The Impact of Tobacco Spending in Albania: Crowding Out Essentials and Crowding in Addictive Behaviors

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Abstract

Tobacco use, a major preventable risk factor for premature death and morbidity, profoundly shapes individual and household decision-making. Closely linked to alcohol consumption, tobacco spending in lower-income countries like Albania exacerbates economic strain on households. To accommodate tobacco costs, many households are forced to reduce expenditure on necessities and beneficial goods and services—a phenomenon known as the "crowding-out effect."

This study uses data from Albania's national Household Budget Survey and applies a three-stage least squares method with instrumental variables to estimate Engel curves to shed light on how tobacco use influences household financial decisions. The findings reveal that tobacco spending significantly reduces spending on essential needs such as health, education, housing, and clothing. Additionally, tobacco use shows a positive correlation with alcohol spending, revealing another negative influence of a habitual behavior on household resource allocation.

The results demonstrate an urgent need for stronger tobacco control measures, such as higher excise taxes, to deter youth smoking, reduce adult consumption, and promote better economic decision-making within households. Such measures would enhance public health, improve economic stability, and encourage more equitable resource distribution.

Keywords: tobacco spending, crowding out effect, Albania.

Introduction

Major causes of illness and premature death are often linked to various personal habits and daily behavioral choices. Previous studies have shown that eight of the nine leading causes of death are related to lifestyle decisions.[1,2] Tobacco use is widely demonstrated to be among the largest preventable risk factors for premature death and increased morbidity, and in some countries, the most impactful. It is a major risk factor for many non-communicable diseases including cancers, lung and cardiovascular diseases, and diabetes[3].

Tobacco consumption is a deeply rooted habit that poses significant health risks in addition to profoundly, and often adversely, influencing individual and household economic decision-making. Behavioral economics offers insights into tobacco consumption behaviour. The addictive nature of tobacco causes individuals to overvalue immediate gratification from smoking while undervaluing its long-term health and financial consequences.[4] This dynamic is often set in motion when individuals are young and most likely to try smoking. It is well documented that youth typically have a stronger present bias and weaker will power than older individuals so the lure of trying something forbidden and seemingly mature, particularly to impress and/or fit in with peers increases their likelihood of experimentation.[5] But again, the real problem lies in the highly addictive nature of nicotine because the individual underestimates the overall harm and how difficult it will be to quit in the future.[6]

Habits like smoking influence how individuals and households allocate limited resources, frequently leading to suboptimal economic choices.[7] Households often redirect scarce financial resources toward sustaining this habit, resulting in reduced spending on needs such as education, healthcare, and housing. This behavior is known as the "crowding-out effect" in economic literature, wherein consumption of one good or service (in this case, tobacco) displaces spending on other important goods and services.[8,9] The effect is particularly harmful for low- and even some middle-income households, where the financial strain of maintaining a smoking habit puts considerable pressure on already tight budgets.[10] Furthermore, the adverse health effects of smoking contribute to lower household income due to increased morbidity and mortality rates, which reduce economic productivity and exacerbate the financial strain on households.[11] In this context, the crowding-out effect creates a vicious cycle, where the economic burdens of smoking lead to increased deprivation in critical areas, limiting opportunities for social mobility and long-term well-being, especially for vulnerable households.

One major consequence of tobacco consumption is its tendency to crowd out educational opportunities, meaning that financial resources that could be used for education are instead spent on sustaining the smoking habit.[8,9] This shift in priorities results in fewer resources available for essential educational needs, such as school supplies, tuition, or extracurricular activities. This may lead to limited social mobility for household members, particularly children of smokers. Due to the negative impacts of parental smoking on educational outcomes, these children may face fewer opportunities for advancement. In addition, smoking within the household perpetuates a harmful cycle, where detrimental habits are passed down to future generations. Research, including studies conducted in Albania, consistently demonstrates that parents who smoke increase the likelihood of their children smoking.[12] This transmission occurs not only through direct exposure and behavioral modelling but also through indirect pathways, as smoking can hinder a child's educational progress and future potential.

Moreover, tobacco consumption is strongly and positively correlated with alcohol consumption.[13] Research indicates a positive association between alcohol and cigarette consumption, as they are often shown to be complementary products.[14–16] Not surprisingly, individuals who quit smoking significantly reduce their daily alcohol consumption.[17] Similarly, tobacco use is associated with greater spending on alcohol-related services, such as bars, restaurants, and entertainment venues.[8,9,18] This connection extends to diet as well, as smokers and drinkers are more likely to make poor food choices, leading to declines in healthy eating habits and nutrient intake.[19]

In Albania, the interplay between tobacco consumption as an addictive behavior and its consequences is highly pronounced. Around 25 percent of adults smoke, including 43 percent of men.[20] Smoking is a leading risk factor for disease and premature death in Albania, responsible for 25 percent of male deaths and 9.1 percent of female deaths annually, totaling more than 4,000 deaths per year. It is one of three main contributors to Albania's disease burden, which implies a significant economic cost.[21] This is particularly problematic as Albania is among the poorest countries in Europe. In 2022, 20.6 percent of Albanians were at risk of poverty, while 33.2 percent faced severe material deprivation.[22] This behavior is deeply rooted in social norms and cultural practices, yet its consequences extend far beyond individual health. Previous research in Albania shows that nearly 13,000 households, including 60,000 people, including 10,000 children, are pushed below the poverty line due to tobacco-related costs, worsening their economic situation.[23] For these families, the habitual nature of tobacco consumption is not a matter of choice but a reflection of behavioral inertia,

wherein the immediate satisfaction derived from smoking takes precedence over more prudent financial decisions.

The profound influence of tobacco consumption on household economic decision-making is not unique to Albania. Studies from other countries and regions, including India,[8] Turkey,[24] Vietnam,[25] Serbia,[26] and Montenegro,[27] consistently reveal how habitual tobacco use constrains household budgets. While findings may vary somewhat by socioeconomic and cultural context, overall, these studies provide strong evidence that smoking as a habitual behavior undermines households' ability to allocate resources effectively by reducing spending on essential goods and services.

Albania's unique socioeconomic and cultural landscape, however, remains underexplored, leaving critical gaps in understanding how this dynamic plays out within the country. This study aims to address these gaps by investigating how the habitual nature of tobacco consumption influences household spending decisions in Albania. Using data from Albania's Household Budget Survey (HBS), this study analyzes the crowding-out effect of tobacco spending in the country. The results show that tobacco spending decreases expenditures on healthcare, education, housing, and clothing while increasing alcohol spending. By examining spending patterns across income groups, the study sheds light on how habitual smoking behaviors affect different segments of society.

The findings underscore the importance of addressing tobacco use not just as a public health issue, but also a behavioral and economic challenge. Tobacco use harms health in addition to diverting spending from essential goods and affecting children by limiting their access to education and other necessities. This reduces human capital accumulation and perpetuates economic struggles for future generations. Comprehensive tobacco control measures—including higher excise taxes, targeted public awareness campaigns, and support for smoking cessation—are crucial to breaking the cycle of habitual tobacco consumption. By reducing the financial strain imposed by this behavior, such policies can help households make more optimal economic decisions, fostering both individual well-being and broader economic resilience.

Theoretical framework and econometric model

Household utility maximization

This study is grounded in the theory of household utility maximization, which posits that households make spending decisions to achieve the highest possible

satisfaction (utility) within the constraints of their budget. Household preferences can be represented by a utility function, reflecting how different goods contribute to overall satisfaction (utility), subject to a budget constraint. The demand for each good is, thus, a function of prices, income, and household-specific characteristics.

Let U=U(x_1,..., x_n: h) represent the household utility function, where x_i denotes the quantity consumed of the i-th good, and $\boldsymbol{h}$ is a vector of household characteristics. The household maximizes utility subject to a budget constraint, where total expenditure is Y, and the prices of all goods are given by p_1,...,, p_n. The utility maximization problem can be written as:

$$Max\ U = U(x_1, \dots, x_n; \boldsymbol{h})\ \ s.t.\ \sum_{i=1}^{n-1} p_i, x_i = Y$$

The solution to this problem yields the unconditional demand functions for each good–or the optimal quantity of each good that a household will consume–dependent on total income Y, prices P=(p_1,...,p_n) and the household characteristics h:

$$x_i = h_i(p_1, \dots \dots, p_n, Y; \boldsymbol{h}) = x_i = h_i(P, Y; \boldsymbol{h}), \qquad for\ \ i = 1, 2, \dots., n$$

Conditional Demand Framework

Tobacco consumption's habitual and addictive nature introduces a dimension that alters standard economic decision-making dynamics. As an addictive and habitual good, tobacco consumption often takes precedence in household budgets, reducing the resources available for other goods and services. Therefore, to specifically analyze the impact of tobacco consumption, this study employs the conditional demand framework.[28] Here, tobacco expenditure is treated as a fixed allocation, transforming the household's decision-making process for other goods. In the presence of habitual consumption, such as tobacco, a portion of the budget is pre-allocated, reducing the effective income available for other goods. This constraint alters the utility maximization process, by reducing the available income for all other goods and creating a framework for understanding the crowding-out effects of tobacco.

Suppose tobacco is the n-th good. The household pre-allocates a certain amount of its budget, p_t*t to tobacco, where p_t is the price of tobacco and t is the fixed quantity consumed. Thus, the remaining income available for the consumption

of the other n−1 goods is given by $M=Y− p_t*t$. The new utility maximization problem becomes:

$$Max\ U = U(x_1, \ldots, x_n; \boldsymbol{h})\ \ s.t. \sum_{i=1}^{n-1} p_i, x_i = M$$

with the constraint $x_n = \bar{x}_n$ denoting the household's pre-determined allotment of tobacco. Solving this maximization problem for the remaining n−1 goods yields the conditional demand functions, which can be written as:

$$x_i = g_i(p_1, \ldots\ldots, p_{n-1}, x_n, M; \boldsymbol{h}), \quad i = 1, 2, \ldots., n-1$$

Here, the function $g_{i,n}$ represents the conditional demand function for the i-th good, conditional on the consumption of the n-th good (in this case, tobacco). This framework allows for an examination of how spending on essential goods changes from habitual tobacco use.

The use of conditional demand functions offers several advantages.[28,29] By holding the consumption of tobacco fixed, we isolate the impact of tobacco spending on the demand for other goods. This framework is particularly useful when studying households with varying levels of tobacco consumption, as it allows us to test whether the consumption patterns of tobacco users differ significantly from non-users.

Scholars further expand on this by introducing the concept of consumer separability, which tests whether the preferences of tobacco users and non-users differ fundamentally.[30] In this context, we augment the conditional demand function with a binary indicator d, where d=1 if the household spends on tobacco and d=0 if they do not. The goal is to assess whether this binary variable significantly influences the demand for other goods:

$$x_i = g_i(p_1, \ldots\ldots, p_{n-1}, x_n, d, M; \boldsymbol{h}), \quad i = 1, 2, \ldots., n-1$$

If d is statistically significant, this would suggest that tobacco users and non-users allocate their remaining income differently, rejecting the hypothesis that non-users are simply constrained by budget limitations. This also allows us to test whether tobacco consumption generates only an income effect or if it also produces substitution effects on the demand for other goods. A key hypothesis in this model is weak separability of tobacco consumption from the demand for other goods. Under weak separability, tobacco consumption would have no

substitution effects on the consumption of other goods, implying that the allocation of income to tobacco only reduces the total budget available for other goods without changing their relative demands. If the parameter associated with tobacco consumption is statistically significant, weak separability can be rejected.

Methods

Data

To estimate the crowding out effects of tobacco consumption, this study uses 2017 HBS data. The HBS is a nationally representative survey, conducted by the Statistical Office of Albania (INSTAT). The survey is used for monitoring national expenditure trends and for calculation of weights when computing consumer price indices (CPIs). It is a relatively standardized instrument and is conducted in all European countries with a comparable methodology and coordinated by Eurostat. Importantly, the HBS is the only survey in Albania that provides detailed information on household expenditures, other economic and socio-demographic characteristics, and population weights needed for the estimation of the effects of tobacco expenditures on other consumption. The total number of households that participated in HBS during 2017 was 7,518. About 38 percent of these households have positive tobacco expenditures. In line with the Classification of Individual Consumption According to Purpose (COICOP) developed by the United Nations Statistics Division, household expenditures in HBS are divided into 12 mutually exclusive and exhaustive commodity groups. HBS data allow for further differentiation within the 12 groups, and this feature is utilized in this research to differentiate between tobacco and alcohol expenditures within the COICOP group 2 – Alcoholic beverages and tobacco. Therefore, a total of 13 mutually exclusive and exhaustive expenditure variables are used for the estimation of the crowding out effect in this study. The main goal is to estimate the effect of tobacco expenditures on the expenditure for the other 12 commodity groups.

Econometric model

Empirically, the analysis uses the Quadratic Almost Ideal Demand System (QUAIDS).[31] The QUAIDS model extends traditional demand systems by incorporating quadratic income terms, enabling the identification of goods that transition between necessities and luxuries as income levels change. The conditional Engel curves derived from the QUAIDS framework are estimated for 12 expenditure categories, excluding tobacco.

Thus, incorporating household characteristics (h) and conditioning expenditures on tobacco (p_t*t), we estimate the following conditional Engel curves for 12 broad categories of goods and services:

$$w_{ij} = \beta_{0i} + \beta_{1i}\text{tob\_exp}_j + \beta_{2i}\ln M_j + \beta_{3i}\left(\ln M_j\right)^2 + \gamma_i h_j' + u_{ij}$$

In this equation, w_i represents the budget share of i-th product group in the j-th household's total expenditures, net of tobacco spending. The term tob_exp denotes the household's expenditure on tobacco, while M represents the total household expenditure after deducting the expenditures for tobacco spending. The vector h contains household characteristics such as household size, the number of children under 14 years, the number of elderly members (aged 65 or older), the maximum education level within the household, household type, region, and residence type (rural or urban). Finally, u_{ij} is the error term in the demand equation, capturing unobserved factors that affect the budget share of each product group per household.

The inclusion of quadratic income terms $\left(\ln M_j\right)^2$ in the equation allows for variations in preferences across different income levels.[8] This feature enables the model to distinguish between goods that may be considered luxuries at lower income levels and necessities as income rises, offering a more nuanced understanding of household consumption behavior. For example, at low-income levels, certain goods like food staples might dominate the household budget, while at higher income levels, the share of luxury goods, such as electronics or entertainment, might increase.

The key coefficient of interest in the equation is β_{1i}, which estimates the crowding out effect of tobacco expenditures. If β_{1i} is negative and statistically significant, it indicates that an increase in tobacco spending reduces the budget share allocated to the i-th product group, confirming a crowding-out effect. In this case, higher tobacco consumption would lead to lower expenditure on other goods, reflecting a trade-off between spending on tobacco and other household needs. Conversely, if β_{1i} is positive, this suggests that tobacco consumption and spending on the i-th good are complementary. In this scenario, households that spend more on tobacco may also allocate a larger budget share to other related goods, such as convenience foods or beverages.

Augmented model that accounts for consumer separability

To further explore the interaction between tobacco consumption and household spending on other goods, we test for consumer separability. This involves

augmenting the conditional demand function with a binary variable d, which indicates whether the household has positive tobacco expenditure (i.e., d= for households that spend on tobacco, and d=0 for those that do not). This test allows us to examine whether the preferences of tobacco-using households differ fundamentally from those of nontobacco ones.

To formally account for these potential preference differences, we extend equation (1) to incorporate the binary variable d, which allows for the separate estimation of preferences for tobacco users and non-users. The extended model can be expressed as follows:

$$w_i = \beta_{0i} + \beta_{0di}d_j + \beta_{1i}tob\_exp_j + (\beta_{2i} + \beta_{2di}d)\ln M_j + (\beta_{3i} + \beta_{3di}d)\left(\ln M_j\right)^2 + \gamma_j h_j' + u_i$$

This model allows us to estimate the impact of tobacco consumption on the budget shares of other goods by accounting for potential heterogeneity between tobacco users and non-users.

Estimation of the model: Key Challenges and solutions

When estimating the model to analyze the crowding-out effect of tobacco consumption, several important methodological challenges must be addressed.

The first challenge arises from the potential endogeneity of key variables such as tobacco expenditure (tob_exp) and total income/expenditures (M) in the equation, primarily due to simultaneity. Endogeneity occurs when regressors are correlated with the error terms, violating the ordinary least squares (OLS) assumption of independence between regressors and errors. This correlation undermines the causal interpretation of OLS estimates.[32] A standard solution to this problem is the use of instrumental variables (IV) estimation, which requires identifying exogenous variables that are correlated with the endogenous regressors but uncorrelated with the error terms.

When multiple endogenous regressors are present, Shea's partial R^2 is used to account for the intercorrelations among the instruments. This measure helps evaluate the strength and relevance of the instruments while considering their mutual dependencies. If the model is overidentified—meaning there are more instruments than endogenous variables—we can test the moment conditions, specifically whether the instruments are uncorrelated with the error term using the Hansen J statistic, which is a key requirement for valid instrumental variables.

In this study, following previous research on the crowding-out effect, we use total expenditures as an instrument for total expenditures excluding tobacco (M). Additionally, we use the household sex ratio (the ratio of adult women to men) and adult ratio as instruments for tobacco expenditures. This choice is grounded in the well-documented observation that smoking prevalence is typically higher among men than women,[8,24] a pattern also seen within Albania. The assumption here is that the sex ratio is correlated with tobacco expenditure but uncorrelated with budget shares on other goods. To strengthen the instrument set for tobacco expenditures, we also use average aggregated smoking intensity by primary sampling unit (PSU), leveraging its exogeneity from the higher level of aggregation, as per Deaton's model. Since we did not have access to specific household municipalities, data were aggregated at the PSU level.

A second challenge involves potential contemporaneous correlation between the error terms of the different equations in the demand system. This correlation can arise because the dependent variables in each demand equation may be affected by common shocks or omitted variables, which would violate the assumptions of independent errors across equations. While the most suitable estimation method for this issue, might be 3SLS-GMM, we encountered convergence issues. Therefore, we estimated the system using generalized 3SLS with a bootstrapped procedure (500 replications), which allows for flexibility in instrumented variables across equations. This approach controls for the contemporaneous correlation of errors while addressing the potential heteroscedasticity in the model by using a bootstrap procedure with 500 replications. We also applied GMM 2SLS with a robust covariance matrix for standard errors as an alternative method, but this did not lead to any significant change in the results.

The third challenge involves the heterogeneity in preferences between tobacco users and non-users. Non-users may have zero tobacco expenditures for different reasons: either because they cannot afford tobacco (a corner solution) or because they choose not to consume tobacco, as it does not contribute to their utility (abstention). In this latter case, the consumption preferences of tobacco users and non-users may differ across other commodity groups. To test for such heterogeneity, we examined whether the coefficients for tobacco use ($\beta_{0di}, \beta_{2di}, \beta_{3di}$) were jointly significant using the Wald test. If these coefficients are significant, it would indicate that tobacco-using and non-using households allocate their spending differently across consumption categories. The Wald test was significant for health, housing, and clothing, indicating that smoking status affects spending patterns in these categories. However, the

coefficients for tobacco expenditures were not simultaneously significant, so we did not report these results in the final table.

Results

Table 1 provides an overview of spending patterns across different income groups (low, middle, and high) and various household expenditure categories, shedding light on how income levels shape financial priorities. Low-income households, constrained by limited resources, focus heavily on essential expenditures such as food and housing dedicating a significant share of their budget (respectively 57.5 percent and 17.9 percent), leaving minimal room for education (0.1 percent) or a non-essential category like entertainment (1.1 percent). In contrast, high-income households exhibit greater flexibility, allocating a larger share of their budgets to education (4.9 percent) and discretionary spending, including entertainment (3.9 percent) and restaurants (6.4 percent).

A key observation across all income groups is the role of tobacco as a habitual expense that influences household decision-making. Despite variations in income, tobacco expenditures remain a notable share of household budgets, with middle-income households allocating the highest proportion (3.1 percent) compared to low- and high-income households (2.1 percent and 2.5 percent, respectively). This reflects tobacco's persistent impact on financial choices, as it often competes with other critical spending needs. This habitual spending may further reinforce economic disparities, as lower-income households, already stretched thin, are more likely to be gravely affected by the crowding-out effect, diverting resources away from other critical needs to accommodate tobacco costs.

Table 1. Average monthly budget share for all categories of expenditures by income group

Category	All household	Low-income	Middle-income	High-income
Tobacco	2.7	2.1	3.1	2.5
Food	50.2	57.5	52.7	40.4
Health	3.7	3.3	3.6	4.1
Education	1.7	0.1	0.5	4.9
Housing	13.1	17.9	13.0	9.6
Clothing	4.0	2.4	4.0	5.0
Entertainment	2.4	1.1	2.2	3.9
Transport	5.4	1.7	4.5	9.8
Durable goods	5.1	5.2	5.3	4.7

Other	5.8	3.6	6.0	6.9
Communication	3.9	5.0	3.9	3.1
Restaurants	3.7	1.4	3.1	6.4
Alcohol	1.1	0.8	1.2	1.2

Source: Author calculation based on INSTAT HBS data (2017)

The values identified as significant in Table 2 reveal distinct differences in spending patterns between smoking and non-smoking households, underscoring how smoking, as a habitual behavior, shapes household decision-making. Non-smoking households allocate significantly more to housing, indicating that smoking households may prioritize tobacco-related expenses over housing needs. Additionally, non-smoking households spend more on education, suggesting a greater emphasis on educational investment. In contrast, smoking households spend significantly more on clothing and transport, which may reflect lifestyle choices. The most striking difference is in alcohol spending, where smoking households allocate much more, nearly double the share of their budgets, highlighting a likely association between smoking and increased alcohol consumption.

Table 2. Budget share of smoking and non-smoking household

Category	Non-smoking households	Smoking households	Difference	t-stat
Food	50.4	49.8	0.5	1.427
Health	3.6	3.7	-0.1	-0.602
Education	1.9	1.4	0.5	2.069**
Housing	13.8	11.9	1.8	8.251***
Clothing	3.8	4.2	-0.3	-2.660***
Entertainment	2.3	2.6	-0.3	-2.275**
Transport	5.0	6.1	-1.1	-5.247***
Durable goods	5.0	5.3	-0.3	-3.293***
Other	5.7	5.9	-0.2	-1.920*
Communication	4.0	3.7	0.4	4.916***
Restaurants	3.6	3.8	-0.1	-0.607
Alcohol	0.8	1.5	-0.6	-13.911***

Source: Author calculation based on INSTAT HBS (2017)

Table 3 presents the estimated crowding-out effects of tobacco expenditures for all households and across different income groups. Column 1 shows that across households, on average, tobacco expenditures negatively affect spending on essential categories like health, education, housing, clothes, communication,

and restaurants. Conversely, tobacco expenditures are associated with an increase in the budget share for food, entertainment, and alcohol. No significant impacts are observed on transport and durable goods for the overall sample, suggesting that tobacco spending does not alter these categories.

When breaking down the results by income group (column 2-4 in Table 3), it becomes evident that the overall crowding-out effects are largely driven by the middle-income group. In this group, tobacco expenditures reduce spending on health, housing, education, and clothing, reinforcing the trend seen in the overall sample. The middle-income group also increases spending on food, alcohol, and entertainment concomitant to tobacco expenditure.

For low-income households, tobacco expenditures significantly reduce spending on communication and entertainment while increasing the share of income allocated to food. It is important to note that particularly the food results are not consistent with findings from a lot of other countries. One possible explanation is that there are different kinds of foods, and the aggregate food measure is simply not refined enough for the results to show more clearly what the complex relationship is between tobacco spending and food spending.

Among high-income households, tobacco spending leads to reduced expenditures on education and restaurants, suggesting a reallocation of spending. At the same time, these households increase spending on food and alcohol, similar to other income groups, highlighting a consistent pattern wherein smoking diverts resources toward immediate consumption and non-productive activities.

Table 3. Estimation results for crowding out effect of tobacco spending in the budget share of

other expenditures categories (for all households and by income group)

Category	All households	Low-income	Middle-income	High-income
Food	0.0000934***	0.000212*	0.0000753***	0.000115***
	(-8.04)	(-2.58)	(-5.29)	(-6.66)
Health	-0.0000149*	0.0000384	-0.0000317***	0.00000954
	(-2.25)	(-0.8)	(-4.33)	(-0.73)
Education	-0.0000374***	-0.00000783	-0.0000107*	-0.0000810***
	(-4.87)	(-1.46)	(-2.34)	(-4.24)
Housing	-0.0000206**	-0.0000808	-0.0000306***	-0.00000128
	(-2.80)	(-1.42)	(-3.30)	(-0.12)
Clothing	-0.0000137***	-0.0000416	-0.0000220***	-0.00000269
	(-3.65)	(-1.59)	(-4.39)	(-0.44)

Entertainment	0.00000965**	-0.0000335*	0.0000120*	0.0000121
	(-2.6)	(-1.98)	-2.52	-1.44
Transport	0.00000791	0.0000102	0.0000172*	-0.0000179
	(-1.09)	(-0.46)	(-1.96)	(-1.19)
Durable goods	0.00000486	0.0000245	0.00000283	0.00000463
	(-1.33)	(-0.83)	(-0.73)	(-0.8)
Communication	-0.00000411*	-0.0000814***	-0.0000017	0.00000181
	(-2.01)	(-3.83)	(-0.61)	-0.83
Restaurants	-0.0000324***	0.00000871	-0.0000197**	-0.0000530**
	(-4.57)	-0.4	(-3.29)	(-3.22)
Alcohol	0.0000132***	-0.0000167	0.0000176***	0.0000126***
	(-5.96)	(-1.46)	(-5.64)	(-5.13)
N	7302	1761	3684	1857

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

Discussion and Conclusions

This research is the first to examine the crowding-out effects of tobacco spending in Albania, where smoking rates surpass both global and EU averages. Smoking is a major cause of disease, premature death, and economic strain, and this is magnified in the context of one of Europe's poorest countries, where approximately one-third of the population has faced severe material deprivation.

Tobacco consumption has a direct and profound impact on household decision-making by creating immediate opportunity costs. Funds spent on tobacco are diverted from other essential goods and services, limiting households' ability to invest in critical needs such as healthcare, education, and even basic necessities. Indeed, our research findings show that tobacco spending decreases expenditure on essentials including health, education, housing, and clothing.

Beyond its monetary implications, tobacco use is often linked to changes in other health-related behaviors, such as alcohol consumption and dietary habits.[33] Our study identifies a positive relationship between tobacco and alcohol expenditures, consistent with prior research.[14–16,33] Similarly, there is a positive association between tobacco and food expenditures.[9] Unfortunately, due to the lack of disaggregated data on food spending, it remains unclear whether this reflects a preference for processed or less healthy foods. Previous studies have highlighted a tendency for tobacco spending to correlate with higher processed food consumption, but lower expenditure on healthier foods consumed at home. Improved disaggregation of food expenditure data in future surveys could help clarify this relationship.

The findings underscore the urgent need for targeted tobacco control measures to mitigate the crowding-out effects observed in household expenditures. Increasing excise taxes on tobacco products would raise the cost of smoking, discouraging consumption and freeing up resources for essential categories such as health, education, and housing. Research demonstrates that higher tobacco excise taxes, which increase cigarette prices, reduce smoking initiation rates among teenagers[34] and encourage cessation among adults. This approach not only curtails tobacco use but also indirectly reduces teen drinking,[14] creating dual benefits from such fiscal policies. Additionally, public awareness campaigns and behavioral support programs can address the habitual nature of tobacco use, helping households make more balanced financial decisions. Policymakers should also focus on supporting low- and middle-income households, where the financial strain of tobacco consumption is most severe, to ensure resources are directed toward improving long-term well-being and economic stability.

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Appendix

Table A1. Tests of hetroskedasticity and validity of instruments

Category	Pagan Hall	p_values	Hansen J	p-values	Instruments
food	148.972	0.000	2.303	0.129	sexratio, intesity
health	359.466	0.000	2.152	0.142	sexratio, intesity
education	1478.696	0.000	0.639	0.424	sexratio, adultratio
housing	107.008	0.000	3.919	0.048	sexratio, intesity
cloths	141.962	0.000	0.363	0.547	sexratio, intesity
entertainment	104.168	0.000	1.372	0.241	sexratio, intesity
transport	383.821	0.000	1.502	0.220	sexratio, adultratio
durable	63.249	0.000	2.084	0.149	sexratio, intesity
comunication	225.241	0.000	2.288	0.130	sexratio, intesity
restorants	612.038	0.000	5.364	0.021	sexratio, intesity
alcohol	117.912	0.000	0.700	0.403	sexratio, adultratio