

Table 18**Relative Merits of Various Cigarette Price Measures**

Pricing Metric	Advantages	Disadvantages
Marlboro	Standard product across countries.	May not be representative of the market as a whole.
Most Sold	Reflects the price of the product which has the highest volume within a country.	Variation in product specification (e.g., length) among different brands may misrepresent true consumption and affordability.
Cheapest Legal Cigarettes	From a public policy perspective, this is the most relevant price benchmark, as the cheapest legal cigarette both indicates the lowest tax level paid as well as the cigarettes with the highest affordability, which is relevant for public health	Specific brand varies widely by country. Doesn't consider non-cigarette tobacco consumption (such as bidis in India); may skew PRI upwards.
Weighted Average Price (WAP)	Most representative reference point for the total cigarette category; not brand dependent; will accurately reflect price movements as well as consumer up or down-trading.	May be difficult to measure, as it requires sales volume information per price point. Products are rarely directly comparable, and may present additional difficulties identifying true consumption and affordability.

The Blecher and van Walbeek PRI analysis considered the price of either Marlboro (or its closest equivalent) and the most popular local brand of cigarettes, with the cheapest pack being chosen for analysis.¹⁴⁹ Furthermore, the retail outlet was also accounted for—whether the cigarettes were sold in a high-volume supermarket or a mid-price retail outlet.

While adjustment for exchange rates is not needed for a PRI measurement, if particular countries experience hyperinflation, then the data for cigarette prices may not align well with GDP. As a result, countries with hyperinflation may require some data adjustments for comparison purposes, or may need to be excluded completely if the data are too volatile. Also, as previously mentioned, although

GDP per capita has the appealing feature of data availability, it fails to consider the distribution of incomes within an economy. As such, PRI may inaccurately measure affordability in the presences of high income inequality. Therefore, it is important for policymakers to ensure the accuracy of PRI by first obtaining an estimate of the Gini coefficient—as the Gini coefficient moves away from 0 and approaches 1, the degree of income inequality is worse. Prior to introducing policy changes that increase the price of cigarettes, policymakers should consider measuring PRI for the lower income brackets to prevent the income gap from further widening. This is especially true for countries where the smoking prevalence is higher in lower income brackets relative to higher income brackets.

ii. The Minutes of Labor Required to Purchase a Pack of Cigarettes

Similar to PRI, the amount of labor required to purchase cigarettes is a measure of affordability, and a relevant reference for policymakers and consumers alike. Minutes of labor required to purchase a pack of cigarettes is a useful metric, as it provides a more micro, “day to day” glimpse into consumer’s purchasing decisions.

Calculating the weighted average of net hourly wages from a UBS survey conducted every three years¹⁵⁰ and the cigarette price data from the cost of living survey conducted by the EIU,¹⁵¹ Guindon et al. compute the average number of working minutes needed to buy either a pack of Marlboro cigarettes (or an international equivalent) or a pack of local brand cigarettes for the average earner in the UBS survey.¹⁵² As such, cigarettes are less affordable as the minutes required to purchase one pack of cigarettes increases. The minutes of labor required to purchase a pack of cigarettes can be formalized by the following equation:

$$\text{Minutes of Labor}_{\text{pack}} = (\text{RSP}_{\text{pack}} / \text{Wage}_{\text{weighted average, (net hourly, 12 occupations)}}) * 60$$

In contrast to the broad affordability measure, PRI, the minutes of labor method, as applied by Guindon et al., is much narrower since it uses net hourly earnings across 12 occupations rather than GDP per capita.¹⁵³ It should be noted that the UBS data is less representative of average earnings within a country since the data is collected from cities alone, which tend to be commercial centers where wages are often higher relative to wages in rural areas. Furthermore, al-

though some of the occupations in the UBS survey are unskilled, a disproportionate amount of the occupations are in fact skilled, which likely does not represent the countries as a whole, especially developing countries. In countries where wages differ significantly between rural and urban areas, and where the population does not match the same composition of skilled to unskilled workers as UBS, estimates for affordability based on the data from the UBS survey will be biased toward cigarettes appearing more affordable than they really are.

iii. The Percentage of Daily Income Required to Purchase a Pack of Cigarettes

The percentage of daily income required to purchase a pack of cigarettes was developed by Kan as a measurement of cigarette affordability that accounted for income distribution within the UBS¹⁵⁴ survey data.¹⁵⁵ Rather than considering the weighted average of net earnings, Kan instead focuses on the average of the seven least-paid net daily wage occupations of the UBS survey, which highlights the affordability of cigarettes for lower income households.¹⁵⁶ Cigarette prices are constructed in the same manner for all three affordability measures—that is, through EIU’s data on the international cost of living. As the percentage of daily income required to purchase a pack of cigarettes rises, the less affordable cigarettes are for the seven least-paid occupations surveyed by UBS. Kan’s affordability measurement can be specified as the following equation:

$$\text{Percentage of Daily Income}_{\text{pack}} = (RSP_{\text{pack}} / \text{Wage}_{\text{average, net daily, 7 least-paid occupations}}) * 100$$

Although Kan’s focus on the seven least-paid occupations in the UBS survey helped to eliminate some bias due to income disparities, many of the same problems remain as a result of the narrowness of the UBS survey data. As previously discussed with Guindon’s minutes of labor estimate, the income measure likely contains measurement bias due to the gap between rural and urban wages, as well as the overstated presence of skilled to unskilled workers in the UBS survey. As such, the concern of overestimating the affordability of cigarettes remains present in Kan’s affordability measure.

iv. Measuring Affordability over Time

The methodologies above provide estimates for one particular snapshot in time, rather than a dynamic measurement of affordability trends over time. The compounded growth rate of the cigarette affordability estimate is one method to analyze cigarette affordability trends over time,¹⁵⁷ but may be invalid in the presence of outliers (fortunately, there are relatively simple econometric solutions if this is a concern).

Even simpler, Guindon et al.¹⁵⁸ analyze the trend of cigarette affordability by considering the annual real percentage changes in cigarette prices, along with the annual changes in minutes of labor required to purchase one pack of cigarettes, which controls for changes in income levels as well.

B. Tobacco Excise Taxes and Regressivity

As one of Adam Smith's four maxims of taxation, equity continues to be a crucial consideration for policymakers to ensure that the tax burden does not disproportionately fall onto individuals in the lower income brackets.¹⁵⁹ The key indication of whether a tax policy is "fair" is whether the overall net effect of the tax shifts the income distribution toward equality. If the tax burden falls mostly on higher income individuals, then the after-tax income of those individuals moves closer to the after-tax income of poorer individuals, or using the information from the previous subsection, a tax that falls heavily on higher income individuals will imply that the Gini coefficient is moving closer to zero, which is total equality. The converse is also true, a tax that burdens the lower income brackets disproportionately, and thus, further reduces relative after-tax income, will indicate that the Gini coefficient is moving toward one, which is total inequality.

As the after-tax income gap increases between poorer and wealthier segments of the population due to a disproportionately burdensome tax, the tax is said to be regressive since it increases in the degree of inequality i.e., Gini coefficient moves toward one. In any case, as Stiglitz notes, a regressive tax occurs when lower income individuals pay a higher percentage of income toward the tax relative to higher income individuals.¹⁶⁰ For tobacco excise tax policy, this becomes a concern if the prevalence of smoking is higher for lower income

individuals and if the price elasticity of tobacco demand is inelastic for lower income individuals. This becomes especially problematic because increases in excise taxes can further diminish the standards of living for individuals in lower income brackets—the choice may come down to forgoing proper nutrition in order to maintain current tobacco consumption, which is certainly not an outcome policymakers would attempt to achieve.

In general, regressivity does impact countries differently due to smoking prevalence variations not only among the different income distributions within countries, but across different countries as well. For instance, Peck observes the following: (1) in developed countries, the smoking prevalence of lower income groups is higher than the smoking prevalence of higher income brackets; and, (2) the overall smoking prevalence is higher in developing countries relative to developed countries, but tobacco consumption also tends to rise in response to income increases in developing countries.¹⁶¹ Therefore, issues of regressivity can be both domestic (i.e., higher smoking prevalence among lower income brackets within a country) and international (i.e., higher smoking prevalence in developing countries relative to developed countries) in nature. Due to these unique, country based characteristics, tobacco tax policy will need to be tailored to individual country circumstances, as an internationally harmonized tax approach is likely to have negative effects upon equity and regressivity in individual countries. The remainder of this subsection will discuss how to determine whether an excise tax is regressive, as well as the theoretical considerations for a tax's marginal value.

1. DETERMINING WHETHER A TAX IS REGRESSIVE

There are two aspects of equity when reviewing taxes—horizontal and vertical equity. Horizontal equity compares whether the amount of tax paid is the same for every individual in a given income group. For example, if two people earn \$20,000 annually and each pays the same amount in taxes, then the tax is horizontally equitable. Tobacco taxes are horizontally equitable when a large proportion of the income group consumes tobacco. In most countries, a majority of the population does not smoke. Therefore, tobacco taxes are not horizontally equitable, as smokers pay the tax and non-smokers don't.

A tax is vertically equitable when individuals in different income groups are equally burdened by the tax, which implies that as income rises, the monetary amount of the tax paid also increases.¹⁶² Tobacco taxes tend to be vertically inequitable when the smoking prevalence in lower income groups is relatively higher and/or when the daily smoking rate does not increase in proportion with income. Both of these conditions are usually the case, as we can also see from the fact that in many countries, the income elasticity of tobacco products is smaller than 1.

Therefore, tobacco taxation breaks both rules of vertical and horizontal equity. This may not be a major policy issue as long as tax levels are modest compared to income levels, but as countries have increased taxes on tobacco substantially over recent decades, equity issues will require more attention of policy makers.

To determine whether a tax is regressive, it is necessary to analyze how the ratio changes as income changes. Formally, the amount of tax as a share of income for each individual is represented as the following ratio, where t is the unit tax, Q is the quantity of tobacco purchased, and I is individual income:¹⁶³

$$\text{Amount of Tobacco Excise Tax Paid as a Share of Income} = t * Q / I$$

To demonstrate the amount of tax paid as a share of income, assume the annual consumption of tobacco is 100 packs of cigarettes and that there are two individuals' incomes to consider—Joe's annual income of \$10,000 and Fred's annual income of \$20,000. Prior to a specific excise tax of \$2 levied on a per pack of cigarettes basis, the specific excise tax was \$1 per pack, indicating a \$1 tax increase. The resulting shares of income required to pay the tax on 100 packs of cigarettes is summarized below in Table 19. These results indicate that Joe's income share increases by 1 percent after the excise tax increase, while Fred's income share increases by only 0.5 percent after the excise tax increase, thus implying that the excise tax is regressive. Assuming that both Joe and Fred have similar preferences, the excise tax on cigarettes will be regressive since Joe will require a greater proportion of his income to pay the tax.

Table 19**Income Share Required to Pay Tax on 100 Packs of Cigarettes**

	Joe	Fred
Annual Income (in \$)	10,000	20,000
Quantity of Cigarette Packs Demanded	100	100
Old Specific Excise Tax (\$, Levied Per Pack of Cigarettes)	1	1
New Specific Excise Tax (\$, Levied Per Pack of Cigarettes)	2	2
Old Tax Income Share (percent, Per 100 Packs of Cigarettes)	1	0.5
New Tax Income Share (percent, Per 100 Packs of Cigarettes)	2	1

Generally, if the ratio shown on the previous page between the amount of taxes paid versus income shrinks as income increases, then the excise tax is regressive since the amount of the excise tax paid declines as income rises. This occurs when the implied income elasticity of tobacco demand is between zero and one, which indicates that tobacco is a normal necessity good.¹⁶⁴ In this scenario, two key points are implied: (1) that the income share of tobacco taxes paid is decreasing as income increases (i.e., the tax is regressive); and, (2) that the total monetary amount of tobacco taxes paid increases as income rises (i.e., the tax is progressive).

The second argument, that tobacco consumption is more income-elastic at lower income levels, and therefore tobacco taxation is progressive, while technically accurate, misrepresents the axiomatic intent of progressive taxation. Even though lower income consumers are spending less money on tobacco products, they *are not* better off as a result of such a tax increase. To illustrate, imagine you have a strict \$100 budget with which to purchase groceries. You make your purchasing decisions, and, having spent exactly \$100, you leave the store with your basket of goods—however, as you leave, you're given the option to exchange your existing basket for a new, alternative basket of goods. If you exchange your existing basket for this new basket, by definition, the new basket must be worth more than \$100—otherwise, you would have chosen those same goods initially. Similarly, if the price of any good in the basket increases, the consumer must reduce consumption of at least one good in the basket, making them intrinsically worse off. From a welfare perspective, price increases *cannot* improve a consumer's utility; labeling

cigarette excise taxation as progressive artificially ignores the welfare damage caused by its implementation.

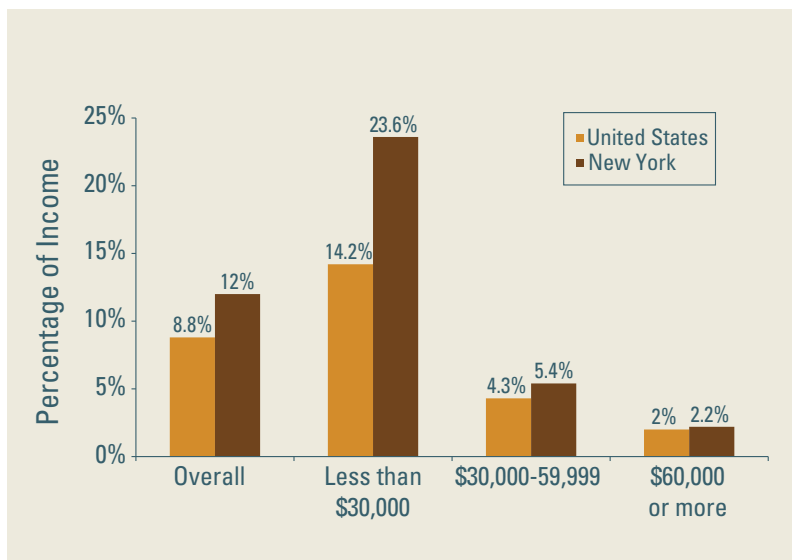
Related to vertical equity, progressive taxation reflects the fundamental belief that the tax burden should be directly related to income and that those with lower incomes should bear less of the costs of taxation. Ignoring the welfare loss by those who have been priced out of the market due to higher cigarette prices (indicated by higher income elasticity of demand) belies the true costs of such a tax: while the monetary costs may be progressive, the welfare costs are strongly regressive. If the income elasticity of tobacco demand is less than zero, which implies that a percentage increase in income yields a percentage decrease in tobacco demand, then tobacco taxes are regressive, at least on average, and cause further distortions to the income distribution.

The analysis above ignores the fact that many taxes other than tobacco taxes exist in the economy, and while the tobacco tax burden may be regressive, it does not imply that the total tax burden is regressive.¹⁶⁵ In fact, taxes that disproportionately fall on higher income brackets will potentially offset the tobacco tax burden on lower income brackets. As Peck observes, “*the tax system can be adjusted in order to ameliorate the burden of tobacco taxes...for example, offset the impact of higher tobacco excise taxes by lowering a tax on kerosene, so long as the pattern of kerosene use is similar to patterns of tobacco use*”.¹⁶⁶

Despite the fact that general equilibrium effects are often ignored, empirical evidence from the U.S. and from New York in 2010–2011 suggests that cigarette excise taxes tend to be regressive.¹⁶⁷ Although the percentage of income spent on cigarettes for smokers is 8.8 percent overall in the U.S., for smokers earning less than \$30,000 annually, this percentage is 14.2 percent overall.¹⁶⁸ This disparity is even more pronounced when comparing data from New York state, which has the highest cigarette excise tax (\$4.35), where smokers spend 12 percent of their income overall and 23.6 percent for smokers earning less than \$30,000 (Figure 11).¹⁶⁹

Figure 11

Percentage of Annual Household Income Spent on Cigarettes, Overall and by Income in the United States and New York¹⁷⁰



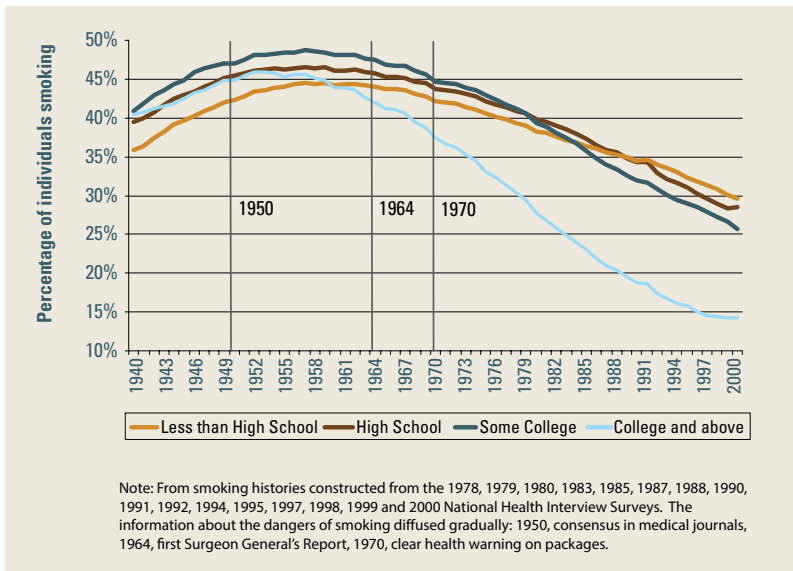
Additionally, U.S. data suggests that smoking prevalence has a very strong correlation with both education and income (which tend to be correlated themselves), and is the primary reason tobacco taxation tends to be regressive. For example, in 1995, U.S. smoking rates for college graduates (13.8 percent) are less than half the rate of either high school graduates (28.1 percent) or those who did not graduate from high school (28.2 percent). Similarly, smoking prevalence for those with incomes below \$15,000 is significantly higher than for those with incomes above \$50,000 (28.8 percent and 17.2 percent, respectively).¹⁷¹

Furthermore, the gap seems to be widening: in 1940, smoking prevalence for all education levels hovered close to 40 percent (ranging from 35.8 percent for those with less than a high school degree, to 40.8 percent for those with some college education).¹⁷² By 2000, however, there was a clear relationship between educational achievement and smoking prevalence: college graduates now had smoking prevalence rates of 14.2 percent, while each other group had rates

between 25 percent and 30 percent, refer to Figure 12.¹⁷³ Repeatedly, the prevalence of current smoking in the U.S. has been shown to be greatest among persons in—and independently associated with—working class jobs, low educational level, and low income.¹⁷⁴ Attempts to quit showed no socioeconomic gradient, while success in quitting was greatest among those with the most socioeconomic resources.¹⁷⁵

Figure 12

Prevalence of Smoking by Education Category in the United States, Age 25 and Above, 1940 to 2000¹⁷⁶



Source: <http://www.aeaeb.org/assa/2006>

2. THEORETICAL CONSIDERATIONS FOR DETERMINING A TAX'S MARGINAL VALUE

Although the discussion of average regressivity is important, analysis is incomplete without also considering the marginal impact of taxation shifts i.e., accounting for price elasticity of tobacco demand. While the example of Joe and Fred highlighted regressivity with respect to income in Subsection 1, it assumed consumer preferences, and therefore price elasticity of demand, for both individuals were identical and constant—which both theory and practice suggest is

largely unrealistic. For example, assume that Joe pays \$200 in tobacco taxes and still earns \$10,000 annually, while Fred pays \$300 in tobacco taxes and still earns \$20,000 annually. Therefore, Joe pays 2 percent of his income in tobacco taxes while Fred only pays 1.5 percent, suggesting that tobacco taxes are regressive on average, see Table 20 below.

Table 20

	Joe	Fred
Income	\$10,000	\$20,000
Price Elasticity of Demand	-1	-1
Total Cigarette Taxes Paid	\$200	\$300
(As a Percentage of Income)	2.0%	1.5%
Verdict	Regressive	

However, suppose that the price elasticity of demand for Joe and Fred are no longer identical. For example, Joe will reduce his consumption of tobacco products so that he continues to pay \$200 in tobacco taxes, regardless of the impact on his tobacco consumption, and Fred will maintain his current consumption of tobacco products, regardless of price increases. If the government imposes a 10 percent increase on tobacco excise taxes, Fred will now pay \$330 in tobacco taxes to maintain his level of tobacco consumption, but Joe will continue to pay \$200 by reducing his consumption. Therefore, the change in taxes paid has increased for the wealthier individual, Fred, while the change in taxes paid for Joe is zero.

Table 21

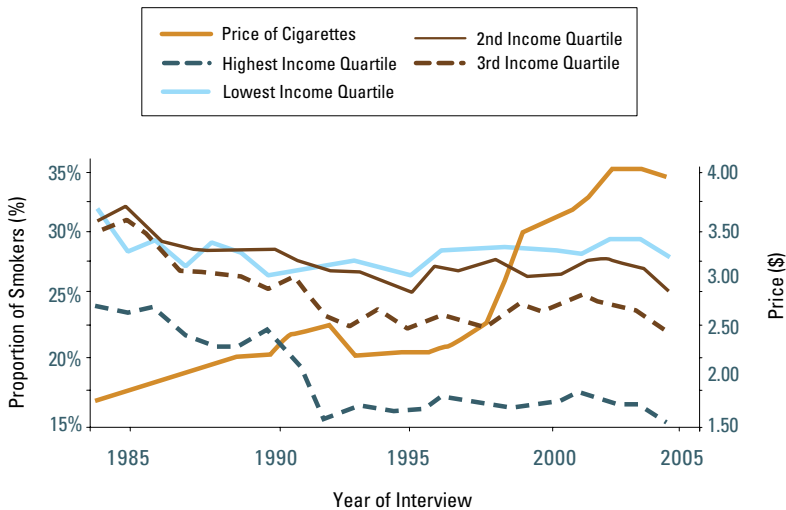
	Joe	Fred
Income	\$10,000	\$20,000
Price Elasticity of Demand	-1.0	0.0
Total Cigarette Taxes Paid	\$200	\$330
(As a Result of Tax Increases)	\$0	\$30
Tax as a Percentage of Income	2.0%	1.6%
Marginal Tax Paid (as a percentage of income)	0%	0.15%
Verdict	Progressive	

As a result, regressivity on the margin is reduced since Fred's proportion of taxes paid relative to income has increased. This example illustrates that a tax increase can distort consumer choice—Joe is forced to decrease his tobacco consumption, while Fred is not. However, while this example of a “progressive” excise tax increase is correct in the mathematical sense, it is not correct in the spirit of the definition as it describes a situation where a tax increase prices some lower incomes out of the market such that those individuals pay zero tax. Furthermore, given that many smokers do have inelastic demand preferences, a majority of these smokers will not only continue smoking, but will also pay more in excise taxes as a consequence. If smokers tend to be in the lower income brackets, such as evidenced in Figure 13, then excise tax increases will be regressive.

Even though a cigarette tax itself may be regressive, a common argument is that a cigarette tax *increase* will be a progressive measure: due to an assumed more elastic cigarette demand among lower income groups, a price increase is thought to result in those groups discontinuing tobacco consumption at higher rates, such that the majority of tax revenue comes from higher-income individuals. Empirical evidence based on the U.S. doesn't support this conclusion, as increases in tobacco prices are becoming less and less of an effective policy tool,¹⁷⁷ and are now beginning to impose a disproportionate burden on lower-income consumers.¹⁷⁸ The study from Franks et al (2007) finds that the smoking prevalence gap between the lowest income bracket and all other income brackets has increased to 7 percent, while the average cigarette pack price increased (due mainly to federal and state excise tax increases) from \$2.24 (1984 to 1996) to \$3.67 (1997 to 2004) in the U.S., which is nearly a 64 percent increase (Figure 13).¹⁷⁹ The rise in U.S. cigarette excise taxes along with the growing smoking prevalence gap implies that cigarette taxes have become more regressive in the U.S.¹⁸⁰

Figure 13

Proportion of Smokers, by Cigarette Price, Income Quartile, and Year: United States¹⁸¹



Note: From smoking histories constructed from the 1978, 1979, 1980, 1983, 1985, 1987, 1988, 1990, 1991, 1992, 1994, 1995, 1997, 1998, 1999 and 2000 National Health Interview Surveys. The information about the dangers of smoking diffused gradually: 1950,

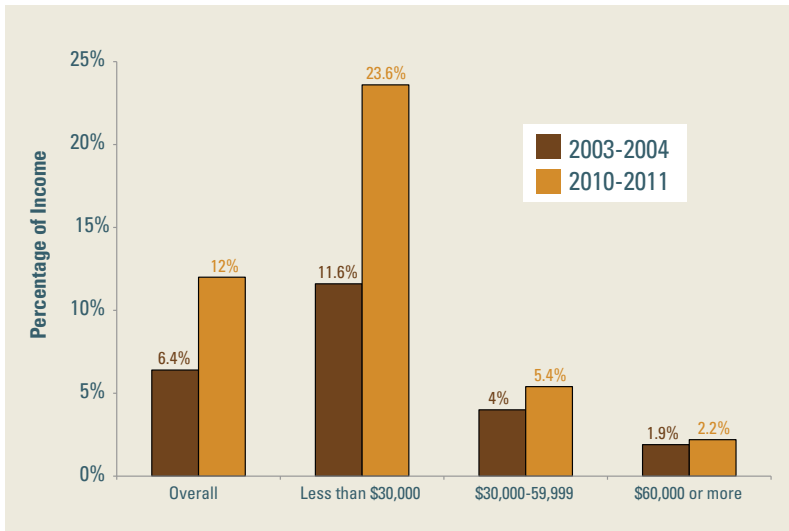
Additionally, among low-, middle-, and high-income groups in the U.S., total cigarette price elasticity has been estimated at -0.37 , -0.35 , and -0.20 , respectively—not *nearly* sufficient dispersion to result in the type of tax progressivity typically described.¹⁸² Furthermore, in the same income groups, taxes absorb 1.9 percent of income for the median smoker in the lowest income tercile, 0.7 percent in the middle income tercile, and 0.3 percent in the high income tercile;¹⁸³ the higher prevalence of cigarette smoking among the low income smokers dwarfs the effect of their somewhat greater price sensitivity. These results also imply that the share of income going to cigarette taxes in 2003 rose by 2.5 percent, 1.1 percent, and 0.6 percent for low, middle, and high income smokers, respectively, as a result of a \$1 per pack increase (in 1997 dollars).¹⁸⁴ Cigarette tax increases are neither progressive nor a movement toward progressivity; pol-

icymakers, even those who are paternalistic, must acknowledge that high cigarette taxes could curtail other factors that support health, such as safe housing and nutritious food, for smokers and their families.

Furthermore, empirical evidence using data from New York State supports the claim that excise tax increases are indeed regressive.¹⁸⁵ As illustrated in Figure 14, between 2003–2004 and 2010–2011, the percentage of smokers’ incomes spent on cigarettes increased from 6.4 percent to 12 percent overall, and from 11.6 percent to 23.6 percent for smokers with incomes less than \$30,000, as the state excise tax increased from \$1.50 to \$4.35.¹⁸⁶ As tobacco taxes represent the majority of the price of cigarettes, the increasingly regressive effect is clear.

Figure 14

Percentage of Annual Household Income Spent on Cigarettes, Overall and by Income in New York¹⁸⁷



This trend, while decidedly restricted to developed countries, is not limited to the U.S.: in France, between 2000 and 2007, smoking decreased by 22 percent among executive managers and professionals, by 11 percent among manual workers, and did not decrease among the unemployed; the falling-off of smoking initiation for manual workers occurred later and was less marked than it was among executive managers and professionals.¹⁸⁸ In fact, in 2005, 15 percent of French smokers devoted at least 20 percent of their equivalized household income to the purchase of cigarettes, versus only 5 percent in 2000. As stated by Peretti-Watel et al., “*it is therefore likely that the increase in cigarette price contributes to pauperizing a fringe of the smoker population...in other words, increasing the cigarette price could accentuate social inequalities*”.¹⁸⁹

Canadian data further demonstrate that smoking prevalence declines as education increases and that tax increases likely disadvantage low socioeconomic groups in comparison to high socioeconomic groups.¹⁹⁰ In India, the price elasticity for bidis was found to be the highest in richest quintile (-0.511) and lowest in the poorest quintile (-0.247), while, for cigarettes, the lowest elasticity was in the middle quintile (-0.082)¹⁹¹ and highest in the richest quintile (-0.280) – which indicates that tax increases will be more effective in reducing smoking among higher incomes, such that tax increases in India have a regressive impact.¹⁹²

In order to understand the impact of regressivity with respect to tobacco taxes, policymakers must estimate the price elasticity of tobacco demand for different income brackets of the population. The more inelastic the price elasticity of tobacco demand is for lower income consumers relative to higher income consumers, the more regressive tax increases will be on the margin since the change in taxes paid for lower income consumers will be larger than for their higher income counterparts.

i. Theoretical Considerations for Indexing Tobacco Excise Tax Increases to the Growth in Wages

Another interesting aspect of tobacco excise tax policy, as it relates to affordability and regressivity, is recent discussion to index specific excise tax increases to the growth in wages (generally, average

wages), rather than to consumer price indices. In order to prevent the erosion of specific excise taxes in real terms over time, policymakers often index specific levels to CPI. Rather than pegging specific excise tax increases to CPI, policymakers with both fiscal and public health objectives may instead opt to index excise tax increases to wages, especially if wages grow faster than prices, as Australia has recently done.

From an affordability standpoint, assuming no other excise tax hikes are introduced, increases indexed to wages rather than prices would keep tobacco affordability constant within a country. However, while indexing to wages preserves a certain level of affordability within a country, it is important to remember that relative affordability vis-à-vis other countries, especially bordering nations, is a crucial policy consideration in order to avoid spurring illicit trade and cross border shopping.

Indexing tobacco excise tax increases to wage growth may have different effects on different income groups, depending on the measure of wages that is used. Furthermore, wages vary dramatically not only across different sectors, but within sectors. Therefore, the average wage growth may in fact further disadvantage poorer consumers.

VI. STRUCTURE OF TAXATION

Excise taxes come in two main forms—specific and *ad valorem*.¹⁹³ A specific excise tax is a fixed monetary amount per unit (e.g., pack, weight, carton, piece) of tobacco products, whereas an *ad valorem* excise tax is a percentage tax on the price of each unit.¹⁹⁴ In both cases, however, there is a wedge created between the amount paid by consumers and received by producers. The consumer will face prices that are higher than what the producer will receive for the good, and the government collects this difference as tax revenue.

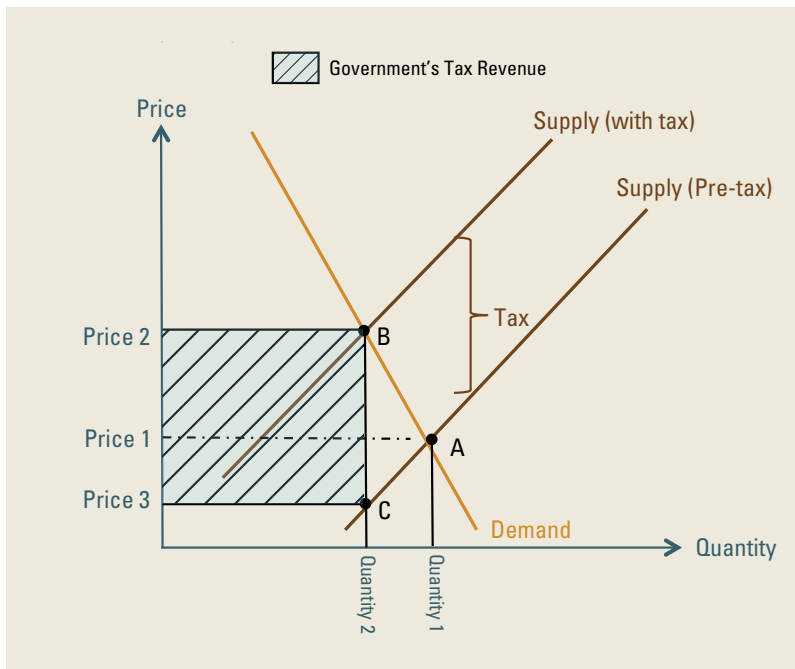
A. Illustrating Government Tax Revenue with Supply and Demand Under a Specific Excise System

Figure 15 (below) demonstrates the government's tax revenue under a specific tax. Prior to the introduction of a tax, the market is in equilibrium i.e., supply equals demand at Point A, where equilibrium price and quantity are Price 1 and Quantity 1, respectively. Once the tax is introduced, the price consumers must pay is Price 2, whereas the price

suppliers receive is Price 3. Since the quantity demanded falls when price rises, producers must sell their goods at the price for the new level of quantity demanded, which is at Point C. The government's tax revenue is calculated by multiplying quantity sold (Quantity 2 in this case) by the tax received per good (which is Price 2 minus Price 3)—the striped rectangle in Figure 15 thus represents the government's tax revenue.

Figure 15

Government Tax Revenue



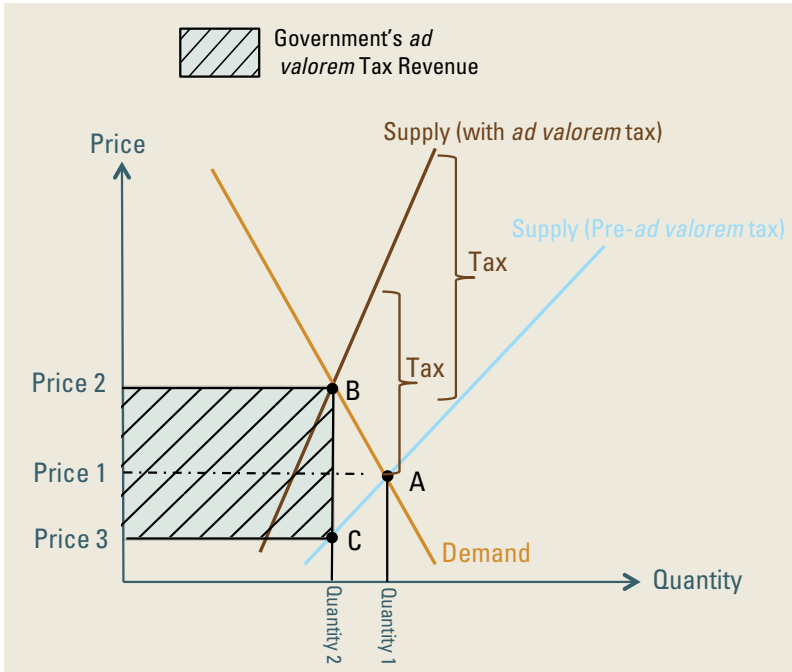
B. Illustrating Government Tax Revenue with Supply and Demand Under an *Ad valorem* Excise System

Because an *ad valorem* tax is a percentage tax on the price of each unit, it does not shift the supply curve upward in a uniform way; rather, an *ad valorem* tax will impose a pivotal shift in the supply curve, which is demonstrated in Figure 16 on the next page. As be-

fore, Point A in Figure 16 is the initial market equilibrium. After an *ad valorem* tax is imposed, the price consumers must now pay is Price 2, which reduces the quantity demanded to Quantity 2—this is summarized at Point B. The price that suppliers will receive is Price 3, since that is the price that corresponds with the new quantity demand at Quantity 2 (represented by Point C). As before, the striped rectangle represents the government’s tax revenue—in this case, from an *ad valorem* tax. These illustrations are of course highly theoretical, and apply to a situation of a homogeneous product – i.e., where all cigarettes are identical and sold at the same price.¹⁹⁵

Figure 16

Government *Ad valorem* Tax Revenue



C. Comparison of the Specific and *ad valorem* Excise Taxes

In reality, tobacco products are not homogeneous goods, all sold at the same price. Cigarettes and other tobacco products are available

in different price and quality categories, and this reality needs to be considered when comparing the advantages and disadvantages of different tax structures.

There are many factors that policymakers must consider when choosing between a specific excise and an *ad valorem* excise. Broadly speaking, these factors can either pertain to the economic climate or to the overall goals of policymakers. Addressing the economic climate first, in countries where both current inflation and expected inflation are high, policymakers should consider an *ad valorem* excise tax structure since it will not need to be regularly adjusted for inflation (again, assuming the price of the taxed commodity follows inflation), or alternatively implement a specific excise tax that is automatically linked to the Consumer Price Index, thereby adjusting the tax for inflation. If tax administration is problematic (which can be the case in countries that lack sufficient funding and government infrastructure), then a specific excise tax policy should be pursued since it is far easier to evaluate the quantity of products than the value of the product.

Turning now to the public policy objectives of policymakers, specific taxes are clearly preferred over *ad valorem* taxes for a variety of reasons. From a government tax revenue perspective, specific taxes offer a more stable and controllable source of tax revenue, as government income does not depend on prices set by manufacturers or depend on consumer brand choice trends—as all cigarettes pay the same amount. If public health is an important objective for policymakers, then a specific excise is highly encouraged since they are based on the number of units sold, which implies that the tax burden is equal per unit. Given that a specific excise tax equalizes the tax burden across all cigarettes, it is more likely that the consumption of cigarettes will fall following a tax increase because consumers will not be able to offset a tax increase by down-trading to lower taxed cigarettes. In other words, consumer prices for cigarettes under a specific tax will rise equally across all cigarettes, whereas a tax increase under an *ad valorem* tax system will result in larger price increases for expensive brands compared to lower priced brands. Table 22 summarizes the main differences between the specific tax and the *ad valorem* tax.

Table 22**Comparison of the Specific Tax and the *ad valorem* Tax Systems**

Topic	Specific	<i>Ad valorem</i>
Tax Base	Per unit of product (number of cigarettes)	By value of the product (price)
Impact on Price Gap (Price difference between low and high priced cigarettes)	Maintains the price gap in monetary terms; reduces the price gap in percentage terms	Increases the price gap in monetary terms, and maintains the price gap in percentage terms
Government Tax Revenue under High Inflation	Maintained when adjusted by CPI	Maintained, no need to adjust based on CPI ¹⁹⁶
Ease of Tax Administration	Relatively easy; only the volume of the products needs to be determined	More challenging, the government monitors and audits retail or ex-factory prices continuously to assure that the correct amount of taxes is collected
Impact on Retail Price	Leads to overall higher prices, especially for cheaper products	Leads to lower prices; the tax system encourages manufacturers to focus competitive efforts on lower priced products that pay less tax

D. Alternate Excise Tax Structures

As previously mentioned, excise taxation can take structures other than specific excises or *ad valorem* excises. In fact, only very few countries in the world have implemented a pure specific or *ad valorem* system. Many countries have tiered systems, where the cigarette category is subdivided into a number of subcategories, each with its own set of tax rates. And very often, countries combine *ad valorem* and specific taxes in a number of ways. How these systems work in practice, and why countries have implemented such systems to address particular domestic concerns or objectives, is described in Part II.

VII. EARMARKING

A. Economic Explanation of Earmarking Taxes

An earmarked tax allocates a part or all of its tax revenue for spending on a specified government project or public service.¹⁹⁷ Perhaps the most distinctive characteristic of an earmarked tax is that it is implemented in order to protect certain expenditures from the regular political and government budget process—at least in theory. Earmarked taxes operate much like a user fee if the tax is levied to cover the cost of the benefits supplied, or much like a Pigouvian tax if the tax is levied to cover the costs associated with negative externalities.

The relationship between the tax source and the project it funds can be either strong or weak. If it is strong, then all or most of the tax revenue generated goes toward funding that particular expenditure, and that expenditure does not receive significant financing from other sources.¹⁹⁸ For example, in certain countries, residents pay a monthly sewage fee, which is based on the volume of water they use, in which case the beneficiaries are the individuals paying the earmarked tax. A weak relationship, on the other hand, implies that only part of the tax revenues are designated to the specific expenditure, for example when excise taxes on alcohol finance, in part, general education programs. The relationship with the earmarked tax and the expenditure fund is especially weak when the activity is supplemented by revenues from other sources.¹⁹⁹

Secondly, earmarking can be either specific or broad according to the types of activity on which the tax funds are spent. Under specific earmarking, funds are directed toward a particular service that is usually provided by a public organization, such as highway infrastructure maintenance. On the other hand, broad earmarking assigns the funds toward more general purposes, such as general healthcare. Furthermore, earmarking can be classified as either direct or indirect: a direct earmarked tax is levied in addition to any existing taxes (i.e., in addition to excise taxes) to fund a particular purpose, whereas an indirect earmarked tax earmarks a portion of the revenues from an already existing tax (such as an excise tax) in order to fund a particular purpose.

The general argument for placing an earmarked tax on a private good (i.e., a good that owners can prevent others from using) is to fund a public good (i.e., a good that is non-excludable). For example, it is not uncommon for governments to levy an earmarked tax in the form of an excise on a product, such as gasoline (which is a private good), as a close approximation for charging for road usage (which is a public good). The funds generated from the earmarked tax on gasoline then go into maintaining roads and highway infrastructures. However, in this example, the individuals taxed are those using and benefiting from the good or services provided. Earmarked taxes can also be levied on products, such as alcohol (again, as an excise), where the tax revenues are then directed to fund social programs that benefit individuals other than those who were taxed. In this respect, an earmarked tax functions much like a transfer payment from one group of individuals to another. As this book will further address in this section, earmarked taxes on tobacco products often fall into this second category.

Economists and public finance experts tend to have a negative view on the practice of tax earmarking.²⁰⁰ As Deran points out, earmarking can lead to the misallocation of resources, where too much funding is given to activities designated for earmarked tax revenues and too little is given to other projects.²⁰¹ Furthermore, earmarking can hinder efficient budgetary control, encroach on the discretion of the legislative and executive branches, and lead to budgets that are inflexible and rigid.

These conclusions are further validated by McCleary, who finds that, “*there are certainly grounds for skepticism*” about earmarked taxes since they carry their “*own set of potential problems*”, especially when questions are raised about

*“the adequacy of resources to meet sectoral needs, the adequacy of the institution designated to carry out the earmarked activity, lack of control or scrutiny over expenditure priorities or administrative outlays, and possible conflicts with the government’s ability to raise resources for the general budget or with other government policies.”*²⁰²

Put simply, activities funded by earmarked taxes will only by accident receive the “right” amount of budget – as the earmarked tax will

typically either generate more than objectively required (in which case the government is wasting resources) or not enough.

Despite these challenges, there are cases that may justify earmarking. For instance, proponents of earmarking argue that earmarked taxes can potentially protect high-priority programs, as well as dodge administrative and bureaucratic inefficiencies.²⁰³ But these same ends can also be achieved through the normal budgetary process and with the oversight of the Finance Minister.

Experience suggests that taxes are best organized within a government's general tax framework, with revenues and expenditures both overseen by the normal legislative or parliamentary assessment of public spending priorities.²⁰⁴

B. Application of Earmarking Taxes to Tobacco Products

Although earmarking has many economic arguments against it, the earmarking of taxes, and in particular tobacco taxes, is often seen as a politically attractive proposal. In order to fund tobacco control policies, governments (such as the U.S., Canada, Finland, Korea, and Portugal) began earmarking part of tobacco tax revenue in the late 1980s.²⁰⁵ There is little evidence as to how strong the linkage is between tobacco tax revenue and public expenditure or how much of these earmarked funds are actually spent on the dedicated activities. As Keen points out, "*the need to establish better links between the pain of paying taxes and the enjoyment of public spending remains nonetheless an important point*".²⁰⁶

Advocates of earmarked tobacco taxes argue that the earmarked funds can go toward policies that include disseminating information on tobacco to the public, counter-advertising tobacco products, funding healthcare costs, research, preventing youth tobacco use, funding access to cessation services, and reducing secondhand smoke exposure.²⁰⁷ Additionally, earmarked tax funds are often cited as a tool to correct for the regressivity of a tax increase by designating those funds toward providing smoking cessation products for individuals in lower income brackets.²⁰⁸ All of these government spending options, however, can also be achieved through the ordinary government budget process.

Most earmarked tobacco taxes around the world fund broad programs that are not related to reducing tobacco consumption, in which case the individuals paying the tax will not be the main beneficiaries of these funds. For example, in South Korea, earmarked tax revenues collected from alcohol and tobacco products are directed toward general education, despite the fact that there is no relationship between the consumption of these products and the demand for education—prompting Bird and Jun to draw the conclusion that these earmarked tax policies lack economic rationale.²⁰⁹ As a result of weak or soft earmarking, the transparency diminishes with respect to the true cost of public expenditure programs. Even more problematic, is that soft earmarking obscures any signals from the earmarked tax about public demand for the funded services provided by the expenditure programs.

As previously mentioned, earmarked taxes introduce rigidity into the budget decision making process since they prevent the government from reallocating funds in response to changes that may occur in the need or demand for public services. That is, earmarking can prevent policymakers from efficiently allocating funds based on priorities. In countries such as South Korea, where earmarked tax revenues account for almost 30 percent of total government tax revenues, the rigidity of earmarked funds could become cumbersome given that so much of the government revenue funds are not directly managed by the government.²¹⁰ For a comprehensive overview of global earmarking practices, please refer to Part II on earmarked tobacco taxes. Lastly, to the extent that countries have different earmarking policies, a tax increase to satisfy international harmonization requirements will have disparate effects across countries.

VIII. INTERNATIONAL TAXATION AND HARMONIZATION

A. Structuring the Institutional Frameworks

1. CENTRALIZED AND DECENTRALIZED GOVERNMENT SYSTEMS

One of the primary purposes of any government is to facilitate the efficient allocation of an economy's resources, by providing a distribution mechanism for wealth or public goods that the competitive market does not generate.²¹¹ Oftentimes, the distribution mechanism is via a

tax, in which one individual pays a compulsory amount to the government, who then either provides a transfer payment to another individual or provides a public good or service. The government can either take on a centralized or decentralized structure: when decisions on resource allocation and distribution are concentrated within a single agency, the system is said to be centralized.²¹² Conversely, a decentralized system is characterized by having many agencies that carry out the decision making process, which permits regional or local governments to absorb certain responsibilities of the central government. Historically, the precedent has been to centralize the government, since it was assumed that local governments could not handle the technical and administrative responsibility. Over the past several decades, however, this trend has reversed as local governments have become better equipped and less dependent on guidance from the central government.²¹³

Decentralization within a country can be on the political level, as well as the fiscal level. For instance, Scandinavian countries tend to be politically decentralized while also being fiscally centralized, while Germany for instance, is fiscally decentralized.²¹⁴ In general, federal states tend to have some level of decentralization with respect to tax administration, while unitary states tend to administer taxes centrally.²¹⁵ It is possible, however, for the decentralized government to administer taxes on behalf of the central government, and vice versa. Furthermore, whether the central government and local municipalities can independently tax the same base, otherwise known as tax base sharing, is important as well—in countries where only the central government has the authority, a fiscal imbalance between the local and central government can occur. Additionally, not every tax necessarily follows the same administrative framework—certain taxes may be administered in a different format from others.

There is also varying degrees of decentralization—for example, fiscal decentralization can either entail revenue sharing with the central government or taxing autonomy.²¹⁶ With respect to the fiscal institutional framework, there are four structures to consider, as introduced by Martinez-Vazquez and Timofeev (2005) and summarized in Table 23 below.

Table 23

Centralized Versus Decentralized Tax Administrations

	Type of Tax Administration	Tax Administration Independence	Shared Tax Administration**	Shared Tax Base	Tax Coordination	Case Studies
Single Centralized Tax Authority	Centralized	-	-	-	-	Unitary states: Sweden, Italy
Independent Tax Authorities at Different Levels of Government	Both	Independent	No	Sometimes	Not Generally	Federal states: Australia*, Brazil*, U.S.*
Mixed Models of Tax Administration	Both	Mixed	Yes	Yes	Sometimes	Federal states: Canada*, Spain, Switzerland
Fully Decentralized Tax Authorities	Decentralized	-	-	-	-	Rare: Germany*, former Soviet Union, China (pre-1994 Reform)

***Country Notes**

Australia: It is illegal in Australia to share the tax base. Canada: Canada has tax coordination with both centralized and decentralized governments. Brazil: The central government and decentralized governments share the tax base. US: The central government and decentralized governments share the tax base. Germany: The central government develops policy and financing, while decentralized governments are responsible for administering policies and revenue assignment.

***The question of whether tax administration is shared really asks whether some decentralized taxes are administered centrally, and vice versa.*

The institutional framework chosen for tax administrations in particular countries is motivated by economic, political, as well as historical factors—economic and political factors are explained and summarized below. While theoretical support exists for both levels of institutions, ultimately, each country should determine the appropriate system given its unique economic, political, and socioeconomic characteristics rather than applying these general theoretical considerations uniformly, see Table 24 on the following page.

Table 24

Economic and Political Factors for Tax Framework

Factor Category	Factor	Framework that Best Accommodates That Factor	Rationale	Study
Economic	Economies of Scale	Centralized	Central bureaucracies likely function closer to the technical production frontier, thus provide public goods and services more efficiently	Prud'homme (1995) ²¹⁷
		Centralized	Centralized tax administration likely has a lower average cost given its ability to invest in better technology and more qualified or trained staff.	Mikesell (2003) ²¹⁸
	Allocative and Tax Efficiency	Decentralized	Decentralized governments account for different local preferences and demand for local public goods and services, thus better achieving allocative efficiency.	Musgrave (1983) ²¹⁹ ; Oates (1972) ²²⁰ ; Tiebout (1956) ²²¹
		Decentralized	Decentralized governments are likely to administer taxes quicker, thus are also able to distribute their revenue toward public expenditures sooner.	Mikesell (2003) ²²²
		Decentralized	Decentralized tax administration avoids the problem of having to implement a national tax at the local level, since it designs and administers the tax structure with the local peculiarities in mind.	Mikesell (2003) ²²³
	Government Incentives and Competitiveness	Decentralized	Decentralized governments are incentivized to engage in horizontal and vertical competition in order to earn citizen approval. Horizontal competition occurs between local governments, usually via taxation; while vertical competition arises as local governments keeps checks on the central government.	Breton (1996) ²²⁴ , Salmon (1987) ²²⁵ ; Weingast (1995) ²²⁶
		Decentralized	Decentralized governments are closer to its constituents, therefore more incentivized to provide better quality.	Inman and Rubinfeld (1997) ²²⁷ ; World bank (1997) ²²⁸
	Macroeconomic Stability	Centralized	Decentralization can work when properly planned for, but it falls apart when expenditure responsibilities exceed revenue resources (thus service levels decline or local governments require more loans) and when revenues exceed expenditure responsibilities (reduces incentive for local governments to efficiently mobilize revenue). Macroeconomic stability is compromised when local governments cannot meet debt obligations and are forced to go bankrupt.	Tanzi (1996) ²²⁹ , Wildasin (1997) ²³⁰ ; Prud'homme (1995) ²³¹
		Either	Decentralization fails due to bad incentives and design, rather than any inherent issues to the system itself. For instance, when centralized governments decentralize in order to pass off fiscal imbalances from the central government, these imbalances are then observed locally rather than centrally (thus making decentralization to appear destabilizing).	Spahn (1997a) ²³² , Spahn (1997b) ²³³ ; Wallich (1994) ²³⁴

Table 24 (cont.)

Economic and Political Factors for Tax Framework

Factor Category	Factor	Framework that Best Accommodates That Factor	Rationale	Study
Economic (cont.)	Redistribution	Centralized	Central governments are more effective at redistribution.	Musgrave (1983) ²³⁵
		Centralized	Central governments are able to better redistribute wealth from wealthier regions to poorer regions. Thereby avoiding the localization of wealth, regional disparities, and the potential bias of local elites.	Prud'homme (1995) ²³⁶ ; Wilensky (1974) ²³⁷ ; Inman and Rubinfeld (1997) ²³⁸
	Resource Mobility	Centralized	Central government has better resource mobility to provide better public service delivery, financing, and redistribution.	Buchanan and Wagner (1971) ²³⁹
	Tax Enforcement and Compliance	Centralized	Generally, centralized governments can better ensure standardized tax enforcement, taxpayer monitoring, and can more easily handle large national and global businesses as well as legal litigation.	Mikesell (2003) ²⁴⁰
		Decentralized	Decentralized governments have more incentives to ensure that proper care is taken to collect and enforce its taxes, especially with respect to individuals who are taxable in multiple jurisdictions.	Mikesell (2003) ²⁴¹
		Decentralized	Decentralized governments are likely to be more successful to ensure taxpayer compliance in regions where taxes and paying taxes are a relatively new concept.	Burgess and Stern (1993) ²⁴²
Political	Good Governance	Centralized	Centralized governments are more likely to be consistent in their treatment toward taxpayers, regardless of where the taxable activities occur. Corruption is less likely to be an issue since tax authority employees can be rotated frequently.	Mikesell (2003) ²⁴³
	Regional Autonomy	Decentralized	There is a political rationale for decentralization in order to accommodate pressure for regional autonomy, which could otherwise lead to internal conflict in a country.	Litvack, Ahmad, Bird (1998) ²⁴⁴
	Political Accountability	Centralized	Tax authorities not only tend to have more discretion in decentralized governments, but they may be more likely to face pressure from local interest groups.	Prud'homme (1995) ²⁴⁵
		Decentralized	In a decentralized system, it is easier for taxpayers to hold the tax authority accountable since taxes and tax expenditures are easier to observe on the local level.	Mikesell (2003) ²⁴⁶

Broadly speaking, a decentralized tax system tends to excel when there is a high degree of regional variability, as its intrinsic flexibility allows for a much greater degree of legal customization and provincial autonomy. These advantages are further accentuated when a strong central government and institutions of law already exist, such that a more dispersed tax framework can “piggyback” on preexisting governmental authority and enforcement policies. Tax-specific policies will still need to be enacted, but they will benefit from an established culture of le-

gal compliance. Where a decentralized tax system tends to falter, however, is in the absence of such established governance—such a system tends to struggle with issues of stability, corruption, lack of enforcement and efficiency, primarily when those issues are already present to some degree.

Conversely, a centralized tax system tends to thrive in regions where firm governmental control is less established, as each centralized institution has the authority (and weight) of the full government behind it. Such a system is also able to take advantage of economies of scale, allowing for lower marginal and average costs for instituting and enforcing a given tax framework; the costs of compliance and enforcement tend to be similarly reduced as well. As mentioned previously, centralized tax framework tends to have an advantage in terms of macroeconomic stability and reduced corruption, as well as both resource mobility and wealth redistribution (by virtue of having a wider tax base from which to draw).

In terms of tobacco taxation, there is no individual tax framework that is universally ideal—both centralized and decentralized systems have their advantages, and the unique circumstances of individual countries dictate the most appropriate policy. As such, insistence from international organizations about the “right” way to institute tobacco taxation is misleading, counterproductive, and potentially damaging as well.

2. A THEORETICAL INTRODUCTION TO INTERNATIONAL TAXES

The discussion of tax administration, comparing centralized versus decentralized at the national level, has recently shifted to focus on tax administration at the international level. The key feature of international taxation is that the tax is levied at the international level, by some form of an international authority or institution, in order to allocate resources globally. Theoretically, the international organization would annually review its budget and decide how to distribute the funds collected through the international tax. This differs from international efforts to coordinate or harmonize national taxes, which is primarily done to reduce competitive distortion between countries and to avoid undesirable behavior that arises, in part, from tax differentials (i.e., illicit market activity, tax evasion, and tax avoidance). The coordination of international taxes is far less extreme since it doesn't necessarily encroach on national sovereignty

and it allows national governments, whose constituents are the taxpayers, to retain the tax revenues.²⁴⁷ The coordination and harmonization of taxes will be further addressed shortly.

The case for international taxation relies on many of the theoretical justifications used to support centralized taxation—mainly that international taxes can be used to correct international market failures (i.e., externalities),²⁴⁸ provide more predictable revenue flows for expenditure projects since they are compulsory, and redistribute resources such that income distribution is more equitable across countries.²⁴⁹ Specifically, international taxes have been proposed mainly in the context of global environmental concerns and financing development; therefore, the economics literature has thus focused on international taxes from this perspective. Despite the fact that international taxes were proposed to correct global problems, numerous concerns have been well-documented—such issues include “*the amounts they are likely to raise, the difficulties in administering them, the technical problems involved and the political viability of the proposals.*”²⁵⁰

Administering international taxes is difficult in the sense that there is currently no comprehensive or effective international finance system or fiscal body—there is no form of a centralized world government that can vote on international taxes, let alone levy or collect international taxes, or impose fines for evasion.²⁵¹ Even the international institutions that exist for development are not suitable for administering international taxes since too many agencies overlap with one another (i.e., multiplicity) and do not use a standardized, international approach to finance development.²⁵² Additionally, using the existing international institutions to administer an international tax is problematic in that it places significant resources in unelected international bureaucracies.²⁵³

Theoretically, for an international tax to work, a global treaty is needed that clearly defines the tax base, the tax rate, the method of collecting the tax, the distribution of revenues, the penalties for violation, the guidelines for establishing an international fiscal body, and the protocol for reviewing the treaty after a specified period.²⁵⁴ Furthermore, this global treaty would need to address whether it would establish a uniform policy across each country, or allow some deviations²⁵⁵ such as allowing for minimum and maximum tax rates, flexibility of tax rates, and differential tax rates between countries. However, at this

point, the global treaty then becomes more or less a harmonization of national taxes across the world rather than an international tax. Additionally, at the very least, an international tax must meet the same economic criteria that apply to the imposition of national taxes²⁵⁶—this point will be further addressed in following subsections.

Nevertheless, even with global approval of an international system of taxation, the design is hard to implement since issues arise over the “*compensation and appropriate distribution of revenues across nations.*”²⁵⁷

Another design issue arises in that an international tax must be coordinated with the equivalent domestic tax, otherwise significant tax differentials form and can result in production, consumption, or labor distortions.²⁵⁸ Furthermore, an international tax system requires compliance from every country; without it, country competitiveness becomes distorted by non-compliant countries evading taxes. As such, international taxes could be very expensive to administer, given the costs of compliance and enforcement.

Although some proposals are aimed at avoiding the difficulties of international tax collection by “decentralizing” tax collection (vis-à-vis leaving tax collection to the individual countries), the problem then becomes that countries have little incentive to dedicate scarce resources to ensure effective international tax collection since tax revenues generally do not proportionately accrue to the countries tasked with collecting taxes.²⁵⁹ While this issue can be alleviated by allowing a proportion of the receipts to be kept with the authorities collecting international taxes, it cannot be eliminated completely.²⁶⁰

Additionally, an international tax will be regressive if participating governments do not offset the international tax by changes in other domestic taxes or transfers, whereas “*if the tax proceeds are used to reduce other taxes, the adverse output effects of the tax would be significantly smaller than if they are used to finance higher government outlays.*”²⁶¹

However, the remedies for avoiding tax regressivity can either lead to declining national tax revenues (if tax cuts target unproductive economic activity) or to increases in government spending (if transfer payments increase)—yet do have the (remote) possibility of having a positive impact as well, if excise taxation led to cuts in income taxation, for example.

Furthermore, national governments can never truly offset the international tax given that the distribution of international tax revenues are not necessarily proportional to the amount of tax paid by that country—thus implying domestic taxpayers are to be burdened regardless of national policies to offset international taxes. To explain this, first consider why national governments can, at times, offset the cost of a domestic tax—which is mainly because the national government retains (or loses) the tax revenues spurred by a change in domestic tax.²⁶²

International taxes, however, are directed to and released at the discretion of the international fiscal body. As such, without having access to the accrued international tax revenues to offset the international taxes, there is no direct link between revenues paid and services received, violating the principle tenant of effective and efficient taxation.

Perhaps the largest obstacle to international taxation is the political feasibility—mainly, the issue of national sovereignty. The concern over international taxes stems from the potential formation of a world government, which differs from the intergovernmental, international organization of sovereign countries, such as the UN.²⁶³ A world government would essentially encroach upon national sovereignty such that countries would no longer have the sole jurisdiction to levy taxes upon their citizens.²⁶⁴ Although some proposals have suggested removing the compulsory aspect of an international tax in order to make it more politically feasible,²⁶⁵ this potentially incentivizes regulatory or tax-based arbitrage (from a production standpoint) and illicit or illegal purchasing (from a consumption standpoint).

As noted earlier, international taxes have been proposed in the context of financing development.²⁶⁶ However, these proposals differ from an international tax in that they are essentially earmarked—the revenues from an international tax would theoretically be reviewed and distributed annually by the international fiscal body rather than earmarked to a particular development expenditure program. The same problems facing earmarked taxes at the national level would not only be amplified at the international level, but would also intro-

duce further political complications as a result. Such political complications that could stem from an international earmarked tax are similar to those confronted by other fiscal development institutions, such as the IMF and World Bank. Both institutions have received criticism for not allowing input from aid-receiving countries and for tying development assistance to stringent conditions. It is likely that the governments administering the earmarked international tax would insist on having a disproportionate influence regarding how the funds are spent.

Similar to the national level, earmarked international taxes may not generate additional aid, but rather, crowd out and simply replace existing aid—this is difficult to prevent, as there is little assurance that countries would set their budget independently of their international tax payments.²⁶⁷ At the same time, there will be negative effects of increased taxation in general if countries don't account for the new tax (and thus reduce existing taxes). In theory, international taxes to aid development can only work effectively if the income effects²⁶⁸ outweigh the costs associated with the burden and administration of the tax.²⁶⁹

However, even when this condition holds, there is little theoretical justification for earmarking international taxes for development when there is little conceptual link between international taxes and development aid.²⁷⁰

In fact, efforts to provide development assistance would be better spent on improving the necessary infrastructure to effectively mobilize and distribute coordinated aid rather than designing international taxes.²⁷¹

As theory has found, the cooperative setting of coordinating development assistance always generates more development aid than the non-cooperative setting, such as an international tax.²⁷² This should come as no surprise after considering Bhagwati's theory that the best solution is the most direct one, or that a development problem needs a development solution.

3. COORDINATING OR HARMONIZING TAXES

The coordination and harmonization of taxes are both lesser extremes of bringing national tax rates together compared to an international tax. Coordinating national taxes across the world involves structuring national taxes such that the overall system works together to avoid macroeconomic distortions caused by tax differentials. Harmonization, on the other hand, is generally applied in a regional bloc (such as the EU) that is given the power to supersede national taxes in order to create a more uniform regional tax system. Partial harmonization occurs when one aspect of the tax is harmonized, such as the tax base, while full harmonization implies that both the tax base and rate are harmonized. The main difference between coordination and harmonization is that coordinating taxes leaves countries with significant control of their tax policies, while harmonizing taxes requires countries to relinquish much of that power. The overarching goal of either system, however, is to “*eliminate obstacles to cross-border trade and investment...and to protect against the erosion of their tax bases.*”²⁷³

Unfortunately, however, this practice leads to increased rigidity and stickiness in tax and regulatory systems, preventing policy adjustments based on relevant political and economic factors; such a suppression of market forces tends to generate broad market inefficiencies and net welfare losses for those affected.

Coordinating or harmonizing taxes is often proposed in order to simplify multiple tax systems that operate in “one market” economies—that is, regions seeking to have a single, unified market (such as the EU, or individual states in the U.S.). Doing so can reduce compliance costs that can arise due to double taxation, which occurs when individuals or firms engage in taxable activities in more than one jurisdiction.²⁷⁴

As globalization continues and technology advances through e-commerce and cross-border activities, the more costly it is for individuals and firms to comply with multiple, complicated tax systems. Furthermore, facilitating taxes across different countries can favor growth and employment since differentials in taxes can distort producer prices and the cost of capital.²⁷⁵

Distortions often arise as a result of production and investment being located in areas for tax purposes rather than in areas where operations can be most efficiently conducted.²⁷⁶

At the very least, theory finds that partial harmonization benefits all countries relative to full international harmonization and often to no harmonization—assuming capital is adequately mobile.²⁷⁷

While there are some advantages to coordinating or harmonizing taxes, the process is not without its difficulties. Even partial harmonization through the tax base can be difficult to transition to due to the technical complexities,²⁷⁸ such as determining the best definition, formula, and measurements of the variables.²⁷⁹

Design issues also pose a challenge, especially if unintended economic consequences are produced as a result, such as establishing a tax minimum but not a tax maximum. Establishing a tax minimum without a tax maximum can result in taxes diverging away from the minimum, especially in countries with high initial taxes, as it will be easier for those countries to increase taxes without further reducing their competitiveness since neighboring countries will be at the minimum level (rather than below it). Coordination and harmonization, regardless of the design, can also create the wrong incentive for managing public finances—governments are less likely to be as careful in its budgetary review without tax competition.²⁸⁰

Tax competition between different countries ensures, to some degree, that governments are incentivized to find ways to reduce spending in order to optimize their budgets or give tax cuts to its citizens (which may not be possible with harmonization).

Furthermore, it is necessarily true that some countries will lose competitive advantage from coordination²⁸¹ or harmonization.²⁸² Generally, countries with high initial taxes will benefit at the detriment of countries with lower initial taxes—this is especially true when economic structures are asymmetric across different countries.²⁸³

Again, these issues raise the question of why different countries should align taxes when each country faces different economic fun-

damentals, socioeconomic factors, sources of competitive advantage, and demand for social programs.²⁸⁴

Perhaps more problematic, at least in terms of political feasibility, is the loss of national tax autonomy that is implied by harmonization,²⁸⁵ especially in binding or compulsory situations. This creates tension not only with national sovereignty, but it also limits the arsenal of effective policy tools available to handle asymmetric shocks, which occur when a supply or demand shock affects different countries uniquely.²⁸⁶

As such, since coordination is a weaker form of harmonization, it might be politically preferred if some alignment of taxes is necessary, such as in areas where economies are open with little border control.

B. Theoretical Criteria for International Taxation—Efficient Taxation and National Sovereignty

International taxation is a recent development in public debate, fueled by international organizations' efforts to advocate for either the creation of separate international taxes or the international coordination of existing taxes, which are then levied or determined by an international body. Perhaps the most notable example of international tax coordination has been the harmonization of various taxes within the EU, which was undertaken as an effort to integrate Europe into a single market, in order to avoid distortions that are spurred by differences in standards and practices. While many international organizations, such as the UN or the WHO, draw comparisons between the EU harmonization experience to recent international tax proposals, the motivations driving both efforts differ dramatically. Rather than establishing a regional market with the free movement of goods and services, recent international tax proposals are generally targeted for non-economic policy objectives, such as reducing carbon emissions or tobacco consumption. Furthermore, the levy of international taxes has been proposed as a tool for what is known as “innovative financing for development”, or IFD.²⁸⁷

The only example of an international IFD tax is the airline ticket tax;²⁸⁸ however, it has only been implemented by Cameroon, Chile, Congo, France, Madagascar, Mali, Mauritius, Niger, and the Repub-

lic of Korea as a specific levy on air passengers' domestic and international ticket prices to fund UNITAID.²⁸⁹ However, other international taxes have been proposed, such as environmental taxes (i.e., carbon taxes) and financial transaction taxes.²⁹⁰

There are two proposals relating to international tobacco excise taxes—the first system involves setting minimum global benchmarks on tax incidences, while the second system is implemented for IFD purposes. Currently, the WHO has recommended that the international minimum on the excise tax incidence should be at least 70 percent of cigarette retail sales prices.²⁹¹ The solidarity tobacco contribution, or STC, is a WHO proposal that is designed as an international IFD tax on tobacco products, which would fund health and development projects in developing countries.²⁹² The focus of this subsection is to evaluate whether international taxes meet the standards and criteria of economic theory, as well as to highlight the difference between the proposed international taxes and the EU harmonization experience.

WHO Goal of 70 percent Tobacco Taxation

The World Health Organization (WHO) has recently proposed that tobacco excise taxes should constitute no less than 70 percent of the retail price of tobacco consumption. The primary goal of such high tax rates is to increase the purchase price of cigarettes, thereby causing current smokers to reduce or eliminate their tobacco consumption, as well as discouraging new smokers (especially youth) from beginning smoking in the first place. Secondly, an increase in tobacco excise tax rates is thought to similarly increase government tobacco tax revenues, which have been proposed to be earmarked for tobacco health or education programs.

Proponents claim that such an increase in tax rates is progressive (i.e., impacting high income individuals more than low income individuals), causes no increase in illicit trade (given uniformity of implementation), and has a minimal or positive impact on inflation and employment.

There is not a consensus among economists on these points, however, and these claims are often quite contentious. The fact of the matter is that, even in the highest tax region in the world—the European Union—not even one country currently applies such high tax rate.

The Solidarity Tobacco Contribution (STC)

The STC is a new approach taken by the WHO to fund health programs in developing countries via an additional “micro-levy” on tobacco products (between \$0.01 and \$0.05 (USD) per pack of cigarettes). Its primary objective is to combat the emergence of new health challenges, but it is often presented in conjunction with the aforementioned goal of 70 percent tobacco taxation. Such a levy would be voluntary at the national level (although not at the individual level), and is neither meant to replace existing tobacco tax policies, nor intended to be offset by tax rate reductions elsewhere.

Similar to the 70 percent goal for tobacco taxation, such a measure is often touted as progressive, with no expected consequences for illicit trade, inflation or employment. These claims also remain contentious and controversial among economists, however.

Utilizing the principles of efficient taxation developed previously in Section I, Subsection B, this subsection will evaluate whether international taxes meet these theoretical criteria. Additionally, policymakers must also consider the theoretical implications that international taxation has on national sovereignty. Although the focus of this handbook is on the taxation of tobacco products, these theoretical concerns are just as applicable to other international tax proposals that are based on non-economic objectives.

1. REVISITING THE FIVE ECONOMIC PRINCIPLES OF TAXATION

In order to determine whether these international taxes are economically sound, the five principles of taxation are reconsidered: (1) economic efficiency; (2) administrative costs; (3) flexibility; (4) political responsibility or accountability; and, (5) equity.

i. Economic Efficiency

The criterion of economic efficiency is not met with either type of proposed international tobacco excise tax system—setting a minimum benchmark on the tobacco excise tax incidence is likely to further distort consumer choice and exacerbate the illicit trade problem, while international IFD taxes, such as the STC, are inefficient since they are prone to many of the same issues that face earmarked taxes in addition to distorting consumer choice.

The setting of a minimum tobacco excise incidence level, as well as the STC, further distorts consumer choice since the quantity demanded for other goods and services are impacted due to the general inelastic nature of tobacco products with respect to demand. Additionally, tobacco excise tax revenues will fall short of expectations over time given that the price elasticity of tobacco demand becomes more elastic in the long-run. In particular, the projects that are financed through the STC might be underfunded over time. Furthermore, the solidarity tobacco contribution cannot rely on the Pigouvian framework since the tax revenue collected is not to correct for the externalities generated from tobacco consumption; the solidarity tobacco contribution is just an earmarked redistribution.

Moreover, imposing additional international taxes on top of existing national excise taxes could aggravate the growing problem of illicit trade, which is not only an undesirable activity, but is also detrimental to governments' collection of excise tax revenues. If international tax proposals on tobacco products are implemented in countries already experiencing Laffer Curve effects, the incentive for the illicit trade increases while excise tax collection drops, thus further rendering international taxation on tobacco products as economically inefficient.

The recommendations of the WHO are driven from non-economic objectives, which have been developed without consideration for fiscal policy. The objectives of the WHO are not economic in principle, but are instead motivated by the goal to reduce global cigarette consumption (via the proposed 70 percent global benchmark for cigarette excise incidence) and to promote health and development in developing countries (via the STC). Neither policy recommen-

dation is considered efficient vis-à-vis the Bhagwati theorems since these non-economic objectives can be better accomplished through other means. For instance, assisting countries with developing their domestic tobacco excise tax policy would be a better approach than the global benchmark, since it would take into account each country's varying income levels, illicit trade, and estimates for the price, income, and cross-price elasticities of demand, while also minimizing distortions. As mentioned previously, a uniform international benchmark which fails to account for individual characteristics (at the national level) would be both inefficient and distortionary.

The STC fails the Bhagwati criteria for efficiency, being a consumption solution to a non-consumption problem—i.e., taxing tobacco to fund third world health development goals. A better option would be a development solution to a development problem, such as reducing remittance costs (making it cheaper for foreign nationals to send money overseas) or diaspora bonds (a bond marketed to foreign nationals living abroad, who may invest for patriotic reasons). Furthermore, the STC faces the same inefficiencies as earmarked taxes, only the problems are amplified on an international scale. For example, the beneficiaries of the STC expenditures are not just individuals who are not responsible for paying the STC, they also reside in countries outside of those responsible for the STC, thus further removing any linkage between the expenditure program and the STC itself.

Additionally, the reallocation of resources would likely be inefficient in countries where the tobacco prevalence is higher in lower income brackets, since essentially the STC would redistribute money from one set of poorer consumers to another set. In fact, in a 2012 study, the authors find that, generally, IFD contributions are small, that revenues are low, that the funds are susceptible to volatility relative to traditional sources of funding, and that the *“hype around it has not translated to substantial new funding”*.²⁹³ Furthermore, the authors warn that *“caution should be exercised when establishing new international innovative financing schemes...instead, global leaders and donors should explore more critically how the existing integrated innovative financing mechanisms can be strengthened and used effectively.”*

Moreover, it is not clear that IFD tax funds raise additional money for developing countries; it is likely that these IFD funds simply replace other forms of official development assistance. As such, IFD funds are not achieving their purpose to raise additional money for development projects. Even more troubling, Rajan and Subramantan (2008) find that the link between development aid and economic growth is not established empirically after analyzing 80 developing countries from 1960 to 2000,²⁹⁴ which further calls into question the efficiency and effectiveness of these IFD taxes. As Ketkar and Ratha (2008) point out, these IFD taxes are “*subject to the same concerns about aid allocation, coordination, and effectiveness*”.²⁹⁵ A more efficient solution to address development issues is to guide developing countries toward economic freedom, rather than providing additional monetary development assistance. Other sources of financing that are more efficient, can also be implemented, such as issuing diaspora bonds or reducing remittance costs.²⁹⁶

Going back to the WHO proposed benchmark of 70 percent excise incidence—in addition to the general concern with international benchmarks—even if such a benchmark were proposed, tax incidence is definitely a poor measure of the total weight of taxation, and, as such, is a similarly poor benchmark for global policy design.²⁹⁷ Tax incidence, measured as a proportion of retail sales price, ignores the total excise tax paid. For example, as Table 25 illustrates, although the excise tax yield rises by 50 percent between Scenario 1 and Scenario 2, the corresponding increase in the excise tax incidence is only 7 percentage points, demonstrating that the tax incidence alone, and therefore the global benchmark, is not indicative of the weight of taxation.²⁹⁸

Table 25

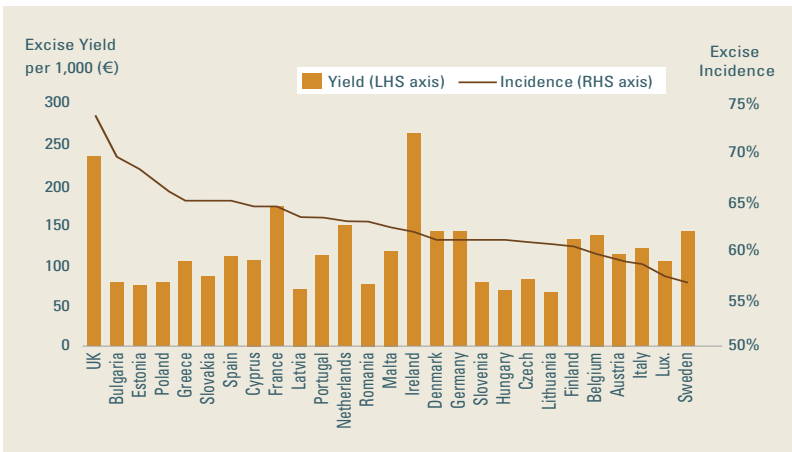
Numerical Example of the Relationship Between Excise Tax Yield and Excise Tax Incidence		
Scenario 1: Excise Tax Yield is \$200	RSP (\$ per 1000 Cigarettes, sum of (a.) to (c.))	360
	(a.) Pre-Tax Price (\$ per 1000 Cigarettes)	100
	(b.) Excise Tax Yield (\$ per 1000 Cigarettes)	200
	(c.) Tax Paid for VAT Rate @20% (\$ per 1000 Cigarettes)	$60=0.2*(100+200)$
	Cigarette Excise Tax Incidence (percent, Excise Yield/RSP)	$(200/360) = 55.56$ percent excise tax incidence
Scenario 2: Excise Tax Yield Increases 50 percent to \$300	RSP (\$ per 1000 Cigarettes, sum of (a.) to (c.))	480
	(a.) Pre-Tax Price (\$ per 1000 Cigarettes)	100
	(b.) New Excise Tax Yield (\$ per 1000 Cigarettes)	300
	(c.) Tax Paid for VAT Rate @20% (\$ per 1000 Cigarettes)	$80=0.2*(100+300)$
	Cigarette Excise Tax Incidence (percent, Excise Yield/RSP)	$(300/480) = 62.50$ percent excise tax incidence
Verdict: A 50% ↑ in Excise Tax Yield Leads to 7% Point ↑ in Tax Incidence - Weak Relationship		

In fact, when analyzing EU data from 2011, there is no apparent relationship between the cigarette tax incidence and excise tax yield, as illustrated in Figure 17 on the following page.²⁹⁹ Ireland, for example, has the highest excise tax yield in the EU—but, due to its similarly-high VAT rate, has a tax incidence rate that is near the EU average and median. VAT rates are not universal and even within

harmonized regions, such as the EU, differ across many European countries—in Hungary, the nominal VAT was 27 percent in 2013, while Luxembourg’s nominal VAT was only 15 percent.³⁰⁰ Higher VAT rates will imply a larger multiplicative effect on excise tax increases, further eroding any relationship between excise tax yields and incidences. In fact, the EU shifted its position on tobacco excise tax policy after realizing that a benchmark did not prevent “*the perpetuation of wide differences in rates and retail price levels*”, and thus, introduced a minimum excise yield.³⁰¹

Figure 17

2011 Cigarette Excise Tax Incidence and Excise Tax Yield in the EU



Source: European Commission (2011)

ii. Administrative Costs

The administrative costs of international taxation are, in theory, higher than similar costs for taxes issued nationally, simply due to the costs of coordinating compliance on the much larger, international scale. According to Chassin (2013), the administrative costs associated with certain international taxes are “*virtually impossible to measure, if only because it is impossible to apportion the overhead cost of the whole tax and enforcement system among specific taxes*”.³⁰² While the French government estimates that the airline ticket tax is “marginal,” the administrative and enforcement costs of an international

tobacco tax or guideline would likely be higher due to the presence and incentive of the illicit trade.³⁰³

iii. Flexibility

International taxes by definition reduce the flexibility of individual countries to adjust such taxes, when implemented at the local level, to address changing domestic circumstances.

iv. Political Responsibility or Accountability

Currently, there is no established international fiscal body to oversee, coordinate, and collect international taxes; therefore, the criterion of political responsibility for international taxes falls short of providing an easily-identifiable government body.

v. Equity

International taxes fail to meet the final criterion of equity for a few reasons—not only do international taxes ignore issues of affordability across and within countries, they are also potentially regressive, especially if the tax burden falls disproportionately on lower income consumers. Furthermore, because the proposed international taxes on tobacco do not consider affordability, one potential consequence of the tax increase is that the illicit trade of tobacco products is further exacerbated. Lastly, as mentioned earlier in this section, the WHO recommendation on the minimum excise tax incidence does not provide policymakers with a useful benchmark, as “*very different levels of the excise yield on cigarettes can be consistent with very similar levels of tax incidence*”.³⁰⁴

2. INTERNATIONAL TAXES AND NATIONAL SOVEREIGNTY

The encroachment of each country’s national sovereignty is also a compelling argument against an international tax incidence minimum or an internationally imposed tax. International taxation violates national sovereignty in two distinct ways—(1) in that an international body would have the authority to levy taxes across different countries and, (2) in that the unique economic, political, and social climates of each country would be neglected, potentially worsening any existing domestic problems in these areas. Setting a precedent

for an international body to levy international taxes is particularly worrisome, as America's Revolutionary War serves as a reminder of the consequences that followed from Britain's taxation on its North American colonies, which was made up primarily of excise taxes. While in theory member states of these international bodies would govern the level and structure of an international tax, in practice the citizens of the member states would have very little control over the direction of these policies.

The second issue of national sovereignty is also important, as different countries have different views on economics, politics, and society. If this were not the case, the European tendency toward social democratic policies, and thus high overall tax burdens, would be echoed in all other countries. Instead, countries such as the U.S. or Japan have lower overall tax burdens, which reflect their differing views on social program expenditures.³⁰⁵ Additionally, the combination of policies that optimizes government excise tax revenues in one country does not necessarily produce the same results in another country.

C. Harmonization

A well-known tax harmonization example is the EU, where value added tax (VAT) as well as excise taxes on alcohol, mineral oils and tobacco products are regulated by EU fiscal directives that define common product definitions, tax base, structure and minimum tax rates. The harmonization of these fiscal rules were seen as necessary to achieve “*the creation of a single integrated internal market free of restrictions on the movement of goods; the abolition of obstacles to the free movement of persons, services and capital; the institution of a system ensuring that competition in the common market is not distorted*”.³⁰⁶ In particular, the abolition of border controls in the EU, without the harmonization of excise taxes, was seen as causing the system to be “*exposed to fraud and evasion*” due to the “*wide differences in excise taxation*”.³⁰⁷

In their regulations, the EU differentiated between two situations. For commercial traders, excise taxes would remain to be due in the country of destination according to the tax rates in that country of destination. By instituting a system of “excise warehouses” (the in-

tra-EU equivalent to what customs bonded warehouses are for customs duties) and rules for “intra-EU movement of excise goods”, manufacturers and traders are able to produce and trade excise goods in different EU countries, always paying the applicable excise duties in the country of destination. For commercial traders, therefore, a harmonization of excise rates was no pre-condition to make the single market work.

For private individuals, however, the EU single market implies that consumers can buy any good for personal use in any EU country, pay taxes (VAT and excise duties) at the rate of the country where the goods are sold, and bring these goods back to their home country without paying for any difference in excise duty and VAT rates. This aspect of the single market was seen as leading to the potential erosion of excise duties in high tax countries (as consumers would start to shop in low tax countries instead) and led in 1993 to the adoption of a set of excise directives for alcoholic beverages, mineral oils and tobacco products, introducing EU-wide minimum excise rates, to prevent tax revenue erosion.

For cigarettes, this initial directive established an overall minimum excise duty incidence of 57 percent of the retail sales price—leaving the EU member states some freedom in establishing the structure of taxes and of course allowing countries to exceed this minimum rate. Over time, some weaknesses were discovered of this system. With VAT rates not being harmonized across the EU (today VAT headline rates vary between 15 percent in Luxembourg and 27 percent in Hungary), the total minimum tax pressure, excise and VAT combined, would vary substantially, even if countries applied a comparable excise incidence. This could lead to a situation where a country with a high excise level in monetary terms (Euro per 1000 cigarettes), could have difficulty meeting the 57 percent minimum requirement as a result of its high VAT rate, as illustrated in Table 26.

Table 26**Numerical Example of Higher VAT Rates Leading to the Divergence of the Excise Tax Incidence**

Scenario 1: VAT is 15% (EU Low)	RSP (€ per 1000 Cigarettes, sum of (a.) to (c.))	345
	(a.) Pre-Tax Price (€ per 1000 Cigarettes)	100
	(b.) Excise Tax Yield (€ per 1000 Cigarettes)	200
	(c.) Tax Paid for VAT Rate @15% (per 1000 Cigarettes)	45
	Cigarette Excise Tax Incidence (% , Excise Yield/RSP)	57.97
Scenario 2: VAT Rate is 20% (EU Medium)	RSP (€ per 1000 Cigarettes, sum of (a.) to (c.))	360
	(a.) Pre-Tax Price (€ per 1000 Cigarettes)	100
	(b.) Excise Tax Yield (€ per 1000 Cigarettes)	200
	(c.) Tax Paid for VAT Rate @20% (€ per 1000 Cigarettes)	60
	Cigarette Excise Tax Incidence (% , Excise Yield/RSP)	55.56
Scenario 3: VAT Rate is 27% (EU High)	RSP (€ per 1000 Cigarettes, sum of (a.) to (c.))	381
	(a.) Pre-Tax Price (€ per 1000 Cigarettes)	100
	(b.) Excise Tax Yield (€ per 1000 Cigarettes)	200
	(c.) Tax Paid for VAT Rate @27% (€ per 1000 Cigarettes)	81
	Cigarette Excise Tax Incidence (% , Excise Yield/RSP)	52.49

This is not a purely academic scenario either, as the case of the accession of Sweden to the EU in 1995 illustrates. The case is analyzed in detail in Section IX of Part II. Suffice it to mention here, that Sweden, which at the time had a VAT rate of 25 percent, failed to meet the minimum incidence requirement despite having the fourth highest excise tax yield in the EU. Moreover, its attempts to reach the 57 percent target only resulted in a collapse of the legal market and consequent explosion of illicit trade.

To correct this issue, the EU introduced an “escape clause”, whereby countries levying an excise tax exceeding (currently) €115 per thousand cigarettes did not need to meet the (percentage) minimum excise incidence rule.

A second weakness of the minimum incidence rule is that it did not necessarily guarantee a minimum monetary tax yield per thousand cigarettes—even though ultimately to stem an erosion of excise duties it was exactly this—monetary excise amount—that required a minimum threshold level. To address this point, the EU later added an additional requirement, to ensure that cigarette excise rates in member countries also meet a minimum excise yield of Euro 90 per thousand cigarettes.

Problems Encountered During Harmonization

The EU’s experience with harmonization has not been without difficulty, which should be noted by policymakers when considering the global benchmark on cigarette excise tax incidence. In fact, the EU struggled to harmonize excise taxes on cigarettes since tax harmonization requires both income and price harmonization. Income harmonization is necessary to align taxes; failure to do so results in cigarette price increases that grow faster than increases in income for less wealthy countries. As such, the affordability of cigarettes declined dramatically in the Central European countries that joined the EU in 2004 and 2007, which increased the incentive for consumers to switch to illicit cigarettes. Furthermore, if the EU country borders a non-EU member,

then cross-border activity is likely to happen if the non-EU member has relatively low excise duty on cigarettes.

Retail price harmonization in the EU has been impossible given that the VAT rate fluctuates across the different member countries. Since the VAT is also used in the excise tax incidence calculation, it amplifies excise tax increases on the retail sales price, which can cause countries with high tax yields to still fail to meet the EU minimum incidence requirement. As mentioned before, it is for this reason that the EU introduced an additional minimum duty, hoping in part to reduce the rate and price differentials for cigarettes across different EU countries,³⁰⁸ as well as the “*growing divergence of tax burdens*”.³⁰⁹

Furthermore, the EU does not set maximum excise rates, and as a result, as low tax countries increased tax rates to reach the EU minimum rates, countries that already exceeded those minimum rates also continued increasing their tax rates, as a result of which tax difference were increased, not reduced.

As an example, the gap between the highest and lowest taxed cigarettes in the EU has widened by almost €20 per 1,000 cigarettes between January 2011 and January 2014, moving from €195.47 to €215.40; that is an increase of more than 10 per cent in three years.

Similarly, within the United States, there is a federal excise tax of \$1.01 per pack of cigarettes³¹⁰ (which acts as an effective minimum tax rate), but each state is allowed to implement additional excise taxes as they see fit (meaning there is no effective maximum). Despite the minimum federal excise tax on cigarettes, for all other intents and purposes, cigarette taxation in the U.S. is not harmonized. In fact, state cigarette taxes per state range from a low of \$0.30 per pack in Virginia, to \$4.35 in New York, where the average retail price per pack of cigarettes was \$10.11 in 2013.³¹¹ Even though U.S. markets are highly homogenized in all other respects, differences in intra-U.S. tax rates have had a strong impact on tobacco sales, especially in relation to illicit trade.

In New York, between 2000 and 2010, state excise tax rates increased by \$4.46, or 596 percent—with the vast majority (402 percent) of that increase taking place after 2006.³¹² Between 2000 and 2008, duty paid volumes declined by 42 percent; between 1990 and 2006, the average incidence of smuggled cigarettes was 20.9 percent,³¹³ which had increased to 56.9 percent by 2012.³¹⁴ Similar experiences have been reported in Minnesota, where a recent tax increase raised the retail price of a pack of cigarettes by \$2. While statistical data is not yet available, anecdotally, cigarette sales in the state have dropped by 27 percent for individual packs, and by 45 percent for cartons; Iowa gas stations near the state border have reported a corresponding increase in cigarette carton sales, while sales of individually purchased packs have remained relatively constant³¹⁵—indicating a high likelihood of cross-border shopping. Furthermore, a recent \$1 tax increase left Massachusetts with the second-highest cigarette tax rate in the nation (\$3.51). Prior to this tax increase, cigarette smuggling into Massachusetts accounted for roughly 18 percent of total cigarette consumption; following the increase, smuggling is expected to account for 43 percent of total consumption, with the resulting increase in illicit trade costing the state 3.3 percent of total cigarette tax revenue.³¹⁶

As noted by John D'Angelo of the Bureau of Alcohol Tobacco and Firearms (ATF), "*There is no doubt that there is a direct relationship between the increase in a state's tax and an increase in illegal trafficking.*"³¹⁷ This is even more of an issue in the U.S. than oth-

er harmonized markets, as open borders between states and an absence of federal enforcement both contribute to a very high degree of illicit trade, all else held equal.

Although excise tax differentials within the U.S. have led to revenue erosion at the state level for states combating the illicit trade, there is theoretical support for allowing states to independently set excise taxes.³¹⁸ For one, there is the seminal “Tiebout Hypothesis”, which proposes that tax competition between the states is welfare enhancing.³¹⁹ Although the “Tiebout Hypothesis” has been critiqued on a theoretical level for leading to less than efficient levels of output of local, public services,³²⁰ it continues to be implemented in the literature for “*recognizing that this competition introduces efficiency-enhancing incentives similar to the profit motives facing competitive firms*”.³²¹ Furthermore, empirical evidence has suggested that tax increases to fund public services have not led to more or higher quality public services.³²²

Additionally, although the U.S. is a single market, incomes vary across and within states—in 2011–2012, the median income in the U.S. was \$51,058.³²³ However, the gap between the states with the highest and the lowest median incomes, Maryland (\$71,075) and Mississippi (\$39,295) respectively, was quite large at nearly \$32,000.³²⁴ Meanwhile, the cost of living also fluctuates across the U.S., with the cheapest and most expensive states being Mississippi and Hawaii, respectively—in fact, as of 2013, Hawaii’s cost of living index is over 1.75 times higher than Mississippi’s.³²⁵ Therefore, due to the absence of income and price harmonization across the U.S., harmonizing excise taxes would lead to cigarettes becoming relatively unaffordable in certain states and could potentially exacerbate the regressivity of tobacco taxation. Furthermore, allowing excise taxes to vary also permits states to express their different views on public health and to take into account the different set of socioeconomic circumstances they must face. Despite both the EU and the U.S. facing similar situations (i.e., a single market), the solutions chosen differed—the EU followed harmonization while the U.S. left state sovereignty intact. The EU experience illustrates the weakness of trying to set either a benchmark or minimum tax rate as a percentage of retail price, while the U.S. example highlights a