

Tobacco Taxes & Government Revenues

Increasing Tobacco Taxes Significantly Will Increase Revenues

Introduction

Tobacco use is the leading cause of preventable deaths globally, accounting for about 7 million deaths each year.¹ Reducing this death toll can be achieved through implementation of cost-effective policies, including smoke-free air laws; prominent graphic warning labels; bans on tobacco company advertising, promotion and sponsorship; and mass media public education campaigns. These policies work, but the single most effective way to reduce the health and economic devastation caused by tobacco is to significantly increase tobacco taxes and prices. Higher taxes lower overall tobacco use, lead current users to quit, prevent young people from taking up tobacco use, and reduce the negative health and economic consequences of tobacco use.^{2, 3, 4}

Increasing tobacco taxes also increases government revenue, which can be used to fund health, healthcare and other economic development initiatives. The tobacco industry opposes higher tobacco taxes, often arguing that increases in tobacco taxes will not result in increases in revenues. They argue that increases in taxes will result in substitution to cheaper, less taxed or illicit cigarettes; or alternatively that reductions in consumption will be significant enough to result in a reduction in revenues.

This policy brief examines the impact of tobacco taxes on tobacco consumption and revenues. It shows that concerns about increases in taxes not increasing revenues are misguided; in fact, this policy brief shows that at current levels, **increases in taxes will almost always result in increases in revenues.**

Impact of Tobacco Taxes on Consumption & Revenues

An increase in the excise tax increases the retail price of tobacco, which in turn reduces tobacco use. Economists look at the relationship between prices and consumption through a measure called “price elasticity of demand,” or the percentage change in consumption resulting from a one percent change in price. Even though higher cigarette taxes and prices reduce consumption, cigarettes are relatively price inelastic, meaning that an increase in price will result in a less than proportional decline in consumption. Estimates of the price elasticity generally lie between -0.4 and -0.6, meaning that for every 10% increase in price (in real or inflation adjusted terms), consumption will decline by between 4% and 6%.⁵

Thus, higher tobacco taxes are good for government revenue, because a 10% increase in price does not result in a 10% reduction in consumption. In other words, even though tobacco consumption decreases, the percentage increase in the excise tax per unit is greater than the percentage decrease in tobacco consumption.

The example below illustrates the price elasticity of demand and its effect on revenue. Assume that the starting price per unit of tobacco is \$1.00, including the tax which is 37 cents, i.e., the tax is 37% of the price (global median in 2016).⁶ At that price, assume that there are sales of 1,000 cigarettes. This would generate \$370 in tobacco tax revenues. If the tax doubles, it goes up from 37 to 74 cents, and if the tax increase is fully shifted to the consumers, then the new

price is \$1.37, which is a 37% increase in the price. Based on a price elasticity of -0.6 (consumption will drop by 6% for every 10% increase in price), consumption will drop by 22%, leaving us with sales of only 778, instead of 1,000. But they will each pay 74 cents in taxes and the government's revenues will increase from \$370 to \$575.72.

The global evidence on price elasticity of demand tells us that at current tax rates cigarettes are almost always inelastic with estimates around -0.4 in high-income countries and between -0.4 and -0.8 in low- and middle-income countries.⁷ Even if demand were price elastic, i.e., that the increase in price resulted in a more than proportional decline in consumption, tax revenues would still increase since tax is only a proportion of the price. In the example above, revenue will continue to rise until a price elasticity of -1.35 is reached, which is when taxes are so high that a 10% increase in prices will result in a 13.5% reduction in consumption.

In addition to the price elasticity of demand, the revenue potential also depends on the tax share of the price. The higher the tax share, the less elastic the product can be before revenue will begin to decline. Thus, even with relatively elastic demand, if the tax share of the price is low, as is the case in many countries, tax increases will still generate revenue increases.

However, the example above assumes that the tax is fully shifted to consumers. In many cases, taxes are over-shifted, i.e., the increase in the price is greater than the increase in tax (in absolute terms). If taxes are over-shifted, the decline in consumption will be greater and the increase in revenue will be less.

Similarly, increases in tobacco tax revenues as a result of increases in tobacco taxes can be undermined by substitution to cheaper or less taxed brands or by increases in illicit trade. To an extreme, the tobacco industry argues that this will result in declines in revenues. While these issues are of critical importance, the empirical evidence shows that revenues are likely to increase as a result of tax increases even in the

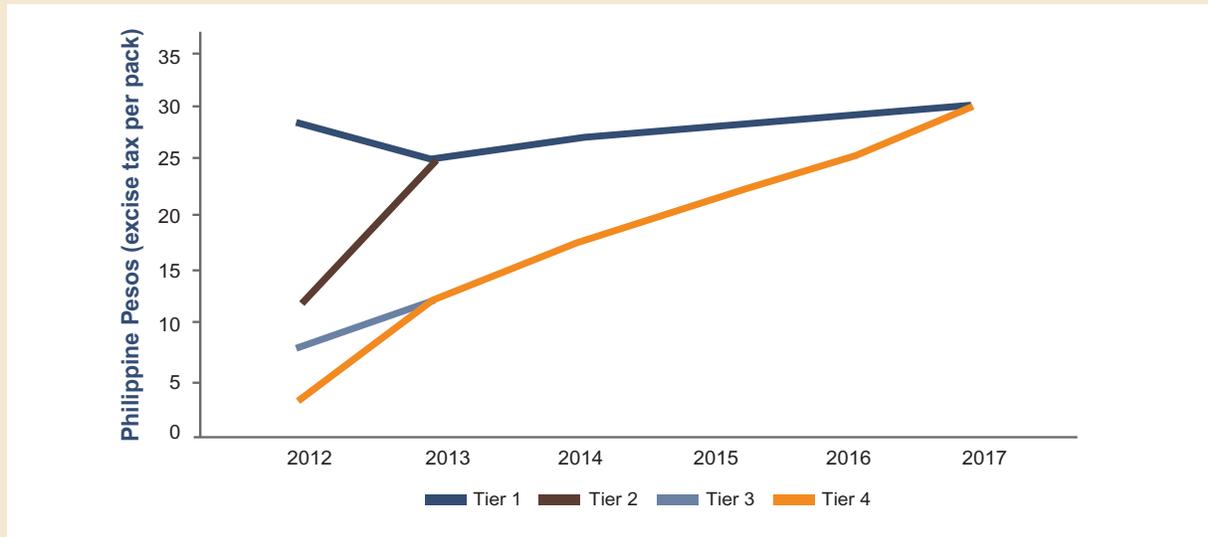
face of substitution. Furthermore, tax policy can be designed and administered in such a way as to minimize the effects of substitution on undermining revenues. It is important to note that the tobacco industry will often create cheaper brands in response to higher tobacco taxes to encourage substitution.

Tax structures significantly influence the ability of consumers to substitute to cheaper or less taxed brands. The tax structure refers to whether taxes are implemented as *ad valorem* or specific taxes, or whether such taxes are tiered or uniform. These structures can be designed to ensure that increases in taxes result in larger increases in revenue. For example, systems that rely more on *ad valorem* or tiered taxes result in larger price differences and thus allow consumers to avoid tax increases by trading down to cheaper or less-taxed brands. Consequently, tax structure reforms that shift to uniform and/or specific taxes will result in increases in revenues. *A more detailed discussion is available in a Policy Brief on Tobacco Tax Structures on the Tobacconomics website.*

The Philippines is an excellent example of raising tobacco taxes while simultaneously reforming the tax structure. The Philippines recently reformed their tobacco excise tax system by consolidating a four-tiered specific tax system to a uniform specific tax system between 2012 and 2017. At the same time, excise tax rates were increased substantially, as much as 11 times on the lowest tax categories (Figure 1). Models that were developed before passage of the tax reforms suggested significant incremental excise tax revenues, raising an additional Pesos 56.9 billion (USD 1.06 billion) per year by 2016. Revenue collections to date have surpassed these expectations, with incremental revenues reaching Pesos 67.2 billion (USD 1.26 billion) per year by 2016 (Figure 2). Revenues were higher than expected in each year since 2013 although have varied as a result of forestalling (i.e., industry increasing production prior to tax increases). Key to the increases in revenues was the reform of the tax structure. More uniform tax

Figure 1

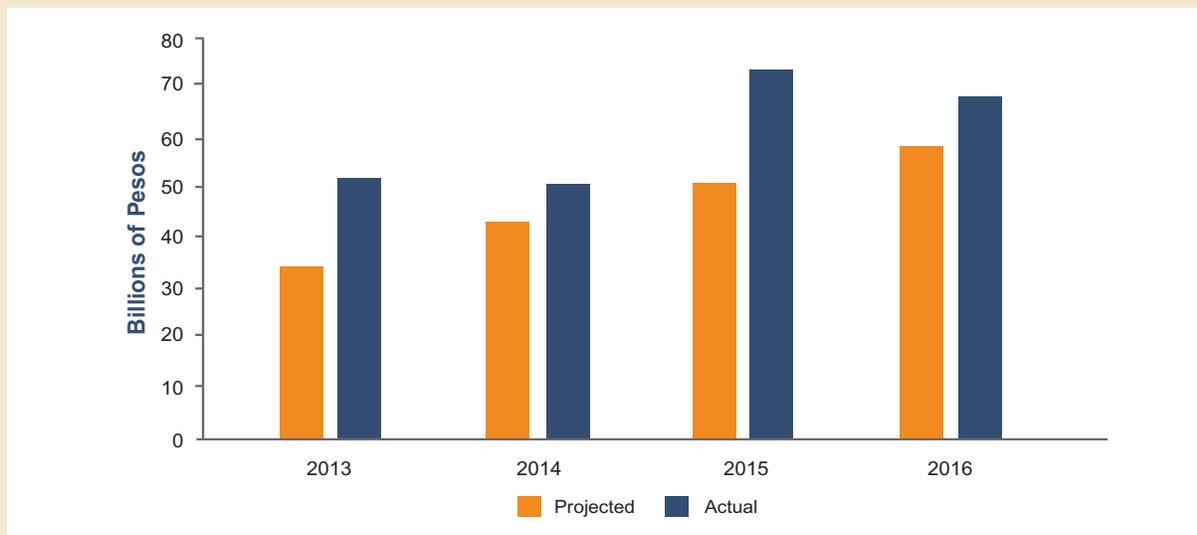
Excise tax per pack in the Philippines, 2012-2017



Source: Kaiser, Bredenkamp and Iglesias. *Sin Tax Reform in the Philippines: Transforming Public Finance, Health, and Governance for More Inclusive Development. Directions in Development.* Washington, DC: World Bank; 2016.

Figure 2

Expected and actual incremental tobacco excise tax revenue in the Philippines, 2013-2016



Source: Kaiser, Bredenkamp and Iglesias. *Sin Tax Reform in the Philippines: Transforming Public Finance, Health, and Governance for More Inclusive Development. Directions in Development.* Washington, DC: World Bank; 2016.

structures (i.e., moving from four tiers in 2013 to two in 2016 with a smaller gap) resulted in significant increases in revenues.

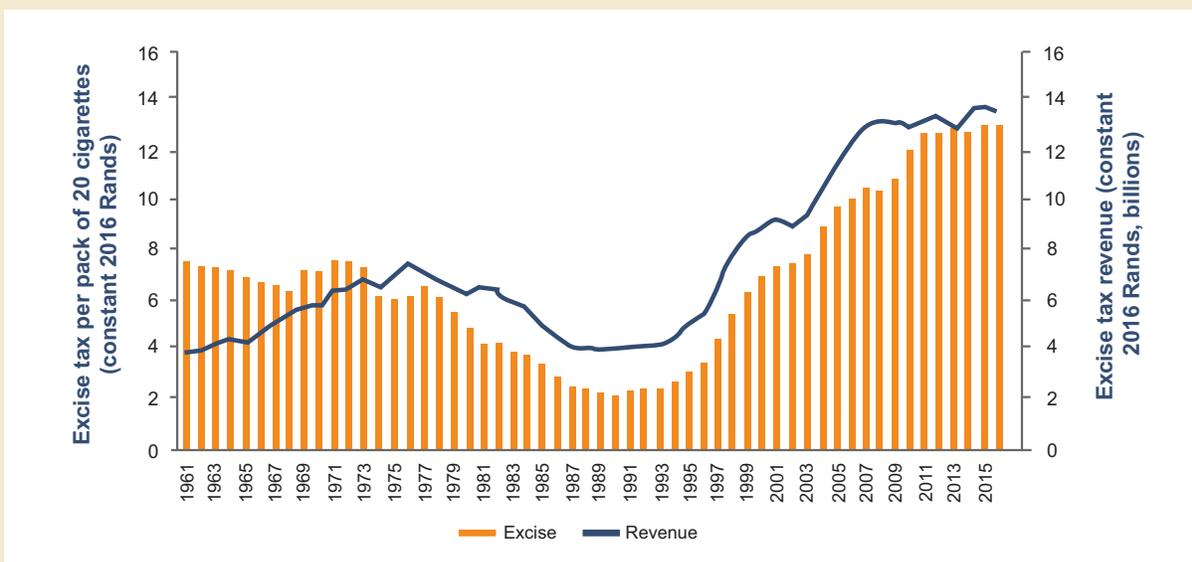
An alternative example is that of South Africa (Figure 3), which has consistently implemented a uniform specific tax. One of the important features of this tax is how it reduces the incentives for substitution to cheaper or low-taxed brands. South Africa was able to raise taxes consistently for over two decades and continues to experience increases in revenues. Between 1990 and 2016 excise taxes per pack increased by 537% in real terms (i.e., adjusting for the effect of inflation). During the same period, real excise tax revenues also increased by 245%. In contrast, in the 1970s and 1980s, real excise revenue decreased quite sharply because the real excise tax per pack of cigarettes decreased. Since 2011, excise tax increases have slowed considerably, and this has been accompanied by slower growth in revenues. This demonstrates that a lack of increase in excise taxes is a significant risk to revenues.

Vietnam is an example of how a low tax share in price with an *ad valorem* tax structure can create opportunities for substitution to cheaper or less-taxed brands even with tax increases.⁸ As the *ad valorem* rate rose from 55% of ex-factory price in 2006 to 70% in 2016, real excise revenues rose by 21%. Even though the tax rate rose by 27%, the real price of the cheapest brand in Hanoi and Ho Chi Minh City increased only by 3% and 9%, respectively.

The tobacco industry argues that illicit trade creates a threat to tobacco tax revenues. The argument is that increases in taxes will shift sufficient volumes to the illicit market that the legal market will decline and so will revenues. However, examples show that even in the presence of illicit trade, increases in taxes will result in increased revenue. Brazil is one such example. In 2013, illicit trade was approximately 32% of the total market (25% according to Euromonitor), however, between 2010 and 2014, real excise tax per pack increased by 61%, coinciding with an increase in real revenue of 20%. Thus, even in the presence of a sizable illicit trade, increases in taxes results in increase in revenues.

Figure 3

Real excise tax per pack and real excise tax revenue in South Africa, 1961-2016



Source: Van Walbeek CP (2005) *The Economics of Tobacco Control in South Africa*. PhD Thesis. Cape Town: University of Cape Town. Available online at: <https://tinyurl.com/yaw8n5m3>. Updated data provided by the author.

The Laffer Curve and Tobacco Taxes

The Laffer concept about taxes and revenue was based on a theory regarding income taxes developed by an economist, Arthur Laffer, and popularized in the 1970s and 80s. Laffer argued that if the tax rate became “too high”, the government would lose revenue by increasing the tax rate further. The Laffer theory gained prominence in subsequent years and was extended to other types of taxes, including corporate taxes. There was supposed to be some turning point on the Laffer curve beyond which any tax increase would reduce revenue. The trouble is that it is difficult to know where that turning point is. On the mistaken belief that income and corporate tax rates were on the “wrong” side of the Laffer curve, many countries reduced their tax rates in the late 1980s and early 1990s, only to find that their revenues decreased.⁹

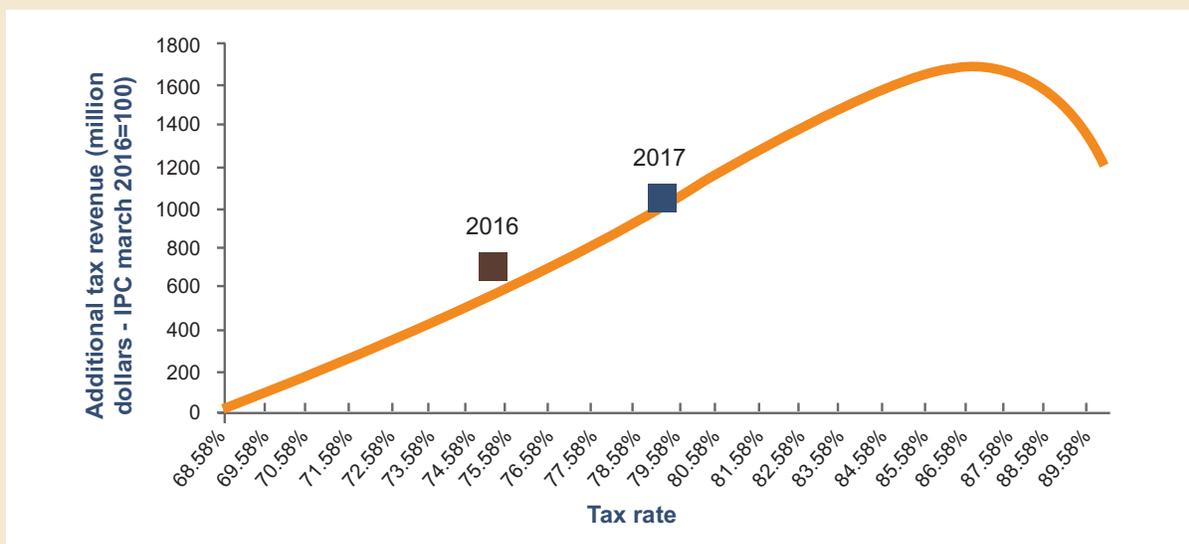
Recently, the tobacco industry hired Laffer to write a handbook on tobacco taxation.¹⁰ This handbook (published in 2014) applied the Laffer curve to tobacco and advocated against tobacco

tax increases on the basis that at some point increases in tobacco taxes will reduce revenue.

The price elasticity of demand and the shifting of taxes are the critical factors in determining the tax rate beyond which increases in the tax rate will cause revenues to decline. The more inelastic a product is, the higher the tax rate at which the turning point occurs. Since tobacco products are relatively inelastic, the turning point will occur at a much higher tax rate than for a relatively elastic product, as shown by the Argentina example below. But the tobacco industry also deliberately over-shifts tax increases, i.e., they increase prices more than the increase in taxes. The more taxes are over-shifted, the lower the tax rate at which the turning point of revenue reduction occurs, which distorts the impact of tax increases on revenue.

Argentina’s experience shows why it still has room to raise taxes. In 2016, as part of the efforts to assess the potential impact of tobacco tax increases in Argentina, researchers estimated a Laffer curve for tobacco taxes. According to the simulation (Figure 4) model, if taxes were

Figure 4
Laffer curve simulation in Argentina



Source: Author's Calculations based on Rodríguez-Iglesias G, Schoj V, Chaloupka F, Champagne B, González-Rozada M. Analysis of cigarette demand in Argentina: the impact of price changes on consumption and government revenues. Salud Pública de México. 2017

increased to account for 87% of the price, that would maximize incremental tax revenues at US\$1.6 billion (an increase of 82.5% in revenue). In May 2016, the Ministry of Finance increased the excise taxes on cigarettes resulting in the total tax share in price increasing from 68.6% to 79.1%. This was well below the revenue maximizing tax rate of 87%. The simulation model predicted incremental revenue of US\$1 billion per year based on the new tax share in price of 79.1%. Actual tax revenues increased in line with expectations. For the 8 months between May and December 2016, incremental revenues were US\$ 716 million, while for the full year 2017, incremental revenues were \$1.1 billion. Both the simulation model and the actual results show that Argentina was on the upward sloping portion of the Laffer curve, and could still increase tobacco taxes substantially before experiencing declines in revenues.

The tobacco industry argues that some countries are already beyond the turning point of the Laffer curve in terms of their tobacco taxation. Furthermore, they argue that substituting to cheaper brands and illicit cigarettes will result in reduced revenues. In general, these arguments lack validity based on actual and recent revenue data.

Even in very high-taxed countries, many of which are experiencing dramatic declines in tobacco use, we continue to see increases in revenues as a result of tax increases. For example, Australia has taken some of the most aggressive measures in recent years to reduce smoking, including being the first country to adopt plain packaging of tobacco products alongside large graphic health warnings. It also has some of the highest excise tax rates in the world (3rd in US Dollars based on the most popular brand) and has regularly increased taxes in recent years.¹¹ Significant nominal excise tax increases, well above inflation rates, occurred in 2015 and 2016 (13.0% and 13.6%, respectively), in addition to regular affordability based

adjustments in March of each year (1.6% and 1.2% in 2015 and 2016, respectively). Excise revenue increased by 4.1% and 10.9% in 2015 and 2016, respectively.¹²

Conclusions

The argument that an increase in the excise tax on tobacco will reduce excise tax revenue is contradicted by an overwhelming body of empirical evidence. Furthermore, economic theory supports tobacco tax increases since demand for tobacco is relatively inelastic and because taxes do not account for the whole price. This policy brief has shown examples of countries where increases in excise tax rates have resulted in increases in excise tax revenues. It has also shown that in countries where smoking is declining, often as a result of successful tobacco control policies, tax revenues continue to increase in response to tax increases. This includes countries that have some of the highest tobacco tax rates in the world. While the theoretical construct of the Laffer curve is correct, there are several examples of countries, from a variety of economic backgrounds, tax rates and tax structures, that continue to experience increases in revenues in response to tax increases, even in the face of substitution to cheaper, less-taxed and illicit cigarettes. Rather, the examples show that countries are on the upward sloping portion of the Laffer curve and thus will continue to experience increases in revenues as a result of increases in tobacco tax rates.

In summary,

- Increases in tobacco taxes, that result in increases in prices reduce tobacco use but also increase tobacco tax revenue.
- Substitution to cheaper, less taxed and illicit brands can undermine revenue increases, but revenues will increase nonetheless. Governments can ensure that tax structures are well designed to mitigate these challenges.

- The Laffer curve proposes that there is a tax rate at which tax revenue is maximized; increases in tax rates cause increases in revenue until this point, beyond which increases in tax rates cause declines in revenue.
- Examples presented show that many countries are still on the upward portion of the curve meaning that increases in tobacco tax rates will result in increases in revenues.

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Suggested Citation

Blecher E. Increasing Tobacco Taxes Significantly Will Increase Revenues. A Tobacconomics Policy Brief. Chicago, IL: Tobacconomics, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago, 2018. www.tobacconomics.org

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This Policy Brief is funded by Bloomberg Philanthropies.

About Tobacconomics

Tobacconomics is a collaboration of leading researchers who have been studying the economics of tobacco control policy for nearly 30 years. The team is dedicated to helping researchers, advocates and policymakers access the latest and best research about what's working—or not working—to curb tobacco consumption and the impact it has on our economy. As a program of the University of Illinois at Chicago, Tobacconomics is not affiliated with any tobacco manufacturer. Visit www.tobacconomics.org or follow us on Twitter www.twitter.com/tobacconomics.