

UCSF

WHO Tobacco Control Papers

Title

Taxation reform as a component of tobacco control policy in Australia

Permalink

<https://escholarship.org/uc/item/95t699r7>

Authors

Scollo, Michelle

Borland, Ron

World Health Organization

Publication Date

2004



Taxation reform as a component of tobacco control policy in Australia

**Michelle Scollo
and Ron Borland,**

VicHealth Centre for Tobacco Control



World Health Organization



Tobacco Free Initiative Headquarters would like to thank the Regional Offices for their contribution to this project.

WHO Regional Office for Africa (AFRO)

Cite du Djoue
Boîte postale 6
Brazzaville
Congo
Telephone: +(1-321) 95 39 100/+242 839100

WHO Regional Office for the Americas / Pan American Health Organization (AMRO/PAHO)

525, 23rd Street, N.W.
Washington, DC 20037
U.S.A.
Telephone: +1 (202) 974-3000

WHO Regional Office for the Eastern Mediterranean (EMRO)

WHO Post Office
Abdul Razzak Al Sanhoury Street, (opposite Children's Library)
Nasr City, Cairo 11371
Egypt
Telephone: +202 670 2535

WHO Regional Office for Europe (EURO)

8, Scherfigsvej
DK-2100 Copenhagen
Denmark
Telephone: +(45) 39 17 17 17

WHO Regional Office for South-East Asia (SEARO)

World Health House, Indraprastha Estate
Mahatma Gandhi Road
New Delhi 110002
India
Telephone: +(91) 11 337 0804 or 11 337 8805

WHO Regional Office for the Western Pacific (WPRO)

P.O. Box 2932
1000 Manila
Philippines
Telephone: (00632) 528.80.01



Introduction

In 1998, the Australian Government announced a major reform of Australia's overall tax system. The previous system was characterized as out of date (it included a range of historically justified but now anachronistic taxes), unfair, discouraging of exports and investment, ineffective and complex. The proposed reforms included the introduction of a Goods and Services Tax (GST) and the abolition of a raft of state taxes and charges. The aim was to bring the service economy into the tax net, provide sustainable funding to the states and lower corporate and individual tax rates. Tobacco control advocates felt that it was essential to ensure that this did not adversely affect tobacco taxation levels.

Higher tobacco taxes significantly reduce cigarette smoking and other tobacco use. However, for a specific tax increase to have maximum effect on reducing consumption there are a number of criteria that must be considered. Firstly, it must be a real, sustained increase, that is, greater than the rate of inflation. Ad valorem taxes such as the GST will increase with actual prices. Secondly, the impact of the tobacco tax will depend on the magnitude of the price increase. Thirdly, it must be understood that smokers exhibit compensating behaviour, for example, substituting with higher tar and nicotine cigarettes. And finally, smuggling can reduce the effect on consumption of a tax increase (Chaloupka, 1998), as can other means of excise avoidance.

In Australia, a country without land borders, distant from other producers of the types of cigarettes that smokers want, smuggling is not believed to be a major issue. Of greater local concern, is the increased use of roughly chopped leaf, sold on the black market and sourced illegally from the small number of remaining tobacco-growing areas in the country. This product appears to be used mainly by the very poor.

In Australia, tobacco companies had dampened the effect of tax rises on smokers. Taxes were based on weight of tobacco, so by reducing the amount of tobacco per cigarette, without reducing yields, price could be contained. Furthermore, through packaging cigarettes (often the lighter sticks) in larger budget packs additional economies were made. This has meant that smokers have been able to avoid much of the price increases that extra taxes should have produced by moving to these budget cigarettes.

This report examines health groups' contribution to the argument that the tax reform campaign should be used to secure reform of tobacco taxes in Australia. Such taxes

should achieve two objectives. They should limit the ability of companies to undermine the tax increases and restrict consumers' capacity to compensate when faced with increased prices. The report describes the reforms that were introduced and the effect these had on tobacco tax levels and prices. Data collected from mid-1997 for the purpose of evaluating Australia's National Tobacco Campaign were used to make a preliminary assessment of the likely contribution of price increases to recent declines in tobacco use in Australia and relate that to declines attributable to other factors.

Tobacco users in Australia mainly smoke factory-made cigarettes. Around 20% of smokers at least occasionally purchase pouches of manufactured tobacco to make "roll-your-own" (RYO) cigarettes. It is illegal to sell smokeless tobacco products, and only a small percentage of smokers regularly use pipe tobacco or cigars (Hill DJ et al., 1998).

Cigarettes and manufactured tobacco in Australia are sold, broadly speaking, in two market sectors. Firstly, they are sold from a large number of convenience shops, where smokers purchase cigarettes at close to or at the recommended retail price. Second, they are sold from supermarkets or specialist tobacconists, where prices are well below the recommended retail prices (Scollo et al., 2000).

Smoking prevalence in the Australian adult population decreased from about 36% in 1974 (Hill D and Gray, 1982) to 22% in 1998 (Wakefield et al., 1999), a decline of about 39%. Over that time tobacco consumption declined by 58%, from around 3287 grams per capita in 1974 to 1364 grams per capita in 1998. This decline was due both to reductions in the average number of cigarettes consumed and reductions in the amount of tobacco per cigarette (Winstanley et al., 1995). Most of the latter effect and some of the former has probably occurred without any real reduction in the level of exposure to tobacco-related toxins.

Australia has a federal system of government, consisting of the federal Government and each of six state governments and two territory governments. Federal taxes, in the form of excise or customs duty, had been levied on tobacco based on the weight of the product since 1901. State-based taxes, in the form of franchise fees—based on the wholesale value of a pack of cigarettes—were only introduced by the state of Victoria in 1974, originally calculated at 2.4% of the wholesale price. Over the following couple of years, each of the other five states and two territories introduced similar fees.



Over the 25-year period described above, there were two phases of marked increases in tobacco taxes. The first, beginning in the 1980s, involved a 12-year period of progressive leap-frogging of state-based tobacco licence fees. For several years after they were introduced in 1975, these fees remained at around 10% of the wholesale price of cigarettes in most Australian states. Between 1981 and 1993, in response to budgetary pressures and capitalizing on the support of nongovernment health groups, various state and territory governments at various times increased the fees in a series of steps to 75% (in most states). Between 1995 and 1997 there were also further increases in state tobacco licence fees—from 75% to 100% of the wholesale price. None of the additional revenue raised was invested in tobacco control programmes.

In 1997, state tobacco licence fees were deemed by the Australian High Court to be operating as an excise and as such in breach of the Australian constitution. A key factor in the Court's finding was the lack of a clear relationship between the level of the fees and the cost of regulating tobacco control. The federal Government stepped in to increase federal excise duty on tobacco products by an amount equivalent to the abolished state fees, and to return the resulting additional revenue to the states up until 2000. Figure 1 shows the value of franchise fees (or equivalent in 1998–1999) per average cigarette pack in the largest Australian state New South Wales (NSW), adjusted for inflation.

Federal taxes, by contrast, remained pegged to inflation between 1983 and 1993. A period of sharp excise increases commenced in 1993 (Figure 2). This included small increases in 1993 and 1994 a 10% increase in the 1995 budget. Major health groups had made submissions calling

for both increases in excise duty and a change in the way that excise duty was raised. No changes in the manner of raising the excise were made at this time.

Beyond the bi-annual indexation, there were no further increases in Australian tobacco taxes between mid-1997 and late 1999.

Several countries such as Malaysia, Singapore and Sri Lanka tax tobacco products on the basis of weight, and most countries impose ad valorem fees. However, in the 25 years up to 1999, Australia was the only country in the world to both impose ad valorem fees and to tax cigarettes on the basis of weight rather than number of sticks (Scollo, 1996). The combination of the increasing ad valorem component of the overall tax structure combined with the weight-based excise system resulted in lighter-weight, bulk-packaged budget cigarettes rising in price substantially less than heavier, larger-diameter, premium brand cigarettes. Each time franchise fees rose, manufacturers developed a lighter cigarette variant packaged in an ever-greater pack size configuration (Figure 3). In this way, manufacturers were able to offset, at least partially, the impact of the steep increases in state fees. Australia became the only country in the world where cigarettes were commonly sold in packs of 30 or more—over 60% of smokers were purchasing cigarettes in packs of 30, 35, 40 or 50.

After the publication in 1990 of an Offices of Prices report which, for the first time, highlighted the problem of large pack sizes (Herington, 1990), health groups began advocating for the levying of excise per stick. Both adult and teenage smokers preferring large pack sizes smoked substantially more per week, in terms of both the number of cigarettes smoked per day (Hill DJ et al., 1998) and the

Figure 1
State tax per pack of 25, NSW, 1976 to 1999, concerted to US\$ 89-90

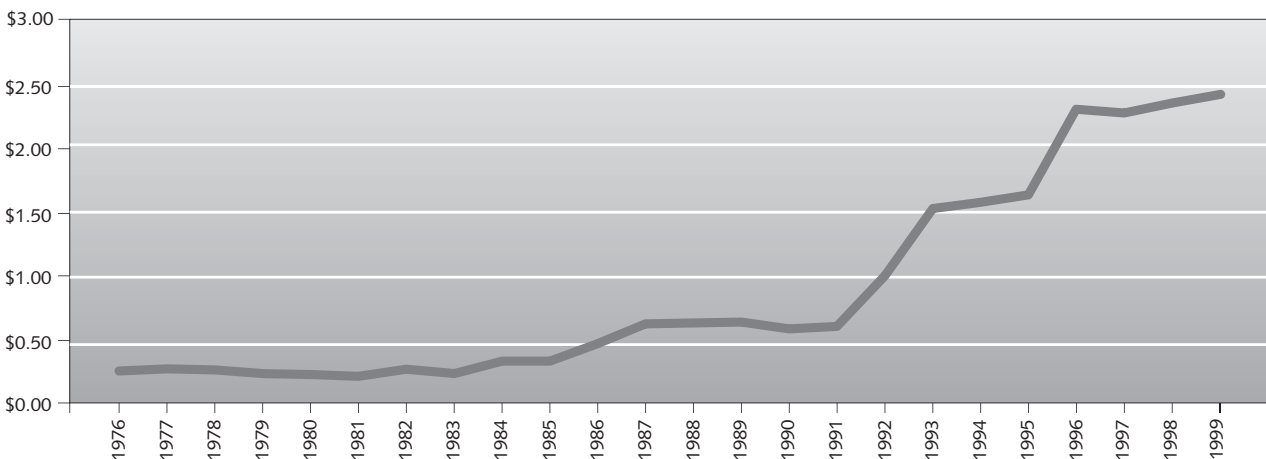
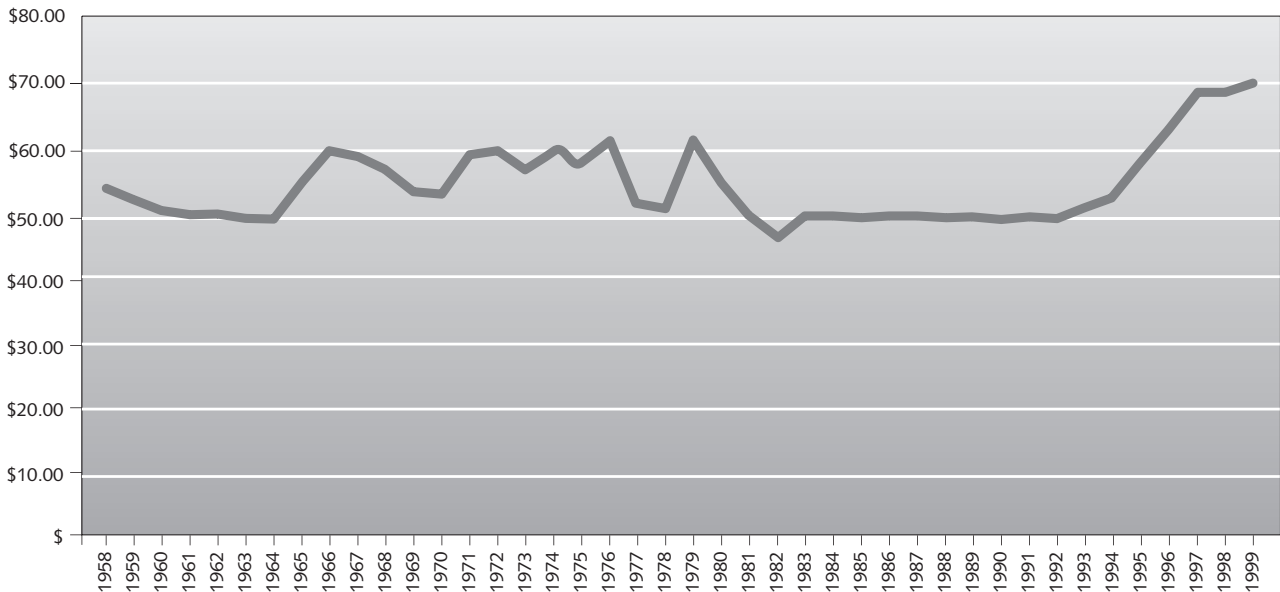


Figure 2

Federal excise duty in Australia, Feb 1958 to 1999, converted to US\$ 89-90



overall weight of tobacco consumed (Scollo, 1996). Health groups believed that large packs were encouraging the development of more addictive patterns of smoking and were providing price-sensitive smokers with an alternative to quitting, thereby reducing the effectiveness of tobacco excise increases as a means of discouraging tobacco consumption in Australia (Scollo, 1996).

The lobbying process

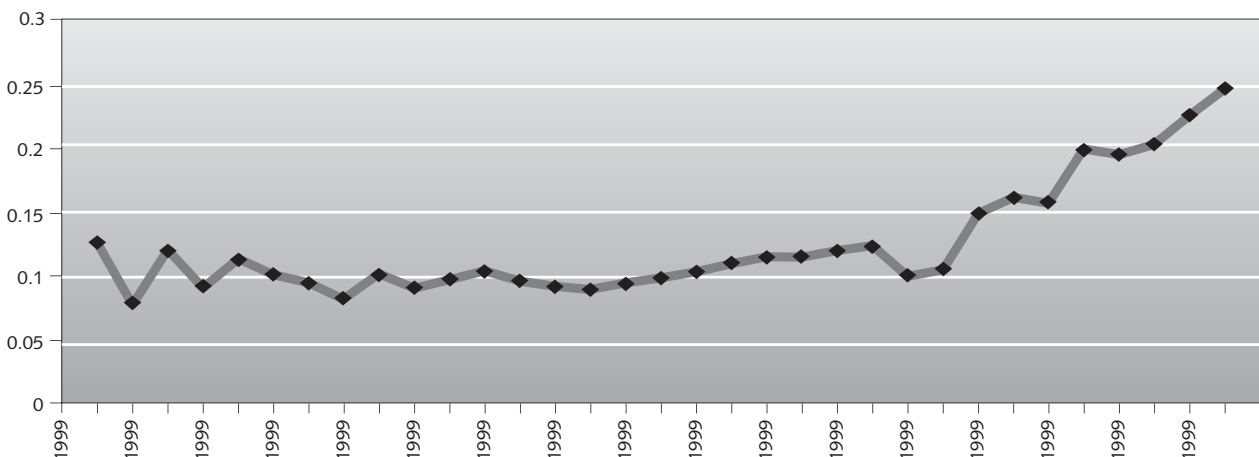
Between 1992 and May 1998, health groups had submitted to the Government written proposals making the case for increases and changes in the system of taxing tobacco

products. While several increases in excise were included in annual budgets over that time, there was little interest in addressing problems with the system.

To capitalize on the 1998 national tax reform campaign announced by the then-Liberal Government, the Anti-Cancer Council of Victoria contracted a consultant to produce a more detailed and better-illustrated submission (Scollo, 1998). The consultant was also to present this to a consultative committee that had been established by the Government to hear submissions from community and business groups (Scollo, 1998). The National Heart Foundation and the Australian Cancer Society also support-

Figure 3

Price per stick of top-selling cigarette brands in Australia, US\$ 89-90





ed the submission's author to accompany lobby group ASH Australia on several trips to the national capital in order to explain the proposal and build support for its adoption.

Health groups made three basic requests:

- Replace current taxes with a simple cents per stick system to remove incentives to market in larger packs;
- Consider excise increases as a means of financing other elements of tax reform;
- Ensure that cigarettes do not become affordable in the shift to a GST;
 - add GST without adjusting excise; and
 - index wages and pensions with the Consumer Price Index (CPI) excluding tobacco.

It was argued that the shift to a per stick system would lead to sharp increases in the price of larger pack formats and, in response, an immediate reduction in consumption among smokers continuing to use larger pack sizes. More importantly, it was predicted that, in the longer term, fewer people would regularly smoke large packs, and that this would also reduce the prevalence of very heavy smoking. Finally, it was hoped that the lower prevalence of heavy smoking would translate, eventually, to higher population quit rates.

Traditional lobbying included letters and personal visits to:

- cabinet and shadow cabinet ministers;
- party whips, key power-brokers;
- health and economic policy committees for both major parties; and
- treasurer and Prime Minister's advisers on tax reform.

Additional, less formal input was provided by:

- briefing key academic economists from whom the Government was seeking advice;
- meeting with and writing to members of a treasury (departmental) Tax Reform Working Group;
- approaching the treasurer at a party fund-raising function;
- meeting with the presidents of political parties – at a meeting at the Cancer Council; and
- briefing media spokespeople for the Business Coalition; the Business Forum, a coalition of business welfare groups; and the Tax Reform Commission, a progressive group of economists and welfare groups.

Description of policy intervention

The submission of the nongovernmental organizations (NGOs) was successful in influencing the then-Government. Prior to the 1998 Federal election (Costello, 1998), the Liberal Party released its major policy document on tax reform. In it the Liberal Party ADDIN announced that, if re-elected, it would replace the anomalous system of taxes that had developed in Australia with a per stick tax as advocated by health groups, at a level such that the price of no cigarette brand would fall. The goods and services tax was to be added on top of the new excise level. After it was re-elected, the Government released plans for implementation of the policy (McCullough, 1999).

The new excise duty became operational on 1 November 1999 (Costello, 2000), and was set at a level such that the tax component and price of premium packs of 20 or 25 cigarettes rose slightly. As planned, the total tax payable on large budget packs rose by more than 20%. This resulted in marked increases in prices for budget brands, particularly those that used less tobacco, had lower diameter tubes or were sold in large packages (40s and 50s) or both. Smoking (RYO) tobacco, cigars and cigarettes weighing more than 0.8 grams remained taxed by weight.

Eight months later, a GST of 10% was introduced on all goods and services sold in Australia, and, as promised, the Government applied the GST on tobacco product sales without decreasing the excise. This resulted in price increases somewhat lower than the 10% tax as manufacturers were required to pass on savings from tax reforms that reduced cost in other parts of the production cycle.

Another major policy intervention was also operating in Australia prior to and during the introduction of these reforms in tobacco taxation. The National Tobacco Campaign (NTC), a major mass-media led campaign launched in May 1997, had a very strong presence until November 1997, and continued at a reduced level over the following four years. The Campaign featured a series of hard-hitting advertisements (Hill, D et al., 1998) and provided support to smokers via operation of a Quit line and provision of resources to health professionals. The campaign was associated with a marked reduction in smoking prevalence in its first phase (to November 1997) (Wakefield et al., 1999). Therefore, when considering the implementation of the tax reforms, it is important to look at the potential effects of the NTC.



The impact of the intervention

This section provides preliminary information on the impact of tax changes on recommended and actual retail prices. It also documents changes in smoker consumption patterns over the period before and after the tax reforms were implemented.

As part of the overall strategy to evaluate the NTC (described above), extensive data were collected through an ongoing retail survey of cigarette prices (Scollo et al. 2000) and an annual population survey. The population survey assessed brand preferences, prices paid, and reported daily consumption and quitting attempts among 18- to 40-year-old smokers, the main target of the campaign (Wakefield et al. 1999). Data are presented from the first phase of the campaign, which lasted from May to November 1997 (Hill, D and Alcock 1999) and the third phase, which was completed when data were collected in November 2000 (Hill, D et al. 2000). A more detailed analysis can be found in Scollo et al., 2003 (Scollo et al. in press).

The impact of reforms on the range of tobacco products sold in Australia

Prior to 1999, cigarette brands could be split into three reasonably clear segments: premium, value and budget (Nicholas and Oldham 1998). Premium brands include Marlboro, Benson and Hedges and other leading international brands. Value brands included Peter Jackson 30s and Escort 35s, which were launched in the 1970s in response to the steadily increasing ad valorem state franchise fees. The budget segment includes brands such as Holiday and Horizon, which were first introduced in 1990 in packs of 50. In 1997 the premium segment had 35% of the market, the value segment 35% and the budget section 25%, with the rest spread among rare brands and RYO.

Between November 1997 (before the excise changes) and November 2000 (a year after the excise change and four months after the imposition of the GST), there was a 37% increase in the number of pack variants, 84% of this in smaller pack sizes (20s and 25s). This was in contrast to a small decline in the total number of variants in the previous three years.

Following the introduction of the per stick system, all three tobacco companies reconfigured a number of the most popular cigarette brands, increasing the amount of tobacco in each cigarette and promoting the reconfigured brands as "better value for money". Given the tendency

of smokers to determine the dose, we suspect that this resulted in little extra exposure to tobacco toxins per cigarette smoked, but we cannot be certain.

The impact of reforms on prices at the retail level

As intended, the shift to a per-stick method of levying excise duty in November 1999 resulted in a significantly greater increase in the recommended retail price of budget brands compared to premium brands (18% for budget brands, compared with only 5% for premium brands). The differential between premium and budget brands (the percentage by which budget brands were cheaper than premium brands) consequently reduced from a high of 25% in November 1995 to 12% following the change to the per stick method. Further increases in cigarette prices across the board were evident following the introduction of the GST in June 2000.

Actual monitored retail prices were lower than recommended prices both before and after the reforms, and were substantially lower in discount outlets. Actual monitored retail prices increased in both the discount and convenience sector for all segments of the market over the period of the campaign. Recommended retail prices rose in parallel.

Between May 1997 and November 2000, average (unweighted) recommended retail cigarette prices increased by 34% and actual prices paid by smokers also increased by 34%. Actual prices paid in each market segment increased in line with recommended retail prices for each brand segment (28% compared with 27.6% in the premium sector; 35% compared with 34% in the value segment, and 40.1% compared with 42% in the budget segment).

Reliable data are not available on the actual and reported prices paid on roll-your-own tobacco, however extensive data were collected in each NTC survey on what people reported paying for factory-made cigarettes. Prices paid for cigarettes increased in all brand segments and were roughly equal across socioeconomic status groups. The same pattern of increase was observed with the discount and convenience sectors, and for pack and carton purchasers.

Smokers' attempts to offset the impact of price increases

The proportion of smokers favouring budget brands declined significantly between 1997 (17%) and 2000 (10%), with all the change being to premium brands. Once again this trend applied to both blue- and white-col-



lar groups, for carton as well as for pack purchasers, and for purchasers in both the discount and the convenience sector. Some of this occurred before the excise changes.

Following the shift to the per stick excise system in November 1999, there was a substantial reduction in the percentage of remaining smokers using 40s and 50s (down from 30% to 19%). There was also a corresponding increase in the proportion of remaining smokers using 20s and 25s (up from 48% to 58%).

The rise in prices may have increased supermarket sales at the expense of other places, but the effect is small. There was a continuing shift to RYO cigarettes, which may relate to greater use of illicit tobacco known as Chop-chop, which is grown and clandestinely distributed by farmers and wholesalers and sold without government intervention or taxation. There was no significant change in the proportion of remaining smokers buying cartons over the course of the campaign (Table 1).

Apart from the shift to RYO and a shift to discount outlets during Phase 1 of the campaign, it appears that remaining smokers have not been able to cushion themselves from the impact of cigarette price increases by shifting to cheaper brands, format and outlets. In fact, as intended by the November 1999 cigarette excise reforms, which differentially increased the price of light-weight cigarettes, there has been a large shift away from budget brands and large pack sizes.

The extent to which the decline in the percentage of smokers using budget brands results from differential rates of quitting among budget versus premium smokers or a real shift among remaining smokers to smaller pack sizes is unclear. However, the size of the effect suggests much is due to brand shifting.

Consistent with these observed trends, 52% of smokers reported in November 2000 that they found cigarettes "more difficult to afford compared with one year ago". Overall, around 11% of smokers reported changing to RYO (4%) or a cheaper brand (7%), and 13% reported that they smoked fewer cigarettes.

Changes in cigarette consumption

Changes in consumption can be due to quitting or to reduced consumption among remaining smokers or both. Analysis of data from the NTC Evaluation respondent surveys indicates a significant drop in consumption among remaining smokers over the period of the campaign. This occurred both among blue- and white-collar groups. During the period of high advertising and small price changes there was little change in consumption per smoker (-.65%), while following the price rises the reduction was greater (-7.84%). This seems to have led to a reduction in the percentage of heavy smokers (25+ per day).

As anticipated, average consumption among remaining smokers using larger pack sizes appeared to reduce more significantly than consumption among smokers using smaller pack sizes (Table 2). The reduction in consumption due to the price increases remained significant ($p < .05$) after taking account of the change in cost/stick, and any sex, age, education, and socioeconomic status differences.

To assess the likely contribution to reduced tobacco use of cigarette price increases, it is first of all necessary to establish how much less affordable cigarettes were in November 2000 compared to November 1998 before the tax reforms, and May 1997 at the commencement of the NTC.

Average per stick prices paid by smokers were adjusted for each phase of the campaign to take account of overall

At least weekly smokers	Benchmark May 1997 (n=921)	Follow-up 2 Nov 1998 (n=1239)	Follow-up 4 Nov 2000 (n=1155)	% change May 97 to Nov 1998	% change Nov 98 to Nov 2000
% using RYO	13%	17%	22%	+31%	+29%
% using budget brands	17%	14%	10%	-18%	-28%
% using 35s, 40s or 50s	29%	32%	21%	+10%	-34%
% using discount outlets	48%	55%	54%	+15%	-2%
% using cartons	14%	13%	12%	-7%	-8%

Table 2. Reported cigarette consumption among current smokers, by pack size

At least weekly smokers	Benchmark, May 1997	Follow-up 2 – Nov 1998	Follow-up 4 – Nov 2000
For daily and weekly smokers	n=1,075)	(n=1,496)	(n=1,480)
Mean cigs/day (sd)	15.4 (10.4)	15.3 (10.3)	14.1 (9.4)
Pack size 20	10.5(7.4)	9.9(7.9)	9.8 (7.6)
Pack size 25	13.2(10.0)	12.8(8.3)	13.1(9.8)
Pack size 30	15.0(9.2)	15.5(10.4)	15.1(9.1)
Pack size 35	17.8(10.5)	18.0(10.7)	14.2(5.8)
Pack size 40	18.1(9.8)	20.2(9.6)	17.4(8.7)
Pack size 50	22.3(11.4)	19.2(10.3)	18.4(9.3)

Source: NTC Evaluation respondent surveys

increases in prices of common consumer goods and services since the previous phase (Table 3). This shows that the excise changes did lead to greater real changes.

International research suggests that the price sensitivity of demand for cigarettes in Western countries is probably around -0.4 (Centers for Disease Control and Prevention, 1998). That is, for every 10% increase in cigarette prices, cigarette consumption can be expected to fall by about 4%. There is also evidence from behavioural studies, however, that price sensitivity of demand may be higher where prices are higher. (Bickel et al., 1990). Australian cigarette prices are among the highest in the world (Scollo, 1996). Separate estimates were derived for the impact on smoking participation and consumption among remaining smokers. International research has indicated that around three-fifths of the drop in demand tends to be due to reduced smoking prevalence, and around two-fifths to reduced consumption by remaining smokers (Chaloupka, 1998).

How do these estimates compare with overall changes in smoking participation and prevalence over the period of the NTC? Data from NTC Evaluation surveys indicate that the proportion of the population aged 18 to 40 years who smoked fell by about 9.5% over the period of the NTC, with just over 4% of the reduction occurring in the last two years of the Campaign following tax changes. A roughly equal drop in participation occurred among blue- and white-collar groups, with most of the drop among blue-collar groups occurring in the third stage of the campaign

In short, if we assume a sensitivity of demand for both participation and consumption of 0.4 we would expect a reduction in participation of about 1% over the NTC period and 4.3% over the excise reform period. This

can be compared with observed reductions of 5.4% and 4.3% respectively. Price cannot explain the drop in the first phase of the NTC, but it can explain the drop in the subsequent phase, which corresponded with the excise reforms. The drop in the first phase seems to be in part due to the strong advertising campaign. For consumption, the picture is somewhat different. We estimate reductions of 0.7% and 2.8% respectively and found reductions of 0.7% and 7.8%. Here price can account for the reduction in consumption in the NTC period, but underestimates consumption declines in the excise reform period. Sensitivity analysis for this is found in Table 4.

The higher-than-expected effects of the excise reforms on consumption could be due to the reduced opportunity to compensate. We also need to consider other potential contributions such as the role of nicotine replacement therapies, which became more widely promoted and more readily available in Australia over this time. This was also a period of rapid change in social norms with regard to the acceptability of smoking indoors, even in the home and this may have acted to drive down consumption as well.

Other effects

Source: Industry data provided to Australian members of Parliament, updated with excise data from ABS

Industry reports suggest that production figures reduced significantly in response to price changes. Figure 4 shows that there was a decline in production leading up to the changes, and further declines thereafter. The figures for June 2000 suggest that the industry may have underestimated the likely effect and overproduced in the short term.



Summary

Recent tobacco tax reforms do seem to have been effective both in increasing the availability of smaller pack size configurations for popular brands and in reducing the affordability of factory-made cigarettes, particularly the so-called budget brands.

Despite some evidence of a shift to roll-your-own tobacco, the reforms appear to have contributed to the recent decline in smoking participation in Australia, and in particular to a decline in heavy smoking and in reported consumption among remaining smokers, particularly those using budget cigarette brands. The decline in cigarette consumption and smoking participation appears to have occurred across all socioeconomic groups.

Table 3. Summary of changes in affordability of cigarettes and expected total consumption changes over the period of the NTC

At least weekly smokers Benchmark	Benchmark May 1997 (n=921)	Follow-up 2 Nov 1998 (n=1239)	Follow-up 4 Nov 2000 (n=1155)	% change May 97 to Nov 2000	% change Nov 98 to Nov 2000
Average price paid per cigarette – cents per stick	(n=881) 22.60	(n=1171) 23.90	(n=1053) 30.30	5.8%	26.8%
CPI for relevant quarters	120.2	121.9	131.3	1.4%	7.7%
Average price paid per cigarette in AUS\$ May 1997	22.60	23.57	27.74	4.4%	17.7%

Source: NTC Evaluation respondent surveys; Australian Bureau of Statistics, Consumer Price Index (ABS 2001)

Table 4. Expected compared to actual falls in smoking prevalence and consumption among respondent groups

Period	May 1997 to Nov 1998		Nov 1998 to Nov 2000	
Price increase	4.4%		17.7%	
Expected fall @ price demand elasticity	Prevalence	Consumption	Prevalence	Consumption
- 0.3	- 0.65%	-0. 65%	-2.65%	-2.65%
- 0.5	- 1.08%	- 1.08%	- 4.23%	- 4.23%
- 0.7	-1.51%	-1.51%	-6.20%	-6.20%
Actual falls	-5.42%	- 0.65%	- 4.30%	- 7.84%
Percent of reduction plausibly explained by price increases	Prevalence	Consumption	Prevalence	Consumption
@ - 0.3	12%	100%	62%	34%
@ - 0.5	20%	166%	98%	54%
@ - 0.7	28%	232%	144%	79%

Source: NTC Evaluation respondent surveys; Australian Bureau of Statistics, Consumer Price Index [10]; Centres for Disease Control MMMW bulletins [11]



References

- ABS (2001) Consumer Price Index, 6401.0. Canberra, Australian Bureau of Statistics.
- Bickel W et al. (1990) Behavioural economics of drug self-administration. Functional equivalence of response requirement and drug dose. *Life Science*, 47: 501–510.
- Centers for Disease Control and Prevention (1998) Response to Increases in cigarette prices by race/ethnicity, income and age groups – US, 1976 –1993. *Morbidity and Mortality Weekly Report*, 47.
- Chaloupka F (1998) How Effective are Taxes in Reducing Tobacco Consumption. *The Social Cost of Smoking*, Lausanne, Switzerland.
- Costello P (1998) Not a new tax: a new tax system. Canberra, Australian Government Printing Service.
- Costello P (2000) Excise Tariff Amendment Bill (No. 1), Explanatory Memorandum. Canberra, The Parliament of the Commonwealth of Australia, House of Representatives.
- Herington A (1990) Does Smoking Make Cents? Melbourne, Victorian Office of Prices.
- Hill D, Alcock J (1999). Background to campaign. In: Hassard K (ed.) *Australia's National Tobacco Campaign: Evaluation Report Volume One*. Canberra, Commonwealth Department of Health and Aged Care.
- Hill D et al. (2000) Perspectives of the Australian National Tobacco Campaign. *Australia's National Tobacco Campaign, Evaluation Report Volume Two*. Hassard K. Canberra, Commonwealth Department of Health and Aged Care: p. 1–9.
- Hill D, Gray N (1982) Patterns of tobacco smoking in Australia. *Medical Journal of Australia*, 23–25.
- Hill D, Donovan, R (1998) The return of scare tactics. *Tobacco Control*, 7: 5–8.
- Hill DJ, White VM, Scollo M (1998) Smoking behaviours of Australian adults in 1995: trends and concerns. *Medical Journal of Australia*, 168: 209–213.
- McCullough P (1999). Media release: Reform of Tobacco Taxation, Australian Treasury.
- Nicholas D, Oldham D (1998). *Australian Tobacco. Breathe Easy*. Melbourne, Merrill Lynch, Global Securities Research and Economics Group.
- Scollo M (1996) The Big Mac index of cigarette affordability. *Tobacco Control*, 5: 69.
- Scollo M (1996) Closing the Loophole—The Need for Action in 1997. Melbourne, Anti-Cancer Council of Australia: 28.
- Scollo M (1998). Federal Excise Duty on Tobacco – Proposals for Reform. Melbourne, Anti-Cancer Council of Victoria.
- Scollo M, Freeman JMW (in press) Early evidence of impact of recent reforms t tobacco taxes on tobacco prices and tobacco use in Australia. *National Tobacco Campaign Evaluation Volume No. 3*. Canberra, Department of Health and Ageing, 3.
- Scollo M, Owen T, Boulter J (2000) Price discounting of cigarettes during the National Tobacco Campaign. *Australia's National Tobacco Campaign. Evaluation Report Volume Two*. Hassard K, Canberra, Commonwealth Department of Health and Aged Care, 155–200.
- Wakefield M, Freeman J, Boulter J (1999) Changes associated with the National Tobacco Campaign: pre and post campaign surveys compared. *Australia's National Tobacco Campaign. Evaluation Report Volume One*. Hassard K, Canberra, Commonwealth Department of Health and Aged Care.
- Winstanley M, Woodward S, Walker N (1995) *Tobacco in Australia; facts and issues 1995*, Carlton South, Victorian Smoking and Health Programme.