



THE RESPONSIVENESS OF SMOKING PREVALENCE AND CIGARETTE CONSUMPTION TO CHANGES IN PRICE AND INCOME IN NORTH MACEDONIA

The small country of North Macedonia is among the leaders in the world with respect to tobacco consumption. Smoking prevalence is approximately 40 percent; there is a high intensity of smoking at 28.2 packs per month per household, which places the country well above the EU average in terms of tobacco consumption. For comparison, smoking prevalence in 2014 ranged from 8.7 percent in Sweden to 27 percent in Greece and Bulgaria, while only 6 percent of the EU population over the age of 15 consumed at least 20 cigarettes per day, and around 13 percent consumed less than 20.¹ Projections from the World Health Organization (WHO) suggest that 139,000 tobacco-related deaths will occur in the next 40 years if the current levels of tobacco consumption continue.² The WHO Framework Convention on Tobacco Control recommends significant increases in tobacco taxes and prices as the most effective way to reduce tobacco use and its devastating health consequences.^{3,4} Price and tax increases on tobacco can be effective in improving people's health, reducing healthcare costs, and at the same time, increasing government revenue.

Higher prices can reduce both smoking prevalence and consumption of cigarettes among smokers. Our results suggest that an increase in price of 10 percent would result in a decrease of smoking prevalence by 2.1 percent. Most of this change would come from low- and middle-income households. Similarly, smoking intensity would decline by around 2.3 percent.

Increases in income result in higher smoking prevalence and smoking intensity in North Macedonia. A 10 percent increase in income would, on average, increase the quantity of cigarettes consumed by 8.7 percent. Low- and middle-income households would respond the most to this change, with more than a 10 percent increase in consumption, mostly because around 5 percent of these households would start smoking.

A price increase through higher excise taxes would not only reduce consumption, but would bring significant additional revenues. A specific tax increase of 25 percent, from 2.053 MKD to 2.567 MKD per stick (or from 33.39 EUR per 1000 sticks to 41.74 EUR per 1000 sticks), would reduce consumption by 8.1 percent, and increase government revenues by 12.6 percent.

Trends in consumption of cigarettes

Recent trends suggest that, even though moderate, there has been a negative relationship between cigarette prices and consumption in North Macedonia (Table 1). While the average price per pack of cigarettes increased from 2015 to 2017 by almost MKD 17, or by almost 23 percent, consumption of cigarettes has declined by 7.5

percent, or on average, by 2.3 packs per household per month. Smoking prevalence has, however, not changed much. This moderate change in consumption is most likely due to still relatively low prices of cigarettes, averaging it at only around EUR 1.3 per pack.

Table 1. Cigarette consumption in North Macedonia

Year	Smoking prevalence percent) ¹	Average number of cigarettes packs (per household, per month) ²	Average real ³ monthly household expenditure on cigarettes ¹ (in MKD ³)	Average real price ^{3,2} (in MKD ⁴)
2015	40.5%	30.5	2,226.6	73.14
2016	39.7%	29.1	2,333.9	80.41
2017	39.5%	28.2	2,550.4	89.67

Source: Authors' calculations based on HBS data for North Macedonia.

¹Percent of households who report consumption of cigarettes in total number of households in the HBS data.

² Average consumption (in packs) per month of households who report consumption of cigarettes

³ In 2005 values.

⁴ Average real price is proxied by an average ratio of reported household expenditure of cigarettes and purchased quantity (i.e. average unit value).

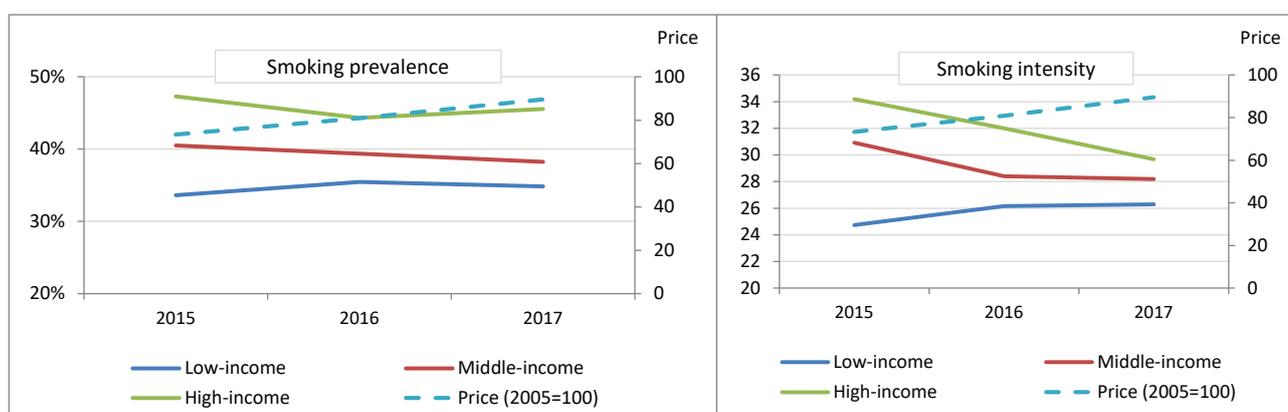


Figure 1. Smoking prevalence and smoking intensity by income group (2015-2017)⁵

Source: Authors' calculations based on HBS data for North Macedonia.

Notes: Smoking prevalence is defined as the share of the households with positive tobacco consumption, while smoking intensity represents the number of cigarettes packs a household with positive expenditures on cigarettes smoked per month. Cigarette prices are defined as psu/year average cigarette unit values (ratio between total monthly expenditure on cigarettes and quantity) and expressed in real terms (2005=100).

While the average monthly income of high-income households is around 3.3 times higher than low-income households, low-income households spend 4.7 percent of their total household budget on cigarettes, compared to 2.4 percent of the high-

-income households. Decreasing the consumption of cigarettes, especially among low-income households would allow for spending on more necessary goods, such as food and housing.

Projected impact of higher excise taxes on cigarette consumption

A 25 percent excise tax increase (leading to 17 percent increase in price) would lead to an overall reduction in consumption by around 8.1 percent, and to around 12.6 percent of additional government revenues. Middle-income households would experience the most benefits from this policy change, with a reduction in consumption of 17.3 percent, and the lowest increase in tax burden of

1.3 percent. Consumption of the low-income group would reduce by 11.6 percent, primarily due to an 7.7 percent reduction in smoking prevalence, and their additional tax burden would be about 8.4 higher than before the excise tax increase. Finally, the high-income group would see an increase in consumption and the highest increase in tax burden.

Table 2. Projected consumption and revenues by income group

Income group	Consumption			Revenues		
	Baseline (2018) ¹	Scenario (2019) ¹	Change (%)	Baseline (2018) ²	Scenario (2019) ²	Change (%)
Low	35.8	26.1	-27.1%	41.9	42.3	1.1%
Middle	50.1	47.7	-4.8%	58.6	77.3	32.1%
High	57.0	47.6	-16.4%	66.7	77.2	15.9%
Overall	142.9	121.4	-15.0%	167.2	196.7	17.9%

¹ Million packs; ² EUR million.

Source: Authors' calculations based on HBS data for North Macedonia.

Policy implications and recommendations

Given the high smoking prevalence in North Macedonia, urgent attention is needed to develop efficient tobacco control policies. Smokers in countries with higher cigarette prices are significantly more motivated to quit smoking.⁶ Hence, to have a positive impact on public health, cigarette prices need to increase faster than income to ensure that cigarettes become less affordable over time.

Tobacco tax policy in North Macedonia is currently not based on the empirical evidence that points to the necessity of higher taxes as an effective way to reduce consumption and related health system savings. At the same time, the tax policy is only partly aligned with the EU and WHO recommendations, while other tobacco control measures have even deteriorated over the last year.⁷

Policy makers should pay particular attention to the findings of this study that an increase by 25 percent in excise tax (leading to a 17 percent

increase in price) would lead to an overall reduction in consumption by 8.1 percent, and to 12.6 percent of additional government revenues. This would lead to additional savings in the health system which should be a subject of further research.

Revision of the existing tax policy would therefore lead to an increase in tax revenues and have many other positive consequences related to lower consumption. In addition, it can be concluded that it does not seem that tax increase will have a socially regressive dimension, with richer bearing the additional tax burden by far more. Low-income household demand for cigarettes shows lower responsiveness to price increases, as compared to middle-income households, possibly due to lower awareness of the risks of smoking within those households. The tax system is an important instrument for achieving health policy goals by reducing cigarette consumption and by generating additional revenue for the state budget in North Macedonia.

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About the project

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¹ https://ec.europa.eu/eurostat/statistics-explained/index.php/Tobacco_consumption_statistics

http://www.euro.who.int/__data/assets/pdf_file/0011/312599/Tobacco-control-fact-sheet-TFYRofMacedonia.pdf?ua=1

² Law on ratification of the Framework Convention of Tobacco Control of the World Health Organization Official Gazette of the Republic of Macedonia No 68, 2006, Art. 6 Price and tax measures to reduce the demand for tobacco products (page 7): "The Parties recognize that price and tax measures are an effective and important means of reducing tobacco consumption by various segments of the population, in particular young persons."

³ Tobacco Taxation Can Reduce Tobacco Consumption and Help Achieve Sustainable Development Goals, Policy Brief, August 2018

⁴ This Policy Brief draws upon analysis conducted in the Policy Report – North Macedonia, produced within the project Accelerating Progress on Effective Tobacco Tax Policies in Low-and Middle- Income Countries. Analytica think tank, North Macedonia.

⁵ Chaloupka F., Peck I., Peck R., Tauras J., Xu X. and Yurekli A. (2010). "Cigarette Excise Taxation: The Impact of Tax Structure on Prices, Revenues, and Cigarette Smoking," NBER Working Papers 16287, National Bureau of Economic Research, Inc.

⁶ Mijovic Spasova T. and Mijovic Hristovska B., (2018). Economics of Tobacco and Tobacco Taxation, National Study – MACEDONIA, Research performed within the Project Accelerating Progress on Effective Tobacco Tax Policies in Low- and Middle-Income Countries. Analytica think tank, North Macedonia.