



Cost-benefit analysis when the conclusion drives the method: a review of “Report on tobacco taxation in New Zealand”

As I wrote in opposition to the anti-tobacco lobby’s work on tobacco taxation in 2007,¹ and particularly chided the citing of work not publicly available, it’s only fair that I give some attention to their report now that they’ve unveiled the creature behind the curtain.

The SmokeFree Coalition² argues that tobacco taxes should be increased substantially, that future increases be indexed to inflation, and that a dedicated portion of the revenues collected be put to programmes assisting individuals to quit smoking.

Parts of the report are sound. If the goal is to stop people from smoking, increasing tobacco taxes are an effective means to that end. For now, let’s take the report’s desiradata as given and consider whether a package of increased cigarette taxes, coupled with spending on anti-smoking initiatives, is an effective way of improving the lot of current smokers, and especially that of current poor smokers.

The report notes that such a policy would make current poor smokers who quit better off while making worse off those who continue to smoke. If the goal is to reduce the amount of smoking while minimising the harm done to low-income people who continue to smoke, directing any additional cigarette taxes raised to reductions in the income tax rate facing low income earners would seem a more efficient means to that end than the proposed tax-and-programmes package. As cigarette taxes are highly regressive and disproportionately hurt poor people, poor smokers who continue smoking would most likely prefer to get some of the tax increase back via reduced income taxes rather than have it fund further browbeating about their consumption decisions.

The authors estimate that some 39,000 non-quitting decile 1 households would spend an extra NZ\$348 per year with a 20% rise in prices and that 37,000 non-quitting decile 1 households would spend an extra \$928 per year with a 50% rise. These are not insignificant figures for low-decile households.

It would seem somewhat perverse to me if tobacco excise taxes were indexed to inflation, as per the report’s recommendation, while income tax bracket thresholds were not, but that’s something of a value judgment.

The biggest problems in the report are in the cost-benefit analysis. In my prior editorial, I emphasised the importance of noting the benefits of smoking as experienced by smokers. I do not smoke but I have it on good authority from smokers that they enjoy smoking. A supporter of the report, in response to my prior editorial, argued³ that I ought to discuss the benefits of smoking with a cancer patient. That one may suffer adverse health consequences from smoking does not mean that the smoker didn’t enjoy smoking. It’s perhaps reasonable to argue that smokers might be myopic

and weigh too-heavily current pleasures against future pains, but we can't assume away those pleasures. We have to have some way of measuring them.

The report makes some accounting for the benefits enjoyed by smokers, but, following Easton⁴ and Collins and Lapsley,⁵ subject to massive discounting. Collins and Lapsley deem those smoking more than 10 cigarettes per day to be addicted and, based on Australian figures provided in a 1989 study, tally 89% of tobacco to be consumed by addicts. They use this estimate to add up the costs of addictive consumption: the value of real resources used to produce tobacco destined for addictive use. Easton then adds that those in the addictive categories enjoy no utility from smoking; he counts 11% of cigarette expenditures in New Zealand as the benefits of smoking to smokers.

There are more than a few problems with this approach. First, total spending on a product necessarily comprises a lower bound estimate of the gross utility enjoyed by consumers. The standard economic approach is to estimate consumer surplus—that is to say, the utility one receives from consumption over and above the price one pays for the good consumed - based on the elasticity of demand and total purchases. The report estimates demand elasticity at -0.45, which means that a 1% increase in the price of cigarettes is associated with a 0.45% drop in consumption.

If per capita consumption is 1000 cigarettes with 25% of the population being smokers, we have average consumption among smokers being 4000 cigarettes per year. At a price of \$0.21 per cigarette and assuming linear demand functions, consumer surplus then is about \$933 per smoker: \$1773 in total enjoyment less \$840 spent on cigarettes. This seems to me to be a lower bound estimate of consumer surplus as I would expect demand to become more inelastic with price increases: the demand curve would then follow a hyperbola lying above the linear curve here estimated, with a correspondingly larger area beneath it.

If we have 750,000 smokers in New Zealand, consumer surplus from smoking then totals about \$700 million, again as a lower bound estimate. This sort of measure of consumer surplus is far more consistent with the literature estimating the benefits of smoking.⁶⁻⁸

Moreover, discounting the utility of “addictive consumption” is fundamentally at odds with our basic theory on the matter,⁹ which defines addictive goods as those for which the utility of consumption is increasing in our prior stock of consumption. It seems rather odd to set equal to zero utility that ought to be increasing with consumption. For those who disagree with the standard model, though, net surplus is the appropriate measure to discount because of addiction, not gross surplus. Drive the consumer surplus down to zero if you must, but arguing that the net surplus is negative (less than the amount spent on cigarettes) tortures the method too much.

Finally, even if it were legitimate to discount entirely the consumption benefits of smoking for those smoking more than 10 cigarettes per day, we really don't know whether the proportions of such smokers in Australia in the late 1980s correspond at all to the proportions in New Zealand today. There's no attempt made to check the cross-country validity of an estimate taken almost 20 years ago, or even any

acknowledgement that applying such a measure 20 years later in a different country might be somewhat problematic.

After massively and inappropriately discounting the benefits of smoking, the report goes on to inflate the costs. The worst error here is including as a cost of smoking the real resources that go into tobacco production. If the report used a gross measure of consumer surplus, such an accounting would be fine.

Let's take a simple example. Suppose that it costs \$1 to produce an apple and you derive \$1.50 in enjoyment from eating the apple. You pay \$1 for the apple. We can then say that you receive \$0.50 in net surplus or \$1.50 in gross surplus. If we do a total accounting of the costs and benefits of apple eating and wish to include the \$1 in apple production activities as a cost, we'd better use the gross measure of consumer surplus; it would be ridiculous to conclude that we're worse off for the apple having been grown and eaten based on comparing a \$0.50 net benefit to the consumer and a \$1 cost of production.

In the case of cigarettes, consumers enjoy roughly \$700 million in enjoyment from smoking over and above the \$1.6 billion they spend on cigarettes. If we include \$650 million in tobacco production costs on the cost side of the ledger, we have to use the gross measure of surplus on the benefits side: about \$2.3 billion. You simply cannot honestly have a net measure on the benefit side and then double-count by including the resource cost on the cost side. In fairness to the authors, they seem here to have been led astray by Easton⁴ who uses similar method.

Similarly, we cannot count the health care costs on the cost side if we do not simultaneously include the tax revenues collected on the benefits side. While the tax revenues are a transfer and the health costs a real resource cost, the taxes were imposed precisely to offset those health costs. Indeed, tobacco taxes collected, at \$980 million, dwarf health care expenditures of \$350 million. As the report notes, "it does seem reasonably apparent that the tax contribution of approximately \$1 billion annually by smokers exceeds substantially the external costs of smoking which fall on non-smokers. If savings on pension costs from premature mortality were added as well the net fiscal contribution of smokers, to the fiscal gain of non-smokers, would be further increased." (Vol 1., p. 46)

The remaining costs fall almost entirely on the smokers themselves. But, smokers already have weighed these costs against the benefits of smoking: that they smoke is evidence that they find the benefits to outweigh those costs. Mortality, morbidity, loss of production from each of those causes, smoking-induced fires—all of these are costs borne by the smoker. Again, if we wish to include these on the cost side, we'd need to weigh them against a more comprehensive measure of the gross benefits. Such a measure of gross benefits would be rather in excess of the \$2.3 billion I highlighted above.

In sum, the cost-benefit analysis presented is fundamentally unsound: its methods seem to have been chosen with the aim of maximising the monetised costs of tobacco use and minimising the monetised value of the utility derived by smokers from tobacco use. And why? The report explicitly states that the best case for increased tobacco taxes is that it reduces tobacco use and improves the health of those quitting

(Vol 1., p. 46); it then argues that tax increases ought to be presented and justified as a public health measure (Vol 1., p. 76) rather than as a way of internalising externalities, recovering costs on the health system, or because of the prior cost-benefit analysis.

Why distort the numbers if the numbers aren't the basis for the policy recommendation? All of the cost-benefit analysis could be excised from the report and replaced with the simple and honest, albeit contestable, assertion that the authors know better what's good for smokers than do the smokers themselves.

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