Will Plain Packaging Reduce Cigarette Consumption?

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Abstract: The Australian Parliament has passed legislation compelling tobacco products to be sold in “plain packaging”. This paper reviews this legislation and its likely effects on prices, market structure in the tobacco industry and on smoking behaviour. Industry changes following two previous sets of restrictions on advertising are examined for relevant empirical evidence. Without offsetting tax increases the legislation will plausibly reduce prices but significant entry into the industry and greater consumption of counterfeit/illegal cigarettes are unlikely. Provided that tax increases offset any induced fall in prices that might result, plain packaging will reduce cigarette consumption.

1. Introduction. From the mid-1970s Australian governments have placed successively more intense restrictions on cigarette advertising. The most recent of these requires replacing standard packaging, with its trademarks and graphic anti-smoking messages, with a drab dark brown plain package with the name of the product, anti-smoking messages and little else. The term given for this is “plain packaging” (hereafter PP) although, given that packaging is dominated by graphic health messages, a better term is “dissuasive packaging” (Heath Canada, 1995). The case for PP is that it discourages (particularly young) smokers from initiating smoking by making it less attractive (Germain et al. 2009; Quit Australia, 2011). Smoking is recognised by smokers and non-smokers alike as a highly risky activity. Hammond and Parkinson (2009) provide experimental evidence, as well as documentation from cigarette producers, confirming that package designs drove inferences about the magnitude of such risks and hence market demands – light coloured packets and packs with a picture of a filter were perceived as having lower health risks.

The PP policy has, however, been criticised as potentially reducing cigarette prices thereby

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1 Thanks to Vivienne Pham for helpful comments.
encouraging smoking (BATA, 2011; Padilla, 2010). By making brands less attractive and more similar the different brands will appear less differentiated and hence closer substitutes. This reduces the market power of firms resulting in lower prices. In addition, it is claimed that, by potentially reducing brand loyalty, there may be increased sales of counterfeit and illegal, unbranded cigarettes and tobaccos\(^2\). Even if PP is dissuasive will the net effect of introducing it on demand be positive or negative accounting for these latter effects?

The question as to whether PP will reduce smoking or will have its effects offset by price cutting and increased illegal cigarette usage cannot be found by analysing the effects of this policy in other countries, as PP has not been tried elsewhere. However insight can be obtained into the likely effects of PP by considering the effects of earlier restrictions on, in turn, electronic and subsequently print media advertising of cigarettes. These policies should have had analogous effects in reducing inter-brand substitutability as would PP. There are two key questions. Were these earlier restrictions followed by price-cutting and was there a surge in competitive entry following such policies? This should suggest what will happen with PP.

We argue that there was evidence of price-cutting, through quantity discounting, following these earlier restrictions however there is no evidence that competitive entry became more attractive. Indeed, there has not been substantial entry since the early 1970s. Indeed not long after print advertising was prohibited incumbent cigarette companies largely ceased introducing new brands. This suggests the market was less profitable for incumbents considering introducing new brands and less profitable for new entrants.

We conclude that PP will, at worst, have relatively small effects in reducing cigarette demands. PP will not increase demands particularly if auxiliary policies are employed along with it, which would increase the excise on cigarettes to offset any induced price fall. PP is likely to make cigarettes somewhat less attractive, particularly to young smokers and, if price declines do occur, an increased cigarette excise can offset this. Similarly problems of

\(^2\) Additional health problems can be caused by smoking imperfectly cured illegal tobaccos such as ‘chop chop’. According to Bittoun (2004, p.13), ‘The smoking and handling of “chop-chop” tobacco has the potential to induce illness and possible fatality in those who use it. These illnesses may range from allergic reactions, chronic bronchitis, asthma, aspergillosis, alveolitis, pneumonitis, lung cancer to Legionnaire’s disease’.
counterfeit cigarettes and illegal unbranded cigarettes seem overstated. Policies can be developed to address such issues should they arise. For example if there was evidence of increased sales of counterfeit cigarettes, this could be dealt with by making the dissuasive packaging intricate enough to make effective counterfeiting very expensive.

This paper proceeds as follows. In Section 2 background on the cigarette market is provided with a summary of the PP legislation. Section 3 surveys economic models of competition by brand and applies these to the PP issue by analysing the Australian cigarette market’s recent history. Section 4 summarises conclusions and makes some final remarks.

2. Background on the Australian Cigarette Market. This section analyses regulatory changes in the Australian cigarette market between 1970 and 2010 and the recent PP legislation.

2.1 Contemporary Cigarette Market and its Evolution. The main developments in the Australian cigarette market are described in Table 1. They are discussed further in Scollo and Winstanley (2008). After the Second World War the incidence of cigarette smoking in Australia declined as the absolute size of the cigarette market increased through to at least 1976, because of population growth and increased consumption per capita by those who continued smoking. Thereafter not only did absolute numbers of smokers decline (from 3.3m persons in 1976 to 3.1m persons in 2007 during a period where the total adult population increased 74 per cent) but the total market contracted. The smaller base of smokers each smoked far fewer cigarettes per day particularly during the latter part of this period. Scollo and Winstanley (2008, Table 2.7) estimate that annual cigarette consumption per smoker fell from 2016 in 1998 to 1398 in 2006. This suggests that, health warnings fostered by the program of public anti-smoking messages, Quit campaigns and substantially increased excises on cigarettes decreased both the incidence and the per capita smoking intensities. Table 1 shows that the cigarette market contracted in the early 1990s, with a dramatic decline from 1990 to 2001 during which it shrank in absolute terms by one third.

The cigarette market is now concentrated among those with low educational attainment, low occupational prestige and among indigenous and those new Australians from particular ethnic backgrounds (Scollo and Winstanley, 2008, chapters 8 & 9). Slower rates of decline in the size of the market since 2001 suggest that this diminished pool of smokers has become
resistant to pre-existing anti-smoking policy messages so new strategies for reducing smoking have been sought. Partly this has taken the form of focused attempts to encourage quits – such as campaigns directed at indigenous groups – but the focus has also been on eliminating the last area that cigarettes can be promoted, namely via their packaging.

Between 1975 and 2010 nearly all cigarettes sold in Australia have been manufactured or, to a much lesser extent, imported by three large firms. Other imported cigarettes had a negligible market share. Between 1975 and 1999 the firms were W.D & H.O Wills, Rothmans and Phillip Morris. All are subsidiaries of international cigarette companies. In 1999, following the merger of the international parents of Wills and Rothmans, the brands manufactured by these companies were distributed between two new companies. The first, British-American Tobacco Australia (BATA) was the successor company to Wills and Rothmans. The second, Imperial Tobacco Australia (ITA) is the local subsidiary of another international cigarette company which distributes a set of brands, imported or manufactured at a BATA factory, divested, by agreement with the ACCC, from Wills and Rothmans. The market shares of these firms are reported in Table 1.

2.2 Regulatory Changes: 1970 to 2010. The main past regulatory changes have been restrictions on advertising and increases in tobacco excises. The main restrictions on advertising have occurred through Commonwealth government legislation:

- Which between 1973 and 1976 phased out advertising of cigarettes on radio and television.
- From late 1990 banned advertising of cigarettes in the print media. Furthermore, between 1992 and 1995 most tobacco sponsorship was banned as was billboard and illuminated sign advertising.

After the late 1990s state governments progressively restricted advertising at point of cigarette sale. From 2010-2011, cigarettes could no longer be displayed at all at the point of sale in NSW and Victoria other than in specialist tobacconists.

Very little advertising remains. Cigarettes are hidden from customers at point of sale and compulsory health warnings are posted. There is just negligible promotion of cigarette sales
by discounters on the Web and via restricted event promotions. The only major way firms can now draw attention to the specific products they sell is by branding their products and this provides the logic behind the PP legislation. It is also worth noting that from 2005 cigarette companies were not longer permitted, as a result of undertakings given to the ACCC, to use “mild”, “light” and similar terms in brand names or on packaging, which further restricted the nature of packaging that could be used on cigarettes.

Other regulatory changes have included substantially increased tobacco taxes. As summarised in Table 1, taxes on cigarettes were increased substantially from 1970 and 2010. In 1970, the real excise was about $53 per kilo and by 1995 it was $68. Over the same period ad valorem taxes imposed by the states increased from 0 to 100 per cent. The sharpest increase in taxes occurred in the early 1990s when both Commonwealth excise and state taxes increased substantially. Once state taxes were ruled unconstitutional they were incorporated into the Commonwealth excise. Between 1999-2001 and again in 2010 there were further substantial tax increases. From 1999 and 2001 the excise was changed from a combined per kilo and ad valorem tax to a per-stick tax. This substantially increased the tax payable on cigarettes in large packets that had become increasingly popular between 1980 and 2000. In addition, when the 10 per cent goods and services tax (GST) was introduced in 2001, this was added to existing taxes. On 29 April 2010, the government increased the excise on cigarettes from $0.2622 to $0.32775 per stick.

Finally note that both State and Commonwealth Governments have implemented a range of other policies aimed at reducing smoking. From the 1970s there were advertising and education campaigns aimed at discouraging smoking, particularly by youth, and to encourage existing smokers to quit. From 2006, cigarette packages were required to prominently display large graphic health warnings. In addition, at the state level, increasing restrictions have been placed on where smoking could occur. Smoking is now prohibited in workplaces, most entertainment venues, many public places and even in cars when non-smokers are also commuting.

2.3 Plain Packaging. The most recent substantial restriction on advertising is a world first. The Tobacco Plain Packaging Bill 2011 was passed on November 21, 2011 and will take

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3 The cigarettes in large packets weighed less than cigarettes in smaller packets.
effect on December 1, 2012.\textsuperscript{4} This \textit{Bill}\textsuperscript{5}:

- Makes it an offence to sell tobacco products not in PP. It is not an offence to buy or possess tobacco products not in PP.
- Requires packaging is to be a featureless, standardised drab dark brown colour with trade names in a standard font (specified in the accompanying regulation as \textit{Lucinda Sans}. Health warnings remain on the pack.
- Requires cigarette sticks to also be standardised, without trademarks or any other marks unless permitted by the regulations.
- Imposes penalties for non-compliance that are the same as those for failing to feature health warnings. Maximum fines are $220,000 for individuals and $1.1 million for corporations.
- Provides exemptions for tobacco products produced for export.

Complementary policies include the large increase in the tobacco excise introduced in April 2010, ongoing general and targeted negative advertising campaigns and the more extensive inclusion of anti-smoking treatments such as nicotine replacement therapies as part of the Pharmaceutical Benefits Scheme (Department of Health and Ageing, 2011b).

The \textit{Explanatory Memorandum for the Tobacco Plain Packaging Bill} (Department of Ageing and Health (2011b)) sets out the policy context for PP. It argues that packaging is designed to make brands more appealing, particularly for the young, whereas PP is less attractive. In addition, existing packaging is seen as reducing the effectiveness of the anti-smoking messages that are required to be on the packaging by distracting from the messages or even, effectively, suggesting that certain types of cigarettes may be safer. To support these claims studies from the public health literature are cited, see particularly the effects of PP in discouraging youth smoking by Germain et al. (2010). More references are provided in Quit Victoria (2011).

There have been two main lines of criticism of PP legislation.\textsuperscript{6} The first approach is to

\textsuperscript{4} To ensure cigarette trademarks can be used (except for packaging) and are protected by their owners the Trade Marks Amendment (Tobacco Plain Packaging) Bill was simultaneously passed.
\textsuperscript{5} See Department of Health and Ageing (2011a, 2011b)
criticise the empirical evidence on the effects of packaging on cigarette consumption. For example, Padilla and Watson (2010), in their report for PMI, critique this literature. Rather than getting into a detailed analysis of other research, we note that it is highly unlikely that packaging has no effect on consumer choices about which brand to smoke or whether smoking behaviour should be initiated or ended. Otherwise it would not be profitable to devote extensive resources to designing and redesigning packaging. The size of the effects of packaging on consumer demand is certainly an empirical question but they are unlikely to be zero.

The second main line of criticism is that the PP legislation may be counterproductive because it may result in lower prices increasing cigarette consumption. For example, BATA’s submission (BATA, 2011; pps. 18-21) to the House of Representatives Standing Committee on Health and Ageing Advisory Report on the Bill, claims that PP will:

- Lead to lower prices that may increase consumption because of increased competition between existing brands and from counterfeit products and
- Result in increased trade of counterfeit cigarettes associated with organized crime.

In the next section we discuss the economic foundations for each of these claims and in the fourth section we present some empirical evidence on these claims.

3. Effects of Plain Packaging on Competition and Market Structure.

BATA’s arguments are based on the standard view of advertising in the industrial organization literature, namely that, advertising promotes product differentiation and reduced own and cross-price demand elasticities. This, in turn, permits firms to charge higher prices in equilibrium. Removing advertising makes cigarettes seem less differentiated increasing the price sensitivity of demand for each brand to own-price and to the prices of other brands.  

Competition then drives prices down, resulting in a new equilibrium with lower prices and lower firm profits. Ceteris paribus, lower prices result in greater consumption. This will be

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6 A third line of criticism is that the PP legislation is unconstitutional but the debates in constitutional law are beyond the scope of this paper.

7 Padilla (2010) discusses the role of advertising as signalling and describes how this can preserve margins. However, this is associated with conspicuous consumption. It is not necessary for cigarettes to be a conspicuous consumption item for brands to have a signalling role. Advertising is used to signal the quality of a product where there is asymmetric information about quality. Advertised products will then tend to be high quality and those that are not, low quality. It is not required, for this model, that others observe consumption for these effects to operate.
offset to a certain extent by the decline in demand due to the reduced attractiveness of smoking when the distinctive packaging is removed. It thus becomes an empirical question as to whether the net effect of PP will substantially increase cigarette consumption or not. 

Appendix 1 argues that substantial increases in demand are unlikely even without offsetting excise tax increases.

As well as arguing PP will reduce prices of existing brands, it is argued in BATA’s submission that PP will have substantial effects on market structure, resulting in a much greater share for illegal cigarettes. If removing packaging differences takes away the effects of previous advertising and features that differentiated different brands, then brands, legal and illegal, will be perceived as more homogenous. Hence, equilibrium prices would tend towards marginal cost and market shares would depend only on different production efficiencies with lower cost producers having greater market shares. The market share for illegal cigarettes in the new equilibrium would be much larger than the present one. Though it is not argued explicitly in the BATA submission, this is captured in the modelling of Padilla (2010) of the consequences of PP as entry of low cost producers.

Although both sets of claims seem plausible for both of them to occur simultaneously requires fairly strong conditions to hold. First, note that in introductory microeconomics, market competitiveness is seen as inversely related to concentration. A market with a large number of small firms is more competitive than one with only two firms. A second feature of this standard view is as markets expand and become more profitable (in aggregate) entry occurs and concentration declines. With some exceptions, both of these features are built into mainstream models of industrial organization.

Sutton (1991) focuses on a reverse causation between competition, entry and concentration. Specifically, there are institutional factors that influence the extent of competition in a market. If these change, ceteris paribus, the aggregate profitability of the market changes and firms enter or exit until a new equilibrium market structure established. This argument is not just a theoretical possibility. As well as the evidence provided in Sutton (1991), Symeondis (2002) documents how in the United Kingdom, after tougher competition policy was introduced in the late 1950s, there were significant increases in concentration in industries that had previously been collusive, consistent with a decline in profitability.
This theory can also be applied to the range of products available for sale. While the theory does not specify the types of products that will exit if a market becomes less profitable, it does predict that increased competition will result in fewer products being offered for sale.

According to standard industrial organization arguments, reducing differentiation is an institutional change that increases competition. This suggests that, if PP is introduced, and results in greater competition, that it is unlikely that additional competitive entry will occur as a consequence. Equivalently, if it is profitable for illegal cigarette manufacturers to enter when the market is more competitive, why was it not profitable for the illegal cigarette manufacturers to enter when the market was less competitive and more profitable?  

Large increases in the market share of illegal cigarettes after PP if two very specific set of conditions on the behaviour of cross elasticities hold:

- Before PP, even though the market was more profitable, demand was such that larger scale entry by a new producer (legal or illegal) was not profitable, for example, because of low cross price elasticities between incumbent and entrant brands.
- After PP, even though the market was less profitable, cross price elasticities increased so low price entrant brands could obtain a larger market share with lower margins.

These conditions do not seem likely – though they are theoretically possible.

The plausible effects of introducing PP can be summarised as follows: There are likely to be lower prices. If lower barriers to entry are more important than greater competition, then lower concentration should result but if greater competition is more important then the exit of products should increase concentration. There will be a tendency to more uniform market shares unless brands have different marginal costs.

3.1 Empirical evidence. As PP has not been tried there can be no direct empirical evidence on its effects. However, as mentioned, in 1976 and 1990 in Australia, substantial restrictions on advertising were introduced. We examine whether these policies were followed by

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8 It is possible within the Sutton framework for concentration to fall after reducing advertising. However, the sunk costs of advertising and the savings in marginal costs from eliminating packaging would have to be considerable. This is unlikely to be the case for packaging.
increased competition leading to price cuts and competitive entry. Indirect evidence of changes in competition such as entry, exit and changes in concentration are also analysed following Sutton (1991). Finally the behaviour of market shares are also examined. These exercises are carried out using data on prices, market shares and brands in Pham and Prentice (2010) supplemented with more recent data. See Appendix 2.

3.2 Did Restricting Advertising Increase Competition and Reduce Prices? Developments after each of the two sets of restrictions on advertising were imposed are now shown to be consistent with increased competition. Because these restrictions were accompanied by tax increases we cannot show that net of tax prices fell after 1990 however, in each case, the restrictions were followed by firms introducing greater pack sizes which had relatively lower prices than for products offered before restrictions and before the tax increases were imposed.

Table 2 reports the median real per stick price by pack-size by year. The unit of observation is pack size by brand. For example, Dunhill 20s and Dunhill 25s are separate observations. Table 3 reports estimated market share by pack size.

Consider changes in real prices following the television and radio advertising bans in 1976 by comparing average prices and market shares for packet sizes of 20 and 25 in 1975 and in 1980. This comparison is complicated by the simultaneous real cut of about 10 per cent in the real excise and the imposition of a 10 per cent license fee. The main market change was that, whereas in 1975 nearly all cigarettes were sold in packs of 20, in 1980 55 per cent were sold in packs of 25 with a real per stick price 2 cents lower than the 1975 price. The average real price of cigarettes sold in packs of 20 remained unchanged. This change is consistent with advertising restrictions being followed by increased competition via quantity discounting. This interpretation is supported by the discussion in two internal marketing documents for two major companies available in the Legacy Tobacco Documents Library (W.D and H.O Wills, undated though plausibly the early 1980s) and Phillip Morris (undated but plausibly the late 1980s). Both make it clear that larger pack sizes were discounted. Specifically, 25 cigarettes were introduced for the same price as 20, and then 30 for the same price as 25 and so on. These documents offer different interpretations. W.D and H.O Wills interpret these changes as a continuation of competitive responses that date back in the 1960s. Phillip Morris, written latter, assigned roles to increased taxation, the anti-smoking lobby and
advertising restrictions which reduced the value of branding as well as general competition.\textsuperscript{9}

The same analysis can be carried out for the 1990 advertising bans by comparing prices and market shares in 1990 and 1995. The impact of these restrictions is again obscured by a 44 per cent increase in the real excise over this period as well as a general increase in state tax rates from around 35 per cent, in all states except Queensland, to 100 per cent. Prices across all pack sizes increased however new brands with pack sizes of 40 and 50 were introduced shortly after the restrictions on advertising and these obtained a 37 per cent market share by 1995. This could have been a response to the tax increases as cigarettes in large packs tended to be lighter, have a lower wholesale per-stick price, and therefore attracted less tax. However, larger packs were introduced following the advertising restrictions in 1976 and, following the large tax increases of 1999-2001, there was no further expansion in pack size. To sum up, behaviour following the 1990 restrictions is consistent with increased competition but not by as much as followed the 1976 restrictions. This is unsurprising if advertising using electronic media is judged to be more effective than that in the print media.

3.3 Did Restricting Advertising Encourage Competitive Entry? The evidence suggests that restricting advertising did not encourage competitive entry. In fact, the behaviour of the major firms is consistent with a general decline in the profitability of the cigarette market for incumbents and potential entrants.

Entry did occur during the 1950s and 1960s while the Australian cigarette consumption was expanding. The predecessor of Wills, British Australian Tobacco dominated the market up to the 1950s when Rothmans and Phillip Morris entered. Two other sizeable firms, Godfrey Phillips and Gallahers, operated at different times during the 1950s and 1960s before exiting and/or merging with other local firms. (Walker, 1984). Walker’s account of the 1950s and 1960s suggests there were considerable changes in market shares, heavy use of advertising as well as price competition.

However, although cigarette consumption continued to expand up until 1990, there was no further firm entry after the early 1970s. The last entrant, RJ Reynolds, operated on a small scale, without its own manufacturing plant, by importing and getting other manufacturers to

\textsuperscript{9} Both documents refer to how discounting must avoid associations of low prices with low quality. Wills (undated) refers to using established brands or brands supported with extensive advertising.
produce for them from the early 1970s to the early 1990s after which they effectively exited with Rothmans taking over the distribution of their few active brands.

Furthermore, over the whole sample period imports have a negligible share of the market. While there has been a shift in the nature of imports from high price European and American cigarettes to low price Asian cigarettes, their market share remained negligible.

This evidence is consistent with expected profit from entry declining after the mid-1970s. Profitability may have declined due to increased competition following advertising restrictions though increased taxes and then, after 1990, because the market itself declined. The evidence is inconsistent with the claim that restricting advertising lowered barriers to entry for low cost legal competitors. Competition from illegal entrants is discussed below.

3.4 Changes in the rate of brand entry. To gain further information about whether PP will affect the market structure and encourage competitive entry, changes in the rate of entry of brands following earlier restrictions on advertising are analysed.

Table 4 and Table 5 report numbers of brands and their concentration. In compiling this data Winfield and Marlboro are, for example, treated as distinct brands whereas different pack sizes of the same brands (such as Marlboro 20s and Marlboro 25s) or different varieties of the same brand (Mild, Extra Mild, Menthol) are not considered distinct. The data suggests a substantial change in brand level entry occurred after the restrictions on print advertising were introduced in 1990.

From Table 4 the three major firms are observed to have numerous brands over the sample period. The first and third rows of Table 5 report four- and eight-brand concentration ratios. These are typically high suggesting that the large firms feature a small number of brands with large market shares (here more than 1 per cent) and many brands with small shares.

The numbers of entering and exiting brands between 1975 and 2010 are reported in the remainder of Table 4. The next three rows on Entrants report numbers of brands sold in that year that were not sold in the previous year by domestic producers, by importers and in total. For example, in 1975 there were 20 domestic brands not sold in 1970. The last three rows report Exits, the number of brands sold in the preceding year not sold in the year of interest.
For example in 1980 there were 11 domestic brands sold in 1975 that were no longer sold in 1980. The extent of entry and exit before 1990 is understated as firms not infrequently introduced brands that entered and exited between the reference years. This rarely occurred for domestic brands after 1990.

Consider the effect of restrictions on electronic advertising on entry and exit. Though there is evidence of lower prices on larger packet size brands, there is no decline in the number of domestic brands that would result from a dramatic fall in profits. However, note that the number of entrants drops by half around 1975 even though the market was growing then. Also note that, during this period, some new brands were discounted, large pack brands. This is reflected in the substantial changes in the Top 8 brands following 1975 at the bottom of Table 5. As noted earlier, Wills (undated) saw the need to quantity discount with either existing brands or brands heavily supported with advertising to avoid the discounted cigarettes seeming low quality as well as cheap. This suggests that even though electronic advertising was restricted, print advertising was sufficient to successfully launch new brands.

Extending advertising bans to print was associated with much larger changes in the number of brands. From 1975 to 1990 the number of entrants and exits of domestic brands, every five years, is roughly similar – around 10 – even though the market size increased and then remained around the same size. This sort of churn is common in markets. Sutton (1997) describes this phenomenon for firms as ‘turbulence’.

After 1990 the number of exits for each period continues at about the same rate up to 2010. However, the number of entrants halves between 1990 and 1995 and then virtually ceases. This results in a substantial decline in the number of domestic brands. There were new product lines but these tended to be small variations on existing products or changes in pack sizes for existing brands. This suggests that the restrictions on advertising, and possibly other restrictions on distribution, reduced the expected profitability of launching new brands and, as the market shrunk, small market share brands were withdrawn. Note that after 2001 there are no changes in the Top 8. This again suggests that, following the more extensive restrictions on advertising, competition via new brands became more difficult. Supporting this conclusion is the fact that, unlike in earlier periods, none of the new brands introduced

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10 The difference between total brands from year to year does not always equal the difference in entrants and exits due to brands switching between being imported and being distributed by domestic firms.
after 1995 achieved market shares in the Top 8.

It is important to note that the end of entry was not solely due to the market ceasing to grow. During the 1980s, while the market size remained roughly constant, entry (and exit) at the brand level occurred at a fairly rapid rate. However, when the market stabilised between 2001 and 2010 brand churn did not return suggesting the expected profitability of introducing new brands fell after print advertising was banned on top of the existing bans on advertising using electronic media. This provides further evidence that restrictions on advertising did not facilitate low cost entry despite greater competition. The incumbent firms have not been able to successfully introduce a low-cost brand since the 1990s and there has been no successful large-scale entry by importers.

3.5 Greater Concentration and Uniformity of Market Shares. Finally we examine if concentration increased following the two phases of advertising restrictions and if market shares became more uniform. As argued, the former is consistent with competition increasing, reducing profits, resulting in less brands being able to be sustained in the market. The latter is consistent with legal brands being perceived as being more homogenous.

A substantial increase in concentration following the restriction on advertising in 1975 can be observed although there is also a further increase between 1980 and 1985. This tended to be associated with new (or relaunched) brands with larger pack sizes (25 and 30) taking substantial market shares as discussed. The next jump in concentration occurred in the late 1990s, as tax rates began to increase and again was associated with new brands with larger pack sizes (40 and 50) entering the Top 8. This is consistent with greater competition following each set of restrictions on advertising.

The effect of restrictions on the diversity of market shares within the Top 8 differed between the two episodes. Following 1975, diversity increased and then gradually fell, whereas after 1990 diversity fell and then gradually increased. Hence while increased restrictions on advertising was associated with greater concentration at the brand level, consistent with the arguments of Sutton (1991), the data provided here does not provide evidence that restricting advertising has lead to more uniform market shares. This could be due to some combination of brand loyalty and marketing practices. For example, in many cigarette retailers such as supermarkets and convenience stores only a very limited selection of brands is available.
3.6 Will Plain Packaging Increase the Market Share of Illegal Cigarettes? So far only effects of advertising restrictions on entry by legal cigarette supplies have been considered. An objection to PP is that it may result in a greater share of unbranded and counterfeit cigarettes.\textsuperscript{11} In Deloitte (2011), a report prepared for the three large Australian cigarette firms, it is claimed that the current share of illegal cigarettes in total consumption is already substantial and growing rapidly. It was claimed to be 6 per cent in 2007 and 15.9 per cent in 2010. Deloitte estimate that 91 per cent of consumers of illegal cigarettes purchased unbranded cigarettes (or loose tobacco) and another 4 per cent purchased counterfeit cigarettes. Only 40 per cent of counterfeit cigarettes were copies of “major known brands”. The remainder were “exotic” brands, mainly from China. Illegal cigarettes tend to be cheaper than legal cigarettes. So is the illegal market operating differently from the legal market?

Deloitte’s estimates of the size of the market share of illegal cigarettes have been challenged as being too high. Other survey evidence suggests that the share was about 3 per cent and not increasing (House of Representatives Standing Committee on Health and Ageing, 2011). In addition, the observed stability of market shares between 2005 and 2010 suggests that there has not been a change in the share of illegal cigarettes.

While sales of illegal cigarettes are unrecorded, it is likely that low price illegal brands would affect some legal brands more than others. The changes in market shares that occurred following the introduction of low price legal brands in the past is potentially informative. When the low price, large packet, brands were introduced, the main brands to lose market share were the small to medium size mainstream brands. Large brands like Winfield and Benson and Hedges tended to preserve their market share in the face of entry. Hence, if there has been a large increase in the sales of low price illegal cigarettes, and consumers substitute away from small to medium size mainstream brands, then it might be expected that we would observe an increase in the market share of the larger mainstream brands. Alternatively, if it was the case that illegal low price cigarettes were taking sales from legal low price cigarettes, then it might be expected that if the share of illegal cigarettes increased then the larger more

\textsuperscript{11} Contraband cigarettes, manufactured legally overseas but diverted to Australia, would presumably cease as the packaging would no longer match that in Australia.
expensive brands would obtain a larger market share. However, what we have observed, over the period over which it is argued that illegal low price cigarettes increased their sales, is extremely stable market shares. This would require illegal cigarettes affecting all brands about equally which is unlikely. This evidence suggests that there has not been a large increase in the share of illegal cigarettes and that their actual market share has remained small and probably effectively constant.

Will there be a large increase in counterfeit or unbranded cigarettes following the introduction of PP? If removing brandings makes legal cigarettes less attractive, then unbranded cigarettes could be perceived as close, cheap substitutes for legal brands. However, if increased competition leads to lower branded prices the gap between legal and unbranded cigarette prices should fall. Moreover, the cost of supplying unbranded cigarettes has increased as domestic production of tobacco has ceased in Australia. Tobacco must either be produced illegally or imported – both of which involve higher manufacturing cost than if legally produced. Tobacco is bulky and relatively low value compared with other illegal imports even though the fines may also be lower. Australia’s borders are easier to police than most other developed countries which makes it a less attractive destination for imported illegal tobacco than other countries So unless the reduced differentiation substantially increases demand for unbranded cigarettes, their market appears likely to be less profitable in the future and an expansion in their market share unlikely.

Post the introduction of PP the market also looks less profitable for counterfeit cigarettes than it is currently. Their cost of production could fall as it is cheaper to make plain packages than to replicate the more elaborate branded packages. But costs might rise if previously counterfeit cigarettes could be made for multiple countries whereas post-PP the packages will have to be made specifically for Australia. The anecdotes in the Deloitte report are consistent with this as they note that counterfeit cigarettes tend not to have health warnings. Prices on legal cigarettes will fall requiring lower prices on counterfeit cigarettes for consumers to choose them.

4. Conclusions and Final Remarks. Legislating for PP is likely to reduce the demand for cigarettes and to increase quit rates. Two major policy concerns regarding PP are (i) possible price cuts due to increased competition and (ii) increased counterfeiting and sales of
unbranded cigarettes. The preceding analysis concludes that increased competition and price
cuts are possible and this would increase cigarette consumption to some extent. However it is
worth noting that price cuts predicted by Padilla (2010) are much less than the price increases
that followed the April 2010 increase in the excise – prices increased by about one third
between 2005 and 2010 – so it is unlikely that cigarette consumption would increase in
response to the PP-cum-tax-increases package of reform as a whole. If there were further
substantial price cuts, then further increases in the excise could be imposed to offset
reductions in gross prices. As entry has proven very difficult following the restrictions on
advertising in the early 1990s it is unlikely that new low price brands from major companies
will be introduced which would substantially further lower prices.

In addition, our analysis suggests that substantial increases in unbranded or counterfeit
cigarette supply are unlikely because of their current small scale and the less profitable
market they will face after plain packaging is introduced. If, with counterfeit cigarettes, a
problem did emerge it could be offset by increasing detection efforts, penalties, and replacing
the plain brown package with a complex but unattractive design.

This conclusion does not mean PP legislation will have strong effects in reducing demands.
This depends on the dissuasive impact of PP on consumption. But it is very unlikely that such
policies would be counterproductive in the sense of increasing demands. A weak argument
endorsing Australia’s adoption of PP policies is that they will have some positive effect in
reducing demand without causing any harmful effects. An important gain is determining
whether such policies will be very effective or not. Such innovative policies provide a “global
public good”. There is often a Prisoners’ Dilemma case against delivering such public goods
but, because the policies are likely to be non-disadvantageous, there are no extra costs if
Australia is the first country to try out such policies. Indeed Australia has advantages over
other developed countries in performing such an experiment. It is remote and physically
isolated compared with European, developed Asian or even North American nations. This
reduces problems of illegal cigarettes and private importing. Possibly only New Zealand is
better as a laboratory. Altruistic provision of global information on the effectiveness of PP
should provide benefits in reducing smoking but, at worst, will cost Australia nothing and
boost its image as a good global citizen.
References


Table 1: Australian Cigarette Market

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### Table 2 Average Price of Cigarettes by Pack Size 1975 – 2010

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**Imports**

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**Source:** As for Table 1. See Appendix Two for more details.

### Table 3 Market Share by Pack Size

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**Source:** As for Table 1. See Appendix Two for more details.
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**Source:** As for previous tables – see Appendix Two for details.

### Table 5  Concentration at the Brand level in the Cigarette Market

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**Sources:** See Appendix Two for details.

An immediate effect of plain packaging is to reduce product differentiation thereby making cigarette brands closer substitutes. This reduces prices and increases consumption. Padilla (2010), in a report for PMI, estimates that prices could fall from by 4.8-19.2 per cent and consumption increase by between 2.6-16.6 per cent. This appendix analyses this analysis and concludes it is unlikely that the larger estimates could eventuate.

Padilla calibrates a standard nested logit model of demand for differentiated products using product level demand and cost data for 2008 provided by PMI. Brands of cigarettes are classified into three nests (premium, medium and low). The nested logit is a class of model often applied to analyse differentiated products. Plain packaging is modelled as removing all nests and increasing substitutability between products.

Pham and Prentice (2010) estimate a similar nested logit model for Australia using publically available annual data for 1975-1984 and 1987-1992. Their results differ from Padilla’s. First, their own-price elasticities by brand are lower (from -1.99 to -3.77 rather than -8.1 to -9.5). That prices were much lower for most of the period they use will have contributed to this. For cigarettes as a whole, they estimate an own-price elasticity of -0.6 similar to estimates found in the literature. This is at the lower end of the two Padilla uses (-0.5 to -1). The own-price elasticity of -1 seems far too high.

Pham and Prentice also estimate a degree of substitutability between brands at the high end of the values Padilla uses. This suggests that cigarette brands are already fairly substitutable. The combination of low price elasticities and more limited scope for increasing substitutability between brands means that the likely price cuts and responsiveness of demand will be much lower than the estimates Padilla simulates. For example, when the overall elasticity of demand is -0.5 the greatest quantity response he gets without entry is 5.5 per cent.

In addition, his largest estimates arise when low cost entry occurs. It is important to note that this form of entry is an assumption Padilla makes. It is not automatically an outcome of the

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12 Specifically, Pham and Prentice (2010) estimate a value for the parameter that captures this, $\sigma$, of 0.72 whereas Padilla (2010) varies $\sigma$ between 0.1 and 0.9.
demand model specified. The body of this paper provides theoretical and empirical evidence based on previous restrictions on advertising that suggests such entry is unlikely.

Appendix 2 – The Data.

In this appendix the data provided in Table 2 and Table 3 is discussed.


The first data set is composed of the recommended retail prices for all varieties of cigarettes sold in Australian from the Australian Tobacco Retailer. This is a bimonthly trade journal that lists all brands and variants being sold in Australia and their wholesale and recommended retail prices. The June-July editions are used except for 1975 when the May edition was used.

The second data set is on market shares mainly for the largest brands. Pham and Prentice (2010) located in the Legacy Tobacco Documents Library market research reports from RJ Reynolds, Phillip Morris and Wills as well as some Nielsen reports which include Australian national market shares mainly for the largest brands for 1975 to 1995. This is supplemented with market share data for the largest brands from 2001 to 2010 from the Global Market Information Database of Euromonitor International.

For Table 2 if there are multiple varieties for the same pack size for a brand (such as Mild and Extra Mild) the mean price is used. In practice, different varieties of a brand sold in the same pack size typically sell for the same per-stick price.

For Table 3, for 1980 to 1995 market shares are taken directly from market research reports. For 2001 to 2010, the shares are assigned to brands with the maximum pack size e.g. Winfield has a maximum pack size of 25 so its market share is assigned to 25s. While the brands and pack sizes are not known for about 9 – 11% of the market it is likely a substantial share of this is for brands with 25s as just a few brands (each with a market share of less than 0.16) have more than 25 cigarettes.