & Drope, J. (2020). Legal Steps to Secure the Tobacco Supply Chain: A Case Study of Poland. *International journal of environmental research and public health*, 17(6), 2055.
- Calderoni, F. (2014). A new method for estimating the illicit cigarette market at the subnational level and its application to Italy. *Global Crime*, 15(1-2), 51-76.
- Chaloupka, F. J., Hu, T. W., Warner, K. E., Jacobs, R., & Yurekli, A. (2000). The taxation of tobacco products. In P. Jha & F. J. Chaloupka (Eds.), *Tobacco control in developing countries*. World Bank.
- Chaloupka, F. J., Straif, K., & Leon, M. E. (2011). Effectiveness of tax and price policies in tobacco control. *Tobacco Control*, 20(3), 235-238.
- Chaloupka, F. J., Yurekli, A., & Fong, G. T. (2012). Tobacco taxes as a tobacco control strategy. *Tobacco Control*, 21, 172-180.
- DSA (2019). *Healthier and wealthier – Why taxing tobacco is important not only for Health but also for the economy, Policy Brief*, Available on: [http://tobaccotaxation.org/cms_upload/pages/files/170_albanija_2019_eng_\(1\).pdf](http://tobaccotaxation.org/cms_upload/pages/files/170_albanija_2019_eng_(1).pdf)
- Euromonitor International. (2014). *Illicit trade in tobacco products 2013*.
- Euromonitor International. (2018). Illicit trade. In: *Global Report: Tobacco – World, 2017*.
- Firth, D. (1993). Bias reduction of maximum likelihood estimates. *Biometrika*, 80(1), 27–38.
- Gjika, A., Gjika, I., Zhllima, E., & Imami, D. (2020a). *Smoking uptake, prevalence, and cessation in Albania*. Tirana, Albania: Development Solutions Associates.
- Gjika, A., Zhllima, E., Rama, K., & Imami, D. (2020b). Analysis of tobacco price elasticity in Albania using household level data. *International Journal of Environmental Research and Public Health*, 17(2), 432.
- Guindon, G. E., Driezen, P., Chaloupka, F. J., & Fong, G. T. (2014). Cigarette tax avoidance and evasion: Findings from the International Tobacco Control Policy Evaluation (ITC) Project. *Tobacco Control*, 23(suppl 1), i13-i22.
- Harri, A., Zhllima, E., Imami, D., & Coatney, K. T. (2020). Effects of subject pool culture and institutional environment on corruption: Experimental evidence from Albania. *Economic Systems*, 100783.
- Horowitz, J. L., & Savin, N. E. (2001). Binary response models: Logits, probits and semiparametrics. *Journal of Economic Perspectives*, 15(4), 43–56.

- IES. (2019). *Improving tobacco taxation policies in Southeastern Europe policy brief*. Institute of Economic Sciences: Belgrade, Serbia.
- INSTAT. (2012). *Main results of population and housing census 2011, Albania*. http://www.instat.gov.al/media/3058/main_results_population_and_housing_census_2011.pdf
- INSTAT. (2020). *Local administrative units (LAU)*. <https://ec.europa.eu/eurostat/web/nuts/local-administrative-units>
- Jha, P., & Chaloupka, F. J. (Eds.). (1999). *Tobacco control in developing countries*. World Bank. <http://documents1.worldbank.org/curated/en/602821468330954036/pdf/709670WP0tobac00Box370064B00PUBLIC0.pdf>
- Jha, P., Chaloupka, F. J., Jacobs, R., Gale, H. F., & Capehart, T. C. (2000). The supply-side effects of tobacco-control policies. In P. Jha & F. J. Chaloupka (Eds.), *Tobacco control in developing countries*. World Bank.
- Joossens, L., Merriman, D., Ross, H., & Raw, M. (2009). *How eliminating the global illicit cigarette trade would increase tax revenue and save lives*. International Union Against Tuberculosis and Lung Disease.
- Joossens, L., & Raw, M. (2012). From cigarette smuggling to illicit tobacco trade. *Tobacco Control*, 21(2), 230-234.
- Joossens, L., Lugo, A., La Vecchia, C., Gilmore, A. B., Clancy, L., & Gallus, S. (2014). Illicit cigarettes and HR tobacco in 18 European countries: A cross-sectional survey. *Tobacco Control*, 23(e1), e17-e23.
- KPMG. (2011). *Project Star 2010 Results*. http://www.pmi.com/eng/tobacco_regulation/illicit_trade/documents/Project_Star_2010_Results.pdf
- Long, J. S. (1997). *Advanced quantitative techniques in the social sciences series. Number 7. Regression models for categorical and limited dependent variables*. Sage Publications, Inc.
- Prieger, J. E., & Kulick, J. (2019). *Tax evasion and illicit cigarettes in California: Part IV—Smokers’ behavioral and market responses to a tax increase* <http://dx.doi.org/10.2139/ssrn.3322095>
- Rainey, C., & McCaskey, K. (2019). *Estimating logit models with small samples*. <https://doi.org/10.7910/DVN/6XS8Z1>, Harvard Dataverse, V1, UNF:6:3Pa+rQbFbEWdhn1avG03zQ== [fileUNF]
- Ross, H., & Blecher, E. (2019). *Illicit trade in tobacco products need not hinder tobacco tax policy reforms and increases*. Tobacconomics White Paper. Chicago, IL: Tobacconomics, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago. www.tobacconomics.org.
- Ross, H. (2015). *Understanding and measuring tax avoidance and evasion: A methodological guide*. http://www.tobaccoecon.uct.ac.za/sites/default/files/image_tool/images/405/Publications/reports/Understanding-and-measuring-tax-avoidance-and-evasion-A-methodological-guide1.pdf.

- Smith, K. E., Savell, E., & Gilmore, A. B. (2013). What is known about tobacco industry efforts to influence tobacco tax? A systematic review of empirical studies. *Tobacco Control*, 22(2), e1-e1.
- Stoklosa, M., Paraje, G., & Blecher, E. (2020). *A toolkit on measuring illicit trade in tobacco products*. A Tobacconomics and American Cancer Society Toolkit. Chicago, IL: Tobacconomics, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago, www.tobacconomics.org.
- Tobacco Reporter. (2001). *Winter bonus issue. Tobacco Reporter 2001*.
- West, R., Townsend, J., Joossens, L., Arnott, D., & Lewis, S. (2008). Why combating tobacco smuggling is a priority. *British Medical Journal*, 337, a1933.
- WHO. (2007). *The European tobacco control report 2007* (No. EUR/07/5062780). Copenhagen: WHO Regional Office for Europe.
- WHO. (2013). *Protocol to eliminate illicit trade in tobacco products*. World Health Organization.
- Wooldridge, J. M. (2013). *Introductory econometrics: a modern approach*. 5th ed. Mason, OH: South-Western Cengage Learning.
- Zaloshnja, E., Ross, H., & Levy, D. T. (2010). The impact of tobacco control policies in Albania. *Tobacco Control*, 19(6), 463-468.
- Zhllima, E., Imami, D., Rama, K., & Shahini, A. (2018). Corruption in education during socialism and the postsocialist transition: The case of Albania. *Region*, 7(2), 51-70.

APPENDIX A. SAMPLE CHARACTERISTICS

Table A1. Percentage distribution of smokers by cigarette pack shown/not shown

Demonstration of last purchased pack of cigarettes/tobacco	All Smokers		MC		HR	
	Percentage	(95% CI)	Percentage	(95% CI)	Percentage	(95% CI)
Yes	77.9	(72.8, 83.0)	79.8	(74.2, 85.4)	71.7	(60.3, 83.1)
No	22.1	(17.0, 27.2)	20.2	(14.6, 25.8)	28.3	(16.9, 39.7)

Note: Sample size = 198 for MC and 60 for HR packs. Total number of smokers is 248 (ten smokers use both HR and MC).

Table A2. Number and percentage distribution MC and HR tobacco smokers in the study sample, by selected demographic and socioeconomic characteristics

Indicator		MC tobacco smokers		HR tobacco smokers	
		Observations	Percentage	Observations	Percentage
Gender	Male	168	84.6	53	89.0
	Female	30	15.4	7	11.7
Age category	18-24	41	20.9	0	0.0
	25-34	51	25.8	2	3.0
	35-44	43	21.8	17	28.1
	45-54	27	13.4	17	28.8
	55-64	19	9.4	14	23.5
	65-74	10	5.1	4	7.0
	75-85	7	3.6	6	10.2
Residence	Urban	113	57.1	32	53.3
	Rural	85	42.9	28	47.3
Education level	Primary	99	49.8	42	69.7
	Secondary	73	36.7	17	28.7
	Tertiary	27	13.5	1	2.3
Household income levels (€/month)	Up to 400	102	51.3	46	76.6
	401-800	63	31.8	10	16.3
	801-1,200	10	5.3	2	4.1
	1,201-1,600	2	1.0	0	0.0
	Over 1600	21	10.6	2	3.6
Smoking intensity (no. of cigarettes smoked daily)	≤10 cigarettes	106	53.5	25	41.7
	11-19 cigarettes	6	3.0	6	10.0
	20+ cigarettes	86	43.4	29	48.3
Budget share of tobacco	0% - 20%	140	70.6	50	83.3
	More than 20%	58	29.3	10	16.7
Total		198	100.0	60	100.0

Note: Sample size = 198 MC packs and 60 HR packs

APPENDIX B. DESCRIPTIVE ANALYSIS RESULTS

Table B1. Percentage distribution of MC and HR tobacco smokers, by place of purchase

Place of purchase	MC		HR	
	Percentage	(95% CI)	Percentage	(95% CI)
Domestic grocery stores (small independent grocery stores, mini/super/hyper markets, kiosks)	89.4	(85.1, 93.7)	16.7	(7.2, 26.1)
The open-air market, on the street from independent/individual sellers	4.5	(1.6, 7.4)	68.3	(56.6, 80.1)
Domestic specialized tobacco shops	4.5	(1.6, 7.4)	15.0	(6.0, 24.0)
In other countries (grocery stores, specialized tobacco shops, etc.)	1.0	(-0.4, 2.4)	0.0	-
Duty-free shops	0.5	(-0.5, 1.5)	0.0	-

Note: Sample size = 198 MC packs and 60 HR packs

Table B2. Percentage distribution of smokers of MC and HR tobacco, by presence of health warning label

Presence of health warning label	MC		HR	
	Percentage	(95% CI)	Percentage	(95% CI)
Health warnings in local language	96.5	(93.9, 99.0)	42.0	(29.5, 54.5)
Health warnings in foreign language	0.5	(-0.5, 1.5)	5.9	(-0.1, 11.8)
No health warnings	0.5	(-0.5, 1.5)	40.3	(27.9, 52.7)
Does not know	1.0	(-0.4, 2.4)	10.1	(2.5, 17.7)
Refused to answer	1.5	(-0.2, 3.2)	1.7	(-1.6, 4.9)

Note: Sample size = 198 MC packs and 60 HR packs. For 2.5 percent of MC packs and for 11.8 percent of HR packs no such information was recorded (i.e., presence of health warning label).

Table B3. Percentage distribution of smokers of MC and HR tobacco, by presence of tax stamp

Presence of tax stamp	MC		HR	
	Percentage	(95% CI)	Percentage	(95% CI)
Local stamp	92.4	(88.7, 96.1)	38.3	(26.0, 50.6)
Foreign stamp	0.0	-	1.7	(-1.6, 4.9)
Stamp removed or destroyed	1.5	(-0.2, 3.2)	3.3	(-1.2, 7.9)
Lack of stamp	2.0	(-0.2, 3.2)	46.7	(34.0, 59.3)
Does not know	2.5	(0.3, 4.7)	8.3	(1.3, 15.3)
Refused to answer	1.5	(-0.2, 3.2)	1.7	(-1.6, 4.9)

Note: Sample size = 198 MC packs and 60 HR packs. For 4 percent of MC packs and for 10.0 percent of HR packs no such information was recorded (i.e., presence of tax stamp).

Table B4. Percentage distribution of smokers of MC and HR tobacco, by brand

MC Brand	MC		HR Brand	HR	
	Percentage	(95% CI)		Percentage	(95% CI)
Imperial Classic	6.6	(3.1, 10.1)	George Karelia's and sons	8.3	(1.3, 15.3)
Karelia	41.1	(34.3, 48.0)	Unbranded tobacco (purchased at the open air market)	16.7	(7.2, 26.1)
Marlboro	17.8	(12.4, 23.1)	Homemade, unbranded tobacco, purchased from private producer	68.3	(56.6, 80.1)
Winston	9.6	(5.5, 13.8)			
Marlboro	17.8	(12.4, 23.1)			
Other	19.3	(13.8, 24.8)	Other	6.7	(0.4, 13.0)

Note: Sample size = 198 MC packs and 60 HR packs. Only for 0.5 percent (for 1 observation) of MC smokers was no such information recorded (i.e., brand used). The category "Other" for MC packs includes brands such as "Guri i zi," "Leggera," "Maxim," "Ibiza," "White Diamond," and "Durrës Special;" and for HR packs it includes brands such as "Grand" and "Old Holborn."

Table B5. Main descriptive data on price of cigarette packs/tobacco packs, by type of tobacco product (MC and HR)

Indicator	MC (€)	HR (€)
Mean (95% CI)	2.07 ¹⁹ (1.42, 2.72)	4.81 ²⁰ (-5.12, 14.73)
Median (95% CI)	2.03 (1.38, 2.68)	3.25 (-6.68, 13.18)
Minimum	1.06	0.81
Maximum	4.07	24.39
Percentage of smokers who purchased at a price lower than 70 percent of the lowest price	0.5% (only one case)	0.0% (no such cases)

Note: Sample size = 198 MC packs and 60 HR packs

¹⁹ Price per 20 cigarettes.

²⁰ Price per 0.020 kg HR tobacco pack (not cigarettes).

Table B6. Percentage distribution of smokers who evaded tax on their last purchased pack of MC and HR, by selected demographic and socioeconomic characteristics

	Total		MC		HR	
	Percentage (95% CI)					
Overall	19.4	(14.4, 24.3)	5.6	(2.4, 8.7)	68.3	(56.6, 80.1)
Gender						
Male	19.3	(14.0, 24.7)	6.0	(2.7, 9.3)	67.1	(55.2, 79.0)
Female	16.7	(4.5, 28.8)	3.3	(0.8, 5.8)	80.4	(70.4, 90.5)
Age category						
18-24	0.0	-	0.0	-	0.0	-
25-34	1.9	(-1.8, 5.7)	2.0	(0.0, 3.9)	0.0	-
35-44	16.4	(6.6, 26.1)	4.6	(1.7, 7.6)	54.1	(41.5, 66.7)
45-54	38.1	(23.4, 52.8)	11.3	(6.9, 15.7)	77.1	(66.5, 87.7)
55-64	40.6	(23.6, 57.6)	13.5	(8.7, 18.2)	75.2	(64.2, 86.1)
65-74	21.4	(-0.1, 42.9)	0.0	-	75.2	(64.3, 86.1)
75-85	50.0	(21.7, 78.3)	34.6	(28.0, 41.2)	85.4	(76.5, 94.4)
Residence						
Urban	20.4	(13.8, 27.1)	8.4	(4.5, 12.3)	72.9	(61.6, 84.1)
Rural	17.9	(10.6, 25.2)	1.8	(-0.1, 3.6)	63.8	(51.7, 76.0)
Education level						
Primary	24.8	(17.5, 32.2)	6.1	(2.8, 9.4)	72.3	(61.0, 83.7)
Secondary	15.1	(7.5, 22.7)	4.8	(1.8, 7.8)	61.4	(49.1, 73.7)
Tertiary	6.9	(-2.3, 16.1)	5.6	(2.4, 8.8)	46.1	(33.5, 58.7)
Household income groups (€ per month)						
Up to 400	27.0	(19.6, 34.4)	8.4	(4.5, 12.2)	71.6	(60.2, 83.0)
401-800	11.0	(3.8, 18.1)	4.0	(1.3, 6.7)	58.9	(46.4, 71.3)
801-1,200	15.4	(-4.2, 35.0)	0.0	-	70.4	(58.8, 81.9)
1,201-1,600	0.0	-	0.0	-	0.0	-
over 1,600	4.3	(-4.0, 12.7)	0.0	-	47.0	(34.4, 59.7)
Smoking intensity (no. of cigarettes smoked per day)						
<=10 cigarettes	14.8	(12.6, 26.5)	7.0	(3.5, 10.6)	70.0	(58.4, 81.6)
11-19 cigarettes	37.5	(-8.0, 24.6)	0.0	:	61.7	(49.4, 74.0)
20+ cigarettes	22.2	(6.9, 19.5)	4.1	(1.3, 6.8)	69.0	(57.2, 80.7)
% of monthly income spent on tobacco						
Up to 20%	22.5	(16.4, 28.6)	5.0	(2.0, 8.0)	74.2	(63.2, 85.3)
More than 20%	11.3	(3.6, 19.0)	8.2	(4.3, 12.0)	37.0	(24.8, 49.2)

Note: Sample size = 198 for MC tobacco and 60 for HR tobacco. Total no. of smokers is 284 (ten smokers use both HR and MC).

Table B7. Percentage distribution of smokers who avoid tobacco taxes (total and by tobacco product)

	Total		MC		HR	
	Percentage	(95% CI)	Percentage	(95% CI)	Percentage	(95% CI)
Tax avoidance	0.4	(-0.4, 1.2)	0.5	(-0.5, 1.5)	0.0	-

Note: Sample size: 198 MC packs and 60 HR packs. Total no. of smokers is 284 (10 smokers use both HR and MC).

Table B8. Number and percentage distribution of current smokers of MC who avoid tax overall and by selected demographic and socioeconomic characteristics

	MC packs with tax avoidance		
	N	Percentage	(95% CI)
Overall	1	0.5	(-0.5, 1.5)
Gender			
Male	1	0.5	(-0.5, 1.5)
Female	0	0	-
Age category			
18-24	0	0	-
25-34	0	0	-
35-44	0	0	-
45-54	0	0	-
55-64	0	0	-
65-74	1	8.3	(4.4, 12.1)
75-85	0	0	-
Residence			
Urban	0	0	-
Rural	1	1	(-0.4, 2.4)
Education level			
Primary	1	0.8	(-0.4, 2.1)
Secondary	0	0	-
Tertiary	0	0	-
Household income groups (€ per month)			
Up to 400	1	0.8	(-0.4, 2.1)
401-800	0	0	-
801-1,200	0	0	-
1,201-1,600	0	0	-
over 1,600	0	0	-
Smoking intensity (no. of cigarettes smoked per day)			
<=10 cigarettes	0	0	-
11-19 cigarettes	0	0	-
20+ cigarettes	1	1	(-0.4, 2.3)
% of monthly income spent on tobacco			
Up to 20%	0	0	-
More than 20%	1	1.7	(-0.1, 3.5)

Note: Sample size = 198 MC smoker

Table B9. Percentage distribution of MC and HR cigarette packs by place of purchase and presence of health warning label

Place of purchase/presence of HW	MC					HR				
	Local HWL	Foreign HWL	No HWL	No info	Total	Local HWL	Foreign HWL	No HWL	No info	Total
	Percentage									
Domestic grocery stores	88.4	0.0	0.5	0.5	89.4	14.7	0.0	0.0	1.9	16.7
The open air market, on the street	2.5	0.0	0.0	2.0	4.5	12.3	5.8	40.3	9.9	68.3
Domestic specialized tobacco shops	4.5	0.0	0.0	0.0	4.5	15.0	0.0	0.0	0.0	15.0
In other countries	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Duty-free shops	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total	96.5	0.5	0.5	2.5	100.0	42.0	5.8	40.3	11.8	100.0

Note: Sample size = 198 MC packs and 60 HR packs

Table B10. Percentage distribution of MC and HR cigarette packs by place of purchase and presence of tax stamp

	MC					HC					
	Local stamp	Stamp removed/destroyed	Lack of stamp	No info	Total	Local stamp	Foreign stamp	Stamp removed/destroyed	Lack of stamp	No info	Total
	Percentage										
Domestic grocery stores	85.9	1.0	0.5	2.0	89.4	13.3	0.0	0.0	0.0	3.3	16.7
The open air market, on the street	2.5	0.0	0.0	2.0	4.5	10.8	1.7	3.3	46.7	5.8	68.3
Domestic specialized tobacco shops	4.0	0.5	0.0	0.0	4.5	14.2	0.0	0.0	0.0	0.8	15.0
In other countries	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Duty-free shops	0.0	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total	92.4	1.5	2.0	4.0	100.0	38.3	1.7	3.3	46.7	10.0	100.0

Note: Sample size = 198 MC packs and 60 HR packs

Table B11. Percentage distribution of MC and HR cigarette packs by presence of health warning label and tax stamp

Presence of HWL/presence of tax stamp	MC					HC					
	Local stamp	Stamp removed/destroyed	Lack of stamp	No info	Total	Local stamp	Foreign stamp	Stamp removed/destroyed	Lack of stamp	No info	Total
	Percentage										
Local HWL	92.4	1.0	1.0	1.5	96.5	38.3	0.0	0.0	3.7	0.0	42.0
Foreign HWL	0.0	0.0	0.5	0.0	0.5	0.0	0.8	1.7	3.3	0.0	5.8
No HWL	0.0	0.5	0.5	0.0	1.0	0.0	0.0	1.7	38.3	0.3	40.3
No info	0.0	0.0	0.0	2.5	2.5	0.0	0.9	0.0	1.3	9.7	11.8
Total	92.4	1.5	2.0	4.0	100.0	38.3	1.7	3.3	46.7	10.0	100.0

Note: Sample size = 198 MC packs and 60 HR packs

Table B12. Percentage of illegal MC and HR tobacco packs according to two and three criteria simultaneously

	Illegal place of purchase and inappropriate HWL	Illegal place of purchase and inappropriate tax stamp	Inappropriate tax stamp and inappropriate HWL	All three	Illegal place of purchase, with tax stamp	Illegal place of purchase, with HWL
	Percentage					
MC	0.0	0.0	0.5	0.0	2.5	2.5
HR	40.3	46.7	38.3	36.7	10.8	12.3

Note: Sample size = 198 MC packs and 60 HR packs

APPENDIX C. FACTORS AFFECTING PROBABILITY OF TAX EVASION

Table C1. Potential variables used in the models and their description

Variables	Description
Household income	Categorized into three groups: less than €400, €401-1200, and above €1200
Education	Measured as years of education
Tertiary*Unemployment	Interaction term between tertiary education level and unemployment labor status
Gender	Dummy variable for the respondent's gender; 1 for male and 0 otherwise
Age	Age of the respondent (current smokers), measured in years
Age squared	Age squared of the respondent (current smokers)
Household size	Respondent's family size (including the respondent)
Household size squared	Respondent's family size squared (including the respondent)
Employment status	Categorized into four groups: employed, self-employed (including those working in agricultural sector or working part time), unemployed, and pensioners
Region	Three regions based on the official national division of NUTS2: North, Central, and South
Residence	Dummy variable (1 for urban and 0 otherwise)
Border with Montenegro	Dummy variable, taking 1 for municipalities close to the border with Montenegro, where cigarette prices were lower compared to the most-sold brand in Albania in 2019
Border with Kosovo	Dummy variable taking 1 for municipalities close to the border with Kosovo, where cigarette prices were higher compared to the most-sold brand in Albania in 2019
Border with North Macedonia	Dummy variable taking 1 for municipalities close to the border with North Macedonia, where cigarette prices were higher compared to the most-sold brand in Albania in 2019
Distance	A variable indicating the distance in km from each municipality to the closest border with Kosovo, Montenegro, and North Macedonia
Smoker of MC tobacco	Dummy variable taking 1 for smokers of manufactured cigarettes, 0 for hand-rolled cigarettes
Smoking status	Dummy variables, taking 1 for daily and 0 for less than daily smokers
	Number of manufactured cigarettes smoked per day
Smoking intensity	Categorized into four groups based on the number of cigarettes smoked per week: Light smoker, standard, heavy and ultra-heavy smoker
Smoking expenditure	Spending on manufactured cigarettes per month

Variables	Description
Capital city	Dummy variable taking 1 for Tirana, 0 otherwise
Pack of MC cigarettes	Dummy variable, taking 1 for the respondent who showed their pack of manufactured cigarettes, 0 otherwise

Table C2. Linktest of Models 1–5 using the full data set

	Model 1				Model 2			
	Coef.	Std. Err.	z	P>z	Coef.	Std. Err.	z	P>z
_hat	1.13	0.20	5.62	0.000	1.19	0.26	4.44	0.000
_hatsq	0.05	0.03	1.97	0.049	0.06	0.03	1.89	0.058
_cons	-0.24	0.43	-0.58	0.563	-0.12	0.49	-0.25	0.804

	Model 3			
	Coef.	Std. Err.	z	P>z
_hat	1.16	0.22	5.11	0.000
_hatsq	0.05	0.02	2.04	0.042
_cons	-0.18	0.44	-0.43	0.669

	Model 4				Model 5			
	Coef.	Std. Err.	z	P>z	Coef.	Std. Err.	z	P>z
_hat	1.29	0.22	5.67	0.000	1.38	0.27	5.11	0.000
_hatsq	0.10	0.05	1.86	0.063	0.11	0.06	1.81	0.071
_cons	-0.31	0.38	-0.77	0.442	-0.25	0.38	-0.66	0.508

Table C3. Linktest of Models 1–4 using the MC data set

	Model 1				Model 2			
	Coef	Std.Err.	z	P>z	Coef.	Std. Err.	z	P>z
_hat	1.29	0.32	4.04	0.000	0.74	0.74	1.00	0.318
_hatsq	0.05	0.01	2.91	0.004	-0.06	0.18	-0.36	0.721
_cons	0.12	0.54	0.23	0.817	-0.11	0.62	-0.19	0.849

	Model 3				Model 4			
	Coef.	Std.Err.	z	P>z	Coef.	Std. Err.	z	P>z
_hat	2.00	0.43	4.59	0.000	1.94	0.59	3.29	0.001
_hatsq	0.18	0.04	3.96	0.000	0.19	0.10	1.81	0.071
_cons	0.45	0.57	0.79	0.430	0.38	0.63	0.61	0.543

Table C4. Hosmer and Lemeshow goodness of fit test (full sample – Models 1, 2, and 3)

	Model 1				
observations	231	231	231	231	231
groups	5	10	15	20	50
chi2	2.89	5.99	11.38	15.15	36.05
p	0.4084	0.6487	0.5794	0.6514	0.8978
	Model 2				
observations	231	231	231	231	231
groups	5	10	15	20	50
chi2	2.99	4.47	20.98	16.12	63.37
p	0.3927	0.8122	0.0732	0.5841	0.0676
	Model 3				
observations	231	231	231	231	231
groups	5	10	15	20	50
chi2	3.50	5.73	15.34	18.78	48.04
p	0.3211	0.6772	0.2866	0.4056	0.4712

Table C5. Hosmer and Lemeshow goodness of fit test (MC sample – Models 1 and 2)

	Model 1				
observations	146	146	146	146	146
groups	5	10	15	20	50
chi2	24.10	28.13	85.99	58.03	164.95
p	0.000	0.004	0.000	0.000	0.000
	Model 2				
observations	146	146	146	146	146
groups	5	10	15	20	50
chi2	1.53	2.93	7.13	9.78	51.05
p	0.6752	0.9390	0.8951	0.9387	0.3547

Table C6. Multicollinearity (full sample – Models 1, 2, and 3)

	Model 1			Model 2		
	Coef.	Tolerance	R squared	Coef.	Tolerance	R squared
Age	51.31	0.0195	0.9805	52.25	0.0191	0.9809
Age2	61.61	0.0162	0.9838	62.63	0.0160	0.9840
Pensioners	3.53	0.2837	0.7163	3.60	0.2775	0.7225
Employed	1.82	0.5491	0.4509	1.86	0.5379	0.4621

	Model 3		
	Coef.	Tolerance	R squared
Age	51.93	0.0193	0.9807
Age2	62.72	0.0159	0.9841
Pensioners	3.57	0.2801	0.7199
Employed	1.86	0.5375	0.4625

Table C7. Multicollinearity (MC sample – Models 1 and 2)

	Model 1			Model 2		
	Coef.	Tolerance	R squared	Coef.	Tolerance	R squared
Age	46.18	0.0217	0.9783	46.21	0.0216	0.9784
Age2	55.72	0.0179	0.9821	56.01	0.0179	0.9821
Pensioners	3.54	0.2829	0.7171	3.49	0.2868	0.7132
Central Albania	1.91	0.5245	0.4755	1.91	0.5244	0.4756