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Philippine Cigarette Excise Tax Revenues under Two Tax Systems

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The Philippines had two types of cigarette excise taxes in the past three decades: an ad valorem tax under the 1986 Tax Reform Program (TRP) and a specific tax under the 1997 Comprehensive Tax Reform Program (CTRP). Ad valorem taxes, according to economic theory, are desirable since these are flexible in that tax revenues automatically adjust to price changes. However, economic theory also recognizes the difficulty in implementing ad valorem taxes because of the challenge in identifying the appropriate tax base (e.g., price). The alternative, a specific tax is easier to implement but is not flexible, requiring regular adjustments in taxes to inflation. In practice, this characteristic of flexibility is even more important if the political or institutional environment make it difficult to increase existing or pass new tax laws.

Empirically, Philippine cigarette excise tax revenues—in real terms—declined in the period after the shift to a specific tax. This study examines the effect of a shift from an ad valorem to a specific cigarette excise tax on Philippine cigarette excise tax collections during the period 1988 to 2005. The results showed a significant negative relationship between cigarette excise tax revenue effort and the period when a specific excise tax was in effect. Though the results cannot entirely attribute the decline in cigarette excise tax effort to the 1997 CTRP shift to specific taxes because of politico-institutional reasons (e.g., not implementing the provisions of the law), the results showed that Philippine cigarette excise tax effort is negatively related to the 1997 CTRP.

JEL classification: H2, H3
Keywords: tax policy, sin tax, cigarette excise tax

1 Introduction

Since the 5th Republic of the Philippines was established in 1986, there were two major tax reforms that affected the consumption of tobacco and alcohol. For cigarettes, the 1986 Tax Reform Program established the use of an ad valorem (i.e., according to value) tax which is a flexible tax that allows tax revenues to automatically adjust to changes in the price of cigarettes (Stiglitz, 2000). Under the 1997 Comprehensive Tax Reform Program (CTRP) or Republic Act No. 8424 Tax Reform Code of 1997, the ad valorem tax on cigarettes was replaced by a specific tax, that is, specific Philippine peso value on unit of output, justified on grounds of easier administration but not flexible to changes in prices despite provisions of adjustment to inflation in subsequent years of implementation (Diokno, 2005). The specific excise tax on cigarettes was revised in the Sin Tax Law of 2004 (R.A. No. 9334, 2005) to allow for biannual increases in the specific tax rates from its date of effectivity in 2005 to 2011. Most recently, in 2012, R.A. 10351, "An Act Restructuring the Excise Tax on Alcohol and Tobacco Products," restructured the specific tax rate per pack of cigarettes with explicit values for years 2014 to 2017 and a 4% increase in the tax rate every year thereafter effective Jan. 1, 2018 (R.A. 10351, 2013).

Figure 1 shows cigarette excise tax revenues in nominal and constant 2000 prices for the period 1988 to 2005. For this period, cigarette excise tax collections, in 2000 prices, increased at an average of almost 0.6% (see Appendix A). In 2000 prices, cigarette excise tax revenue collections grew faster at an average of 0.7% from 1988 to 1996, compared to an average increase of 0.5% in the ensuing period of 1997 to 2005, when there was a shift to specific cigarette excise tax. It has been argued that revenues became less buoyant after 1997 because of the shift to a specific from an ad valorem tax (Manasan & Parel, 2013; Diokno, 2005).

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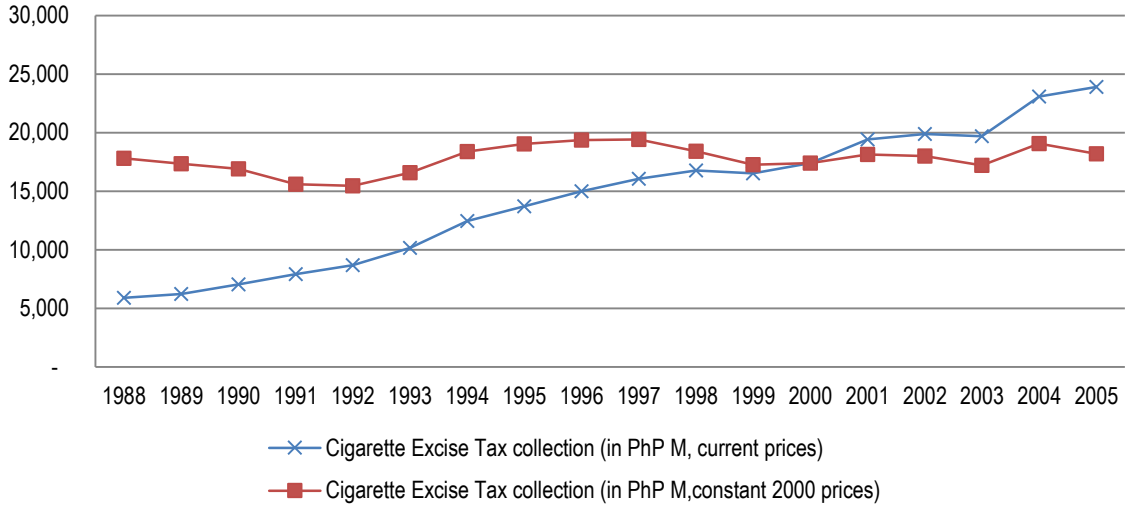
Figure 1. Cigarette Excise Tax Revenues, 1988-2005



Source: Bureau of Internal Revenue, Department of Budget and Management

This paper tests the effect of the shift from an ad valorem tax in 1986 to specific tax in 1997 on Philippine cigarette excise tax revenues. The succeeding section combines the theoretical justifications for government intervention and relevant literature on Philippine cigarette excise tax. The methodology for estimation and data are explained in Section 3, while the results are presented in Section 4. The last section discusses the results and concluding remarks.

2 Theoretical Framework

2.1 Economic justifications for cigarette excise tax

There are three economic justifications for government intervention in cigarette and alcohol consumption control: (1) the merit goods argument; (2) incomplete information; and (3) the presence of negative externalities (Chaloupka et al., 2012; Stiglitz, 2000; Rosen & Gayer, 2010). The merit goods argument portrays the government as a paternalistic authority looking out for the best interest of its constituents by implementing tobacco and cigarette controls to dissuade consumption. In addition, government provides its citizenry with more information on the hazards of tobacco consumption. Finally, information shared also includes health hazards imposed not only on the smoker but also to those who are exposed to second-hand smoke (i.e., a negative externality).

In the Philippines, the 2009 Global Adult Tobacco Survey (GATS) reported that 17.3 million (28.3%) of population aged 15 years old and over smoke tobacco (Department of Health, 2010, 3). In addition, the Philippines ranked as one of the countries with the highest smoking prevalence rates in the world with a 12th world ranking in the adult male smoking population and 29th world ranking in the adult female smoking population (Chaloupka et al., 2012).

Smoking is associated with higher risks of death from lung and other cancers, respiratory and cardiovascular diseases and other conditions. In 2012, the World Health Organization (WHO) estimated that each year close to 36,000 Filipinos die from lung cancer, cardiovascular disease, coronary artery disease, and chronic obstructive pulmonary disease (Leonen, Latuja, Reyes, & Sy, 2010).

As for the negative externality imposed by cigarette smoking, the 2009 GATS found that "among the 61.3 million adults aged 15 and older, 48.8% (29.8 million) allow smoking in their home; and 39.6% were exposed to smoke in their home daily in the last 30 days (of the survey)" (Department of Health, 2010, p. 3). According to WHO (2010), 60% of the youth aged 13-15 years are exposed to second hand smoke in their own homes. The health risks of second-hand smoke are also numerous ranging from low birth weight and stunted growth in children to cancers and other respiratory and cardiovascular illnesses (Leonen et al., 2010).

It is for these reasons that the Philippine government has taken an active role in tobacco control.

2.2 How is sin taxed in the Philippines?

The Philippine government uses a market-based solution for tobacco control (i.e., an excise tax on tobacco products). For the period 1988-1996, after the 1986 Tax Reform Program (TRP), there was an ad valorem tax imposed on the wholesale price of a pack of cigarettes with the rate depending on the number of cigarettes in a pack and the brand of locally manufactured cigarettes (Executive Order No. 287, 1987).

The Tax Reform Act of 1997 (R.A. 8424, 1997) or Comprehensive Tax Reform Program (CTRP) effected a shift from an ad valorem to a specific tax which had a multi-tiered rate depending on whether the cigarettes were packed by hand or machine and the net retail price (NRP) of the packed cigarettes. The NRP is defined as the price at which the cigarette is sold on retail in 20 major supermarkets in Metro Manila (for brands of cigarettes marketed nationally), excluding the amount intended to cover the applicable excise and value-added tax (R.A. 8424, 1997).

An important provision of the CTRP aimed to address the inflexibility of a specific tax. This provision allowed revisions in the net retail price of cigarettes existing in the Philippines in 1996 and prior, "(T)he classification of each brand of cigarettes based on average net retail price as of October 1, 1996, as set forth in Annex 'D,' shall remain in force until revised by Congress" (R.A. 8424, 1997, Sec. 145). The problem was that the classifications of cigarettes in Annex 'D' were never revised. This became known as the 'Price Classification Freeze' that gave cigarette manufacturing brands that were around longer an advantage in terms of tax liabilities to other entering brands. One of the cigarette manufacturing brands that benefited from the Price Classification Freeze was the Fortune Tobacco Company (Chaloupka et al., 2012).

The failure of Congress to revise the 1996 net retail prices of cigarettes highlights the importance of a flexible tax. Flexibility, or the ability of a tax system to automatically adjust revenues to changes in economic activity, is an important characteristic of a modern tax system (Stiglitz, 2000). For example, a flexible tax such as an ad valorem tax will automatically generate corresponding increases in tax collections with increased economic activity. Otherwise, an inflexible tax such as a specific tax would require legislation to ensure that revenues adjust to economic activity.

Legislation of new tax laws or amendments to existing ones pose a challenge to policymakers because of the unpopularity of taxes with constituents (Diokno, 2005). This is what happened with the 1997 CTRP:

> While the tax system has become responsive to changes in economic activity as a result of the 1986 tax reform program, it has become unresponsive after the 1997 CRTP. While overall tax elasticity averaged 1.49 from 1986 to 1991, this dropped sharply to an average of 0.47 from 1998 to 2003, or after the 1997 CTRP. The observation is true for all major categories of taxes but the contrast is starker with respect to domestic taxes. As a result, the Executive Department has to go back quite to Congress for discretionary changes in the tax rates and bases in response to changes in economic activities and financial performance of the public sector. A reasonable explanation for this result is the ill-advised shift from ad valorem taxation to specific taxation for three major types of commodities: alcohol products, cigarettes, and petroleum products. While the new law taxing cigarettes provided for an adjustment mechanism through price indexation, the process of indexation proved to be politically difficult to implement. (Diokno, 2005, p. 16)

On July 26, 2004, the CTRP was amended by R.A. 9334, the Sin Tax Law. An improvement in this law was the explicit identification of the multi-tiered tax rates and the requisite biannual increases in the rates until 2011. Most recently, R.A. 10351 was passed in July 23, 2012 restructuring the excise tax on tobacco and alcohol.

The rest of this article examines the impact of the 1997 CTRP shift from an ad valorem (flexible) to specific (inflexible) cigarette excise tax on cigarette excise tax collection.

3 Methodology and Data

To test the relationship between cigarette excise tax revenues and the shift to a specific tax, the reduced-form equation model of Woo (2001) is used:

$$CIGTAX_t = \beta_1 + \beta_2 1997\ Tax\ Reform + \beta_3 Economic\ Growth_t + \beta_4 Inflation_t + \varepsilon_t \quad (1)$$

where t denotes the year and ε_t is the error term.

Woo (2001) examined, for a panel data for 57 developed and developing countries, the effect on public sector surplus of various macroeconomic variables such as the growth rate of gross domestic product (GDP), inflation rate, and decade and regional dummies. The study also used various institutional and political economy variables such as income inequality, political instability, and the size of the cabinet to identify determinants of public sector deficits.

Diokno (2007) used the framework of Woo (2001) to examine economic and fiscal policy determinants of public deficits in the Philippines (Diokno, 2010; Diokno, 2007). Diokno (2010) reported that tax effort was a robust determinant of the two measures of public deficit used, e.g. the national government account balance or budget deficit and the consolidated public sector deficit. Furthermore, Diokno (2007) examined the effect of the 1986 and 1997 tax systems on tax effort and found that tax effort was positively related to the 1986 TRP and negatively related to the 1997 CTRP. That is, tax effort declined during the period that the 1997 CTRP was in effect. Similarly, this study applied the framework to tax revenues, which is also a component of the different measures of fiscal balance.

Ordinary least squares regressions are estimated for the dependent variable, cigarette excise tax collection (CIGTAX), which will be defined in two ways. First, CIGTAX is presented as a share of gross domestic product (GDP), which is a common definition of tax effort (Stiglitz, 2000). Second, CIGTAX is presented as a share of total national government tax revenues. Looking at these two definitions give a clearer picture as to how cigarette excise tax collections figure in the economy.

The explanatory variable of concern is the qualitative dummy variable that indicates the period when the 1997 CTRP was in effect. The hypothesis is that the 1997 CTRP, which implemented a shift from ad valorem to specific cigarette excise tax, is negatively related to cigarette excise tax revenues because of its inflexibility to changes in prices. Variables such as economic growth and inflation rates are included in the estimation to control for the effect of these variables on cigarette excise tax collections. Economic growth is defined as the percentage change in real Gross Domestic Product (GDP) and inflation rate is the percentage change in the Consumer Price Index (CPI) in 2000 prices.

The regressions are first estimated using only the primary variable of interest which is the dummy variable for the 1997 CTRP to establish a benchmark. The results for this estimation are reported in Column 1 of Tables 2, 3 and 4. The control variables economic growth and inflation are added one by one in the estimation to check the robustness of the results with the results being reported in Columns 2 and 3, respectively, of Tables 2, 3 and 4. In addition, the Breusch-Pagan Cook-Weisberg test for heteroscedasticity and the Breusch-Godfrey test for autocorrelation were conducted after initial estimates of the regression equation (Gujarati & Porter, 2009). In the case of the presence of heteroscedasticity, robust standard errors were estimated to correct for heteroscedasticity (Gujarati & Porter, 2009).

This paper looks at the period 1988-2005 with the data taken from Philippine National Government (NG) sources, namely: (1) Bangko Sentral ng Pilipinas (BSP); (2) Department of Budget and Management (DBM); (3) Department of Finance (DOF); (4) National Statistical Coordination Board (NSCB); and (5) the Bureau of Internal Revenue (BIR).

One limitation is that available data on cigarette excise tax revenues shared by the BIR is only for the period 1988 to 2005, a total of 18 years. This may cast doubt on the ability to draw conclusions from results based on less than 30 observations, which is the minimum number needed to assume a normal distribution and be considered as a large sample (Gujarati & Porter, 2009; Wooldridge, 2009). However, similar studies on Philippine fiscal behavior have been conducted with limited observations (Diokno, 2007).

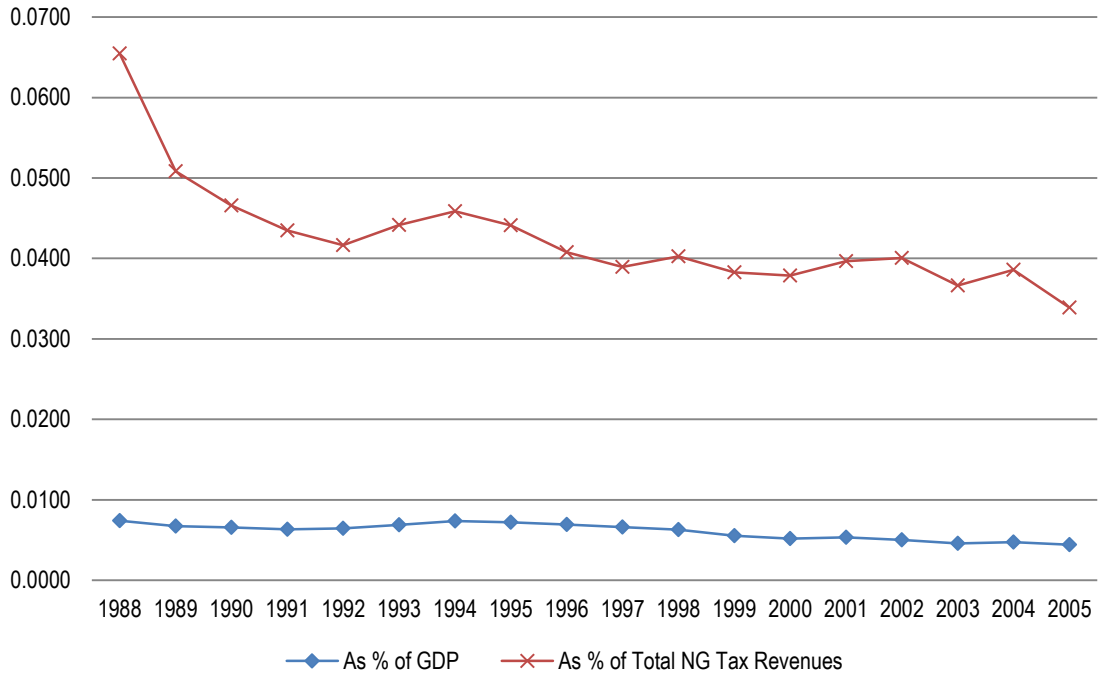
Table 1 shows the summary statistics of the variables used in this study. Cigarette excise tax collection and GDP are defined in millions of Philippine Pesos (PhP Million). Both of the tax effort variables, economic growth and inflation rates are expressed in percentage terms.

Figure 2 shows the trend of Philippine cigarette excise tax revenues as a share of GDP and total national government tax revenues. Cigarette excise tax collection as a share of GDP, or cigarette excise tax effort, decreased on the average at 2.9% (see Appendix A). Looking at the periods before and after the shift to a specific cigarette excise tax, the average rate of decrease of cigarette excise tax effort was lower at 1.5%, when the ad valorem tax was effective. The shift to a specific tax led to more rapidly decreasing cigarette revenue effort of 4.4% on the average.

Table 1. Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Cigarette Excise Tax collection (in PhP M)	18	14,438	5,743	5,917	23,911
Cigarette Excise Tax Effort (in %)	18	0.61	0.10	0.44	0.74
Cigarette Excise Tax to Total National Government Tax Revenues (in %)	18	4.26	0.70	3.39	6.55
1997 Tax Reform	18	0.4	0.5	0	1.0
National Government Tax Revenues (in PhP M)	18	360,189	174,631	90,352	705,615
National Government Tax Effort	18	14.3	1.7	11.3	17.0
GDP (in PhP M)	18	2,568,442	1,415,503	799,182	5,418,839
Economic Growth (in %)	18	3.8	2.3	(0.6)	6.8
Consumer Price Index (2000=100)	18	80.6	30.2	33.2	131.5
Inflation Rate (in %)	18	8.8	4.7	3.2	22.0

Figure 2. Philippine Cigarette Excise Tax Revenue, 1998-2005. Adapted from Bureau of Internal Revenue, Department of Budget and Management.



Similarly, the contribution of cigarette excise tax collections to total national government tax revenues decreased at an average of 3.3%. For the period 1988 to 1997, cigarette excise tax collection

as percent of total national government taxes decreased at faster rate of 4.4%, on the average, than the succeeding period average decrease of 2.2%.

4 Results

The results in Table 2 indicate that the 1997 shift from an ad valorem to specific cigarette excise tax had a negative effect on cigarette excise tax effort. Even controlling for economic growth and inflation, which were both statistically insignificant, the 1997 Comprehensive Tax Reform variable was robustly and negatively related to cigarette excise tax collections. A possible explanation that cigarette excise tax effort was unresponsive to changes in economic growth and inflation rates is that a specific tax, unlike ad valorem, does not adjust to fluctuations in prices or economic activity.

Table 2. Dependent Variable: Cigarette Excise Tax Effort (Cigarette Excise Tax Collection as Percent of Gross Domestic Product or GDP)

Cigarette Excise Tax Collection as percent of Total NG Tax Revenues	**Column 1**	**Column 2**	**Column 3**
1997 Tax Reform (coefficient)	-0.002 *	-0.002 *	-0.002 *
Std. Error	0.000	0.000	0.000
t-statistic	-7.35	-7.17	-5.84
P>t	0.00	0.00	0.00
Economic growth (coefficient)		-0.00002	-0.00004
Std. Error		0.00005	0.00006
t-statistic		-0.48	-0.68
P>t		0.64	0.51
Inflation (coefficient)			-0.00002
Std. Error			0.00004
t-statistic			-0.53
P>t			0.605
Constant (coefficient)	0.007	0.01	0.01
Std. Error	0.0002	0.0003	0.0006
t-statistic	44.41	27.59	11.91
P>t	0	0.00	0
No. of Obs.	18	18	16.49
Adjusted R^2	0.75	0.74	0.73
Breusch-Godfrey Lagrange Multiplier Test for Autocorrelation (χ^2)	2.42	3.436	2.09
Prob>χ^2	0.1198	0.0638	0.1482
Breusch-Pagan/Cook-Weisberg test of heteroscedasticity (χ^2)	1.82	0.49	0.51
Prob>χ^2	0.1777	0.4819	0.4766

*p<.01, Significant at 1%

Tests for serial correlation (Breusch-Pagan Lagrange Multiplier test) and heteroscedasticity (Breusch-Pagan (1979)/Cook-Weisberg (1983) test) were administered to establish correct model specification (Gujarati & Porter, 2009). These tests indicated no serial correlation and heteroscedasticity in this specification, and the results are presented in the lower rows of Table 2.

Even using the share of cigarette excise tax collection to total national government tax revenues as the dependent variable (Table 3), the 1997 CTRP was significant and negative. For this definition, there is heteroscedasticity, which is why regressions were re-estimated specifying robust standard errors (Gujarati & Porter, 2009).

Table 3. Dependent Variable: Cigarette Excise Tax Collection as Percent of Total National Government (NG) Tax Revenues

Cigarette Excise Tax Collection as percent of Total NG Tax Revenues	Column 1	Column 2	Column 3
1997 Tax Reform (Coefficient)	-0.01 *	-0.01 *	0.00
Std. Error	0.00	0.00	0.00
t-statistic	-2.91	-2.94	-1.35
P>t	0.01	0.01	0.198
Economic growth		0.001	0.001
Std. Error		0.001	0.001
t-statistic		1.06	2.00
P>t		0.31	0.07
Inflation			0.0007
Std. Error			0.0004
t-statistic			1.89
P>t			0.08
Constant	0.0005	0.04	0.03
Std. Error	0.0018	0.00	0.01
t-statistic	25.06	14.98	5.17
P>t	0.00	0.00	0.00
No. of Obs.	18	18	18
Adjusted R^2	0.30	0.31	0.41
Breusch-Godfrey Lagrange Multiplier Test for Autocorrelation (χ^2)	1.352	0.795	1.079
Prob>χ^2	0.2449	0.3726	0.299
Breusch-Pagan/Cook-Weisberg test of heteroscedasticity (χ^2)	5.47	7.1	6.66
Prob>χ^2	0.0194	0.0077	0.0099

*p<.01, Significant at 1%

The results estimating robust standard errors are presented in Table 4 and show that the share of cigarette excise taxes to total national government tax revenues decreased when the 1997 Comprehensive Tax Reform was in effect. Unlike earlier results though, the dummy variable for the 1997 CTRP lost its significance in the final specification of in column 3, which includes both control variables.

Table 4. Dependent Variable: Cigarette Excise Tax Collection as Percent of Total National Government (NG) Tax Revenues

Cigarette Excise Tax Collection as percent of Total NG Tax Revenues	Column 1	Column 2	Column 3
1997 Tax Reform (Coefficient)	-0.01 *	-0.01 *	-0.004
Robust Std. Error	0.00	0.00	0.00
t-statistic	-3.20	-3.12	-1.48
P>t	0.006	0.007	0.162
Economic growth (Coefficient)		0.0006	0.001
Robust Std. Error		0.0007	0.001
t-statistic		0.89	1.32
P>t		0.39	0.21
Inflation (Coefficient)			0.0007
Robust Std. Error			0.0006
t-statistic			1.32
P>t			0.21
Constant (Coefficient)	0.05	0.04	0.03
Robust Std. Error	0.002	0.001	0.01
t-statistic	19.24	31.61	3.94
P>t	0.00	0.00	0.001
No. of Obs.	18	18	18
R^2	0.34	0.39	0.51

*p<.01, Significant at 1%

5 Discussion and concluding remarks

The Philippines has had two types of cigarette excise tax in the past 29 years: an ad valorem tax under 1986 TRP and a specific tax under the 1997 CTRP. What was the impact of the shift from the more flexible ad valorem tax to a less flexible specific tax on Philippine cigarette excise tax revenue collections? The results showed that there was a decrease in cigarette excise tax effort with the shift from an ad valorem tax to a specific tax in 1997.

It is important, however, to also consider political economy and institutional reasons that may have contributed to the lower tax effort associated with the 1997 CTRP. Though the 1997 CTRP attempted to incorporate flexibility of revenue collections to inflation through allowed regular increases in the rate and adjustments in the cigarette tax base, this provision was never implemented for lack of political will. Apart from the political challenge in passing new taxes or amending existing tax laws because of its unpopularity (Diokno, 2005), this price classification freeze was attributed to a strong Philippine tobacco industry lobby (Chaloupka et al., 2012).

This failure to adjust the cigarette excise tax base and rates under the 1997 CTRP exemplified the inflexibility of a specific tax. In addition, the failure to implement the intention of the law whether for political economy or institutional reasons shows that this weak stance has consequences on the economy. In the case of Philippine cigarette excise taxes, the consequence was reduced cigarette excise tax effort with the 1997 CTRP.

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Appendix A
Data

Year	Cigarette Excise Tax collection (in PhP M, current prices)	Cigarette Excise Tax collection (in PhP M, constant 2000 prices)	Cigarette Excise Tax Effort (in %)	Cigarette Excise Tax to Total National Government Tax Revenues (in %)	National Government Tax Revenues (in PhP M)	National Government Tax Effort (in %)	1997 Tax Reform	GDP (in PhP M)	Economic Growth (in %)	Consumer Price Index (2000=100)	Inflation Rate (in %)	CPI deflator
1988	5,917	17,822	0.74	6.55	90,352	11.3	0	799,182	6.80	33.2	14.1	0.332
1989	6,225	17,340	0.67	5.08	122,462	13.2	0	925,444	6.20	35.9	8.1	0.359
1990	7,065	16,902	0.66	4.66	151,700	14.1	0	1,077,237	3.00	41.8	16.4	0.418
1991	7,923	15,596	0.63	4.35	182,275	14.6	0	1,248,011	-0.60	50.8	22.0	0.508
1992	8,692	15,466	0.64	4.16	208,706	15.4	0	1,351,559	0.30	56.2	10.6	0.562
1993	10,167	16,586	0.69	4.42	230,170	15.6	0	1,474,457	2.10	61.3	8.7	0.613
1994	12,448	18,387	0.74	4.59	271,305	16.0	0	1,692,932	4.40	67.7	10.0	0.677
1995	13,703	19,032	0.72	4.41	310,517	16.3	0	1,905,951	4.70	72.0	6.8	0.72
1996	15,000	19,355	0.69	4.08	367,895	16.9	0	2,171,922	5.80	77.5	7.6	0.775
1997	16,053	19,435	0.66	3.89	412,165	17.0	0	2,426,743	5.20	82.6	6.6	0.826
1998	16,763	18,401	0.63	4.02	416,585	15.6	1	2,665,060	-0.60	91.1	10.3	0.911
1999	16,517	17,277	0.55	3.83	431,687	14.5	1	2,976,905	3.40	95.6	4.9	0.956
2000	17,414	17,414	0.52	3.79	460,034	13.7	1	3,354,727	6.00	100.0	4.6	1
2001	19,424	18,136	0.53	3.97	489,860	13.5	1	3,631,474	1.80	107.1	7.1	1.071
2002	19,884	17,995	0.50	4.01	496,372	12.5	1	3,959,648	4.30	110.5	3.2	1.105
2003	19,695	17,201	0.46	3.66	537,684	12.5	1	4,293,026	4.70	114.5	3.6	1.145
2004	23,076	19,055	0.47	3.86	598,014	12.3	1	4,858,835	6.20	121.1	5.8	1.211
2005	23,911	18,183	0.44	3.39	705,615	13.0	1	5,418,839	5.00	131.5	8.6	1.315