A New Form of Federal or State-level
Cigarette Excise Taxation in the U.S.

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Abstract

This paper provides a template for the taxation of cigarettes that not only will yield a rich source of government revenue but also has the potential to improve public health. The tax formulae provided here expressly tax the nicotine and tar content of any brand of cigarette. This acts to discourage the substitution of higher nicotine brands for lower nicotine brands when higher cigarette taxation is imposed.

Keywords: Cigarette consumption, Nicotine taxation, Tar taxation

1. Introduction

In 2010, the U.S. Congress passed comprehensive health care reform in the form of two bills, the Patient Protection and Affordable Care Act, which became law on March 23, 2010 and which was soon thereafter amended by the Health Care and Education Reconciliation Act of 2010. Neither of these laws took the opportunity to meaningfully address cigarette consumption and the fact that cigarette smoking accounts an estimated 443000 deaths in the U.S. annually, with an estimated 50000 dying from secondhand smoke (Centers for Disease Control and Prevention [CDC], 2008); moreover, cigarette smoking is linked to a host of other adverse health effects (CDC, 2008). Indeed, cigarette smoking is found to cause a variety of cancers in addition to lung cancer, and smokers are up to six times more likely to suffer a heart attack than nonsmokers; furthermore, approximately 20.6 percent of U.S. adults smoke cigarettes, including nearly 20 percent of high school students (CDC, 2008).

The impact of excise taxes on cigarette consumption has been studied extensively.   The usual finding is that higher taxation of cigarettes leads to a reduction in the number of packs of cigarettes consumed (Chaloupka&Warner, 2000; Forster & Jones, 2001; Farrelly, et al., 2004; Lien & Evans, 2005; Adda&Cornaglia, 2006). Typically, it is argued that the higher price on cigarettes in light of higher cigarette taxation acts as a deterrent to smoking.   Oftentimes, when studies find higher excise taxes on cigarettes to reduce the aggregate amount/volume of cigarette consumption, it is also suggested/*speculated* that such taxation yields social benefits in terms of improving the health status of the population (Chaloupka& Warner, 2000; Forster & Jones, 2001).

Interestingly, however, this claim does not address the practical problem of *increased smoking intensity* in the form of *substitution* of higher nicotine cigarettes for lower nicotine cigarettes as a smoker's behavioral response to a significant cigarette tax hike (Evans &Farrelly, 1998). Furthermore, this claim ignores the Adda and Cornaglia (2006) finding that in response to higher cigarette taxation, many smokers *also* smoke cigarettes with greater intensity by increasing their intake of nicotine *per cigarette* through "smoking down" the higher nicotine (and tar) cigarettes they do smoke. Smoking down a cigarette involves smoking the cigarette until the maximum amount of tobacco in the cigarette has been consumed; ergo, the latter behavior becomes a *de facto* second form of *increased smoking intensity*. Thus, understandably, Adda and Cornaglia (2006, p. 1025) logically "…question the usefulness of excise taxes as a tool to regulate smoking intake, especially as the medical literature has shown that increasing the intensity of smoking is detrimental to health (Thun, et al., 1997)."

This brief paper provides a cigarette excise tax framework that could be adopted to *seriously* address the cigarette-health-risk problem. Indeed, if the cigarette excise tax formulae provided here were to be intelligently implemented, it could potentially provide far more health benefits in the aggregate than any thus-far proposed forms of federal health care legislation (including the bills referred to above). Indeed, not only could large numbers of lives be saved, but also aggregate medical care costs and the inflation thereof over time could be significantly reduced.

Moreover, a rich source of tax revenue could potentially be created, based upon those who still insist on smoking cigarettes. Finally, the framework developed here can be applied in any nation.

Before considering said the proposals contained herein, the issue of what level of government should impose/administer the tax warrants a few observations. For example, assume a reasonable and useful alternative to the present system of cigarette excise taxes is deemed potentially very beneficial in reducing not only cigarette consumption but also in promoting public health, i.e., in not only reducing cigarette consumption but also in addressing smoking intensity issues. Let this new cigarette excise tax format be assigned the label *SSET* (selective supplementary excise tax). Arguably, the *SSET* could be adopted by all of the states or by the federal government. In the former case, it clearly would be a rich revenue source for revenue-starved states; in the latter case, the *SSET* could help ameliorate the federal budget deficit problems and, presumably, the federal government's related bond-ratings problem as well.

Assume that it is left to the states to administer such a tax system. If some states were to resist raising cigarette excise taxes in the form of the proposed/agreed-upon *SSET* or were to resist raising the cigarette excise tax in the same way and to the same extent, due either to the influence of tobacco producers, tobacco lobbyists, and/or tobacco growers organizations and/or due to some other reason, whereas other states raised cigarette taxation by fully adopting the same *SSET*, the revenue and other benefits for the policy would be less extensive, particularly in those cases where cigarette purchases could be made on a large scale across state lines without significant transaction costs (Lovenheim, 2008). Interestingly, on this very issue, Lovenheim (2008, p. 7) estimates that 13-25 percent of consumers already purchase cigarettes in border localities. Thus, as Lovenheim (2008, p. 7) suggests, cross-border smuggling would confound much of the potential health as well as revenue benefits from increased cigarette excise taxes imposed by *state* governments *unless all of the states agreed* to adopt the exact same *SSET* at the very same time. That is, for the new cigarette excise tax at the state level to yield large public health benefits, a *very* significant degree of co-operation and co-ordination between states on cigarette excise tax policy would be necessary in order to get them all to adopt not only an *SSET* but the very *same SSET*.

Given that, historically, there has been and continues to be an *enormous* interstate variation in state-imposed cigarette excise tax levels and given the historical differences among the states in the predisposition of state legislatures and governors to tax tobacco products, the likelihood of a uniform large cigarette *SSET* imposed by all of the states might at first glance seem remote.

To illustrate the large interstate variation in state taxes per pack of cigarettes, consider the data provided in Table 1, which reflects such taxation levels in cents per pack as of January 1, 2011. Given the autonomy of these 51 major political entities, and given the highly varying levels of commitment to cigarette taxation among them, and given the highly varying levels of those factors that influence cigarette taxation among these 51 political jurisdictions, it would seem that for successful adoption of either some form of nationally *uniform SSET* (nicotine-based cigarette excise tax or some form of uniform nicotine-plus-tar based cigarette excise tax) to be plausible, it might seem likely that the only feasible way to impose a both significant and geographically uniform such tax would be at the federal level. Ergo, it *can* be argued that the administration of the *SSET*, once its precise form is identified, very likely, out of practical necessity, would most likely lie with the federal government.

That said, the *SSET* could in theory work equally well (to promote public health and generate tax revenues) at the *state* level as it would at the federal level, but only if the exact same *SSET* were adopted in both the state-level and federal scenarios and only if it were uniformly administered by all 50 states plus the District of Columbia at the very same time. But is there a way for the same *SSET* to be adopted at the state level? Plausibly, "yes."

In particular, assume that the federal government in fact passes the new *SSET*. The key to promoting widespread if not universal (in the U.S.) adoption by states could be the presence of a *default clause* or a *trigger*, one that would have the federal government imposing the *SSET* in the case of any state that chose not to do adopt the *SSET*. Consider, for instance, what would potentially happen if that *SSET* statute were to include a provision such as the following: "Each of the 50 states and the District of Columbia (hereafter, simply 'jurisdiction') shall have the option of adopting, using a uniform implementation date across states, this *SSET* as a *'local jurisdiction' option cigaretteSSET*(Note 1). Each such jurisdiction has the option, to be exercised by the end of this calendar (or fiscal) year, of either *adopting in full* the *SSET* embodied in this legislation and deriving *all of the revenue benefits* thereof, to begin as of the first day of the forthcoming calendar (or fiscal) year, *or* of *rejecting* the *SSET* embodied in this legislation, in which case all of the revenues generated by the *SSET* in each such jurisdiction will be both imposed by the U.S. Treasury and generate revenues solely for the U.S. Treasury. Furthermore, should a given jurisdiction adopt the *SSET* embodied in this legislation and, at some subsequent date reject this *SSET*, the U.S. Treasury shall by default in such case automatically become the sole administrator of and sole tax revenue beneficiary thereof."

Given the rich revenue incentives of adopting the *local jurisdiction option cigaretteSSET*, as well as the opportunity to take credit for the improved health benefits to its residents and the reduced health care costs (including Medicaid) associated with cigarette smoking, it would be reasonable to expect that most states, as well as Washington, D.C., would have an almost irresistible incentive to accept the legislation. Even in states where a very politically conservative population resides or a population deeply inured in the tobacco industry resides, adoption of the *' local jurisdiction' option cigaretteSSET* would likely be regarded as more appealing to the same very tax being administered by and solely providing tax revenues for the Federal government. Thus, with the correct economic incentives built into the legislation, the *local jurisdiction option cigaretteSSET* could well be adopted throughout the nation. Moreover, this widespread adoption of the *SSET* would be especially helpful for state governments in need of revenues.

2. A New Cigarette Excise Tax Formulation

Consider now what the modified taxing of cigarettes might look like, i.e., the possible form of a "selective supplementary excise tax on cigarettes per pack," *SSET*, regardless of whether it takes the form of a strictly federal-level tax or evolves into a state-level tax. In addition to a flat tax on all cigarettes per pack, this approach could involve constructing a supplementary tax in direct proportion to each cigarette brand's nicotine content and tar content. For example, the total cigarette excise tax (*TCET*) could have two variable components in addition to a general flat tax (*FLATTX*) that is applicable to all cigarette brands equally:

$$TCET_j = FLATTX + n_jNICOTINE_j + t_jTAR_j \qquad (1)$$

where *TCETj* is the total excise tax per pack on cigarette brand *j*, which consists of *FLATTX*, a flat excise tax imposed on every single pack of cigarettes regardless of nicotine and tar content, *and* ($n_jNICOTINE_j + t_jTAR_j$), the selective supplementary excise taxes (*SSETs*) on brand *j*.   The tax rates *nj* and *tj* correspond to pennies per pack. Clearly the magnitudes of *nj* and *tj* must be sufficiently large in magnitude as to impose a clear financial disincentive to consume cigarette brand *j*.

In taxing cigarette brand *j*, reference points are needed both in terms of nicotine content and tar content. The reference points suggested here for the nicotine and tar tax bases are, respectively, 0.1 milligrams (mg) of nicotine and 1.0 milligram (mg) of tar. Thus, if cigarette brand *j* had 0.4 mg of nicotine, *NICOTINEj*= 4; furthermore, if cigarette brand *j* had 6.0 mg of tar, *TARj* = 6. Although obviously other reference points could be chosen, these two reference points not only manifest simplicity but also effectively correspond to the lowest nicotine and tar cigarettes on the U.S. market.

Thus, in this formulation—equation (1)—and using the reference points suggested above, the *SSET* would impose higher taxes on cigarettes in direct proportion to the amounts of both nicotine and tar contents, so that the *variable* component of that taxation would be *proportional* to nicotine and tar contents. The *SSET* tax rates would be so constructed that a cigarette with 0.2 mg of nicotine carries twice the nicotine *SSET* as a cigarette containing only 0.1 mg of nicotine; alternatively, a cigarette with 1.0 mg of nicotine would carry a nicotine *SSET* of ten times that of the cigarette with only 0.1 mg thereof. As for the tar tax component of the *SSET*, it would work the same way. Thus, a cigarette with 2 mg of tar would carry a tar *SSET* of twice that of a cigarette with 1 mg of tar.

Of course, since nicotine is the *addictive agent* in cigarettes, the SSET could be focused solely on nicotine content rather than both nicotine and tar content. Such a tax could take the form of (2):

$$TCET_j = FLATTX + no_jNICOTINE_j \qquad (2)$$

where *noj* is the nicotine-only *SSET* and would presumably be a much higher tax rate than *nj* (see equation (1) above) in order to exercise needed disincentive effects; this version of the *SSET* would be assessed otherwise exactly like the nicotine tax component in formulation (1). On the other hand, since the tar content in cigarettes is used to describe/measure the toxic chemicals in cigarettes, formulation (1) has arguably its merits vis-à-vis formulation (2).

Alternatively, a *broader* tax could be so formulated as to also tax the carbon monoxide (CO) contents in cigarette brand *j*; this is demonstrated in equation (3):

$$TCET_j = FLATTX + n_jNICOTINE_j + t_jTAR_j + c_jCO_j \qquad (3)$$

where *COj* is the number of milligrams (mg) of CO in cigarette brand *j* and *cj* is the number of cents per mg of *SSET* on the CO level, *COj*.   Indeed, even cigarette length could be a base for taxation. Letting cigarette length, in millimeters, be a base for taxation, (3) could become:

$$TCET_j = FLATTX + n_jNICOTINE_j + t_jTAR_j + c_jCO_j + m_jML_j \qquad (4)$$

where *MLj* is the number of millimeters in length for cigarette brand *j* and *mj* is the number of cents per millimeter of length for cigarette brand *j*.

In addition, the proposed (proportional) taxes shown in (1), (2), (3), and (4) could be expressed in non-linear form and be made progressive with respect to either a cigarette's nicotine, tar, and/or carbon monoxide contents and/or length. For instance, the tax bases $NICOTINE_j$, TAR_j, and/or CO_j and/or ML_j could be expressed with an exponent greater than one and thereby introduce graduated taxation. Thus, the *general form* of the *TCET* and its *SSET* components are given by:

$$TCET_j = FLATTX + n_j NICOTINE_j{}^a + t_j TAR_j{}^b + c_j CO_j{}^c + m_j ML_j{}^d \tag{5}$$

Where $FLATTX \geq 0$, $n_j \geq 0$, $t_j \geq 0$, $c_j \geq 0$, $m_j \geq 0$, $a = 0$ or $a \geq 1$, $b = 0$ or $b \geq 1$, $c = 0$ or $c \geq 1$, and

$d = 0$ or $d \geq 1$.

Such a policy could be useful not only as a significant revenue source but also in promoting health benefits from cigarette excise tax policy by discouraging substitution of high nicotine cigarettes for lower nicotine cigarettes in light of significantly increased cigarette excise taxation (Evans and Farrelly, 1998). It of remains to be seen to what extent greater *smoking intensity behavior resulting from increased nicotine consumption from each cigarette* smoked, as described in Adda and Cornaglia (2006), would be ameliorated, however, except to the extent that the overall tax level make cigarette consumption prohibitively to at least some portion of those persons whose smoking behavior makes them prone to "smoking down behavior."

3. A Closing Observation and a Major Caveat

Whereas the formulations shown above in equations (1) – (5) are expressed in U.S. dollars and cents, these various forms of a nicotine/tar/carbon-monoxide/length tax could easily be altered to reflect the currency in any nation. Thus, any sovereign government could choose to adopt such an approach to cigarette excise taxation. Globally, it is estimated that tobacco consumption leads directly to about 5.4 million deaths annually; in China, for example, 1.2 million people die annually because of smoking; moreover, smoking is predicted to kill 6.5 million people in 2015 and 8.3 million in 2030. It is urgent that this problem be addressed effectively.

In closing, it must be stressed that there is a significant caveat regarding the potential benefits (both health and tax revenue) alluded to in this presentation. Namely, for the above framework to be effective in achieving its goals, it is likely that a similar tax framework would have to be developed and implemented on cigars and other tobacco products. Failure to undertake such a course of action could, at least to some degree, simply induce a *substitution* of cigars or other tobacco products for cigarettes! In other words, for the above cigarette excise tax system to succeed, the substitution effects of alternative taxes on alternatives to cigarettes such as smokeless tobacco, snuff, cigars, and pipe tobacco must be taken into consideration. Interestingly, 49 states and the District of Columbia have such non-cigarette taxes, with Pennsylvania being the sole exception. Pennsylvania has no smokeless or cigar tax at all (although the state regards small cigars as cigarettes for taxation purposes). Furthermore, of the states that do impose laws of this type, one, Florida, does not tax cigars, although all other tobacco products are taxed in the state. Indeed, the U.S. federal government charges different non-cigarette excise taxes according to six tobacco categories, namely, snuff, chewing tobacco, pipe tobacco, roll-your-own, large cigars, and small cigars. Finally, the black market also must be taken into consideration, e.g., imported cigarettes and similar products from Latin American countries. Thus, the issue at hand requires yet further development.

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Notes

Note 1. This would be similar in principle to the local option sales tax that exists in counties throughout most of the U.S.

Table 1. Cigarette Excise Taxes, As of June 28, 2011

State	Tax (Cents per Pack)	State	Tax (Cents per Pack)
Alabama	42.5	Nebraska	64
Alaska	200	Nevada	80
Arizona	200	New Hampshire	178
Arkansas	115	New Jersey	270
California	87	New Mexico	166
Colorado	84	New York	435
Connecticut	300	North Carolina	45
Delaware	160	North Dakota	44
Florida	133.9	Ohio	125
Georgia	37	Oklahoma	103
Hawaii	300	Oregon	118
Idaho	57	Pennsylvania	160
Illinois	98	Rhode Island	346
Indiana	99.5	South Carolina	57
Iowa	136	South Dakota	153
Kansas	79	Tennessee	62
Kentucky	60	Texas	141
Louisiana	36	Utah	170
Maine	200	Vermont	224
Maryland	200	Virginia	30
Massachusetts	251	Washington	302.5
Michigan	200	West Virginia	55
Minnesota	159	Wisconsin	252
Mississippi	68	Wyoming	60
Missouri	17	District of Columbia	250
Montana	170		

Source: Campaign for Tobacco-Free Kids (2011).