

## **DENYING THE UNDENIABLE**

**A critique of the Canadian Convenience Store Association report, *The failure of tax policies to curb tobacco consumption: results of the 1994 Statistics Canada Survey on Smoking***

**Emmanuel Guindon  
Centre for Health Economics and Policy Analysis  
McMaster University**

**January 27, 2010**

I have been asked to assess the January 4, 2010 report *The Failure of Tax Policies to Curb Tobacco Consumption: Results of the 1994 Statistics Canada Survey on Smoking* prepared by Jean-François Ouellet for the Canadian Convenience Store Association (CCSA). Because of the importance of tobacco tax policies to societal efforts to reduce tobacco consumption, I am pleased to submit an evaluation of the CCSA study. I believe this seriously flawed work has a potential to mislead decision-makers about tobacco tax policies and, as a result, to harm public health.

Stating, as Ouellet does, that tobacco taxes have little impact on the use of tobacco products, ignores a wealth of research evidence that has accumulated over the past decades. Such ignorance –wilful or not– attests in and of itself to the poor quality of his report. Both theory and research evidence show clearly that the single most effective method of reducing the prevalence and consumption of tobacco products is to increase their prices.

First, higher prices for tobacco products can deter individuals who do not smoke from starting, thus preventing addiction. Second, higher prices can persuade current users to quit or reduce their consumption. Third, higher prices can prevent former users from starting again. Additionally, the young and the poor are more affected by an increase in tobacco prices than their older and wealthier counterparts (Chaloupka, and Warner 2000).

In 1999, the World Bank concluded, after an extensive review of the evidence, that on average a price increase of 10% would be expected to reduce demand for tobacco products by about 4% in high-income countries (World Bank 1999). In a meta-analysis of 86 studies (and more than 500 point estimates), Gallet and List find a mean price elasticity of -0.48 (Gallet, and List 2003). Similarly, in an extensive review of both theoretical and empirical evidence, Chaloupka and Warner, in response to the claim that the demand for cigarettes may not follow one of the most fundamental law of economics, the law of demand (i.e. a downward-sloping demand curve) write:

As the now-substantial body of economic research demonstrates, however, the demand for cigarettes clearly responds to changes in prices and other factors, as found in applications of both traditional models of demand and more recent studies that explicitly account for the addictive nature of smoking (Chaloupka, and Warner 2000 p. 1546).

Ouellet also conveniently ignores a wealth of Canadian studies that have looked specifically at the impact of tobacco taxes on tobacco use within the Canadian context. Of particular interest are a number of studies that take great care in examining the impact of tobacco taxes when there is smuggling.

First, Vivian Hamilton and colleagues from McGill University (Hamilton et al. 1997), analyze the same dataset utilized by Ouellet and find strikingly different results. Hamilton and colleagues, as does Ouellet, compared short-term trends between provinces where taxes have been cut and provinces where taxes had not been cut, and observe that:

1. Smoking prevalence declined during the entire survey period in both groups of provinces, but the decline was greater in the provinces where taxes were not cut (from 29.0% to 24.9%) than in the provinces where taxes were cut (from 31.0% to 28.3%). Difference in smoking prevalence between the 2 groups of provinces increased from 2.0 percentage points in January 1994 to 3.4 percentage points between February and March 1995.
2. The difference in the rate of starting smoking between the 2 groups of provinces widened from 0.2 to 0.5 percentage points between the beginning and the end of the survey period.
3. The quit rate increased during the survey period in both groups of provinces, but was lower in each cycle in the provinces where taxes had been cut. The most sizeable differences in quit rates between the 2 groups of provinces occurred in cycles 1 and 2, just after the tax rates had been reduced.
4. Mean number of cigarettes smoked declined only slightly in both groups of provinces. The decline was greater in the provinces where taxes had not been cut in both absolute terms (0.5 v. 0.1, respectively) and percentage terms (2.9% v. 0.6%, respectively).<sup>1</sup>

Second, in a study published in the *Journal of Health Economics*, economists Jonathan Gruber from the Massachusetts Institute of Technology, Anindya Sen from the University of Waterloo and Mark Stabile from the University of Toronto, use two distinct approaches that take account of widespread smuggling in the early 1990s and find price elasticity estimates in the narrow range of -0.45 to -0.47. They also find that the sensitivity of smoking to price is much larger among lower income Canadians (Gruber, Sen, and Stabile 2003).

Third, University of Waterloo economists, Sen and Wirjanto, use a wide array of datasets to explore the relationship between tobacco use and prices during the 1990s and conclude that the 1994 reduction in taxes resulted in an increase in smoking participation. Sen and Wirjanto also find that the 1994 tax cut led more teens to start smoking (Sen, and Wirjanto 2009).

---

<sup>1</sup> The four key messages provided in the bullet points are reproduced nearly verbatim from Hamilton et al. (1997).

Fourth, Bo Zhang and colleagues at the University of Toronto examine the impact of the tobacco tax cuts on smoking initiation among young adults and find that lower cigarette prices were associated with higher smoking initiation among young adults (Zhang et al. 2006).

In addition to the four studies briefly described above, there are at least ten others that study the relationship between prices or taxes and tobacco use in Canada and all studies obtain price elasticity estimates that are substantially different from zero, which indicates that prices have a significant and often substantial impact on tobacco use (Auld 2005; Dupont, and Ward 2002; Farnworth 2006; Galbraith, and Kaiserman 1997; Gospodinov, and Irvine 2005; Gospodinov, and Irvine 2009; Malhotra, and Boudarbat 2008; Reinhardt, and Giles 2001; Stephens et al. 1997).

In addition to ignoring blatantly existing research evidence, Ouellet's analysis fails to reach even the lowest standard of research quality. Notwithstanding the limitation of the dataset utilized which are well documented<sup>2</sup> (e.g. the very short term nature of the survey and the substantial attrition which Ouellet even fails to mention) and the utter lack of methodological description (which is a serious concern in and of itself), Ouellet's data manipulation and statistical approach raise serious methodological concerns. Despite a rich literature on the stages of smoking uptake<sup>3</sup>, Ouellet arbitrarily codes stages of smoking to create a dubious scale of smoking uptake. The limited statistical analyses presented suggests the use of univariate analyses and multivariate analyses with a dismal number of control variables which raise serious concerns of omitted variable bias.

Ouellet's Chart 1 illustrates well his attempt to mislead his readers. In Chart 1, Ouellet reproduces tobacco consumption data presented by Stephens (Stephens 1995) but conveniently avoids providing the most important and meaningful data. We reproduce Ouellet's Chart 1 below which is based on Stephen's Table 2. The data could hardly show a clearer picture: total tobacco consumption dropped substantially every year between 1990 and 1993 but suddenly jumped upward in 1994, just when taxes were cut. It is worth reiterating that these data are presented by Ouellet to support, bizarrely, the notion that tax cuts did not lead to any changes in tobacco consumption. The data show unmistakably the opposite.

---

<sup>2</sup> See Hamilton and colleagues (Hamilton et al. 1997) and Stephens (Stephens 1995) for more details.

<sup>3</sup> See Wakefield and colleagues for a synthesis of this literature (Wakefield et al. 2004).

**Table 1:** Canadian tobacco consumption, 1990–1994 (billion units)

	1990	1991	1992	1993	1994
Total legal sales	54.25	46.90	41.41	35.20	50.49
Total contraband	1.27	4.43	9.83	14.21	4.20
<b>Total Market</b>	<b>57.42</b>	<b>53.88</b>	<b>53.67</b>	<b>51.80</b>	<b>56.56</b>

Stephens (1995): Table 2.

Ouellet’s questionable data manipulation and methodological approach yields results that are not only at odds with published work that analyse the same dataset (not surprisingly, Ouellet fails even to inform readers, due to his ignorance or mendacity, that such a contradictory study exists), but that are also at odds with more than a dozen Canadian studies and a wealth of studies conducted in the United States and Europe.

*Emmanuel Guindon is a PhD candidate in Health Research Methodology and a member of the Centre for Health Economics and Policy Analysis, McMaster University. Prior to McMaster, Mr. Guindon spent seven years as an economist at the World Health Organization. His primary research interests pertain to tobacco control, health care financing and research methods.*

**Acknowledgements:** This research note has been prepared at the request of Physicians for a Smoke-Free Canada and the Non-Smokers’ Rights Association. The author has declined any financial remuneration. Detailed comments from David Boisclair are gratefully acknowledged.

The views expressed in this note are those of the author and do not necessarily represent the views of McMaster University.

## REFERENCES

- Auld, M. C. 2005. "Causal effect of early initiation on adolescent smoking patterns." *Canadian Journal of Economics/Revue canadienne d'economique* 38(3): 709-34.
- Chaloupka, F. J. and K. E. Warner. 2000. "The Economics of Smoking." In *Handbook of Health Economics*, edited by A. J. Culyer and J. P. Newhouse, pp. 1539-627. Amsterdam: Elsevier Science, North-Holland.
- Dupont, D. P. and A. J. Ward. 2002. "The Economic Impacts of Cigarette Tax Reductions on Youth Smoking in Canada." Ste-Catherines: Brock University.
- Farnworth, M. G. 2006. "What motivates daily cigarette smokers to quit? Retrospective annual discrete duration analysis." *Subst Use Misuse* 41(4): 533-54.
- Galbraith, J. W. and M. Kaiserman. 1997. "Taxation, smuggling and demand for cigarettes in Canada: evidence from time-series data." *J Health Econ* 16(3): 287-301.
- Gallet, C. A. and J. A. List. 2003. "Cigarette demand: a meta-analysis of elasticities." *Health Econ* 12(10): 821-35.
- Gospodinov, N. and I. Irvine. 2005. "A 'long march' perspective on tobacco use in Canada." *Canadian Journal of Economics/Revue canadienne d'economique* 38(2): 366-93.
- Gospodinov, N. and I. Irvine. 2009. "Tobacco taxes and regressivity." *J Health Econ* 28(2): 375-84.
- Gruber, J., A. Sen, and M. Stabile. 2003. "Estimating price elasticities when there is smuggling: the sensitivity of smoking to price in Canada." *J Health Econ* 22(5): 821-42.
- Hamilton, V. H., C. Levinton, Y. St-Pierre, and F. Grimard. 1997. "The effect of tobacco tax cuts on cigarette smoking in Canada." *CMAJ* 156(2): 187-91.
- Malhotra, N. and B. Boudarbat. 2008. "The Hazards of Starting the Cigarette Smoking Habit." *Working paper*.
- Reinhardt, F. S. and D. E. A. Giles. 2001. "Are cigarette bans really good economic policy?" *Applied Economics* 33(11): 1365 - 68.
- Sen, A. and T. Wirjanto. 2009. "Estimating the impacts of cigarette taxes on youth smoking participation, initiation, and persistence: empirical evidence from Canada." *Health Econ*.
- Stephens, T. 1995. "Trends in the Prevalence of Smoking, 1991-1994." *Chronic Diseases in Canada* 16(1): 27-32.
- Stephens, T., L. L. Pederson, J. J. Koval, and C. Kim. 1997. "The relationship of cigarette prices and no-smoking bylaws to the prevalence of smoking in Canada." *Am J Public Health* 87(9): 1519-21.
- Wakefield, M., D. D. Kloska, P. M. O'Malley, L. D. Johnston, F. Chaloupka, J. Pierce, G. Giovino, E. Ruel, and B. R. Flay. 2004. "The role of smoking intentions in predicting future smoking among youth: findings from Monitoring the Future data." *Addiction* 99(7): 914-22.
- World Bank. 1999. *Curbing the epidemic: governments and the economics of tobacco control*. Washington: The World Bank.
- Zhang, B., J. Cohen, R. Ferrence, and J. Rehm. 2006. "The impact of tobacco tax cuts on smoking initiation among Canadian young adults." *Am J Prev Med* 30(6): 474-9.