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Economic Research Informing  
Tobacco Control Policy

# Tobacconomics Cigarette Tax Scorecard

## 2nd Edition



## Scoring Component Policy Note – Cigarette Price

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**The Tobacconomics Cigarette Tax Scorecard** evaluates countries' cigarette tax systems based on a five-point rating system that incorporates international guidance and best practices in tobacco taxation developed by the World Health Organization (WHO), the WHO Framework Convention on Tobacco Control (FCTC), the World Bank (WB), and academics and researchers worldwide. The five-point index uses data from the World Health Organization's biennial *Report on the Global Tobacco Epidemic (RGTE)* (WHO, 2021a) to score countries on the following four components: cigarette price, changes in the affordability of cigarettes over time, the share of taxes in retail cigarette prices, and the structure of cigarette taxes. The total score reflects an average of the four component scores.

## Why is cigarette price important?

The price of cigarettes is a key variable affecting smoking behavior. The WHO FCTC's Article 6 and its Guidelines state that increases in real prices reduce tobacco use (WHO, 2014). The *WHO Technical Manual on Tobacco Tax Policy and Administration* and the World Bank's *Tobacco Tax Reform at the Crossroads of Health and Development* report also emphasize the importance of high prices to reduce cigarette smoking (WHO, 2021b; World Bank, 2017). As the price of cigarettes increases, smoking prevalence decreases because current smokers are incentivized to quit, nonsmokers are discouraged from taking up smoking, and former smokers are discouraged from restarting. Those smokers who do continue to smoke often reduce their smoking intensity (that is, the number of cigarettes smoked in a given time period) as the price increases.

While higher prices generally reduce consumption (Tauras et al., 2016), cigarettes are relatively price inelastic: an increase in price will result in a less-than-proportional decline in consumption. The estimated impact of price on tobacco consumption varies from country to country, but most studies show that consumption is more responsive to price in low- and middle-income countries (LMICs)—where elasticity estimates cluster around -0.5—than in high-income countries where it is closer to -0.4 (U.S. National Cancer Institute & World Health Organization [NCI & WHO], 2016). Therefore, a ten-percent increase in price will result in a five-percent decrease in consumption in LMICs and a four-percent decrease in high-income countries.

Studies have found that about half of these declines in consumption are due to reduced smoking participation (quitting or not starting) and the remaining half come from reduced smoking intensity among smokers (Chaloupka & Wechsler, 1995; Levy et al., 2004; World Bank, 2017). Moreover, due to its addictive nature and the fact that quitting for good often requires multiple attempts, the long-term impact of price on cigarette consumption increases over time. Thus, it is estimated that the long-term impact is approximately double the short-term impact (Pacula & Chaloupka, 2001).

Studies also show that youth are two to three times more responsive to tobacco price increases than the general population, which is explained by various factors including limited income, lower addiction levels, and peer effects (Bader et al., 2011). Evidence on smokers switching to other tobacco products because of price changes in cigarettes—called substitution—is mixed. In high-income countries there is some evidence that a portion of smokers will switch to less-expensive non-cigarette products, reinforcing the recommendation that all tobacco products should be taxed similarly. In LMICs, however, these patterns are less clear (NCI & WHO, 2016).

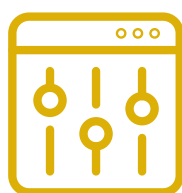
Evidence from high-income countries such as the United States, the United Kingdom, and Australia shows that lower socioeconomic groups are relatively more responsive to tobacco price changes than

higher socioeconomic groups (Chaloupka, 1991; Colman & Remler, 2008; Farrelly et al., 2001; Siahpush et al., 2009; Townsend et al., 1994). There is a growing body of evidence from LMICs that the poor are more responsive to tobacco price changes and, thus, benefit most from the reductions in smoking (Chaloupka et al., 2012; World Bank, 2017).

For these reasons, the price of tobacco products is an important part of evaluating the performance of a country's tobacco tax system. Even in cases where the tax structure is ideal (that is, a uniform specific tax with adjustments for inflation and income growth) and the excise tax share of retail price is 70 percent or above, if the price of tobacco products is low the tax system will not be as effective in discouraging and reducing tobacco consumption.

## Scoring criteria of cigarette price

The Scorecard compares cigarette tax systems in terms of the price of the most-sold brand in international dollars (Intl\$), adjusted for purchasing power parity (PPP).<sup>1</sup> According to the prices reported for 2020,<sup>2</sup> scores are based on the following rubric:



### Scoring – Cigarette Price:

- 5: Price  $\geq$  10.0 Intl\$ PPP
- 4:  $8.0 \leq$  price  $<$  10.0
- 3:  $6.0 \leq$  price  $<$  8.0
- 2:  $4.0 \leq$  price  $<$  6.0
- 1:  $2.0 \leq$  price  $<$  4.0
- 0: Price  $<$  2.0 Intl\$ PPP

## Strengths and weaknesses of the measure

The greatest strength of this measure is that nearly everyone understands the notion of price, all complexities of the calculations here aside. One of the largest challenges in promoting tobacco taxation is explaining how it works; however, using price as the foundation of this explanation is largely intuitive.

The Scorecard gives the highest score to a PPP-adjusted price of ten international dollars or higher in 2020 for a pack of 20 of the most-sold brand of cigarettes, and the price thresholds drop by two Intl\$ PPP units for each score. These thresholds are based on the literature highlighting the importance of sufficiently high cigarette prices to reduce consumption. The rationale for the scoring criteria is based on the roughly smooth distributions in cigarette price scores for each year, and the criteria for cigarette price scores are functioning as intended in terms of distinguishing high- and low-performing countries and identifying improvements within a country over time.

The empirical measure used here—PPP-adjusted constant international dollars of the most-sold brand—though a bit complicated at first glance, is particularly appropriate because it captures price accurately and allows for meaningful comparisons over time and across countries. Since countries often have their own popular local brands, prices of the most-sold brand are useful when comparing cigarette prices. They reflect the largest share of the country's cigarette market, even though the brands may differ by country and may even change over time in the same country. However, these prices do not reflect the variability in cigarette prices across brands within a country's cigarette market nor the opportunity for smokers to switch to cheaper brands as cigarette taxes and prices rise. This dynamic is partially, but not fully, captured by the tax structure component, given that the tax structures that score highest are those that reduce variability in prices across cigarette brands.

<sup>1</sup> Purchasing power parity is a common metric used to compare countries' currencies based on an exchange that allows one to buy the same amount of goods and services in each country.

<sup>2</sup> These prices are converted to 2018 prices to compare them with those in the previous Scorecard.

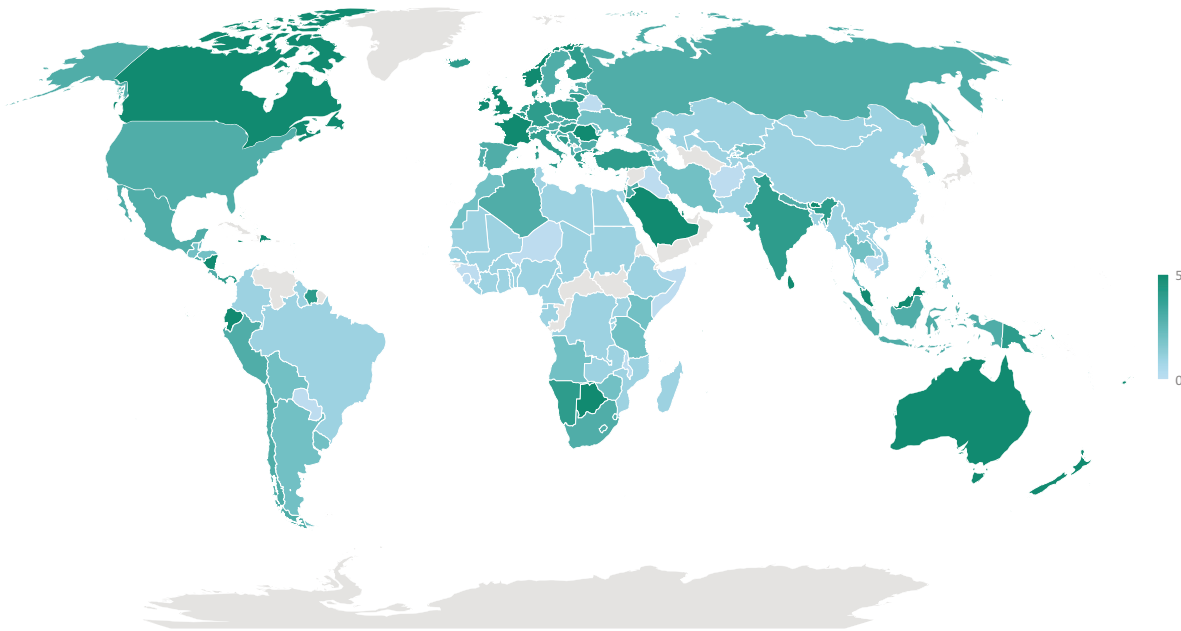
In the *RGTE*, cigarette prices are reported in current IntI\$ PPP units, which are prices adjusted for the purchasing power of each currency. Whereas current IntI\$ PPP units facilitate price comparisons in relation to other goods across countries in the same year, they could be inconsistent when assessing tax systems using the same grading scale for all years. For this reason, prices are converted into constant 2018 IntI\$ PPP based on the gross domestic product (GDP) PPP in current and constant 2018 IntI\$ PPP from the World Development Indicators.<sup>3</sup>

There are also potential challenges with data consistency. First, the data on prices in local currency units in the *RGTE* are not collected using a consistent and comparable approach in all countries, so they should be interpreted with some caution. Second, to convert prices in local currency units to IntI\$ PPP, the *RGTE* uses the PPP conversion factor from either the International Monetary Fund or the World Bank. However, as PPP conversion factors are regularly updated with all other macroeconomic indicators, differences can be observed in prices in IntI\$ PPP between different editions of the *RGTE*. For example, prices and scores from the previous edition were revised based on the updated cigarette price information in the most recent *RGTE* data and the GDP information from the World Bank database, which is used for price adjustments.

## Cigarette price scores in 2020

Figure 1 presents the cigarette price scores for 2020. Among the 163 countries with available data, 25 countries received the highest score of five (up from 19 in 2018), led by Sri Lanka (\$24.19), New Zealand (\$20.07), Australia (\$18.74), and Fiji (\$18.64). Twelve countries received a score of zero, with the lowest prices in Paraguay (\$0.82), Iraq (\$0.92), Democratic Republic of the Congo (\$1.07), and Guinea (\$1.22).

**Figure 1** Cigarette price scores, 2020



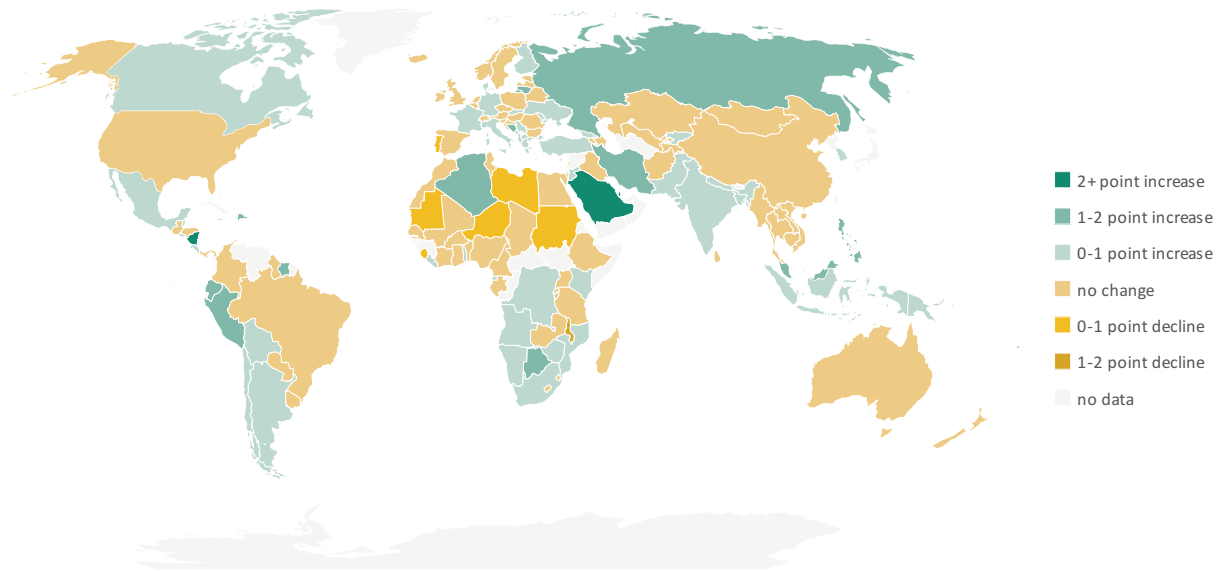
Note: Countries in gray lack available data on this measure.

<sup>3</sup> World Bank. (Last accessed October 16, 2020)). *World development indicators*. Available online: <https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.PP.CD&country=>

## Change over time

Cigarette price scores have risen over time, from an average of 1.98 out of 5.00 in 2014 to 2.50 in 2020. As shown in Figure 2 below, the number of countries receiving the highest score has risen from 11 in 2014 to 25 in 2020, while the number of countries receiving the lowest score has decreased from 17 in 2014 to 12 in 2020. Over the past six years, five countries have experienced more than a two-point score increase, while ten countries have seen a one-to-two-point decline.

**Figure 2** Changes in countries' price scores, 2014–2020

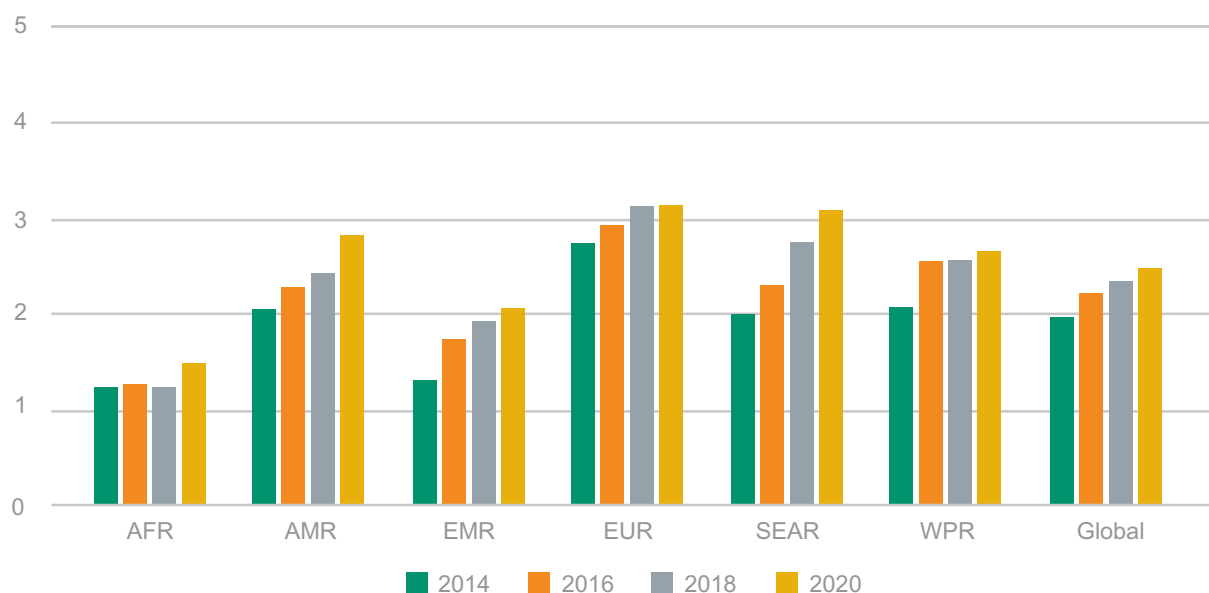


Note: Countries in gray lack available data on this measure.

As demonstrated in Figure 3, average cigarette price scores in 2020 were higher in the European, South-East Asia, and Americas regions and lowest in the African region. From 2014 to 2020, average cigarette price scores rose across all WHO regions, rising the most in the South-East Asia region and the least in the African region and European region. Average cigarette price scores rise with country income, as shown in Figure 4.

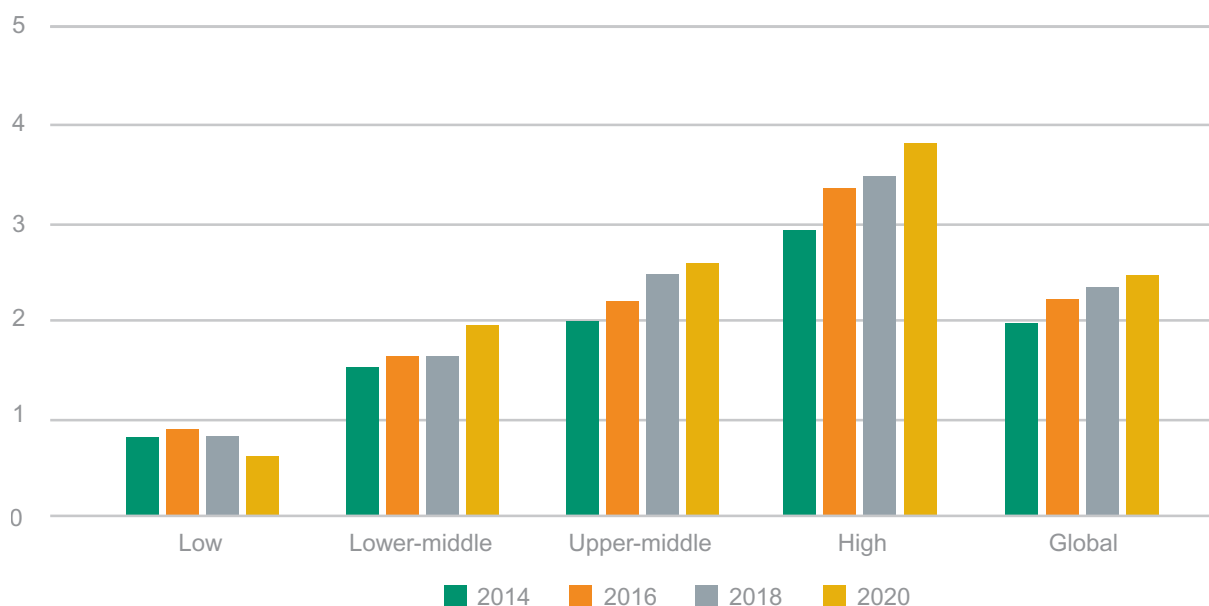
It should be noted that average cigarette price scores in low-income countries actually decreased from 2014 by \$0.18, while all other income groups' cigarette price scores consistently increased during the same period. Lowering cigarette prices makes cheap cigarettes more accessible to low-income populations, especially young people. At the same time, the tobacco industry is increasing prices in other regions, which allows the industry to maintain stable global profits while expanding their market in low-income countries. This expanded market translates into increases in smoking prevalence and the resulting tobacco-related diseases and deaths, not to mention the economic burden of added health care spending and lost productivity.

**Figure 3** Average cigarette price score, globally and by WHO region, 2014–2020



Note: Scores reflect updated cigarette price information in the most recent *RGTE* data and GDP information from the World Bank database, which was used for price adjustments. A full list of affected countries can be found in Appendix 4 of the Scorecard, second edition.

**Figure 4** Average cigarette price score, globally and by World Bank income group, 2014–2020



Note: Scores reflect updated cigarette price information in the most recent *RGTE* data and GDP information from the World Bank database, which was used for price adjustments. A full list of affected countries can be found in Appendix 4 of the Scorecard, second edition.

## Policy recommendations



While there has been some progress in increasing cigarette prices over the past six years, there is considerable room to raise cigarette prices, and, in fact, cigarette prices have decreased on average in low-income countries. This alarming development will make cheaper cigarettes more accessible to vulnerable populations, including youth and the poor.

Governments should proactively use cigarette taxation as an intervention to increase cigarette prices and prevent the expansion of cigarette markets in their countries. Increases in smoking prevalence today inevitably result in increases in tobacco-induced diseases and deaths in future years. The associated costs of medical expenses, lost productivity, and human lives, which are well documented globally can be curbed by effective cigarette taxation policies.

Higher tobacco prices are effective at reducing tobacco use. Based on the impact of cigarette prices on reduced smoking participation and smoking intensity, increases in cigarette price are likely to reduce the burden of smoking-attributable diseases and, thus, improve population health.

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