

## **A REVIEW OF EXCISE TAXES ON CIGARETTES IN JAMAICA**

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## EXECUTIVE SUMMARY

In 2005, two authors of the present report, and two collaborators, presented a report to the Minister of Health entitled “*The Economics of Tobacco Control in Jamaica: Will the Pursuit of Public Health place a Fiscal Burden on the Government?*” This report argued that an increase in the excise tax on cigarettes would reduce the consumption of cigarettes in Jamaica, and raise revenues at the same time. The report also commented on the tax structure in Jamaica, arguing that it was unnecessarily complicated and subject to exploitation by the tobacco industry. The current report evaluates the implementation of tobacco excise tax policy in Jamaica in the past ten years, and presents a model that can be used to predict the likely consumption and revenue consequences of an increase in the excise tax on cigarettes, taking cognizance of the lessons learnt from the forecasting model used in the 2005 report.<sup>1</sup>

In Article 6 of the Framework Convention on Tobacco Control, governments are strongly encouraged to use price and tax measures to curb tobacco consumption. In fact, increases in the excise tax that result in increases in the price of cigarettes are regarded as the single most effective and cost-effective way to reduce tobacco consumption. In 2014 the Conference of the Parties adopted the *Guidelines for Implementation of Article 6 of the WHO FCTC*, which gives substantially more detail about how governments can practically implement excise tax systems that will reduce tobacco consumption and increase government revenue at the same time.

In April 2008 the government greatly simplified the excise tax system on cigarettes. It abolished the ad valorem component of the Special Consumption Tax (SCT) and the excise levy (the latter being used to partially fund the National Health Fund). Structurally, the government kept the specific component of the SCT but substantially increased it (from J\$ 2300 to J\$ 6000 per 1000 cigarettes). The changes in 2008 meant that the structure of Jamaica’s excise tax system became aligned with international best practice.

The government substantially raised the excise taxes on cigarettes between 2004 and 2010, but especially between 2008 and 2010. The increases in the SCT were above the inflation rate. Real (inflation-adjusted) government revenue increased by 22.0% between the 2004/05 and 2010/11 fiscal years. However, since January 2010 the nominal SCT has not been adjusted, resulting in a real decrease in the SCT of 32% per pack. Between 2010/11 and 2013/14 total real tobacco-related government revenue decreased by 40.5%.

Aggregate recorded cigarette consumption decreased by 36.3% between 2004/05 and 2012/13. This decrease can be ascribed to two main factors. Firstly, the real price of cigarettes increased by 35% over this period. Given that the price elasticity of demand for cigarettes has been shown to lie between -0.4 and -0.8 in low- and middle-income countries, this real price increase is responsible for a decrease of between 14% and 28% in total consumption. Secondly, the poor economic performance of Jamaica over the whole 2004-2012 period, and especially during the 2008-2010 recession, decreased average income levels, which in turn reduced the demand for tobacco products (and most other goods and services).

Aggregate cigarette consumption decreased by another 27.7% in 2013/14. The primary reason for this large decrease is the promulgation of stringent Public Health (Tobacco Control) Regulations which became effective in July 2013. The Regulations require cigarette packs to carry large pictorial health warnings. The Regulations also bans smoking in specified public places. Other than these legislative interventions, cigarette consumption was reduced by the decrease in per capita GDP in 2012 and 2013, and by substantial increases in the real retail price that were implemented by the tobacco industry.

Carreras Limited, a publically listed company, but controlled by British American Tobacco in the UK, is the dominant player in the Jamaican tobacco market. It describes itself as

“the leading marketer and distributor of cigarettes and tobacco-related products in Jamaica”.<sup>2</sup> Carreras, like tobacco companies worldwide, argues that illicit trade in cigarettes is a large and increasing problem, and typically place the blame on high excise taxes. However, in Jamaica the nominal excise tax has not increased since January 2010, when it was set at J\$ 10 500 per 1000 cigarettes. However, despite there being no increase in the nominal excise tax, and Carreras importing its cigarettes at very low cost (J\$24 CIF price per pack in 2013/14) from Trinidad and Tobago, the company increased the suggested retail price by 13% in January 2013 and by another 17% in March 2014. As a result of these net-of-tax increases, the real suggested price of cigarettes increased by 18.9% between December 2012 and March 2014, and the real price of cigarettes was only 6.6% lower in March 2014 than its all-time high in January 2010.

While high excise taxes may attract illicit traders, high and increasing net-of-tax prices also attract competitors and illicit traders. In the past three years the increase in the retail price of cigarettes was driven solely by Carreras’s pricing strategy. Through this pricing strategy Carreras has been able to protect its profits at the expense of the government of Jamaica. Had the government been adjusting its tax rate over the period it could have maintained its nominal tax revenue at the very least. The increase in the price reduces consumption, which reduces government revenue, because the revenue is the product of aggregate consumption and the (broadly fixed) excise tax per cigarette. The tobacco industry, by arguing that there has been an increase in illicit trade, and implicitly putting the blame on excise taxes, while at the same time increasing the suggested retail price by significantly more than the inflation rate, appears to be hypocritical and self-serving.

The risk of illicit trade in cigarettes should not be discounted, and the customs authorities should be vigilant in their approach towards illicit trade. However, the government should realise that the tobacco industry has an interest in exaggerating the threat of illicit trade. We recommend that, should the government ever commission a study into the magnitude

and causes of illicit trade in cigarettes, this be done completely independently of the tobacco industry.

Associated with this report is an Excel file that aims to quantify the impact of a change in the excise tax (i.e. the SCT) on variables such as the retail price of cigarettes, cigarette consumption, and various categories of tobacco-related taxes (i.e. SCT, GCT and import duties, levies and fees). Users of this report are welcome to experiment with the model and simulate different scenarios.

The model is more sophisticated than the one we used for the 2005 report.<sup>1</sup> In particular, the model allows the tobacco industry to change the net-of-tax price, which consists of two components: the CIF value and a catch-all category called “distribution costs, wholesale and retail margins and profit”. In the 2005 report we, rather unfortunately, assumed that the real net-of-tax price would remain the same when the government increased the excise tax. The net-of-tax price has not remained the same over the past ten years, and generally increased when the excise tax was raised. The current model was programmed to allow for this possibility.

Using a set of assumptions that are reasonable in terms of the international experience and previous experience in Jamaica we investigate the impact of raising the SCT to J\$ 16 000 per 1000 cigarettes. This tax level is approximately equal to the same level in January 2010 (in real terms). Given the assumptions of the model we expect this tax increase to decrease aggregate consumption by 12% and increase total tobacco-related tax revenue by 27%. This would be expected to increase the SCT tax share from 27.6% to 33.3% of the retail price. Should the increase in the SCT be smaller, then the effects on consumption and revenue would also be smaller. Similarly, should the increase in the SCT be larger, then the effects on consumption and revenue would be larger.

However, at some point a further increase in the SCT would no longer increase government revenue. While this turning point of the Laffer curve is fairly sensitive to some of the underlying assumptions, the most appropriate set of assumptions (we believe) will maximise revenue where the SCT is J\$ 33 000 per 1000 cigarettes. This clearly shows that excise taxes in Jamaica are still on the feasible side of the Laffer curve, i.e. an increase in the excise tax per pack increases total tax revenue, while a decrease in the excise tax per cigarette decreases total tax revenue.

We recommend that that government of Jamaica increases the Special Consumption Tax on Cigarettes to J\$ 16 000. Other than this one-off adjustment, the government of Jamaica should adjust the nominal SCT on an annual basis to ensure that, at a minimum, the SCT increases by the inflation rate.

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## **A REVIEW OF EXCISE TAXES ON CIGARETTES IN JAMAICA**

### **1. INTRODUCTION**

The harmful effects of tobacco use are well known and are beyond dispute. According to the Jamaican Health and Lifestyle Survey of 2007-2008, the most recently available prevalence survey, current smoking prevalence was 22.1% amongst adult males and 7.2% amongst adult females.<sup>3</sup> While these prevalence percentages are not particularly high compared to high-income countries, they are comparable to the smoking prevalence in many low- and middle income countries. Smoking prevalence amongst females in Jamaica is much higher than amongst females in many low- and middle-income countries. There are large smoking prevalence discrepancies by education level and socio-economic status. More than 30% of males with primary education or less smoked, as did 33.9% of males who were regarded as having low socio-economic status. Among more educated and higher socio-economic groups smoking prevalence was substantially lower. The smoking prevalence disparities contribute to the health disparities between different socio-economic groups in Jamaica.

Globally about 6 million people die annually from smoking-related diseases, and this number is expected to increase to 8 million by 2030.<sup>4</sup> Of these 6 million premature deaths, 600 000 occur in non-smokers who are exposed to second-hand smoke. An increasing proportion of these premature deaths are occurring in low- and middle-income countries as smoking prevalence increasing in these countries, while it is decreasing in many high-income countries. Approximately 80% of the world's one billion smokers live in low- and middle-income countries.<sup>5</sup>

Within the context of a global public health risk, the World Health Assembly adopted the Framework Convention on Tobacco Control<sup>6</sup> (FCTC) on May 21, 2003. It came into force on February 27, 2005, having been ratified by the fortieth country ninety days earlier. To date it has been ratified by 180 countries. Jamaica ratified the FCTC in July 2005.



States that are Parties to the FCTC commit themselves to implementing “...*tax policies and, where appropriate, price policies, on tobacco products so as to contribute to the health objectives aimed at reducing tobacco consumption...*” (Article 6). The tax typically takes the form of an excise tax. An excise tax, in contrast to other indirect taxes like general sales tax or value-added tax, specifically targets a particular product. Excise taxes are often levied on tobacco products, alcohol, petroleum products and luxury goods.

It is generally acknowledged that, of all tobacco control policies available, increasing the excise tax on tobacco is by far the most effective and cost-effective.<sup>7</sup> In contrast to other interventions (such as an advertising ban, restrictions on indoor smoking and plain packaging), increasing the excise tax on tobacco is not a one-off event. Even if taxes have been increased in the past, there is nothing to prevent further increases. A distinct advantage of increasing the excise tax on tobacco is that it also increases the amount of revenue collected by the government.

In 2005, the author and one of the collaborators of the current report presented a report to the Minister of Health entitled “*The Economics of Tobacco Control in Jamaica: Will the Pursuit of Public Health place a Fiscal Burden on the Government?*” The report provided a comprehensive overview of various tobacco control policies. Much of the analytical work in the 2005 report<sup>1</sup> focused on raising the excise tax on tobacco products. Using econometric analysis, it was shown that an increase in the excise tax reduces smoking and the associated burden of disease. In addition, it was estimated that the government of Jamaica would be able to substantially increase its revenue if it were to raise the excise tax. In fact, it was estimated that the government would be able to increase its revenue from tobacco excise taxes by about 50% if it were to raise the total tax share (i.e. total taxes expressed as a percentage of the retail price) to approximately 70%. At the time the total tax per pack of cigarettes was approximately 52% of the retail price. The report also

noted that the tax structure on tobacco was unnecessarily complicated and that this complexity was being exploited by the tobacco industry to their financial advantage.

Between 2005 and 2010 the government of Jamaica substantially increased the excise tax, resulting in a sharp increase in cigarette prices. However, since 2010 there have not been any changes in the nominal excise tax, with the result that the real (inflation-adjusted) excise tax and the real price of cigarettes have decreased.

The relatively sharp increases in the excise tax between 2005 and 2010 allow us to evaluate the predictions made in the 2005 report.<sup>1</sup> We also evaluate the increases in the excise tax and the retail price between 2004/05 and 2013/14, and this has impacted cigarette consumption in Jamaica in this period. We also present the results of a simulation exercise, where we consider the likely impact of further tobacco tax increases on government revenue and cigarette consumption.

## **2. INTERNATIONAL DEVELOPMENTS WITH RESPECT TO TOBACCO TAXATION AND PRICING**

There have been significant developments with respect to tobacco taxation and pricing in the past decade. When the 2005 report was written, there was already a consensus that increases in the excise tax on tobacco products were particularly effective at reducing tobacco consumption and at raising government revenue.<sup>9</sup> This consensus has been strengthened over the past decade.

In 2011 the International Agency for Research on Cancer published a handbook entitled *“Effectiveness of Tax and Price Policies for Tobacco Control”*. This handbook summarised the existing literature on the impact of excise taxes and price on the demand for tobacco and found that there was “sufficient evidence”<sup>i</sup> that excise-induced increases in tobacco

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<sup>i</sup> “Sufficient evidence” is the strongest type of evidence (other categories of evidence are strong evidence, limited evidence, inadequate/no evidence and evidence of no effect) and is defined by the IARC as follows: “An association has been observed between the intervention under consideration and a given effect in

prices would decrease overall tobacco use, reduce the prevalence of adult tobacco use, induce current smokers to quit, lower the consumption of tobacco products among continuing users, reduce the prevalence of tobacco use among young people, and reduce the initiation and uptake of tobacco use among young people (IARC, 2011: 356). The IARC handbook also found “sufficient evidence” that an increase in the tobacco tax increases tobacco tax revenue.

The FCTC came into effect February 2005, and forms the cornerstone of the global fight against tobacco consumption and its harmful effects. The FCTC provides the impetus and the legal mandate for civil society and the public health community to put pressure on governments to implement effective tobacco control measures. The FCTC is an evidence-based treaty. Article 6 deals with the impact of tax and price measures on the demand for tobacco, and is based on hundreds of studies that have investigated the demand for tobacco. In Article 6 “*the Parties recognize that price and tax measures are an effective and important means of reducing tobacco consumption by various segments of the population, in particular young persons*”.<sup>6</sup>

At the sixth Conference of the Parties, held in Moscow in October 2014, the Parties adopted *Guidelines for Implementation of Article 6 of the WHO FCTC*. These *Guidelines* provide substantially more information to the Parties about the technicalities of raising the excise tax on tobacco products.

In 2010 the World Health Organisation published the *Technical Manual on Tobacco Excise Taxation*<sup>8</sup>. This comprehensive document describes a variety of aspects related to tobacco taxation. Amongst other things, it strongly advocates for a uniform, specific tax, rather than for more complicated tax structures (such as ad valorem taxes, and tiered tax structures). The *Technical Manual* suggests that countries should aim at an *excise* tax share of 70%, i.e. the excise tax should be 70% of the retail price. The World Bank, in its

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studies in which chance, bias and confounding can be ruled out with reasonable confidence. The association is highly likely to be causal” (IARC, 2011: 355).

seminal book *Curbing the Epidemic* (1999) set the target in terms of the *total* tax share.<sup>9</sup> As will be pointed out in this report, a target that is set in terms of excise taxes only is preferable, because it focuses on the tax that distinguishes tobacco from other consumer goods and services (which are also subject to standard revenue-generating sales taxes, but typically not to excise taxes). While this is admittedly a very high threshold or target, some jurisdictions, like Brunei (80.7%), Cuba (75.1%), Egypt (72.5%), San Marino (74.2%) and Tunisia (70.1%) have achieved this target (based on the most popular cigarette price category).<sup>10</sup>

Other than targeting the excise tax share, the *Technical Manual* argues that increases in the excise tax should take account of (1) inflation and (2) the growth in income. The first consideration (i.e. changing the specific tax to keep up with inflation) is obvious and well-accepted in both the academic and policy space. The second consideration is based on the growing literature on cigarette affordability.<sup>11 12</sup> The argument runs as follows: even if the excise tax (and the retail price) increases in line with the inflation rate, cigarettes become more affordable if average incomes increase. Many low- and middle-income countries have experienced unprecedentedly high economic growth rates over the past two or three decades. The resulting increases in real incomes have made cigarettes more affordable to people who previously could not afford cigarettes. In order to prevent cigarettes from becoming more affordable over time, the *Technical Manual* advises governments to take account of both inflation and the growth in income when changing the excise tax.

### 3. MACRO-ECONOMIC DEVELOPMENTS IN JAMAICA

#### 3.1 GDP growth and inflation

The Jamaican economy has struggled over the past 40 years. Periods of modest GDP growth have been followed by (often multiple) years of recession. In the 2005 report the poor economic performance of the previous three decades was lamented. It is cold

comfort that the poor economic growth between the early 1970s and the mid-2000s resulted in a substantial decrease in cigarette consumption.

The economic performance in the past ten years is broadly similar to the performance of the previous thirty years. Between 2004 and 2013, Jamaica recorded six years of modest GDP growth, and four years of negative GDP growth (see Table 1). Over the ten-year period the size of the economy (in real terms) has remained the same. As a result, per capita GDP has decreased. The decrease in per capita GDP means that people have less money to spend, and they would thus decrease the demand for most goods and services, including tobacco products.

The inflation rate averaged 13% for the 2005-2009 period and about 8% for the 2010-2014 period. While this is significantly lower than the inflation rates recorded in the 1990s, it is much higher than the international average. The high inflation rate over many decades has fuelled and is fuelled by the long-term decline in the external value of the Jamaican dollar.

**Table 1: Some macro-economic indicators for Jamaica, 1990-2013**

<i>Year</i>	<i>GDP growth rate</i>	<i>Inflation rate</i>	<i>J\$/ US\$ Exchange rate</i>
1990	6.3	22.0	7.18
1991	0.8	51.1	12.12
1992	2.8	77.3	22.96
1993	2.2	22.1	24.95
1994	1.9	35.1	33.09
1995	2.5	19.9	35.14
1996	-0.2	26.4	37.12
1997	-1.6	9.7	35.40
1998	-1.2	8.6	36.55
1999	1.0	6.0	39.04
2000	0.8	8.2	42.99
2001	1.3	7.0	46.00
2002	0.7	7.1	48.42
2003	3.7	10.3	57.74
2004	1.3	13.6	61.20
2005	0.9	15.3	62.28
2006	2.9	8.6	65.74
2007	1.4	9.3	69.19
2008	-0.8	22.0	72.76
2009	-3.4	9.6	87.89
2010	-1.5	12.6	87.20
2011	1.4	7.5	85.89
2012	-0.5	6.9	88.75
2013	0.2	9.3	100.24
2014	NA	6.4	110.50*

\* Approximate value, based on <http://www.exchangerates.org.uk/USD-JMD-exchange-rate-history.html>

Data source: IMF (<http://elibrary-data.imf.org/>); Statistical Institute of Jamaica.

### **3.2 The fiscal situation, National Health Fund and the costs of tobacco**

Jamaica's large public debt has been a cause of concern for more than a decade, and constrains the economic growth of the country. The debt, as a percentage of GDP, is one of the highest in the world, and peaked at nearly 150% in 2012.<sup>13</sup> Servicing the debt places a significant burden on the government. Nearly two thirds of all government expenditure is spent on servicing the debt, diverting resources from other expenditures.

Within this context of a highly constrained fiscal situation, the government of Jamaica must protect its revenue sources and, at the same time, is forced to control its

expenditures. In the 2010/11 fiscal year, indirect taxes on tobacco products (i.e. the sum of Special Consumption Tax, General Consumption Tax and import-related duties, levies and fees) yielded 3.0% of total government revenue. This dropped to 1.8% in 2013/14. This is unfortunate, because, as will be pointed out in this report, the decrease in real tobacco-related tax revenue occurred because the Ministry of Finance did not adjust the nominal SCT on tobacco products, allowing inflation to erode the real value of the SCT and the resulting revenue.

The National Health Fund (NHF) is funded from three sources, namely the SCT on tobacco products (20% of total SCT revenue), the SCT on all other excisable products (5% of total SCT revenue) and the Payroll Tax (20% of total Payroll Tax revenue). While the NHF's revenue sources have become more diversified over time, the decrease in tobacco-related SCT revenues since 2010 should be cause for concern. The NHF, as part of the Ministry of Health, has a mandate to reduce the burden of disease and death caused by tobacco. At the same time, as a recipient of tobacco tax revenues, it has an interest in ensuring that this funding does not decrease over time. An increase in the SCT on tobacco products is consistent with the NHF's public health mandate *and* with its wish and need for additional funding.

Protecting government revenue and ensuring sustainable funding for the NHF is only one aspect of the fiscal rationale for looking at the excise tax on tobacco products. Keeping government expenditures under control is the other aspect. Tobacco use places a burden on the government, and the Ministry of Health in particular, because it incurs expenditures when treating tobacco-related illnesses. If an increase in the excise tax is successful in reducing tobacco use, this will reduce tobacco-related disease and the associated health expenditures (although typically with a substantial lag).

In discussions with various stakeholders, it became clear that there is a need for a study on the economic costs of tobacco on Jamaica. Such a study can be of a variety of sorts.

The simplest is to consider the tobacco-related costs borne by government. These costs would typically be the medical costs of treating tobacco-related diseases, costs related to the provision of cessation services, costs related to extinguishing fires caused by cigarette butts, etc. More comprehensive studies would consider the costs of smoking to society as a whole. Other than accounting for costs borne by government, one would include the lost production of smokers that are sick and/or die prematurely, the health care costs of patients who use private health care facilities, the additional cost of cleaning smelly clothes because of tobacco smoke, etc. While these are all pecuniary (i.e. money) costs, many smoking-related costs are not pecuniary. For example, what is the value-of-life of a person that succumbs to smoking-induced lung cancer at the age of 40? How does one account financially for the grief and heartache felt by the family that stays behind? On the other hand, if a retired pensioner dies prematurely because of a tobacco-related disease, should this be regarded as a fiscal benefit (or even societal benefit)? There are methodologies to try to deal with the non-pecuniary costs associated with smoking.

Such studies are very data intensive and the results are often driven by some crucial underlying assumptions, however such types of studies have been done in other countries. They require the input of both economists and epidemiologists. The present study does not consider the economic cost of tobacco in Jamaica, but we recognise that there is a need for such a study. We hope that, in time, there will be funds and expertise available to perform such a study.

## **4. CIGARETTE EXCISE TAXES IN JAMAICA**

### **4.1 The structure and implementation of the current excise tax regime**

Cigarettes in Jamaica, as in most countries, are subject to taxes, other than the standard value-added tax (called the General Consumption Tax (GCT) in Jamaica). In the 2005 report we noted that the excise tax was unnecessarily complicated, and that this



complexity was exploited by the tobacco industry to its own financial advantage. This came at the expense of the government and people of Jamaica.<sup>ii</sup>

In 2008 the excise tax system was greatly simplified. Currently the *structure* of Jamaica's excise tax system is in line with international best practice (see the *WHO Technical Manual on Tobacco Excise Taxation*). The excise tax is levied as a uniform specific tax. In other words, being a *specific* tax, it is levied on the quantity of cigarettes, not the value. From an administrative perspective, it is much easier to count the number of cigarettes, than determine the value of them. The tobacco industry, like any industry in a similar situation, would have an incentive to distort the value of the product with the aim of reducing its tax liability. By being levied as a specific tax, that incentive disappears. The tax is also *uniform*, meaning that, irrespective of the characteristics of the cigarette (e.g. the length, the type of packaging, the perceived quality, and the price), the amount of tax levied per cigarette is the same. It is much more difficult to administer and audit the revenues that are generated in a tax system consists of different tax tiers. Also, a tiered system allows the tobacco industry to exploit differences in the excise taxes, usually at the expense of public health and the fiscus.

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<sup>ii</sup> The excise tax system was described in detail in the 2005 report (see pages 16-19 and 60-63). For the sake of completeness, the main features of the excise tax system, as it was implemented between 2003 and 2008, are repeated here. The core tax was the Special Consumption Tax (SCT). The SCT was levied primarily as a specific tax (i.e. a certain rate per 1000 cigarettes). The SCT also had an ad valorem component, which was levied at a rate of 39.9% on the value of the "base price" in excess of a certain threshold value. The government occasionally increased the threshold value where the ad valorem component became effective (e.g. in April 2005). This reduced the ad valorem SCT amount payable. The combined effect of raising the specific component of the SCT and the threshold for the ad valorem component of the SCT, made it quite difficult to estimate the net impact of the changes in the SCT on the total tax share. In Appendix B of the 2005 report we indicate that the tax changes announced on 15 April 2005 had very little effect on the total tax levied on cigarettes, despite the illusion that it had had a large impact. The increase in the specific component of the SCT received much media attention, and prompted Carreras to place an advertisement in the Jamaica Gleaner in which it announced an increase in the recommended retail price of cigarettes, blaming the "increase in the tax on cigarettes" as the rationale for doing so. We pointed out in the 2005 report that at least 80%, and possibly 90% or more, of the increase in the recommended retail price went to the tobacco industry's coffers, rather than to the government. The excise levy, dedicated to finance the National Health Fund, was imposed at a rate of 23% on the sum of the "base price" and the two SCT components. The General Consumption Tax was levied at the standard rate on the sum of the "base price", the two SCT components and the excise levy.

The government of Jamaica should be commended in changing the structure of the excise tax to be in line with international best practice.

Uniform specific excise taxes have one significant drawback, in that, if they are not adjusted regularly, their real value is eroded by inflation over time. Unfortunately, this has happened in Jamaica. The nominal excise tax was increased to J\$ 10 500 per 1000 cigarettes in January 2010, and has not been adjusted subsequently. Inflation has eroded the real value over time, to the extent that the real value of the excise tax is currently about 32% less than in January 2010.

Thus, even though the *structure* of the excise tax system follows international best practice, the *implementation* of the excise tax system does not. The *WHO Technical Manual* indicates that the excise tax should be adjusted regularly, in order to account for inflation and the growth in average incomes. In most countries the Minister of Finance has the power to adjust tax rates. Typically this is done at the annual reading of the budget. According to officials from the Ministry of Finance and Planning in Jamaica, the Cabinet has final authority about which reform options are actually implemented, but the Minister of Finance sets the agenda regarding tax reforms and tax changes. For the past five years there have not been changes in the nominal excise tax on cigarettes.

At the minimum, the Minister of Finance should adjust the nominal excise tax by the inflation rate, to ensure that inflation does not erode the real value of the excise tax. Such an annual inflationary increase should be standard policy. There is no need to negotiate the increase in the policy, because once policy is established, it would provide a high degree of policy predictability for the industry and the public alike.

#### **4.2 Cigarette excise taxes over the past decade**

Using data from a variety of sources (e.g. official data on SCT changes, declared import quantities and NHF revenue data) we compiled a time series dataset on the excise taxes

per pack of cigarettes for the period May 2004 to November 2014. We present the data in both nominal terms (where the impact of inflation is not removed) and real terms (where the impact of inflation is removed). For the series in real terms, we used November 2014 as the base period for the monthly analysis and 2014 (the average for the calendar year) as the base for the annual analysis.

The trend in the excise taxes on cigarettes are shown in Figure 1 below, for (1) the SCT (specific component only), and for (2) the SCT (specific and ad valorem components) plus the excise levy. The excise levy was abolished in April 2008, as was the ad valorem component of the SCT, which means that the two curves coincide after May 2008.

The SCT (specific component) is indicated by the red (barbed) lines in Figure 1. The nominal values are illustrated by the thin line and the real values are shown by the thick line. The stepped increases in the nominal SCT are clearly shown. There were nominal increases in April 2005 (from J\$ 1286.10 to J\$ 1920 per 1000 sticks), April 2007 (to J\$ 2300), April 2008 (to J\$ 6000), April 2009 (to J\$ 8500) and January 2010 (to J\$ 10 500).

Figure 1 clearly illustrates the eroding impact of inflation. Consider the real values of the SCT (i.e. the thick, red, barbed line). Since the Consumer Price Index increases nearly every month, the real value of the SCT is eroded consistently. The sporadic increases in the SCT typically regain some of the losses to inflation, but the eroding impact of inflation then starts afresh.

The SCT peaked at J\$ 15 475 in January 2010 (expressed in constant November 2014 prices), and has subsequently decreased to J\$ 10 500 in November 2014, and even lower in January 2015 (the time of writing this report).

The blue (smooth) lines include the ad valorem component of the SCT (which was significant in 2004/5 but became negligible subsequently and was officially abolished in

April 2008) and the excise levy; the latter levy funded the NHF. The thin line indicates the nominal amounts and the thick line indicates the real amounts (expressed in November 2014 prices). Since the excise levy was abolished in April 2008, the discussion in the following paragraphs covers the period May 2004 to April 2008. It is included for completeness only, since it does not have an impact on current excise tax policy.

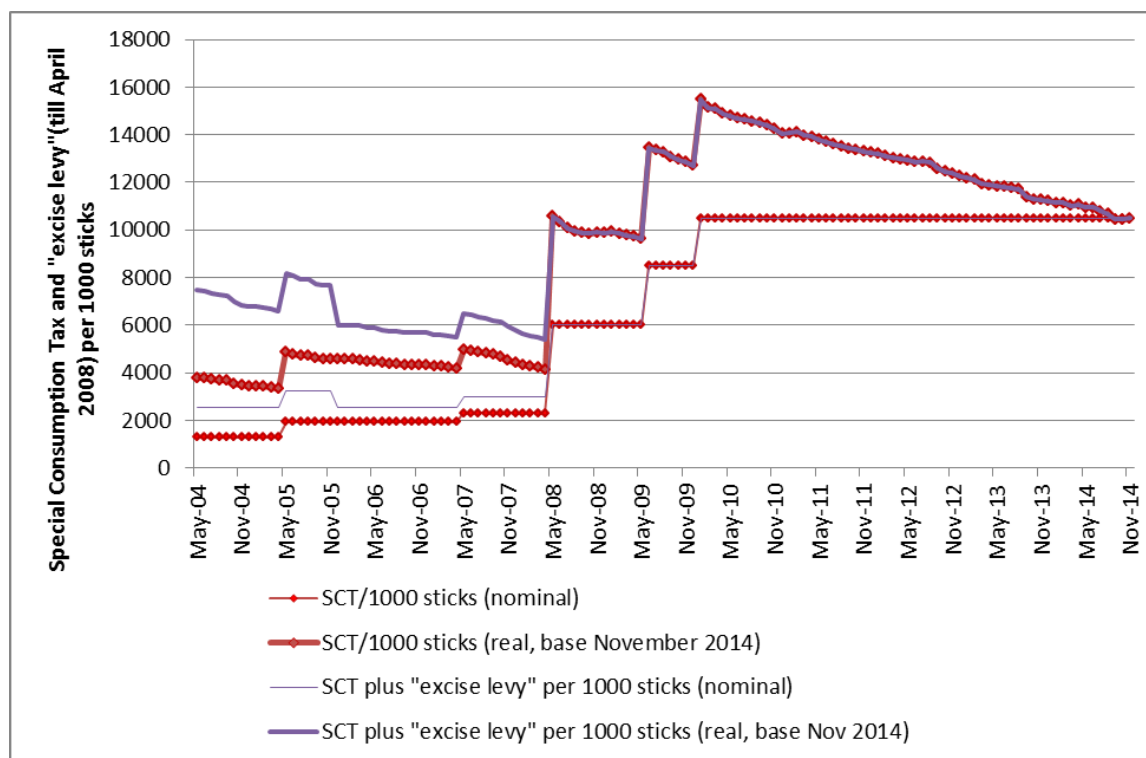
The excise levy was levied at a rate of 23% on the sum of a “base price” plus the SCT (both the specific and ad valorem components). When cigarettes were still produced in Jamaica, the “base price” was around J\$ 75 per pack. In November 2005 Carreras shut down its manufacturing facility and has subsequently imported all its cigarettes from Trinidad and Tobago. The “base price” now became the CIF value, and this was recorded at less than J\$ 20 per pack. The result was that the base value on which the excise levy was levied, decreased precipitously. Between 2005/6 and 2006/7 the revenue that the NHF received from the excise levy on tobacco products decreased by 48% (in nominal terms). This situation continued in the 2007/8 financial year, to the detriment of the government of Jamaica and the NHF.

This substantial decrease in the excise levy was a windfall to Carreras, who were able to raise their profits per stick, and, because they kept the nominal suggested retail price same (thus reducing the real retail price), were able to increase the quantity of cigarettes sold by 12% in 2006/7.

This exploitation of the excise tax structure by Carreras was clearly not in the government’s best interests, and in April 2008 the government simplified the system, by removing the excise levy and the ad valorem component of the SCT. The government increased the SCT from J\$ 2300 to J\$ 6000 per 1000 cigarettes. This was a substantial increase and more than made up for the loss of revenue due to the abolition of the excise levy. The NHF received 20% of the tobacco-related SCT revenues, which substantially increased its revenues from the depressed 2006/07 and 2007/08 levels. Through these tax

reforms the Jamaican excise tax structure was brought in line with international best practice.

**Figure 1: SCT and excise levy on cigarettes in Jamaica (per 1000 cigarettes)**



#### 4.3 Cigarette taxes per pack and tobacco-related government revenue

In Figure 2 below two specifications of tobacco-related tax revenue are shown on the primary vertical axis. The blue barbed line illustrates the tobacco tax revenue received from the SCT and the excise levy, combined (until April 2008) (in constant 2014 prices), while the smooth red line shows the sum of the revenues received from the SCT, the excise levy, tobacco-related GCT and tobacco-related import duties, levies and fees. On the secondary axis the bar chart indicates the real value (in 2014 prices) of the excise tax per pack of cigarettes, defined as sum of the SCT and the excise levy, but not including the GCT and the import duties, levies and fees (the rationale for excluding the latter tax categories is explained below).

As an aside, the next four paragraphs consider an issue that causes confusion in the press, among the public, and policy makers, and which is being used by the tobacco industry to present itself more favourably.

It is in the tobacco industry's interest to quote the highest possible tax revenue number, because it increases their importance as a tax-paying entity and an "ally of the fiscus" (our terminology, although this kind of sentiment is also used by officials in the Ministry of Finance). In newspaper reports, Carreras is quoted as contributing J\$ 11 billion (about 4% of total government revenue) to the government, making it the third or fourth largest tax-paying entity in the country.<sup>14</sup> Presumably this number of J\$ 11 billion includes not only the indirect tobacco-related taxes, but also corporate taxes and contributions such as the payroll taxes, since the maximum nominal amount of indirect tax revenue (i.e. SCT, excise levy, GCT and import-related duties, levies and fees) was J\$ 8.4 billion in 2010/11 (this amount cannot be read off from Figure 2, because figure 2 shows revenues in constant 2014 prices).

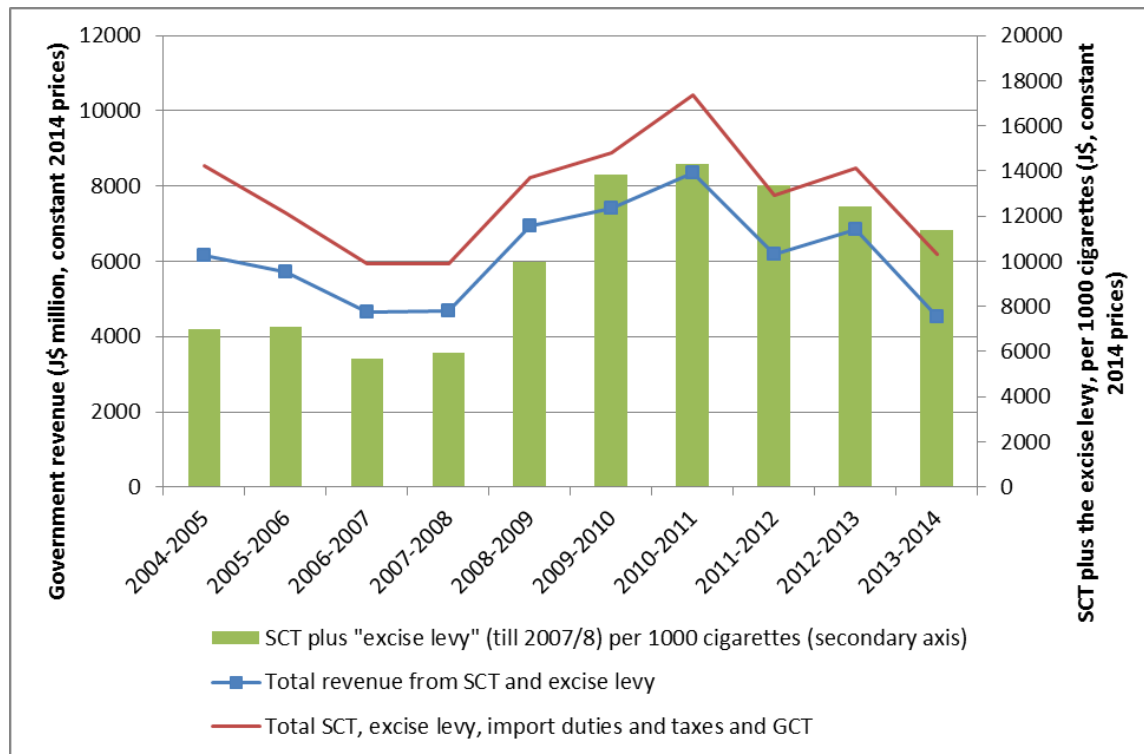
While Carreras's claim is not necessarily wrong, it is a misrepresentation to suggest that all taxes paid by Carreras are attributable to tobacco. Had tobacco and Carreras not existed, people would be spending their money on other things, which would be subject to GCT and, if they were imported, to the appropriate import duties, levies and fees. Also, the companies producing or distributing these other products would be subject to corporate tax, although the revenue raised from them would probably be less than the revenue raised from Carreras, given Carreras's extraordinary profitability.

The only taxes that are directly attributable to tobacco is the SCT and, before April 2008, the excise levy. If tobacco were to disappear overnight, the revenues collected through these two types of taxes would also disappear. The other taxes (GCT, import-related duties, fees and levies, corporate taxes and payroll taxes) would not disappear, but would

probably be reduced. For this reason the WHO, in its *Technical Manual*, urges countries to focus on the *excise* tax share (i.e. the excise tax as a percentage of the retail price), rather than the overall tax share, because the overall tax share includes taxes and levies that are common to all goods and services and that are not unique to tobacco.

Nevertheless, we present the analysis for both the tobacco-specific tax revenues (i.e. SCT and the excise levy) and the expanded definition (i.e. including tobacco-related GCT and import duties, fees and levies), because there is an apparent “acceptance” by the public and policy makers that one should attribute all the tobacco-related tax revenues to tobacco. We do not include corporate taxes into the analysis, in line with the existing literature.

Reverting back to Figure 2, we see that, over the period as a whole, there is a very strong positive relationship between the real excise tax per pack of cigarettes and real revenue received (irrespective of the definition of revenue). Decreases in the real excise tax per pack (such as in 2006/07 and 2007/08 and after 2010/11) are associated with decreases in real tax revenue, while the sharp increases in the real excise tax per pack (between 2008/09 and 2010/11) are associated with substantial increases in real tax revenue.

**Figure 2: Real cigarette-related tax revenues and the real excise tax per pack**

In the period 2010/11 to 2013/14 the decrease in real tax revenue (-40.5%, based on the expanded definition of tax revenue; -45.8% based on SCT revenues) seems high in comparison to the decrease in the real excise tax per pack (-20.9%). This indicates that, while the real excise tax per cigarette was decreasing, cigarette consumption was also decreasing. This sounds contradictory because one would expect cigarette consumption to increase when the real excise tax is decreasing. This matter is discussed in more detail in section 5.3.

## 5. CIGARETTE PRICES, CONSUMPTION AND ILLICIT TRADE IN JAMAICA

### 5.1 Cigarette prices

In the 2005 report we reported on retail prices of cigarettes between 1974 and 2003 and indicated that there had been a gradual upward trend in the real price of cigarettes over



this period. In fact, between the mid-1970s and the early 2000s the real price increased by about 60%, which equates to about 1.7% per year. Compared to countries that have used tax increases to increase the retail price aggressively and thus reduce tobacco consumption, the increase in the real retail price of cigarettes in Jamaica in this period was modest.

For the present study we used the “suggested retail price” of cigarettes (previously known as the “recommended retail price”), published by Carreras. Officials from Ministries of Health and Finance and members of the public health community argue that the actual average retail price paid by consumers is typically higher than the suggested retail price by Carreras.<sup>iii</sup> If this is true, it would imply that the “real” tax shares (i.e. either the SCT as a percentage of the retail price, or all tobacco taxes as a percentage of the retail price) would be somewhat lower than the numbers presented in this report.

Ideally we should use monthly cigarette price data collected by the Statistical Institute, used in the compilation of the Consumer Price Index. This will be more representative of reality than Carreras’s suggested retail prices. It is not clear whether such data exists and whether it is available going back to at least 2004. However, we are confident that, even though the suggested retail price might understate the true retail price, it represents the trends in the retail price accurately (assuming that the true retail price is higher than the suggested retail price by a constant percentage).

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<sup>iii</sup> If true, this experience would be similar to the experience in South Africa. BAT South Africa publishes recommended retail prices for its various brands. However, actual retail price data collected by Statistics South Africa (used in the compilation of the Consumers’ Price Index) suggests that the recommended price acts as a minimum retail price for the BAT brands. Most cigarettes are sold at higher prices. This strategy of setting the recommended price at a level lower than the actual retail price is particularly clever, because in South Africa the excise tax (which, like in Jamaica, is set as a uniform specific tax) is benchmarked to the average retail price. Rather than using the actual average retail price as collected by Statistics South Africa, the National Treasury uses the recommended retail price as the benchmark. This results in a lower excise tax amount per cigarette, which benefits BAT South Africa.

The monthly real suggested retail price of a pack of 20 cigarettes is shown in Figure 3. We decompose the retail price into three components: the net-of-tax price (shown as the bottom part of the bar chart), the SCT (shown as the middle part of the bar chart) and the GCT (shown as the top part of the bar chart). Figure 3, like Figure 1, clearly indicates the eroding effect of inflation. It also indicates that the suggested retail price increases correspond very closely to the excise tax increases.

The largest increase in the suggested retail price in the period under discussion took place in April 2008, when the nominal price increased from J\$ 280 to J\$ 420 per pack (i.e. a 50% increase). This large increase in the suggested retail price of cigarettes corresponded with a more than 100% increase in the SCT (from J\$ 46 per pack to J\$ 120 per pack), and the abolition of the excise levy (which amounted to approximately J\$ 14 per pack at the time).

Between January 2010 and December 2012 the nominal retail price of cigarettes remained largely constant at J\$ 580 per pack (it reduced to J\$ 575 per pack in early 2012). Presumably Carreras decided that the large tax-induced increases in the retail price in the previous three years, and the deep recession, were undermining its market and that the company wanted to stem the decrease in consumption. The fact that the nominal SCT was not increased certainly helped Carreras with this pricing strategy, in addition to its market dominance. Between January 2010 and December 2012 the real suggested retail price decreased by 21.4%.

However, in January 2013 Carreras increased the suggested retail price by 13% from J\$ 575 to J\$ 650, and in March 2014 the company increased the suggested retail price by another 17%.<sup>iv 15</sup> According to the CEO of Carreras, as reported in the *Jamaica Gleaner*,

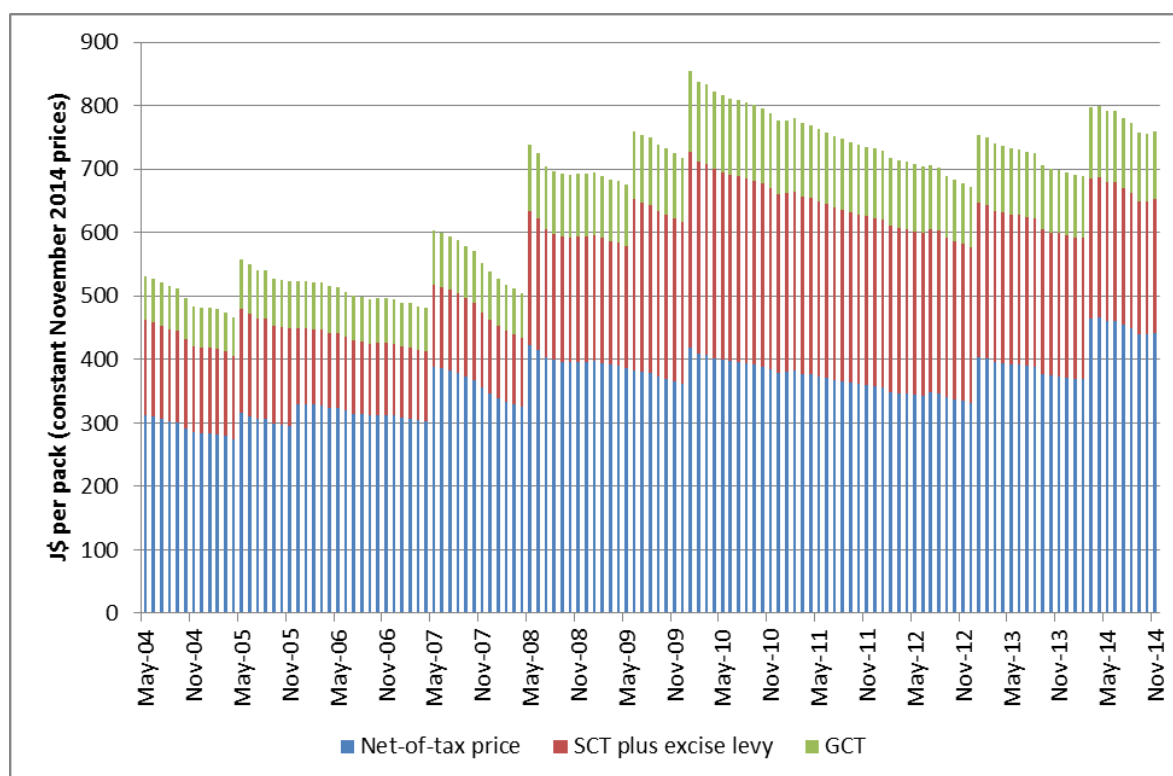
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<sup>iv</sup> We were unable to locate an advertisement or official announcement by Carreras to this effect. Our source is the CEO of Carreras, as quoted in the *Jamaica Gleaner*. A 17% price increase would increase the suggested retail price from J\$ 650 to J\$ 760. In the simulation analysis we work from the assumption that the retail price is J\$ 760.

“some of the fall-off in sales [in the 2013/14 financial year] was offset with price increases which came into effect on March 1 [2014]” (authors’ insertions in brackets).<sup>15</sup>

These increases in the suggested retail price are sizeable. Between December 2012 and March 2014 the real suggested retail price of cigarettes increased by 18.9%. In fact, in March 2014 the real suggested retail price was only 6.6% lower than the all-time highest real level, which was achieved in January 2010.

**Figure 3: Suggested retail price of a pack of cigarettes, broken down into tax and non-tax components, Jamaica (November 2014 base)**



## 5.2 Illicit trade

Carreras has argued that illicit trade is a problem in Jamaica and that the government is losing revenue as a result. One cannot deny that there is some illicit trade in cigarettes, as there is likely to be illicit trade in any product where there is easy money to be earned. It

is not clear whether illicit trade is increasing or not, although newspaper reports suggest that Carreras wants the public and the government to believe that it is increasing. In this respect Carreras would be following the international trend. Globally, the tobacco industry argues that illicit trade is increasing and at unacceptably high levels.<sup>16</sup>

The industry argues that illicit trade is caused by high excise taxes. At an intuitive level, this makes sense: if one can avoid paying the taxes, then an illicit trader can sell his or her product more competitively (i.e. at a price lower than the market price) and/or more profitably (i.e. with a greater profit per unit).

Internationally, there is not much empirical support for the industry's argument.<sup>17</sup> Countries that have some of the highest excise tax shares often have very low incidences of illicit trade. It seems that factors other than the level of the excise tax are more important in explaining the magnitude of illicit trade. The thoroughness of the border and customs controls, the probability of being caught, the severity of the penalties, and the general level of corruption in the country play at least as important a role in illicit trade as the amount of the excise taxes.<sup>17</sup>

An analysis of Carreras's pricing behaviour in recent years casts a completely different light on the illicit trade in cigarettes in Jamaica. On the one hand, Carreras complains that illicit trade in Jamaica is a problem and suggests that the problem is growing. On the other hand, Carreras aggressively increased the suggested retail price in January 2013 (by 13%) and March 2014 (by another 17%). These increases in the suggested retail price are well above the inflation rate, and as a result the real price increased by nearly 20% from its December 2012 level.

So the response might be: *“What is so wrong with Carreras's actions? Should Carreras not be allowed to set the price as it sees fit? If Carreras has market power (which it has), should it not exploit that market power to the benefit of its shareholders? It might even*

*have positive public health consequences because some people would be encouraged to reduce their cigarette use or quit completely.”*

The argument is valid, within the context of zero illicit trade. However, if there is substantial illicit trade, then Carreras would be foolish to increase the suggested retail price, and by implication, the net-of-tax price. The reason is that the increase in the net-of-tax price of cigarettes attracts competitors and potential illicit traders to the Jamaican market. Carreras has to weigh off the reality and/or possibility of an increase in illicit trade (that it detrimental to its business) and an increase in the real net-of-tax prices (that increases its profits). The reality, shown clearly in Figure 3, is that Carreras has discounted the threat of illicit trade and has gone for higher net-of-tax prices.

The tobacco industry argues that illicit traders are attracted to places where the *excise tax* is high. That may be true. However, it is equally true that competitors and illicit traders are attracted to markets where the *net-of-tax price* is high and increasing. By increasing the net-of-tax price, Carreras is inviting competition and illicit traders into its market.

Carreras’s financial statements suggest that it is a particularly profitable business. The fact that the CEO of Carreras has been named Jamaica’s top CEO underscores this.<sup>18</sup> We do not have insight into Carreras’s cost chain, but by subtracting various known taxes and fees from the retail price we get an insight into the net-of-tax component of the retail price. An analysis of trade data suggests that Carreras imports the cigarettes Trinidad and Tobago at extremely low CIF values. In fact, for the 2013/14 financial year, the average declared CIF value was J\$ 24 per pack. At current rates, taxes on a pack of 20 cigarettes, sold at J\$ 760 and imported at a declared CIF value of J\$ 24 are the following: import duty, levies and fees = J\$ 22.59, SCT = J\$ 210.00 and GCT = J\$ 107.64 for a total tax amount of J\$ 340.23 per pack (see section 6.3 for the derivation of these results). That leaves J\$ 395.77 to cover Carreras’s distribution costs, the wholesalers’ and retailers’ margin and the profit. Compared to the cost of the actual product (i.e. J\$ 24 per pack) the potential profits per

pack is very high.<sup>v</sup> The long-term increase in the tobacco industry's real net-of-tax price is illustrated in Figure 3.

In view of Carreras's profitability record, it seems likely that an increase in the suggested retail price was not necessary to save the company from financial ruin, but was aimed to enhance (or, at the minimum, maintain) its profitability.

The government of Jamaica has not increased the nominal SCT since January 2010, and the real value of the tax has been steadily eroded. One cannot credibly argue that there has been a sudden surge in illicit trade after 2010 as a result of an increase in the excise tax.

Thus Carreras finds itself in a situation where it is aggressively increasing the net-of-tax price, and at the same time lamenting the increase in illicit trade. In fact, when it increased the suggested retail price in March 2014 by 17%, it raised the real net-of-tax price to its highest level ever (see Figure 3). Its actions contradict its narrative. Its narrative is self-serving and hypocritical. Carreras's pricing strategy indicates that it is not overly concerned about illicit trade. By complaining about illicit trade it has put the government of Jamaica on the back foot. Partly in response to the perceived threat of illicit trade the government did not raise the excise tax. Real government revenues were substantially compromised as a result. In the meantime, after a period of consolidation (2010-2012), Carreras took advantage of the reduced real excise taxes, and increased the real net-of-tax price in order to maintain and possibly enhance its profitability.

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<sup>v</sup> Of course there is the possibility that Carreras is involved in transfer pricing with the exporter from Trinidad and Tobago. Both are subsidiaries of British American Tobacco. Transfer pricing is illegal. The reported CIF values for imported cigarettes from Trinidad and Tobago are substantially lower than for cigarettes imported from other countries. This matter was raised with the Commissioner of Customs and he is aware of the situation, but says that all goods from Trinidad and Tobago are declared at very low CIF values.

Carreras has played a very clever public relations game and it has won. By increasing the excise tax on cigarettes the government will call Carreras's bluff. Increasing the retail price of cigarettes should not be only Carreras's prerogative. The government of Jamaica can also share in the economic rents that derive from cigarettes. Given that the government and society, not Carreras, carries the cost of tobacco use, the government should not allow Carreras to take that which should go to the government.

In addition, in general Carreras has often stressed the counterfeit side of the illicit trade. However, mention is rarely, if ever, made of even the possibility of there being trafficking of contraband cigarettes into Jamaica. Unlike counterfeit products, which erode the profitability of both the local distributor and the external manufacturer, contraband may be legitimately obtained from the producer, in another market, and then illegally imported into Jamaica. While there is no known evidence of Carreras having been associated with the trade in contraband, its parent company, British American Tobacco and its subsidiaries, has in the past, been found to be complicit in the smuggling of cigarettes in other markets.<sup>19 20 21 22 23 24 25</sup>

Having said this, the authors of this report are not naïve about illicit trade. Illicit trade exists and it has the potential to undermine tobacco control efforts, especially the raising of excise taxes. Illicit trade can substantially reduce government revenue if it spins out of control. Customs officials need to be vigilant about illicit trade, and discussions with the Commissioner of Customs revealed that the customs authorities are serious in their attempts to curb all forms of illicit trade.

What we do say, however, is that the tobacco industry is not a reliable source for information on illicit trade. They have an incentive to exaggerate the threat and/or the magnitude of the problem, and a record of doing so.<sup>26</sup> Also, as pointed out in this section, their pricing strategy differs from their illicit trade narrative. The commonality between Carreras's pricing strategy and their public relations narrative are that they are both self-

serving. The government of Jamaica should discount Carreras's comments about illicit trade, given their self-serving nature.

Discussions with various stakeholders revealed a need for a study on the magnitude of illicit trade in Jamaica. Should the government decide to commission such a study, it should use sources that are completely independent of the tobacco industry.

### **5.3 The affordability of cigarettes in Jamaica**

During the past decade the tobacco control literature has been augmented with a literature on cigarette affordability. Affordability considers the two most important determinants of demand for a product, namely price and income, combined.

While the price of cigarettes is often the single most important determinant of cigarette demand, this has to be seen within the context of average income levels. For example, cigarettes might be more affordable in a high-income country with high cigarette prices than in a low-income country with significantly lower cigarette prices. The reason is that average incomes in the high-income countries are many times higher than in low-income countries, compared to the relative differences in the price of cigarettes. In fact, the evidence clearly indicates that cigarettes are more affordable in the typical high-income country, than in the typical low-income country.<sup>27 28</sup>

A similar argument holds for changes in cigarette prices and changes in income. For example, if the real price of cigarettes is increasing at a rate of 6% per year, this would generally be regarded as good for tobacco control. However, if the economy is growing at 8% per year and per capita real incomes are growing at 7% per year, then a 6% annual increase in the real price of cigarettes is not very impressive. Despite becoming relatively more expensive (relative to other goods and services), cigarettes are becoming more affordable, because of the very rapid growth in average incomes.



A number of measures of cigarette affordability have been developed, but the one that is most commonly used considers the percentage of per capita GDP required to purchase 100 packs of cigarettes.<sup>28</sup> The measure has been called the “relative income price” (RIP). The greater the RIP, the less affordable cigarettes are, and the smaller the RIP, the more affordable cigarettes are. An increase in the RIP implies that cigarettes are becoming less affordable, and a decrease in the RIP implies that cigarettes are becoming more affordable. Usually the price used in the calculation of the RIP is that of the most commonly consumed cigarette brand.

The RIP is particularly useful in seeing whether cigarettes are becoming more or less affordable over time, or to do cross-country comparisons. One cannot say “cigarettes are affordable” based on the RIP. However, one can say that cigarettes have become more affordable over the past 10 years in country X. One can also use the RIP to say that cigarettes in country X are more or less affordable than in country Y.

In Table 2 below the RIP is calculated for Jamaica for the period 1996/97 to 2013/14 (financial years). Per capita GDP, expressed in terms of the population aged 15 and older, is shown in column (2). The per capita GDP is shown in nominal terms, as is the retail price (the latter shown in column (3)). The RIP is calculated as the retail price of a pack of cigarettes, multiplied by 100 packs, and divided by the per capita GDP for that year. For the 1996/97 financial year, the RIP is 3.77. This implies that it requires 3.77% of per capita GDP (where the denominator in the calculation is the population aged 15+, rather than the whole population) to buy 100 packs of cigarettes in that year.

**Table 2: Calculating the relative income price of cigarettes in Jamaica, 1996/97 – 2013/14**

Financial year	Population aged 15+ (million)	Per capita GDP (J\$, nominal prices) (thousands)	Retail price (J\$ per pack, nominal prices)	Relative income price
	(1)	(2)	(3)	(4)
96/97	1.678	166	62	3.77
97/98	1.701	179	74	4.13
98/99	1.721	189	88	4.66
99/00	1.737	207	105	5.08
00/01	1.753	225	114	5.05
01/02	1.755	247	122	4.94
02/03	1.800	270	126	4.67
03/04	1.823	312	154	4.93
04/05	1.847	346	180	5.20
05/06	1.871	383	220	5.74
06/07	1.894	428	220	5.14
07/08	1.918	477	280	5.87
08/09	1.942	521	420	8.06
09/10	1.965	555	480	8.65
10/11	1.989	590	580	9.83
11/12	2.016	626	580	9.27
12/13	2.041	657	575	8.76
13/14	2.066	707	650	9.20

Source: Statistical Institute of Jamaica (population and GDP data), Carreras (prices from 2004/05 to 2013/14), Van Walbeek, et al., 2005 (prices 1996/97 to 2003/04)

It is evident that cigarettes have become significantly less affordable in Jamaica over the 18-year period. The RIP has increased from around 4 at the start of the period to 5.9 in 2007/08. The large increase in the price of cigarettes in April 2008, triggered by the excise tax increase, made cigarettes substantially less affordable. The subsequent two tax and price increases in 2009 and 2010 made cigarettes even less affordable. In fact in 2010/11 cigarettes were the least affordable in Jamaica's recent history. In the subsequent two years cigarettes became somewhat more affordable as the nominal price stayed broadly the same but nominal per capita GDP increased somewhat. The industry-driven price increase in 2013 again reduced the affordability of cigarettes somewhat.

Within an international context cigarettes in Jamaica are not very affordable. According to the Tobacco Atlas, the RIP was 13.2% in 2010. This is somewhat higher than the numbers displayed in Table 2, because they use a different definition of the population (the Tobacco Atlas uses the whole population, whereas we use the population aged 15 and older). In most countries cigarettes are more affordable than in Jamaica, other than in many sub-Sahara African countries and countries like India, Sri Lanka, Timor-Leste and Vanuatu.

#### 5.4 Cigarette consumption

The consumption data for the period under scrutiny were derived from a number of sources (including NHF revenue data, declared imported quantities, and SCT revenue data, divided by the SCT per pack).

Cigarette consumption in Jamaica has been decreasing for decades. In the 2005 report it was shown that per capita consumption decreased by approximately 60% between the early 1970s and the early 2000s. Per capita (aged 15+) consumption in 2003 was estimated at 502 cigarettes, which translated to aggregate consumption of 911 million sticks.

In Figure 4 aggregate annual cigarette consumption (the blue line) is shown on the primary vertical axis, together with the annual average real cigarette price per pack (the bar chart) on the secondary vertical axis.

Throughout the 2004/05 – 2013/14 period there has been a downward trend in aggregate cigarette consumption. In fact, between 2004/05 and 2012/13 recorded (i.e. tax-paid) aggregate cigarette consumption decreased by 36.3%. In 2013/14 recorded cigarette consumption decreased by another 27.7%.

These are large decreases, over a fairly short period of time. A legitimate concern by officials in both the Ministries of Health and Finance is the following: are these decreases in aggregate consumption real (in that they represent a reduction in smoking prevalence and/or smoking intensity by remaining smokers) or do they simply reflect an increase in illicit trade (and thus a substitution of illicit cigarettes for legal cigarettes)? In other words, should this decrease in aggregate consumption be cause for public health celebration or should it be cause for concern? We address these concerns by considering the decrease in cigarette consumption in the 2004/05 - 2012/13 period first, followed by an analysis of the decrease in cigarette consumption in 2013/14.

In 2012/13 the real average price of cigarettes was 35% higher than in 2004/05, driven primarily by an increase in the real excise tax, and to a lesser extent by an increase in the real net-of-tax price. The price elasticity of demand for cigarettes in low- and middle income countries have been estimated at between -0.4 and -0.8.<sup>7,9</sup> In the 2005 report we concluded that the price elasticity of demand for cigarettes in Jamaica also falls in this range. Thus, independent of any other factors that influence the demand for cigarettes, the price increase would be expected to decrease cigarette consumption by between 14% (35% increase in the price x -0.4 price elasticity) and 28% (35% x -0.8).

Secondly, the demand for cigarettes, like most consumer products, is influenced by the growth in people's average incomes. While there is no "best" indicator of the growth in people's average incomes, the growth in per capita GDP is often used as a good approximation. From Table 1, it is clear that the economy of Jamaica has struggled between 2004 and 2012. In fact, in those nine years, aggregate GDP decreased in four years, and grew only modestly in the other five years. The 2004-2012 period included a deep three-year recession, starting in 2008, in which the Jamaican economy shrank by a cumulative percentage of more than 6%. Expressed in per capita terms (not shown in Table 1), average GDP shrank by close to 10% in the 2008-2010 period alone.

According to basic economic principles and the experience of other countries, the decrease in Jamaica's per capita GDP over the whole 2004-2012 period, but between 2008 and 2010 in particular, would significantly reduce cigarette demand. International studies suggest that the income elasticity of demand for cigarettes in low- and middle-income countries, on average, lies between 0.6 and 0.8.<sup>7</sup> Thus a 10% decrease in per capita GDP would be expected to decrease cigarette consumption by between 6% and 8%. A closer inspection of Figure 4 indicates that the most rapid decrease in cigarette consumption was in 2009/10, which corresponds to the deepest point of the recession, thus providing further evidence that people's cigarette purchases are strongly influenced by the macro-economic situation.

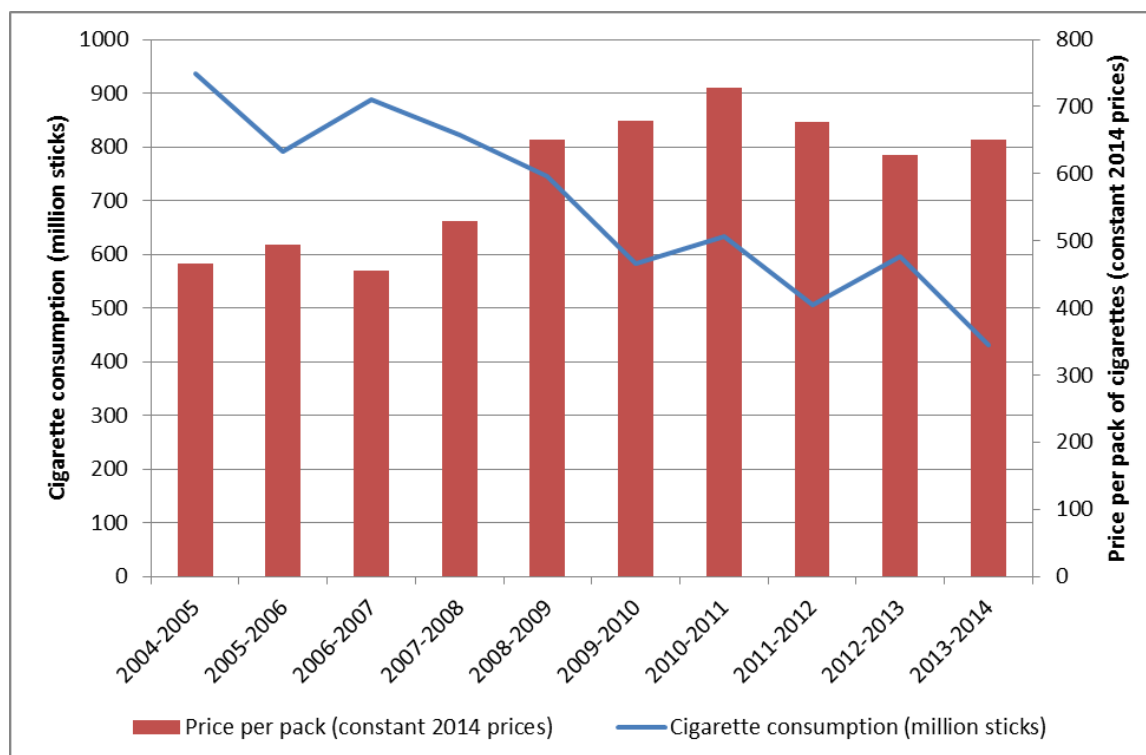
The third possible explanation for the decrease in cigarette consumption between 2004 and 2012 concerns Jamaica's signing (September 2003) and subsequent ratification (July 2005) of the Framework Convention on Tobacco Control (FCTC). The media attention attracted by these events, together with a very active civil society and public health community, urging the government to implement the provisions of the FCTC, has raised the public's awareness about the detrimental consequences of tobacco use. This increased awareness, independent of the increased average price of cigarettes and the poor performance of the economy, would reduce the demand for cigarettes. Unfortunately, it is not possible to quantify the impact of this increased awareness, but it certainly would have had an effect on consumption.

If we add all these three influences together (a 14%-28% decrease in consumption attributable to the increase in the real price of cigarettes, a 8% decrease attributable to the decrease in per capita GDP, and an unknown decrease attributable to increased health awareness), the 36.3% decrease in cigarette consumption over the 2004-2012 period is completely plausible. If we conservatively assume that the increased awareness about the health effects of tobacco reduced tobacco consumption by 3% over the 2004-2012 period,

we would expect cigarette consumption to decrease by between 25% (14% + 8% + 3%) and 39% (28% + 8% + 3%).

The tobacco industry is likely to argue that there has also been an increase in illicit trade over this period. In fairness, that possibility cannot be ruled out. However, the increase in illicit trade is unlikely to have been large. As indicated above, most of the 36.3% decrease in the consumption of legal cigarettes is explained by verifiable and well-understood economic factors.

**Figure 4: Aggregate cigarette consumption and the real price of cigarettes in Jamaica**



The nearly 30% decrease in cigarette consumption in a single year (2013/14) is dramatic and unprecedented in Jamaica's history. This sharp decrease can be attributed primarily to the passing of the *Public Health (Tobacco Control) Regulations* by the Minister of Health in May 2013, which became effective in July 2013. The Regulations, amongst other

provisions, provided for comprehensive smoke-free public places and for the introduction of pictorial health warnings. Although 75% coverage was initially proposed, the government eventually settled at 60% coverage.

The effectiveness of the Tobacco Control Regulations in reducing the demand for cigarettes was acknowledged by the CEO of Carreras, who, according to a newspaper report, indicated that the new law was “the main factor affecting sales” of the company.<sup>15</sup> The CEO also pointed out that “another negative factor hitting Carreras was the increase in the sales of counterfeit cigarettes”.<sup>15</sup> However, as pointed out in section 5.2, the tobacco industry is quick to point that there has been an increase in illicit trade; it seems to be part of their standard narrative.

Another factor that presumably reduced the demand for cigarettes in 2013/14 was the 13% nominal increase in the retail price of cigarettes in January 2013 and the subsequent 17% increase in March 2014 (although the impact of the latter price increase was small because it would have influenced consumption in only one month of that financial year). Both were pricing initiatives of Carreras as we have discussed before.

Other than the price effect, cigarette demand was negatively affected by the decrease in per capita GDP. In 2012 the economy was in recession, and grew at a modest rate of only 0.2% in 2013. In both years per capita GDP was decreasing, reducing the demand for cigarettes, independent of the price effect and the effect of the legislation.

While the focus of this report is on cigarette taxation, and the positive public health and fiscal affects that are derived from such tax increases, the recent Jamaican experience indicates that strong tobacco control legislation can also be very powerful and effective. That this is acknowledged by the tobacco industry, is telling.

The success of the tobacco control legislation in reducing tobacco use comes at a fiscal cost. Tobacco-related tax revenues will decrease as people reduce their consumption of tobacco products. While this loss of revenue may be of concern to the Ministry of Finance, the Minister of Health's argument is that it is a price worth paying (Hon. Dr Fenton Ferguson, personal communication, 21 January 2015). The aim of the tobacco control legislation was to reduce cigarette consumption. The government should not complain if its legislative interventions are effective, i.e. reduce tobacco consumption. As will be shown in the simulations in the next section, it is unlikely that real government revenue will reach the 2010/11 levels again. That does not mean that excise tax increases are not effective. It simply means that other tobacco control interventions have independently reduced tobacco consumption as well.

## **6 QUANTIFYING THE IMPACT OF AN INCREASE IN THE EXCISE TAX**

Like in the 2005 report, we present the results of a modelling exercise to demonstrate the likely impact of a change in the excise tax on cigarette consumption and government revenue. We briefly discuss the predictions and outcomes of the 2005 modelling experience and incorporate the lessons learned from that experience in the current modelling exercise.

### **6.1 An ex post evaluation of the predictions made in the 2005 report**

In Table 6 of the 2005 report we indicated that, the government would be able to increase its real revenue by more than 50% from 2004 levels, reduce tobacco consumption by nearly 40%, and increase the real retail price of cigarettes by 75%, should it increase the excise tax to its revenue-maximising level. In the 2010/11 fiscal year the total tax amount per cigarette (comprising the SCT, GCT and the import-related duties, levies and fees), in real terms, was at its maximum. We thus compare the predictions with the outcomes as they were in 2010/11. These are shown in Table 3.



**Table 3: Comparison of forecasts to actual outcomes (comparing 2010/11 fiscal year to 2004/05 fiscal year)**

<i>Variable</i>	<i>Forecast</i>	<i>Outcome</i>
Change in the real price of cigarettes	75% increase	+92.0%
Change in cigarette consumption	Nearly 40% decrease	-32.3%
Change in government revenue	50% increase	+22.0%

Forecasting is an imprecise endeavour, and errors are inevitable. However, as forecasts go, the forecasts made in 2005, are in the right direction and broadly of the right magnitude. Between 2005 and 2010 the real excise tax per pack of cigarettes increased sharply, although not to the levels suggested in the 2005 report. Cigarette consumption decreased, as predicted, but not but quite as much as 40%. Real government revenue increased by 22% between 2004/05 and 2010/11; this was less than the predicted 50% increase.

The predicted increase in government revenue turned out to be too optimistic. The inability of the model to accurately predict the growth in government revenue is explained primarily by the tobacco industry's pricing behaviour. In the forecasting model we assumed that the industry would keep the real net-of-tax price (what we called the "industry price" in the 2005 report) constant, in the face of increased excise taxes. It turned out that the industry *increased* the real net-of-tax price as the government increased the excise tax. The combination of the increase in the real excise tax and the increase in the real net-of-tax price was that the real retail price increased by more than predicted (92% vs. predicted increase of 75%, see Table 3). The implication of the industry's pricing strategy was that the industry was able to enhance its real revenues per cigarette sold, at the expense of government revenues.

From a public health perspective the tobacco industry's pricing strategy was beneficial, because it helped to reduce the demand for cigarettes. Consumers respond to changes in

the retail price of cigarettes. Whether those changes are brought about by changes in the excise tax or changes in the net-of-tax price is immaterial from the consumers' perspective. However, from a fiscal perspective, the industry's pricing strategy was detrimental, because it reduced the base on which the revenues were based. Recall that the total revenue received by government is equal to the total number of cigarettes consumed (which was reduced because of the industry's pricing policy), multiplied by the tax per cigarettes (which is mostly a fixed amount).

In the 2005 report we explicitly acknowledge that it is likely that the industry would respond to increases in the excise tax by raising the real net-of-tax price (see discussion on pages 22-23, 38 and 61-63).<sup>vi</sup> However, it is difficult, if not impossible, to know the magnitude of the industry price response, and as a result we, rather unfortunately, did not account for any change in the net-of-tax price in response to the excise tax increase. In the modelling that we perform for this report we allow the user to change the net-of-tax price. This is a user-determined percentage, as there is no way of knowing up-front how the tobacco industry is going to change the net-of-tax price in response to a change in the excise tax. Nevertheless, incorporating some change in the "net-of-tax" price is likely to yield better predictions than not incorporating any change into the "net-of-tax" price.

## **6.2 The forecasting model**

The forecasting model is Excel based, and is available to readers of this report. The model is completely user-driven. The Excel file consists of two main sheets, and a number of

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<sup>vi</sup> We repeat footnote 15 on page 38 here for additional clarification: ".....This [the assumption that the industry will not change the net-of-tax price in response to a change in the excise tax] is not always the best assumption to make, because the tobacco industry may have an incentive to increase the real retail price by more than the increase in the real amount of the tax. Should this happen, the benefit to the Ministry of Finance will be decreased to some degree, because the additional price increase (over and above the increase in the amount of the tax) will cause an additional reduction in the quantity consumed that is not explained by the increase in the amount of the tax. Importantly, even though the magnitude of the increase is somewhat smaller, it is an increase nonetheless. The public health benefit will be amplified, because people are going to cut back their cigarette consumption by more than what the tax-induced price increase would have achieved by itself."

additional sheets required for the graphics that are presented in this report. The first is the *Input* sheet. Users can change any of the input variables; these are shown with a yellow background. The second sheet is the *Output* sheet, in which the simulated impact of a particular tax intervention (e.g. increasing the SCT from J\$ 10 500 to J\$ 16 000 per 1000 cigarettes) on all the variables of interest are shown. The *Output* sheet is derived from the user-determined inputs in the *Input* sheet. The other sheets are required for the graphics and the analysis presented in section 6.3 below.

This section briefly outlines the broad structure of the model. Readers not interested in the mechanics of the model can continue to section 6.3, without loss of continuity.

The fundamental principle underlying the model is that the retail price of cigarettes can be broken up into clearly identifiable tax and non-tax components. The tax components are (1) the SCT, (2) the GCT and (3) the various import duties, levies and fees (we identify each of these import costs separately in *Input* sheet, but because these amounts are typically small, and not really the focus of tobacco control policy, we lump them together under the heading “import duties, levies and fees”). The non-tax components are (1) the CIF value and (2) a catch-all concept that we call “distribution costs, wholesale and retail margins and profit”. The sum of these two non-tax components comprises the net-of-price of cigarettes. The sum of the three tax components and the two net-of-tax price components equals the retail price.

The tax components are known (e.g. the SCT is currently J\$ 10, 500 per 1,000 sticks which equals J\$ 210 per pack of 20 cigarettes and the GCT is currently 16.5% of the GCT-excluded retail price) or can be easily calculated from other known non-tax components (e.g. the import-related costs can be derived from the CIF value). By subtracting the three tax components and the CIF value from the retail price, we calculate the “distribution costs, wholesale and retail margins and profit”. The latter component is thus calculated as a residual, because there is no publically available data on this cost category.

By multiplying the relevant tax component per pack of cigarettes by the number of cigarettes sold, we obtain the total tax revenue for that tax component. So, for instance, the total SCT revenue (J\$ 6545.5 million, rounded to J\$ 6546 million) is the SCT per pack (J\$ 210) multiplied by the number of packs of cigarettes (21.55 million packs, 431 million sticks). We do the same for import-related duties, levies and fees (considered together) and GCT.

The GCT is levied at 16.5% and operates like a value-added tax. In principle a pack of cigarettes selling at J\$ 760 should be subject to  $J\$ 760 \times [16.5/(100+16.5)] = J\$ 107.64$  GCT. However, even though the GCT might be levied, a proportion of this amount is not paid over to the government. The defaulters are typically small wholesalers and retailers. Their turnovers are typically so small that it is not worthwhile for the revenue authorities to pursue them. The model allows for this leakage. Through an iterative process, we find that 48.8% of the cigarette-related GCT revenue is leaked like this.

In the calculation of the tax amount per pack of cigarettes, the full amount of the GCT is included, since the consumer *thinks* that he/she is paying this tax amount. However, in the calculation of the GCT revenues, we subtract the leaked amount from the amount of revenue that should have been collected by the government.

The model is calibrated such that the simulated values of the different tax revenue components equal the actual values of these tax revenue components, with a maximum tolerance of 0.2%. Thus, as a description of the tax revenue situation in any particular year, the model can be calibrated to a high degree of accuracy.

In the second step, the user is able to make changes to important tax and the non-tax components, which make up the retail price of cigarettes. In particular, the user can change (1) the CIF amount per cigarette (which will influence the amount of import duties,

levies and fees, albeit modestly), (2) the “distribution cost, wholesale and retail margin and profit”, and (3) the SCT. The model does not allow the user to change the GCT or the rates at which the import duties, levies and fees are imposed. These rates are generic to many products and would not be used as a tobacco control tool.

By allowing the user to change the CIF value and “distribution cost, wholesale and retail margin and profit” the current model improves upon the model used in the 2005 report. Recall that the forecasts made in the 2005 report were negatively affected by the rather unfortunate assumption that the net-of-tax price would not change. Now the user can control the predicted change in the net-of-tax price by changing the CIF value and/or the “distribution cost, wholesale and retail margin and profit”.

Once the user has changed these three price components, the model calculates a new retail price. The change in the price drives the change in consumption. The percentage change in the price is multiplied by the user-determined price elasticity of demand in order to calculate the percentage change in the quantity.<sup>vii</sup> Like in the 2005 report and in line with the experience in many low- and middle-income countries, we use a default price elasticity of demand of -0.5. The model also allows the new quantity consumed to be influenced by the change in real GDP. An increase in the real GDP increases the demand

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<sup>vii</sup> While the price elasticity concept is well understood in economics, there are a number of ways to apply the formula. The point elasticity approach is applicable for extremely small changes in the price of the product. This is not applicable in this simulation. The arc elasticity approach has the advantage of symmetry. This means that price increases from  $P_0$  to  $P_1$  and price decreases from  $P_1$  to  $P_0$  will yield the same absolute change in the predicted quantity. However, it has the drawback that tax revenues are a permanently increasing function of the excise tax rate. As such the Laffer curve never turns negative, which is unrealistic (see the 2005 report, page 41). Thus we use the simplest specification, using the price and quantity in the base period as the base value, and using the definition that the price elasticity of demand is the percentage change in the quantity divided by the percentage change in the price. The advantage of this approach is that the Laffer curve becomes downward sloping at some point. The disadvantage is that it is not symmetrical for price increases and decreases.

for cigarettes, the magnitude of which is determined by the income elasticity of demand (this is also a user-determined variable; we use a default of 0.8<sup>viii</sup>).

The revenue per tax component is equal to the new quantity of cigarette (in packs), multiplied by the relevant new tax amount per pack of cigarettes. Total revenue from all cigarette-related taxes is simply the sum of revenues generated from the SCT, the GCT and the import-related duties, levies and fees.

The model subsequently calculates the percentage change in selected variables between the simulated scenario and the base scenario.

### 6.3 Simulation results

As an illustration of how the model works, we present the *Output* sheet for one simulation in Table 4. Users of this report are encouraged to use the Excel spreadsheet to try out alternative scenarios and/or use different sets of assumptions. The base scenario is shown in column (1). The first part of the table breaks down the retail price into the various tax and non-tax components. At the outset we assume a retail price of J\$ 760 per pack. The second part summarises the tax components per pack of cigarettes and calculates the tax share (i.e. tax as a percentage of the retail price), for the SCT separately, and for the three tax components combined. The third part considers the revenues from the three tax components, and also indicates the amount of GCT revenue that is lost through leakage, as discussed previously.

Total tax revenue, according to the model, equals J\$ 6200 million. This corresponds exactly to total the recorded revenue for 2013/14, and indicates that the model is well-calibrated.

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<sup>viii</sup> Given that the economic growth rate in Jamaica has historically been low and is unlikely to increase to Asian levels in the near future, the magnitude of the income elasticity of demand does not have a material impact on the demand for cigarettes.

In column (2) of Table 4 we change some of the crucial parameters. For this simulation exercise we increase the SCT to J\$ 16 000 per 1000 cigarettes. We also increase the CIF value by 10% (from J\$ 24 to J\$ 26.40 per pack), and we increase “distribution costs, wholesale and retail margins and profit” by 15%. We assume that GDP would grow by 2%. The price elasticity of demand of -0.5 and the income elasticity of demand of 0.8 approximate the international averages for these two magnitudes for low- and middle-income countries. Also, we assume that 25% of imported cigarettes are subject to the standard import duty of 40%, while the rest are imported duty-free, giving a weighted average import duty rate of 10%.

The percentage changes are shown in column (3) of Table 4.

From column (2) we can see that the joint effect of raising the SCT, the CIF value and “distribution costs, wholesale and retail margins and profit” is to increase the retail price to J\$ 960.41 per pack (from J\$ 760 in the base scenario). The GCT amount has also increased, since it is a constant proportion of the retail price, even though the GCT rate remained unchanged.

The SCT tax share (defined as the SCT amount as a percentage of the retail price) increases from 27.6% to 33.3%, while the total tax share increases from 44.8% to 49.9%.

The single most important variable in the model is cigarette consumption, both for its own sake (because this is the best indicator of the public health impact of a change in the excise tax), and since it drives the revenue components (recall that total tax revenue is the tax amount per cigarette multiplied by the number of cigarettes consumed). With a 26.4% price increase and a price elasticity of -0.5, consumption would be expected to decrease by 13.2%. However, because we assume a 2% increase in GDP, the decrease in cigarette consumption is attenuated to 11.8%.

Consider part 3. The combined effect of the tax changes, interacted with the decrease in consumption, is that import tax-related revenue decreases by 10.8%, SCT revenue increases by 34.4% and GCT revenue increases by 11.5%. Total tobacco related tax revenue increases by 26.5% to J\$ 7841 million (all values are expressed in constant 2014 prices).

This increase in total tax revenue is significant but it does not raise revenue to the level it was in 2010/11 (which was J\$ 10 421 million in constant 2014 prices). The reason was alluded to in section 5.3, but is repeated here for completeness. There has been a structural decrease in cigarette consumption that can be attributed, firstly, to decreasing per capita incomes in Jamaica since 2008, and secondly, to the Public Health (Tobacco Control) Regulations that came into force in 2013. A third possible reason is the alleged increase in illicit trade. As was pointed out, it is possible that there was an increase in illicit trade, but the analysis indicates that it has not been so substantial as to significantly undermine the impact of an increase in the excise tax.



**Table 4: Simulation results for an increase in the SCT to J\$ 16 000 per 1000 cigarettes**

<b>Part 1:</b>	<b>Base scenario</b>	<b>Scenario 1</b>	<b>Percentage Change</b>
<b>Decomposing the retail price (J\$ per pack)</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
CIF value	24.00	26.40	10.0
Import duties and fees (total)	22.59	22.85	1.1
Of which: Import duty	2.40	2.64	10.0
Environmental levy	0.12	0.13	10.0
Additional stamp duty	0.00	0.00	
Special compliance fee	0.07	0.08	10.0
Customs administration fee	20.00	20.00	0.0
Special Consumption Tax	210.00	320.00	52.4
Distribution costs, wholesale and retail margins and profit	395.77	455.13	15.0
General Consumption Tax	107.64	136.02	26.4
<b>Retail price</b>	<b>760.00</b>	<b>960.41</b>	<b>26.4</b>
<b>Part 2</b>			
<b>Taxes per pack (J\$ per pack)</b>			
Import duties and fees (total)	22.59	22.85	1.1
Special Consumption Tax	210.00	320.00	52.4
General Consumption Tax	107.64	136.02	26.4
<b>Total taxes</b>	<b>340.23</b>	<b>478.87</b>	<b>40.7</b>
SCT as percentage of retail price	27.6	33.3	
All taxes as percentage of retail price	44.8	49.9	
Cigarette consumption (million sticks)	431	380	-11.8
<b>Part 3</b>			
<b>Aggregate tax revenues</b>			
Total import duties and fees	487	434	-10.8
Special Consumption Tax	4526	6083	34.4
General Consumption Tax	2320	2586	11.5
Less GCT not collected (leaked)	-1132	-1262	11.5
<b>Total government revenue</b>	<b>6200</b>	<b>7841</b>	<b>26.5</b>

In the previous example the simulation considered a particular scenario, i.e. increasing the SCT from J\$ 10 500 to J\$ 16 000 per 1000 cigarettes. What would happen if the

government increases the SCT to only J\$ 12 000 per 1000 cigarettes? Or to J\$ 14 000? Or to any other rate? The model allows one to ask these types of questions, and presents the results of the simulation in a reasonably accessible format.

Figure 5 below indicates the impact of a range of changes in the SCT on government revenue. The “new” SCT (in J\$ per 1000 cigarettes) is shown on the horizontal axis (and ranges from J\$ 9000 (i.e. a decrease from the current level of J\$ 10 500) to J\$ 21 000. All the assumptions that underlie the analysis presented in Table 4, apply here as well (i.e. a 10% increase in the CIF value, a 15% increase in “distribution costs, wholesale and retail margin and profit”, a 2% GDP growth rate, etc.).

On the primary vertical axis one can read off the expected amount of SCT revenue and total tobacco-related government revenue, for different SCT tax amounts, and given the assumptions presented in the previous paragraph. For, example, should the government increase the SCT to J\$ 16 000 per 1000 cigarettes, SCT tax revenue would be expected to be J\$ 6083 million (compared to J\$ 4525 million in the base scenario), while total tobacco-related revenue would increase to J\$ 7841 (compared to J\$ 6200 in the base scenario).

On the secondary vertical axis one can read off the percentage change in the total tobacco-related revenue (on the line graph), and the tax share (expressed in terms of the SCT, rather than all three taxes combined, on the bar chart). The percentage increase in total revenue is 26.5% and the new tax share is 33.3% of the retail price.

The values that are read off from the chart (and from the appropriate tables in the Excel sheet) correspond exactly to the values presented in Table 4. This is not a coincidence, since the same assumptions on which Table 4 is based, also apply to Figure 5.

Figure 6 is interpreted broadly in the same way as Figure 5, but focuses on consumption. The primary vertical axis shows the expected level of consumption associated with

different levels of SCT taxes. As the SCT increases, consumption, not surprisingly, drops. The secondary axis again shows the SCT tax share (as the bar chart) and the percentage change in consumption. In order to make the graph more readable, we present the *absolute value* of the change in consumption on the secondary vertical axis. Thus, for this variable, a large number represents a large decrease, and a small number represents a small decrease.

From Figure 6, if the SCT increases to J\$ 16 000, consumption is expected to decrease to 380 million cigarettes, which represents a 11.8% decrease. Again these changes in consumption correspond exactly to the numbers presented in Table 4.

**Figure 5: Fiscal impact of a range of changes in the Special Consumption Tax**

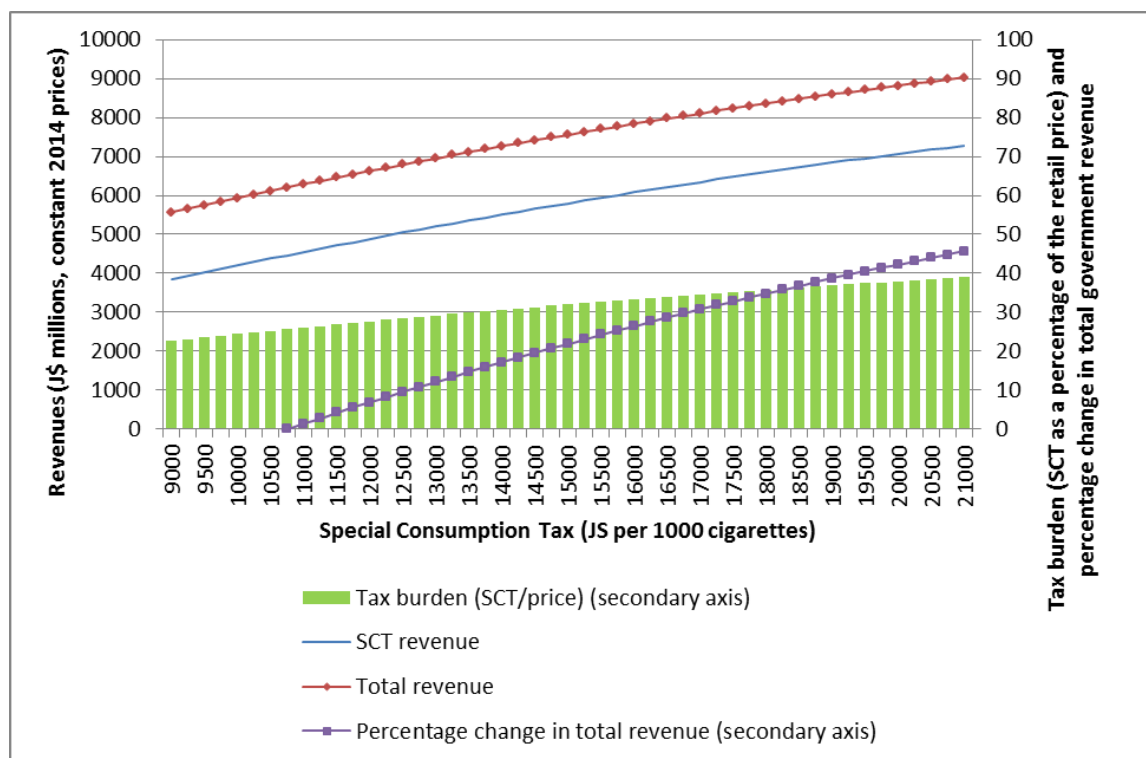
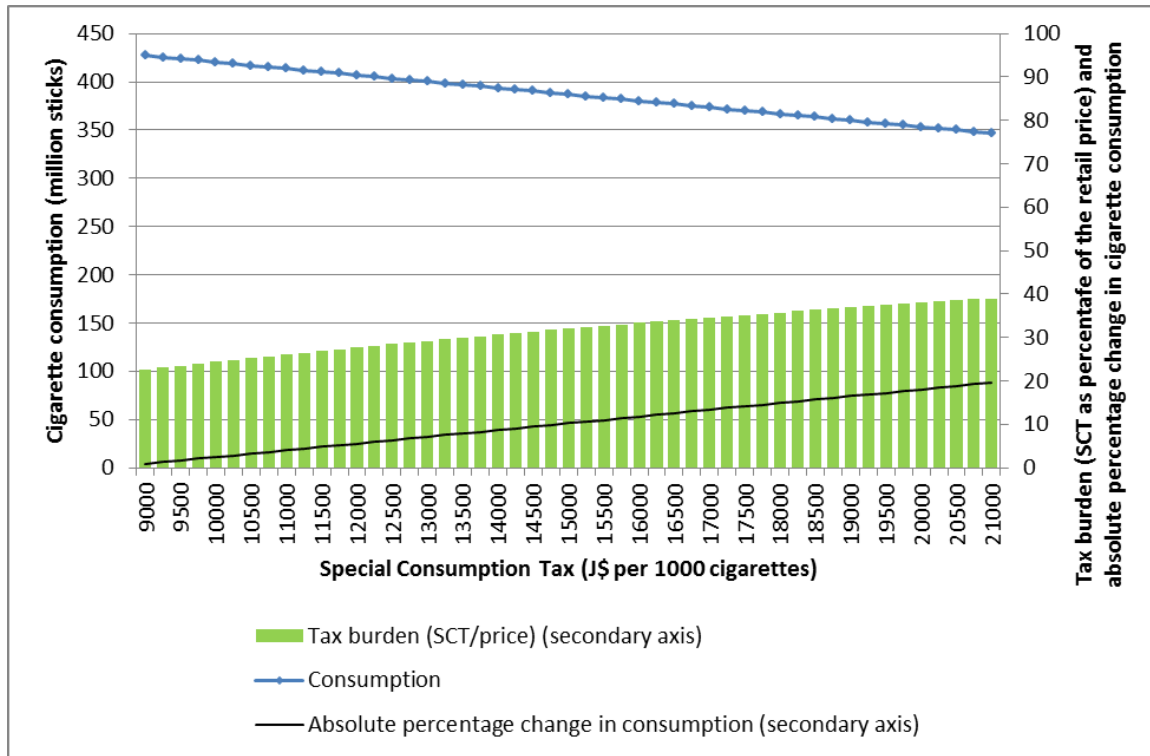


Figure 6: Consumption impact of a range of changes in the Special Consumption Tax



Should the SCT increase to only J\$ 12 500 per 1000 cigarettes, the impact would, of course be smaller. From Figures 5 and 6 we would expect total tobacco-related revenue to increase by 9.6%, consumption to decrease by 6.3%, and the SCT tax share to increase to 28.4% from its current level of 27.6%.

On the other hand, if the government of Jamaica wants to be bold in its excise tax policy, and increases the SCT to J\$ 20 000 per 1000 cigarettes, then this would result in an expected 42.3% increase in total tobacco-related revenue and a 18% decrease in cigarette consumption. The SCT tax share would be expected to increase to 38.0%. These predictions are based on based on an assumption of a 10% increase in the CIF value and a 15% increase in the “distribution cost, wholesale and retail margin and profit”. However, should the government increase the SCT by such a substantial percentage, even over multiple years, our assumptions about the industry’s pricing strategy may differ from the actual outcome and cause the predictions to become less accurate. We saw in section 5.1

that the predictions about the growth in government revenue that we made in 2005 were undermined by the tobacco industry's pricing strategy.

#### **6.4 Revenue maximising tax rates**

In the 2005 report we presented a curve that showed the relationship between the tax share (defined as the sum of all tobacco-related taxes as a percentage of the retail price) and the expected percentage change in the tobacco-related excise tax revenue. The total tobacco tax amount at the time was about 52% of the retail price. The maximum revenue was predicted at a total tax share of around 70%. Since the actual tax share at the time was substantially less than the tax share associated with the point of maximum revenue, we predicted that an increase in the excise tax per pack of cigarettes would increase total tobacco-related government revenue. In technical language, we were on the feasible part of the Laffer curve. The large increases in the SCT in 2008, 2009 and 2010 bore out the predictions. Tobacco related revenue increased during these years.

Furthermore, the decrease in the real SCT per pack since 2010 resulted in a decrease in the real tobacco-related tax revenue. Again, this suggests that we are on the feasible side of the Laffer curve, but moving down the upward-sloping part of the curve.

We repeat that exercise here, but define the horizontal axis somewhat differently, based on our experience with the modelling in the 2005 report. Rather than expressing the horizontal axis in terms of the tax share, we express it in terms of the SCT per 1000 cigarettes. The reason why we do not express it in terms of the tax share is that the tax share is greatly affected by the pricing strategy of the industry. We saw that the industry has the ability to change the net-of-tax price (and does), and this greatly influences the tax share. For example, if the SCT increases, and at the same time the industry increases the net-of-tax price, the tax share stays the same. This would result in a very different tax share than had the industry decided to keep the net-of-tax price constant when faced with

the tax increase. Also, if the industry increases the net-of-tax price, this tends to reduce government revenue, all other factors held constant.

It is nearly impossible to accurately determine the precise turning point of the Laffer curve, because it depends on a number of factors (e.g. the price elasticity of demand, the change in the net-of-tax price, income changes, and illicit trade). However, we can find an approximate range where revenues are expected to be maximised, given a set of user-specified assumptions (see section 6.2).

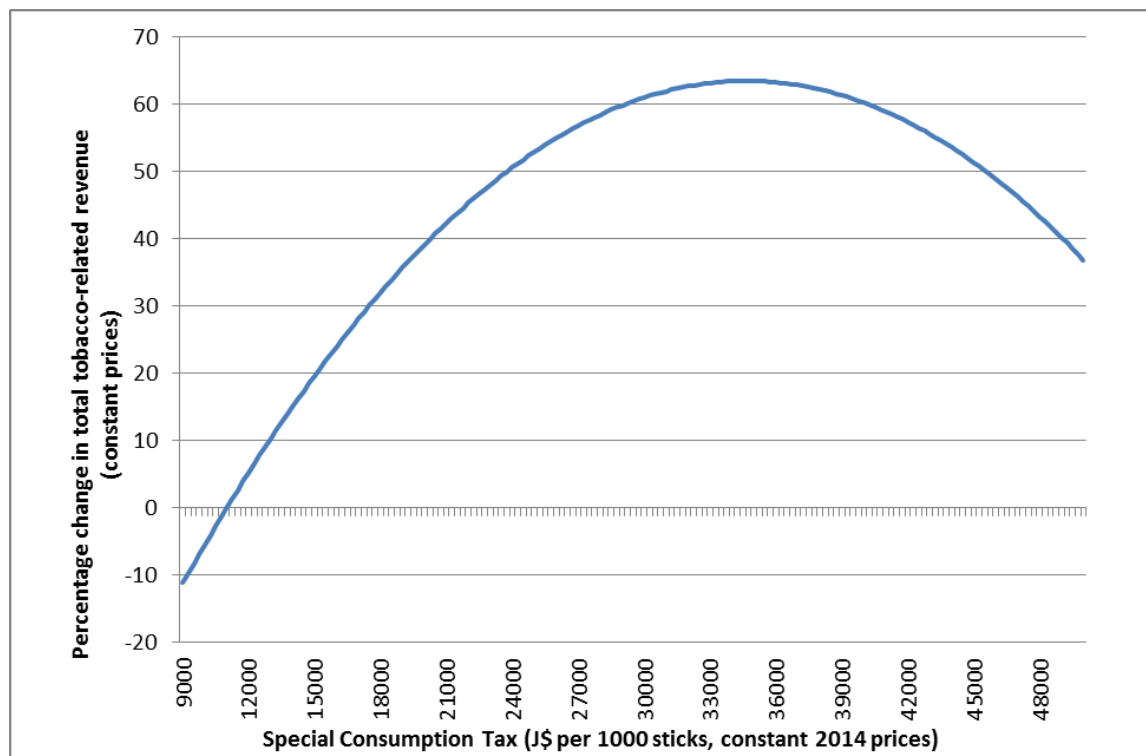
In Figure 7 we present the relationship between the SCT (on the horizontal axis) and total expected revenue (on the vertical axis), assuming a price elasticity of -0.5, a 10% increase in the CIF value and a 15% increase in “distribution costs, wholesale and retail margins and profit” (the other, typically less influential, assumptions are in the *Input* sheet of the Excel file). Revenue is maximised, and we would expect it to be about 56% more than 2013/14 levels, where the SCT is about J\$ 33 000 per 1000 cigarettes.

The revenue maximising SCT rate (and the associated change in real revenues from current levels) depends quite significantly on the underlying assumptions. Readers of the report are encouraged to change some of the inputs in the Inputs sheet of the Excel file and see how it changes the shape and position of the Laffer curve. For example, the revenue-maximising SCT amount, and the expected percentage increase in total revenue would decrease if the demand became more price elastic, or if there was lower (or negative) GDP growth, or if the industry increased the “distribution costs, wholesale and retail margins and profit” by a greater percentage.

However, for all reasonable assumptions for the input variables, the analysis shows that Jamaica is on the feasible side of the Laffer curve, i.e. an increase in the SCT increases government revenue. For officials in the Ministry of Finance this is an encouraging finding.

It shows that the pursuit of public health is not in conflict with the fiscal imperatives of the country. In fact, by increasing the excise tax on cigarettes, both can be served.

**Figure 7: The relationship between the SCT per 1000 cigarettes and the predicted change in total government revenue in Jamaica**



## 7 RECOMMENDATIONS

### 7.1 Primary recommendations

- (a) It is recommended that, in order to protect public health and increase government revenue, the government increases the Special Consumption Tax on cigarettes to J\$ 16 000 per 1000 cigarettes. This excise tax would restore the excise tax per pack to the same level (in real terms) as the SCT per pack in January 2010. It is projected that such an increase would reduce consumption by about 12% and increase tobacco-related tax revenue by about 27%.

- (b) The government of Jamaica is commended for implementing a uniform specific excise tax on cigarettes, in line with international best practice. While the structure of the tax system is good, the government should, adjust the nominal SCT on an annual basis to ensure that, at a minimum, the SCT increases by the inflation rate.
  
- (c) While there is a sincere desire by the customs authorities to curb illicit trade of all types, the customs authorities seem to have bought into the tobacco industry's self-serving narrative on the causes of illicit trade in cigarettes (i.e. that illicit trade is caused primarily by an increase in the excise tax). The tobacco industry's narrative about illicit trade does not correspond with their own actions (specifically their pricing strategy). While illicit trade in cigarettes should be taken seriously, the government should not accept the industry's narrative without independent scrutiny.

## **7.2 Secondary recommendations**

- (a) It is recommended that a study be performed on the economic costs of tobacco use on the government of Jamaica and on the Jamaican society at large.
  
- (b) It is recommended that officials in the Ministries of Health and Finance, when analysing the tax structure and calculating the respective tax shares, use actual average retail prices, rather than the suggested retail price, published by Carreras.



## References

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