May 4, 2015

The Honorable Samuel Sanes
Senate Majority Leader
100 Lagoon Street Complex
Federiksted, St. Croix 00840

Dear Senator Sanes:

SUBJECT: Bill No. 31-0023

In accordance with your request, the following analysis concerning Bill No. 31-0023 is respectfully submitted.

PROPOSAL

This bill proposes to increase excise taxes on cigarettes from 35% to 45% on the value of each carton of cigarettes imported. The Bill also creates a government fund to be known as "The Virgin Islands Sin Tax Fund" with 95% of the proceeds going to the General Fund of the Government of the Virgin Islands and 5% of the proceeds shall be given annually to the Virgin Islands Council on Alcoholism and Drug Dependence to be used exclusively for its treatment and prevention programs.

Fiscal Summary

Revenue Effect: The bill will result in the collection of an estimated $377,411 in additional cigarette excise tax revenue and $57,142 in gross receipts revenue.

BACKGROUND

Tobacco Taxes

Existing Excise Taxes. Currently, U.S. Virgin Islands law imposes excise taxes on the distribution of cigarettes and other tobacco products. Cigarette excise taxes are paid by distributors who supply cigarettes and other tobacco products to retail stores. The excise tax is based on the invoice value of such merchandise, plus a mark-up of 5%.

FISCAL Analysis

To formulate these estimates, the Bureau of Economic Research reviewed data on cigarette tax receipts, including data from 2002 to 2014. A moving average is used to estimate the current and expected total revenues from an increase in excise taxes on cigarettes, where the last three complete years of tax revenues collected are provided in table 1. As shown, prevailing total annual revenues from existing excise taxes on cigarettes were roughly $1.3 million in 2012-2014.

Table 1. Total Excise Tax Revenues from Cigarettes

	2012	2013	2014
Cigarettes	1,318,541	1,164,225	1,476,095
3-Year Moving Average (MA)	1,365,344	1,327,106	1,319,620

Source: U.S. Virgin Islamds Bureau of Internal Revenue

Elasticity of Demand for Cigarettes

In evaluating revenue impact, it is important to consider elasticities of demand. In general, an elasticity estimate is a measure of the percent change in consumption of a particular commodity (or good) given a one percent change in the price of the same commodity (holding all other factors constant). If a good has a high elasticity of demand, then demand for the product decreases quickly as the price goes up. For inelastic goods (those with low elasticities), demand only changes slowly with increases in price.

Cigarette consumption will not change as price changes if demand is completely inelastic (zero price elasticity). In such a case, as quantity remains constant after a tax increase. Alternatively, if demand elasticity is constant (e.g. price elasticity of 1 at all price levels), consumers spend on cigarettes the same amount no matter the price level. Empirical studies show that the price elasticity of demand for cigarette is around 0.4, which implies that a 10% increase in the tax rate on cigarettes is, on average, associated with a 4% reduction in cigarette consumption. This suggests that cigarettes are largely inelastic to price change.

Estimate of Revenues

As the excise tax is specified as an *ad valorem* tax, the expected revenue impact can be calculated on the basis of tax revenues alone, which posits a proportional relationship to the actual consumer price of the cigarettes. Under consideration is an increase in the *ad valorem* tax from 35% to 45%, representing a 28.6% increase in the tax rate. Consumers are expected to experience a lesser increase in the consumer price of cigarettes. If the post-tax price of a carton of cigarettes is currently $22, then the proposed tax increase will raise the price of a carton of cigarettes by $1.63, that represents a 7.4% (=1.63/22) increase in the consumer price.

The expected percent change in tax revenues can be calculated based on the following equation.

$$\frac{\Delta R}{R} = \frac{\Delta P}{P} * t * (1 + |\varepsilon|)$$

where the symbol Δ represents the "change in", R is tax revenues, P is price of a carton, t is the tax rate (used base rate of 3.5%) and ε is a measure of consumer response to a price increase, called the own-price elasticity of demand.

The elasticity of demand is measured as the percent change in the quantity purchased divided by the percent change in the consumer price. We currently do not have the capacity to measure the ε and given the uniqueness of consumer considerations of those purchasing cigarettes at ports of call, it would be difficult to conjecture what this response may be. But as the literature suggests cigarette demand is largely inelastic to price change;

therefore, increasing the cigarette tax is unlikely to result in drastic changes in demand or shifts in cross-country purchases.

The impact on excise tax revenue using various hypothetical price elasticities of demand is calculated as follows. In the extreme case of no change in consumer demand, we can estimate the change in tax revenues simply as the percent increase in the tax rate times the tax revenue. That is, 28.6% (= (45-35/35), resulting in an increase in tax revenues of $377,411. If demand is moderately inelastic (ε =-0.9) then we should expect consumers to reduce total purchases, but not by enough to reduce total tax revenues. Alternatively, if it is moderately elastic, we should expect demand to decrease such that we reduce total tax revenues of the existing excise tax. Finally, if demand is unitary elastic, such that the change in purchases is proportional to the consumer price, then tax revenues will largely remain unchanged. The summary of the findings are presented in table 2.
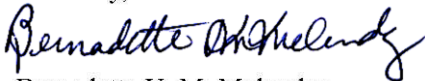
Table 2. Consumer Demand and Tax Revenue

Consumer Demand Response	ε	Change in Tax Revenues
No change		377,411
Inelastic Change	-.9	99,071
Elastic Change	-1.1	-99,071
Unit Elastic	-1.0	0

Effect on Gross Receipts Revenues

It is estimated this measure will generate a gain of $57,142 in gross receipts tax revenue. This assumes no change in consumer response. Again, if consumers respond to the proposed tax increase under the measure by reducing demand, gross receipts revenue will be lower.

Sincerely,

Bernadette V. M. Melendez
Acting Director, Bureau of Economic Research