

Weighing the evidence

Evaluating the social benefits
and costs of the Australian
tobacco industry



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**Cancer
Council**
Western Australia

First published in 2009 by the Cancer Council Western Australia



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Cancer Council Western Australia gratefully acknowledges the funding support of Healthway and the Department of Health.



Government of **Western Australia**
Department of **Health**

Suggested citation:

Collins DJ, Lapsley HM. Weighing the evidence: evaluating the social benefits and costs of the Australian tobacco industry. Perth: Cancer Council Western Australia, 2009.

ISBN 978-0-646-51952-4

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List of abbreviations

ABS	Australian Bureau of Statistics
BATA	British American Tobacco (Australia)
HFCE	Household final consumption expenditure
GST	Goods and Services Tax
HES	Household Expenditure Survey
ITA	Imperial Tobacco Australia
NCP	National Competition Policy
NSW	New South Wales
PMA	Philip Morris International (Australia)
WA	Western Australia
WHO	World Health Organization

Executive summary

Until recently, the tobacco industry was still denying that tobacco caused harm. Its eventual reluctant acceptance of at least some of the overwhelming cumulative epidemiological and medical evidence has been one factor in shifting its defence towards economic arguments, particularly a focus on the claims regarding the contribution of tobacco to the economy and to tax revenue.

This study reviews the costs and benefits of the Australian tobacco industry to the community as a whole and in so doing, evaluates the various economic arguments put forward in defence of the industry.

The study reviews the size and structure of the Australian industry, examining its contribution in terms of industry output, value-added (the industry's contribution to gross domestic product), profitability and employment. It provides information on manufacturers' market shares, tobacco consumption, tobacco imports and exports, tobacco tax revenues and the balance of payments impacts of the industry.

A brief summary is provided of the social costs of tobacco use in Australia, and the potential social benefits of measures to reduce smoking prevalence are considered. It is concluded that:

- the potential social benefits of measures to reduce smoking prevalence are very high,
- the social rate of return to anti-tobacco expenditures would also be high, and
- much higher levels of anti-tobacco public expenditures are justified than are currently undertaken.

Various tobacco industry-funded studies have examined the benefits contributed to the national economy by the industry in terms of, for example, output and employment. An implication of these studies is that a decline in smoking will have undesirable effects in terms of flow-on declines in output and employment. However, these studies fail to take into account the fact that, in reality, money saved by smokers as a result of their reduced smoking will be either spent on other goods and services and/or saved. This alternative scenario will have stimulatory effects on national output and employment through either the reallocation of tobacco expenditures to other areas of spending (the most likely outcome) and/or the impact of increased savings levels and personal debt reduction on interest rates.

The weight of evidence from a range of international and Australian studies is that a fall in smoking prevalence, while significantly affecting the tobacco industry itself, will have very little, if any, negative impact on aggregate levels of national output, income and employment in the Australian economy. Indeed, it is possible that the overall impact could be mildly positive.

The paper considers the issue of whether a reduction in smoking would yield benefits to disadvantaged households. This reduction could be achieved by tobacco tax increases and/or non-tax measures such as public health education campaigns and increased tobacco regulation.

The use of non-tax measures will have unequivocally positive benefits for any disadvantaged household in which smoking is reduced. If tobacco tax increases are used to reduce tobacco consumption, their impact on individual smokers depends on whether the smokers decide to quit or to continue smoking. Smokers who quit as a result of the tax increase will certainly be better off. They will experience health benefits while having extra money available for other expenditures. Continuing smokers, on the other hand, will face higher tax-inclusive tobacco prices, thus increasing their level of disadvantage. Any tax increase is likely to have the greatest impact, in terms of tobacco demand reduction, on families in the lowest socioeconomic groups.

There is substantial evidence that the use of tobacco taxes is one of the most effective, and certainly the most cost-effective, means of reducing smoking prevalence. It has sometimes been suggested that, because tobacco taxes are regressive (that is, bear down hardest on the poor), they should not be employed to reduce tobacco consumption. There is little merit in this argument. It would be perverse to renounce the use of higher tobacco taxation merely in order to protect a minority of disadvantaged households when the benefits to the community as a whole, including many disadvantaged households, would be so great.

The industry frequently argues that it is subject to excessive regulation. The paper reviews in detail the cases for and against tobacco regulation. It concludes that the longer term public benefits of tobacco regulation are high, while the costs to the tobacco industry are relatively low, and possibly even negative. Assertions that the Australian tobacco industry is over-regulated are extremely difficult to sustain.

The question is addressed as to whether smokers and the tobacco industry pay their way: that is, whether they cover, through tobacco taxes, the social costs which they impose on the rest of the community. The study concludes that:

- Smokers themselves can, and frequently do, bear some of the social costs of smoking,
- Tobacco tax revenues more than cover tobacco-attributable public expenditure costs but fall well short of the total social costs borne by the Australian community as a whole,
- A relatively small proportion of the tobacco tax burden is borne by the industry itself.

Tobacco tax revenue paid by the tobacco industry itself does not cover the social costs of tobacco.

The report concludes that economic analysis of the costs and benefits of tobacco to the Australian economy and the Australian community provides strong support for the implementation of public policies designed to produce further reductions in tobacco consumption. The resulting benefits would almost certainly substantially exceed the costs of implementing these policies.

Acknowledgments

Professor Mike Daube, of Curtin University, for his active help and encouragement of this project.

Bill Junor, of Macquarie University, for statistical support, and advice on the paper.

Michelle Scollo and Margaret Winstanley, on behalf of Cancer Council Victoria, for their monumental efforts in producing the volume *Tobacco in Australia: Facts and Issues*, which made our task much easier.

Maurice Swanson, of the National Heart Foundation (WA Division) for his strong support for this project.

and of course:

Denise Sullivan and Narelle Weller, of the Cancer Council Western Australia, for their usual highly efficient and cheerful organisation of this project.

If errors or omissions remain, they are entirely our responsibility.

1. Introduction

Background

In the last few years, public attitudes to the tobacco industry have undergone significant change. Cigarettes have become more expensive, and smoking rates continue to decline. There has been unprecedented recognition of tobacco harm, reflected in major changes in regulation, and Australia has become a signatory to the World Health Organization (WHO) Framework Convention on Tobacco Control.

Only a few years ago the tobacco industry was still publicly denying that tobacco caused harm. Its eventual reluctant acceptance of at least some of the overwhelming cumulative epidemiological and medical evidence has been one factor in shifting its defence towards economic arguments, particularly a focus on the claims regarding the contribution of tobacco to the economy and to tax revenue. This study reviews the costs and benefits of the Australian tobacco industry to the community as a whole and, in so doing, evaluates the various economic arguments put forward in defence of the industry.

As the tobacco industry is legal, and pays taxes, it is possible to undertake a comprehensive review of the impact of the industry on major sectors of the Australian economy, and to draw some conclusions regarding the costs of this sector. Tobacco products are the highest taxed products in Australia, with legislation and regulations supplementing taxes to protect particular groups and to limit the exposure of non-smokers to tobacco smoke.

The industry claims to provide considerable economic benefit to Australia. There are extensive Australian and international studies relating to costs incurred through tobacco use, and this paper seeks to address the economic impact of the industry, which can then be contrasted with the identified costs. A broad economic perspective of the tobacco industry in Australia needs to consider the context in which it operates.

Australian governments have a long history of involvement with the production and distribution of tobacco. From 1965, the Tobacco Industry Stabilisation Plan, together with the Local Leaf Content Scheme, sheltered tobacco growers from market realities. Following the 1994 Industry Commission report *The Tobacco Growing and Manufacturing Industries*, both of these schemes were terminated. The Industry Commission report, in confirming the appropriateness of the termination of the assistance schemes, found that they had been primarily responsible for the development of an inefficient industry structure.

The termination of these subsidies, the very existence of which so relatively recently seems surprising to contemporary policy analysts, enabled the tobacco industry to move to the use of entirely imported tobacco leaf, and to restructure more efficiently. The Industry Commission report recognised the desirability of reducing smoking, and confirmed that taxation, regulation and the public provision of information all have a role in controlling the consumption of tobacco products.

This study, which addresses the economics of the tobacco industry in Australia in 2009, should be read with the recognition that, while Australia now grows no tobacco, the restructuring of the tobacco growing industry has been relatively recent. Questions to which this study provides answers include the issue of the contribution of the Australian tobacco industry, in terms of manufacturing production, employment, and tax revenue. The social costs of smoking are enumerated, using the most recent available data, and the economic impact of reduced smoking prevalence upon both the tobacco industry and smoking households is considered. A review of the regulation of the Australian tobacco industry assesses the appropriateness of the current regulation level, using the framework provided by the National Competition Policy. Benefits and costs of current and potential regulation are identified and addressed. Finally, the question is asked as to whether smokers and the tobacco industry pay their way, including consideration of tobacco tax revenue, the incidence of tobacco taxes, tobacco-attributable public expenditures, and the net budgetary impact of the industry.

Tobacco control policies in Australia now operate within the context of its international obligations under the WHO Framework Convention on Tobacco Control. This lends extra weight to the need to understand the economic impact of the tobacco industry and to be able to evaluate the economic arguments put forward by the industry.

WHO Framework Convention on Tobacco Control

This treaty, which confirms the right of signatories to give priority to the protection of public health, was developed by the WHO as a response to the spread of the tobacco epidemic, and in recognition of various factors including trade liberalization, direct foreign investment, global marketing, transnational tobacco advertising, promotion and sponsorship. The Convention opened for signature in 2003, and entered into force on 27 February 2005, after which the signatory countries, which include Australia, are legally bound by its provisions.

Article 6, which addresses price and tax measures to reduce the demand for tobacco, states:

1. The Parties recognize that price and tax measures are an effective and important means of reducing tobacco consumption by various segments of the population, in particular young persons.
2. Without prejudice to the sovereign right of the Parties to determine and establish their taxation policies, each Party should take account of its national health objectives concerning tobacco control and adopt or maintain, as appropriate, measures which may include:
 - a) implementing tax policies and, where appropriate, price policies on tobacco products so as to contribute to the health objectives aimed at reducing tobacco consumption; and
 - b) prohibiting or restricting, as appropriate, sales to and/or importations by international travellers of tax-free and duty-free tobacco products.

2. The Australian tobacco industry

This section assesses the contribution of tobacco to the Australian economy. The exercise involves some difficulties since the Australian Bureau of Statistics (ABS) publishes less than comprehensive data on the industry. The highly concentrated nature of the industry, with only three tobacco companies, means that commercial confidentiality requirements prevent the publication of data which might be linked back to individual enterprises. In addition, since all three tobacco companies are wholly-owned subsidiaries of overseas parent companies, they are not listed on the Australian Stock Exchange and they release only limited information on their Australian operations. The sources of much of the available information on the Australian industry are consulting reports funded by the industry.

The publication *Tobacco in Australia: Facts and Issues* (Scollo and Winstanley, eds., 2008) has also been an important information source for this section.

The structure of the Australian tobacco industry

The three tobacco companies in Australia are British American Tobacco Australia (BATA), Philip Morris International (Australia) (PMA) and Imperial Tobacco Australia (ITA). Only BATA and PMA manufacture in Australia. ITA subcontracts BATA to produce its Australian range of tobacco products and also imports a range of products. Some smaller companies import speciality tobacco products. The industry also generates value-added and employment at the wholesale and retail levels. Industry value-added is the value added by an industry to the intermediate inputs which it uses. It is, in other words, the difference between the value of the industry's output and the value of materials purchased. It measures the contribution of the industry to gross domestic product.

Commercial tobacco is no longer legally grown in Australia.

The major tobacco companies

The following table presents a brief summary of the activities of the three tobacco companies.

Table 1 Tobacco companies operating in Australia, 2006/07

	BATA \$m	PMA \$m	ITA \$m	Total \$m
Total revenue	1,476.7	623.3	386.5	2,486.5
Net profit after tax	410.7	172.6	2.7	586.0
Number of employees	over 1,200	691	299*	over 2,190
Approx. market share in Australia	46%	34%	18%	98%

Source: Scollo and Winstanley (2008), Table 10.6.

Notes: *denotes figure for 2006.

Approximately two per cent of market share is accounted for by imports.

BATA financial data relate to the company's activities across the Asia-Pacific region as a whole. Australia-specific data are not released by BATA.

Tobacco consumption

Table 2 presents ABS data for household final consumption expenditure (HFCE) on cigarettes and tobacco. HFCE data for tobacco have two components:

- Household consumption expenditures net of indirect taxes (customs duties, excise duties and GST), and
- The indirect tax component.

Given that the objective of the current analysis is to indicate the economic contribution of the industry to national output, the market price data are adjusted in the table by removing the indirect tax component (the tax revenue contribution from tobacco is discussed below).

Table 2 Household final consumption expenditure on cigarettes and tobacco, 2002/03 to 2007/08, at current prices

	2002/03 \$m	2003/04 \$m	2004/05 \$m	2005/06 \$m	2006/07 \$m	2007/08 \$m
HFCE	11,004	10,858	11,143	10,747	10,367	10,424
Excise duties, customs duties and GST	6,590	6,595	6,769	6,896	6,994	7,130
HFCE net of indirect taxes	4,414	4,263	4,374	3,851	3,373	3,294
Indirect taxes as a percentage of HFCE	59.9%	60.7%	60.7%	64.2%	67.5%	68.4%

Sources: HFCE from ABS 5206.0.
tax revenues from Table 8 below.

Indirect taxes represented between 60 per cent and 68 per cent of total HFCE on tobacco. HFCE (net of taxes) on cigarettes and tobacco fell by about 23 per cent in the five year period to 2007/08. Adjustment for changes in the general price level would show that the real (adjusted for inflation) fall was even greater than this percentage.

Manufacturing production

ABS data on manufacturing production are available only until 2004/05, after which data collection ceased. The following table presents data for the period 1996/97 to 2003/04.

Table 3 Manufacturing production of tobacco and cigarettes, 1996/97 to 2003/04

	Tonnes
1996/97	22,193
1997/98	21,257
1998/99	21,045
1999/2000	20,688
2000/01	19,124
2001/02	18,367
2002/03	19,561
2003/04	18,785

Source: ABS 8301.0.

Manufacturing production of tobacco and cigarettes fell by around 15 per cent between 1996/97 and 2003/04. The data in Table 2 indicate that the industry has continued to decline since 2003/04.

Although it is not possible to produce an exact estimate from ABS data, available data suggest that the value-added of the tobacco industry represents about one per cent of the total value-added of Australian manufacturing industry.

Imports, exports and balance of payments impacts

Data on Australia's international trade in tobacco are presented in Table 4 below.

Table 4 Exports and imports of tobacco, 2002/03 and 2007/08

	Exports \$m	Imports \$m	Net imports \$m
2002/03	120	337	217
2007/08	130	190	60

Source: ABS 5368.0, exports Table 12b, imports Table 13b.

Australia's tobacco exports rose slightly between 2002/03 and 2007/08, while tobacco imports declined substantially. Nevertheless, Australia remains a net importer of tobacco products.

Given that all three Australian tobacco companies are wholly foreign-owned, it is reasonable to assume that substantial domestic profits (see Table 1 above for domestic profit levels) are remitted to foreign owners. Thus the overall negative impact of the tobacco industry on the country's balance of payments current account is almost certainly substantially greater than indicated by the excess of imports over exports.

Tobacco wholesaling

The most recent ABS data on the structure of tobacco wholesaling are for the financial year 1998/99. These out-of date estimates are further compromised by an ABS note that the estimates have a high relative standard error and so should be used with caution. Nevertheless the data presented in Table 5 below are the best that are currently available.

Table 5 Tobacco wholesaling data, 1998/99

	Management units Number	Employment Number	Total income \$m
Tobacco product wholesaling	76	2,570	1,243
Total food, drink and tobacco wholesaling	4,645	54,229	30,864

Source: ABS 8638.0

Note: The management unit is defined by the ABS in such a way that in nearly all cases it coincides with the legal entity owning the business (i.e. company, partnership, trust, sole operator, etc.).

Data on wholesale sales of tobacco are presented in Table 6.

Table 6 Wholesale sales of tobacco, 2005/06

	Wholesale sales of tobacco \$m	Cost of tobacco sold \$m	Operating profit margin
Tobacco products	2,592.4	2,002.9	22.7 per cent

Source: ABS 86240 DO 001

Note: Operating profit margin is defined as total operating profit before tax as a percentage of total sales of goods and services.

Tobacco retailing

This section uses ABS data but also relies heavily upon a report prepared for BATA (see PricewaterhouseCoopers, 2005). The report was submitted to and published online by the NSW Parliament Joint Select Committee on Tobacco Smoking in connection with its June 2006 report on tobacco smoking in New South Wales.

The most recent available data on retail sales of tobacco are presented in the following table, with total Australian retail sales presented for comparison purposes.

Table 7 Retail sales of tobacco, 2005/06

	Retail sales of goods \$m	Cost of goods sold \$m	Operating profit margin
Retail sales of tobacco products	6,868.5	5,792.6	15.7 per cent
Total Australian retail sales	240,274.5	178,579.7	25.7 per cent

Source: ABS 86240 DO 001

Note: Operating profit margin is defined as total operating profit before tax as a percentage of total sales of goods and services.

According to PricewaterhouseCoopers (2005), cigarettes and tobacco products were sold in more than 35,000 different outlets in 2004, down from an estimated 40,000 outlets in 1997/98. The report also states that “Retailers of cigarettes and tobacco provide employment for over 0.5 million Australians”. Given that the total number of employees in all retail industry in Australia in 2005/06 was estimated by the ABS to be 1,116,122, the PricewaterhouseCoopers figure appears to relate to the number of employees working in establishments which sell tobacco as one of their sales lines, rather than the number of employees exclusively employed in selling tobacco products.

Employment

Accurate data on the level of employment directly related to the production and distribution of tobacco and tobacco products are difficult to identify. Table 1 indicates that the number of employees working for the three large tobacco companies in 2006/07 was in the order of 2,200. Employment in tobacco product wholesaling in 1998/99 was estimated by the ABS to be 2,570 (with a significant possible margin of error). Given the general decline in tobacco consumption in Australia since then, the current figure is probably below 2000. There seems to be no way of estimating from published information the direct employment in tobacco retailing.

Epidemiological evidence indicates that a considerable amount of employment in the health sector is directly attributable to tobacco smoking. However, estimation of smoking-attributable employment in the health sector involves substantial methodological and data difficulties, and is not attempted here.

Tobacco tax revenues

The following table presents data on revenues from indirect taxes imposed on tobacco.

Table 8 Tobacco tax revenues, 2002/03 to 2007/08

	2002/03 \$m	2003/04 \$m	2004/05 \$m	2005/06 \$m	2006/07 \$m	2007/08 \$m
Excise duties	5,140	5,160	5,237	5,296	5,382	5,631
Customs duties	450	448	519	623	670	551
Total customs and excise duties	5,590	5,608	5,756	5,836	5,922	6,070
GST	1,000	987	1,013	977	942	948
Total indirect taxes on tobacco	6,590	6,595	6,769	6,896	6,994	7,130

Sources: excise duties - Commonwealth Budget Paper No 1, Statement 5: Revenue (various years).

customs duties - AIHW Statistics on drug use in Australia 2006.

customs duties after 2004/05 are estimated.

GST - authors' own calculations.

The above table separately identifies customs and excise duties, on the one hand, and GST on the other. Customs and excise duties are deliberately designed to discriminate against tobacco use, while GST does not discriminate against tobacco, being imposed at the same rate on tobacco as on almost all other goods and services in the Australian economy.

Overall, tobacco generated revenue of approximately \$7 billion in 2007/08. However, it should be understood that this figure does not represent resources created by the tobacco industry. The revenue merely represents a redistribution of resources from smokers and/or tobacco companies to the Australian community as a whole. The issue of who actually bear these taxes, smokers or the tobacco industry, is discussed in Section 8 below.

The joint Cancer Council Australia/ National Heart Foundation of Australia 2009 submission to the Federal Treasury review of the Australian tax system (the "Henry Review") presents evidence that there are 29 high and middle income countries that collect more excise as a proportion of total tobacco product prices than Australia does, including 19 OECD nations (see Table 1 in that submission). The submission also states that Australia is one of the few high and middle income countries that have not increased tobacco excise and customs duties since 1999 (apart from the twice-yearly consumer price indexation).

3. The social costs of tobacco

There is overwhelming epidemiological evidence that prolonged smoking is an important cause of chronic disease and premature mortality. A recent Australian epidemiological study (Begg et al., 2007) identified 31 medical conditions which are causally linked to tobacco (see Collins and Lapsley, 2008a, Table 8 for a full listing). Collins and Lapsley estimate that in the financial year 2004/05 there were 14,902 deaths and 753,618 hospital bed days attributable to tobacco (Collins and Lapsley, 2008a, Table 13). Tobacco is the most important preventable cause of death in Australia.

For almost all tobacco-attributable medical conditions there is a long delay between an individual's onset of smoking and the occurrence of tobacco-attributable disease (Gajalakshmi et al., 2000). Accordingly, there is a long delay between an increase in population smoking rates and a full increase in population death rates from tobacco-attributable diseases. This has the unfortunate implication that there is also a long delay between reductions in smoking prevalence and the achievement of the full health benefits of those falls.

Together with the physical effects of tobacco on health there is a whole range of economic costs. Collins and Lapsley (2008a) have estimated the social costs imposed on the Australian community in 2004/05 by past and present smoking.

They compare the size and structure (according to age and sex) of the actual Australian population in 2004/05 with the size and structure of an alternative hypothetical population which would have existed in 2004/05 had there been no past or present smoking over an extended period of time. From this comparison, they estimate the value of the extra resources which would have been available in 2004/05 to the Australian community for consumption or investment purposes had there been no past or present smoking.

The costs imposed on the Australian community as a result of tobacco come in various forms:

- Increased healthcare costs (hospital, medical, nursing homes, pharmaceuticals and ambulances).
- Reduced workforce production, resulting from the premature deaths of people of workforce ages, from greater workforce absenteeism and from reduced on-the-job productivity.
- Reduced production in the household, that is unpaid household work such as domestic activities, childcare, purchasing of goods and services, and volunteer and community work.
- Higher numbers of tobacco-attributable fires, causing death, injury or property damage.
- Increased use of national resources used in the production, import and distribution of tobacco and tobacco products.

There are also important psychological costs of pain, suffering and premature death borne not only by smokers themselves but also through the suffering and bereavement of relatives and friends of the smokers.

Table 9 summarises the Collins and Lapsley (2008a) estimates of the social costs which tobacco imposed on the Australian community in 2004/05.

Table 9 Total social costs of tobacco use, 2004/05

	\$m
Tangible costs	
Net labour costs	8,009
Net health care costs	318
Fires	63
Resources used in the production etc. of tobacco	3,636
Total tangible costs	12,026
Intangible costs of premature death	19,460
Total costs	31,486

In summary, the total costs of tobacco to the Australian community in 2004/05 were estimated to be in the order of \$31 billion, of which tangible costs represented around \$12 billion. To put these figures into context, the total value-added in the combined industry categories *cigarette, and tobacco products manufacturing and spirits manufacturing* in 2006/07 was in the order of \$1.25 billion (it is not possible to derive from published ABS data the figure for cigarette and tobacco products manufacturing individually).

The tangible costs detailed above can be borne by various community groups - individuals, households, the business community and governments (federal, state and local). It is not widely understood that the government sector as a whole bears a comparatively small proportion of the total tangible social costs of tobacco - eight per cent, compared with 50 per cent borne by individuals and families, and 42 per cent borne by the business sector (Collins and Lapsley, 2008a, Table 37). All intangible costs are necessarily borne by individuals and households.

The question is often asked as to whether smokers pay their way, which is usually interpreted to mean "Does tobacco tax revenue cover the social costs of tobacco?" This issue, which is more complex than it appears at first sight, is addressed in Section 8 below.

4. The macroeconomic impact of reduced smoking prevalence

Section 2 above examines the size and structure of the Australian tobacco industry and its contribution to the Australian economy. An important objective of Australian health policy at all levels of government has been to reduce community smoking rates. This would clearly have a negative impact on the tobacco industry. It also raises questions about the likely macroeconomic effects - that is, the economy-wide effects on such national aggregate measures as gross domestic product, national income, balance of payments and government budgets.

Industry-funded studies

Tobacco industry-funded studies of the macroeconomic effects of reduced smoking have, in the examples we have seen, estimated only the gross impact of such reductions in prevalence (see, for example, ACIL Economics and Policy, 1994, and Chase Econometrics, 1985). They fail to take into account the fact that money saved by smokers as a result of their reduced smoking will be either spent on other goods and services and/or saved. In reality, this alternative scenario will have stimulatory effects on macroeconomic aggregates through either the reallocation of tobacco expenditures to other areas of spending (the most likely outcome) and/or the impact of increased savings levels and personal debt reduction on interest rates. The issue then is a comparison between estimates of the size of the initial contractionary effects of reduced expenditures on smoking and of the secondary expansionary effects of increased expenditures elsewhere in the economy.

Tobacco industry studies of the macroeconomic impact of reduced smoking appear to consign the money saved as a result of reduced smoking to a type of black hole from where it never emerges to be spent or saved. The only such possible economic black hole would be in a situation in which the money not spent on tobacco products was entirely spent on imported goods and services with absolutely no impact on the domestic economy, so that the expansionary effect would be entirely exported to other countries. This outcome is so implausible as to be not worthy of consideration.

Occasionally, tobacco industry-funded studies acknowledge that alternative spending patterns would produce compensating increases in employment. Warner and Chaloupka (1999) report "In the most telling example of this, buried in chapter V of volume 1 of the detailed technical report prepared by analysts at Chase Econometrics (1985) is the acknowledgment that money not spent on tobacco products would be reallocated to other spending and that nationwide (combining tobacco and non-tobacco states), the economic results with and without tobacco 'would be substantially the same'".

Other studies

Several recent international studies have estimated the economic impact of the reduction or elimination of smoking in the country under study, taking into account the consequent reallocation of the resources freed up by the reduction in expenditures on tobacco products. A summary of the results of these studies is provided in Junor, Collins and Lapsley (2004, Table 1). Of the studies summarised in that table, only one predicts a (very minor) decline in national employment. All the other studies predict job gains. This effect is not difficult to explain. Cigarette manufacturing is a highly capital-intensive activity, often with a significant import component. If the reallocated expenditures are directed towards the products of more labour-intensive industries or of industries with lower import content, the change will involve increased employment within the country under study.

The Australian study

The only such Australian study of this type is Junor *et al.* (2004) which examines the macroeconomic and distributional effects of a reduction in smoking prevalence in New South Wales. The present section draws heavily on that paper and assesses the applicability of its State results to the Australian national economy.

Junor *et al.* (2004) model the impact of a one percentage point reduction in NSW smoking prevalence per annum over five years and over ten years, taking into account the impact of a reallocation of tobacco expenditures. These prevalence reductions translated into a reduction of 25 per cent in NSW household consumption expenditure on tobacco products over five years, and a 50 per cent reduction over ten years.

In modeling the impact of the expenditure reallocation, certain issues must be considered:

- What size reduction in tobacco consumption is to be modeled?
- What would be the alternative expenditure patterns resulting from the reduction in tobacco consumption? Possibilities include that households could:
 - spend the freed-up money in the same proportions as those of their non-tobacco expenditures,
 - spend the freed-up money according to the expenditure patterns of non-smoking households,
 - adopt new and different expenditure patterns, or
 - some combination of the above.
- What would be the responses of governments to the budgetary impacts of reduced smoking?

In examining the budgetary impact, it is necessary to know (or to assume) which policies would be used to achieve the reduction in smoking. An increase in tobacco taxes would almost certainly produce an increase in tobacco tax revenue, given the strong evidence that the demand for tobacco is price-inelastic (that is that tobacco demand is relatively, but not completely, insensitive to price changes). On the other hand, the use of non-price measures to reduce tobacco demand would inevitably produce both a fall in tobacco tax revenue and an increase in government expenditures.

A deterioration in government budgets could be met by one, or a combination, of the following:

- Higher non-tobacco taxes,
- Lower non-tobacco-related public expenditures,
- An increase in the budget deficit (or a decrease in the budget surplus).

Since it is not possible to be definitive about the various possibilities discussed above, the research methodology adopted is to simulate various plausible combinations of expenditure reallocation, methods of reducing tobacco consumption and government reactions to the budgetary impacts. Fortunately, the NSW results prove to be almost completely insensitive to the set of assumptions adopted. Thus, the conclusions to be drawn from the Junor *et al.* (2004) results can be viewed as robust.

The conclusions for the scenario of a 25 per cent reduction in smoking prevalence over five years can be summarised as follows:

- The predicted change in the value of NSW State output ranges from minus 0.006 per cent to plus 0.003 per cent. In other words, the impact on the value of NSW output would be close to trivial.
- The impact on total NSW employment is estimated to range from minus 0.015 per cent to minus 0.003 per cent. Once again, the impact would be very small.
- The tobacco industry in NSW is predicted to experience a decline in output of about seven per cent and a loss of employment the equivalent of around 105 full-time positions.
- Of the 34 industry classifications, other than the tobacco industry, in NSW 20 are predicted to experience an increase in both output and employment, and four to experience a reduction in both output and employment. For the other ten industry categories, the outcome (positive or negative) depends on the simulation scenario adopted.

- As Junor *et al.* say, “In practice, any reductions in output or employment would almost certainly be masked (except in the case of the tobacco industry itself) by the effects of economic growth in the Australian economy over the period, which would take up any slack created by the decline in smoking”.

The estimates for the simulated reduction in smoking prevalence of 50 per cent over ten years are essentially twice those for the five year 25 per cent reduction.

As indicated earlier, it is not possible to make a plausible estimate of the impact of tobacco on health sector employment. However, it seems reasonable to assume that an eventual reduction in tobacco-attributable morbidity would not lead to any reduction in employment in the health sector. The Australian health care sector is currently characterized by excess demand, as indicated for example by significant surgical waiting lists, and so a reduction in smoking would be more likely to result in a reduction in resource pressure elsewhere in the healthcare system than in a reduction in healthcare employment.

Can the results for the NSW study be generalized for the Australian economy as a whole? It is, in fact, perfectly possible that the Australia-wide macroeconomic impact of a reduction in smoking prevalence would be slightly more expansionary than for NSW alone. The Australian tobacco products manufacturing industry is located only in NSW and Victoria, with no commercial tobacco legally grown in Australia. Accordingly the NSW results would probably be largely replicated in Victoria. By the same token, the other States would not suffer contractionary effects from the decline in the tobacco industry itself but would experience expansionary effects from the expenditure reallocation.

It would at first sight appear surprising that an assumed 25 per cent reduction in smoking prevalence would lead to only a seven per cent reduction in NSW tobacco industry output. The effect arises because the NSW study assumes that the reduction in smoking prevalence applies only in NSW, while the NSW tobacco industry also exports to other Australian States and overseas. An Australia-wide study which assumed a reduction in national prevalence would probably predict a reduction in tobacco industry output of somewhere between 20 per cent and 25 per cent, and a reduction in employment of around 350 full time equivalent jobs.

The restriction of Junor *et al.* to a NSW study meant that what is probably the most effective, and certainly the most cost-effective, means of reducing smoking prevalence, increased tobacco taxation, was excluded from the analysis. This was because Australian States lack the constitutional power to tax tobacco. In an Australia-wide study it would be reasonable to assume the inclusion of higher tobacco taxes in an anti-tobacco package. As a result of the relative insensitivity of tobacco consumption to changes in the price of tobacco, there would also be an increase in tobacco revenue. Tobacco taxation can provide the free lunch of a simultaneous reduction in smoking and increase in tobacco tax revenue. The use to which the increased revenue would be put would influence aggregate outcomes. If the Federal Government (which is the only jurisdiction having the constitutional power to tax tobacco) maintained its broad budget balance, there is no reason to expect that the overall impact of higher tobacco taxes would be significantly contractionary.

Any macroeconomic changes will inevitably have balance of payments effects. A decline in domestic smoking prevalence would not affect exports of tobacco products, unless it was matched by similar prevalence declines in Australia’s tobacco export markets. On the other hand, imports of tobacco products could be expected to decline. Profitability of the domestic tobacco industry would certainly be expected to decline with a consequent reduction in profit remittances to the overseas parent companies.

The balance of payments current account impacts predicted in Junor *et al.* (2004) depend upon which scenario is considered, but they are minor for all plausible scenarios. However, these outcomes do not take into account the probable reduced level of profit remittances to the overseas tobacco parent companies. The overall impact of a tobacco industry decline on the balance of payments current account is likely to be mildly favourable.

The weight of evidence from a range of international and Australian studies is that a fall in smoking prevalence, while significantly affecting the tobacco industry itself, will have very little, if any, negative impact on aggregate levels of national output, income and employment in the Australian economy. Indeed, it is possible that the overall impact could be mildly positive.

Junor *et al.* (2004) conclude their study as follows:

In summary, tobacco industry assertions about the possible adverse consequences of public policy measures aimed at discouraging smoking are seen to be without foundation and thus irrelevant in the framing of public health policies. It is apparent that there is no impediment relating to the economic impact on industries other than tobacco in pursuing public policies designed to reduce smoking. In fact, there will be positive economic benefits in a number of sectors, not least in the health care sector.

A decline in smoking prevalence will inevitably involve some restructuring within Australian manufacturing and service industries. Indeed, such restructuring is constantly taking place in Australia and is actively encouraged by many public policies. Past Australian public policies designed to inhibit restructuring, for example high tariffs on imported manufactured goods, certainly had a deleterious effect on the efficiency of the Australian economy.

5. The economic benefits of reduced smoking prevalence

The previous section shows that, while a reduction in tobacco consumption will certainly cause a contraction in the tobacco industry itself, it would be unlikely to produce a contraction of the overall Australian economy. It would, however, lead over time to a reduction in the social costs of tobacco, which is the equivalent of a social benefit.

Collins and Lapsley (2008c) undertook an evaluation of the social benefits of reduced smoking prevalence in Western Australia (WA). No similar estimates have yet been produced at the national level. The authors estimated the value of the benefits which would result from a reduction of the WA smoking prevalence rate of 15.5 per cent to a rate of five per cent over periods of ten years or 15 years. A summary of their results is presented in the following table.

Table 10 The present value in 2004/05 of the social benefits of a reduction in Western Australian smoking prevalence to five per cent

Assumption set	Prevalence reduced over 10 years		Prevalence reduced over 15 years	
	Present value	Present value	Present value	Present value
	\$m	per smoker \$	\$m	per smoker \$
Most conservative	1,406.6	8,398	937.7	5,599
Least conservative	13,054.3	77,942	11,515.6	68,755
Most plausible	4,368.6	26,083	3,340.8	19,947

These estimates range from \$1,407m. to \$13,054m. for the reduction in the prevalence rate over ten years, and from \$938m. to \$11,516m. for the reduction over 15 years. The present values per smoker range from \$5,599 to \$77,942. In general, the authors favour the most conservative analytical basis, and so the most conservative estimates.

The authors comment as follows:

These results are more meaningful if they are placed into a policy context. For example, it could be assumed that public expenditures were required to yield a real social rate of return of at least ten per cent per annum and that these public expenditures were successful in producing the reduction in Western Australian smoking prevalence to five per cent. On this basis, and on the most conservative set of assumptions, the achievement of the lower prevalence over 15 years would justify annual real expenditures [in Western Australia] of up to \$110m. for a 20 year period. Reducing the prevalence rate to five per cent over 10 years would justify annual expenditures of up to \$165m.

These figures represent the maximum justified expenditures. It is probable that the lower prevalence rate could be achieved by the application of much lower expenditures than these maxima, particularly if the Federal Government cooperated by raising the rate of excise tax on tobacco. Clearly, however, there would be strong justification for effective annual public anti-tobacco expenditure programs much higher than the actual 2004/05 Western Australian public expenditures of \$7.7m (Collins and Lapsley 2008c, page 20).

Translated to the national level, the Western Australian results would suggest that

- the potential social benefits of reducing smoking prevalence are very high,
- the social rate of return to anti-tobacco expenditures would also be high, and
- much higher levels of anti-tobacco public expenditures are justified than are currently undertaken.

The social costs of tobacco, which are widely felt across the Australian economy and community, are very clearly closely related to smoking prevalence but with very significant time lags. Just as rises in prevalence are only fully reflected in tobacco-attributable morbidity and mortality after very significant periods of time, so reductions in prevalence will only be fully effective over many years.

This fact is reflected in the results of Collins and Lapsley (2008a) which showed that, while Australian daily smoking prevalence fell from 21.8 per cent in 1998 to 17.4 per cent in 2004, real (that is, adjusted for the general rate of inflation) social costs of tobacco rose by 23.5 per cent in broadly the same period. There is, however, no doubt that a decline in smoking prevalence, if maintained, would eventually lead to a similar proportionate decline in social costs. As discussed above, this process would inevitably take time.

6. The impact of reduced smoking on Australian households

The rate of smoking in Australian households is positively related to their level of disadvantage. The greater the level of disadvantage, the higher on average is the smoking rate and so the greater is the harm inflicted by smoking. This assertion is strongly borne out by data released in the 2007 National Drug Strategy Household Survey and summarised in the following table.

Table 11 Selected characteristics by smoking status, persons aged 14 years and older, 2007

Characteristic	Smokers per cent
All persons (aged 14 +)	19.4
Education	
Without post-school qualifications	21.0
With post-school qualifications	18.8
Labour force status	
Currently employed	21.7
Unemployed	38.2
Unable to work	33.7
Socioeconomic status	
First quintile (most disadvantaged)	25.9
Second quintile	21.5
Third quintile	20.5
Fourth quintile	17.8
Fifth quintile (most advantaged)	13.9
Indigenous status	
Aboriginal and/or Torres Strait Islander	34.1
Other Australian	19.0

Source: Australian Institute of Health and Welfare (2008, Table 4.5).

Note: Smokers are defined by the AIHW for the purposes of this table as smoking daily, weekly or less than weekly.

These statistics are reflected in Table 12 which presents sample data on expenditure on tobacco products by those Australian households which contain one or more smokers. Households which undertake no expenditure on tobacco products are excluded from these data.

Table 12 Expenditure on tobacco products by smoking households, 2003/04, classified by household income category

Income quintile (20 per cent)	Average expenditure on tobacco products	Tobacco expenditure as a proportion of average household income
	\$ per week	per cent
Lowest	33.34	12.7
Second	42.20	7.6
Third	42.91	4.6
Fourth	43.56	3.1
Highest	46.37	1.8
All smoking households	42.05	3.7

Source: ABS unpublished data.

The above data are derived directly from ABS Household Expenditure Survey (HES) data. If these sample data are grossed up to produce an estimate of aggregate Australian expenditure on tobacco products in 2003/04, the resulting figure is very significantly lower than the figure for household final consumption expenditure (HFCE) on cigarettes published in the Australian National Accounts and presented in Table 2. This indicates that the HES figures presented in Table 12 significantly underestimate the actual household expenditures on cigarettes and tobacco.

Nevertheless, the expenditure pattern presented in Table 12 is clear in relation to households containing at least one smoker. Low income households spend a greater proportion of their income on tobacco products than do higher income households. Low income households have proportionately the most to gain from quitting.

It is clear, therefore, that effective measures to reduce smoking prevalence are of particularly significant benefit to disadvantaged individuals and households. However, the impact of reduced smoking depends to some extent on the types of public policy measures used to achieve that reduction.

Two broad policy approaches can be applied:

- An increase in tobacco tax, and/or
- Non-tax measures, such as public health education campaigns and an extension of tobacco regulations beyond the present controls, which are detailed in Section 7.

The use of non-tax measures will have unequivocally positive benefits for any disadvantaged household in which smoking is reduced. There will be significant health benefits flowing from the reduced smoking (particularly in the longer term) while, at the same time, the reduced expenditure on tobacco will release money for other forms of expenditure. It is possible that quitting households, like all other households, might face minor non-tobacco tax increases resulting from the need to fund the higher public anti-smoking measures, but these increases would certainly be much smaller than the households' reduction in tobacco expenditures.

If tobacco tax increases are used to reduce tobacco consumption, their impact depends on whether existing smokers decide to quit or to continue smoking.

Smokers who quit as a result of the tax increase will certainly be better off. They will experience health and other benefits while having extra money available for other expenditures.

Continuing smokers, on the other hand, will face higher tax-inclusive tobacco prices, thus increasing their level of disadvantage. However, there is evidence (see, for example, Jha *et al.*, 2000) that the price elasticity of demand for tobacco is higher for families in lower socioeconomic groups – that is, that their demand for tobacco is more responsive to tobacco price increases than is the demand of families in general. Thus, any tax increase is likely to have the greatest impact, in terms of tobacco demand reduction, on families in the lowest socioeconomic groups.

An understanding of the concept of the price elasticity of demand (henceforth called “demand elasticity”) is very important in the framing of appropriate tobacco tax policies. Demand elasticity measures the responsiveness of the quantity demanded of a product to changes in its price. It compares the percentage change in price with the consequent percentage change in quantity demanded. In almost all cases, a rise in price will lead to a fall in quantity demanded and a fall in price will lead to a rise in quantity demanded. If a given percentage rise in price (say ten percent) leads to a greater percentage fall in quantity demanded (say 15 percent), demand is said to be elastic. If a given percentage rise in price (say ten percent) leads to a smaller percentage fall in quantity demand (say five percent), demand is said to be inelastic. Note that inelasticity of demand does not mean that demand is completely unresponsive to price changes, it is only relatively unresponsive. If demand is inelastic, a rise in price will not be completely offset by the consequent fall in demand, so that total revenue (calculated as unit price multiplied by the number of units sold) rises. This is important for tobacco tax policy.

Accordingly, the low level of tobacco demand elasticity will lead, in spite of the reduced tobacco demand, to higher tobacco tax revenue, yielding extra resources which could possibly be used to assist disadvantaged continuing smokers in other ways. If the increases in tobacco tax revenue were partly directed towards non-tax anti-smoking measures, the impact on continuing smokers could be mitigated.

In the final analysis, there is substantial evidence that the use of tobacco taxes is one of the most effective, and certainly the most cost-effective, means of reducing smoking prevalence. It has been argued that, because tobacco taxes are regressive (that is, bear down hardest on the poor), they should not be employed to reduce tobacco consumption. There is little merit in this argument. It would be perverse to renounce the use of higher tobacco taxation merely in order to protect a minority of disadvantaged households when the benefits to the community as a whole, including many disadvantaged households themselves, would be so great.

7. Regulation of the Australian tobacco industry

The tobacco industry is one of the most heavily regulated industries in Australia. Indeed, apart from industries operating specifically in the health sector, for example in the production and distribution of prescribed pharmaceuticals, it may well be the most heavily regulated industry in this country.

The objective of this section is to assess the appropriateness of the current level of tobacco regulation. This assessment will use the framework provided by Australia's National Competition Policy (NCP) which was established in 1995 to promote enhanced competition across the Australian economy. As part of the policy, a framework was established for the assessment of various types of industry regulation in Australia, and that framework is applied here.

The forms of tobacco regulation

The following is a brief summary of current Australian tobacco regulation:

Promotion. Legislation by the Federal Government and all State and Territory Governments effectively prevents all tobacco promotion through traditional media forms.

Place of sale. Some Australian States have introduced legislation to ban cigarette displays in places of sale. Pharmacies are barred from selling tobacco products. Cigarette vending machines are banned when sited in places to which the young have access.

Place of use. Bans of various types have in recent years been enacted in all Australian States. They include bans on smoking in workplaces, restaurants, clubs and hotels, in some public areas and in cars carrying young people.

Age of use. All States have legislated for a minimum age of 18 for purchasers of tobacco.

Health warnings. Increasingly graphic health warnings are now required on all cigarette and tobacco packaging.

Oral tobacco. Retail supply of oral tobacco products such as snuff/snus and chewing tobacco is banned.

The actual product itself, the cigarette, is largely unregulated.

For a full listing of current legislation see ASH Australia (2009).

The rationale for tobacco regulation

The 1995 inter-governmental agreement on National Competition Policy established the framework for assessing the level of competition in Australia and for evaluating current levels of regulation. NCP was based on the recommendations of an independent inquiry into a national competition policy chaired by Professor Fred Hilmer (Independent Committee of Inquiry into National Competition Policy, 1993).

The framework for undertaking NCP reviews is formulated on the proposition that open and unrestricted competition in markets is generally the most efficient method of allocating the community's productive resources between competing ends, and that the benefits of a restriction on competition will generally only exceed the costs of these restrictions in a situation of market failure.

Market failure, the inefficient operation of markets, will arise if one or more of the following are present:

- Public goods,
- Externalities,
- Natural monopoly, and
- Information asymmetry.

Of these four, only externalities and information asymmetries are relevant to the situation of the tobacco industry. The meaning of these terms is discussed below.

Even when the market failure justification for industry regulation exists, this regulation will not necessarily result in a *net* public benefit. The costs of regulation could still exceed the benefits, so that an informed assessment of regulation should consider both its benefits and its costs. The NCP actually adopted a presumption against regulatory intervention, so that the onus lies on the proponents of regulation to justify their case. According to the NCP, public benefits likely to result from regulation designed to address market failure include:

- Greater assurance of product or service quality,
- Improved information to facilitate informed consumer choice,
- Reduced risk of illness, injury or fatality, and
- Reduced incidence of activities which might impose costs on third parties

(Competition Policy Task Force of the Victorian Department of Premier and Cabinet, 1996).

Tobacco externalities

The classic definition of externalities in relation to tobacco is presented in Markandya and Pearce (1989).

Every human activity that can be described as one involving the consumption or production of goods and services generates certain costs....To the extent that these costs are knowingly and freely borne by the consumer or producer himself, they are referred to as private costs but to the extent that they are not so borne but fall on the rest of society, they are referred to as social costs. Hence, the total cost of any activity is the sum of the private and social costs.

The simple distinction, however, is complicated by a number of factors. As far as tobacco consumption is concerned, the most important of these is the extent to which the consumer is aware of the costs he bears. If his actions are determined by a perceived cost that is in fact less than his actual cost, then the difference between the two can be viewed as a social cost. The reason for making this interpretation is that the individual himself has not adjusted his behavior to reflect these higher costs and they are therefore, in some sense, unaccounted for. It is this unaccountable nature of some of the costs that one is trying to capture in the definition of social cost...

There are two important components of the above definition in relation to smoking. Firstly, if the costs of smoking are not fully borne by the smoker but fall on the rest of the community, then externalities (social costs or spillovers) exist. Secondly, the costs of smoking which are borne by smokers themselves are only categorized as private costs if they are "knowingly and freely" borne by these smokers. If potential smokers underestimate the costs they will bear over their lifetime (or if they take no account at all of these costs), they will be much more likely to take up smoking than if they had taken into account the true cost. Thus, costs borne by the smokers themselves can in certain circumstances be classified as external costs.

Consideration of the nature of smoking costs indicates that a substantial proportion of these costs is borne by others rather than the smokers themselves. Environmental tobacco smoke (second hand smoke) clearly imposes costs on others. The method of funding health expenditures in Australia is through a combination of public funding, private health insurance funding and private out-of-pocket expenses. A relatively small

proportion of health care costs is borne by the patients themselves or by their families. Public health system costs are funded by taxes unrelated to the taxpayer's health or smoking status. Private health insurance funds set their premiums on a community rating basis which takes no account of the insurer's health or smoking status. In Australia, tobacco-attributable health costs are largely borne as external (social) costs rather than by the smokers themselves.

Are smokers fully informed about the costs they bear? The question would be better expressed as "Are smokers fully informed about the costs and risks of addiction at the time they take up their smoking habit?" The uptake of smoking almost always occurs in the teenage years, with a small proportion of smokers starting after the age of 20. It is clear that smokers have some (but certainly not complete) knowledge of the health effects of smoking but little knowledge of the magnitude of the risks involved or of the highly addictive nature of nicotine. There is evidence that around 80 per cent of all current smokers have made attempts to quit, with many of them having made multiple failed attempts (Brennan *et al.*, 2007). Many smokers appear to take up smoking under the delusion that it will be easy to give up the habit at some future time.

The epidemiological evidence on the health impacts of smoking is complex and developing continuously. Health technology changes very rapidly, as do health care costs. In these circumstances it is difficult to see how a person contemplating taking up smoking could, with the best will in the world, make any sensible estimate of the costs which might be borne as a result of tobacco-attributable diseases 30 or 40 years into the future.

Tobacco information asymmetries

National Competition Policy includes information asymmetries as a source of market failure. When consumers find it difficult to locate, or to evaluate, accurate information about a product, or where producers provide misleading information, market power is inevitably shifted away from the consumer towards the producer. One effect may be that lower quality products drive higher quality products out of the market. Clear information asymmetry exists in unregulated tobacco markets, with typically a lack of accessible information on product quality and health effects. The less adequate is the relevant information, the greater are likely to be the social costs of tobacco.

A high proportion of the community costs of tobacco borne by the community as a whole (including the smokers) represents external costs. As Section 3 reports, these external costs are estimated to have been in the order of \$31 billion in the financial year 2004/05.

The potential benefits of tobacco regulation

All four types of the potential benefits of regulation to correct market failure which is listed above are relevant to the case of tobacco. They can all be used in mounting a pro-tobacco-regulation approach under the NCP.

The benefits of tobacco regulation manifest themselves in the form of a reduction in the social costs of tobacco abuse - estimated by Collins and Lapsley (2008a) to have been in the order of \$31 billion in the financial year 2004/05. In an earlier work (Collins and Lapsley, 2002) the same authors estimated that around 45 per cent of the total social costs of tobacco abuse would over time be potentially avoidable. In the light of later research and analysis in relation to the avoidable costs of alcohol (Collins and Lapsley, 2008b), this figure may prove to have been an underestimate.

The 45 per cent estimate assumed the adoption of best practice tobacco harm minimization policies and programs over a period of time sufficiently long for them to take full effect. The set of harm minimization policies includes a range of policies, not simply tobacco regulation, so that the potential benefits of regulation would be significantly below 45 per cent of total social costs. Research to indicate what this proportion might be has not yet been undertaken but it would appear to be at least one third of the avoidable cost proportion that is at least 15 per cent of the total social costs of tobacco abuse. This would indicate that, over time, the

potential benefits of current and potential future tobacco regulation would be in the order of at least \$5 billion per annum. These benefits would comprise:

- Reductions in health care costs,
- Productivity increases in the workplace and the home,
- Reductions in the costs of fires,
- The release of productive resources from the tobacco industry for use in other areas of the Australian economy, and
- Reductions in the intangible personal costs of pain, suffering and premature death.

The costs of tobacco regulation

The costs of current and future tobacco regulation to the Australian community, including the tobacco industry itself, fall into three categories:

- The costs to government of administering the regulation,
- The costs to the tobacco industry as a whole (manufacturing, importing, wholesaling and retailing), and to the rest of the economy, of complying with the regulations, and
- The impact of the regulation on the efficiency of the tobacco industry.

All three impacts are difficult to quantify but it is certainly possible to produce some broad conclusions about these costs.

Administrative costs

These include the fixed costs of the drafting, legislating, implementing, publicizing and enforcement of the anti-tobacco regulation. Regulation without effective enforcement is likely to be ineffective, and so enforcement costs should be a significant proportion of total administration costs. The Australian experience of enforcement has been that there has been widespread public recognition and acceptance of some types of non-smoking regulations, for example on public transport and in restaurants. As a result, enforcement of these types of regulations has been largely through general consent, almost completely removing the need for additional monitoring. Nevertheless, the administrative costs of regulation which are borne by Federal and State Governments, while they have not been quantified, are likely to be substantial.

Compliance costs

The tobacco industry bears some costs in complying with tobacco regulations, for example in the need to change cigarette packaging. On the other hand, the industry's costs are reduced as a result of the virtual elimination of its previously very substantial expenditures on advertising, sponsorship and most other methods of promotion.

Australian industry generally also incurs compliance costs, particularly in relation to the implementation of restrictions on smoking in the workplace. On the other hand, these restrictions yield benefits to industry in terms of reduced absenteeism, increased on-the-job productivity and an enlarged available workforce.

The efficiency of the tobacco industry

The potential impact of regulation on the efficiency of the tobacco industry is complex and enters into areas of industry economics analysis which are largely beyond the scope of this paper. However, we present here a brief review of the issues and some general conclusions.

While some might question whether there would be any public interest benefit in improving the efficiency of the tobacco industry, there are good reasons to support the goal of improving efficiency in any industry, including in the tobacco industry.

1. The production and consumption of tobacco products is unlikely to be made illegal in this country. This assertion is made on the practical grounds that such a tobacco prohibition law would, like alcohol prohibition in the United States, be impossible to enforce effectively and would be likely to lead to unintended consequences, including a significant increase in organized crime. In addition few, if any, economists would support on theoretical grounds a goal of zero tobacco consumption, which would represent from the economist's perspective a sub-optimal level of consumption. The optimal level would be one at which the extra cost incurred to reduce consumption marginally would just match the resulting reduction in social costs. In other, words, below a certain level of consumption, the extra cost of achieving a further reduction in consumption would be greater than the benefit resulting from that reduction, and so would not be justified. Given that the industry in some form is legal, there is a strong case for ensuring that it operates as efficiently as possible.
2. If the existence of an efficient tobacco industry leads to lower tobacco prices to the consumer or excess profits for the industry, higher levels of tobacco taxation can be used to correct for these problems and to transfer resources to the public sector. The benefits of improved tobacco industry efficiency then could effectively be transferred to the rest of the community.

Perhaps the most important incentive to industry efficiency is the level of actual or potential competition. If *actual* competition exists, and public pro-competitive policies prevent collusive activities by industry participants to restrict competition, this competition will tend to hold down prices and provide an incentive for improved efficiency. If the number of actual industry participants is low, the level of *potential* competition becomes important. Where entry into the industry is relatively easy (in the economics jargon, where barriers to entry are low), the fear of new competition is likely to have the same effect on efficiency, prices and profits as the existence of actual competition. The existence of excess profits would provide an incentive for new competitors to enter the industry and compete away the excess profits. If potential competition exists in a situation of low barriers to entry, the market is said to be contestable.

In the classic study of barriers to entry, Bain (1956) showed that product differentiation was the major source of barriers to entry both in American industry generally and in the American tobacco industry. Another less important, but still significant, source of entry barriers was the ability of companies to exploit the cost economies yielded by large scale production. There is good reason to believe that the same conclusions apply to Australia.

Product differentiation involves distinguishing in the eyes of the consumer products which are essentially similar in their physical characteristics, using such techniques as advertising, branding, sponsorships and design. The intention is to make products which serve the same purposes, and which are physically similar, appear very different to consumers, with the aim of inducing in purchasers a level of brand loyalty much higher than is justified by the quality of the product itself. This permits the charging of higher prices than would otherwise be the case. Effective product differentiation is very expensive and high expenditures are necessary if new entrants are to be able to break into highly differentiated markets.

The above exactly describes the activities of the Australian tobacco industry prior to the implementation of controls on advertising and other forms of promotion. These controls are likely to have had an interesting effect on tobacco industry barriers to entry. The benefits to firms of barriers to entry do not disappear

immediately the promotional activities cease. Thus, banning tobacco promotional activities, by preventing potential new entrants from effectively differentiating their products, increases the protection of the market positions of existing firms. The market becomes less contestable, in the meaning explained above. It is likely to be many years before the effects of prior product differentiation decline to the extent that they no longer represent significant barriers to entry.

The regulation of tobacco promotional activities is unlikely to improve the efficiency of the industry but may well provide extra protection from competition for existing firms.

Comparing the costs and benefits of tobacco regulation

In summary, the longer term benefits of tobacco regulation are high, while the costs to the tobacco industry are relatively low, and possibly even negative. Systematic analysis suggests that assertions that the Australian tobacco industry is over-regulated are extremely difficult to sustain.

8. Do smokers and the tobacco industry pay their way?

It is often suggested that, although the social costs of tobacco are high, this is not a problem because tobacco tax revenue substantially exceeds public expenditures attributable to tobacco. The implication of this suggestion is that smokers compensate the rest of the community for the social costs which they impose. This belief is supported by the fact that the Federal Government profits substantially from smoking, in the sense that it receives considerably more in tobacco tax revenue than it disburses in tobacco-attributable expenditures.

In comparing tobacco-attributable revenues and public expenditures, the only taxes which should be included are those which specifically discriminate against tobacco or the tobacco industry. Taxes which treat tobacco products in exactly the same way as they treat any other products or services, or treat tobacco firms in exactly the same way as they treat any other firm, are not relevant to this issue. Non-discriminatory taxes can be viewed as having the function of funding goods and services from which the tobacco industry may benefit in the same way as any other industry. The Australian taxes which specifically discriminate against smokers or tobacco manufacturers are excise taxes and customs duties. Non-discriminatory taxes include the GST, company income tax and payroll tax.

An examination of the budgetary impact of tobacco should also take account of general revenue losses, in such areas as income and consumption taxes, as a result of the sickness and premature deaths attributable to tobacco.

The following table, based on Collins and Lapsley (2008a, Table 44), indicates the total impact of tobacco on the budgets of Federal and State Governments in the financial year 2004/05.

Table 13 Total budgetary impact of tobacco abuse, 2004/05

Public sector outlays		Tax receipts	
	\$m		\$m
Health	249	Excise tax	5,237
Fires nei	10	Customs duties	519
		Total tobacco tax revenue	5,756
		Less revenue forgone	
		Income tax	1,025
		Indirect taxes	1,849
		Total revenue forgone	2,874
Total outlays	259	Total net revenue	2,882
Net revenue minus outlays	2,623		

Note: nei signifies not elsewhere included.

Tobacco consumption generated an excess of revenue over public sector outlays of approximately \$2.6 billion in 2004/05. The big beneficiary was the Federal Government. All revenue from discriminatory tobacco taxes accrues to the Federal Government, while governments at both State and Federal levels have tobacco-attributable expenditure responsibilities. State Governments receive GST revenue resulting from consumer expenditures on tobacco, under the provisions of the 1999 Intergovernmental Agreement on the Reform of Commonwealth-State Financial Arrangements, but the GST is a non-discriminatory tax applying a uniform rate of ten per cent to consumption virtually across the board.

This analysis merely shows that tobacco tax revenue exceeded tobacco-attributable public sector outlays in 2004/05. It does not indicate that revenue covered the total social costs, which are borne by individuals, households and the business sector, as well as by government. In fact, total social costs in 2004/05 were estimated to be over \$31 billion (Collins and Lapsley, 2008a) while gross tobacco tax revenue (taking no account of revenue losses) yielded only \$5.8 billion.

Who bears these tobacco taxes? This is an important issue because, as explained above, smokers themselves may well be bearing social costs. On the other hand, it is difficult to conceive of mechanisms by which tobacco manufacturers could bear any social costs of tobacco (except perhaps in incurring some workplace costs as a result of smoking in their workforce).

In discussing this issue it is important to make the distinction between the *legal incidence* of a tax and its *effective incidence*. Legal incidence describes who bears the legal responsibility for paying the tax to the revenue authorities. For example, the legal incidence of tobacco excise rests largely with tobacco products manufacturers. These manufacturers may well pass (in the economic jargon “shift”) the tax forward in terms of higher prices to the final consumer, the smoker. It could also be possible for manufacturers to shift the tax backward to their workforce through lower wages and salaries. Again, it is possible that the tax would remain unshifted and so would reduce manufacturers’ profits. Some combination of these three possibilities is the most likely outcome. The term *effective incidence* describes where the tax finally lies after all the shifting behavior has been analysed. It describes who ultimately bears the tax.

Empirical studies of tobacco demand and supply indicate that there exists a relatively low degree of responsiveness of tobacco demand to changes in price (see, for example, Gallet and List, 2002). On the other hand, the supply of tobacco products by manufacturers appears to be much more responsive to price changes. Tax incidence analysis (see, for example Stiglitz, 1988, chapter 17) indicates that in these circumstances a higher proportion of the tax finally rests with the smoker rather than with the tobacco manufacturer. In other words, a high proportion of the tobacco tax burden is borne by smokers, many of whom are also bearing social costs of tobacco. The tobacco industry, without whose existence tobacco social costs would not exist, ultimately pays a relatively small proportion of tobacco tax revenue.

The relevant question here appears to be whether revenue from the tobacco industry covers the social costs of tobacco. The answer is clearly in the negative.

9. Summary and conclusions

The manufacture, sale and consumption of tobacco are legal in Australia. Nevertheless, strict regulations control how tobacco may be promoted, where and to whom it may be sold and where it may be consumed. For both practical and theoretical reasons it is difficult to argue that tobacco should be made an illicit substance, in the way that many other drugs have been. In practical terms, a policy of tobacco prohibition would almost certainly be unsuccessful, as was alcohol prohibition in the US. In theoretical terms, the optimal level of tobacco consumption (the level at which the extra social benefits resulting from a further reduction in smoking prevalence become less than the extra social costs required to achieve that reduction) is certainly greater than zero.

However, the legal status of tobacco should not protect it from scrutiny to determine whether, from a societal point of view, the current level of tobacco consumption is defensible and appropriate. Such scrutiny should involve an analysis of the social benefits and costs of tobacco. This paper aims to provide the theoretical and statistical basis for such a comparison and for judging the appropriateness of the current level of tobacco regulation. Although the fundamental problems resulting from tobacco consumption are largely health-related, the required analytical approach is essentially economic in nature.

This paper accordingly provides an economic review of the tobacco industry in Australia. It briefly reviews the background to the industry and its transition from local tobacco growing with government support to the present situation of three international companies which are involved in the production and/or marketing of tobacco products from imported leaf.

The value-added of the tobacco industry appears to be about one per cent of the total value added of all Australian manufacturing industry. Data show the gradual but steady decline of tobacco as a component of household final consumption expenditure, and the concomitant reduction in production and retail sales. Australia remains a net importer of tobacco and tobacco products. Presumably, tobacco industry profits are largely remitted to the overseas parent companies. Those taxes which specifically discriminate against tobacco yield approximately \$6 billion in annual revenue.

The three tobacco companies appear to employ a total of about 2,000 people. The extent of the employment in the wholesale and retail trades which is directly attributable to tobacco consumption is difficult to determine. It is however, clearly very much less than a figure of the total number of employees in establishments which sell tobacco products as just one of their sales lines. A considerable amount of employment in the health care sector is generated by the morbidity and mortality causally attributable to tobacco consumption. In reality, budget constraints in this sector mean that labour resources are almost certainly diverted from other areas of health care, rather than smoking causing an overall increase in health sector employment.

In summary, the Australian tobacco industry is a very minor, and declining, contributor to manufacturing output and to employment. Its balance of payments effects are largely negative. The economic contribution of the tobacco industry, with a value-added in the order of \$1 billion per annum, is shown to be very substantially less than the estimated social costs of tobacco (approximately \$31 billion in the financial year 2004/05).

The tobacco industry explicitly or implicitly suggests that a reduction in tobacco consumption will have negative macroeconomic effects, particularly on national output and employment. However, when account is taken of the fact that the money saved as a result of lower tobacco expenditures will be spent on goods and services elsewhere in the economy, a different conclusion is reached. In this case, a reduction in tobacco consumption, while significantly affecting the tobacco industry itself, will have very little, if any, negative impact on aggregate levels of national output, income and employment in the Australian economy. The overall impact could even be mildly positive.

In the same way that the adjustment and assistance programs for Australian tobacco growers were phased out, and the growers themselves diversified to other products, it can be safely assumed that economic and structural adjustments will occur as the demand for tobacco production, and consequently retailing, gradually declines.

While the macroeconomic costs of reduced smoking prevalence are shown to be very low, and possibly even negative, the social benefits of measures to reduce prevalence are recognised to be high. There is considerable evidence that anti-tobacco public expenditures will potentially yield high social rates of return.

Non-tax measures to reduce smoking prevalence will certainly have a particularly favourable impact upon households in lower socioeconomic groups. Increases in tobacco tax rates will also benefit quitting smokers but continuing smokers will find that their real incomes decline. When tobacco tax increases are implemented, there may be a case for assisting low income continuing smokers, for example by the provision of highly subsidized assistance to quit smoking. The case for renouncing the use of higher tobacco taxes simply in order to protect a minority of disadvantaged households is weak, when the benefits to the community as a whole, including many disadvantaged households, are so great.

The tobacco industry is certainly one of the most heavily regulated Australian industries. The review presented above indicates that the industry is not subject to excessive regulation. This report addresses the benefits and costs of tobacco regulation, and concludes that the longer term benefits of tobacco regulation are high, while the costs to the industry are very low.

Tobacco industry regulation in Australia has been considerably strengthened in recent years, and those initiatives have been demonstrated to be effective in both demand and access reduction. From economic and population health perspectives, such regulation can be considered to be appropriate in the same way as traffic regulations and controls on pharmaceuticals are promulgated and enforced. Without enforceable and enforced regulations for public safety, road injuries and deaths would undoubtedly be considerably higher, and without adequate regulation the many benefits of pharmaceuticals would also result in great harm. While recognising the legality of tobacco consumption, it is a product which harms the health of all tobacco consumers as well as many others. If used in the way it is intended by the tobacco industry to be used, it will cause premature death in at least half its users. The economic environment needs to be extended to recognise public health and safety perspectives. For example, the cost of implementing and enforcing regulatory compliance should include consideration of the costs of non-compliance, similar to the recognition of societal costs which are imposed by drunken drivers.

It could be argued that, if smokers and the tobacco industry together fully compensated the rest of the community for the social costs of tobacco, no further attempts to reduce smoking prevalence would be justified. However, it is demonstrated that smokers, while bearing a high proportion of the tobacco tax burden, will in many cases also be bearing social costs themselves. While tobacco tax revenue substantially exceeds the public sector costs of tobacco use, it falls a long way short of the total social costs of tobacco. A relatively small proportion of tobacco tax revenue is borne by the tobacco industry itself, the major beneficiary of tobacco consumption. This fact provides further support for the case for tobacco regulation.

In summary, economic analysis of the costs and benefits of tobacco to the Australian economy and the Australian community provides strong support for the implementation of public policies designed to produce further reductions in tobacco consumption. The resulting benefits would almost certainly substantially exceed the costs of implementing these policies.

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