Tobacco Smoking Initiation Among Youth in Kosovo

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Abstract

Background

Nearly 50 percent of Kosovo's populace is under the age of 25. While its youthful population is considered one of the country's greatest assets, it could also prove to be an Achilles' heel when it comes to tobacco consumption. According to the Global Youth Tobacco Survey (GYTS) of 2016, the smoking prevalence of youth (age 13-15) in Kosovo is around 9 percent, at 11.7 percent for boys and 5.6 percent for girls. Evidence from various countries shows that tobacco taxation and price increases are the most effective ways to discourage tobacco use. This study investigates various determinants of cigarette smoking initiation among youth in Kosovo, including tobacco pricing.

Methodology

To investigate the smoking behavior of young people in Kosovo, this study uses data from the GYTS 2016. Smoking initiation is modeled as a function of cigarette prices, non-price tobacco control measures, and socioeconomic variables. The study employs survival analysis techniques and split-population duration models (SPD), where the probability of initiation is modeled as a function of different variables. By splitting the population into those who eventually smoke and those who do not and estimating the hazard rate for initiation among the rest of the population, the SPD model accounts for the possibility that some individuals will never smoke.

The data set is transformed into a pseudo-longitudinal format using the information on age initiation self-reported by the respondents. The combined information on the current age of the respondents at the time when the survey was conducted and their reported age when they first initiated smoking allows for construction of a variable on smoking status for subjects observed throughout the period, thereby providing data from youths' first exposure to smoking until the year they initiate smoking, both for those respondents who eventually initiate smoking, or fail, and for those who do not fail during that period. To construct measures for cigarette prices, we use self-reported answers to price-related data in the GYTS and official data reported by the Kosovo Statistical Agency (KAS).

Results

The results of the study suggest that price, easy access to cigarettes, parental and peer exposures, gender, and age are important determinants of smoking initiation for Kosovo youth. Price is a strong negative determinant of smoking initiation among Kosovo youth. There is a 65-percent decrease in the expected hazard relative to a one-percent increase in price, holding everything else constant. For female young smokers in Kosovo, the expected hazard rate (assuming a one-percent increase in price) is 58.1 percent lower than for young males, which is statistically significant.

Access to cigarettes is also a significant determinant of smoking behavior for young Kosovars. The results suggest that the expected hazard is 287 percent higher for

respondents for whom it is fairly easy to buy cigarettes, holding everything else constant. Social environment also appears to be an important factor in smoking behavior of young people in Kosovo. There is a 129-percent increase in the expected hazard if half of the respondent's friends smoke, holding everything else constant. We also investigated whether the key non-price tobacco control policies enforced during this period have any impact on smoking initiation of young people in Kosovo, but the results for the measures of key government policies were not significant.

Conclusions

The study fills a gap in the literature by investigating the smoking behavior of young people in Kosovo and provides evidence that tax/pricing policies that reduce cigarette affordability can significantly affect smoking onset among youth in Kosovo. Thus, policy makers in Kosovo should design their tobacco tax policies using large, regular increases to achieve sustainably high tax rates and prices, keeping in mind that price is a key determinant of smoking behavior among youth.

Keywords: *Smoking initiation, youth smoking, cigarette prices, tobacco consumption*

Introduction

The imposed financial and health costs of tobacco consumption are well established in literature, and the near certainty that low- and middle-income countries will disproportionally bear the brunt of these costs by 2030 (WHO, 2011) has fueled the worldwide need for explicit policies pursuing reduction of tobacco consumption. Since the use of tobacco products starts and becomes established primarily during adolescence (Stoklosa et al., 2021), for Kosovo—as a low-income country with the youngest population in Europe—determining the factors driving smoking initiation is vital.

Nearly 50 percent of Kosovo's population is under the age of 25, and its youth—while considered one of the country's greatest assets—could prove to be an Achilles' heel when it comes to tobacco consumption. In 2016, youth (age 13-15) in Kosovo reported smoking prevalence of around 9 percent (11.7 percent for boys and 5.6 percent for girls) according to the Global Youth Tobacco Survey (GYTS) 2016. This issue is even more concerning considering that 22.4 percent of adult smokers in Kosovo initiated smoking between 16 and 17 years of age (Prekazi & Pula, 2020), meaning youths that initiate smoking in Kosovo are doing so at a young ages.

Smoking initiation among youth is a serious public health concern. Initiating smoking at a young age increases the likelihood that a person will continue to smoke into adulthood, leading to long-term health problems. These problems undermine the individual's ability to be economically productive, which collectively weakens the country's overall growth and prosperity. Thus, it is important for parents, educators, and policy makers to take steps to prevent youths from starting to smoke and help young people avoid the dangers of tobacco use.

Preventing youth smoking initiation is important for public health. Effective strategies for preventing youth smoking initiation can include implementing tobacco control policies, such as increasing taxes on cigarettes and restricting tobacco marketing.

Increasing taxes on tobacco products can be an effective way to reduce smoking initiation among youth. Hasselt et al. (2015) found that a higher price of cigarettes is strongly associated with a decrease in the odds of smoking initiation among youth. An increasing number of studies find a positive relationship between price increases and smoking cessation among youth (Towerk et al., 2010). Overall, the evidence suggests that increasing taxes on tobacco products is an effective way to reduce tobacco consumption among youth and improve public health.

The effectiveness of policies that increase price—thereby driving down smoking initiation—is reported to be higher in low- and middle-income countries (Chaloupka et al., 2011). This is even more pronounced among youth, who, according to the evidence, are more susceptible to tobacco taxes and corresponding price increases (NCUDHS, 2021), largely because young people are typically more income constrained.

This makes higher tobacco taxes especially important for countries with a young population, such as Kosovo, that are aiming to reduce tobacco consumption. This study investigates the impact of cigarette prices in tobacco consumption initiation among young Kosovars and provides insight into using tobacco taxation as a tobacco control strategy.

The literature also suggests that peer and family exposure to smoking—through friends, parents, and siblings—is an important determinant of smoking initiation among young people (Dusenbury et al., 1992; Unger & Cheng, 1999; Fletcher, 2009; Lakon et al., 2010). There is considerable empirical research showing that adolescents with parents who smoke are more likely to start smoking themselves (Gilman et al., 2009; Hill et al., 2005).

Besides price and exposure to peer and family members smoking, this study also looks at the impact that access to cigarettes, gender, and various tobacco control policies undertaken by the Kosovo government have on smoking initiation among young Kosovars. To the best of our knowledge, this is the first study that investigates the effects of cigarette price increases and other tobacco control policies on the smoking behavior of young people in Kosovo. The results of the study could be useful for the Kosovo government in designing future health initiatives, tobacco control policies, and public health awareness campaigns against tobacco use.

The rest of the paper is structured as follows. Section 2 describes the data used, their sources, and the descriptive statistics. The model specification is described in Section 3. The empirical results of the estimation and their implications are discussed in Section 4. Section 5 concludes the paper.

Methodology

Data

This study uses data from the Global Youth Tobacco Survey (GYTS), a component of the Global Tobacco Surveillance System (GTSS), which is a global standard for systematically monitoring youth tobacco use (smoking and smokeless tobacco) and tracking key tobacco control indicators. The GYTS uses a global standardized methodology that includes a two-stage sampling design with schools selected with a probability proportional to enrollment size. The classes within selected schools are chosen randomly, and all students in selected classes are eligible to participate in the survey.

The survey uses a standard core questionnaire with a set of optional questions that countries can adapt to measure and track key tobacco control indicators. The survey is a cross-sectional, nationally representative school-based study that targets students in grades associated with ages of 13-15 years.

The most recent GYTS in Kosovo was conducted in 2016 by the National Institute of Public Health and includes a sample of 5,031 students in grades 7-9, including 3,895 students aged 13-15 years. The survey reports data only for these 3,895 students. The overall response rate was 94.6 percent.

It is worth noting that an earlier GYTS was conducted in Kosovo in 2004. The school response rate was 98.2 percent, the class response rate was 100 percent, the student response rate was 89 percent, and the over-

all response rate was 87.4 percent. A total of 2,444 students aged 13-15 participated.

This study reports only the results based on the latest GYTS from 2016 since it is considerably more recent and because necessary price data to use the 2004 survey is are not available. Furthermore, the questions from which the key variables of interest are constructed are not directly comparable between the two surveys. The pseudo longitudinal dataset used in this study consists of GYTS data from the year 2016 and data from the Kosovo Agency of Statistics (KAS) covering the period 2007-2017. Most of the variables are derived from items included in the GYTS survey and KAS, as seen in the list presented in Table A1 in the Appendix.

Smoking initiation. The key dependent variable of this study is the event of smoking initiation, which is derived from the responses to the question "How old were you when you first tried a cigarette?" In GYTS, this was a multiple-choice question, which does not provide the exact age of starting smoking, but provides a range of categories from the age of seven years or younger up to 16 years or older. The age of initiation is coded as a

continuous variable taking the midpoint of each range as the age of initiation, which suggests that the initiation in this sample has occurred at the following ages: 7, 9, 11, 13, 15, or 16.

Cigarette price. The key independent variable considered in this study is the price of cigarettes. To construct measures for cigarette prices, we use self-reported answers to price-related data in the GYTS and official data reported by KAS in their Annual Report on Harmonized Index of Consumer Prices (CPI) for a pack of Lucky Strike cigarettes. These data sets are used to construct a constant price measure, as shown in Figure 1.

The use of official data is usually preferred because they are considered less biased and more precise and reliable than survey data. However, in a small country like Kosovo, with relatively unified prices across different regions, using official data exclusively could result in a lack of variation, which may jeopardize estimation of the impacts of price. Therefore, data from both sources are used. We also assess the responsiveness of initiation to the interaction of price by gender.

Figure 1
Constant price of a pack of cigarettes and its natural logarithmic form
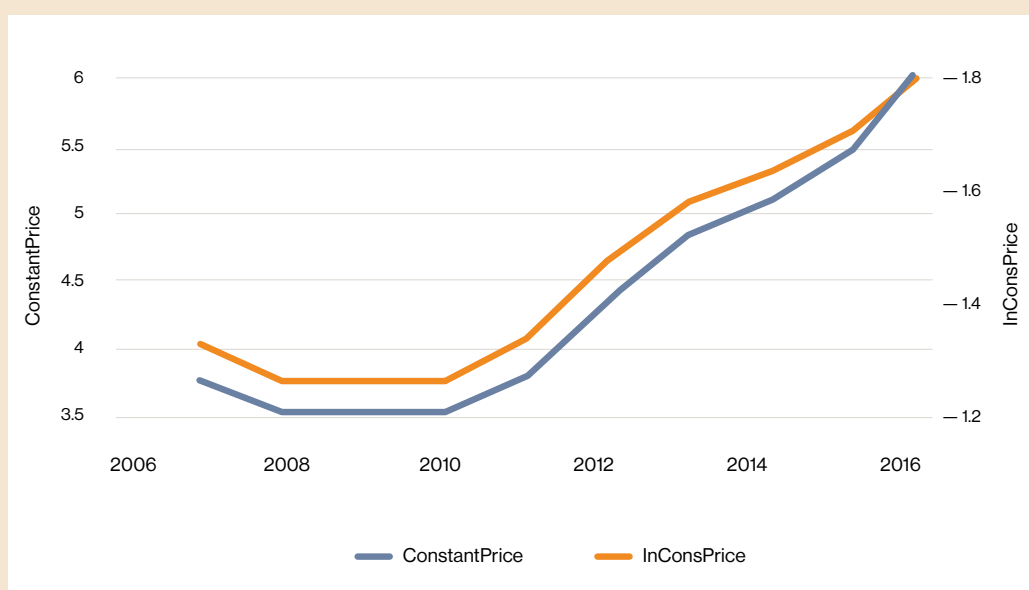
Access to cigarettes. We also looked at whether access to cigarettes has an impact on smoking initiation by young Kosovars. We do so by including dummy variables that take the value of one if the respondent stated that it was fairly easy to buy cigarettes and zero if they were ever denied sale of cigarettes. We anticipate greater likelihood of initiation if it was easy to purchase and lower likelihood of initiation if they report being denied purchase.

Non-price tobacco control policy. To measure the effectiveness of non-price tobacco control policy on deterring smoking initiation of young Kosovars, we include dummy variables that capture the impact of each important policy throughout the period under consideration. The three main non-price policies enforced in Kosovo are: 1) the laws on excise on tobacco and production processing and trading passed in 2011, 2) the law on tobacco control passed in 2013, and 3) the calendar tobacco excise passed in 2015. We use dummy variables that take the value of one from when each of these laws came into force.

Controls. We also controlled for demographic characteristics such as gender and social environment. To measure the impact of gender and social environments in terms of smoking initiation among young Kosovars, we include dummy variables derived from self-reported data. These data include the gender of the respondent, which takes a value of zero if male and one if female; whether either parent smoked, which takes a value of zero if neither smokes and one if either (or both) smokes; and whether at least half of the closest friends of the respondent smoke, which takes a value of zero if less than half smoke and one if at least half of the closest friends smoke.

Methods

To investigate the determinants of cigarette smoking initiation in Kosovo, the study employs survival analysis techniques and split-population duration models. The probability of initiation is modeled as a function of price, other non-price policies, and the socioeconomic and sociobehavioral characteristics of respondents.

Survival analysis techniques have been used in the literature to investigate the timing of events such as cigarette smoking initiation, assuming that the probability of initiation approaches one at the time that risk becomes sufficiently large. However, they also assume that every subject observed will eventually initiate, which in the case of smoking is unreasonable because there are individuals that will never start smoking no matter how long they are observed.

To account for this dynamic, following the existing research, we employ the split-population duration (SPD) model to account for the possibility that some individuals will never smoke. In this way, we split the population into those who eventually experience the event (that is, initiate smoking) and those who do not. Thus, we are able to utilize data from the individuals who do not initiate smoking during the observed time period as well, which are considered right censored.

In the split population model, a part of the population is assumed to never initiate smoking, and the hazard rate for initiation is estimated for the rest of the population. This is a methodology employed by many scholars investigating the impact of price on smoking initiation (Kostova et al., 2015; Stoklosa et al., 2015; Gordon et al., 2019; Gonzalez-Rozada & Montamat, 2019).

The following model specification is employed to carry out this investigation.

$$ln(L) = \sum \{c_i \ln[k * \int (t|s_i = 1, x_i(t))]$$
$$+ (1 - c_i)\ln[1 - k + k$$
$$* S(t|s_i = 1, x_i(t))]\}$$

Where L is the likelihood contribution for ith person with a survival time of t years; $c_i=1$ if individual i ever smoked; $s_i=1$ if individual i will eventually start smoking and 0 if they never do; z_i are time-invariant covariates and x_i are time-varying covariates; k is the probability of smoking; $f(t|s_i=1,x_i(t))$ is the conditional density function of starting smoking at the observed starting age; and $k*S(t|s_i=1,x_i(t))$ is the probability of starting after the age observed in the survey.

The hazard of smoking is modeled as a function of cigarette prices, access to cigarettes, non-price tobacco control policies, and controls such as gender, parental smoking behavior, and peer smoking behavior.

Hazard = f (price, access, non-price tobacco control policies, controls)

To carry out the investigation, the data set is transformed into a pseudo-longitudinal format using the information on the age of initiation self-reported by the respondents. The combined information on the current age of the respondents at the time of the survey and the age when they first initiated smoking enables the construction of the variable on smoking status throughout the period.

Thus, we have information from the first exposure until the year of smoking initiation for the share of respondents that eventually initiate smoking, or fail, and from the first exposure until the interview for those that do not fail during that period.

The pseudo-longitudinal data set is integrated with the data on the price of cigarettes provided by the KAS. We model the probability of eventual failure as less than one for some portion of the population, and we use a cubic polynomial specification (t, t2, t3) as the functional form for the duration dependence in the hazard function.
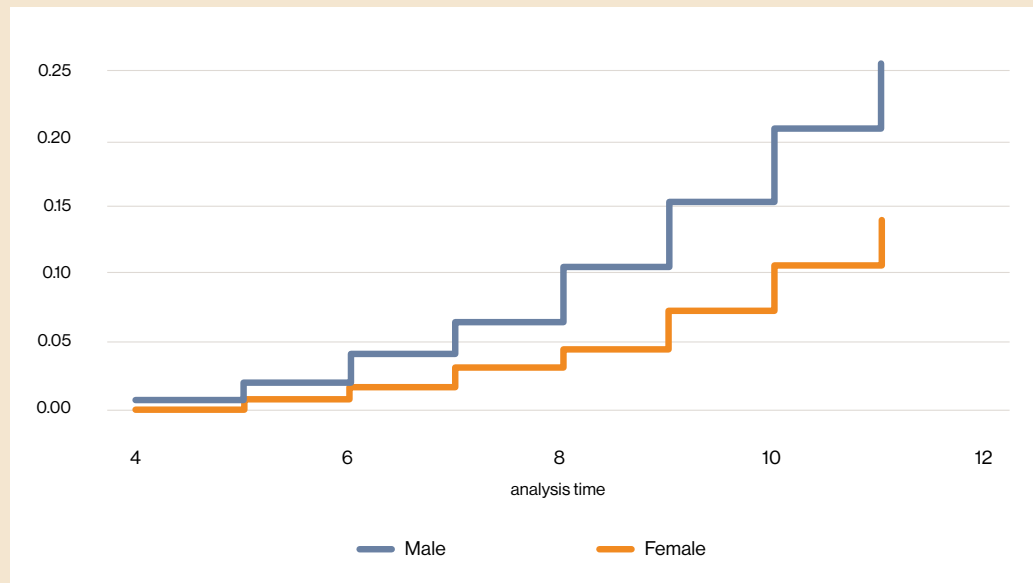
Results

This section presents the empirical results for the model of specification survival analysis techniques and SPD, to investigate the smoking behavior of young people in Kosovo.

The total number of individuals observed in the sample is 4,590. The prevalence of the individuals who initiated smoking is 22.8 percent. The average age of individuals at initiation is 11 years old. Out of those who initiated smoking in the sample (that is, failed) 61 percent are male and 38 percent are female. Only three percent of the sample initiated smoking at eight years old, and around 12 percent initiated at 15 years old. The mean duration in the sample is 6.5 years. We assume the minimum age of exposure is eight years old.

To analyze how the population has evolved over time, we apply the Nelson-Aalen analysis and get the curve of cumulative hazard of smoking initiation on irregular time intervals, which we differentiate by gender. Figure 2 shows the trends of risks of initiation of smoking by gender and suggests that the hazard rates increase over time and that the risks are lower for young women in Kosovo than for young men. The risk increases for both genders after the age of eight.

Nelson-Aalen cumulative hazard estimates by gender

The main results of our estimations are presented below in Table 1. The parameter estimates represent the increase in the expected log of the relative hazard for each one-unit increase in the predictor, holding other predictors constant. For interpretability, we compute hazard ratios by exponentiating the parameter estimates. For price, $[\exp(-1.062)] = 0.345$.

The values below one are interpreted to reduce the hazard of smoking by the distance to one, while those above one increase the hazard of smoking initiation by the amount greater than one. The change in hazard ratios from one is obtained by $[1-\exp(.)]$. If the value <1, then an increase in variable leads to a reduction of hazard ratios by $[1-\exp(.)]$. If it is >1, then an increase in variable leads to an increase in hazard ratio by $[1-\exp(.)]$. For price, $[1- 0.345] = 0.65$.

Table 1.
Main results

Initiation	Full sample		Female		Male	
	Estimate (t-stat.)	HR	Estimate (t-stat.)	HR	Estimate (t-stat.)	HR
Price	-1.062** (-2.90)	**0.345**	-1.876** (-2.84)	**0.153**	-0.56 (-1.25)	**0.571**
Female	-0.868*** (-9.15)	**0.419**				
Age	-0.176 (-1.14)	**0.838**	-0.429 (-1.52)	**0.651**	-0.025 (-0.13)	**0.975**
t	1.856*** (-5.66)		2.235*** (-3.31)		2.311*** (-5.4)	
t2	-0.221** (-3.28)		-0.233 (-1.69)		-0.387*** (-4.04)	
t3	0.014** (-3.06)		0.016 (-1.69)		0.026*** (-3.93)	
N	31,238		17,000		15,099	

The table above shows three key sets of results and their computed hazard ratios (HR). This is because, initially, among explanatory variables we include the price variable, an age variable, and a dummy variable that controls for gender; and then we run the same estimation for females and males separately.

The results suggest that our key variable of price is statistically significant and has a strong impact on the initiation of smoking of young Kosovars. The hazard ratios for price variables are below the value of one, and there is a 65-percent decrease in the expected hazard relative to a one-percent increase in price, holding everything else constant.

To put it differently, at an average price of 10 euros, a 10-percent increase in price (equivalent to 0.2 euros) would reduce the hazard of smoking initiation by around 13 percent (0.2 * 0.65). Of course, as the price increases, the estimated impact of a 10-per-

cent price increase would also increase; for example, at an average price of 2.2 euros, a 10-percent increase (0.22 euros) would reduce the hazard of smoking initiation by 14.3 percent.

The results show that gender is also an important predictor of smoking initiation among youth in Kosovo. The estimate for the coefficient of the female variable is highly significant, with a relatively sizeable effect. On average, the results suggest that the expected hazard is 58 percent lower in young women compared to young men, holding everything else constant.

Besides our key results, we estimate the main model with additional control variables and provide these results and their computed hazard ratios in Table 2.

Initially, among explanatory variables we include the ease-of-access-to-cigarettes variable and the policy variables, then we

add a control variable if at least one of the parents smokes. In the following model, we add a control for the interaction of price and the female dummy, and in the final specification we also control for the smoking habits of the respondents' friends.

The model specifications with an interaction term of price and female suggest a similar impact on males and females. Price is a strong determinant of smoking initiation in each specification.

Access to cigarettes is also a significant determinant of smoking behavior of young Kosovars. The estimate for the coefficient associated with the variables of ease of buying is highly statistically significant and in line with prior expectations. Easy access is expected to increase the hazard of smoking initiation. The results suggest that the expected hazard is 286 percent higher for respondents for whom it is fairly easy to buy cigarettes, holding everything else constant.

Table 2.
Additional results

Initiation	Estimate (t-stat.)	HR	Estimate (t-stat.)	HR	Estimate (t-stat.)	HR	Estimate (t-stat.)	HR
Price	-1.239** (-3.15)	0.29	-1.308** (-3.28)	0.27	-1.389*** (-3.47)	0.25	-1.391*** (-3.47)	0.25
Female	-0.635*** (-7.62)	0.53	-0.631*** (-7.61)	0.53	-1.698*** (-3-35)	0.18	-1.683*** (-3-33)	0.19
Age	-0.375* (-2.03)	0.69	-0.418* (-2.23)	0.66	-0.419* (-2.24)	0.66	-0.442* (-2.35)	0.64
t	1.768*** (-5.12)	5.86	1.812*** (-5.19)	6.12	1.804**** (-5.18)	6.07	1.816*** (-5.21)	6.15
t2	-0.168** (-2.71)	0.85	-0.170** (-2.72)	0.84	-0.167** (-2.68)	0.85	-0.168** (-2.70)	0.85
t3	0.00857* (-2.19)	1.01	0.00870* (-2.22)	1.01	0.00835* (-2.14)	1.01	0.00830* (-2.14)	1.01
Easy Buy	1.349**** (-14.55)	3.85	1.332*** (-14.38)	3.79	1.308*** (-14.01)	3.70	1.231*** (-14.58)	3.42
Policy_2011	-0.32 (-1.39)	0.73	-0.33 (-1.45)	0.72	-0.33 (-1.43)	0.72	-0.34 (-1.50)	0.71
Policy_2013	0.16 (-0.86)	1.17	0.12 (-0.66)	1.13	0.13 (-0.67)	1.14	0.13 (-0.72)	1.14
Policy_2015	-0.02 (-0.11)	0.98	-0.03 (-0.21)	0.97	-0.04 (-0.23)	0.96	-0.04 (-0.21)	0.96
OneParent Smokes			0.13 (-1.66)	1.14	0.13 (-1.62)	1.14	0.09 (-1.24)	1.09
Female_ CPrice					0.214* (-2.14)	1.24	0.218* (-2.21)	1.24
Friends Smoke							0.792*** (-5.87)	2.21
N	32,099		17,000		15,099		31,755	

t statistics in parentheses
*p<0.05, **p<0.01, p<0.001

Age is also an important predictor of smoking initiation for young Kosovars when we add different control variables. The estimate for the coefficient of the age variable is significant at a 10-percent significance level with a relatively sizeable effect. On average, the results suggest that the expected hazard decreases by 36 percent in young women and men as they grow older, holding everything else constant.

We also investigate whether the key non-price tobacco control policies enforced during this period have any explanatory power in smoking initiation of young people in Kosovo. The results suggest that the various laws passed have not had a statistically significant impact.

We then investigate whether being exposed to smoking in the home environment is an important factor in smoking initiation among young Kosovars. The results suggest that being exposed to smoking at home does not have a statistically significant impact. The impact is also not significant in magnitude and does not significantly impact the results on price, suggesting that the direct effect of price on youth smoking initiation is high and robust.

We then add the variable that controls for the share of friends of the respondents who are reported as smokers to the explanatory variables. Social environment also appears to be an important factor in the smoking behavior of young people in Kosovo. There is a 129 percent increase in the expected hazard if half of the respondent's friends smoke, holding everything else constant. Given that this variable could potentially be endogenous, we estimate results with and without this variable, and its inclusion does not impact the estimated results of other variables.

Finally, the statistically significant estimates of t, t2, and t3 suggest that different patterns of hazard are significant in the model.

As with other similar studies, this study faces several limitations. The main limitation is in the construction of the initiation variable, which, together with the recall bias, causes measurement error. However, this is accounted for in the error term since this is the dependent variable of the study. Furthermore, the recall bias is considered smaller, given that the study uses a youth survey and the recall time is relatively short. The study also does not differentiate between current and previous smokers since GYTS does not ask about the current smoking status of the respondents. It only asks when respondents first tried smoking, which could be misleading in the sense that some individuals try smoking early on, but do not smoke currently.

In addition, the model does not account for price variation among different brands and considers the cheapest option, assuming that young people are more likely to smoke cheaper brands because they are typically more price-sensitive than adults.

Conclusions

The aim of this paper is to investigate the determinants of cigarette smoking initiation among youth in Kosovo and contribute to the existing literature on tobacco consumption. The smoking behavior of youth has not been adequately explored in Kosovo, and, to the best of our knowledge, this is the first study that investigates the effects of cigarette price increases and other tobacco control policies on the smoking behavior of young people in Kosovo.

Investigation of smoking onset among youth in Kosovo modeled as a function of cigarette prices, non-price tobacco control measures, and socioeconomic and sociobehavioral variables is carried out employing survival analysis techniques and split-population duration models, where the probability of initiation is modeled as a function of different variables.

The results show that price is an important determinant of smoking initiation among youth in Kosovo and is even more pronounced in young Kosovar girls. Furthermore, the results show that easy access to cigarettes increases the hazard of smoking initiation and that parental behavior, as well as peer behavior, affects the decision to initiate smoking among young Kosovars.

In conclusion, this study fills a gap in literature by examining youth smoking initiation behavior in Kosovo. It provides evidence that tax/pricing policies and non-pricing tobacco control policies are important determinants of smoking behavior of young people in Kosovo.

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Appendix

Table A1.
List of variables

Variable name	Definition
Dependent variables	
Initiation	Dummy variable that takes the value of 1 if the respondent has initiated smoking and zero if not
Duration	A variable that is constructed based on the age of initiation subtracting the minimum age
Key independent variable: Price Definition	
Constant Price	The price of a pack of 20 sticks of Lucky Strike in the Republic of Kosovo deflated by the annual change in CPI for cigarettes
LnConsPrice	The price of a pack of 20 sticks of Lucky Strike in the Republic of Kosovo deflated by the annual change in CPI for cigarettes, in its natural logarithmic form
Female_Inprice	The interaction of the dummy variable taking the value of 1 if the respondent is female and the log of price
Other independent variables of interest: non-price policy measures	
Easy to buy	Dummy variable that takes the value of 1 if the respondent reports it is fairly easy to buy cigarettes
Denied sale	Dummy variable that takes the value of 1 if the respondent was ever denied sale
Policy 2011	Dummy variable that takes the value of 1 if after the year 2011, when the laws on excise on tobacco and production, processing, and trading were passed
Policy 2013	Dummy variable that takes the value of 1 if after the year 2013, when the law on tobacco control was passed
Policy 2015	Dummy variable that takes the value of 1 if after the year 2015, when the calendar tobacco excise was enforced
Control variables	
Gender	Gender dummy variable that takes the value of 0 if the respondent is male and 1 if the respondent is female
One parent smoke	Dummy variable that takes the value of 1 if after the year 2011, when the laws on excise on tobacco and production, processing, and trading were passed
Friends smoke	Dummy variable that takes the value of 1 if at least half of the closest friends of the respondent smoke
T	Denotes the time to the first event
t3	Denotes the time from the first to the second event
t4	Denotes the time from the second to the third event

Appendix

Table A2.
Descriptive statistics

Variable name	No. of obs.	No. PSUs	Mean	St. Dev.			
Initiation	32,099	4,590	22.8%	0.0008			
% value 0	97.44%						
% value 1	2.56%	Male	Female	Mean age	Mean age at initiation		
		61.39%	38.61%	13.8	11.57		
Age at initiation	4,512	821	12.28	0.0724			
Percent of smokers by age at initiation	8 years old	9 years	10 years	11 years	12 years	13 years	14 years	15 years
	3.24%	6.05%	8.16%	11.86%	21.68%	25.22%	11.70%	12.10%
Duration		4,580	6.517	0.016			
Constant Price	32,099	4,590	4.630	0.0033			
Female_CPrice	32,099	4,590	2.345	0.039			

	No. of obs.	No. PSUs	% 0	% 1
Gender	32,099	4,589	47.04%	52.96%
One parent smoke	31,745	4,541	50.15%	49.85%
Friends smoke	31,980	4,573	70.49%	29.51%
Easy to buy	31,755	4,542	83.64%	16.36%
Denied sale	31,996	4,576	95.65%	4.35%
Policy 2011	32,099	4,590	20.15%	79.85%
Policy 2013	32,099	4,590	48.06%	51.94%
Policy 2015	32,099	4,590	74.98%	25.02%

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