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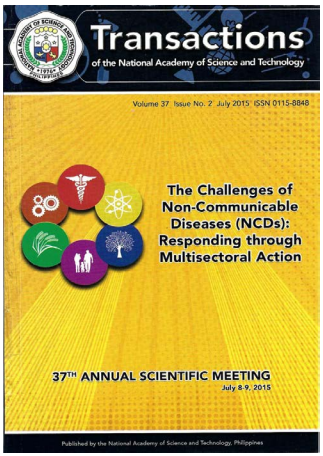

Will Sin Taxes Deliver us from Disease? An initial Assessment of the Sin Tax Law

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WILL SIN TAXES DELIVER US FROM DISEASE? AN INITIAL ASSESSMENT OF THE SIN TAX LAW

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ABSTRACT

In 2012, sin taxes in the Philippines were re-structured, paving the way for high, unitary taxes by 2017. The restructuring was intended to discourage the consumption of tobacco and alcohol, thus, addressing the concerns of high smoking prevalence and increasing incidence of non-communicable diseases such as diseases of the heart and malignant neoplasms. I propose a framework for tracking health status improvements and then use various population-based survey data to assess one pathway from sin taxes to better health, i.e., reduced tobacco consumption. Higher sin taxes in 2013 seem to have reduced total consumption by not more than 10 percent. A larger impact on cigarette consumption can be expected beyond 2013, particularly, in 2017 with uniform and higher tax rates. Systematic and coordinated monitoring of tobacco consumption is needed to ensure maximum and sustained health gains from sin taxes.

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BACKGROUND

By world standards, consumption of tobacco by Filipinos can be considered high. In 2008, smoking prevalence among adult Filipino males was ranked 9th highest in the world, with 47.7 percent of males 15 years and older were current tobacco users. The smoking prevalence of adult Filipino females, estimated at 9 percent, ranked 16th highest in the world [SITT 2011]. Even among the world's youth, the country counts among the heaviest tobacco users with the girls ranked second highest and the boys ranked fourth highest [2003 Global Youth Tobacco Survey]. Figure 1 shows estimates of smoking prevalence rates from 1995 to 2009, using various data sources. The overall prevalence rates have declined slowly from over 30 percent in 1995 to below 30 percent in 2009.

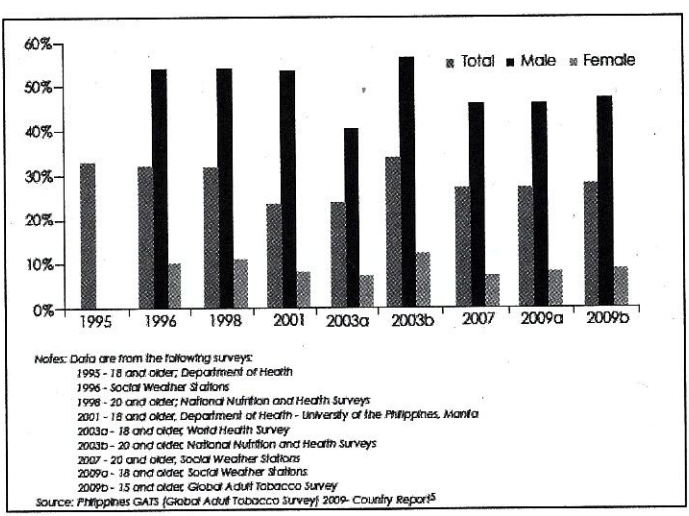

Figure 1. Smoking Prevalence Rates, 1995 - 2009 (multiple surveys), by sex
Source: Quimbo et al. (2012)

One reason for the high smoking prevalence rates in the Philippines is the affordability of tobacco products. Prior to 2013, excise taxes were too small. The share of excise taxes to cigarette prices was only about 36 percent, less than the World Bank-recommended two-thirds to four-fifths of total price (Quimbo et al. 2012). One important reason for the previously low excise taxes is the so-called "frozen price classification" of cigarettes. The 2004 Sin Tax Law stipulated cigarette classifications based on 1996 cigarette prices. Because the price classifications were annexed to the law, they were "frozen" and alterable only by an act of Congress. The law did not provide for changes in this price classification. Thus, early entrants or established brands had the advantage of being classified as low-priced and given low tax rates. Even with subsequent price increases, they could still be classified as "low priced" for tax purposes and thus charged low tax rates. This weakness of the old law kept excise taxes on cigarettes small and very affordable. Because of this "frozen price classification", cigarette prices prior to 2013 were 40 to 120 percent lower than what they should have been without "frozen price classifications" (Quimbo et al. 2012).

In December 2012, sin taxes in the Philippines were re-structured, paving the way for high uniform taxes by 2017. Republic Act (RA) 10351 restructured excise taxes on alcohol and tobacco products and introduced three important features: (i) the gradual shift to unitary taxes, (ii) the removal of the fixed classification by price of alcohol and tobacco products, and (iii) automatic increases in excise taxes by 4 percent to account for inflation. With the changes introduced by RA 10351, prices of sin products are expected to substantially increase, thus, discouraging consumption by encouraging quits, reducing consumption levels for those who decide not to quit, or preventing take-up.

Table 1 shows excise tax rates on machine-packed cigarettes prior to the passage of RA 10351. The rates in 2011 are non-uniform, ranging from 2.72 pesos to 28.30 pesos per pack, depending on the price per pack of cigarettes. Table 2 shows that RA 10351 imposes a uniform specific tax for all sin products by 2017 - 30 pesos for cigarettes (per pack), 23.5 pesos for fermented liquor (per liter), and a combination of specific and ad valorem for distilled spirits. The period 2013 to 2016 paves the way for a transition from two-tiered to uniform rates.

Table 1. Excise Taxes on Cigarettes (Machine-packed, Packed in 20s), before RA 10351

	RA 8424: The Tax Reform Code (1997)	RA 9334: Sin Tax Law (2004)
For net retail price below P5 per pack	P1 per pack	P2 per pack beginning Jan. 2005.
		P2.23 per pack beginning Jan. 2007.
		P2.47 per pack beginning Jan. 2009.
		P2.72 per pack beginning Jan. 2011.
For net retail rice of P5 to P6.50 per pack	P5 per pack	P6.35 per pack beginning Jan. 2005
		P6.74 per pack beginning Jan. 2007
		P7.14 per pack beginning Jan. 2009
		P7.56 per pack beginning Jan. 2011
For net retail price above P6.50 to P10 per pack	P8 per pack	P10.35 per pack beginning Jan. 2005
		P10.88 per pack beginning Jan. 2007
		P11.43 per pack beginning Jan. 2009
		P12 per pack beginning Jan. 2011
For net retail price of above P10 per pack	P12 per pack for net retail price of above P10.	P25 per pack beginning Jan. 2005
		P26.06 per pack beginning Jan. 2007
		P27.16 per pack beginning Jan. 2009
		P28.30 per pack beginning Jan. 2011

Source: Quimbo et al. (2012)

Table 2. Sin Tax Rates, 2013-2017

	2013	2014	2015	2016	2017
Tobacco (per pack)					
Less than P11.50	12.00	17.00	21.00	25.00	30.00
P11.50 and more	25.00	27.00	28.00	29.00	30.00
Fermented Liquor (per liter)					
Less than P50.60	15.00	17.00	19.00	21.00	23.50
P50.60 and more	20.00	21.00	22.00	23.00	23.50
Distilled Spirits (specific per proof liter + ad valorem per proof)					
NRP per proof	P20.00 + 15%	P20.00 + 15%	P20.00 + 20%	P21.80 + 20%	P21.63 + 20%

Source: DOF website. Date accessed: 24 June 2015.

Another important feature of the 2013 Sin Tax Law is that it earmarks 68 percent (or 80 percent of 85 percent) of "incremental revenues for universal health care under the National Health Insurance Program" and 17 percent for medical assistance and the Department of Health's Health Enhancement Facilities Program (HFEP). Concretely, this translated to a budgetary appropriation of about 35 billion pesos in 2014 for the automatic enrollment of poor families in PhilHealth identified via National Household Targeting System for Poverty Reduction (NHTS-PR) program of the Department of Social Welfare and Development (DSWD). In addition, close to 9.3 billion pesos was appropriated in 2014 for health facilities enhancement. The 2014 budgetary appropriation was a 180 percent increase over the 2012 amounts.

This paper seeks to provide an initial assessment of the possible health gains from the 2012 Sin Tax Law. I propose a framework for tracking health status improvements and then use various population-based survey data to assess one pathway from sin taxes to better health, i.e., reduced tobacco consumption. Data sources include the 2012 Family Income and Expenditure Survey (FIES), the 2013 Annual Poverty Indicator Survey (APIS), Bureau of Internal Revenue (BIR) reports, the 2009 Global Adult Tobacco Survey (GATS), and the 2003 Quality Improvement Demonstration Study (QIDS) Random Household Survey.

Health Implications of Smoking

The health consequences of tobacco consumption are significant and well-known. It has been estimated that smoking-related illnesses—namely, cerebro-vascular diseases (CVD), coronary artery diseases (CAD), chronic obstructive pulmonary diseases (COPD), and lung cancer—accounted for 6–8 percent of all deaths and that the economic costs of these diseases were in the order of US$2.86–6.05 billion [Department of Health (DOH) et al. 2006]. It is estimated that 50 percent of regular smokers will die prematurely. Annually, this implies 87,600 people die due to smoking [Quimbo et al. 2012].

Since illness reduces worker productivity and premature deaths cut workers' future income streams, the economic implications of smoking are potentially substantial. Estimates of the total annual economic costs range from a low of 0.2 to 0.4 percent of the country's GNP in 2003 [DOH et al. 2006] to a high of 7 percent of GDP [Quimbo et al. 2012].

The health of children is also directly affected by their parents' smoking decisions. A mother's smoking predicts low birth weights [World Bank 2006]; decreased lung function [Office on Smoking and Health (US) 2006]; and 4.09 percent greater risk of death for infants compared to those whose mothers did not smoke [Mitchell et al. 1993]. The burden of smoking-related diseases borne by Filipino children can be gleaned from Table 3. The figures are generated using data on a random sample of about 1,500 children in the central regions of the Philippines who were surveyed in 2003. These data suggest that the smoking status of parents is correlated with children's health status. A greater proportion of children of smokers are stunted, wasted, and malnourished (authors' computations using data from www.qids.ph). Wasting and stunting are short- and long-term measures of health, respectively, while

folate deficiency is a nutritional marker. Wasting, a standard nutritional status index measured using weight-for-height, is defined as the percent of children (aged 6-59 months) falling below -2 standard deviations for weight-for-height, plus all children with edema [Cogill 2003]. Stunting, a height-for-age index, measures those falling below -2 SD of the WHO Child Growth Standards median among children aged less than 5 years. The "fair/poor health rating" refers to the subjective rating given by mothers in the survey for the overall health of their children.

Table 3. Proportion of Children who are Stunted, Wasted, Folate-Deficient, and Having Fair/Poor Health Rating, by Smoking Status of Parents

Proportion of Children Who Are:	Mother is Non-Smoker	Mother is Smoker	p-value
Stunted	0.2835	0.4871	<0.01
	HH Head is Non-Smoker	HH Head is Smoker	p-value
Stunted	0.2559	0.3204	<0.01
Wasted	0.0405	0.0672	<0.01
Folate-Deficient	0.0858	0.1069	<0.10
Fair/PoorHealth Rating	0.1049	0.1434	<0.05

Source of basic data: www.qids.ph

Second-hand smoke also harms the health of adults, and is a negative externality. Spouses of smokers, who usually have high second-hand smoke exposure, are at higher risk for lung cancer: 20 percent higher risk for wives of smokers and 30 percent higher risk for husbands of smokers, according to a meta-analysis [WHO and IARC joint study, 2002], with risk increasing with exposure. Cost estimates in the U.S. of smoking externalities range from 16 to 33 cents per pack, in 1986 and 1995, respectively [Manning et al. 1989, 1991; Viscusi 1995 as cited in Gruber 2001].

Analytical Framework: Pathways from Sin Taxes to Disease Reduction

Figure 2 summarizes the pathways by which high, uniform sin taxes can ultimately improve the health status of the population. Higher cigarette prices would imply reduced cigarette smoking. Studies on Filipinos' demand for cigarettes would suggest that demand is fairly inelastic or not very responsive to changes in price. Quimbo et al. (2012) report a midpoint price elasticity estimate of -0.51. That is, a 10 percent increase in cigarette prices would predict a reduction in cigarette consumption, albeit a disproportionately smaller reduction of 5.1 percent.

High uniform taxes could also force the smoker to quit altogether if cigarette prices become prohibitive. Under the old tax structure, however, one may argue that quitting is less likely to happen. The previous law classified cigarettes according to price, and then low, specific tax rates were indicated for each price category. Tax increases were stipulated (refer to Table 1), however, the tax rate increases were such that shifting to cheaper brands could make economic sense. One's current brand would be more expensive with a tax increase; however, the next cheaper brand, even with the tax increase, could in fact be offering a price reduction. This was one unintended consequence under the old tax structure: higher sin taxes could promote increased consumption, not of one's current choice of brands but of the cheaper alternatives.

On the other hand, with high uniform tax rates, downshifting is unlikely to happen because both current brands and next cheaper alternatives will be uniformly more expensive. This is the general prediction, unless brands that are extremely cheap but with acceptable quality are made available in the market. Even with a high uniform tax, such brands could increase their market share.

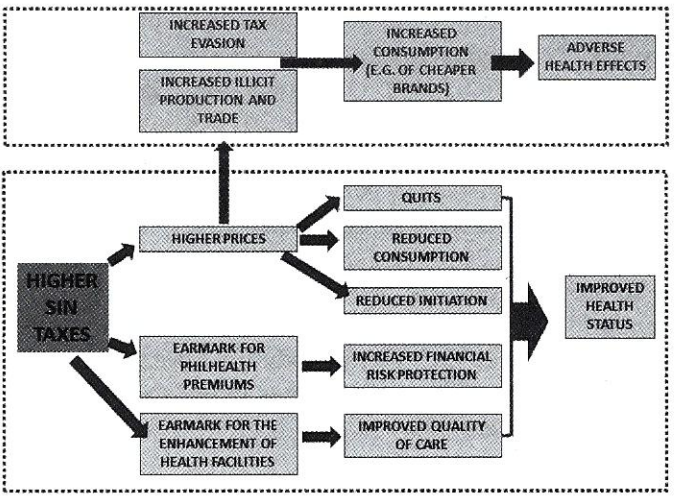

Figure 2. Pathways from Sin Taxes to Improved Health

Another possible effect is that high sin taxes could prevent smoking initiation, especially among the youth, whose demand for cigarettes is expected to be highly elastic [Kostova et al 2010]. Young smokers have a tendency to start smoking by "bumming" cigarettes [Katzman et al. 2002] from peers, in effect, accessing cigarettes at a zero direct cost. More expensive cigarettes could mean a reduced availability of free cigarettes to potential young smokers.

More expansive health insurance coverage implies better financial risk protection [Galárrraga et al. 2008; Wagstaff and Pradhan 2006], say, in the form of reduced out-of-pocket spending on catastrophic health expenditures. An ongoing study on Filipino families [Wagner et al. 2015] suggests that when families have better financial risk protection from PhilHealth, the resources "saved" are utilized for items such as water and sanitation that tends to protect illness particularly among young children. Finally, health facilities enhancement could mean improved quality of care and better health outcomes [Javitt et al 1983].

However, there are possible adverse behavioral responses arising from higher cigarette prices. Some argue that illicit production and trade could intensify. Others are concerned with possible increases of tax evasion and tax avoidance cases (WHO 2010). Ultimately, these are empirical questions that need to be addressed. According to the 2013 Asia-14 Illicit Indicator Report, the share of illicit consumption in total consumption of cigarettes in the Philippines increased from 5.9 percent in 2012 to 18.1 percent in 2013. In fact, the Philippines recorded the largest increase in domestic illicit[1] consumption with 181.2 percent in 2013. The study further notes that in the Philippines "the decline in Legal Domestic Sales was wholly offset by a rise in Illicit Consumption, which accounted for 18.1% of Total Consumption or 19.1 billion cigarettes in 2013." Yet, a study by Abola et al. (2014), argues that illicit trade, although still a problem, has fallen sharply in the face of sin tax increases from 1997 to 2009.

Methods and Results

Estimated Reduction in Consumption Using Estimated Change in Prices and Price Elasticity

One method of inferring changes in cigarette consumption is by using estimates of price increases and the price elasticity of demand defined as the percentage change in consumption divided by the percentage change in price. Table 4 shows trends in cigarette prices, as reported by the Philippine Statistics Authority (PSA). Using the 2012 FIES regional estimates of average tobacco expenditures of households as weights, the average increase in prices of tobacco products implied by the PSA data is 47 percent.

Using data on market shares and prices reported in Quimbo et al. (2012), alternative estimates of cigarette prices are given in Table 5. This assumes that the excise tax is passed on completely to the consumer. Furthermore, assuming that market shares in 2012 are maintained by each type of cigarette in 2013, the implied increase in average price is 48 percent (28.7 to 42.4 pesos). This is similar to the price increase implied by the PSA figures in Table 4. Assuming, however, that the market shares are those implied by BIR reports on cigarette removals (see Table 7 below), the increase in average price is only about 14 percent (28.7 to 32.7 pesos).

Table 4. Consumer Price Index, Tobacco Products, 2012 and 2013, by region

Region	2012	2013	% Increase
I - Ilocos Region	127.1	199.2	57%
II - Cagayan Valley	134.3	219.4	63%
III - Central Luon	121.2	183.1	51%
IVa - Calabarzon	136.2	211.4	55%
IVb - MIMAROPA	126.5	171	35%
V - Bicol Region	127.5	188.5	48%
VI - Western Visayas	127.7	204.7	60%
VII - Central Visayas	137.5	223.9	63%
VIII - Eastern Visayas	114.9	184.3	60%
IX - Zamboanga Peninsula	141.6	243.9	72%
X - Northern Mindanao	135.5	191.8	42%
XI - Davao Region	132.4	150.1	13%
XII - SOCCSKSARGEN	128.5	226.8	76%
XIII - CARAGA	171.5	278.7	63%
NCR - National Capital Region	122.1	154.3	26%
Cordillera Administrative Region	128.2	198.2	55%
Autonomous Region in Muslim Mindanao	136.8	164.9	21%[2]

Source: PSA

[2] Defined as cigarettes that are produced to be illegally sold and consumed in the same market.

Table 5. Estimated Cigarette Prices, 2012 and 2013*

Type of Cigarette	Market Share	Price	VAT	Excise Tax	Net Retail Price[3]
2012					
Low-priced	0.45	14.00	1.50	2.72	9.78
Mid-priced	0.20	25.00	2.68	7.56	14.76
Premium	0.35	50.00	5.36	12	32.64
Weighted Average		28.66	3.07	6.91	
2013, assuming same market shares as 2012					
Low-priced	0.45	24.39	2.61	12	9.78
Mid-priced	0.20	44.53	4.77	25	14.76
Premium	0.35	64.56	6.92	25	32.64
Weighted Average		42.36	4.54	19.14	
2013, assuming market shares implied by BIR reports					
Low-priced	0.72	24.39	2.61	12	9.78
Mid-priced	0.15	44.53	4.77	25	14.76
Premium	0.13	64.56	6.92	25	32.64
Weighted Average		32.67	3.50	15.65	

**Author's computations*

Given these two alternative sets of cigarette price increases, we can expect a range of 7-24 percent reduction in consumption of cigarettes (see Table 6).

[3] The NRP is determined by the BIR through a price survey to be conducted by the BIR itself, or the NSO when deputized for the purpose by the BIR. As defined by the law, the "'net retail price', shall mean the price at which the cigarette is sold on retail in at least twenty (20) major supermarkets in Metro Manila (for brands of cigarettes marketed nationally), excluding the amount intended to cover the applicable excise tax and the value-added tax. For brands which are marketed only outside Metro Manila, the 'net retail price' shall mean the price at which the cigarette is sold in at least five (5) major supermarkets in the region excluding the amount intended to cover the applicable excise tax and the value-added tax."

Table 6. Implied Consumption Reduction using Inflation and Price Elasticity Estimates

	High	Low
Price Elasticity of Demand*	0.51	-0.51
Price Increase (%)	48%	14%
Consumption Reduction (%)	-24%	-7%

**Source: Quimbo et al. (2012)*

Estimated Reduction in Consumption Using Tax Collection Reports

Another method of estimating the reduction in consumption is by using data on cigarette removals, as reported by the BIR (see Table 6). "Removals" refer to the number of cigarettes withdrawn from the factories for purposes of excise tax payments and subsequently, moved to retail outlets for distribution. This method could be an accurate measure of reduced consumption if all removals are also consumed within the year. If a portion of 2012 removals were, in fact, consumed in 2013 (say, to frontload production in anticipation of the sin tax hike beginning 2013), then this method could overestimate the reduction in consumption in 2013.

Another important limitation of this method is the missing figure on imported cigarettes in 2012. Ignoring this data problem, the implied reduction in consumption is 19.6 percent. Assuming, instead, that 2013 levels of imported cigarette removals is 90 percent that of the 2012 levels, the estimated reduction in consumption from 2012 to 2013 is about 15.4 percent.

Moreover, BIR data on removals will, by definition, not include illicit consumption. To illustrate how this data problem could impact on our estimate of consumption reduction, if we assume that illicit consumption of the low-price cigarettes in 2013 is 10 percent of reported removals, then the estimated reduction in consumption drops to 9.4 percent.

Table 7. Estimated Reduction in Cigarette Consumption Using Cigarette Removals Data, 2012 and 2013

	2012 Tax	2012 Removals (in millions)	2013 Tax	2013 Removals (in millions)	Reduction in Consumption from 2012 to 2013 *Assumption (for Reduction in Consumption Estimate):* Using BIR data, as reported	Imported Cigarettes in 2012 = 110 percent of 2013 levels	2013 Low-priced cigarettes (20s) have 10% under-reporting
Packed in 30s	Low priced (@Php 2.47/pack)	41.24	Php 12/pack	0.08			
Packed in 20s	Low priced (@Php 2.47/pack)	3,720.37	Php 12/pack	3,501.75			
	Medium priced (@Php7.14/ pack)	482.8	Php 25/pack	731.78			
	High priced (@Php 211.43/pack)	1,519.32					
Packed in 10s				635.35			
Packed in 5s				0.01			
Imported - packed in 20s				97.36			
Total Number of Sticks*		115,687		92,974	-19.6%	-15.4%	-7.8%

Source of Basic Data: BIR reports

Estimated Reduction in Consumption Using Household Expenditures Data

Data on tobacco expenditure of households can also be used to estimate the percent reduction in total consumption. Figure 2 shows how, with a linear demand curve, the following accounting identity for the change in total expenditures (region A - region B) can be used to estimate the reduction in consumption:

Change in Tobacco Expenditures = (Change in Price x New Consumption Level) + (Change in Consumption x Old Price Level)

The change in household expenditures is estimated using the 2012 FIES and 2013 APIS. The assumed 2012 cigarette price is based on the computations shown in Table 5. Table 8 shows the estimated reduction in consumption using this method. Using the high estimate of price increase (about 50 percent, implied by the PSA figures) and the low estimate (about 12 percent, implied by Table 5), the reduction in cigarette consumption ranges from a high of 30.8 percent to a low of 9.2 percent.

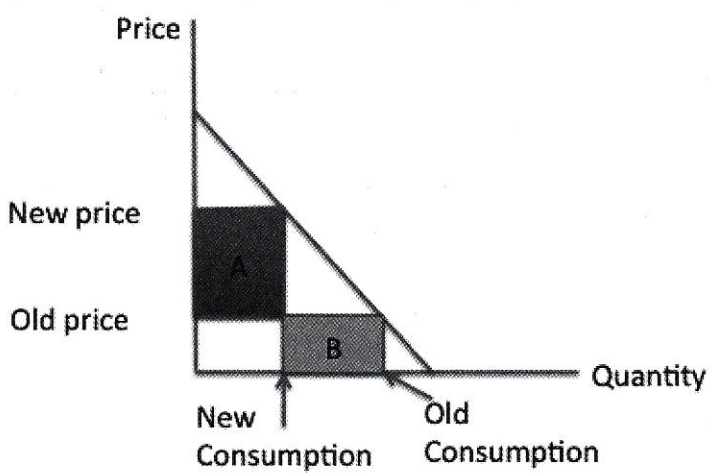

Figure 2. Accounting for the Reduction in Consumption Using Expenditure Data

Table 8. Estimated Reduction in Consumption Using Household Expenditure Data

	High Estimate	Low Estimate
Increase in HH spending from 2009-2012 (FIES)	676 pesos per year	same
Increase in HH spending from 2010-2013 (APIS)	1461 pesos per year	same
Change in annual household tobacco expenditures attributable to the 2012 increase in sin taxes*	785 pesos per year or 205 pesos per year per smoker	same
Increase in cigarette prices in 2013	14 pesos per pack (~50%)	4 pesos per pack (12%)
Average cigarette prices in 2012	28 pesos per pack	same
Estimated cigarette consumption in 2012 (in packs)	193 per smoker	same
Estimated reduction in consumption in 2013	30.8 percent	9.2 percent

**Generated using a regression model with a difference-in-difference specification*

Discussion

Using three alternative methods and various data sources, the reduction in consumption of cigarettes from 2012 to 2013 could range from 7 to 30.8 percent. Arguably, the estimated reduction in consumption of 19.4 percent using the BIR report on cigarette removals can be viewed as the largest plausible figure. All data problems associated with this methodology - i.e., missing data on imports, underreporting of removals, and illicit consumption - tend to overstate the estimate of reduction in consumption. This further implies that the high estimates of 24 percent and 30.8 percent using the two other methodologies, because they exceed the theoretical maximum estimate of 19.4 percent, may have lower accuracy levels compared to the low estimates of 7-9 percent. Despite this lower range estimates, this reduction in consumption over one year is noteworty, given that reduction in smoking prevalence seems to have been very modest from 1995 to 2009 (as shown in Figure 1).

We further note that the plausible range of reduction in consumption, i.e., 7-9 percent, are associated with the low estimates of price increases, i.e., 12-14 percent. While the new excise tax rates could potentially increase cigarette prices by as much as 48 percent, the actual price increase could be lower due to a number of reasons. Cigarette manufacturers may not be passing the entire tax to the consumer in a bid to protect market share. Inventory build-up towards the end of 2012 may have been undertaken to avoid the higher excise tax beginning 2013. This makes business sense given that the maximum shelf life of a cigarette pack is 6-8 months [Wigand 2006]. Tax evasion, smuggling, and illicit sales may also explain why cigarette prices did not increase as expected, as implied by the 2013 Asia-14 Illicit Indicator Report. Another possible reason for why average increase in cigarette prices faced by the consumer is lower than expected is that, with the two-tiered tax (i.e., 12 and 25 pesos in 2013), a smoker could in fact face a reduction in cigarette prices if he or she switched from an expensive brand with a 25 peso tax to a cheaper brand with a 12 peso tax.

The main limitation of this analysis is the lack of data on smoking prevalence. In the Philippines, collection of smoking prevalence data is not frequent, nor coordinated. As implied by Figure 1, there is no single agency that is mandated to monitor smoking prevalence. The data are also not easily accessible to policymakers and researchers. I attempt to illustrate what the estimates of reduced consumption imply in terms of number of smokers and cigarettes smoked (see Table 9). If the higher sin taxes in 2013 cause a reduction in smoking prevalence by about 2 percentage points, the likely range of reduction in consumption (i.e., 7-9 percent) implies a very small change in the number of cigarettes smoked per individual. As mentioned above, this could be partly due to downshifting to cheaper brands.

Table 9. Estimated Reduction in Consumption, by varying smoking prevalence rates

	2009	2012	2013	2013
Smoking Prevalence Rate	28.3	28.3	26	26
Source of Smoking Prevalence Data	GATS	Assumed	Assumed	Assumed
Total Population (>15 years old, in millions)*	60.2	63.7	64.9	64.9
Number of Smokers (smoking prevalence rate x population)	17.0366	18.0271	16.874	16.874
Number of cigarettes per smoker per day*	10.6	10.6	10.3	10.5
Total cigarettes smoked per day (number of smokers x number of cigarettes per smoker per day)	180.58796	191.08726	173.8022	177.177
Reduction in Consumption			-9%	-7%

**Sources of data: Number of cigarettes per smoker - GATS (2009); population - PSA website*

Conclusion

Higher sin taxes in 2013 seem to have reduced total consumption by not more than 10 percent. Indeed, there is huge potential for sin taxes to deliver the population from disease, but this potential can be translated into actual gains only with a strict enforcement of the law and a quality of tax administration that will allow prices to increase to levels that reflect the tax. With the full implementation of the law in 2017, when a single, uniform high tax will prevail, a larger reduction in cigarette consumption can be expected. Systematic and coordinated monitoring of tobacco consumption is needed to ensure maximum and sustained health gains from sin taxes. Other pathways from higher sin taxes to improved health status should be considered in future research.

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