

SMOKING PREVENTION THAT INCREASES TAX REVENUE: TOBACCO TAXES IN THE CZECH REPUBLIC 2004–2020

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SUMMARY

Objectives: Increasing tobacco excise tax is one of the most effective smoking-prevention tools. The aim of the study is to assess the use of this tool in the Czech Republic (CR) by studying trends in cigarette taxes, prices, tax revenue, and the affordability of cigarettes in the CR.

Methods: Data on cigarette consumption, their tax rates, price, and tax revenue in the CR for 2004–2020 come from multiple sources. We used the consumer price index to convert nominal values to real values. Given an average daily consumption of 12.7 cigarettes per smoker, the affordability of cigarettes was measured as a percentage of the average monthly wage needed to buy 19 cigarette packs.

Results: Despite recent increases in excise taxes, cigarettes in the CR are becoming more affordable. We found that the affordability of cigarettes was greater in 2020 than in 2008. The values of both the specific and the minimum excise taxes are currently being eroded by inflation. Cigarette consumption has declined from 2015 to 2020, and the government still received a bit more excise tax revenue due to its earlier tax policy. However, if taxes are not increased further, the revenue will start to decline.

Conclusions: Despite the trend of increasing tobacco taxes in the CR, both the affordability of cigarettes and their use are still high in the country. This means that the CR is not using tax policy effectively enough to reduce smoking prevalence. It needs a substantial and sudden tax increase, in addition to the currently planned tax increases, to reduce smoking prevalence and lower the burden of tobacco use in the economy. Such a move would not only improve public health in the CR, but also increase government revenue.

Key words: tobacco taxes, smoking, prevalence, consumption, tobacco budget revenues

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INTRODUCTION

Tobacco use imposes a significant economic burden on a country, including the additional healthcare costs of treating smoking-related diseases and the loss of productivity resulting from smoking-attributable morbidity and mortality (1). Its costs and externalities to society far outweigh any benefits (2).

Tobacco tax increases that result in higher prices are the most effective and the most cost-effective measures available to reduce tobacco use and the associated costs, especially among youth and those on low incomes, while it also increases tax revenue (3). Price affects all aspects of tobacco consumption, with higher prices preventing initiation among potential users, inducing cessation among current users, and reducing the frequency of consumption and amount consumed by continuing users (4).

To reduce tobacco use, the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) (5) encourages each Party to adopt appropriate tax and price policies on tobacco products as part of its national health objectives for

tobacco control (Article 6). Despite the power of tobacco taxes, they are the least implemented of the set of available tobacco control measures (3).

Taxes that result in a 10% increase in tobacco prices have the potential to suppress tobacco consumption by about 4% in high-income countries (3). The level and the structure of excise tax applied to tobacco products varies widely across countries (4). Deviation from the best practice of a specific tobacco tax structure allows more opportunities for tobacco prices to be polarized. Typically, countries where a specific tax (i.e., a fixed rate per stick or gram of tobacco) forms a higher proportion of total tobacco duty tend to have less price dispersion between value and premium products. Conversely, a more complex tax structure and reliance on an ad valorem tax (based on a percentage of final retail price) is associated with a greater price gap between products. An ad valorem tax has a particular disadvantage in that it allows manufacturers to reduce prices to maintain sales of low-cost tobacco (6). On the other hand, an ad valorem tax automatically adjusts for inflation.

The WHO recommends that the tax share represent at least 75% of the retail price of the most popular brand of cigarettes and encourages states to increase taxes above inflation (7). According to the World Bank, tobacco taxes are particularly effective if they reduce cigarette affordability. If wages are rising, cigarettes can become more affordable and their consumption increase, unless tobacco taxes and prices rise even faster. Effective strategies to reduce affordability and consumption generally involve combining large tax increases with recurrent tax hikes over time to ensure that real cigarette prices grow faster than real income (8).

The prevalence of smoking in the CR remained for a long time at around 30% from 2004 onward (9). It has slowly declined from 31.3% in 2012 (36.5% men, 26.3% women) to 23.1% in 2020 (28.3% men, 18.2% women) (10), but this is still far higher than in many European Union (EU) countries. Cigarettes are the most commonly used tobacco product in the Czech Republic (11). Consumption tax rates are determined by Act No. 353/2003 Coll. on consumption taxes (12). The CR complies with the Council Directive 2011/64/EU of 21 June 2011 on the structure and rates of excise duty applied to manufactured tobacco. Czech legislation included this directive in Act No. 353/2003 Coll., as amended, on excise taxes, and the CR therefore uses a mixed tax structure that consists of both a specific component and an ad valorem component. However, a 2020 report evaluating the functioning of the directive concluded that it is no longer as effective in deterring consumption as it was and that it is desirable to revise it (13, 14).

The aim of this study is to assess the tobacco tax system in the Czech Republic in terms of its possible impact on reducing cigarette consumption and its relationship to tobacco-tax revenues.

MATERIALS AND METHODS

Data Sources

Data for this study came from the Ministry of Finance of the Czech Republic (MoF), the Czech Statistical Office (CZSO), the Customs Administration of the Czech Republic, and the European Commission. All the data are publicly available.

Research Question

What are the trends in cigarette prices, taxes, revenues and affordability in the CR?

As cigarettes are both the most toxic and the most used tobacco product (10, 15) the research question focused on them.

Collected Data

Cigarette taxes – values of all components of the cigarette taxes are determined by the Excise Duty Act No. 353/2003 Coll., as amended, which entered into force in 2004. The nominal values of the specific tax and the minimum tax were converted into real values using average annual inflation (Table 1).

Most popular price category (MPPC) – prices reported in Czech crown (CZK) per 1,000 cigarettes were converted to

prices per pack (20 cigarettes). Additionally, nominal prices were converted to real prices using the consumer price index for each year from 2004 (16) (CZSO). MPPC were obtained from the European Commission document on indirect taxation and tax administration (17).

Tobacco excise tax revenues – excise tax revenue from tobacco products was retrieved from the European Commission (17) and includes excise tax revenues for the following tobacco products: cigarettes, cigars, pipes and cigarillos, and tobacco for roll-your-own (RYO) cigarettes, as well as tobacco for hookahs, and heated tobacco products.

Calculated and Estimated Data

Cigarette consumption – we use cigarette consumption data from the Czech Statistical Office (CZSO) (18). The CZSO provides an average per capita cigarette consumption in sticks in the CR, and this average also includes RYO cigarettes (0.56 g of tobacco). It captures legal sales in the CR, including purchases made by tourists.

Affordability – in this paper, the affordability of cigarettes is defined as the ratio of the nominal price of 19 packs of cigarettes (each pack contains 20 cigarettes) to the average gross monthly wage, obtained from the CZSO (19). Similar studies used gross domestic product (GDP) per capita, household income or average wages. What matters is not the absolute monetary value of the affordability, but the development over time (the trend), and that is captured equally well by either gross or net wages (20). We chose 19 packs as a proxy for monthly consumption, since a Czech daily smoker in 2020 consumed about 12.7 cigarettes per day on average (10).

$$\text{Affordability of cigarettes} = (\text{MPPC} * 19) / (\text{average gross monthly wage} / 100) \%$$

and

$$\text{Affordability of minimum excise tax} = (\text{Minimum excise tax} * 20 * 19) / (\text{average gross monthly wage} / 100) \%$$

Table 3 contains additional terminology.

Statistics

Descriptive analysis and derived parameters are used in this paper.

RESULTS

From 2004, both the specific component of the cigarette excise tax and the minimum excise tax rose in the Czech Republic, but from 2008 to 2012 and from 2016 to 2019 these increases were eroded by inflation. The minimum excise tax began to grow again in 2020, a year when both the specific and the ad valorem tax components increased. By 2021, the specific excise and the minimum excise tax were 12.3% and 11.5% higher in real terms, respectively, than in 2016 (Table 1).

Given these relatively small increases in cigarette excise taxes, and rising incomes, the affordability of cigarettes in the CR has not changed much over time. Figure 1 shows that cigarettes were becoming less affordable from 2008 to 2015, but this trend began to be reversed in 2016. By 2020, cigarettes in the Czech Republic

Table 1. Cigarette taxes

Effective date	Deflator index ^a	Excise tax rate			Minimum excise tax CZK/stick (nominal)	Minimum excise tax CZK/stick (real)
		Specific CZK/stick (nominal)	Specific CZK/stick (real)	Ad valorem (%)		
From 1/1/2004 to 30/6/2005	1	0.48	0.48	23	0.94	0.94
From 1/7/2005 to 31/3/2006	0.981	0.6	0.59	24	1.13	1.11
From 1/4/2006 to 28/2/2007	0.956475	0.73	0.70	25	1.36	1.30
From 1/3/2007 to 31/12/2007	0.929694	0.88	0.82	27	1.64	1.52
From 1/1/2008 to 31/1/2010	0.871123	1.03	0.90	28	1.92	1.67
From 1/2/2010 to 31/12/2011	0.862412	1.07	0.91	28	2.01	1.70
From 1/1/2012 to 31/12/2012	0.849476	1.12	0.90	28	2.10	1.69
From 1/1/2013 to 31/12/2013	0.833336	1.16	0.92	27	2.18	1.73
From 1/1/2014 to 30/11/2014	0.805835	1.19	0.94	27	2.25	1.78
From 1/12/2014 to 31/12/2015	0.794554	1.29	1.02	27	2.37	1.87
From 1/1/2016 to 31/12/2016	0.791376	1.39	1.09	27	2.52	1.97
From 1/1/2017 to 31/12/2017	0.789001	1.42	1.08	27	2.57	1.96
From 1/1/2018 to 31/3/2019	0.783478	1.46	1.09	27	2.63	1.97
From 1/4/2019 to 29/2/2020	0.763891	1.46	1.06	27	2.63	1.91
From 1/3/2020 to 31/1/2021	0.74785	1.61	1.13	30	2.90	2.04
From 1/2/2021 to 31/12/2021	0.72691	1.79	1.21	30	3.20	2.17
From 1/1/2022 to 31/12/2022	0.703649	1.88	1.11	30	3.36	1.98
From 1/1/2023	0.67691	1.97	1.11	30	3.52	1.99

Numbers in bold indicate stagnation of tax growth. Real values are calculated by multiplying the nominal values by the deflator index.

^aDeflator index – derived from average annual inflation rate expressed by the increase in the average consumer price index (16)

Source: Czech Statistical Office (16), Customs Administration of the Czech Republic (21), Czech National Bank (22)

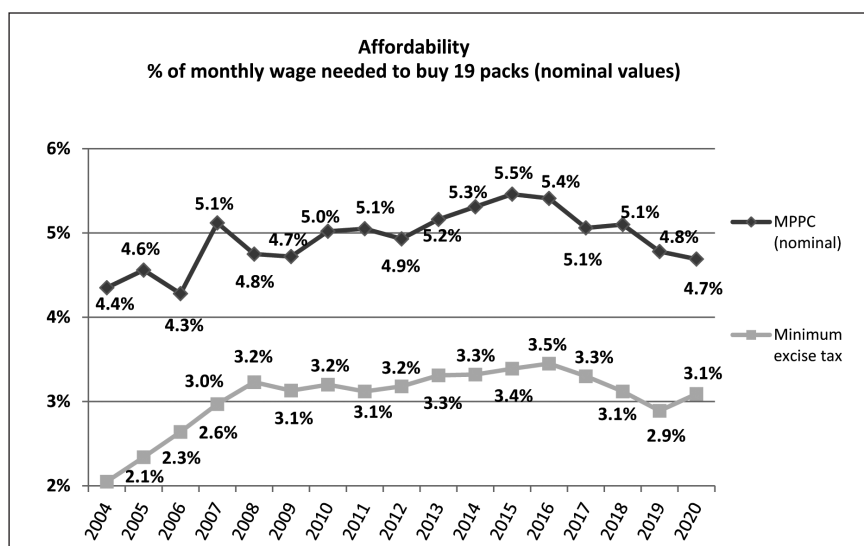


Fig. 1. Affordability of cigarettes and minimum cigarette excise tax in the Czech Republic, 2004–2020.

Source: Excise duty tables (17), Czech Statistical Office (19)

MPCC – most popular price category

were more affordable than in 2008. Figure 1 also shows the affordability of cigarettes and the minimum excise tax.

Nominal prices of cigarettes as measured by MPCC were rising from 2004, with real prices growing more slowly until 2018, when they began to decline due to inflation (Fig. 2). At the same time, we observe growing tobacco excise tax revenue and declining cigarette consumption.

Per capita cigarette consumption in the Czech Republic increased from 2004 to 2007, and then began to decline until 2013. Since then, it has been stable, despite some moderate increases in real cigarette prices (Fig. 2).

The increase in 2007 revenue is attributed to unregulated frontloading prior to the tax rate hike on 1 January 2008.

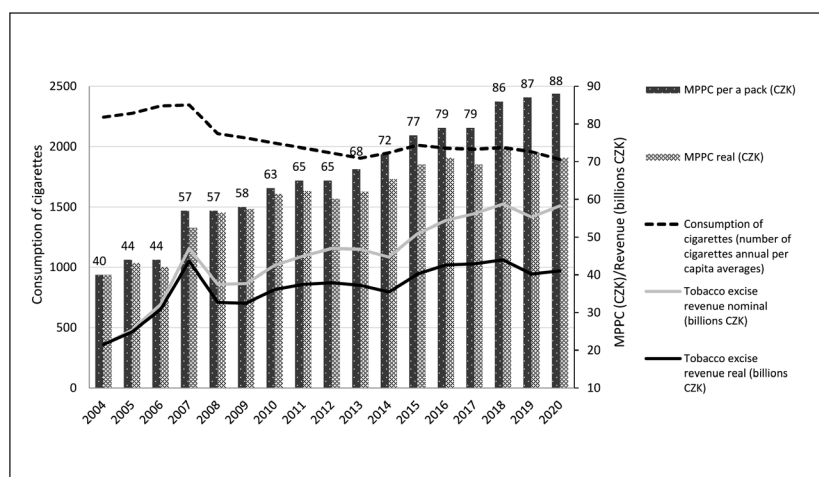


Fig. 2. Cigarette consumption, cigarette prices and tobacco excise tax revenue

Source: Czech Statistical Office (16, 18), Excise duty tables (17)

MPPC – most popular price category

DISCUSSION

This paper provides an overview of trends in cigarette taxes, prices, and affordability, and of tobacco excise revenue in the Czech Republic over the last sixteen years.

We found that in 2008 cigarettes in the Czech Republic were less affordable than in 2020, and that inflation is eroding the value of both the specific component of the excise tax and the minimum excise tax. These weaknesses of the tobacco tax policy in the CR, as well as the presence of “down-trading” (when smokers move to a cheaper option after a price increase rather than quitting (23), are likely to be contributing to the very slow decline in cigarette consumption. Nevertheless, the cigarette excise tax revenue is growing due to the inelastic nature of cigarette demand (2). Increases in tobacco taxes are the policy tools that governments use to raise prices faster than incomes rise, so as to reduce the affordability of cigarettes over time (20).

To achieve positive public health and economic outcomes, tobacco taxes need to be regularly adjusted for inflation and these adjustments need to take into consideration the affordability of cigarettes (3, 8). The best strategy for a pro-health tax policy is to institute regular tax increases accompanied by occasional substantial tax increases, as was successfully implemented in Australia, for example. Australia has one of the lowest smoking prevalence rates in the world, and the rate there has halved in the last two decades (24). This was achieved primarily through its tobacco-tax policy: in addition to annual indexed adjustments of taxes, Australia introduced large excise taxes increases in 2015 and 2016 (13% and 14%, respectively) that resulted in excise revenue increasing by 4% and 11% (25). Thus, even in a country with large tax increases and a declining smoking prevalence, tax revenues increase.

Adopting slow, cautious timeline strategies of tobacco tax increases condemns large numbers of people to avoidable illness and premature death. The government must communicate that tax increases are a part of its development strategy and that they are intended to make tobacco products unaffordable. This could motivate current smokers to quit and young people not to start (8).

The Czech MoF stated that, following the OECD and WHO recommendations, it proposed a further gradual increase in excise duty rates on tobacco products according to a pre-agreed timetable for the period 2021–2023, which would provide legal and economic certainty for all stakeholders. The goal of this policy is not to change the affordability of tobacco products (26). This is exactly the opposite of the recommended and proven approach taken in Australia, for example. The affordability of cigarettes needs to be reduced to lower the high smoking prevalence in the CR. The best way to do this is to increase the specific component of the excise tax because it targets downtrading (27).

Smokers currently have no motivation to switch to other tobacco products due to the high affordability of cigarettes in the CR. Hand-rolled cigarettes need to be taxed more heavily, so that the tax on them is the same as that for cigarettes, to avoid substitution. If an effective tobacco tax system were implemented, smokers would quit smoking or switch to products with a proven reduced risk profile, i.e., electronic cigarettes (EC) (28). EC have the potential to help smokers quit (29).

An increase in tobacco taxes would increase nominal tax revenues in the short to medium term, even when combined with other policies aimed at reducing tobacco use. As tobacco use falls over time, nominal tax revenues will gradually decline, but it will be many years before they fall below their pre-tax-increase level, as can be seen by the Australian example. In contrast, failing to increase tobacco tax rates to keep pace with inflation will lead to reductions in the real value of tobacco tax revenues over time (27).

The tobacco industry is trying to reduce or limit increases in tobacco taxes in several ways (30). Tobacco companies are engaging in illicit tobacco trade (tax evasion) while also using the presence of illicit trade as an argument to deter governments from increasing tobacco taxes (31). The impact of tobacco taxes is further undermined by stockpiling, when companies pre-purchase tax stamps immediately before the tax increase to use these lower-value stamps after the tax increase.

This stockpiling (also called frontloading) resulted in an unfulfilled revenue expectation in early 2021. This was misused by those opposing tobacco taxes (i.e., tobacco industry), who attributed the tax gap to the expansion of the illicit cigarette market.

However, the Czech Ministry of Finance explained that the situation was caused primarily by the tobacco industry pre-purchasing tax stamps before their value increased on 1 January 2021, and secondarily by fewer cross-border purchases due to Covid-19. Stockpiling has been exploited by the tobacco industry to avoid taxes. This tax loophole should be closed, as has already been done in many EU countries, for example Poland and Hungary (32, 33).

Many effective and cost-effective tobacco-control measures do not need funding but rather political will. These include, for example, regular and substantial increases in tobacco taxes, the requirement to sell cigarettes in plain packages (34), banning tobacco advertising including tobacco point-of-sale display bans (35), a requirement that tobacco products be sold only in licensed establishments (with licensing fees raising revenue for enforcement) (36), and the establishment of smoke-free public places (37).

Our study has several limitations. We are using sales of all cigarettes as a proxy for cigarette consumption. However, not all cigarettes sold are consumed (e.g., some packs are lost, destroyed, etc.), and not all cigarettes sold are consumed by Czech citizens

(they are consumed by tourists, for example). In addition, our estimate of consumption also includes RYO cigarettes. Therefore, we assume that the gap between the sale and consumption of cigarettes and the share of RYO consumption are more or less constant over time. To the extent that downtrading to RYO is accelerating over time, the downward trend in manufactured cigarette consumption will be faster.

The excise tax revenue is available for all tobacco products, not just for cigarettes. However, the majority of tobacco consumed in the CR consists of cigarettes (93.6% in 2020) (10), and therefore they dominate the tax revenues obtained from tobacco products.

We summarize our recommendations for the tobacco-tax system in the Czech Republic in Table 2.

Implications

The long-term trend of cigarette excise tax revenue, the cigarette tax rate, and cigarette consumption in the Czech Republic provides further assurance that the relationship between the tax rate, tax revenue and cigarette consumption hold even in this small

Table 2. Recommendations for tobacco tax policy in the Czech Republic to achieve effective tobacco control via lowering cigarette affordability

Increase the minimum tobacco excise tax (24)	The key advantage of a minimum excise approach is that it may help narrow the price gap between cheap and premium cigarettes, and thus reduce the opportunity for downtrading (6).
Implement unexpected and large increases of tobacco taxes (8)	Sudden increases are necessary in the Czech Republic to prevent stockpiling. The current tax policy only calls for gradual tax increases. As a result, consumers see only small and gradual changes in cigarette prices and are reluctant to respond by reducing consumption.
Automatically adjust the specific component of tobacco tax for inflation	Unless regularly adjusted, the real value of specific tobacco taxes will fall over time as general price levels increase. When this happens, the real value of tobacco taxes revenues falls and the effectiveness of the tax in reducing tobacco use and promoting health will be diminished. Governments can avoid this by establishing a mechanism for automatically adjusting specific taxes so as to keep pace with inflation (4).
Increase tobacco taxes so that the affordability of tobacco products is reduced (8)	To maximize the health impact of higher tobacco taxes, governments should raise taxes with the goal of reducing the affordability of tobacco products. A high and sudden increase in excise duty is necessary to reduce the affordability of cigarettes.
Ban stockpiling	Stockpiling is a form of tax avoidance in which a tobacco company is allowed to pre-order tax stamps before the tax increase and then uses the old, cheaper stamps after the tax has increased and new, more expensive tax stamps are required to sell cigarettes (32). Even though tax avoidance is legal, it still deprives the government of tax revenue, and undermines the effectiveness of tobacco-tax policy as a public health measure.
Prevent the tobacco industry interference in tobacco tax policy	Transnational tobacco companies' influence over public policies weakens tobacco control (38). The government is obligated to comply with article 5.3 of FCTC that requires it to publicly disclose all interactions with tobacco organizations and their representatives (5).

Table 3. Terminology of tobacco taxation used in the Czech Republic

Terms	Explanation
Taxes on tobacco products	Different type of taxes levied: excise taxes, VAT ^a , duties on tobacco product imports.
Cigarette excise taxes:	A subset of tobacco taxes, these are the most important taxes because they raise the price of cigarettes relative to the price of other goods and services and thus contribute to achieving the health objective of reducing cigarette use.
Specific excise tax	Is levied based on quantity (e.g., a fixed amount per cigarette or weight of tobacco).
Ad valorem excise tax	Is levied based on value of the product (e.g., a percentage of the retail price).
Minimum excise tax	A minimum level of excise duty for any packet of cigarettes.
Valued added tax = DPH*	Is charged as a percentage of the value added to a product at each stage of its production.

VAT – valued added tax

*DPH – VAT in the Czech Republic (21%)

Source: WHO (24)

country in the centre of Europe. The main impact of higher taxes is better public health, future savings in health care costs, and higher labour productivity (e.g., due to lower morbidity); higher revenue is just an additional benefit, given the reduction in the costs associated with smoking. The conclusions of this study should be reflected in the amended Excise Duty Act No. 353/2003 Coll.

CONCLUSIONS

Tobacco-tax policy could be employed more effectively in the Czech Republic in order to reduce smoking prevalence and lower the economic burden of tobacco use. Depending on future inflation rates and the pricing strategy of the tobacco industry, substantial and sudden tax increases, in addition to the currently planned tax increases, that make cigarettes less affordable would improve public health in the CR and increase government revenue.

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Conflicts of Interest

None declared

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