Submission to the Netherlands Plain Packaging Consultation

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1. Introduction

This submission establishes a framework whereby the various costs of the plain packaging policy can be evaluated. An institutional theory of tobacco control is outlined that highlights the social costs of tobacco control policy. In environments of no or little tobacco control, consumers may well be misled by tobacco companies as to the health consequences of tobacco consumption. An information asymmetry may result in smokers being unaware of the adverse health consequences of their tobacco consumption. Tobacco consumption imposes both internalities on the smoker, and externalities on society.

By contrast increased government intervention in tobacco control imposes enforcement costs on the economy that may, or may not, reduce tobacco consumption. The model set out in section 2 explains the various trade-offs in tobacco control policy.

Section 3 sets out the "official" evidence relating to the standardised packing experiment in Australia. The standardised packaging policy (called plain packaging in Australia) was introduced in December 2012. Despite the Australian government and the Australian public health lobby arguing that the policy has been successful, the evidence they have brought to bear shows no such outcome. The early evidence from France suggests similar effects in that country. This section also re-examines some of the evidence collected by the Tracking Study – a AUD$3 million project commissioned by the Australian Health Department to track the efficacy of the plain packaging policy before, during and after its implementation. This evidence is inconsistent with the plain packaging policy achieving its stated objectives. Section 4 discusses the unintended consequences of the plain packaging policy. Finally section 5 concludes and includes some recommendations.

The evidence presented in this submission demonstrate that despite, and contrary, to the claims made by the Australian government, and the public health lobby, that standardised packaging does not reduce the prevalence of tobacco consumption beyond any pre-existing trend. Tobacco control policies should focus on providing information to smokers and potential smokers as to the health risks associated with consumption and in levying appropriate taxes to finance any smoking related costs associated with tobacco consumption.

The Netherlands proposed policy is explicitly aimed at deterring youth adoption of tobacco consumption. I wish to draw your attention to the discussion contained in section 3.4.1 that shows that the Australian plain packaging policy had no impact on youth smoking rates.

2. An Institutional Theory of Tobacco Control

What is not well understood is that an economic perspective has important difference to a public health perspective to tobacco consumption. The public health lobby views tobacco from a disease

perspective. The World Health Organization, for example, talks about the "Global Tobacco Epidemic". From this perspective it may be entirely sensible to wish to totally eliminate or eradicate tobacco consumption. This is, however, a normative assessment – tobacco consumption is a very different "ailment" to, say, contracting small pox or polio. Unlike tobacco consumers, disease victims do not voluntarily contract their diseases.

Economics strives to be a positive science that investigates human action and choice. It is only through a careful analysis of incentives, constraints, costs, and benefits that choices and decisions can be fully understood. Economics provides a coherent and consistent framework to investigate the totality of any policy choice or decision. It provides, in principle, for a full accounting of the costs and benefits under differing institutional frameworks of different choices and decisions.

From an economic perspective, tobacco consumption is much like consuming any other good or service. There may be an informational asymmetry that results in market failure associated with the consumption of tobacco, but once that information asymmetry is overcome there is no further basis, in *economic* theory, for government intervention. Any additional tobacco control policies are likely to impose unnecessary costs on the economy and distract attention from the primary policies that are likely to be successful.

While the public health lobby may wish to reduce tobacco consumption to zero, from an economic perspective that may not be an appropriate policy objective. The point being that reducing tobacco consumption to zero may reduce the health costs associated with tobacco consumption, but may also impose higher social costs or economic costs.

In a series of papers Andrei Shleifer (and various co-authors) has developed an institutional theory that posits (efficient) regulation as emerging from societal trade-offs between the costs of private disorder, and the costs of government dictatorship.[1] "Disorder" relates to the ability of private individuals to inflict harm on others, while "Dictatorship" relates to the ability of government and its bureaucrats to inflict harm on citizens. Behavioural responses to government intervention should also be classified as "Dictatorship" costs.

Depending on the relative costs of disorder and dictatorship, different regulatory approaches are more or less appropriate in different circumstances, for different industries, and for different goods and services. What is important to recognise is that government has a role to play in reducing private disorder when private solutions are unavailable, or too costly; subject, of course, to not imposing too high dictatorship costs itself.

This institutional model of regulation, following in the "new comparative economics" literature (see Djankov et al 2003), develops the notion of an "Institutional Possibility Frontier" that maps the various trade-offs in any set of institutions (which could be regulations or policies) aimed at social control in pursuit of some socially desirable end. These socially desirable ends could include, for example, Business Regulation to address negative externalities (Shleifer 2005), Productivity reform (Davidson 2013), Environmental Policy (Davidson 2014), Media Regulation (Berg and Davidson 2015), or

[1] Djankov, S., E. Glaeser, R. La Porta, F. Lopez de Silanes, and A. Shleifer, 2003, The new comparative economics, Journal of Comparative Economics, 31(4): 595-616.
Shleifer, A. 2005, Understanding regulation, European Financial Management, 11: 439 – 451.

Innovation Policy (Davidson and Potts 2015, 2016).[2] In this submission I apply the same model to tobacco control.

The Djankov et al. model frames social losses due to state expropriation and private expropriation on the x and y axes of Figure 1 below, and with four institutional orderings for social control (private orderings, independent judges, regulatory state, state ownership) mapped along the Institutional Possibilities Frontier (IPF). The position and shape of the IPF is given by the levels of "civic capital" in the relevant society and the relative transactions and governance costs of the various institutions. A 45-degree line represents points of total loss minimization and the equilibrium tangency with the IPF therefore represents an "efficient" institutional solution.

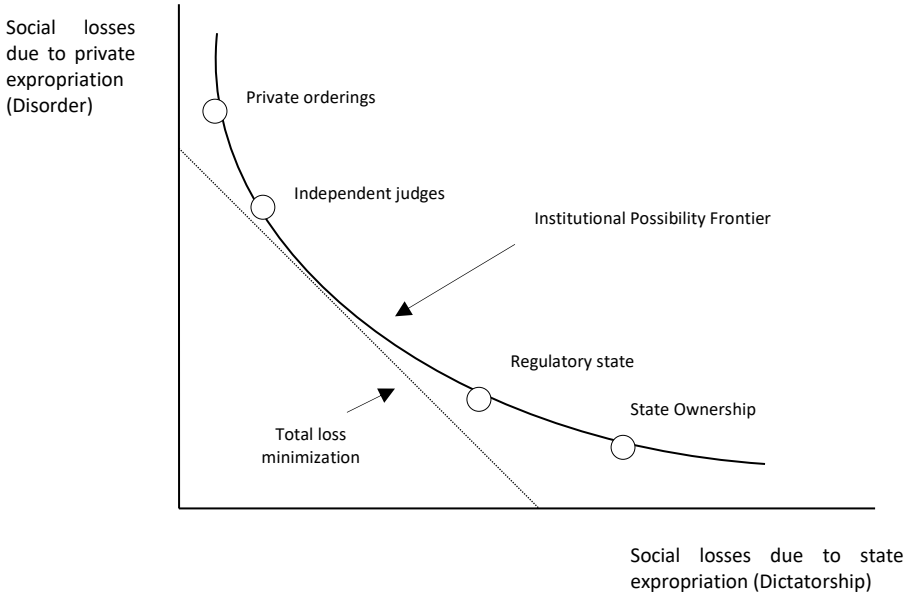

Figure 1. Institutional Possibilities
Source: Djankov et al 2003

Recognising that there are no costless solutions to societal problems or social control is the main feature of this model. It forces analysts to think carefully about the various trade-offs and opportunity costs that any institution of social control imposes. This model makes it very clear that there is no such thing as a perfect or costless institutional form, and that any institution represents some set of compromises between the risks of private expropriation (net of private benefits) and the risks of state expropriation (also net of possible benefits).

In figure 2 I apply the model to tobacco control.

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[2] Berg, C. and S. Davidson, 2015, Media Regulation: A Critique of Finkelstein and Tiffen Available at SSRN: http://ssrn.com/abstract=2669271 or http://dx.doi.org/10.2139/ssrn.2669271
Davidson, S. 2013. Productivity enhancing regulatory reform, In Australia adjusting: Optimising national prosperity, – the Committee for Economic Development of Australia.
Davidson, S. 2014. Environmental protest: an economics of regulation approach, Australian Environment Review, 29(10): 283 – 286.
Davidson, S. and J. Potts, 2016a, Social Costs and the Institutions of Innovation Policy. *Economic Affairs*. Forthcoming.
Davidson, S. and J. Potts, 2016b, A New Institutional Approach to Innovation Policy, Australian Economic Review Policy Forum: Research and Innovation, 49(2): 200 – 207.

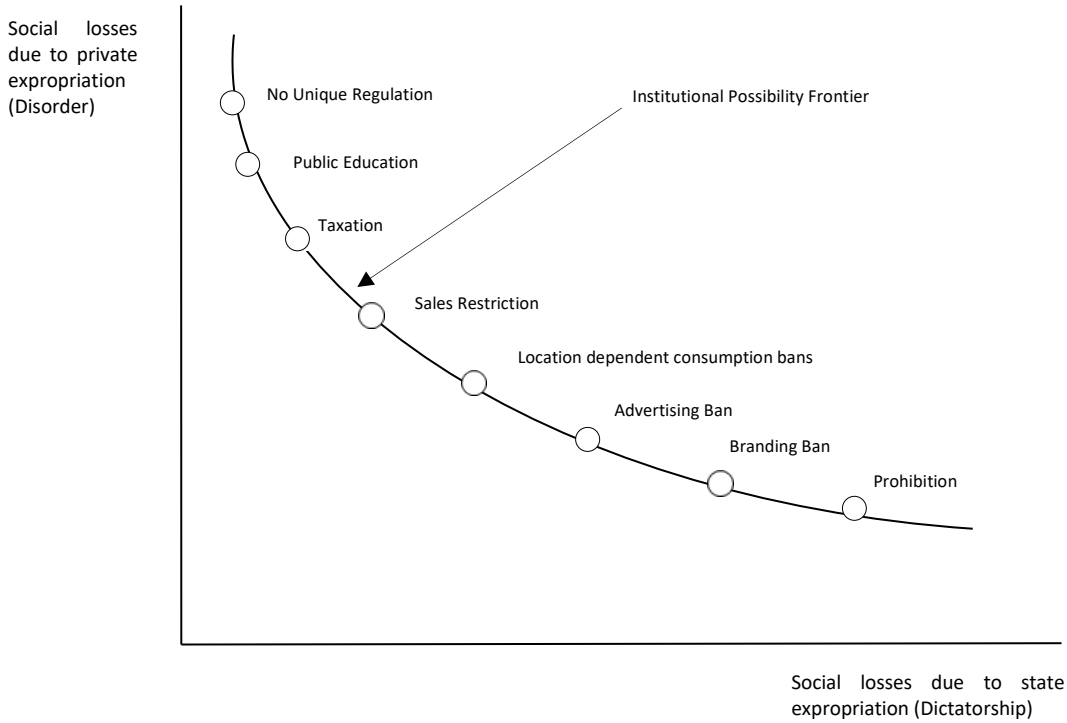

Figure 2: Institutional Possibilities of Tobacco Control

In the first instance we can imagine a situation where there is no unique tobacco control regulation. In this situation the manufacture and sale of tobacco products would be simply regulated as any other generic good or service in the economy. Given the externalities and internalities associated with tobacco consumption, the Disorder costs associated with this regulatory regime could be high.

Tobacco consumption is associated with several medical conditions, including various cancers, heart disease, and emphysema. Consumers may suffer from information asymmetry; either under-estimating the health risks of tobacco consumption generally, or under-estimating the probability of adverse health consequences for themselves. Furthermore, some tobacco consumers may have very high discount rates and undervalue the future costs of their tobacco consumption relative to their current consumption. These considerations can be described as being internalities.

Externalities occur when tobacco consumers impose costs of others through, for example, second-hand smoke. Given the potential for externalities and internalities associated with tobacco consumption a *prima facie* case can be made for government intervention. In the very first instance a government information campaign as to the dangers of tobacco consumption would very likely lower the disorder costs associated with tobacco consumption but would not increase the dictatorship costs associated with government intervention by very much.

Two forms of taxation need to be distinguished. In the first instance tobacco could (and should) be subject to Ramsey taxation. The so-called Ramsey Rule suggests that goods and services should be taxed in inverse proportion to their elasticity of demand. To the extent that tobacco products have a somewhat inelastic demand curve, they should be taxed at higher rates. This is a straight forward revenue raising exercise. Any use of taxation to discourage tobacco consumption would constitute a Pigouvian tax. This is the second form of taxation that we need to consider. While Pigouvian taxation may well raise substantial revenue, the objective of the tax involves social engineering. Here the government wishes to impose a different set of preferences on society than those the society has freely chosen. Here the costs of dictatorship start becoming large – not only in terms of foregone

consumer utility but also in terms of behavioural responses to potentially excessive Pigouvian taxes. The most obvious example would be smuggling.

Up to this point, the tobacco control measures have been associated with low social costs of dictatorship. The provision of information is a public service and the use of the price mechanism to ration tobacco consumption does not necessarily involve the coercive powers of the state.

Sales restrictions would represent the first major use of coercive state power. Here the state would restrict the sale and consumption of tobacco products to, say, individuals over the age of 18, or restrict where tobacco products may be sold. To ensure compliance the state needs to engage in acts of surveillance and entrapment. While these measures may have the effect of reducing tobacco consumption amongst target groups (for example, underage smoking) it also may also reduce the profitability of tobacco products, divert law enforcement activity away from violent crime, and impose surveillance costs on law-abiding citizens.

Having first restricted who may consume tobacco products and where they might be sold, the state then restricts where tobacco products may be consumed. It is somewhat ironic that the state has chosen to ban the consumption of tobacco products in private locations before banning the consumption of tobacco products in public locations. Tobacco product consumption has been banned in workplaces, private restaurants, clubs, pubs and the like under the guise that these institutions are "public places" despite the fact that they are very often private property. Such abrogation of private property constitutes a massive incursion of state power into the economy. The state has also began to ban the consumption of tobacco products on public property (where it does have ownership – but long after banning the consumption of tobacco products in private property). Again the social costs of compliance, surveillance, entrapment, and re-allocation of law enforcement activities constitute major costs.

Having restricted the Who, and Where of tobacco consumption, the state then restricts How tobacco products are marketed through advertising bans. These bans range from bans on advertising in particular media, to bans on advertising of sporting events, to point of display bans, and so on. The costs here include restricting the universe of potential sponsors for major events. While major sporting events continue to receive sponsorship from the alcohol, fast food, and gambling industries, it is also the case that many smaller sporting events are unable to garner sponsorship from either these industries or the tobacco industry. This policy restricts the livelihoods of the advertising industry, restricts the quantum of sponsorship dollars in the economy and imposes compliance, surveillance and entrapment costs on the economy.

Having restricted advertising, bans on branding are an obvious next step. In the first instance naming rights could be limited. Words such as "Light" or "Extra Smooth" or "Low Tar" could be prohibited. In addition a standardised packaging policy could be adopted. In Australia this policy is known as "Plain Packaging". Dictatorship costs here are very high – this is an abrogation of private property in the form of intellectual property. To the extent that private property rights are perceived to become insecure, the resultant loss of investment flows into the economy could be substantial.

Finally there is prohibition. Prohibition can take many forms. For example, the Australian government does not allow the cultivation of tobacco within Australia. Extant tobacco production licences were bought out and no new licences will be issued. The cost here is the loss of economic activity, the potential for permanent job losses in rural areas, the loss of manufacturing capacity and employment, and so on. Alternatively, specific types of tobacco product could be prohibited. In Australia, for example, nicotine fluid for e-cigarettes is banned for sale, as is powdered form for inhalation (snus).

In other jurisdictions there are proposals for the prohibition of menthol flavoured tobacco products. Of course, the public health lobby would like to see all tobacco products prohibited.

Prohibition is associated with a range of costs and adverse consequences. Meadowcroft (2008) has summarised those costs and consequences as follows:[3]

- Prohibition places markets into the hands of criminal enterprises.
- Prohibition increases the risks of already risky activities.
- Prohibition criminalises people who would not otherwise be criminals.
- Prohibition diverts law enforcement resources away from conduct that harms third parties.
- Prohibition increases public ignorance.
- Organised interest groups are crucial to the introduction of prohibitions.
- Prohibition almost never works and is almost always counterproductive.

There are two additional points that need to be emphasised when considering the costs of prohibition. First many of those costs begin to be incurred well before prohibition occurs. Secondly, the social costs of prohibition are *very* high. Consider, for example, alcohol prohibition in the United States. It is popularly believed that this policy was a failure leading ultimately to its repeal. That is not entirely correct:[4]

> Drinking habits underwent a drastic change during the Prohibition Era, and Prohibition's flattening effect on per capita consumption continued long after Repeal, as did a substantial hard core of popular support for Prohibition's return.

Alcohol prohibition in the United States was ultimately repealed because the social costs of enforcing the policy relative the benefits were too high.

When it comes to tobacco products, every element of the marketing mix (product, price, place, promote) is very highly regulated by the state. All of these regulations impose varying degrees of dictatorship costs upon tobacco product consumers, tobacco product producers, tobacco product retailers, and the general community. The question of interest is whether these (dictatorship) costs are worth incurring to reduce or eliminate the (disorder) costs associated with tobacco consumption.

In a world of perfect compliance, actions taken by the state to reduce or even complete prohibit tobacco consumption would be entirely successful. In a world where there is somewhat less than perfect compliance there are behavioural responses to state action that undermine those actions. For example, tobacco consumers may substitute other products that may be associated with a different range of social costs, or consumers may continue to consume tobacco product but source these products on the illicit market. Yet other tobacco consumers may simply continue to consume tobacco.

The success of tobacco control policies must be evaluated by the efficacy of those policies subject to the social costs the policies impose. Looking at the Australian experience, it would be very easy to conclude that tobacco control policy has been very successful. Scollo and Winstanley (2015) report that Australian per capita tobacco consumption has been in decline since the 1960s (figure 2.10.2).[5]

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[3] Meadowcroft, J. (ed), 2008, Prohibitions, Institute of Economic Affairs, Profile Books.

[4] Blocker, J., Jr. 2006, Did Prohibition Really Work?: Alcohol Prohibition as a Public Health Innovation, American Journal of Public Health, 96(2): 233 – 243.

[5] Scollo, M. and M. Winstanley, 2015, Tobacco in Australia: Facts and issues. Melbourne: Cancer Council Victoria; 2015. Available from www.TobaccoInAustralia.org.au

There can be little doubt that greater public awareness of the health risks associated with tobacco consumption and tobacco excise taxation has led to a decline in tobacco consumption. It is not clear, however, whether any of the other tobacco control measures adopted in more recent years has had any impact on tobacco consumption. Figure 3 (below) is a recreation of a graph (also now including a trend line and updated to 2016) released by the Australian Department of Health showing the prevalence of tobacco consumption (smoking) since 1990 with the dates of various tobacco control measures included in a time line.[6] The smoking prevalence data are from the National Drug Strategy Household Survey.[7] This survey collects data of drug usage in Australia (including tobacco) for individuals aged 14 years and older. The survey is conducted, on average, once every three years. While some observers have pointed to this survey as evidence of the efficacy of the plain packaging policy, it is not possible to draw any strong conclusions. The decline in smoking prevalence between 2010 and 2013 is on trend – i.e. this survey presents no evidence that the plain packaging policy worked as opposed to smoking rates simply declining as they have over many years. What is particularly problematic is the flat-line trend since 2013. There is no statistically significant difference between the prevalence of smokers in 2013 and 2016.

The tobacco control measures introduced over the past 25 years have not had any noticeable impact on the long-term decline in the prevalence of tobacco consumption. The public health lobby, however, argues that each new tobacco control measure is part of a portfolio of policies designed to inhibit and prohibit tobacco consumption. While it is easy to make this argument, policy efficacy needs to be demonstrated rather than merely asserted.

The issue with adopting such an approach is that each individual tobacco control policy is associated with costs of its own that need to be weighed up against the decline in disorder costs associated with tobacco consumption. Not only might new tobacco control measures prove to be not effective, but over-zealous application of existing tobacco control measures may result in additional social costs.

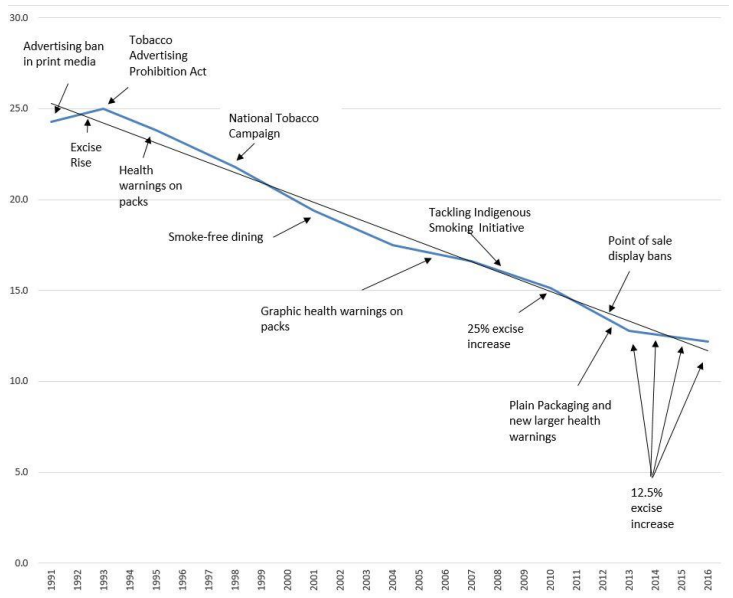

Figure 3: Smoking prevalence rates for 14 years or older and key tobacco control measures implemented in Australia since 1990
Source: Australian Government: Department of Health, Tobacco key facts and figures

[6] http://www.health.gov.au/internet/main/publishing.nsf/Content/tobacco-kff
[7] http://www.aihw.gov.au/alcohol-and-other-drugs/ndshs/

3. Australia's Plain Packaging Experiment

Since December 2012 all tobacco products sold (legally) in Australia are required to be packaged in a standardised pack. In Australia this is known as the "plain packaging" policy. Since then several countries, including the United Kingdom, Ireland, New Zealand, and France, have announced that they too will adopt a plain packaging policy for tobacco products.

The objectives of the policy are set out in section 3 of the Tobacco Plain Packaging Act 2011, No. 148, as amended:

(1) The objects of this Act are:

(a) to improve public health by:

(i) discouraging people from taking up smoking, or using tobacco products; and

(ii) encouraging people to give up smoking, and to stop using tobacco products; and

(iii) discouraging people who have given up smoking, or who have stopped using tobacco products, from relapsing; and

(iv) reducing people's exposure to smoke from tobacco products; and

(b) to give effect to certain obligations that Australia has as a party to the Convention on Tobacco Control.

(2) It is the intention of the Parliament to contribute to achieving the objects in subsection (1) by regulating the retail packaging and appearance of tobacco products in order to:

(a) reduce the appeal of tobacco products to consumers; and

(b) increase the effectiveness of health warnings on the retail packaging of tobacco products; and

(c) reduce the ability of the retail packaging of tobacco products to mislead consumers about the harmful effects of smoking or using tobacco products.

In short, the objective of the policy is to reduce the prevalence of tobacco consumption in Australia by reducing the appeal of tobacco products, and enhancing the health warnings associated with tobacco consumption. A test of the efficacy of the policy would demonstrate that the prevalence of smoking had declined due to the introduction of the policy.

Unfortunately, and despite assurances from the Australian government and the Australian public health lobby, that evidence is simply non-existent. In fact the Victorian Cancer Council, that conducted the National Tobacco Plain Packaging Tracking Survey (NTPPS) commissioned and funded by the Australian federal government, now claims (emphasis original):[8]

> The NTPPS was **quite explicitly *not* designed to assess quitting success or change in smoking prevalence** but rather focussed on the **immediate impact** of the legislation on perceptions of the pack, effects of health warnings and understanding of product harmfulness.

That is a good thing too. Table 4 of Brennan et al. (2013) shows no robust statistically significant relationship between quit attempts and the policy introduced in 2012.[9] The NTPPS did show a

[8] Cancer Council Victoria, 3 June 2016, Comments on Davidson, S and de Silva, A. Stubbing out the evidence of tobacco plain packaging efficacy: An analysis of the Australian National Tobacco Plain Packaging Survey, http://www.cancervic.org.au/downloads/plainfacts/Davidson_working_paper_comments_3_June_2016.pdf.

[9] Brennan, E., S. Durkin, K. Coomber, M. Zacher, M. Scollo, and M. Wakefield, 2015, Are quitting-related cognitions and behaviours predicted by proximal responses to plain packaging with larger health warnings?

relationship between graphic health warnings and quit rates – but those graphic health warnings were introduced in 2006.[10]

The Australian government and public health lobby have pointed to five pieces of evidence to support the notion that the plain packaging policy has been successful.

1. A 3.4 per cent reduction in tobacco clearances.
2. A reduction in household expenditure on tobacco.
3. Victorian Cancer Council Fact Sheets showing survey data of smoking prevalence.
4. Surveys undertaken by the Victorian Cancer Council.
5. Regression analysis presented in the Post-Implementation Review.

I discuss each of these claims in turn.

3.1 The 3.4 per cent tobacco clearance myth

In June 2014, the (now former) Fairfax media claimed that the Australian government Treasury had "entered the debate over cigarette sales, publishing previously secret information that shows sales falling since the introduction of graphic health warnings and plain packaging".[11] In particular, Treasury was said to have made the claim: "3.4 per cent fewer cigarettes were sold last year than 2012".[12] The Health Department subsequently included that claim on its web based fact sheet. Originally it stated:[13]

> The Commonwealth Treasury has further advised that tobacco clearances (including excise and customs duty) fell by 3.4% in 2013 relative to 2012 when tobacco plain packaging was introduced.

That statement was subsequently amended:[14]

> Treasury has advised that tobacco clearances (including excise and customs duty) fell by 3.4% in 2013 relative to 2012 and fell a further 7.9% in 2014. Tobacco clearances have fallen a total of 11.0% since 2012 when tobacco plain packaging was introduced.
>
> These growth rates do not take into account refunds of excise equivalent customs duty made under Customs' plain packaging related Tobacco Refund Scheme between December 2012 and May 2013. These refunds cannot be related to annual net clearances on a comparable basis to other data used to derive these growth rates.

The addition of the second paragraph is very telling – and damning. The initial media coverage was very suspicious – no Treasury official was interviewed, no Treasury official was quoted, and no

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Findings from a national cohort study with Australian adult smokers, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii33.full.

[10] I discuss the studies published from the NTPPS below in section 3.4.2.

[11] Martin, P. 2015, "Plain packaging pushes cigarette sales down", *Sydney Morning Herald*, 23 June.

[12] Strictly speaking that claim cannot be correct. Treasury do not track how many cigarettes (or tobacco products generally) are sold in Australia. Treasury tracks how much tax has been paid on tobacco products available for sale in Australia.

[13] http://web.archive.org/web/20140623001019/http://www.health.gov.au/internet/main/publishing.nsf/Content/tobacco-kff

[14] http://www.health.gov.au/internet/main/publishing.nsf/Content/tobacco-kff

Treasury document was cited. That did not stop the Australian Broadcasting Corporation from running with the story.[15]

> The Department of Treasury keeps records on the sales of cigarettes for taxation purposes, but has never before made the information publicly available.
>
> …
>
> The Treasury data reveals that 3.4 per cent fewer cigarettes were sold last year than 2012.

After the story went to air, the Australian Broadcasting Corporation admitted that the tobacco industry had challenged that 3.4 per cent figure:

> While we don't know the full detail of Treasury's tobacco clearances from their statement, from Philip Morris' perspective, the final quarter of 2012 saw an artificially high rate of tobacco clearances due to our replacement of branded stock on retailers' shelves with plain packaged stock. Whilst this was not double-counted from an industry sales perspective as it was replacement stock, it would have initially been double-counted from a 2012 tobacco clearances perspective as tax must be paid on every pack. Most claims for refunds of the excise paid on our recalled branded stock were not processed until the first quarter of 2013.

It turns out that the 3.4 per cent figure – which has been a very influential statistic – is misleading. This only became apparent once Treasury was required by a Freedom of Information request to report the data for tobacco clearances.[16]

What Treasury had done was as follows: it calculated total tobacco clearances for 2012 and then for 2013 and calculated the difference between the two. When that exercise is performed it is correct to say that tobacco clearances fell between 2012 and 2013 by 3.4 per cent. There are, however, two complications:

1. Plain packaging was introduced in December 2012, not January 2013.
2. As the industry claimed, and the Health Department subsequently admitted, a large number of refunds were made in 2013 for excess payments made in 2012.

When the 12 month period before December 2012 is compared to the 12 month period after December 2013, then tobacco clearances fell by 0.8 per cent.

When we also take into account the double counting of excise/customs duty paid in 2012 and the refunds in 2013, it appears that tobacco clearances *increased* by 0.5 per cent.

It is correct that tobacco clearances increased by less than 1 per cent - but that remains a 3.9 per cent turn around on the number initially quoted by Treasury and the Health Department.[17]

Senator David Leyonhjelm of the Liberal Democratic Party has been closely questioning both Treasury officials and Health Department officials over the claimed 3.4 per cent decline in tobacco clearances.

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[15] http://www.abc.net.au/pm/content/2014/s4031387.htm
[16] http://www.treasury.gov.au/Access-to-Information/DisclosureLog/2015/1703
[17] This is well explained in a Youtube clip: https://www.youtube.com/watch?v=dW4_4ed4QSQ

Having previously confirmed the 0.8 per cent figure to be correct, excluding the refunds, he posed a question to the Health Department:[18]

> … today I received a reply to a question on notice from Treasury which advised that in period of the 12 months ended November 2013 and the 12 months ended 30 November 2012 there was a 0.8 per cent decline in tobacco clearances, excluding tobacco refund scheme refunds. … Do you intend to modify your website to say that, comparing like with like, the reduction was 0.8 per cent? It gives the impression that it had an immediate, substantial impact on clearance rates.
>
> [Health Department Official]: We have no intention of suggesting that clearance rates are a direct measure of tobacco plain packaging effects. In fact, they are not designed to measure the effects of plain packaging or, indeed, any particular tobacco control measure.

In short – Treasury has abandoned the claim that tobacco clearances fell by 3.4 per cent, but the Health Department will not withdraw their false claim; instead the Health Department now claims the Treasury data are not definitive.

France introduced plain packaging in January 2017, and their custom/excise data shows a similar pattern to that of Australia:[19]

> Since France introduced a ban on branded cigarettes in January 2017, more packets of cigarettes have been sold compared to last year when branding was allowed, according to the country's Customs Office (L'administration des Douanes).
> In March alone the French bought four million packets of cigarettes, over four percent more than during the same period last year.

In contrast to Australia, the French Health Minister has acknowledged the failure of plain packaging. Agnès Buzyn told the Assemblée Nationale on November 29, 2017:[20]

> Malheureusement, en 2016, les ventes officielles de cigarettes ont augmenté en France : le paquet neutre n'a donc pas fait diminuer la vente officielle de tabac.

3.2 Australian Bureau of Statistics Household Expenditure data

The Australian Bureau of Statistics provides an estimate of Household expenditure data on tobacco products. This forms part of their estimates of Gross Domestic Product. Figure 4 shows seasonally adjusted Household Final Expenditure on cigarettes and tobacco data.

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[18] Senate Hansard Estimates 10 February 2016, http://tinyurl.com/zpwcsga

[19] Brentnall, B, 2017, Smoking on the rise in France despite rollout of plain packaging, The Local, https://www.thelocal.fr/20170502/the-french-smoke-more-since-the-introduction-of-plain-packaged-cigarettes-in-france (Accessed 30 May 2017).

[20] Roughly translated as "Unfortunately, in 2016, official sales of cigarettes increased in France: the plain package policy did not reduce the official sales of tobacco".

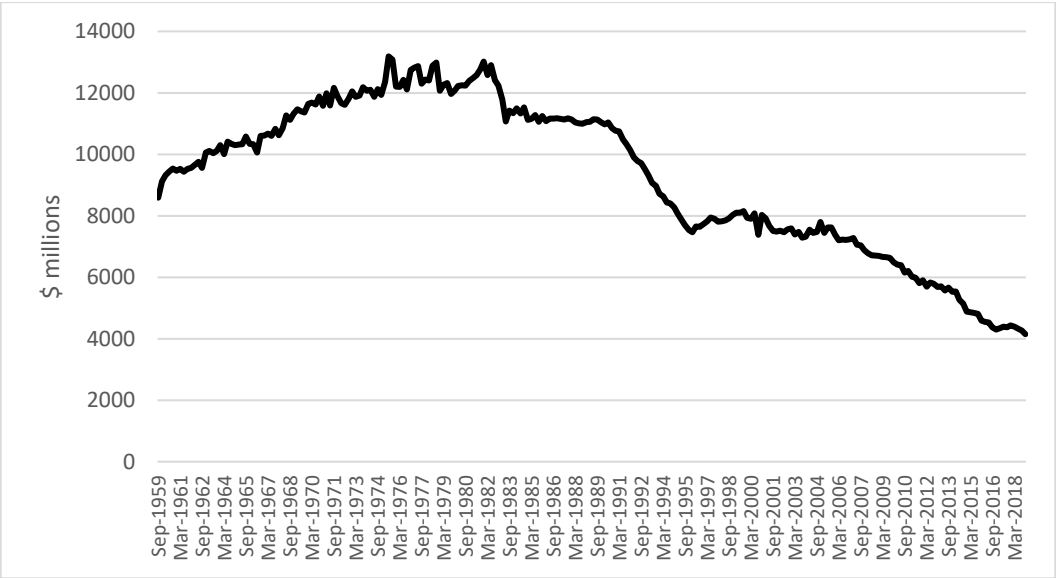

Figure 4: Household Final Consumption Expenditure on Cigarettes and Tobacco: Chain volume measure, seasonally adjusted. Source: ABS Cat. 5206.0 Table 8.

It is important to note that Household expenditure on tobacco products has been falling since the early 1980s. Any evaluation of the plain packaging policy must be undertaken in the context of a long-term downward trend within household tobacco expenditure. In figure 5 below I have accentuated the graph in order to highlight the change in trend. In December 2012 – the month plain packaging was introduced in Australia – quarterly household expenditure on tobacco products was $5.680 billion. By December 2013 – exactly one year later and when the Australian government imposed a 12.5 per cent increase in tobacco excise – household expenditure on tobacco products had decreased to $5.531 billion.[21] Following the increase in excise and changes to excise indexation and then also subsequent excise increases, household expenditure on tobacco resumed its long-term decline.

[21] It is important to note that these figures being quoted have been substantially revised – originally the Australian Bureau of Statistics had reported that Household Final Consumption Expenditure on Cigarettes and Tobacco had *increased*.

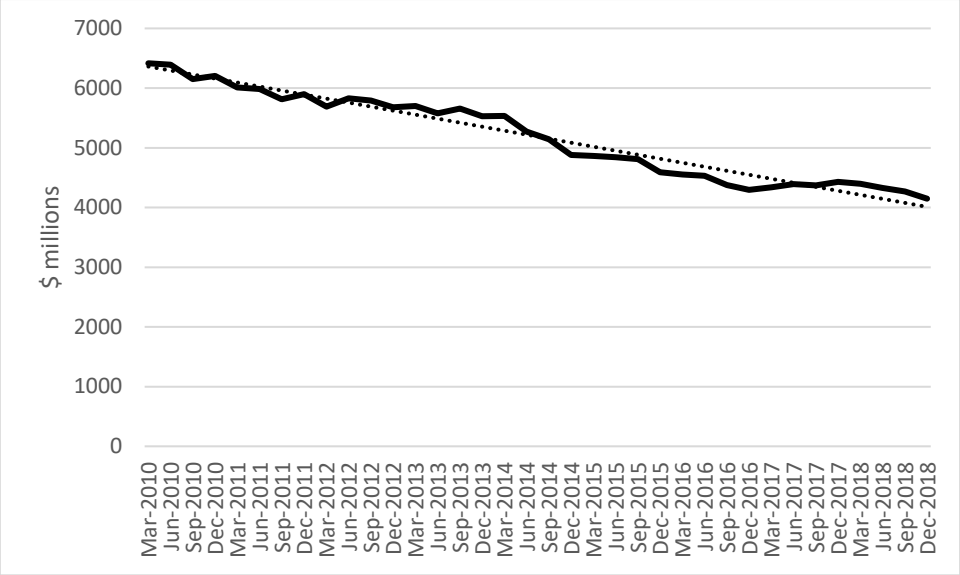

Figure 5: Household Final Consumption Expenditure on Cigarettes and tobacco March 2010 – December 2018: Chain volume measure, seasonally adjusted.
Source: ABS Cat. 5206.0 Table 8.

Davidson and de Silva (2014) investigate the efficacy of the Australian plain packaging policy using the ABS Household Final Consumption Expenditure on Cigarettes and Tobacco data.[22] They conclude:

> At best, we can determine the plain packaging policy introduced in December 2012 has not reduced household expenditure of tobacco once we control for price effects, or the long-term decline of tobacco expenditure, or even the latent attributes of the data.
>
> To the contrary, we are able to find a suggestion that household expenditure of tobacco has, ceteris paribus, increased. In our forecasting exercise the actual data come close to breaking through the 80 per cent confidence interval. While we do not want to over-emphasise these results, we do conclude that any evidence to suggest that the plain packaging policy has reduced household expenditure on tobacco is simply lacking.

3.3 Victorian Cancer Council Fact Sheets

In March 2015 the Victorian Cancer Council released a series of factsheets on plain packaging suggesting (emphasis added):[23,24]

> The available evidence suggests that plain packaging is likely to be contributing *along with other tobacco control policies* to continuing reductions in the prevalence of smoking in Australia

[22] Davidson, S. and A. de Silva. 2014. The Plain Truth about Plain Packaging: An Econometric Analysis of the Australian 2011 Tobacco Plain Packaging Act. *Agenda: A Journal of Policy Analysis and Reform*. 21(1): 27 – 43.
[23] http://www.cancervic.org.au/plainfacts/factsheets1
[24] http://www.cancervic.org.au/downloads/plainfacts/Facts_sheets/Facts_Sheet_no._4_PrevalenceMar16.pdf

The question, however, is not whether Australia's tobacco control policies overall are generally successful – clearly they are – but rather whether, in particular, the plain packaging policy is successful in reducing the prevalence of tobacco consumption.

On that latter question, the Victorian Cancer Council fails to produce any evidence in its factsheets. To the contrary it provides the following graph (their figure 5):

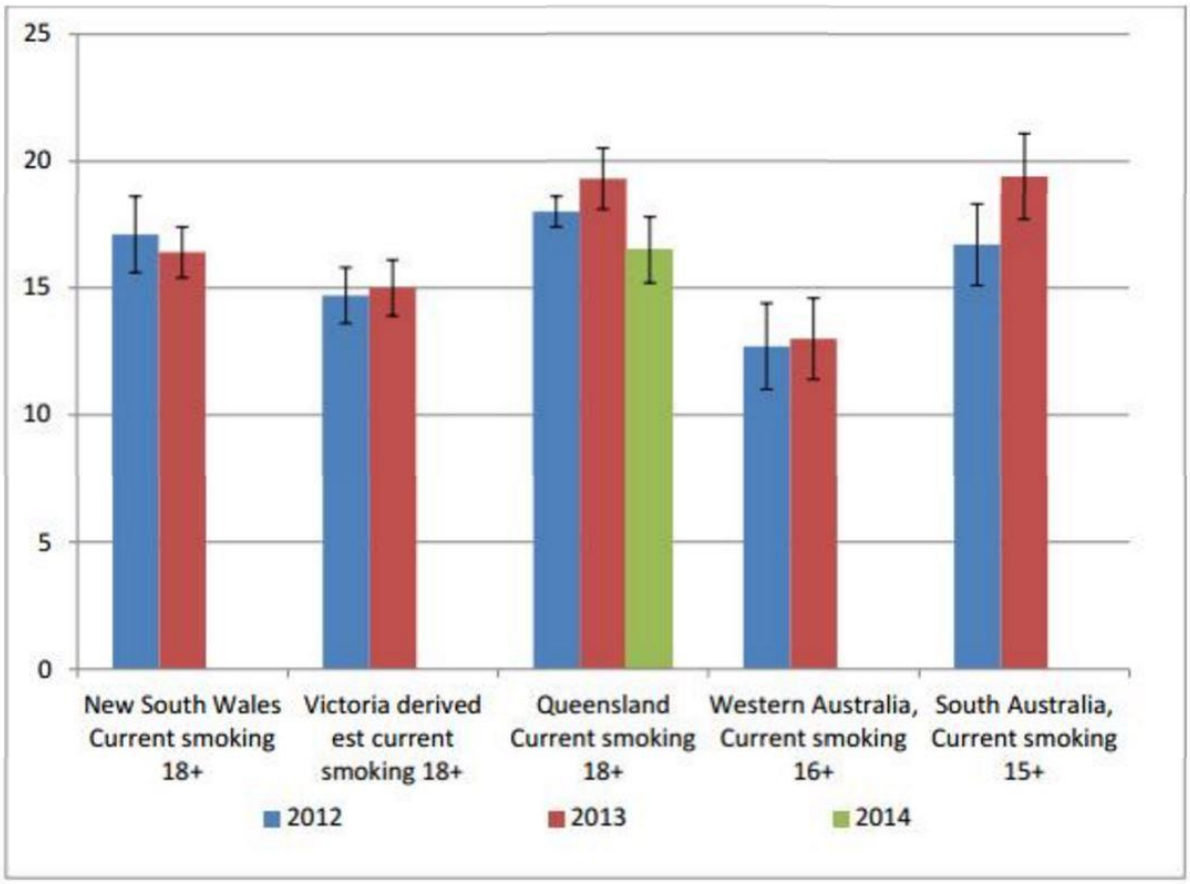

Figure 6: Victorian Cancer Council figure of smoking prevalence in Australian mainland states
Source: Fact sheet no. 4: What is happening to the prevalence of smoking in Australia?

The whiskers on the bar graphs represent the confidence intervals of each survey. The Victorian Cancer Council interprets over-lapping confidence intervals as representing no statistically significant difference between two surveys. Whether or not that is an appropriate measure of statistical significance is debateable – more precise techniques exist. Nonetheless, two points are immediately obvious in figure 6.

1. In four of the five Australian mainland states smoking prevalence *increased* in 2013 compared to 2012.
2. None of the changes in smoking prevalence are statistically significantly different from zero if we accept overlapping confidence intervals to be an appropriate measure of statistical significance.

It is important to emphasise that the smoking prevalence data reported by the Victorian Cancer Council is official state-based survey data. Even if the Australian government and public health lobby wanted to argue that the differences are not statistically different from one year to the next, the fact remains that smoking prevalence *did not decline in 2013 relative to 2012* in 4 out of five mainland

states. Furthermore, this result is inconsistent with the claim that tobacco clearances fell by 3.4 per cent.

More recent state-based survey data are just as damning of the policy as was the original data. In New South Wales, for example, the 2017 smoking prevalence data for a "current adult smoker" is 15.2% with a 95% confidence interval of (14.2 – 16.2).[25] In 2012 the corresponding statistic was 17.1% with a 95% confidence interval of (15.6 – 18.6). There is no statistically significant difference in smoking prevalence rates before and five years after the introduction of plain packaging in that state. In South Australia the adult (defined as 15 years of age and older) daily smoking prevalence rate was 14.4% (with a 95% confidence interval of ± 1.5) in 2012.[26] It had declined to 14.3% (with a 95% confidence interval of ± 1.5) in 2017. Again, not a statistically significant difference. Unfortunately Western Australia did not report time series for confidence intervals in it latest report, but it does report that the prevalence of current smokers (16 years of age and older) declined from 12.7% in 2012 to 11.8% in 2017. That is less than a 1% change over 5 years. The state of Queensland does show a statistically significant decline in smoking prevalence rates between 2012 and 2018 – from 14.3% (13.5 – 15.2) to 11.1 (10.2 – 12.1).[27] Unfortunately a change in survey method has rendered comparisons in Victoria meaningless.

The bottom line, however, is that state-based smoking prevalence data are not consistent with the view that the plain packaging policy has achieved its goals as stated in the Act.

3.4 The Victorian Cancer Council Surveys

3.4.1 Youth Smoking Surveys

There is a 2015 study in *Tobacco Control* that has reported plain packaging reduces "brand appeal" amongst 12 – 17 year olds.[28] This result is somewhat trivial – it is hardly surprising that a policy that *removes* all branding from tobacco product should lead to reduced branding appeal. The very next article in the same issue of *Tobacco Control*, however, found:[29]

> The frequency of students reading, attending to, thinking or talking about the health warnings on cigarette packs did not change.
>
> Conclusions Acknowledgement of negative health effects of smoking among Australian adolescents remains high. Apart from increased awareness of bladder cancer, new requirements for packaging and health warnings did not increase adolescents' cognitive processing of warning information.

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[25] http://www.healthstats.nsw.gov.au/IndicatorGroup/SmokingTopic

[26] https://www.sahmri.org/m/downloads/Key_Smoking_Statistics_for_SA_2017_-_April_2018.pdf

[27] https://www.health.qld.gov.au/__data/assets/excel_doc/0027/816381/qsas-state-data.xlsx

[28] White, V., T. Williams, and M. Wakefield, 2015, Has the introduction of plain packaging with larger graphic health warnings changed adolescents' perceptions of cigarette packs and brands?, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii42.full.

[29] White, V. T. Williams, A. Faulkner, and M. Wakefield, 2015, Do larger graphic health warnings on standardised cigarette packs increase adolescents' cognitive processing of consumer health information and beliefs about smoking-related harms?, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii50.full.

What neither of these two studies did was evaluate the impact that plain packaging had had on actual youth smoking rates (see below).

There is, however, a more profound problem with these two studies. The data to evaluate and replicate the claims being made are not in the public domain – furthermore the Victorian government has changed the Freedom of Information requirements to prevent that data from entering the public domain.[30] British American Tobacco had previously applied to access the data under Freedom of Information. Astonishingly enough the Victorian Cancer Council denies this change to the regulations:[31]

> The [Davidson and de Silva] paper states that Victorian FOI laws were modified to prevent adolescent data from being publicly released. This is incorrect. Evidence provided at an appeal of the Cancer Council's decision not to provide data from its research on drug use by Victorian school children is currently being considered by the Victorian Civil and Administrative Appeals Tribunal.

This characterisation of the facts is extremely disingenuous. As the Australian Broadcasting Corporation explains:[32]

> The Cancer Council's legal status changed in October last year, meaning this was BAT's last chance to access the information under the FOI regime.

British American Tobacco had applied to access the data *before* the rule change; nobody else, however, is able to access the data *after* the rule change under Freedom of Information laws.

Scientific studies that cannot be replicated are always suspect. Studies where the data are deliberately suppressed must be viewed with even greater suspicion. Given the criticisms levelled against other research conducted by the Victorian Cancer Council (discussed below in section 3.4.2) the results of these youth studies should be discounted.

In any event, a paper published in November 2017 in *Tobacco Prevention & Cessation* – the official journal of the European Network for Smoking and Tobacco Prevention – found that the reduction in Australian youth smoking prevalence was not statistically significantly different from zero in the first year after the introduction of plain packaging.

> There was a 12.1% (-4.8% to 26.2%) relative reduction in smoking prevalence when plain packaging was introduced, though the reduction was not statistically significant.[33]

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[30] Freedom of Information Amendment Regulations 2015 S.R. No. 111/2015 http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/PubStatbook.nsf/93eb987ebadd283dca256e92000e4069/C9872C4C5D25291DCA257ED000131682/$FILE/15-111sra%20authorised.PDF

[31] Cancer Council Victoria, 3 June 2016, Comments on Davidson, S and de Silva, A. Stubbing out the evidence of tobacco plain packaging efficacy: An analysis of the Australian National Tobacco Plain Packaging Survey, http://www.cancervic.org.au/downloads/plainfacts/Davidson_working_paper_comments_3_June_2016.pdf.

[32] Hancock, J. 2016, Tobacco company denies seeking children's private information in FOI battle with Cancer Council, http://www.abc.net.au/news/2016-05-17/tobacco-company-denies-seeking-private-information-in-foi-battle/7422928.

[33] Diethelm, P. and T. Farley, 2017, Re-analysing tobacco industry funded research on the effect of plain packaging on minors in Australia: Same data but different results, *Tobacco Prevention and Cessation*, 3, https://doi.org/10.18332/tpc/78508

That particular result is not nearly as damning as a result published in *Tobacco Control* in 2017. There the authors control for the fact that many youth increasing live in households that do not have a landline telephone. The pre-implementation surveys were conducted on landline phones only, while the post-implementation surveys were conducted on a combination of landline and mobile phones. Here is how the authors describe their results:[34]

> There were significant differences in smoking status across the years of the survey, with current smoking decreasing from 16% in 2010 to 12% in 2012. In 2013, different patterns emerged for the dual-frame and landline samples: current smoking increased back to 16% in the dual-frame sample, and remained at 12% in the landline sample.

The pre-implementation baseline youth smoking prevalence rate is 12%. After the plain packaging policy was introduced – there is *no change* in the youth smoking prevalence rate when using landline survey techniques. Using the dual-frame sample, however, the youth smoking prevalence rate *increases* to 16%. Somehow the authors are able to conclude: "Countries considering introducing plain packaging legislation should be encouraged by these findings". It is difficult to imagine how a measured increase in youth smoking when using a superior research method could provide anyone with "encouragement".

The graphic health warnings do not always work as well as advertised. Research conducted by Associate Professor Simone Dennis from the Australian National University found that the graphic health warnings often *encouraged* smoking by pregnant teenagers.[35,36]

> A 10-year national anthropological study into smoking has revealed girls as young as 16 are taking up the killer habit in an attempt to reduce the birth weight of their unborn babies.
> …
> Associate Professor Simone Dennis, of the Australian National University, said she was stunned to discover pregnant teenage girls smoking during the course of her research.
> "They had read on packets that smoking can reduce the birth weight of your baby, which is obviously not how the public health message is intended to be taken," she said.
> "They were scared because they were small. The worst thing that could happen to them was to have an enormous baby.
> "Some were young, 16 or 17 years, and their overriding fear was 'Oh my God, I'm going to have an enormous child', so they were actively using cigarettes to medicate against that.
> "Some had even taken it up for the first time for that very reason, and some smoked harder, hoping the promise on the packet would come true. If you smoked more, you could make it better. I was really struck by that."

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[34] Dunlop, S., D. Perez, A. Dessaix and D. Currow, 2017, Australia's plain tobacco packs: anticipated and actual responses among adolescents and young adults 2010–2013, *Tobacco Control*, 26: 617 – 626. https://tobaccocontrol.bmj.com/content/26/6/617

[35] Dennis, S 2016, Smokefree: A Social, Moral and Political Atmosphere, Bloomsbury Academic, London and New York.

[36] Clarissa Bye, 2016, Pregnant teenage girls smoking cigarettes in bid to deliver smaller babies, The Daily Telegraph, http://www.dailytelegraph.com.au/news/nsw/pregnant-teenage-girls-smoking-cigarettes-in-bid-to-deliver-smaller-babies/news-story/4c67aea9de6b69edb7fdd1e60cdafc66.

Rather than acknowledge the unintended consequences of tobacco control policy, Associate Professor Dennis was subject to hate mail from public health advocates.[37]

3.4.2 The National Tobacco Plain Packaging Tracking Survey

In 2012 the Victorian Cancer Council was awarded a $3 million contract to conduct a national tracking survey of tobacco consumers (and recent "quitters") immediately prior, during, and after the implementation of plain packaging.

The results of the National Tracking study have been reported in a special issue of *Tobacco Control*.[38] Details as to the study itself are available from the Health Department.[39] It is also possible to request copies of the data. The National Tracking Study canvassed many issues and consisted of 26 waves of approximately 400 interviews of current smokers and recent "quitters". There were also follow up interviews a month after the initial interview.

The purpose of this tracking study was set out in the research contract between the government and the Victorian Cancer Council: [40]

> The Final Reports must also include:
> d) a discussion of the overall impact of packaging changes on key proximal outcome measures and more distal outcome measures including quit intentions, quit attempts and consumption; and
> e) a discussion of the independent and combined influences of plain packaging, health warnings, mass media campaign exposure, and any tobacco pricing and product changes.

Furthermore a Health Department official gave this answer to a question posed in the Parliament:[41]

> Senator FIERRAVANTI-WELLS: … Could you tell me what process is in place to assess the effect of plain packaging on smoking prevalence when it commences in December? How will this be reported and when will it be reported?
>
> [Health Department Official]: We have initiated a monthly tracking survey with the Cancer Council of Victoria. It is undertaking a pretty systematic survey of existing smoking habits and then the habits of people's purchasing choices et cetera post that as well. That tracking survey commenced in April this year and will run for two years.

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[37] Tom Lowrey, 2016, Smokers develop resilience to anti-cigarette policies and ads, study says, http://www.abc.net.au/news/2016-06-02/smokers-have-developed-a-resilience-to-anti-smoking-policies/7472864.

[38] http://tobaccocontrol.bmj.com/content/24/Suppl_2.toc

[39] http://www.health.gov.au/internet/main/publishing.nsf/content/tobacco-plain-packaging-evaluation#%5B%3Ch2%3E%5DNational%20Monthly%20Tobacco%20Pl

[40] Department of Health and Aging, 2010, Standard funding agreement between the Commonwealth of Australia and the Anti-Cancer Council of Victoria trading as Cancer Council Victoria, Available on-line http://www.health.gov.au/internet/main/publishing.nsf/Content/2C2A86679E826677CA258027000C91EC/$File/Document%202.pdf, pg. 33, (Accessed 14 March 2017).

[41] https://parlinfo.aph.gov.au/parlInfo/download/committees/estimate/8547f694-fa37-4214-9af8-e6ea075b4c96/toc_pdf/Community%20Affairs%20Legislation%20Committee_2012_10_17_1464_Official.pdf;fileType=application/pdf#search=%22committees/estimate/8547f694-fa37-4214-9af8-e6ea075b4c96/0000%22

Yet not one of the papers published from that survey in the special issue of *Tobacco Control* demonstrates policy success as set out by section 3(1) of the Tobacco Plain Packaging Act. This has not gone unnoticed by Senator Leyonhjelm:[42]

> Senator LEYONHJELM: ... Your department's website says that the key findings of the survey were that the objectives of tobacco plain packaging were achieved. Given that is a departmental website—we are not referring to Professor Wakefield's here—can you tell me: was there a key finding from the survey that plain packaging improved public health?
>
> …
>
> [Health Department Official]: The language on the website reflects the broad findings in the BMJ articles published on 19 March last year. They were referencing the proximal objectives as they are referred to in those articles. I think the department ordinarily now refers to them as the mechanisms, which are found in section 3(2) of the Tobacco Plain Packaging Act under the objects of the act.
>
> Senator LEYONHJELM: Yes, that is why I am asking the questions. Was there a key finding that plain packaging improved public health? That is one of the objectives.
>
> [Health Department Official]: The tracking survey and the BMJ articles that relate to the tracking survey were not designed to measure prevalence and cannot measure prevalence.
>
> Senator LEYONHJELM: So it did not measure whether there was increased giving up of smoking?
>
> [Health Department Official]: As I said, the design of the tracking survey and the articles in the BMJ that discuss it largely related to the section 3(2) mechanisms—so reducing the appeal of the packet, increasing the effectiveness of graphic health warnings and minimising the pack's ability to mislead. In the long term, those three mechanisms work to reduce prevalence.

In short, the Health Department *now* argues that the reported results from the National Tracking survey *do not* establish whether the plain packaging policy actually achieved its goals as set out in section 3(1) of the Act. Rather they establish whether the policy reduces the appeal of tobacco products and/or enhances the impact of the health warnings.

This is consistent with claims now being made by the Victorian Cancer Council, and also consistent with the results reported by Brennan et al (2015). As reported above, the Victorian Cancer Council now claims (emphasis original):[43]

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[42] https://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;adv=yes;db=COMMITTEES;id=committees/estimate/d4e63ac2-46c0-4422-955d-4b7db9b3b72d/0005;orderBy=date-eFirst;page=2;query=Dataset:comSen,estimate;rec=11;resCount=Default

[43] Cancer Council Victoria, 3 June 2016, Comments on Davidson, S and de Silva, A. Stubbing out the evidence of tobacco plain packaging efficacy: An analysis of the Australian National Tobacco Plain Packaging Survey, http://www.cancervic.org.au/downloads/plainfacts/Davidson_working_paper_comments_3_June_2016.pdf.

> The NTPPS was **quite explicitly *not* designed to assess quitting success or change in smoking prevalence** but rather focussed on the **immediate impact** of the legislation on perceptions of the pack, effects of health warnings and understanding of product harmfulness.

Furthermore the Health Department also argues that the National Tracking survey cannot answer whether or not the objectives of the Act could be met. This is an astonishing argument – why commission a tracking study if not to establish the efficacy of the policy?

As Davidson and de Silva (2017) suggest either the Victorian Cancer Council did not undertake all the research required of them by the Commonwealth of Australia, or it has not reported all research results into the public domain.[44]

Importantly, however, none of the published studies investigates whether plain packaging *per se* met any of the objectives of the Act as opposed to the increased graphic warnings on the packaging. What is not fully appreciated is that two policies were introduced simultaneously: plain packaging and *increased* size and usage of graphic warnings. The empirical work published in the special issue does not properly differentiate between the two policies. Davidson and de Silva (2017) are able to differentiate between the two policies using the Victorian Cancer Council's own data and closely following their methodology are able to show that graphic health warnings on packs (a policy first introduced in 2006) are a motivation to quit smoking, but that the introduction plain packaging had no impact on that effectiveness.[45] Indeed, there was a slight, but statistically significant, decline in effectiveness after the introduction of plain packaging. This result is exactly contrary to the stated policy objectives.

Despite the flawed nature of the empirical work that has been published from the National Tracking study, two studies in particular are said to demonstrate the efficacy of the plain packaging policy:

1. Durkin et al. concludes:[46] "These findings provide some of the strongest evidence to date that implementation of [Plain Packaging] with larger [Graphic Health Warnings] was associated with increased rates of quitting cognitions, microindicators of concern and quit attempts among adult cigarette smokers".
2. Brennan et al. reported:[47] "In multivariable models, we found consistent evidence that several baseline measures of GHW effectiveness positively and significantly predicted the likelihood that smokers at follow-up reported thinking about quitting at least daily, intending to quit,

[44] Davidson, S. and A. de Silva, 2017, What the government demanded as proof for plain packaging efficacy: An analysis the public health lobby did not perform, SSRN, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2962216.

[45] This, of course, is a direct test of the Ministry of Health policy objective "Increase the noticeability and effectiveness of graphic health warnings".

[46] Durkin, S., E. Brennan, K. Coomber, M. Zacher, M. Scollo, and M. Wakefield, 2015, Short-term changes in quitting-related cognitions and behaviours after the implementation of plain packaging with larger health warnings: findings from a national cohort study with Australian adult smokers, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii26.full.

[47] Brennan, E., S. Durkin, K. Coomber, M. Zacher, M. Scollo, and M. Wakefield, 2015, Are quitting-related cognitions and behaviours predicted by proximal responses to plain packaging with larger health warnings? Findings from a national cohort study with Australian adult smokers, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii33.full.

having a firm date to quit, stubbing out cigarettes prematurely, stopping oneself from smoking and having attempted to quit".

It is well worth emphasising that neither of these two studies focussed on whether or not smokers had actually stopped smoking (become quitters). Rather they investigated whether smokers had considered "quitting".[48] This oversight can be explained by the data not supporting the efficacy of the policy. It is possible, for example, to reverse out quit rates from the Durkin et al. paper's table 1. Durkin et al. have divided the 26 waves of interviews into 4 time periods:

1. A pre-PP phase.
2. An early transition phase.
3. A late transition phase.
4. PP year 1.

Over those periods smokers and recent quitters were interviewed as to their attitudes towards smoking in general and plain packaging and larger graphic health warnings in particular. The Durkin et al. study provides a series of summary statistics for the sample they employ in their analysis including whether or not a survey respondent is a "continuing smoker" at the follow up interview. See table 1 for an extract of the Durkin et al. table 1.

	Total		**Pre-PP**		**Early transition**		**Late transition**		**PP year 1**	
	CS	BS	CS	BS	CS	BS	CS	BS	CS	BS
Weighted, n	5137	5441	1339	1423	254	276	595	617	2948	3125
% difference	5.59		5.90		7.97		3.57		5.66	

Table 1: Extract of Durkin et al. Table 1 with calculated % changes.

In the table CS is a "continuing smoker" and BS is a "baseline smoker". It is possible to calculate the percentage difference between these two numbers in each time period and thus show an estimated quit rate. Over the entire 26 wave survey period the quit rate was 5.59 per cent. In the pre-PP time period the quit rate was 5.90 per cent which then fell in the PP year 1 period to 5.66 per cent. If we were to accept these data at face value, the quit rate fell after the introduction of a policy specifically designed to increase the quit rate. Unfortunately that is not reported in the study and no test of statistical significance is reported either.

A major critique of the Wakefield studies has been undertaken by Davidson and de Silva (2016).[49] Davidson and de Silva focus their attention on three of the fourteen papers published in a special issue of *Tobacco Control* in 2015 dedicated to the Australian plain packaging policy. These three papers rely on NTPPS data and purport to test to efficacy of the plain packaging policy.[50]

[48] The damning results in Brennan et al. table 4 are under-emphasised, disguised, and so little discussed that the authors (including the author of this report) of a major critique of the study did not realise what the table was reporting. That error was pointed out by the Victorian Cancer Council.

[49] Davidson, S. and A. de Silva, 2016, Stubbing out the evidence of tobacco plain packaging efficacy: An analysis of the Australian National Tobacco Plain Packaging Survey, SSRN Working Paper, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2780938.

[50] Wakefield, M., K. Coomber, M. Zacher, S. Durkin, E. Brennan, and M. Scollo, 2015, Australian adult smokers' responses to plain packaging with larger graphic health warnings 1 year after implementation: results from a national cross-sectional tracking survey, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii17.full.

The three papers are co-authored by the same six authors, albeit they are listed in different order in each of the three papers. the Wakefield et.al paper investigates whether the appeal of smoking has declined due to plain packaging, whether health warning effectiveness has improved due to plain packaging, and whether "misleading claims" about smoking are reduced due to plain packaging. Then the Durkin et.al paper investigates whether or not quitting related cognitions and behaviour changed due to the plain packaging policy. Finally the Brennan et.al paper investigates whether the plain packaging mechanisms are linked to the quitting related cognitions and behaviour.

As a research strategy this approach seems sensible. First investigate the mechanisms, then the outcomes, and then show that the mechanisms are driving the outcomes. Taken at face value the strategy pursued and the results, as presented, may appear to support the argument that the plain packaging policy has been successful.

Unfortunately that argument does not stand up to a close reading of the three papers.

Davidson and de Silva find is that there are severe methodological differences across the three papers. For example, the time periods being analysed differs between papers, the data employed in the analysis differs across the three papers; Wakefield et al. uses data from the baseline survey to test smokers' responses to plain packaging and larger graphic health warnings, while Durkin et al. uses data from the follow-up survey to test quitting related cognitions and behaviours, and Brennan et al. employ the follow-up survey data to relate smokers' responses and quitting cognitions and behaviours. For such a research strategy to be plausible, a single methodology examining the same data, pursued over consistent time segments would seem to be a more appropriate approach to linking the mechanisms to policy outcomes. When Davidson and de Silva replicate the studies using a consistent methodology, consistent time periods, and consistent data many of the reported significant results are found to be fragile.

The most powerful result that Brennan et al. report is that "Attributes much more motivation to quit to GHWs" is statistically significantly different from zero in the time period they analyse. Unfortunately, they have both cherry picked the data and the timing – in their replication Davidson and de Silva find that variable was statistically significantly different from zero *before* the plain packaging policy was introduced. They conclude:

> What undermines these results, however, is that, as before, they are not uniquely associated with the plain packaging policy. There is no evidence to support the view that the new and larger graphic health warnings that were introduced along with the plain packaging policy impacted upon quitting-related intentions and behaviours. Similarly, those smokers who were concerned about the health consequences of smoking were just as concerned before the plain packaging policy was introduced as after the policy was introduced.

Durkin, S., E. Brennan, K. Coomber, M. Zacher, M. Scollo, and M. Wakefield, 2015, Short-term changes in quitting-related cognitions and behaviours after the implementation of plain packaging with larger health warnings: findings from a national cohort study with Australian adult smokers, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii26.full.

Brennan, E., S. Durkin, K. Coomber, M. Zacher, M. Scollo, and M. Wakefield, 2015, Are quitting-related cognitions and behaviours predicted by proximal responses to plain packaging with larger health warnings? Findings from a national cohort study with Australian adult smokers, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii33.full.

3.4.3. What the World Trade Organisation said about these results

Australia submitted the results of the National Tobacco Plain Packaging Tracking Survey as reported in *Tobacco Control* to the World Trade Organisation (WTO) as evidence the policy was working. The WTO panel assessed the empirical results and summarised them as follows (emphasis added):[51]

> With this in mind, and based on the studies and expert reports before us and discussed above, the empirical evidence available to us regarding quitting-related outcomes and other distal outcomes, which is sometimes scarce, suggests that:
>
> a. The impact of the TPP measures and enlarged GHWs on adult cigarette smokers' quitting intention and quitting-related cognition reactions is ***limited and mixed***.
>
> b. The TPP measures and enlarged GHWs have had a statistically significant positive impact on avoidant behaviours, such as pack concealment, among adult cigarette smokers, while their impact on stubbing out and stopping smoking is much more ***limited and mixed***.
>
> c. Although the TPP measures and enlarged GHWs have statistically significantly increased calls to the Quitline, the observed impact of the TPP measures and enlarged GHWs on quit attempts is ***very limited and mixed***.
>
> d. The empirical evidence of the impact of the TPP measures and enlarged GHWs on adolescents' quitting-related outcomes is limited. This evidence suggests that the impact of the TPP measures and enlarged GHWs on adolescents' refraining from smoking cigarettes and thoughts about quitting is ***statistically not significant***. ***No empirical evidence*** has been submitted to us on pack concealment among adolescent smokers.
>
> e. The empirical evidence of the impact of the TPP measures and enlarged GHWs on cigar and cigarillo smokers' quitting-related outcomes is ***limited***. This evidence suggests that the shares of premium cigar and cigarillo smokers and of non-premium cigarillo smokers reporting having decanted the cigars and cigarillos from their boxes to a humidor or an unbranded tin or concealed their pack have increased and there has been an increase in the share of non-premium cigarillo smokers contemplating quitting.

Note the phrases – “limited”, “mixed”, “very limited”, “statistically not significant”, “no empirical evidence”. These statements have been made by judges at the World Trade Organisation. Contrary to what the Australian government, the Health Department, *Tobacco Control*, and the authors of the studies being cited, judges have rules this evidence of the policy efficacy to be limited, mixed or not statistically significant.

3.5 The Post-Implementation Review regression analysis

In February 2016 the Australian government released its Post-Implementation Review of the plain packaging policy. This review included an econometric analysis undertaken by Tasneem Chipty Ph.D (MIT) of the United States based Analysis Group, Inc.[52] Dr Chipty has been previously employed by the Australian government to provide expert evidence to the World Trade Organization on matters relating to trade mark disputes resulting from the introduction of plain packaging in Australia.

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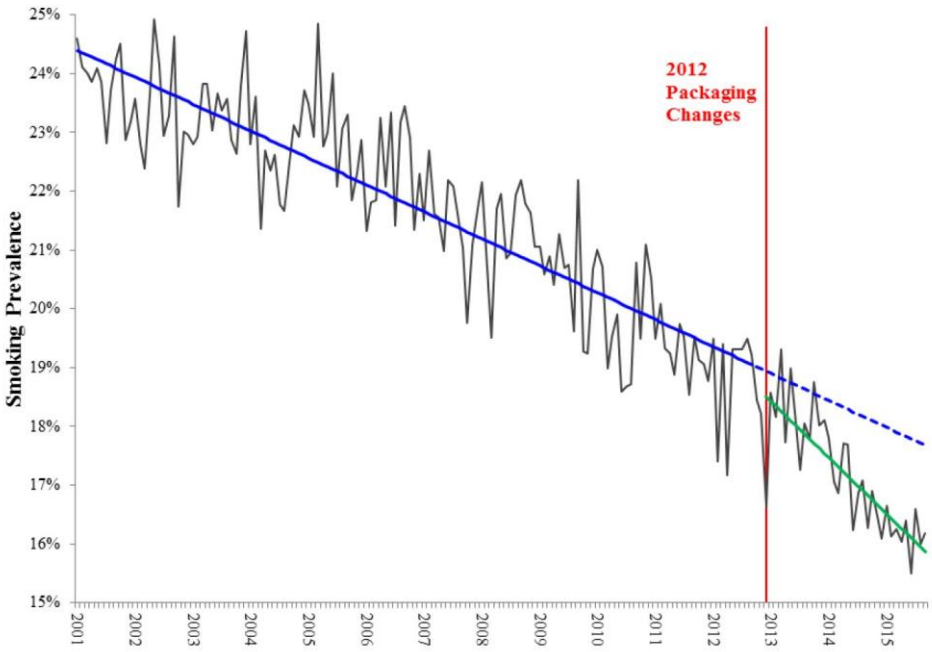
[51] https://www.wto.org/english/tratop_e/dispu_e/435_441_458_467r_b_e.pdf

[52] Chipty, T. 2016, Study of the Impact of the Tobacco Plain Packaging Measure on Smoking Prevalence in Australia. In Post-Implementation Review: Tobacco Plain Packaging.

Dr Chipty employed Roy Morgan Single Source Survey data over the period January 2001 to September 2015 to model smoking behaviour. That survey consists of monthly cross-sectional surveys of approximately 4,500 respondents. In total, her sample includes 177 monthly surveys. Based on that data she is able to calculate smoking prevalence in the Australian population – results are summarised in her Figure 1 (Figure 7 below).

Figure 1: Overall Smoking Prevalence



Note: Data are weighted using the population weights in the RMSS data.

Source: RMSS data (January 2001 – September 2015).

Figure 7: Smoking Prevalence reported by Post-Implementation Review.

Dr Chipty has inserted two trend lines into the data: the blue line is a "before" trend line and the green line is an "after" trend line. It is not clear from her discussion how those two lines were estimated. Nowhere in the study does Dr Chipty explain the origins of the trend lines, nor does she ever test for a structural break at that point. That figure does explain a statement made by a Health Official to Senator David Leyonhjelm:[53]

> [Health Department Official]: … but our modelling suggests that it is a beyond trend drop, especially since plain packaging. As I said, since 2012 it has been the most substantial drop in 20 years. We do not say that is entirely attributable to plain packaging, but it is a beyond trend drop.

While it does appear that there is a structural break in the data, the trend lines have been deliberately constructed to give that appearance. After the underlying data was released following a freedom of information request, it was possible to investigate how those trend lines were constructed. The blue

53

https://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;adv=yes;db=COMMITTEES;id=committees/estimate/d4e63ac2-46c0-4422-955d-4b7db9b3b72d/0005;orderBy=date-eFirst;page=2;query=Dataset:comSen,estimate;rec=11;resCount=Default

trend line is constructed using data from January 2001 to September 2012 and the green trend line is constructed using data from December 2012 to September 2015. Any apparent break in the data around the time of the introduction of the plain packaging policy is entirely due to data snooping. The statement made by the Health Department Official is profoundly misleading.

Figure 8 shows Dr Chipty's data with a single trend line that employs the entire time series. The smoking prevalence data only deviates from the trend line after mid-2014 – over 18 months after the introduction of the plain packaging policy and a massive increase in tobacco excise.

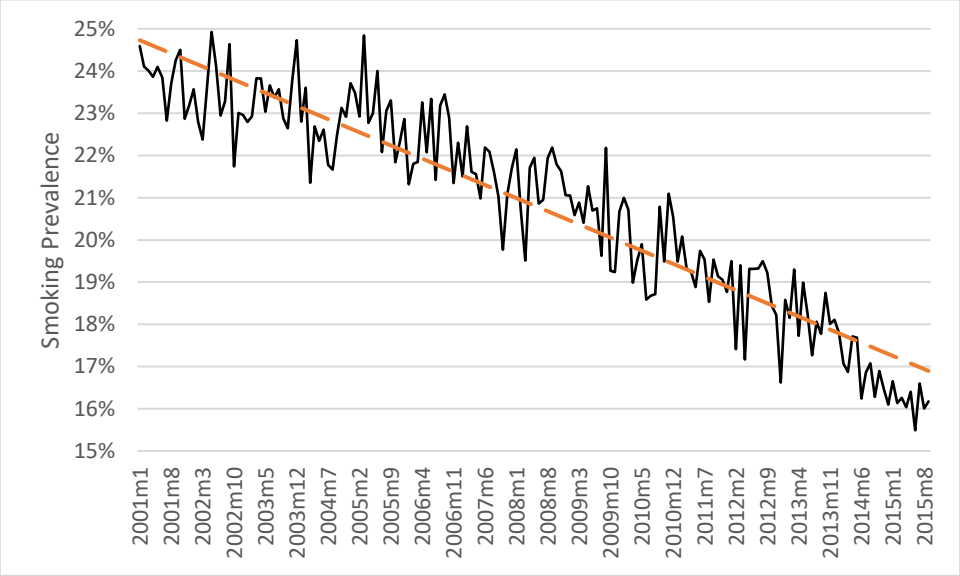


Figure 8: Replication of Chipty Smoking Prevalence with alternate Trend Line

It is also worth pointing out that those estimated smoking prevalence rates are well above National Drug Strategy Household Survey results. By September 2015 Dr Chipty estimates a smoking prevalence of some 16 per cent, while the National Drug Strategy Household Survey reported daily smoking prevalence rates to be 12.8 per cent in 2013. At the very least smokers are likely to be over-represented in the Roy Morgan Single Source Survey data. Without access to the underlying data it is impossible to establish whether there are any other sources of bias in the data set.

I now turn to Dr Chipty's actual econometric analysis. Unfortunately, at the time of writing, the Australian government has refused to make the underlying data available for independent verification of her results. In order to estimate the effect of the plain packaging policy (and the increased graphic health warnings) Dr Chipty estimates a probit regression model where the dependent variable is the smoking status of respondents (= 1 if a smoker and 0 otherwise). She then includes a time trend, sociodemographic variables, tobacco control indicator variables such as changes to excise policy, and an indicator variable for the 2012 policy changes (plain packaging and increased graphic health warnings). Unfortunately she omits to include a price variable – the analysis implicitly assumes that tobacco prices play no role in determining whether or not individuals will consume tobacco.[54] At the very least the analysis suffers from omitted variable bias.

She experiments with various start dates for the 2012 policy introduction but, quite correctly, prefers the December 2012 date as being the most appropriate start date for the policy. She estimates a

[54] She does, however, include excise dummy variables.

coefficient for the 2012 policy of -0.0237 that is statistically significantly different from zero with a p-value of 0.017. As an aside, she also finds that the introduction of graphic health warnings in 2006 is not statistically significantly different from zero. This result does appear to be inconsistent with the results reported in Davidson and de Silva (2016).

Dr Chipty then provides an economic explanation for her results. Her model estimates that by September 2015 smoking prevalence was 17.21 per cent. In the absence of the plain packaging policy (and increased graphic health warnings) that smoking prevalence would have been 17.77 per cent. In other words, over a 34 month period after the introduction of plain packaging (and increased graphic health warnings) that policy had contributed to a 0.55 per cent decline in the prevalence of tobacco consumption. That is just over half of one per cent.

She interprets that result as follows:

> The evidence shows that 2012 packaging changes are succeeding in reducing smoking prevalence beyond trend. In terms of order of magnitude, smoking prevalence is 0.55 percentage points lower over the period December 2012 to September 2015 than it would have been without the packaging changes. For reasons I have explained, this effect is likely understated and is expected to grow over time. This evidence supports the conclusion that the TPP Act is having its intended effect.

That is *one* interpretation. In the first instance the model omits important variables such as price. It does include excise policy changes, but not excise itself. Tobacco excise in Australia is indexed – originally to the consumer price index and currently to increases in average weekly earnings. In addition to any changes in policy, tobacco excise increases twice every year. Tobacco companies themselves may change the prices of their products. Furthermore she has not given careful thought to the base case tobacco consumer in her model. Given the nature of the probit regression and the large number of indicator variables, the model must be estimated with a base case tobacco consumer. Dr Chipty's base case tobacco consumer is an unmarried, male, Australian born, 14 – 17 year old, with a tertiary qualification, employed full time, but with an income less than $6000, and living in Victoria.

Of particular concern is that the pseudo-R-squares of her models (the measure of how well her models explain the data in the sample) is only 0.091.[55] That means that her modelling cannot explain 90.9 per cent of the variation in her dependent variable (i.e. smoking status). Add to that the average sampling error of the Roy Morgan data (for 5000 respondents the margin of error is 0.6) and our confidence in the 0.55 per cent estimate must fall.[56] It is hard to accept a half of one per cent difference is important when the model estimating that difference cannot explain 90 per cent of the variation in the data, and the data itself has a bigger sampling error than the reported effect.

4. The Over-enforcement of Australian Tobacco Control

The previous section has established that there is no evidence to support the Australian government's position that plain packaging has led to a decline in tobacco consumption over

[55] Strictly speaking she should have reported a "hit-miss" table. Ironically the Victorian Cancer Council criticised Davidson and de Silva for reporting pseudo-R-square statistics while remaining silent on Dr Chipty's use of the very same statistic.

[56] http://www.roymorgan.com/morganpoll/about/margin-of-error

the existing trend. The benefits of plain packaging must be limited. The costs associated with the plain packaging policy, however, are not.

4.1 Substitution and Price Effects

One of the concerns usually raised is the fear that a plain packaging policy could lead to price declines as tobacco companies compete for market share. To alleviate that concern the public health lobby often cites an Australian study that found that cigarette prices did not decline, but rather rose as a result of automatic indexation.[57] That is true enough – as far as that analysis goes. But it ignores another paper in the *same issue of the journal* – this paper demonstrated that tobacco consumers were engaged in substitution for cheaper products.[58] So while the price of a given brand of cigarettes may not have fallen – the price being paid by tobacco consumers for a packet of cigarettes may have fallen.

The Australasian Association of Convenience Stores have provided an estimate of the market share of the different categories of tobacco.[59] Data are shown in table 2 below. As can be seen the sub value segment of the market (deep discount cigarettes or "cheapies") has grown 145 per cent since 2013 – the first full calendar year after the introduction of plain packaging).

	2015 %	**2013 %**	**% change**
Cigarettes Mainstream	42.0	50.4	-17%
Cigarettes Premium	16.6	23.2	-28%
Cigarettes Sub Value	28.4	11.6	145%
Cigarettes Value	4.5	8.4	-46%
Roll Your Own	7.5	5.4	39%
Other	1.0	1.0	0%

Table 3: Tobacco Market Share.
Source AACS 2015, pg. 26.

4.2 Increased Criminality

The over-enforcement of tobacco control in Australia has seen a massive increase in criminal behaviour since 2012. In the very first instance Australia has seen a massive increase in the size and scope of the illicit tobacco market. Estimates from KPMG are shown in figure 9.[60] Prior to the introduction of plain packaging it appears that the size of the illicit market was falling – that downward trend was dramatically reversed after the introduction of plain packaging.

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[57] Scollo, M., M. Bayly, and M. Wakefield, 2015, The advertised price of cigarette packs in retail outlets across Australia before and after the implementation of plain packaging: a repeated measures observational study, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii82.full.

[58] Scollo, M., M. Zacher, K. Coomber, M. Bayly, and M. Wakefield, 2015, Changes in use of types of tobacco products by pack sizes and price segments, prices paid and consumption following the introduction of plain packaging in Australia, *Tobacco Control*, http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii66.full.

[59] The Australasian Association of Convenience Stores, 2015, State of the Industry Report, http://www.aacs.org.au/wp-content/uploads/2016/05/AACS-report-2015.pdf.

[60] KPMG, 2017, Illicit Tobacco in Australia 2016 Full Year Report, https://home.kpmg.com/uk/en/home/insights/2016/04/illicit-tobacco-in-australia.html.

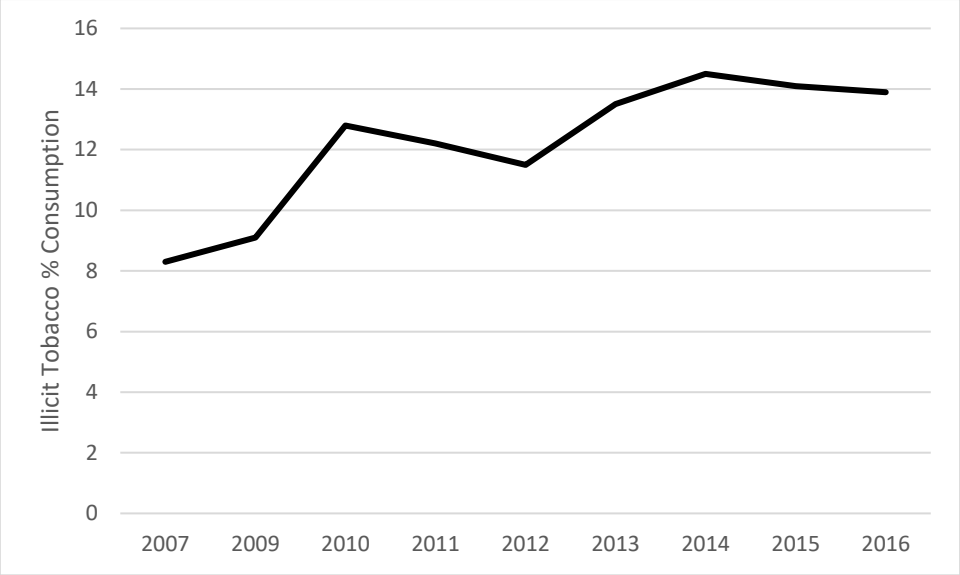

Figure 9: Illicit Tobacco as a share of consumption.
Source: KPMG (2017).

It is important to understand that Australia is an island nation – there is no legal domestic production of tobacco (including those areas of the continent covered by native title), all illicit tobacco must be imported into Australia.

The next thing to realise is that criminality is a "gateway drug" to further criminality. Criminals do not pay taxes, nor do they pay dividends, criminals do not observe industrial laws, criminals do not comply with health and safety standards, criminals do not observe contract law, nor do they enforce contracts through the courts. Criminals invariably engage in acts of violence. In short, criminals disrupt law abiding society. The Australian press has run many stories highlighting increased smuggling. It has also run many stories highlighting the increased theft of cigarettes from convenience stores.

In early August 2016 Australians were shocked to read of a kidnapping attempt made against a tobacco industry executive.[61]

> The attempted kidnapping, bashing and stabbing of an international tobacco company manager outside his family home in Sydney suggests crime syndicates are hitting back at efforts to combat the booming illicit tobacco trade.
>
> A criminal syndicate is suspected of ordering the botched kidnapping in June of a former decorated NSW policeman turned manager of British American Tobacco.
>
> …

[61] McKenzie, N., N. Ralston, and R. Baker, 2016, Australian tobacco executive bashed and stabbed in attempted kidnap, The Age, 12 August, http://www.theage.com.au/national/australian-tobacco-executive-bashed-and-stabbed-in-failed-kidnap-attempt-20160811-gqqds1.html.

> The attack appears to be an unprecedented escalation in the struggle between policing agencies and the syndicates driving the illicit tobacco trade. Evidence suggests the attack was linked to BAT's support of police inquiries.

Importantly, criminals do not compete fairly or legally against existing tobacconists and convenience stores that currently legally sell tobacco products. To be sure tobacco control policies operate to undermine the business models of existing businesses that sell tobacco products. Yet it is not the case that tobacco control policy intends to advantage criminal enterprise over legal businesses. As various submissions to an Australian Parliamentary Inquiry into illicit tobacco made clear this is what is happening in Australia after the introduction of plain packaging.[62]

The Alliance of Australian Retailers told the inquiry:[63]

> Small business retailers like those we represent are already under additional pressure due to excessive tobacco regulation. In addition to ensuring all tobacco products comply with far-reaching retail regulations, our members are exasperated by the consequences of plain packaged products and extreme tax rises that has led to illicit tobacco being so easily sold. Threatening not only the safety of our local communities, the barefaced sale of illicit tobacco encourages customers away from legitimate retailers on the basis of price and within the environment of the now undistinguishable differentiation of tobacco products.

The Australian Retailers Association made a similar argument:[64]

> There is no evidence that recent plain packaging moves have worked and consumers have sought illegal product instead with the loss of brand loyalty the illegal market has grown to the magnitude of 14.3% of consumption.

The bottom line is that the plain packaging policy has not delivered the benefits that were promised, but it has imposed high economic and social costs on the Australian community.

5. Conclusions

Australia was a world leader is adopting standardised packaging for tobacco products in 2012. Substantial data relating to that policy experiment are now available for analysis. The data itself, as opposed to the commentary associated with that data, do not support the notion that standardised packaging has met its stated policy objectives. Health Department officials and anti-tobacco lobbyists have been reduced to claiming the policy will be successful because smokers dislike the packs.

The following conclusions can be drawn:

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[62] Parliamentary Joint Committee on Law Enforcement, 2016, Inquiry into Illicit Tobacco, http://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Law_Enforcement/Illicit_tobacco/Submissions.

[63] Submission 41.

[64] Submission 42.

1. There is no evidence to support the notion that standardised packaging reduces the prevalence of tobacco consumption – as such it cannot be said to reduce the appeal of tobacco products.
2. Enhancing the graphic health warnings has had little impact on reducing smoking prevalence.

The anti-tobacco policy package introduced into Australia in 2012 cannot be described as having met its stated objectives and should not be adopted in other jurisdictions. Rather the public health authorities should focus their efforts on public education and pursuing policies that are likely to reduce the prevalence of smoking without imposing high social costs on society.

About the author

Sinclair Davidson is Professor of Institutional Economics in the School of Economics, Finance and Marketing at RMIT University, an Adjunct Fellow at the Institute of Public Affairs, an Adjunct Economics Fellow at the Consumer Choice Center, and an Academic Fellow at the Australian Taxpayers' Alliance. Sinclair has published in academic journals such as the European Journal of Political Economy, Journal of Economic Behavior and Organization, Economic Affairs, and The Cato Journal. He is a regular contributor to public debate. His opinion pieces have been published in The Age, The Australian, Australian Financial Review, Daily Telegraph, Sydney Morning Herald, and Wall Street Journal Asia.

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