

Title: Standardised packaging of tobacco products	Impact Assessment (IA)
IA No: 3080	
Lead department or agency: Department of Health	
Other departments or agencies:	
	Date: 10/2/2015
	Stage: Final
	Source of intervention: Domestic
	Type of measure: Secondary legislation
	Contact for enquiries: DH Tobacco Programme
Summary: Intervention and Options	RPC Opinion: GREEN

Cost of Preferred (or more likely) Option				
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, One-Out?	Measure qualifies as
£25 bn	-£400m	£36.78m	Yes	IN

What is the problem under consideration? Why is government intervention necessary?

Tobacco use remains one of the most significant challenges to public health across the United Kingdom and is the leading cause of premature death in the UK. The Government remains concerned about the take up of smoking by young people, the difficulty that adult smokers can have in quitting smoking and the consequences for the health of others from exposure to second hand smoke (SHS). Research evidence suggests that standardised packaging of tobacco products can reduce the appeal of tobacco products, increase the effectiveness of health warnings on tobacco packages and reduce the ability of tobacco packages to mislead consumers about the harmful effects of smoking. It could also address the contribution smoking makes to the sustaining of socioeconomic health inequalities.

What are the policy objectives and the intended effects?

The objectives of standardised tobacco packaging would be to improve public health by discouraging young people from taking up smoking, supporting quitting among smokers who want to quit and helping people who have quit to avoid relapse back to smoking. Achieving these aims will improve the health of those who never start to smoke and those who succeed in quitting smoking. There may also be wider benefits such as narrowing of health inequalities and a reduction in the levels of exposure to secondhand smoke which is particularly harmful to the health of children.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Option 1: Change legislation to bring the UK in line with the European Tobacco Products Directive (TPD), to be implemented in 2016. (Although TPD is a policy, in IA language this is essentially a “do nothing” option).

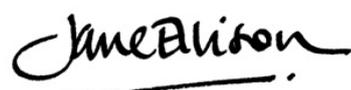
Option 2: Go beyond the TPD in 2016 and require standardised tobacco packaging of cigarettes and hand rolling tobacco (HRT) in the UK. In line with the approach set out in the 2014 consultation document, this would involve the standardisation of pack colour and shape and the removal of all branding except brand name in a standardised typeface. Relevant legal markings such as health warnings and tax stamps would be retained as well as authentication markings to reduce trade in illegal tobacco products.

Option 3: Defer a decision pending further evidence on experience with plain packaging in Australia.

Option 2 is preferred in view of the possibility of very substantial health gains that it offers, deferral of which would be permanently detrimental to successive cohorts of young people and would-be quitters.

Will the policy be reviewed? Yes. If applicable, set review date: 5 years after policy start						
Does implementation go beyond minimum EU requirements?			N/A			
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.		Micro Yes	< 20 Yes	Small Yes	Medium Yes	Large Yes
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)			Traded:		Non-traded:	

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs.

Signed by the responsible Minister:  Date: 10 February 2015

Summary: Analysis & Evidence Policy Option 1

Description:

Post Tobacco Products Directive 2016 – Do nothing

Price Base 2014	PV Base 2014	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: 0	High: 0	Best Estimate: 0

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0	0	0
High	0	0	0
Best Estimate	0	0	0

Description and scale of key monetised costs by 'main affected groups'

These are defined to be 0

Other key non-monetised costs by 'main affected groups'

These are defined to be 0

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate	0	0	0

Description and scale of key monetised benefits by 'main affected groups'

These are defined to be 0

Other key non-monetised benefits by 'main affected groups'

These are defined to be 0

Key assumptions/sensitivities/risks Discount rate (%) 1 ½ / 3 ½

The benefits and costs in this IA are assessed on the basis of additional benefits and costs that would be likely to accrue over and above existing tobacco control measures and anticipated measures in place at the time of standardised packaging implementation. This includes the benefits and costs of recently commenced legislation in England to end tobacco sales from vending machines, ending the open public display of tobacco products in shops by April 2015, and the revised European Tobacco Product Directive (TPD). See paragraphs in the Policy Options section under "Option 1" for the full description of our baseline.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 0	Benefits: 0	Net: 0		

Summary: Analysis & Evidence Policy Option 2

Description:

Implement standardised packaging

Price Base Year 2014	PV Base Year 2014	Time Period Years 10	Net Benefit (Present Value (PV))		
			Low: -	High: -	Best Estimate: £25bn

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	-	-	-
High	-	-	-
Best Estimate	£197m-£202m	-	£5.2bn

Description and scale of key monetised costs by 'main affected groups'

Appraisal is 10 years' of policy implementation (consequential lifetime tax costs are discounted back to the year of behaviour change). Expected costs include losses to the exchequer of £5.0bn, mainly spread over the lifespan of smokers who quit. Transition costs to the UK for tobacco manufacturers, packaging, wholesalers, retailers and consumers are estimated at £197m-202m, including loss of brand value. All other UK losses monetised e.g. potential illicit market are much lower. (All figures discounted and rounded to 2 significant figures).

Other key non-monetised costs by 'main affected groups'

A reduction in the ability of tobacco companies to compete through packaging differentiation. Loss of consumers' surplus associated with diminished branding (ie the satisfaction lost to consumers who value branding on tobacco products).

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	-	-	Optional
High	-	-	Optional
Best Estimate	-	-	£30bn

Description and scale of key monetised benefits by 'main affected groups'

Appraisal is of 10 years' policy implementation with consequential lifetime health gains discounted back to the year of behaviour change. Expected benefits are the health benefits that would accrue from the reduced take-up of smoking and improved quit rates of 0.49m life years valued at £29bn. Expected Productivity gains from fewer employees smoking are estimated at £0.9bn. Manufacturing cost savings are estimated at £23m to the UK. (All figures discounted and rounded to 2 significant figures).

Other key non-monetised benefits by 'main affected groups'

Pecuniary gain from reduced spending by quitters, and reduced uptake of around £5.7bn and £880m net of loss of pleasure from smoking and quitters' withdrawal pain. The possible enhancement of price competition between tobacco companies. The potential for accelerated product innovation and product differentiation could be an additional benefit. These represent economic benefits rather than health benefits and could potentially jeopardise the policy objective unless there were action to maintain tobacco prices. Benefits in terms of reduced morbidity and mortality due to second hand smoke exposure. There would be reduced costs to local authorities and to businesses for litter collection due to fewer discarded cigarette butts.

Key assumptions/sensitivities/risks	Discount rate (%)	1½/3½
Assumptions: Relatively limited value of loss in consumer surplus from branding.		
Sensitivities: The magnitude of the reduction in smoking caused by the policy. The magnitude of the losses due to any potential increase in cross border shopping or illicit trade		
Risks: . Risk of increase in smoking contingent on tobacco costs decreasing and no action to maintain them.		
Discount rate: 1½ % for health impacts denominated in life years and 3½% for monetised impacts.		

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:	In scope of OIOO?	Measure qualifies as
Costs: -	Yes	IN
Benefits: -		
Net: £36.78m		

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Evidence Base

What is the problem under consideration? Why is government intervention necessary?

1. Tobacco use remains one of the most significant challenges to public health across the United Kingdom and is the leading cause of premature death in the UK. The Government remains concerned about the take up of smoking by young people, the difficulty that adult smokers have in quitting smoking, high levels of relapse of those smokers that do attempt to quit and the consequences for the health of others from exposure to second hand smoke (SHS). Tobacco use also contributes significantly to health inequalities.
2. The Government has a policy to stop the promotion of tobacco.¹ Action to stop the promotion of tobacco has been taken over many years. The Tobacco Advertising and Promotion Act 2002 (TAPA) prohibits tobacco advertising. The Health Act 2009 requires the end of tobacco displays in England (in large stores from 2012 and all other tobacco retailers in 2015). A Cancer Research UK report on plain packaging says that tobacco packaging serves multiple functions for tobacco manufactures. It is used to promote the product using the same strategies employed by other manufacturers of consumer goods, specifically packaging innovation, design and value packaging. Packaging is viewed as a key marketing tool for tobacco companies, according to both their own internal documents and also the retail press. Packaging has a wider reach than advertising and is the most explicit link between the company and the consumer.² Tobacco packaging and branding is a key element of tobacco marketing and promotion in the UK today.
3. Evidence suggests that the majority of existing smokers would prefer not to smoke. Almost 7 smokers in 10 say they would like to quit, yet only half actually make a quit attempt. Furthermore, less than 3% of smokers successfully quit each year.³ The smoker who wishes to give up smoking faces many obstacles, particularly the psychological and physiological components of addiction.⁴ Out of the smokers who do attempt to quit, approximately half do so without any assistance. These unassisted quit attempts are associated with the highest rates of relapse. In general, attempts to stop smoking are accompanied by powerful urges to smoke/cravings which are a major source of relapse and occur despite the individual concerned wanting to remain abstinent. Cravings overpower and undermine resolve to remain abstinent. These problems present examples of the difference between what smokers would prefer to do and what they are actually able to do with respect to tobacco consumption. The policy objectives include supporting smokers who want to quit and helping those who have quit avoiding relapse into smoking. In doing so, they will be better able to exercise their free choice in consumption decisions.
4. Introducing standardised packaging⁵ represents a policy option for the Department of Health in England and for the Devolved Administrations in Scotland, Wales and Northern Ireland, as part of their wider comprehensive tobacco control strategies, to improve public health by reducing tobacco use. Research evidence suggests that standardised packaging of tobacco products would contribute to the Government's public health policy objectives by reducing the appeal of cigarettes (including hand rolling tobacco), packs and brands, increasing the salience of health warnings, making perceptions of product harm and strength more accurate and reshaping smoking-related attitudes, beliefs, intentions and

¹ HM Government (2011). *Healthy Lives, Healthy People: A tobacco control plan for England*. DH, London.

² Cancer Research UK (2012). *The packaging of tobacco products*. The Centre for Tobacco Control Research funded by Cancer Research UK, University of Stirling and the Open University, Stirling.

³ HM Government (2010). *A Smokefree Future: A Comprehensive Tobacco Control Strategy for England*. DH, London

⁴ Royal College of Physicians, *Harm reduction in nicotine addiction*, A report by the Tobacco Advisory Group of the Royal College of Physicians, October 2007

⁵ Standardised packaging has also been referred to as plain packaging. As packs would not be plain (for example, they would be required to have coloured picture warnings), The term standardised packaging is considered to be a more accurate description.

behaviour.

5. Tobacco control policy across the UK aims to reduce youth uptake of smoking, and to encourage and support quitting amongst smokers who wish to quit; standardised packaging is expected to have a positive impact on both.
6. Smoking rates are today broadly the same among men and women. Around two-thirds of smokers say that they started smoking regularly before the age of 18. In 2009, the Public Health Research Consortium (PHRC) published a review of young people and smoking in England. The review found that the onset of smoking is a function of individual factors (e.g. self-image), social and community factors (e.g. family circumstances) and societal factors (e.g. tobacco marketing).⁶ Moodie et al. (2008) summarise the different research undertaken on tobacco advertising and smoking uptake by young people, and has found that:

Research has consistently revealed that tobacco advertising and promotion increases the likelihood that adolescents will start to smoke, whether employing cross-sectional research, prospective research, time series studies or systematic reviews. The cumulative evidence indicates that there is a dose-response relationship, where greater exposure to advertising and promotion results in higher risk, even when controlling for known causative factors such as low socioeconomic status, parental and peer smoking... Furthermore, we know that tobacco branding is continuing to drive UK teen smoking even after TAPA (2008).⁷

7. Of particular concern is the impact of tobacco packaging on young people who might not yet be in a position to make properly informed or considered adult lifestyle choices. Growing up in homes where smoking by adults is the norm, children are more likely to become smokers themselves and to take up smoking at an earlier age, perpetuating smoking into new generations.⁸ Pupils who live in a household where someone else smoked are more likely to smoke than those who do not live with any smokers, and, in England, 37% of pupils live with someone who smokes.⁹
8. The impact of tobacco marketing (including branding) may be a key factor in youth smoking uptake. The British Medical Association says:

Young people are greatly influenced by their sense of what is normal and attractive; and this in turn is affected by the messages and imagery attached to different behaviours. Thus, particular fashions, music styles and forms of recreation become more or less popular over time. Young people's smoking is susceptible to these same forces, but in this case the associated imagery seems, for some young people at least, to remain consistently positive. This capacity to remain 'forever cool' belies the reality: smoking continues to be the leading cause of ill health and premature death in the UK.

Pro-smoking imagery originates from three overlapping sources.

First, it is part of the social milieu: young people see others – parents, peers and public figures – smoking and this reinforces the normalcy of the habit. In Great Britain, smoking still has around 10 million role models¹⁰. The detritus of smoking also provides a reminder of the apparent normalcy of the behaviour.

Second, entertainment media depict smoking on a regular basis. Images of smoking are commonplace in films, television shows and magazines, and can influence the attitudes and behaviours of young people. Other forms of media such as the internet represent a growing concern in this respect.

Third, young people are exposed to the positive images of smoking generated by tobacco industry marketing. The ban on tobacco advertising in the UK has greatly restricted the more traditional forms of marketing (eg billboards);

⁶ Public Health Research Consortium (2009). *A Review of Young People and Smoking in England*. PHRC, York.

⁷ Moodie, C. et al. (2008). 'Tobacco marketing awareness on youth smoking susceptibility and perceived prevalence before and after an advertising ban' in *European Journal of Public Health*. 2008, 18(5).

⁸ Buller, D., Borland, R., Woodall, W., Hall, J., Burris-Woodall, P. and Voeks, J. (2003). "Understanding factors that influence smoking uptake" in *Tobacco Control*. 12 (supplement 4), pp.iv16-iv25.

⁹ Health & Social Care Information Centre, "Smoking, drinking and drug use among young people in England in 2012".

¹⁰ By role model we understand this to mean smokers

however, ubiquitous distribution, increasingly elaborate point-of-sale displays, attractive pack liveries and evocative brand imagery continue to provide key marketing opportunities that influence young people.¹¹

9. Research suggests that standardised packaging would help to *re-shape* social norms around the use of tobacco products, assisting people to understand that tobacco use is highly addictive and can be hugely damaging to health. According to an article in the *Bulletin of the World Health Organisation*, ‘for decades, the tobacco industry has taken advantage of the package as a venue for creating positive associations for their product’.¹²
10. While smoking prevalence has fallen steadily in England since its peak in the mid-20th century, smoking rates are today higher than average among particular groups meaning that smoking has emerged as one of the most significant contributors to health inequalities in England. The association between smoking and inequalities is today apparent from evidence of who smokes. Smoking is most common among those who earn the least, and least common among those who earn the most. In 2010, smoking prevalence was more than twice as high among people in routine and manual occupations compared with managerial and professional occupations. Smoking rates are high in particular ethnic and social groups. Smoking rates among people with mental health problems is significantly higher than among the general population.
11. The difference in smoking between social groups widens throughout adulthood as people from more affluent groups are more able to quit, for a variety of reasons. Differences in motivation do not account for the differences in smoking rates between social groups, as desire to quit remains broadly the same. There is likely to be a number of reasons why people from less affluent backgrounds are less successfully able to quit, including levels of addiction and the socially reinforcing nature of smoking in groups and communities where smoking rates are high.¹³
12. Smoking is the main cause of differences in illness and death between the poor and wealthy. The Government’s Healthy Lives, Healthy People White Paper published in 2010 sets out that one of the Government’s key objectives will be to improve the healthy life expectancy of the population, improving the health of the poorest, fastest. The independent review into health inequalities in England, ‘Fair Society, Healthy Lives’, proposed ‘the most effective evidence-based strategies for reducing health inequalities in England’ and made the following recommendation:

*Tobacco control is central to any strategy to tackle health inequalities as smoking accounts for approximately half of the difference in life expectancy between the lowest and highest income groups. Smoking-related death rates are two to three times higher in low-income groups than in wealthier social groups.*¹⁴
13. In England and Wales, at least half of the excess risk of death observed in unskilled manual workers by comparison with professionals is attributable to smoking. Similar effects of smoking on health inequalities were also seen in the United States, Canada and Poland.¹⁵ A 28-year cohort study in Scotland examined the impact of smoking on survival between social classes, and found that the differences in survival between smokers and never smokers are much greater than those between smokers in different social positions.¹⁶

¹¹ British Medical Association (2008). *Forever cool: The influence of smoking imagery on young people*. BMA, London.

¹² Fong, G., Hammond, D. and Hitchman, S. (2009). ‘The impact of pictures on the effectiveness of tobacco warnings’ in *Bulletin of the World Health Organization*. 2009, 87:640-643.

¹³ Department of Health (2008). *Consultation on the future of tobacco control*. Department of Health, London.

¹⁴ Marmot, M. *et al.* (2010). *Fair Society, Healthy Lives: Strategic review of health inequalities in England post-2010*. Marmot Review Secretariat, London.

¹⁵ Jha, P., Peto, R., Zatonski, W., Boreham, J., Jarvis, M. and Lopez, A. (2006). “Social inequalities in male mortality, and in male mortality from smoking: Indirect estimation from national death rates in England and Wales, Poland, and North America” in *The Lancet*. 368, pp.367-370.

¹⁶ Gruer, L., Hart, C., Gordon, D. and Watt, G. (2009). “Effect of tobacco smoking on survival of men and women by social position: A 28 year cohort study” in *British Medical Journal*. 339, p.643.

14. The total cost of treating childhood disease caused by second hand smoke has been estimated at £23m per annum in the UK.¹⁷ We expect this to reduce if legislation to make private vehicles carrying children smokefree is introduced. We would expect this cost to be reduced in proportion to any reduction in parental smoking which might result from a standardised tobacco packaging policy. But, as in previous IAs related to tobacco control policies, we have not otherwise included an impact on NHS costs for the treatment of smoking-related diseases. Although recent research has claimed that quitting may lead to reduced lifetime healthcare costs, the required modelling of cost consequences of deferred mortality requires further development.¹⁸

¹⁷ Royal College of Physicians (2010). *Passive Smoking and Children*. Royal College of Physicians, London.

¹⁸ Godfrey C, Ali S, Parrott S, Pickett K (2011). *Economic model of adult smoking related costs and consequences for England*. University of York, York.

Summary and Conclusion of Tobacco Standardised Packaging Impact Assessment

15. There is a substantial body of evidence regarding the factors associated with the uptake of smoking by young people and the factors that can inhibit smokers who wish to quit and induce relapse among smokers who have tried to quit. This evidence strongly suggests that the implementation of standardised packaging (“the intervention”) could both reduce the uptake of smoking by young people and create a more supportive environment for those who wish to quit. Recent research has considered the impact specifically of tobacco packaging and branding (including standardised packaging) on the self-image of smokers and on the likelihood of quitting, and has confirmed that introducing standardised packaging could bring substantial benefits for public health.
16. Quantification of the likely scale of the impact on smoking take up and prevalence is difficult. There is, however, experience in the UK and internationally of other tobacco control interventions, particularly those involving tobacco advertising, promotion and marketing, to provide insight into expected impacts of introducing standardised packaging. Researchers who have specialised in tobacco control are in an informed and experienced position to integrate existing policy experience with the research studies on tobacco packaging. Independent academic research was commissioned by DH to gather an expert view on the likely scale of impact of standardised packaging from a range of tobacco control experts from around the world. The consensus (based on the median of reported views) of these experts is that the intervention would be expected to generate after two years:
 - a decline in the proportion of 11-15 year olds who have ever smoked of 3 percentage points (the proportion of this population who have ever smoked was 27% at the time of the research, so the 3 percentage points would represent a fall of 11% (3 in 27)); and
 - a decline in adult smoking prevalence of 1 percentage point (the proportion of this population smoking was 21% at the time of the research, so would represent a 4.8% (1 in 21) fall), as more people find themselves able to quit.
17. The benefits and costs in this IA are assessed on the basis of additional benefits and costs that would be likely to accrue over and above existing tobacco control measures and anticipated measures in place at the time of standardised packaging implementation. This includes the benefits and costs of recently commenced legislation in England to end tobacco sales from vending machines, ending the open public display of tobacco products in shops by April 2015, and the benefits and costs arising due to the revised TPD.
18. Based upon the European Tobacco Product Directive (TPD) Impact Assessment²⁶ we estimate around a 1.9% reduction in the number of smokers might plausibly be achieved by TPD without standardised packaging, including a 1% reduction due to packaging and labelling aspects. We account for TPD within Option 1 (our “Do Nothing” option), so only the incremental gain of standardised packaging provides our central estimates (i.e. the 11% and 4.8% figures in the above bullet points become a net reduction of 10% and 3.8% to prevent double-counting)
19. At this time it is difficult to conclude what the impact of standardised packaging on Australian smoking prevalence has been, due to confounding issues of changes to tobacco prices. There are also general difficulties of sample size when investigating impacts that are expected to be relatively small. Also the policy is at an early stage and data on medium and longer term trends do not exist yet. However the evidence that is available is consistent with a hypothesis such as the consensus one above that the policy would contribute to a modest decrease in prevalence.
20. With the intervention sustained for ten years following the policy implementation date (the standard policy appraisal period), such shifts in smoking behaviour would generate very large health benefits – estimated in total at 0.49m life years (discounted). These health gains, using standard DH methodology (based upon surveys of citizens’ willingness to pay for mitigation of health risks), are valued at £29bn.
21. There is considered to be lost economic productivity due to smoking breaks and tobacco-related absenteeism, therefore this policy is expected to decrease this loss and provide productivity gains of

£0.9bn (discounted over the lifetime of those who exhibit behaviour change in the 10 years following policy implementation).

22. We estimate a cost saving associated with the production of simpler standardised rather than branded packs, of £0.23bn (discounted over 10 years). Only a small portion of this will accrue to the UK.
23. There are other benefits discussed but not quantified and not included in the Net Present Value calculations. When considering consumer surplus the orthodox approach is based on rational consumer behaviour. However, for addictive goods, this theory is not a plausible approach. For addictive goods, branding may act as a cue that stimulates craving. Removing the cue helps the addict to realise their true preferences. Any reduction in consumption due to standardised packaging might therefore be taken to reflect true preferences. The approach leaves the analyst with the task of assessing both the costs and the benefits realised by those who, in the wake of reduced branding, either do not become smokers or are enabled to quit. In addition to the health benefits listed above, there is pecuniary gain from reduced spending by quitters of around £5.7bn. However, there are offsetting withdrawal pains that quitters endure and any loss of any pleasure associated with smoking. There are also pecuniary gains for those who do not take up smoking, of £880m. These children are not addicted and hence have no offsetting withdrawal pains, but they do lose smoking related pleasures. As the assumptions that would be required to calculate non-health net gains would be relatively unconventional at this time, and were not included in the consultation IA, so they are not included in the NPV.
24. There are also expected to be benefits in terms of reduced morbidity and mortality due to second hand smoke exposure. There would be reduced costs to local authorities, and to businesses, for litter collection due to fewer discarded cigarette butts.
25. We also expect there to be a reduction in health inequalities. In 2010, 13% of the managerial and professional group were smokers compared with 27% of the routine and manual group. If display of branded packets induces take-up within the home and explains the link between parental smoking and take-up, standardised packaging may be helpful in tackling the differences in acculturation to smoking across socio-economic groups.
26. We consider the possibility that standardised tobacco packaging would be easier and cheaper to copy, so increasing the supply of counterfeit tobacco in standardised packs. We also consider the possibility that smokers may be more likely to seek out branded products in a standardised packaging environment. There are also counter arguments to these possibilities as well as the mitigation factors and options, and evidence from Australia in relation to these risks. We conclude that there is a sizeable likelihood that there will be no discernible increase in the illicit market or cross border shopping (CBS), but there is a chance of an increase. A reasonable statistical expectation is of a 0.4% transfer from the UK duty paid market to UK duty unpaid market (both illicit and CBS are part of the UK duty unpaid market), would imply a £31m UK loss to tobacco manufacturers, wholesalers and retailers.
27. There are also expected losses to the exchequer of £5.0bn. These losses mainly come from the reduction in tobacco consumption. They also come about if smokers downtrade from higher price brands to lower price brands (which are taxed less). There is also a contribution from a potential increase in cross border shopping and illicit trade.
28. In general we assume that normal profits lost due to reduced tobacco sales will be offset by sales of non-tobacco within the economy. However, some of the value of these sales is due to the value of brands that have already been created, and whose value is diminished by the intervention. This diminution of value needs to be reckoned as a one-off cost of the policy. With standardised packaging we expect a more rapid decline in sales of high price than of low price brands because of a greater likelihood of quitting among smokers of high price brands and due to downtrading from high price to low price brands among those who continue to smoke. The impact on returns to UK business (tobacco manufacturers, wholesalers and retailers) attributed to the reduction in brand value is estimated to have a present value of £190m.
29. The impact on small and micro businesses is uncertain, but the small and micro business sector may have relatively higher transitional losses compared to larger businesses due to lost footfall-related sales.
30. Standardised packaging may encourage printing to switch from gravure printing to cheaper offset lithography so some gravure machines may become redundant. In any case the value of the produce of

packaging manufacturers will drop, diminishing the profit stream associated with this business. An estimate of this impact is the expected drop in the economic value of the capital stock which might be affected. We estimate that £10-£15m worth of machinery may become redundant and use this as an estimate of the lost profit stream to packaging manufacturers.

31. We expect there to be a very short lived increase in serving time whilst shop assistants familiarise themselves with the new system and customers become aware of the change in appearance. We value this loss of time to tobacco retailers and those purchasing tobacco at £0.80m.
32. The Direct impact upon all UK based business for One In Two Out (OITO) purposes is set out in the OITO section of the IA.
33. We need to consider not only the consumer surplus associated with smoking (discussed above) but that associated specifically with branded products, the loss of the ability of those who continue to smoke to gain the intangible benefit associated with smoking a particular brand that only the packaging of that brand, as it is currently available, can produce.
34. It is hard to assess how many of the 9.9 million or so people expected to continue smoking would suffer any felt loss from the absence of this particular avenue of self-expression, and to quantify the loss. Personal branding might be substituted by purchase of other branded goods. There is some further evidence that such branding carries a positional good externality¹⁸⁴ i.e. the positive branding associated with premium brands inspires embarrassment and hostility in others not able to afford such self-branding. For these reasons, we have not quantified the loss of consumer surplus from branding.
35. Those who continue to smoke may also feel as though they have suffered a restriction in freedom. However, from a societal perspective, there is reason to discount the importance of this loss of freedom. For individuals to carry and personally to display branded packets of cigarettes may contribute to encouraging others, including children, to take up smoking and to deter quitting by those who wish to quit. Tobacco packaging and branding plays a promotional role and helps to shape social norms around smoking. The freedom to have branded tobacco, therefore, carries a cost to others; and society arguably need not accord value to a freedom that involves inflicting harm on others.
36. One unquantified cost is a reduction in the ability of tobacco companies to compete through product differentiation because of different packaging.
37. The gross gain of standardised packaging (that could be valued) before considering costs or unquantified impacts is assessed as £30bn. The gross costs of standardised packaging (that could be valued) are assessed as £5.2bn. This gives a net gain of around £25bn. Since the benefits are estimated to be much larger than the costs, the risk of the policy having a net loss is considered small. . Furthermore, if the policy had a smaller impact than expected on smoking prevalence then although the benefits would decrease, so would the largest element of cost (that to the exchequer).
38. The intervention is worth pursuing now, notwithstanding these costs and risks. We believe that the cost of delaying a decision on whether to implement the intervention (Option 3) is too great in public health terms, particularly in view of the following considerations:
 - we can already benefit from the experience of Australia in determining the detail of any legislation and in implementing the intervention;
 - the potential health gains are very substantial and dramatically outweigh quantified costs;
 - the deferral of such gains would adversely affect the life expectancy of large cohorts of children and adult would-be quitters in every year of deferral;
 - if the true impact of standardised packaging is substantially smaller than assumed in this IA (but not zero) it would still be net beneficial to act now;
 - evidence from Australia is valuable, but there are considerable uncertainties that will remain;
 - if standardised packaging is implemented, monitoring of extent of impacts, such as any impact on cross-border shopping or the size of the illicit market would identify where mitigating action is needed; the information conveyed by such monitoring is likely to be much more directly pertinent to the policy context in the UK than that which can be gathered from other countries that have implemented the intervention (such as Australia).

Policy context

39. The United Kingdom is a Party to the World Health Organization's *Framework Convention on Tobacco Control* (FCTC). The FCTC is the world's first public health treaty and places obligations on Parties to meet the treaty objective to 'reduce continually and substantially the prevalence of tobacco use and exposure to tobacco smoke' and to implement comprehensive tobacco control strategies. Since the United Kingdom became a Party to the treaty in 2004, the Government has taken its FCTC obligations very seriously. To help Parties meet their obligations under the FCTC, guidelines have been developed. While these guidelines are not binding, Parties have agreed that they reflect their consolidated view of a desirable means of fulfilling their FCTC obligations.
40. Guidelines on Article 11 of the FCTC¹⁹ suggest that:
- Parties should consider adopting measures to restrict or prohibit the use of logos, colours, brand images or promotional information on packaging other than brand names and product names displayed in a standard colour and font style (plain packaging). This may increase the noticeability and effectiveness of health warnings and messages, prevent the package from detracting attention from them, and address industry package design techniques that may suggest that some products are less harmful than others.*
41. Guidelines on Article 13 of the FCTC²⁰ recommend:
- Packaging and product design are important elements of advertising and promotion. Parties should consider adopting plain packaging requirements to eliminate the effects of advertising or promotion on packaging. Packaging, individual cigarettes or other tobacco products should carry no advertising or promotion, including design features that make products attractive.*
42. In 2007, the European Commission (EC) suggested standardised tobacco packaging as a possible policy option in its consultation on revising the Tobacco Products Directive. It stated that 'in order to decrease the smoking initiation and to protect EU consumers on equal basis in all Member States the introduction of generic (black and white) standardised packaging for all tobacco products could be explored as a possibility to reduce the attractiveness'.²¹
43. In March 2011, the Government published *Healthy Lives, Healthy People: A Tobacco Control Plan for England*²² which set out the Government's comprehensive, evidence-based, approach to tobacco control in England. It includes (at paragraphs 3.6 and 3.7) the commitment to explore whether there is evidence to demonstrate that plain packaging of tobacco would have an additional public health benefit, over and above the existing smoking control initiatives in place, including legislation to end the open displays of tobacco products in shops.
44. A World Health Organization report on the global tobacco epidemic argues that consumers of tobacco products have a 'fundamental right to accurate information about the risks of smoking'. A basic requisite for reducing tobacco use is that every person be informed of the health consequences, addictive nature, and potential for disability and premature death posed by tobacco consumption and exposure to tobacco smoke'.²³ Research shows that health warnings on tobacco packages are among the most direct and prominent means of communicating with smokers.²⁴ Health warnings have high reach and frequency of

¹⁹ Article 11 of the FCTC relates to packaging and labelling of tobacco products.

²⁰ Article 13 of the FCTC relates to tobacco advertising, promotion and sponsorship.

²¹ European Commission (2007). *Report from the commission to the European parliament, the Council and the European economic and social committee. Second report on the application of the Tobacco Product Directive*. Brussels: Commission of the European Communities.

²² HM Government (2011). *Healthy Lives, Healthy People: A Tobacco Control Plan for England*. Department of Health, London.

²³ World Health Organization (2011). *WHO report on the global tobacco epidemic. Warning about the dangers of tobacco*. WHO, Geneva.

²⁴ Hammond D. (2011). 'Health warning messages on tobacco products: a review' in *Tobacco Control* 20:327-337.

exposure among smokers; a 20 pack a day smoker potentially being exposed to these warnings over 7000 times per year.

45. In March 2014 the European Commission's revised Tobacco Products Directive (TPD) was officially adopted by the Council following its formal approval by the European Parliament in February 2014.²⁵ Most of the new rules will apply in the first half of 2016 following a two year transposition period for Member States, of which the UK is one. The TPD covers how tobacco products are to be manufactured, produced and presented in the EU. The expected impact of the TPD on tobacco consumption used in this IA is around 1.9% reduction over five years. This value is derived from the European TPD IA²⁶ (see Annex E). Whilst some of the requirements included in the TPD bear slight resemblances to the rules prescribed under standardised packaging, the TPD still allows for packaging to display logos, colours and brand images. Please see Annex E for a more detailed overview of the TPD requirements.
46. Given that the open display of tobacco in retail environments has ended in England for large shops, (and will end in 2015 for small shops), and the adoption of the revised TPD, the introduction of standardised tobacco packaging might further reduce the promotion of tobacco products. With display of tobacco products ending, the tobacco industry may seek to invest more in promoting tobacco use through packaging.
47. As the 2012 and 2014 consultations were conducted on a UK-wide basis, this IA considers costs and benefits of standardised packs for the UK, although some of the illustrative data reported here relate to England only. For example, there are differences in Scotland due to the Tobacco Primary Medical Services (Scotland) Act 2010, considered by some as a more restrictive. These differences feed into the uncertainties in the costs and benefits which are put into context and discussed in the Sensitivity and Risk Analysis section. Devolved Administrations agreed that the primary powers in the Children and Family Act could be passed on their behalf, meaning that the provisions would apply on a UK-wide basis, their consent would also be needed for any regulations to have force in each UK country

²⁵ TPD text is available at:
http://www.europarl.europa.eu/meetdocs/2009_2014/documents/envi/dv/envi20140122_tobacco_agreed_text_/envi20140122_tobacco_agreed_text_en.pdf

²⁶ Available at:
http://ec.europa.eu/health/tobacco/docs/com_2012_788_ia_en.pdf

Summary of Responses to 2012 and 2014 Consultations

48. The 2012 *Consultation on standardised packaging of tobacco products* was carried out between 16 April and 10 August 2012. A consultation-stage IA was included in the consultation exercise, with twelve questions specifically seeking views on the IA and inviting respondents to provide data and evidence where this could inform and strengthen the IA (see Annex C).
49. A summary report of the 2012 consultation has been published by the Department of Health.²⁷
50. A further consultation, *the consultation on the introduction of regulations for standardised packaging of tobacco products*, was carried out between 26 June and 6 August 2014. A revised consultation-stage IA was published alongside this consultation and the consultation document asked for any further evidence or information which would improve the assumptions or estimates made in the consultation-stage impact assessment (see Annex G).
51. The Department of Health will publish a summary report of the 2014 consultation.
52. The IA draws upon information provided in both consultation responses.

²⁷

Department of Health (2013). Consultation on standardised packaging of tobacco products: summary report. London: Department of Health. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/212074/Summary_of_responses_to_consultation_-_standardised_packaging_tobacco.pdf

Impact upon Equality Groups

53. An initial assessment of the potential impact of standardised tobacco packaging on the Government's duties under the Equality Act 2010 was included in the 2012 consultation exercise with a specific question asking respondents for their views and for evidence on whether requiring standardised packaging would contribute to reducing health inequalities or help the Government to fulfil its duties. An Equality Analysis was updated in 2014 to take into account points raised in the 2012 consultation responses and it also considered the Secretary of State's duty to reduce inequalities with respect to benefits from the health service (under section 1C of the NHS Act 2006 which came into force in April 2013).
54. The conclusion of the updated Equality Analysis, which was published alongside the 2014 consultation, is that, although certain groups in society may be affected differently from others, and potential adverse impacts were identified for those with impaired sight or with literacy difficulties, a policy of standardised tobacco packaging of cigarettes and hand rolling tobacco would not have any significant negative impact on any particular aspect of equality. However, the policy should, if successful in achieving the policy aims of reducing smoking initiation among young people and supporting successful quitting, have a positive impact on equalities, and could help to reduce health inequalities between socio-economic groups, because the impact would be greater on those groups in which smoking prevalence is highest.
55. Growing up in homes where smoking by adults is the norm, children are more likely to become smokers themselves and to take up smoking at an earlier age, perpetuating smoking into new generations.²⁸ Smokers in the routine and manual group take up smoking at a younger age than those in other groups. In 2006, 40% of the smokers in the routine and manual group had taken up smoking by the age of 16 compared with 31% in the managerial and professional group.²⁹ These findings could go some way to explaining why, in 2010, 13% of the managerial and professional group were smokers compared with 27% of the routine and manual group. If display of branded packets induces take-up within the home and explains the link between parental smoking and take-up, standardised packaging may be helpful in tackling the differences in acculturation to smoking across socio-economic groups.
56. Smoking rates are high in other population groups, such as among lesbian, gay and bisexual people³⁰ and smoking by gay men is believed to be twice that of wider population levels.³¹ Smoking by people with a mental illness is 'a tremendous problem that goes largely ignored'.³² Smoking is higher in certain ethnic groups, in particular Black Caribbean and Bangladeshi men and Irish women³³.
57. While lower socio-economic groups are more likely to smoke cheaper cigarettes (which may be less subject to brand attachment than more expensive brands), current research does not provide insight into the differential impact of branding on different socio-economic groups.

²⁸ Buller D, Borland R, Woodall W, Hall J, Burris-Woodall P, Voeks J (2003). "Understanding factors that influence smoking uptake". *Tobacco Control* 12(suppl.4):iv16-iv25.

²⁹ DH (2008). Consultation on the future of tobacco control. London: Department of Health

³⁰ Covey L, Weissman J, Lo D, Duan N (2009). "A comparison of abstinence outcomes among gay/bisexual and heterosexual male smokers in an intensive, non-tailored smoking cessation study". *Nicotine and Tobacco Research* 11:1374-1377.

³¹ Harding R, Bensley J, Corrigan N (2004). "Targeting smoking cessation to high prevalence communities: outcomes from a pilot intervention for gay men". *BMC Public Health* 4:43.

³² Williams J, Ziedonis D (2004). "Addressing tobacco among individuals with a mental illness or addiction". *Addictive Behaviours* 29:1067-1083.

³³ Millward D, Karlsen ST, (2011). "Tobacco use among minority ethnic populations and cessation interventions" A Race Equality Foundation Briefing Paper.

Evidence regarding the potential impact of standardised tobacco packaging

58. The health benefits in this IA are assessed on the basis of additional benefits and costs that would be likely to accrue over and above existing tobacco control measures and anticipated measures in place at the time of standardised packaging implementation. This includes the benefits and costs of recently commenced legislation in England to end tobacco sales from vending machines, ending the open public display of tobacco products in shops by April 2015, and the benefits and costs arising due to the revised TPD.
59. The Department of Health and the Devolved Administrations each have tobacco control plans in place.³⁴ If introduced, standardised packaging would form an element within these wider comprehensive strategies to contribute to reducing rates of smoking. The objectives of a policy for standardised packaging would be to improve public health by:
- discouraging people from starting to use tobacco products
 - encouraging people to give up using tobacco products
 - helping people who have given up, or are trying to give up, using tobacco products not to start using them again
 - reducing the appeal or attractiveness of tobacco products
 - reducing the potential for elements of the packaging of tobacco products other than health warnings to detract from the effectiveness of those warnings
 - reducing opportunities for the packaging of tobacco products to mislead consumers about the effects of using them
 - reducing opportunities for the packaging of tobacco products to create false perceptions about the nature of such products
 - having an effect on attitudes, beliefs, intentions and behaviours relating to the reduction in use of tobacco products
 - reshaping social norms around tobacco use to promote health and wellbeing.
60. Standardised packaging will contribute to these objectives by building on the success of Tobacco Advertising and Promotion Act 2002 and further reducing the opportunities for advertising and promotion of tobacco products.
61. If effective, the policy would improve the health of those not starting to smoke and those quitting smoking. An additional benefit would be a reduction in exposure to second hand smoke from reduced rates of smoking. Given that smoking is a leading cause of health inequalities, standardised tobacco packaging may help to narrow these inequalities.
62. While packaging has a practical function, today it is an important component of the overall marketing strategy. Tobacco packaging is a crucial promotional vehicle that helps to create brand awareness, increase brand appeal and foster positive attitudes towards smoking.³⁵ The importance of packaging as part of the promotional mix is recognised in marketing literature. Packaging 'act(s) as a promotional tool in its own right'.³⁶ According to Underwood and Ozanne (1998), the 'product package is the communication life-blood of the firm' or the 'silent salesman that reaches out to customers'.³⁷ Tobacco company documents show the value of packaging to this industry. A report prepared for the tobacco manufacturer Philip Morris in 1989 set out that 'consumer perceptions are based on pack design, price

³⁴ Scotland: *Creating a Tobacco Free Generation: A Tobacco Control Strategy for Scotland* (2013); Northern Ireland: *Ten-Year Tobacco Control Strategy for Northern Ireland* (2012); Wales: *Tobacco Control Action Plan for Wales* (2012); England: *Healthy Lives, Healthy People: A tobacco control plan for England*, (2011).

³⁵ Gallopel-Morvan K, Moodie C, Hammond D, Eker F, Beguinot E, Martinet Y (2012). Consumer perceptions of cigarette pack design in France: a comparison of regular, limited edition and plain packaging. *Tobacco Control* 21:502-506.

³⁶ Palmer, A. (2000). 'The product' in Palmer A (ed.) *Principles of Marketing*. Oxford University Press, London.

³⁷ Underwood, R. and Ozanne, J. (1998). 'Is your package an effective communicator? A normative framework for increasing the communicative competence of packaging' in *Journal of Marketing Communication*. 4(4), pp.207-220.

points and usage patterns – not images created by advertising'.³⁸ Tobacco packaging remains a “badge” product.

63. According to Cancer Research UK, packaging is seen as an effective marketing medium that helps to build consumer relationships through possession and usage. Packaging innovation, design and value packaging are used to promote the product, distinguish products from competitors, communicate brand values and target specific consumer groups. These packaging strategies, together with the visual and structural aspects of packaging design, such as colour, size and shape, influence consumer perceptions and purchase and usage behaviour. They give packaging an important role both at point-of-purchase and post-purchase.³⁹
64. Cancer Research UK also suggests that packaging strategies enable marketers to align brands with target groups of consumers. Brand values are inferred from packaging design and this has an impact on purchase intent, particularly when brand values are congruent with personal values. As personal values stem from membership of cultural and peer groups, careful attention is paid to which values are important to the target group. Tobacco industry documents show clear segmentation with regard to groups such as young people and lower social classes. The values of such groups are monitored to allow packaging strategies to fit in with any changes. For instance, value packaging becomes more prominent in times of economic pressure. A review of tobacco industry documents undertaken by Wakefield (2002) revealed the following about packaging, branding and young people:

Documents repeatedly show that tobacco companies are aware that brand choices are made relatively early in the life of a smoker and that packaging is an important ingredient in positioning brands to be attractive to youth. A Liggett and Myers document, for example, stated: ‘16-21—the formative years; smoking starts and brand preferences are developed.’⁴⁰

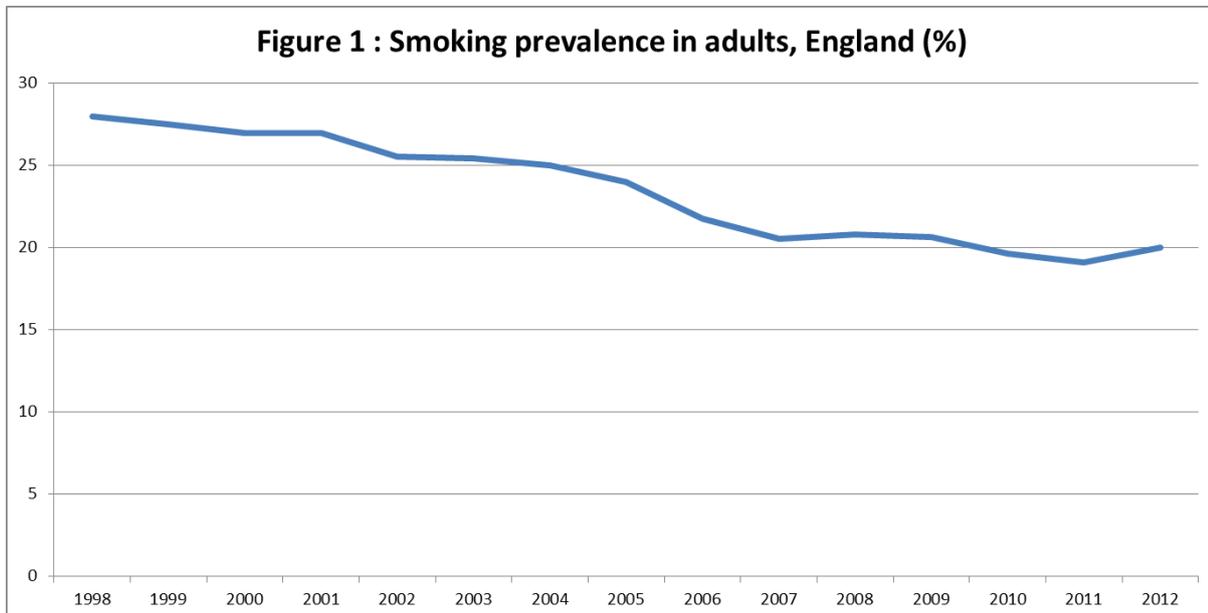
65. Action on Smoking and Health says that the Tobacco Advertising and Promotion Act, which bans tobacco advertising and many forms of promotion, has been effective in removing overt promotional activity and has brought about a consequent reduction in awareness of tobacco marketing amongst the young. However, branding continues to drive teen smoking, and awareness of packaging and new pack design is a key element of this ongoing marketing. Since the Act was implemented, the tobacco industry has invested increased resources into packaging design in order to communicate brand imagery and increase sales. Research shows that this has already had an effect: between 2002 and 2006 there was an increase in the proportion of young people aware of new pack design from 11 per cent in 2002 to 18 per cent in 2006.⁴¹
66. In England, we anticipate that legislation to end the open display of tobacco in shops and the revised TPD will help to sustain the medium to long-term downwards trend in smoking prevalence among the adult population. *Figure 1* shows the trend in smoking prevalence among adults (people aged 16 years and over who say that they do smoke nowadays). *Figure 2* shows the trend in the proportion of young people (aged 11-15) in England who are regular smokers (at least one cigarette per week).

³⁸ Kelly Weedon Shute Advertising (1989). *Cigarette Marketing - A New Perspective*. Available online at: <http://legacy.library.ucsf.edu/tid/lti49e00>.

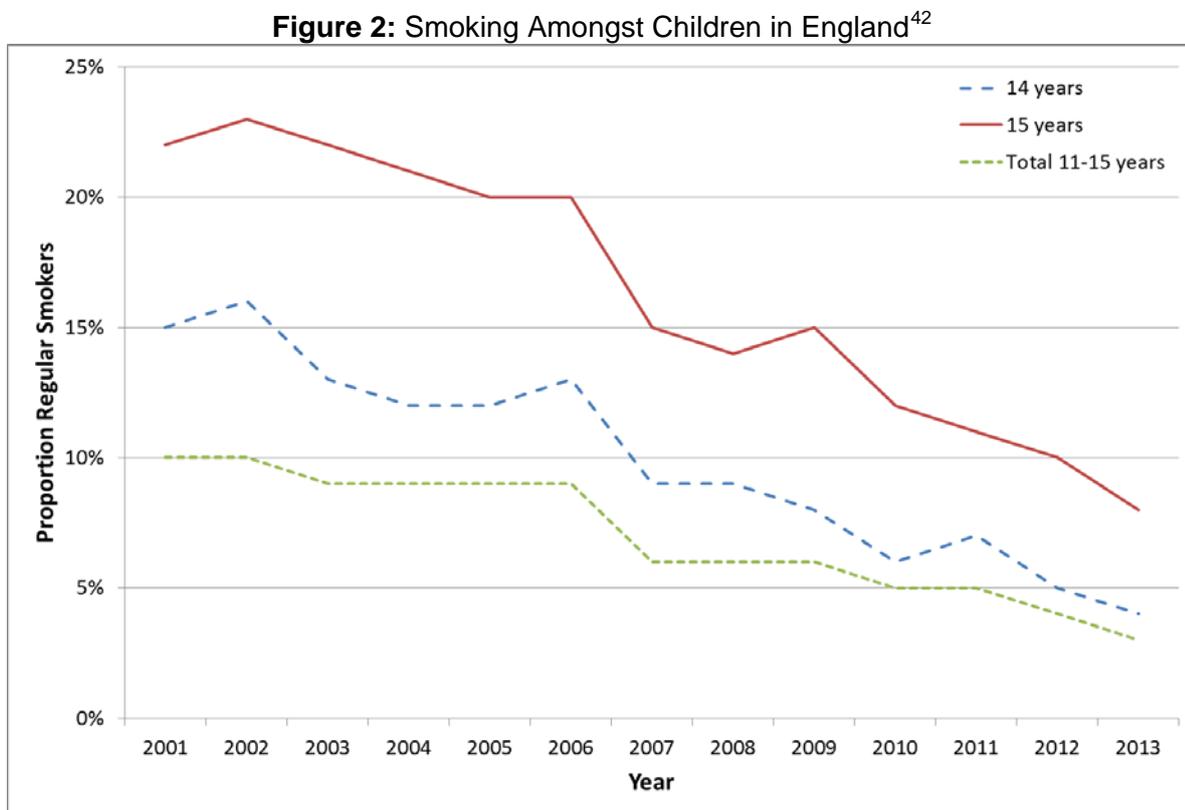
³⁹ Cancer Research UK (2012). *The packaging of tobacco products*. The Centre for Tobacco Control Research funded by Cancer Research UK, University of Stirling and the Open University, Stirling.

⁴⁰ Wakefield, M. (2002). 'The cigarette pack as image: New evidence from tobacco industry documents' in *Tobacco Control*. 11, Supplement 1, pp.i73-i80.

⁴¹ Action on Smoking and Health (2012). *ASH Briefing: Plain Packaging*. ASH, London. Online at: http://ash.org.uk/files/documents/ASH_699.pdf.



Source: General Lifestyle Survey / Opinions and Lifestyle Survey



67. To inform policy development and responses to the 2012 consultation, the Department of Health commissioned a systematic review of the evidence on standardised tobacco packaging.⁴³ The review was supported through the Public Health Research Consortium (PHRC).⁴³ This is referred to as the “evidence review” below. Please note that Sir Cyril Chantler refers to the evidence review as the “Stirling Review” in his report.⁵⁹

⁴² Source Smoking Drinking and drug use among young people in England 2013 available at <http://www.hscic.gov.uk/catalogue/PUB14579>

⁴³ The systematic review was supported through the Public Health Research Consortium (PHRC), a network of researchers funded by the Department of Health’s Policy Research Programme. The lead teams on the review were from the University of Stirling, the University of Nottingham and the Institute for Education, London. The review has been peer reviewed in accordance with the Department of Health’s Research Governance Framework. The PHRC report represents the work and views of the authors, not necessarily those of the Department of Health. Moodie, C. et al. (2012). *Plain Tobacco Packaging: A systematic review*. Public Health Research Consortium. Online at: http://phrc.lshtm.ac.uk/project_2011-2016_006.html

68. Initial evidence on the impact of standardised packaging on smoking beliefs and quitting thoughts in Australian smokers has been reported by Wakefield et al. (2013)⁴⁴ among 388 participants smoking from a standardised pack and 148 smoking from a branded pack. Those smoking from a standardised pack consistently rated quitting as a significantly higher priority and a significantly higher proportion in this group thought about quitting at least once a day in the last week (36.8% versus 21.8%). The odds ratio on this measure was statistically significant in the unadjusted analysis and in both models which adjusted for covariates. However, there was no significant difference in the proportions seriously considering quitting in the next six months. Further details of this study can be found in an update to the evidence review.⁴⁵

Findings of the evidence review

Appeal

69. Studies cited in the PHRC evidence review show that standardised tobacco packaging reduces the appeal of tobacco products to both adults and children, as compared with branded packs. For example, tobacco in standardised packs can be perceived to be of poorer quality. The removal of branding features, such as logos, colour and typeface identified with a particular brand, is likely to reduce the ability of the pack to be linked with brand identity and therefore may weaken the attachment of a smoker to a particular brand. The ability of manufacturers to introduce frequent changes of colour, logos and typefaces allows tobacco brands to be refreshed and modernised, often on a regular basis. There are benefits to manufacturers of refreshing packaging, as was illustrated by the £60 million increase in sales of Lambert & Butler in the UK in November 2004 following the introduction of a new “celebration” pack.⁴⁶
70. Branded tobacco packaging can result in the creation of smoker identity that involves the projection of personality attributes by specific brands, such as “cool” and “popular”. Tobacco industry documents reveal the importance of creating favourable brand image, with one in particular setting out that ‘In the cigarette category brand image is everything. The brand of cigarettes a person smokes is their identity. Cigarettes tell others who they are as a person’⁴³.
71. In contrast, standardised tobacco packs are consistently rated as less appealing in terms of the projection of personality attributes. Standardised tobacco packs can weaken smokers’ attachment to brands and hence are associated with a less desirable smoker identity. A survey of smokers’ perceptions in which branding was increasingly removed showed the plainest packs projected less mature and less popular attributes.⁴⁷ Cigarettes in standardised packs were perceived to be less trendy and stylish and their smokers less sociable and outgoing than smokers of cigarettes from the original branded pack. A study in Scotland asked participants to use their own packs and standardised packs, each for a two week period, to research smokers’ reactions to using standardised and branded packs. Of 140 smokers aged 18-35 who enrolled, 48 completed the full study as intended. The use of standardised packs resulted in the participants feeling more negative about smoking, including reduced enjoyment and satisfaction, as well as experiencing significantly increased feelings of embarrassment and shame.⁴⁸ Participants reported that they were more likely to keep the pack out of sight, to cover the pack, to smoke less around others, to think about quitting and to want to quit. At the fourth measurement point, 44% reported smoking less around others with the “Kerros” pack (the fictitious brand name ascribed to

⁴⁴ Wakefield M A, Hayes L, Durkin S, Borland R (2013). Introduction effects of the Australian plain packaging policy on adult smokers: a cross-sectional study. *BMJ Open* 3:e003175.

⁴⁵ Moodie C, Angus K, Stead M and Bauld L (2013). Plain tobacco packaging research: an update. Stirling: Centre for Tobacco Control Research, Institute for Social Marketing, University of Stirling

⁴⁶ Good G (2006). Global brand director, Imperial tobacco group plc. Presentation at UBS Tobacco Conference, 1 Dec 2006. Available at: http://www.imperial-tobacco.com/files/financial/presentation/011206/ubs_transcript.pdf

⁴⁷ Wakefield M, Germain D, Durkin SJ (2008). How does increasingly plainer packaging influence adult smokers’ perceptions about brand image? An experimental study. *Tobacco Control*, 17: 416-21

⁴⁸ Moodie C, Hastings GB, Mackintosh AM, Ford A (2011). Young adult smokers’ perceptions of plain packaging: A pilot naturalistic study. *Tobacco control*, 20: 367-373 in Moodie C, Stead M, Bauld L, McNeill A, Angus K, Hinds K, Kwan I, Thomas J, Hastings G (2012). Plain tobacco packaging: a systematic review. Stirling: University of Stirling.

the standardised pack) compared with 7% with their own pack ($p < 0.001$). At the same time point, a higher proportion of participants with the standardised pack reported thinking about quitting than those using their own branded pack (52% versus 28%, $p < 0.01$) and a higher proportion reported wanting to quit with the standardised than with their own pack (37% versus 26%, $p < 0.05$). Participants also reported that they were more likely to forgo a cigarette with the standardised pack than with their own branded pack (30% versus 9%, $p < 0.05$). A further survey showed that smokers who are more motivated to quit consider standardised packs as most likely to help motivate cessation.⁴⁹

72. The evidence review identified relatively few studies that compared the appeal of tobacco packaging for children with that among adults. Those studies that did, however, showed that younger participants were more affected by standardised tobacco packaging than adults. A Canadian study found smoking and non-smoking teenagers were much more likely to give standardised tobacco packs negative ratings than branded packs on a range of attractiveness criteria (ugly/attractive, boring/exciting, old fashioned/modern, awful/nice, dull/colourful, nerdy/cool).⁵⁰ A survey in New Zealand found that smoking and non-smoking young adults were 25 times more likely to give a plain pack the worst rating (least likely to share with a new group of friends) than a branded pack.⁵¹
73. Young adults, when using standardised tobacco packs, are more likely to think of quitting or increasingly want to quit as branding is removed. Standardised tobacco packs have been found to have poor symbolic power for young people seeking to create an identity through smoking.⁵² Donovan (1993) found that smoking and non-smoking 11-17 year olds rated standardised tobacco packaging significantly less appealing than smoking and non-smoking 18-29 year olds.⁵³ A study of females aged 16-19 years old in the UK found standardised tobacco packs were rated as significantly less appealing as branded packs targeted at women.⁵⁴

Health warnings

74. The evidence review concludes that health warnings become more prominent with the removal of branding and standardised tobacco packaging is, therefore, likely to result in increasing attention being paid to the warnings. In addition, the prominence of health warnings on standardised packs aids the impression of seriousness and the credibility of the warnings. Given the number of times smokers (and possibly others) look at cigarette packs every day, the importance of health warnings in communicating the health harms of using tobacco is high and may be enhanced by standardised packaging.
75. A study in Canada showed that recall of the health warning "Smoking can kill you" from the side of a cigarette packet was 22% for branded packs compared with 56% for standardised packs ($p < 0.001$).⁵⁵ In

⁴⁹ Gallopel-Morvan K, Moodie C, Hammond D, Eker F, Beguinot E, Martinet Y (2011). Consumer understanding of cigarette emission labelling. *European Journal of Public Health*, 21: 373-375 in Moodie C, Stead M, Bauld L, McNeill A, Angus K, Hinds K, Kwan I, Thomas J, Hastings G (2012). Plain tobacco packaging: a systematic review. Stirling: University of Stirling.

⁵⁰ Centre for Health Promotion (1993). *Effects of plain packaging on the image of tobacco products among youth*. University of Toronto: Centre for Health Promotion.

⁵¹ Hoek J, Gendall P, Louviere J (2009). Tobacco Branding and Plain Packaging: The New Frontier in Tobacco Control? In Moore B, Paappalardo J, Wilkie W (Eds.), *Proceedings of the American Marketing Association Marketing and Public Policy Conference*, Washington DC, May 28-30.

⁵² Comité National Contre Tabagisme (2008). "Comment mettre en oeuvre les dispositions de la CCLAT pour parvenir à une "dénormalisation" de la consommation de tabac?" *Evaluation de l'impact du paquet de cigarettes neutre: Résultats d'une étude qualitative menée sur 34 personnes* [Evaluation of the impact of a plain cigarette pack: Results of a qualitative study with 34 people]. Report for the Institut National de Cancer. Paris: CNCT.

⁵³ Donovan R (1993). *Smokers' and non-smokers' reactions to standard packaging of cigarettes*. Perth Australia: University of Western Australia.

⁵⁴ Hammond D, Daniel S, (2011). UK plain pack study among young women. Submitted to *Journal of Adolescent Health*.

⁵⁵ Goldberg ME, Leifield J, Kindra G, Madill-Marshall J, Lefebvre J, Martohardjona N, Vrendenberg H (1995). *When Packages Can't Speak: Possible impacts of plain packaging of tobacco products*. Prepared for Health Canada. Toronto, Canada in Moodie C, Stead M, Bauld L, McNeill A, Angus K, Hinds K, Kwan I, Thomas J, Hastings G (2012). *Plain tobacco packaging: a systematic review*. Stirling: University of Stirling.

a second North American study undertaken in classrooms in Chicago and Ontario, 51% of the students in Ontario said that it was easier to see the health warning on the standardised pack compared with 29% for the regular pack. The other 20% said it made no difference.⁵⁶

76. A Belgian study researched the motivations of young people choosing cigarette packs. The participants, both daily and non-daily smokers, commented on how the warnings were more salient on the standardised pack than the branded pack.⁵⁷ The study concluded that the prominence and perceived seriousness of health warnings were greater with standardised packs than branded packs. It also appears that recall of the health warning itself is greater because the standardised pack has fewer distractions and fewer stimuli for the smoker to process.

Perceived quality

77. The evidence review found that smokers' perceptions of the quality of tobacco can be influenced by branding. A survey of adults and young people in the UK, comparing standardised white and branded packs, found that differences between alternative brand variants in perceived smoothness of taste were less likely to be recorded when standardised white packs rather than branded packs were being used. Comparing standardised brown packs with conventional branded packs, significantly fewer adults associated the standardised pack with a smoother taste using the examples of Mayfair King Size (9% versus 18%, $p < 0.001$) and Lambert & Butler King size (11% versus 20%, $p < 0.001$). Similarly, significantly fewer youth smokers gave a smoother taste rating to the standardised Mayfair pack (13% versus 20%, $p = 0.001$) or the standardised Lambert & Butler pack (12% versus 26%, $p < 0.001$) when compared with the respective branded packs.⁵⁸

The evidence review's' key findings

78. The following are the evidence review's⁴³ key findings:

Appeal of cigarettes, packs and brands:

- All studies reported that plain packs were rated as less attractive than branded equivalent packs, by both adults and children.
- Plain packs were perceived to be poorer quality, poorer tasting and cheaper than branded equivalent packs.
- Positive impressions of smoker identity and personality attributes associated with specific brands were weakened or disappeared with plain packaging.
- Non-smokers and younger people responded more negatively to plain packs than smokers and older people.

Salience of health warnings:

- Overall, the studies suggest that plain packaging tends to increase the recall of health warnings, the attention paid to them and their perceived seriousness and believability.

⁵⁶ Rootman I, Flay BR, Northrup D, Foster MK, Burton D, Ferrence R, Raphael D, Single E (1995). *A study on youth smoking: Plain packaging, health warnings, event marketing and price reductions*. Toronto, ON, Canada: University of Toronto, University of Illinois at Chicago, York University, Ontario Tobacco Research Unit, Addiction Research Foundation in Moodie C, Stead M, Bauld L, McNeill A, Angus K, Hinds K, Kwan I, Thomas J, Hastings G (2012). *Plain tobacco packaging: a systematic review*. Stirling: University of Stirling.

⁵⁷ van Hal G, Arts M, Vriesacker B, Fraeyman J, Roos S (2011). *Tobacco plain packaging: perceptions of Flemish teenagers*. Unpublished manuscript in Moodie C, Stead M, Bauld L, McNeill A, Angus K, Hinds K, Kwan I, Thomas J, Hastings G (2012). *Plain tobacco packaging: a systematic review*. Stirling: University of Stirling.

⁵⁸ Hammond D, Dockrell M, Arnott D, Lee A, McNeill A (2009). Cigarette pack design and perceptions of risk among UK adults and youth. *European Journal of Public Health* 19: 631-637.

- Findings appear to be moderated by the type, size and position of health warning used.
- Only one study examined sub-group differences, and reported that non-smokers and weekly smokers may pay more attention to warnings on plain packs than daily smokers.

Perceptions of product harm and strength:

- Plain packaging can reduce misperceptions about the relative harmfulness of different brands.
- Colours of packs affect perceptions of product harm and strength. In general, plain packs are perceived as more harmful than branded packs if in a darker colour such as brown and, conversely, less harmful than branded packs if in lighter colours such as white. Red packs are perceived to contain stronger cigarettes than light-coloured packs.
- Use of descriptors such as ‘gold’ or ‘smooth’ on plain packs have the potential to mislead consumers, as they do on branded packs.
- In general, smokers are more likely to have misperceptions about the harmfulness of packs, both branded and plain, than non-smokers.

Smoking related attitudes, beliefs, intentions and behaviour:

- Plain packs appear to increase negative feelings about smoking.
- Plain packs are generally perceived as likely to have a deterrent effect on the onset of smoking by young people and as likely to encourage existing smokers to reduce their consumption or to quit, although in some studies they are perceived as likely to have little impact.
- Non-smokers, lighter smokers and younger people are more likely to perceive that plain packs would discourage or reduce smoking.

Independent review of public health evidence for standardised tobacco packaging (Chantler Report)

79. Sir Cyril Chantler was commissioned by the Government in November 2013 to give advice on whether or not the introduction of standardised packaging is likely to have an effect on public health, and what any effect might be, particularly in relation to the health of children. When undertaking his review he considered three key questions and came to the following conclusions:
- ***Is standardised packaging likely to lead to a reduction in the consumption of tobacco?***
 - Sir Cyril considered evidence from the Stirling Review and commissioned his own independent assessment to make sure the Stirling Review was robust. He accepts the findings of the Stirling Review that standardised packaging has been shown to reduce pack and product appeal. He considers it likely that standardised packaging will result in smokers and potential smokers feeling more negative about smoking, susceptible children and young adult smokers becoming less likely to associate particular brands with the peers they want to emulate and health warnings becoming more credible when not next to attractive packaging. This reduction in appeal is likely, in due course, to translate into changed behaviour and so to a reduction in tobacco use. Overall he expects standardised packaging, over time, to contribute to a reduction in the prevalence of smoking
 - ***Does branded packaging promote tobacco consumption, especially by encouraging children to take up smoking?***

- Very strong evidence shows that children who are exposed to advertising or promotion of tobacco products are more likely to subsequently take up smoking. Branded cigarettes are ‘badge’ products, frequently on display, which therefore act as a “silent salesman.” The tobacco industry argues that all of its marketing activity, including packaging, aims solely to persuade existing adult smokers to switch brand and never targets children or new smokers. However, Sir Cyril has heard no coherent argument as to how this separation happens in practice. In his view children and non-smokers cannot be ‘quarantined’ from seeing tobacco packaging and once they are exposed to it, they are susceptible to its appeal whether it is intended to target them or not. In the light of these and other considerations he believes that branded packaging contributes to increased tobacco consumption.
- ***Is it likely that standardised packaging will lead to an increase in tobacco consumption by lowering the price of tobacco as the market is commoditised or by increasing the consumption of cheap illicit products?***
- Sir Cyril is not convinced by these arguments. He considers that the risk of prices falling is small, but if it were to happen and undermine the objectives of standardised packaging then this could be mitigated through taxation. He notes that in Australia prices have continued to rise, above and beyond tax increases since plain packaging. He has not found any convincing evidence to suggest that standardised packaging would increase the illicit market. The main driver to an increase in the illicit market seems to be price. He notes that what constrains the size of the illicit market is not a lack of demand, but restrictions placed on supply by border controls. He says that if this were not the case then the size of the illicit market would have increased over the last 14 years as tobacco taxes have risen in real terms. Instead the size of the illicit market in the UK has roughly halved. He says that HMRC’s actions in combating illicit trade appear to have been very effective. It seems to Sir Cyril that the solution to illicit use is to have an effective enforcement regime, and the enforcement agencies in the UK have already demonstrated that an effective enforcement regime and appropriate sanctions can keep illicit products to low levels.

In coming to his conclusions he considered published studies, met with representatives from the tobacco industry and tobacco control experts, and commissioned independent analysis of the Stirling Review.⁵⁹ He notes that the independent academic analysis of the Stirling Review found that, in their opinion, the work was robust, and notable for the consistency of its findings (paragraph 4.18).

Conclusions on the role of branded packaging

80. Sir Cyril concludes the following on the role of branded packaging: “In my opinion, the balance of evidence suggests that the appeal of branded packaging acts as one of the factors encouraging children and young adults to experiment with tobacco and to establish and continue a habit of smoking. As British American Tobacco Australia’s spokesman acknowledged in our meeting, tobacco companies, like other consumer goods companies, see branded packaging as one of the tools of marketing. This is supported by numerous internal tobacco industry documents. Although the tobacco industry says that the purpose of branded packaging is to encourage brand switching only, they cannot explain how it would only ever attract switchers from one brand to another, and would never encourage initiation from non-smokers or increased overall consumption. Further, they have not been able to explain why, given that advertising and promotion are proven to increase tobacco consumption, the related marketing tool of branded packaging (referred to by Japan Tobacco International’s counsel against the Australian Government as their mobile “billboard”) should so differ in its effect.”

Conclusion on impact of standardised packaging

81. Sir Cyril concludes the following on the impact of standardised packaging: “Having reviewed the findings of the Stirling Review and subsequent Research Update, and the detailed critiques made of them, I believe the evidence base for the proposed “intermediate” outcomes is methodologically sound and, allowing for the fact that overall effect size cannot be calculated from it, is compelling about the likely direction of that effect. Taken together the studies and reviews based on them put forward evidence with a high degree of consistency across more than 50 studies of differing designs, undertaken in a range of

⁵⁹ <http://www.kcl.ac.uk/health/PressRelease3April2014.pdf>

countries. This conclusion is not seriously undermined by the criticisms made, many of which reflect necessary constraints on study design. This is confirmed by the independent analysis I commissioned.”

82. “I am of the opinion that on the basis of the evidence I have seen, it is likely that standardised packaging will result in smokers and potential smokers acquiring more negative feelings about smoking. They will be less deceived into thinking that some brands are healthier than others and that therefore health warnings apply less to them. Susceptible children and young adult smokers will be less likely to associate particular brands with the peers they want to emulate. Health warnings will be more credible, memorable and effective when not confusingly juxtaposed with attractive branded packaging. This is, in turn likely to lead to behavioural changes such as smokers hiding their cigarette packets, thereby diminishing their role in creating an exaggerated view of smoking as a social norm. This may help to make smoking seem less “normal” and therefore less desirable to children to take up smoking to ‘fit in’ with peers.”

Australian experience

83. The Australian Tobacco Plain Packaging Act 2011 prescribed that all tobacco products had to be sold in standardised packaging from December 1st 2012 (manufacturers could not produce branded packs from October 1st 2012 but retailers were able to sell any branded tobacco remaining in stock). This gives us about 18-24 months of Australian experience to analyse. We identify below key data that has emerged from various analyses regarding the impact of standardised packaging.

Prevalence and consumption

84. The latest official data on smoking prevalence rates in Australia was published in summer 2014⁶⁰. This can be seen in Table 1 below. The data suggests that the overall smoking prevalence rate for 14 year olds or older fell from 18.1% in 2010 to 15.8% in 2013 (daily smoker rates fell from 15.1% to 12.8%). These results include an approximate one year impact of standardised packaging between December 2012 and December 2013. It also includes any lag effects of April 2010’s increase in excise (25% increase) and additional price rises implemented by tobacco manufacturers⁶¹. The decrease in overall smoking prevalence is the largest 3-year percentage fall in prevalence recorded as far as the data goes back (a fall of 15.5%). The sample gave around 3,100 daily smokers⁶² and the 12.8% figure was marked as a “statistically significant change between 2010 and 2013”.

Table 1. Prevalence rate of smokers aged 14 years or older from 1991 to 2013, Australian Institute of Health and Welfare, 2013 National Drug Strategy Household Survey report

	1995	1998	2001	2004	2007	2010	2013
Daily smoker	23.8%	21.8%	19.4%	17.5%	16.6%	15.1%	12.8%
Percentage change		-8.4%	-11.0%	-9.8%	-5.1%	-8.8%	-15.5%
Overall smoker	27.2%	24.9%	23.2%	20.7%	19.4%	18.1%	15.8%
Percentage change		-8.5%	-6.8%	-10.8%	-6.3%	-6.8%	-12.7%

85. Whilst daily smokers in nearly all age cohorts specified by the data display decreases in prevalence, both 12-17 years and 70+ years display increases. The daily prevalence rate for 12 to 17 year olds rose from 2.5% to 3.4% between 2010 and 2013, and the daily prevalence rate for those aged over 70 rose

⁶⁰ National Drugs Strategy Household Surveys, <http://www.aihw.gov.au/alcohol-and-other-drugs/ndshs/>

⁶¹ Standardised Packaging - Report of the independent review undertaken by Sir Cyril Chantler, ‘Letter to the Secretary of State for Health, the Rt. Hon. Jeremy Hunt MP’, paragraph 17 and Box 4 page 36

⁶² 23,855 questionnaires were categorised as being complete and useable 12.8% of this is around 3100 smokers see <http://www.aihw.gov.au/alcohol-and-other-drugs/ndshs/2013/data-and-references/>

from 5.6% to 5.8%. The opposite direction in the change in measured prevalence rates for these specific age cohorts relative to the rest of the Australian population may be due to small sample sizes since the data does not mark these changes as statistically significant between 2010 and 2013.

86. Consumption figures largely point to a fall in legal tobacco volumes consumed, corroborating the evidence of falling prevalence rates. The Commonwealth Treasury has advised that tobacco clearances (including excise and customs duty) fell by 3.4% in 2013 relative to 2012 when tobacco plain packaging was introduced.⁶³ Clearances are an indicator of tobacco volumes in the Australian market. Official Australian statistical data shows that total consumption of tobacco and cigarettes in the between January 2014 and March 2014 was the lowest recorded as measured by estimated expenditure on tobacco products⁶³ (3.405 billion Australian dollars).
87. There have been further reports funded by the tobacco industry looking at the impact of standardised packaging on consumption. An industry funded KPMG report suggests that there was no change in tobacco consumption between 2012 and 2013, with legal sales of 15.3 million kg tobacco in 2012 and 15.1 million kg in 2013. The Chantler Report calls into question the robustness of these consumption estimates. In addition, these consumption estimates contradict information contained in two of the big four tobacco companies' half-year/annual reports which stated that product volumes were lower in Australia in 2013.^{64 65}
88. The University of Zurich have written a tobacco industry-funded, non-peer reviewed, paper attempting to look at any impact of standardised packaging on prevalence of the general population.⁶⁶ Using Roy Morgan Single Source data, they obtain estimated monthly prevalence rates. The paper claims to find "*no evidence at all for a plain packaging effect*" beyond the historical downward trend, at a statistical significance level of 95%.
89. This conclusion is however consistent with standardised packaging having had an important impact, for it might be that the introduction of standardised packaging was necessary in order to sustain the historic downward trend. (Considering prevalence against the "current downward trend" implicitly assumes that without intervention prevalence would continue to fall linearly, which is considered highly unlikely).
90. A second problem relates to the basis for concluding that a change in trend is not observed. The paper derives results from a sample size of around 8,900 smoking adults in 2013.⁶⁷ The authors conduct a power analysis to try to show that if, in reality, there was a small decrease in prevalence beyond the current trend due to standardised packaging the probability of them incorrectly concluding there was "*no evidence at all for a plain packaging effect*" would be small. However, they do this by assuming that standardised packaging would cause a drop in prevalence **immediately** in December 2012. Given the mechanism by which standardised packaging is expected to have an impact (through increasing likelihood of quit attempts and of their success, and through diminishing appeal to youngsters) a continuous gradual change of prevalence over 2 years or more would be a more likely outcome. Let us consider a gradual change in prevalence of 1 percentage point in 2 years broadly consistent with the Pechey et. al work and for the sake of argument accept a counterfactual that, without government interventions prevalence would have continued to drop. This would give a change of prevalence of 0.5 percentage points at the end of the first year, and an average decrease of 0.25 percentage points over

⁶³ Australian Government Department of Health, 'Tobacco key facts and figures', <http://www.health.gov.au/internet/main/publishing.nsf/Content/tobacco-kff>

⁶⁴ Imperial Tobacco half-year 2013 results, http://video.merchantcantos.com/media/202678/imperial_tobacco_half_year_results_transcript.pdf

⁶⁵ British American Tobacco Annual Report 2013, [http://www.bat.com/group/sites/uk_9d9kcy.nsf/vwPagesWebLive/DO9DCL3B/\\$FILE/medMD9HEGPT.pdf?openelement](http://www.bat.com/group/sites/uk_9d9kcy.nsf/vwPagesWebLive/DO9DCL3B/$FILE/medMD9HEGPT.pdf?openelement)

⁶⁶ The (Possible) Effect of Plain Packaging on Smoking Prevalence in Australia: A Trend Analysis, A. Kaul and M. Wolf, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2460704

⁶⁷ Visual inspection of figure 1 gives around 4,000 people per month from 2013-2014, figure 2 gives around 18.5% prevalence per month from 2013-2014.

the first year⁶⁸ (beyond the current trend). A drop (beyond the current trend) of around 0.16 percentage points is observed in the paper, which is not inconsistent with the hypothesis.

91. The University of Zurich have written a similar paper to look at any impact of standardised packaging on smoking prevalence of those aged 14 to 17 years in Australia.⁶⁹ There are similar considerations for this paper coupled with an important point that the cross sectional sample size is small (around 140 smoking children in 2013⁷⁰). If there was a small decrease in prevalence beyond the current trend due to standardised packaging, around the value assumed in this IA, it is unlikely to be picked up in this paper (Lavery et. al⁷¹ have made similar observations).
92. London Economics have written an industry-funded, non-peer reviewed, paper attempting to look at any impact of standardised packaging on prevalence of Australian residence aged 18 or over.⁷² Using an online survey, they obtain various prevalence rates pre and post standardised packaging. For July-October 2012 pre standardised packaging the daily smoking rate observed was 20.4%, for March 2013 post standardised packaging it was 0.9 percentage points lower at 19.5% and for July 2013 post standardised packaging it increased by 0.5 percentage points to 20.0% i.e. still lower than the 20.4% pre-packaging levels. When considering these falls, the paper suggests "*The data does not demonstrate that there has been a change in smoking prevalence following the introduction of plain packaging*" this was being considered at 95% confidence level. The paper has a sample size of around 1,900 daily smokers in July-October 2012, 1,000 in March 2013 and 1,000 in for July 2013⁷³ hence it is difficult to show a statistically significant change, even if such a change existed. There were other smaller groups reported upon such as "weekly" and "less than weekly" that showed a similar pattern, but these are of smaller sizes so suffer even more from statistical uncertainty.
93. At this time it is difficult to conclude what the impact of standardised packaging on Australian smoking prevalence has been, due to confounding issues of a general decreasing trend and changes to tobacco prices. There are also general difficulties when investigating impacts that are expected to be relatively small, where there is variation in observations due to the sampling process. Also the policy is at an early stage and data on medium and longer term trends do not exist yet. However the evidence that is available is consistent with a hypothesis that the policy would contribute to a modest decrease in prevalence. The uncertainty in this impact is considered further in the risk and sensitivity section.

Other impacts

94. We have discussed the evidence emerging from Australia with respect to prevalence rates since the majority of costs and benefits are dependent on these variables. Two other areas discussed in the IA for which we can look to Australia for evidence are the potential impacts on illicit trade and serving times at retailers. We discuss what evidence there is emerging from Australia on the impact of standardised packaging on these two factors in the costs and benefits section later in this IA.

⁶⁸ To illustrate what is meant by a continuous gradual change of prevalence of 1 percentage point: 2 years is around 730 days. 1 percentage point decrease over 2 years can be modelled as around 0.0014 percentage point fall per day [from $1/(2*365)$]. So at day 1 of the first year the decrease is approximately 0, in the middle of the first year the decrease is around 0.25 [i.e. $(365/2)*0.0014$] and at the end of the first year the decrease is approximately 0.5 percentage points [i.e. $365*0.0014$]. The average decrease over the year is therefore 0.25 percentage points.

⁶⁹ 'The (Possible) Effect of Plain Packaging on the Smoking Prevalence of Minors in Australia: A Trend Analysis', A. Kaul and M. Wolf, <http://www.econ.uzh.ch/static/wp/econwp149.pdf>

⁷⁰ Visual inspection of figure 1 gives around 220 children per month from 2013-2014, figure 2 gives around 5.3% prevalence per month from 2013-2014.

⁷¹ Standardised packaging and tobacco-industry funded research, Correspondence, The Lancet Vol 383 April 19, 2014, available at <http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673614604992.pdf?id=haa0COcZt5W2I6JjZIQHu>

⁷² An analysis of smoking prevalence in Australia, London Economics, November 2013, available at <http://londoneconomics.co.uk/wp-content/uploads/2013/11/London-Economics-Report-Australian-Prevalence-Final-Report-25-11-2013.pdf>

⁷³ Figure 1 gives a sample size of 9,226 * 20.4% pre standardised packaging and 5,114*19.5% and 5,247*20% post.

Policy Options

Option 1: Require changes to legislation to bring the UK in line with the European Tobacco Products Directive in 2016 (i.e. go no further than the UK's legal requirements)

95. Option 1: This constitutes the baseline against which standardised tobacco packaging is assessed. It incorporates all existing tobacco control measures currently in place and expected measures, including legislation to end the open display of tobacco products and the revised TPD which will be implemented in 2016. By definition, this option involves zero costs and zero benefits in this IA.
96. The impact of standardised packaging on smoking behaviour has been considered against the background of the projected benefits attributable to existing and expected policies, both in terms of adults quitting (or not relapsing) and young people prevented from taking up smoking. In both cases, the expected impact of standardised packaging derived from the expert panel described below has been reckoned as additional to the impact of ending the display of tobacco in shops.
97. The full effect of the ending the display of tobacco in shops in England is projected to be a fall in the percentage of 11-15 year-old "ever smokers" from 25% in 2011 when the display ban was introduced (according to the NHS Information Centre survey of Smoking, Drinking and Drug Use Among Young People in England in 2011) to around 20%.⁷⁴ The implementation of the revised TPD is assumed to reduce this prevalence by a factor of 1.9% over 5 years (Annex E). We use this anticipated prevalence as the baseline against which standardised packaging is assessed
98. The new European TPD will come into force in May 2016, and includes the following few requirements:
- Mandatory "combined" picture/text health warnings to cover 65% of the front and the back of cigarette packs, and to be aligned with the top edge of the pack.
 - New textual health warnings will be required on 50% of the sides of packs (e.g. "smoking kills – quit now"; "tobacco smoke contains over 70 substances known to cause cancer"), replacing the current tar, nicotine and carbon monoxide (TNCO) levels.
 - There will be minimum dimensions for the health warnings and slim, 'lipstick'-style cigarette packs, which are often targeted to young women, will no longer be allowed.
 - To improve the visibility of health warnings, cigarette packs will be required to have a cuboid shape and each pack will contain a minimum of 20 cigarettes.
 - No promotional or misleading features or elements will be allowed on packs. This includes, for example, references to lifestyle benefits, to taste or flavourings or their absence (e.g. "free of additives"), special offers or suggestions that a particular product is less harmful than another.
 - Similar rules will apply to hand rolling tobacco (HRT) packs, which will also have to carry 65% combined health warnings on the front and back as well as the additional text warnings. HRT products can have a cuboid or cylindrical shape, or be in the form of a pouch, and each pack will contain a minimum of 30g of tobacco. Further details on the TPD are discussed in Annex E.
99. Amongst adults, the health benefits of ending the display of tobacco were based on an expected 3% increase in annual quit attempts and relapses, giving a 0.04 percentage point decrease in prevalence annually. The implementation of the revised TPD is assumed to reduce the prevalence by a factor of 1.9% over 5 years in line with the TPD impact assessment (Annex E).

⁷⁴ This is based on updated estimates of the prevalence of ever smoking and regular smoking compared with the IA for the ending of tobacco displays.

100. A transposition Impact Assessment for the revised TPD will be published in due course. We have identified where there are likely overlaps between TPD and standardised packaging assessments and adjusted our calculations accordingly. For example we attribute some of the health benefits from reduced smoking prevalence⁷⁵ to TPD and the remainder to standardised packaging, so as not to double count any effects.

Option 2: Go beyond the European Tobacco Products Directive in 2016 and require standardised packaging

101. Option 2: Require standardised packaging of cigarettes and hand rolling tobacco (HRT). This would involve the standardisation of pack colour, size and shape, and the removal of all branding from all external and internal packaging, with the exception of a brand and variant name which would appear in a standardised format on the pack. Markings required by law, such as health warnings and fiscal marks, would be retained.
102. Guidelines to Parties for the implementation of Article 13 of the FCTC set out the following description for standardised packaging of tobacco:

*The effect of advertising or promotion on packaging can be eliminated by requiring plain packaging: black and white or two other contrasting colours, as prescribed by national authorities; nothing other than a brand name, a product name and/or manufacturer's name, contact details and the quantity of product in the packaging, without any logos or other features apart from health warnings, tax stamps and other government-mandated information or markings; prescribed font style and size; and standardized shape, size and materials. There should be no advertising or promotion inside or attached to the package or on individual cigarettes or other tobacco products.*⁷⁶

103. Reflecting the FCTC guidelines, draft regulations for standardised packaging of tobacco products were developed for the 2014 consultation and set out the proposed requirements for standardised packaging, should it be introduced. An overview of the draft regulations was provided in section 5 of the consultation document.
104. The draft regulations would not affect other labelling requirements for tobacco products such as health warnings and fiscal marks or features such as authentication markings and security features. The provisions of the regulations only apply to the areas of the packaging remaining after those requirements have been applied.
105. The draft regulations would require the use of specified standard colours for all external and internal packaging and would only permit specified text in a standard typeface. The draft regulations would have the following effect for packs of cigarettes and pouches of hand-rolling tobacco:

Pack Colour (Regulations 3 and 7)

- The outside surfaces of packs (external packaging) would be drab brown with a matt finish.
- The inside surfaces of packs (internal packaging) would be white or drab brown.

Permitted text and features (Schedules 1 and 3)

- Text on packaging would be in a grey Helvetica typeface, with a specified maximum size.
- Brand and variant names may appear once on each of the front, top and bottom surfaces of cigarette packs, once on each of the front and back surfaces and on the surface hidden beneath the flap of hand-rolling tobacco pouches.
- A bar code may appear once on a pack or pouch to facilitate sale and stock control.
- A producer's contact details may appear once on a pack or pouch.
- The pack or pouch may include a measurement mark and a trade description (for example: "20 cigarettes" or "30g hand-rolling tobacco").

⁷⁵ See paragraph 211

⁷⁶ From Article 13 (tobacco advertising, promotion and sponsorship) of the World Health Organization's *Framework Convention on Tobacco Control*. FCTC implementation guidelines are available on the web at: www.who.int/fctc.

- If a pack of hand-rolling tobacco includes filters or cigarette papers inside the pack, then the pack may have text giving this information (for example: “includes cigarette papers and filters” or “includes cigarette papers”).

Cigarette packets (Regulation 4)

- Cigarette packets must be cuboid and made of either a carton or soft material. If packets can be re-closed or re-sealed, then they must either have a flip-tip lid or be a shoulder box with a hinged lid.
- A pack of cigarettes must contain a minimum of 20 cigarettes.

Packets of Hand-rolling tobacco (Regulation 8)

- Hand-rolling tobacco packets must be cuboid, cylindrical or in the form of a pouch.
- A pack of hand-rolling tobacco must contain at least 30 grams of tobacco.

Other provisions (Schedules 3 and 4 and Regulations 11 and 12)

- Pack surfaces must be smooth, with no embossing or irregularities of texture.
- Wrappers must be completely clear and transparent.
- Inserts or other additional material not integral to the packaging would be prohibited (except for cigarette papers and filters included with packs of hand rolling tobacco).
- Packaging would not be permitted to include aspects that change after purchase, make noises or produce a smell not normally associated with tobacco packaging.

Individual cigarettes (Regulation 5)

- Cigarettes would be white with a cork effect or white tip and may have text indicating the brand name (in a specified typeface and location).

106. The draft regulations do not set out any requirements regarding the size or length of cigarettes, or the size of cigarette packets.

107. Cigarette and HRT manufacturers’ ability to circumvent standardised packaging requirements by producing other products with tobacco branding, such as cigarette cases or covers for packs, is already prohibited as a form of promotion.

Option 3: Defer a decision pending collection of evidence from experience in Australia

108. Defer a decision on whether or not to implement standardised packaging until further evidence is available regarding its impact in Australia. Depending on the implications of this evidence the policy will either be implemented as in option 2, or cancelled with option 1 being followed.

Option 2: Categorisation of benefits and costs

109. If the policy is successful, the main benefits may accrue through:
- health benefits consequent upon reduced take-up of smoking; and/or
 - health benefits consequent upon improved quit rates;
 - reduced adult and child ill-health caused by second hand smoke (SHS), including avoidable treatment costs;
 - reduction in health inequalities;
 - improved workplace productivity;
 - cleaner streets;
 - pecuniary benefits to quitters and non-starters net of loss of pleasure from smoking and withdrawal pain.
110. The main categories of costs to be considered are:
- the costs to manufacturers, wholesalers and retailers, including a reduction in profits associated with a reduction in branding, and any other transition costs in the redeployment of resources towards the provision of other goods and services;
 - costs to the Exchequer through the loss of tax from a reduced tobacco consumption,
 - losses to the Exchequer from brand-related downtrading
 - possible losses to the Exchequer, manufacturers and distributors from any increase in cross-border shopping or the illicit market
111. The reduction in brand-related expenses in the packaging of branded products may generate:
- cost-saving to business associated with the loss of the scope for branding
- There may also be:
- a loss of consumer surplus associated with diminished branding.
112. Types of business which could be affected by standardised packaging are as follows:
- Tobacco manufacturers who would expect to have reduced sales and expect to have reduced profits (associated with a reduction in brand value). They would be required to transform their current brand led business model in the UK. They may also have a potential loss due to increased illicit trade;
 - Wholesalers who would expect to have reduced tobacco sales (potentially replaced by other goods). They may have reduced profits associated with a reduction in branding. They may also have a potential loss due to increased illicit trade and cross border shopping;
 - Retailers who would expect to have reduced tobacco sales. They would expect to have reduced profits associated with a reduction in branding. They may also have a potential loss due to increased illicit trade and cross border shopping;
 - the carton and packaging industry, who have invested heavily to meet the needs of the tobacco industry, including the regulatory requirements directed by Government;
 - component suppliers (such as filter, paper, dyes, ingredients, etc.);
 - creative packaging designers and developers; and
 - machinery manufacturers in the EU (who design and manufacture machinery used to package tobacco products).
113. There are four categories of impacts on these businesses:
- Those resulting from reduced final demand for tobacco and corresponding reductions in demand for inputs into the manufacturing process. Reduced profits resulting from such reductions in demand will be (at least partially) offset by increased profits on goods and services purchased in place of tobacco

(though not necessarily in the same industries).⁷⁷ However, we allow for a one-off reduction in profits, associated with branding, due to downtrading from more expensive to less expensive brands as well as due to quitters who currently smoke more expensive brands, as the investment in brands that has generated the “good will” that allows higher profitability on these cigarettes cannot be redeployed.

- Those resulting from the consumption being diverted from the licit UK duty paid market to the illicit market or to other countries by cross border shopping.
 - Transition costs for each group of businesses in the adaptation required of capital equipment and other inputs from an environment of branded packs to a standardised packaging environment. Transitional costs also include the lost profit stream from capital already invested in gravure machinery. .
 - Longer term implications for the costs of tobacco manufacturing under standardised packs. Following the initial period of transition, production costs associated with standardised packs are likely to be lower than those currently incurred to produce branded packs.
114. These benefits and costs are discussed and estimated in turn, and net impact is derived below. It should be reiterated that the health benefits and costs in this IA are assessed on the basis of additional benefits and costs that would be likely to accrue over and above existing tobacco control measures and anticipated measures in place at the time of standardised packaging implementation. This includes the benefits of recently commenced legislation in England to end tobacco sales from vending machines, ending the open public display of tobacco products in shops by April 2015, and the benefits and costs arising due to the revised TPD.

Manufacturing and Distributor Costs and Cost Savings

Transition Costs

115. Standardised packaging might be expected particularly to reduce the appeal of high price brands of cigarettes. While we expect there to remain residual brand loyalty among smokers, tobacco companies say that, in time, we could see smokers trading down to lower price brands (downtrading). We therefore expect a more rapid decline in sales of high price than of low price brands because of a greater likelihood of quitting among smokers of high price brands and because of downtrading from high price to low price brands among those who continue to smoke. We assume that the rate of downtrading between the top two price bands and the lower two price bands will take place at twice the rate after standardised packaging as before standardised packaging, and consultation responses sighting Australian data have suggested this estimate may be fairly accurate (see Annex D).
116. Any impact on profitability for manufacturers will over time be eroded as people and institutions move their investment between different opportunities. In the event that revenues fall (for example, tobacco revenues fall due to decreased smoking prevalence or customers downtrading to cheaper brands) and lower profits are expected, investments will be re-allocated elsewhere.⁷⁸ (Although re-allocated elsewhere, these lost profits have been estimated within and further discussed in the One In Two Out section.) The *net* impact on returns to business is best expressed as a one-off decline in the ability of manufacturers of premium tobacco products to generate future economic benefit from the visual branding in which they have already invested. Reduced profits attributable to the reduction in branding due to increased downtrading and due to smokers who smoke premium/mid-price brand quitting are quantified below.

⁷⁷ Potentially consumers may save part of their income that is no longer spent on tobacco. It is standardly assumed that any shortfall in aggregate demand consequent upon such changes would be offset by macro-economic policy.

⁷⁸ The medium-to-long run return on such investments will depend on various factors, such as the market structure and productivity of industries following the implementation of standardised packaging.

117. Positive brand value is an asset to tobacco manufacturing firms. It enables them to sell their goods to consumers partly based on the brand characteristics of their products (i.e. above and beyond any difference in other characteristics). Consumers are assumed to value, at a premium, products in which brand value has been successfully built up by manufacturers. Premium branded tobacco products are able to generate economic benefit, in the form of profits, to tobacco manufacturing firms.^{79 80}
118. Standardised packaging reduces the ability of tobacco manufacturing firms to sustain sales of higher priced products relying on brand characteristics. We assume that, in aggregate, the ability of tobacco manufacturers to generate profits will therefore diminish for the period in which current brand investments would have depreciated. This is because tobacco manufacturers will be less able to generate profit from consumers who base their purchasing decision on packaging above and beyond any other differences. This loss incurred by manufacturing firms as a result of changing consumption patterns we label a reduction in brand value.
119. To measure the reduction in brand value we estimate the reduction in the ability of tobacco firms to generate additional profit from consumers by selling premium branded products compared to economy products. We estimate this firstly by the expected increase in downtrading from premium/mid-price to economy/ULP brands. The estimated loss of profits accruing to producers of premium/mid-price packs as a result of such downtrading is our estimate of part of the profit lost.
120. During the 2014 consultation we assumed that all cigarette packets cost broadly the same to produce, this gave a difference in profit between a pack of 20 in one of the top two price brands (premium/midprice) as opposed to the bottom two price brands (economy/ULP) of around £0.65. However, 2014 consultation responses have suggested that premium packs cost more to produce than ULP packs. Using information in this response we estimate that it costs 18p more to produce a premium/midprice pack than an economy/ULP pack.⁸¹ Therefore the £0.65 estimate reduces to £0.47. We assume that this additional profit on a higher price as opposed to a lower price brand is split⁸² between manufacturer and retailer, with no extra profits for a premium/mid-price pack above an economy/ULP pack for the wholesale sector.⁸³ The manufacturer's share is the residual after deducting the retailer's share, the latter being based on evidence from the retail sector on the retailer's margin on cigarettes at different price points.
121. For Net Present Value (NPV) purposes the ultimate impacts of reduced profits of multinational tobacco companies are on UK shareholders from foreign-based activity, as well as transitional costs associated with impacts upon UK-based activity.⁸⁴ Therefore, for the UK NPV we consider the shareholder impact by assuming that 10% of the profits of multinational tobacco companies are received by UK shareholders,⁸⁵ whereas 100% of the retailer's share is retained in the UK. Tobacco market size

⁷⁹ The increased profit levels that tobacco manufacturers make as a result of branding (as discussed in this section) contributes to the total value of their intellectual property

⁸⁰ We are aware that there are alternative methods of valuing brands as suggested in the consultation responses. These have been considered and outlined in Annex G. The method we employ is felt to be the most appropriate method for the purposes of this IA

⁸¹ Consultation evidence suggests that the cost to produce the most expensive pack is 3.5 times as much as the cheapest pack. We then assume a linear relationship between the nth percentile of the different types of pack (ranked by cost to produce) and the cost to produce. We further assume that Premium/Mid-price is represented by the 25th percentile and Economy/ULP by the 75th. This leads to an estimated cost difference of 18p.

⁸² This is not an even split

⁸³ Others such as wholesalers may make some more profit on premium/midprice packs than Economy/ULP. However our estimates suggest that it is very small and is best modelled as 0. If the true value was around 1-2p per pack then the wholesale sector estimate would be around 10% of the retail ones and the retail estimate would reduce by an identical amount. Therefore the NPV would not be changed.

⁸⁴ By contrast, the assessment of impacts upon UK business for OITO purposes is concerned with the share of activity that is based in the UK irrespective of ownership.

⁸⁵ See section 5.25 and footnote 4 in HMT The Green Book, Appraisal and Evaluation in Central Government discussing how appraisals should take into account all the benefits to the UK.

estimates are based on Office for Budget Responsibility (OBR) forecasts (see table 2 and accompanying text in the same section). We also assume that the rates of downtrading discussed above, and that there is a potential small decrease in volume due to a potential increase in cross border shopping and illicit trade (see later). On the basis of these assumptions the discounted loss of profits over 10 years to tobacco companies' UK shareholders from downtrading is estimated at £21m (£210m to all shareholders).

122. The following aspects of our estimate highlight possible uncertainties in our valuations. We note that the 3.5% discount rate used is likely to be lower than the private discount rate used by manufacturers. This will lead to a possible overestimation of discounted lost profits in the IA. Secondly, our valuation of lost profit associated with branding is limited to 10 years. (This essentially assumes that the profit premium will last for 10 years, or the rate of depreciation on packaging branding investment is around 10%) This is not necessarily on an equivalent basis as the estimated health benefits which, due to the nature of life years saved, are evaluated on a lifetime basis (please see later section Health Benefits). This may lead to a possible underestimation of lost profits in the IA. Lastly, we do not include the cost savings to manufacturers from not having to invest in refresh branding over the lifetime of their product which will (partially) offset any downside bias of estimated lost profits. (Since tobacco companies tend to redesign their brands periodically, the introduction of standardised packaging would avoid the costs of brand redesign, yielding additional savings to business.) Each of these factors is difficult to estimate but we might expect them to offset each other overall.
123. As well as the loss due to downtrading, there will also be a loss in profit to manufacturers from quitters. This loss accruing to manufacturers for premium/mid-price brands may be described as another component of the reduction in brand value. We assume that around 390,000 smokers quit due to the policy (see health benefits section). We assume that the decrease in prevalence due to standardised packaging in the premium/mid-price brands is twice that of the decrease in prevalence across all brands, and apply this to the market segmentation provided by a tobacco manufacture (see Annex D). We also assume the same profit and shareholdings as the previous paragraph. These assumptions give a loss in brand value attributable to the discounted loss of profits over 10 years of £14m to tobacco manufacturers' UK shareholders (£140m to all shareholders). Similar uncertainties apply.
124. In addition to manufacturers, there will also be a loss in profit attributable to downtrading incurred by retailers. This isn't classified as a component of brand value, however, since retailers do not own the premium/mid-price brands in question. We estimate their loss in profits using the same method described above. This loss estimated over 10 years and discounted is £90m. (Again we assume that there are no extra profits for a premium/mid-price pack above an economy/ULP pack for the wholesale sector⁸³).
125. There will also be a loss in profit attributable to quitters incurred by retailers. We estimate their loss in profits using the same method described above for manufacturers. This loss estimated over 10 years and discounted is £61m. (Again we assume that there are no extra profits for a premium/mid-price pack above an economy/ULP pack for the wholesale sector⁸³).
126. Beyond the loss of brand value, there is a further expected loss of profits due to a decrease in tobacco sales., An assessment of the extent of this loss can be made by using tobacco market size estimates based on Office for Budget Responsibility (OBR) forecasts and then applying the decrease in prevalence expected from a standardised packaging policy of 0.74 percentage points⁸⁶. This volume loss can be applied:
- to an average profit of 30p per pack⁸⁷ for tobacco manufacturers to give a total discounted loss of £180m over 10 years (not all of this profit loss is to the UK).
 - to an average profit loss of 16p per pack⁸⁸ for wholesalers to give a total discounted loss of £92m over 10 years.

⁸⁶ See table 2 and accompanying text in the same section, with further details on the decrease in prevalence expected in the health benefits section.

⁸⁷ This estimate is informed by Tobacco manufacturers' annual reports. "Pack" refers to 20 factory made cigarette sticks. The same profit margin per unit weight of tobacco i.e. 14g is used is for HRT.

⁸⁸ This estimate is informed by Wholesalers' annual reports. "Pack" refers to 20 factory made cigarette sticks. The same profit margin per unit weight of tobacco i.e. 14g is used is for HRT.

- to an average profit loss of 32p per pack⁸⁹ for retailers to give a total discounted loss of £190m over 10 years.

127. All the losses estimated in these paragraph aside from the loss in brand value should be completely offset by increased profits on goods and services purchased in place of tobacco; however they are shown here to aid understanding of the more immediate impact of the policy if consumers respond as expected, (Note also that the impact upon sales of other goods and services is considered Indirect for OITO purposes.)

Impact upon costs of manufacturing packaging

128. A requirement to package tobacco products in standardised packaging may require initial resource costs to manufacturers within the wider tobacco industry to achieve compliance. In particular, packaging manufacturers (producing printed 'blank' packaging for conversion into finished cigarette packs) and tobacco manufacturers may find that existing capital equipment is not compatible with or inefficient in producing standardised packaging. The 2007 IA for the introduction of picture warnings on tobacco packs⁹⁰ estimated set-up costs at between £3.4m and £4.1m for the UK.
129. Across 27 EU countries, a 2010 Rand Europe study has estimated the administrative cost of introducing mandatory generic packaging at between €32.5m and €125.4m, the same as for making pictorial warnings mandatory.⁹¹ As packaging companies have added additional units to their gravure presses in order to produce the colour picture warnings, this is likely to be an overestimate of the cost of acquiring the capability to manufacture standardised packs. Using the gravure process, a packaging company would simply need to procure the printing cylinder(s) required to print the standardised colour and brand details in addition to the picture warning. The implications of standardised packaging for the efficiency of existing equipment are likely to be of greater concern to packaging manufacturers.
130. At present, around 90% of UK cigarette packets are printed on gravure machines costing around €8m⁹² for a new nine colour press. Much of this equipment, with a lifespan of perhaps 20 years, is relatively new, having been installed to cope with new pack design features introduced by tobacco manufacturers in the last three to five years. It is estimated that approximately €200m has been invested in tobacco packaging equipment across Europe in the last ten years, around 10% of this in the UK. Under standardised packaging, printing of cigarette packs could be performed on offset lithography machines costing around £2m new (£0.5m second-hand), introducing greater competition and exerting downward pressure on costs towards the lower end of the current range of packaging costs (€10-€50 per 1,000 blanks).⁹³
131. The European Carton Makers Association ECMA estimate that 60% of gravure printing plant in the UK would cease operations if standardised packaging was introduced. We can derive a rough estimate of the value of the capital stock which might be affected by taking €20m investment spread over the last ten years as our reference point. Assuming a lifespan of around 20 years, this equipment might have a current economic value of around £10m. Some of this investment will have been made to replace existing machinery but, if we assume that this has been added to an existing capital stock with an illustrative current economic value of £10m, then there would be around £20m worth of machinery in total. If 50% - 60% of the value of this capital is lost (consistent with ECMA estimate), then machinery to the value of between £10 and £15m might be lost (estimates rounded to the nearest £5m) unless it can be re-assigned to the export market.

⁸⁹ This estimate is informed by evidence from the retail sector of the retailers' margin on cigarettes and HRT. "Pack" refers to 20 factory made cigarette sticks. The same profit margin per unit weight of tobacco i.e. 14g is used is for HRT.

⁹⁰ Available at the DH website:
http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_077963.pdf

⁹¹ Tiessen J, Hunt P, Celia C, Fazekas M, de Vries H, Staetsky L, Diepeveen S, Rabinovich L, Ridsdale H, Ling T (2010). Assessing the impacts of revising the Tobacco Products Directive: study to support a DG SANCO Impact Assessment. Cambridge: RAND Europe.

⁹² Based on discussions with industry 29th January 2013 and we are not aware of more accurate estimates after consultation.

⁹³ Taken from talks with packaging industry representatives, 29th January 2013

132. To check the plausibility of this estimate, we can consider how it compares to an estimate of the value of the seven presses currently in operation. As mentioned, these are estimated to cost around €8m each new (around £6m). For £12½m (the midpoint of the £10m-£15m range) to represent a 55% (ditto, the 50% - 60% range) of the current economic value would imply that each has a current value of around £3¼m, which is not implausible. It implies an average age of around six years (out of the twenty year span), which is consistent with what we know of recent investment patterns.
133. The lost profit stream to the packaging manufacturers from capital already invested in gravure machinery is considered a transitional cost. We take the £10m-£15m estimated above for current gravure machines as a proxy estimate for the lost profit stream. Below we note potential reasons why this may be an overestimate or an underestimate (and illustrate the potential magnitude of the underestimate) but keep with it as a central estimate.
134. We note that on the one hand an estimate of £10m-£15m for the lost profit stream may be an overestimate, since notwithstanding the ECMA suggestion, some use may nonetheless be found for the relevant machines over the remaining lifetime of these already purchased machines and hence the profit stream may not be stopped, but may reduce. Standardised packaging is simpler and has lower production costs⁹⁴. (Further, not all the costs may fall upon the packaging manufacturers: the assumption that the profit stream of an already purchased gravure machine printing standardised packaging is reduced relies on the assumption that cost savings are bid away by competing printing firms (according to Bertrand competition), and to the advantage of the tobacco manufactures' increase in profits. This may not take place immediately).
135. We also note that on the other hand an estimate of £10m-£15m for the lost profit stream may be an underestimate over the 10 year appraisal period. This is because the £10m-£15m estimate is driven by the value of the gravure machines that have already been purchased, and there may be a loss of profits beyond the lifetime of these machines due to a reduction of the value of the work these printing companies undertake. Once these gravure machine reach the end of their lifetime production would likely continue on cheaper offset lithography machines. Offset lithography machines cost around one third of a gravure machine (from the €8m and £2m information earlier) therefore eventually we expect around £8.8m less capital to be invested. As returns on investment, or normal profits, are proportional to the capital employed, so the returns to the packaging manufacturers, now from a lower cost base, and hence their profit stream, will eventually be lower. If one were to assume an annual return on investment of capital of 7.3%⁹⁵ and that around one twentieth of the gravure machines are replaced every year (based on a lifetime of around 20 years), and that once all the gravure machines reach the end of their lifetime eventually £8.8m less capital is invested, the reduction in profits to the packaging manufacturers would be around £1.4m (discounted over 10 years). However, this particular lost profit stream, arising indirectly as a result of the failure to reinvest in packaging machinery, would be replicated elsewhere in the economy as a return to increased capital invested in the production of other goods and services. (Note that it is the indirectness rather than the reinvestment that excludes this impact from OITO.)
136. We include £10m-£15m as a transitional cost in the Net Present Value. For NPV purposes (but not for OITO, which is concerned with UK based business activity) the ultimate impacts of reduced profits of multinational packaging companies are on UK shareholders. Therefore, considering not all of these packaging companies' shares are owned in the UK, a proportion of the costs would fall to non UK shareholders. Therefore including all of the £10-£15m cost in the NPV is a slight overestimate which will be lost in the rounded NPV value which is in the order of billions.

⁹⁴ More detail in the enduring costs savings section.

⁹⁵ Based on a Weighted Cost of Capital approach to estimate the profits that these companies would have to earn to justify raising the capital with which to renew their investment. This is in the middle of a range estimates made for other industries, for example 4.3% for the water sector, 8.8% for the energy sector and 10.4-10.8% for the telecoms sector. It is also consistent with an estimate made for the packaging and container sector in Western Europe (From the website of Aswath Damodaran, a Professor of Finance at the Stern School of Business at New York University, http://people.stern.nyu.edu/adamodar/New_Home_Page/home.htm). An alternative approach would be to use a lower value based on the financial accounts of AMCOR, one of the tobacco packaging manufacturers operating in the UK. For AMCOR dividing annual profits after tax by the value of assets for gives a return on investment of 5.8% in 2014 and 4.7% in 2013.

137. After a transitional adjustment to a standardised packaging environment, there would be cost savings to tobacco manufacturers. These enduring savings are described in the appropriate section later.
138. Imperial Tobacco have several machines specially engineered to produce the Glide Tec design, which was launched on to the market in 2011. In addition to supplying the UK market, a significant proportion of the outputs of these machines are intended for the export market (over 20 markets), thus limiting the impact of a UK-specific standardised packaging regime. Glide Tec design may require modification to conform to TPD requirements⁹⁶ hence we assume any costs incurred due to standardised packaging will already have occurred under our base case, thus giving an incremental cost of zero.

TPD

139. As described in Annex E, the revised TPD will require changes to be made to cigarette packages and HRT packaging, for example to display larger warnings and to meet minimum dimensions determined by the required dimensions for health warnings. In light of these requirements, consultation responses suggest that the machinery employed by packaging manufacturers will need to be reconfigured to produce packs in accordance with TPD. For example, in the gravure printing process there will be the need for new cylinders to print the new packs with larger warning signs. There will be a TPD Impact Assessment that will consider these costs.
140. Standardised packaging is designed to be implemented at the same time as TPD, one reason being to stop industry incurring costs twice. This means that, where manufacturers are expected to incur set up costs in order to reconfigure equipment in light of the TPD, the incremental cost of standardised packaging over and above this could be close to zero. Having consulted with this assumption, we are not aware of any quantified evidence of set up costs for standardised packaging beyond those for TPD. Therefore where the requirements of standardised packaging result in expenditure on new equipment, and where this expenditure is equal to that under the TPD, there is no additional cost under Option 2 relative to Option 1.

General employment levels

141. If the impacts of standardised packaging on tobacco consumption were to occur at a particularly rapid pace there may be additional transition costs faced by employees in the tobacco and/or packaging industries. An example of this would be the cost of finding a new job. In general the transitional period will extend over a long enough duration such that any resultant staff turnover will be absorbed within the wider economy. In the broader economy, voluntary staff turnover rates have been dropping (recently to around 1.5% per quarter⁹⁷) and for comparison standardised packaging is expected to reduce smoking prevalence by around 3.8% after 2 years (so around 0.5% per quarter).
142. However, it is possible that this will not be the case where firms are small and the impact of the measures is more direct. In particular, it is possible that there will be some impact beyond what can be absorbed through natural wastage as a result of the direct impact upon packaging manufacturers. Further, as discussed in the OITO section, there have been some closures of tobacco manufacturing facilities in the UK which may have been influenced by expectation of standardised packaging regulation: in such cases the model of gradual change is inappropriate; employment is linked to large indivisible investment and there is a viability tipping point to which this legislation may contribute. Such transitional impacts are costly for the individuals concerned, and should weigh in decision making accordingly.

⁹⁶ Although TPD has been adopted, the European Commission is yet to establish technical specifications for the layout, design and shape of health warnings and how this will be applied to different shaped packages. Therefore one cannot categorically say whether TPD would prohibit Glide Tec or require substantial modification to its design. In the extreme case, where TPD requires no change to Glide Tec packs, and where production could not be redirected to the export market, a proportion of the machinery costing a few million pounds might be made redundant. Tobacco companies have provided no information as to the costs of investments in Glide Tec and so reasonable estimates of this extreme case cannot be made.

⁹⁷ See chart and discussion from the http://www.cipd.co.uk/binaries/megatrends_2013-trends-shaping-work.pdf

143. There has been some assessment of the employment impacts of reduced levels of smoking. A report by York University⁹⁸ looked at the expenditure patterns of current and ex-smokers. They concluded that, as ex-smokers spend more on recreation and entertainment which is largely domestically produced, the net impact would be to increase employment. (If macroeconomic policy is maintaining demand in the economy, this benefit might also be realised through an appreciation in the exchange rate). Their results indicate that “policies aimed at reducing smoking-related diseases and deaths may also benefit the economy by creating more jobs...[and]...it is fortunate and reassuring to discover that government health policies are also good for employment.” (Buck, Godfrey, Raw & Sutton, 1995). We do not monetise this benefit.

Disposal costs

144. We have considered the chance that some duty paid branded packs could be disposed of during the transition to standardised packaging. When considering Australia, the Chantler review stated “retailers returned a significant quantity of tobacco stock in branded packaging during the first half of 2013 which was subsequently destroyed rather than smoked. Stockpiling in anticipation of pre-announced tax increases will also have affected the data.”
145. Any amount of disposal is expected to be dependent on the details of any sell-through period of the legislation. The draft regulations propose allowing a 12-month sell-through period for tobacco products that were manufactured before May 2016. In Australia manufacturers could not produce branded packs from 1st October 2012, and all tobacco products had to be sold in standardised packaging from 1st December 2012. Therefore the 12 month sell-through period proposed is 6 times longer than the 2 month sell-through period in Australia. The same sell-through period was provided when picture health warnings requirements were introduced in the UK in 2008. The Department of Health was not made aware of any significant quantity of non-compliant tobacco stock at the end of that 12-month period. 2014 consultation responses confirmed this view, with the small exception of slow-moving lines such as cigars, cigarillos and pipe tobacco, all of which are currently excused from the proposed requirements for standardised packaging. Tobacco products carrying picture warnings were available in shops within one month of the introduction of the legislation. In addition, due to the high cost of tobacco products, we are aware that small shops are unlikely to carry large stocks of tobacco in reserve, and generally sell and replenish stock on a regular basis. We conclude that we have no reason to believe that there would be any significant quantity of non-compliant tobacco stock after this sell-through period.

Increase in Retail Transactions Costs

146. The IA for the tobacco display legislation cited a total of 66,710 shops selling tobacco in the UK (8,151 large and 58,559 small). Specialist tobacconists (as defined in TAPA) consist of around 50 small shops in England.⁹⁹
147. If selecting and serving a standardised tobacco pack takes longer than for a branded pack, retailers would bear some costs. Whether these costs would be significant has been explored through consultation and through recent empirical research. Any impact on serving time would also impact on the leisure time of consumers. Similarly, if selecting and serving a standardised tobacco pack is quicker, then there would be benefits.
148. There are few studies which have directly investigated the serving time required for a standardised pack as opposed to a conventional branded pack. One simulation study among participants unfamiliar with cigarette packs, while not being directly applicable to a typical retailer, suggests that serving staff may adapt quickly to the requirement to distinguish between packs and may be able to serve a standardised pack in the about the same time as, or more quickly than, for branded packs.¹⁰⁰ The study found that the

⁹⁸ <https://www.york.ac.uk/media/che/documents/papers/occasionalpapers/CHE%20Occasional%20Paper%202023.pdf>

⁹⁹ There are special provisions with respect to tobacco advertising and promotion (including display) for specialist tobacconists, provided they meet the definition set out in legislation.

¹⁰⁰ Carter O B J, Mills B W, Phan T, Jonathon R Bremner (2011). Measuring the effect of cigarette plain packaging on transaction times and selection errors in a simulation experiment. Tobacco Control doi:10.1136/tobaccocontrol-2011-

average transaction was slightly quicker for standardised packs than for branded packs (2.92 vs. 3.17 sec; $p=0.040$). When selecting standardised packs, 17.3% of participants made a mistake compared with 40.4% when selecting branded packs.

149. The design of this simulation experiment means that we should be cautious in applying its findings to the real-world environment of the tobacco retailer. Here, we simply observe that familiarity with the study task soon appeared to mitigate the initial increase in serving time. In practice, there are means by which the effect of removing visual cues from packs could be mitigated, such as arranging packs in alphabetical order.

150. To investigate the impact of plain packaging on serving times in the retail environment, the Rural Shops Alliance (RSA) commissioned a study (funded by British American Tobacco) comparing serving times in four convenience stores in England during a week with conventional packaging and a week with standardised packaging.¹⁰¹ Each store was fitted with CCTV cameras to record customers' transactions over the two seven day periods, the usual store environment being recorded in the first week and the standardised packaging environment in the second. Standardised packaging was simulated by over-sleeving of all cigarette packs on display. All cigarette transactions were recorded and analysed by trained video processors to generate a series of metrics relating to each transaction. A number of stages were identified for each purchase, from the customer reaching the counter through to instructing for tobacco, the shop assistant picking the product from the shelf and putting it on the counter to the customer paying for the product, or a transaction error being recorded, prompting a fresh transaction. Some 23,887 transactions were tracked in total, of which 3,851 contained tobacco. The study found that, in the control week, selection time and total transaction time were estimated at 11 seconds and 30 seconds, respectively, compared with 28 seconds and 58 seconds under standardised packaging. Based on these findings, the RSA estimated the total annual cost to the convenience store sector (accounting for 50% of the tobacco market) in the UK to be £37m.

151. DH received a critique about this study¹⁰² suggesting that the features of its design make the generalisability of the results beyond the confines of the study problematic, with the conclusion that tobacco transactions take longer than they would otherwise in real life situations if:

- the cigarette packs are covered in unusual, plain sleeves;
- the sleeves are novel to both the retailer and customer;
- the retailer and customer are aware they are participating in a study;
- (and probably most importantly) the cigarette packs are not arranged in alphabetical order.

152. The critique acknowledged weaknesses of both the Carter et al. (2011) and RSA studies, with real world data from Australia preferred to either. Since these studies were conducted, such real world data has become available. Two studies^{103 104} among over 300 outlets in Sydney, Melbourne, Adelaide and Perth compared retrieval times in December 2012, after the introduction of standardised packaging, with two baseline¹⁰⁵ months, June and September 2012, and three post-implementation months, February, April and July 2013. The retrieval time in December 2012 (12.43 seconds) was found to be significantly higher than in September 2012 (9.84 seconds) but not significantly different from June 2012 (10.91 seconds). It was also significantly higher than the post-implementation months February 2013 (10.37 seconds), April 2013 (9.66 seconds) and July 2013 (9.27 seconds). Retrieval times adjusted quickly to the introduction

050087 in Moodie C, Stead M, Bauld L, McNeill A, Angus K, Hinds K, Kwan I, Thomas J, Hastings G (2012). *Plain tobacco packaging: a systematic review*. Stirling: University of Stirling.

¹⁰¹ Visuality (2012). The effects of standardised tobacco packaging on retail service in the UK. Weymouth: Rural Shops Alliance.

¹⁰² Owen Carter, personal communication.

¹⁰³ Wakefield M, Bayly M, Scollo M (2013). Product retrieval times in small tobacco retail outlets before and after the Australian plain packaging policy: real world study. *Tobacco Control* 0:1-7.

¹⁰⁴ Bayly, M., Scollo, M., Wakefield, M., (2014), No lasting effects of plain packaging on cigarette pack retrieval time in small Australian retail outlets', *Tobacco Control*, e-pub 30 May 2014

¹⁰⁵ The word baseline in this paragraph refers to the papers being discussed not Option 1 which is the baseline which Option 2 if assessed against.

of standardised packaging, falling from 16.03 seconds between 3 and 5 December to 8.15 seconds between 8th and 12th December, a figure which did not differ significantly from either baseline month. Aggregating the data into baseline (June and September 2012), implementation (December 2012), and post-implementation (February, April and July 2013) groups, retrieval times were found to be significantly higher during implementation (12.43 seconds) compared to during baseline (10.34 seconds) and post-implementation (9.76 seconds). There was no significant difference between the baseline and post-implementation times. The findings of this research are similar to those of a study by Carter et al. (2013),¹⁰⁶ undertaken at 100 convenience stores, newsagents, petrol stations and supermarkets in Perth one month before and after the introduction of standardised packaging in Australia. Published as a letter to the *BMJ*, the study found that, between October 2012 and January 2013, average transaction times decreased from 8.94 seconds to 7.39 seconds, a statistically significant reduction.

153. Drawing on all the evidence above as well as consultation responses we conclude that the evidence does not comprehensively demonstrate the effect of standardised packaging on total transaction time. We also conclude that the evidence is consistent with retrieval times being materially unaffected beyond the immediate term, but with very short lived increases whilst shop assistants familiarise themselves with the new system and customers are become aware of the change in appearance. We have estimated a temporary cost increase to retailers and customers as a result of standardised packaging assuming a 2 second retrieval time increase per transaction for one month following the implementation of standardised packaging. This draws on all the information above, and is most similar to the findings in the Wakefield et al study with its real-world environment data over a relatively long time period. Costs to retailers are based on the hourly rate for “sales assistants and retail cashiers” from the 2012 Annual Survey of Hours and Earnings, with a 30% uplift to allow for overheads and adjusted to 2014 prices using the GDP deflator. The number of transactions was based on the estimated number of packs sold and the finding from the RSA/Visuality study of an average 1.5 packs per transaction. Cost to customers used the value of leisure time estimated by the Department of Transport¹⁰⁷ again uprated to 2014 prices. There is also a minor adjustment for a potential small decrease in volume due to any potential increase in cross border shopping and illicit trade (see later). This gives a cost to retailers of £0.50m and to customers of £0.30m and so a combined cost of £0.80m (all costs over 10 years and discounted).

Enduring Cost Savings

154. A report by Europe Economics (2008)¹⁰⁸ argues that, following a transition period during which costs are incurred to switch to standardised pack manufacturing, branding costs would no longer be incurred and ‘costs for cigarette manufacturers would ultimately tend to fall’. We note, in this context, that, although standardised tobacco packaging in the UK would imply a different pack style from most other countries, there already exists variation in branded pack styles between countries in the EU, not least due to the use of different health warnings and different pack size requirements in different Member States. The Rand Europe study argued that the ongoing administrative burden of introducing plain or generic packaging is ‘probably negative’ because of lower production costs with standardised packaging, although this impact is not quantified. Responses to the consultations suggest that plain packaging would reduce costs for suppliers of counterfeit tobacco and it will presumably have a similar impact on the costs of legitimate production. Consultation with packaging companies has likewise indicated that there would be “*lower input costs for the legitimate industry*” under standardised packaging, but again this was not quantified. As stated earlier, packaging costs are estimated to be between €10 – 50 per 1,000 blanks⁹³, and standardised packaging could be expected to push costs towards the lower end of this range. This would give a maximum saving per blank of €0.04 (approximately 3 pence). In addition, there are likely to be cost savings in the assembly of the final product. For our estimate of the cost saving associated with the production of a standardised rather than a branded pack, we take the mid-point of the range of 1-3 pence (2 pence) estimated for the possible savings on the production cost of a

¹⁰⁶ Carter O, Welch M, Mills B, Phan T, Chang P (2013). Plain packaging for cigarettes improves retail transaction times. *BMJ* 346:f1063.

¹⁰⁷ Department of Transport (2013). Values of time and vehicle operating costs. London: Department of Transport.

¹⁰⁸ Europe Economics (2008). Economic analysis of a display ban and/or a plain packs requirement in the UK. London: Europe Economics.

counterfeit pack under standardised packaging.¹⁰⁹ As this estimate is for counterfeit production it is not ideal for applying to legitimate production, however it is consistent with the €0.04 estimate above, and consultation responses from the tobacco industry and packaging manufacturers while suggesting cost savings have not provided more accurate quantitative evidence on cost savings.

155. Assuming packaging manufacturers were making normal profits before the introduction of standardised packaging, and that after the policy is introduced their costs have reduced by 2p, we expect this cost saving to be bid away by the competing printing firms. This change of the cost of packaging will be to the advantage of the tobacco manufacturers, and cause a reduction to the profit stream of packaging manufacturers (as discussed and estimated in the transitional costs). Applying the 2p per pack, packaging saving to the 1.3m – 1.7m packs per year estimate (see table 2), over a ten year period following the effective date of the policy, total discounted savings are estimated at £230m. This estimate takes account of the minor effect of a potential decrease in volume due to any potential increase in cross border shopping and illicit trade (see later). For Net Present Value purposes (though not for OITO, which is concerned with impacts upon UK based business), the ultimate impacts of reduced profits of multinational tobacco manufacturers are on UK shareholders wherever the activity. Therefore, for the UK Net Present Value we consider this impact by assuming that 10% of the profits of multinational tobacco companies are received by UK shareholders and include £23m in the NPV calculation.
156. *“Brand names, colours and logos would still be allowed to be used openly within the tobacco trade”*¹¹⁰ Accordingly, we do not expect any significant changes for wholesalers and retailers in their acquisition and management of stock. There may be some minor impact once the outer cases are broken down on aspects such as restocking shelves, stocktaking of shelves or when restocking shelves after cleaning units. Here we illustrate the potential magnitude of the costs. First we take the £0.49m costs to retailers estimated for assumed for temporary increase in the serving time. We note that this was only for a 1 month increase. We then note that serving time studies suggest the increase retrieval times tend back to zero after a short time, once shop assistants familiarise themselves with the new systems, and so our illustration assumes it takes 25% of the original month's increase in the longer term. We also note that tasks such as restocking shelves will be done for many identical packs at a time. Assuming a near empty display with 3 packs facing the consumer and 9 packs deep, suggests a further 96% reduction. Therefore this illustration suggests around £0.06m lost per annum (which is likely to be lost in the rounding of any Net Present Value or Equivalent Annual Net Costs to Business estimate).

Costs to the exchequer through the loss of tax from reduced consumption

157. When considering a new policy it is important to take into account various factors such as the overall impact on society, distributional impacts and the affordability of relevant options in terms of government spending and tax. Impacts on tax and benefits can be viewed as transfers; for example when the Exchequer loses tax revenue, individuals and/or businesses gain an equal amount, these effects can be seen to offset against each other. In terms of the public finances if the government loses tax revenue this is an important consideration for the financial feasibility for any policy. The section below discusses relevant impacts of standardised packaging on tax revenue and government spending, providing further detail and estimates where relevant, it starts by looking at the expected impact on duty receipts which are the most significant tax effect identified.
158. For changes in consumption due to reduced uptake of smoking or improved quit rates, we report a potential lifetime impact on duty and VAT consistent with the magnitude of the impact on health. The

¹⁰⁹ Joossens L (2012). Smuggling the tobacco industry and plain packs. London: Cancer Research UK.

¹¹⁰ The Department of Health's 2012 consultation document states the following: “Consistent with the allowances for advertising in section 4 of the Tobacco Advertising and Promotion Act 2002, we do not believe that standardised packaging requirements would be necessary during the course of business solely within the tobacco trade. This means that brand names, colours and logos would still be allowed to be used openly within the tobacco trade. However, tobacco products that are made available for sale to the public, or that could be visible to the public, would need to meet the requirements” of a standardised packaging policy. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/170568/dh_133575.pdf

estimates of lost duty have been updated since the IA on the legislation ending the open display of tobacco in shops and use the same methodology as for health benefits. For every additional adult smoker who quits, there is an average discounted lifetime loss of duty and VAT of around £11,000. For every young person who no longer takes up smoking, there is an average discounted lifetime loss of around £15,000. These estimates allow for mortality, consumption of non-UK duty paid tobacco, consumption of hand rolling tobacco, and the probability that those quitting as a result of standardised packaging would have quit at some point in the future. These estimates have been updated since the last consultation IA to account for refinements in the modelling; this is detailed in Annex A.

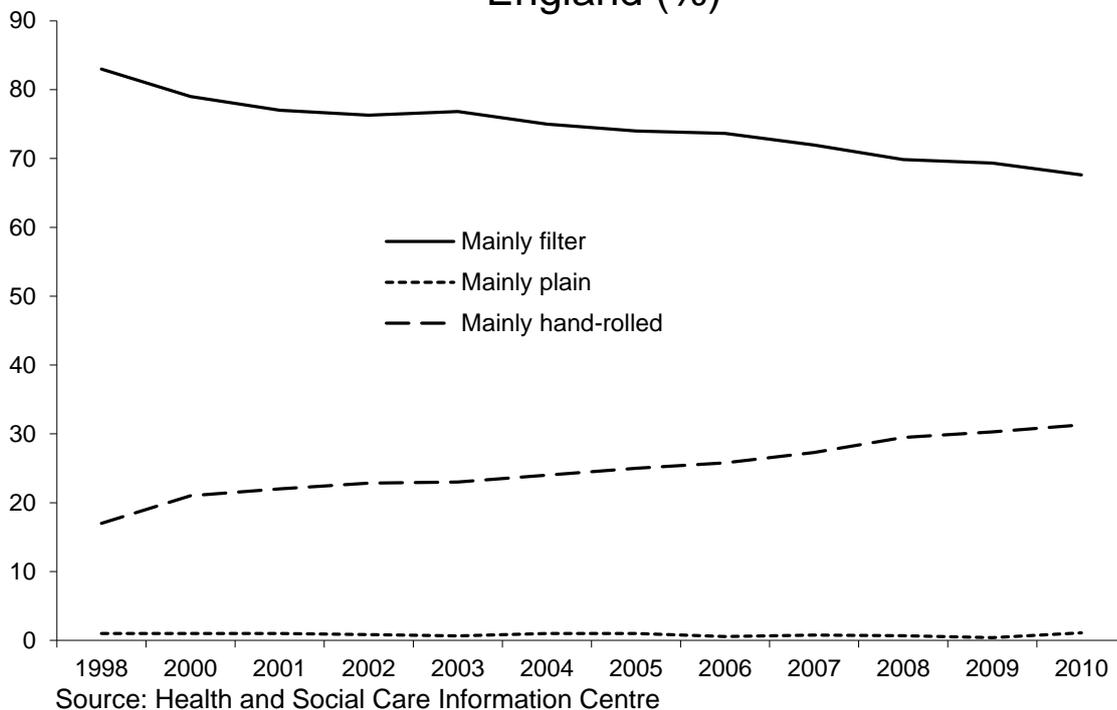
159. Taken together, lifetime losses of duty and VAT are estimated at £4.5bn using a ten year time horizon. These estimates of lost receipts are indicative and do not allow for future changes in: rates of duty, market shares of different brands, smoking patterns, the illicit market, and cross border shopping¹¹¹. The uncertainty of this value is further considered in the sensitivity and risk analysis section.
160. Most change in tax revenues are 'transfer payments'. For example, consider members of society paying less tax due to a policy. On the one hand they will now be able to spend that money and gain a benefit from it. However, on the other hand if the Government decided to maintain public spending, an equal amount of tax would be raised and they would lose an equal amount of benefit. -Such transfer payments therefore have zero net effect on the NPV (ignoring distributional impacts). -However, when considering policies that transfer spending from highly taxed goods to lowly taxed goods, DH identify an adverse impact. On the one hand that member of society has a similar amount of benefit (since they still have a (different) good with a worth that they are judging to exceed the same amount of money). However, on the other hand if the Government decided to maintain public spending additional tax would have to be raised and the public would lose benefit. Therefore, when considering policies that transfer spending from highly taxed goods to lowly taxed goods, DH attributes an adverse impact to such a policy, affecting its NPV.
161. The losses of duty and VAT mentioned above are for illustrative net present value purposes. These are likely to differ significantly from any Exchequer impact that will eventually be incorporated into the Public Finances, which will have to be certified by the Office for Budget Responsibility (OBR), if the policy were to be enacted. In part the differences will be down to issues that are not appropriate for inclusion in this Impact Assessment e.g. not discounting, different relevant timeframes etc. In addition consideration will be given to various behavioural responses which are relevant to both the Public Finances and the Impact Assessment. There are significant elements of judgement involved in the applicable behavioural responses around which the OBR will take their own view. In addition over time as more evidence becomes available this may impact on relevant estimates. We therefore expect that the figure that will eventually be incorporated into the Public Finances will differ significantly in light of appropriateness of inclusion (e.g. discounting), OBR judgements and any future evidence.
162. Other potential impacts on the exchequer include changes in income tax receipts, corporation tax receipts, and unemployment benefits. Taking each in turn we address how such impacts are treated in this IA.
163. Income tax receipts: As discussed under the "General employment levels" section above we expect any employee turnover to be absorbed within the wider economy. Any frictional unemployment is assumed to be short and temporary. In the longer term, the study quoted above⁹⁸ suggests that employment will increase and therefore be a net gain to the exchequer.
164. Unemployment benefits: Aligned to the reasoning above on income tax, we do not expect any notable increase in unemployment benefits. It is also worth commenting that for IA purposes, welfare payments are treated as transfer payments such that the net impact is £0. For example, any losses to the exchequer caused by an increase in unemployment benefits will be directly offset by gains to the recipients of such benefits, since the losses and gains are of equal value.
165. Corporation tax: Any lost tax incurred from lower tobacco industry profits we assume will be offset by increased receipts from increased profits accruing to other industries. Our assumptions on the treatment of profits in general are discussed earlier in the IA.

¹¹¹ It should be noted that potential changes in the illicit market or to cross border shopping or changes to market shares of different brands due to standardised packaging is considered in this IA, just in their later respective sections

Possible losses to the Exchequer from any brand-related downtrading

166. There is currently a market trend, for factory made cigarettes, from the consumption of premium and mid-price cigarette brands to economy and Ultra Low Price (ULP) brands (see Annex D). In this IA we refer to this trend as downtrading. The introduction of standardised packaging would cause a reduction in the distinction between premium/mid-price and economy/ULP factory made cigarette brands. We therefore expect consumer behaviour to change and increase the rate of downtrading. Since, ad valorem and VAT taxes relate to the cost of a packet of factory made cigarettes, and economy/ULP factory made cigarettes are cheaper, any increase in downtrading will have an impact on HMRC receipts.
167. There is the potential for an increase in the consumption of economy/ULP Hand Rolling Tobacco (HRT) relative to premium/mid-price HRT. This is again because the introduction of standardised packaging would cause a reduction in the distinction between premium/mid-price and economy/ULP HRT brands. Such an increase between HRT brands is not, however, an issue for duty receipts as duty on HRT is levied by weight (although potentially there could be a relatively very small loss due to decreased VAT the majority of which is expected to be recouped elsewhere in the economy as discussed in Annex A).
168. There has also been a market trend from the consumption of factory made cigarettes to the consumption of HRT. The trend in England is illustrated in Figure 3. The introduction of standardised packaging would not cause a reduction in the distinction between factory made cigarettes and HRT. Therefore, we do not expect standardised packaging to cause any further switching between factory made cigarettes and HRT. Although we do not expect any acceleration or deceleration in this switching trend, any such change would have an impact on duty receipts due to differential duty regimes (lower duty on HRT) and to the higher likelihood of illicit HRT avoiding duty altogether.

Figure 3: Type of cigarette smoked by adults, England (%)



169. To estimate the loss of duty from downtrading from premium/mid-price to economy/ULP factory made cigarette brands, first an estimate of the total number of duty paid clearances of cigarettes under Option 2 is made. This estimate is based on the OBR's forecast.¹¹² This forecast is projected forward around a year further, continuing the 4% per year reduction observed. From 2020 onwards, the RPI+2% escalator

¹¹²

March 2014 Economic and Fiscal Outlook: Fiscal Supplementary Tables available at http://budgetresponsibility.org.uk/pubs/83723-March_2014_EFO_Fiscal_Supplementary_Tables.xls

is assumed to stop and so a lower 2% per year reduction is used, consistent with the OBR's longer term assumptions¹¹³. Each year's value is then reduced by the ratio of prevalence with TPD and standardised packaging to the prevalence without them. Table 2 provides an illustration of the implications of our assumptions.

170. For the loss of premium/mid-price market share brought about by reduced prevalence, we assume that the decrease in prevalence due to standardised packaging in the premium/mid-price brands is twice that of the decrease in prevalence across all brands. We then assume the corresponding decrease in prevalence in economy/ULP brand, so that the decrease in prevalence across all brands is maintained. (The value of the decrease across all brands is based on the work of Pechey et al and is discussed later). Also, we assume that the rate of downtrading from premium/mid-price brands to economy/ULP brands under standardised packaging occurs at twice the current downtrading trend. Consultation responses sighting Australian data suggest that this estimate may be fairly accurate (see Annex D). Table 2 provides an illustration of the implications of our assumptions regarding the impact of standardised packaging on smoking prevalence and downtrading (see Annex D for further details). By 2025, the number of premium and mid-price packs is estimated to fall to around half of the number anticipated under continuation of the historical trend.

Table 2: Illustration of the IA assumptions on the factory made cigarette market

Year	Prevalence (%) - no Standardised packaging	Prevalence (%) - with Standardised packaging	Market size with Standardised packaging (million packs)	Market share – current downtrading trend (including Standardised packaging)		Market share – double downtrading trend (including Standardised packaging)	
				Premium/ mid-price	Economy / ULP	Premium/ mid-price	Economy/ ULP
2016	19.67	19.30	1,660	28.5%	71.5%	26.5%	73.5%
2017	19.56	18.82	1,560	26.1%	73.9%	22.6%	77.4%
-	-	-	-	-	-	-	-
2025	19.01	18.27	1,250	15.2%	84.8%	7.4%	92.6%

171. To estimate the loss of duty from downtrading, table 3 presents the duty comparison for an illustrative example of downtrading from the premium/mid-price segment to the economy/ULP segment. We have estimated the average prices for these two broad groupings on the basis of prices and market segmentation data provided post 2012-consultation (adjusted for the 2014 budget). The difference in duty on a packet of cigarettes between the premium/mid-price segment and the economy/ULP segment is relatively small at £0.16. The corresponding loss of VAT which would not be recouped by expenditure elsewhere in the economy is around £0.05. Lost duty plus VAT due to downtrading are estimated at £130m up to year 2025 (ten years following the expected effective date of the policy). This figure does not include the losses due to the potential changes in the illicit market and cross border shopping which are considered in a later section.

¹¹³ Office for Budget Responsibility Fiscal Sustainability Report July 2011 available at <http://budgetresponsibility.org.uk/wordpress/docs/FSR2011.pdf> These longer term forecasts are subject to more uncertainty and are less specific about what exact policies will or will not be in place in the future. If different assumptions were made about which policies were or were not included in these longer term forecasts the estimates in table 2 would vary. These variations are small (under 5%) when considered against other uncertainties discussed in the sensitivity and risk analysis section.

Table 3: Duty comparison between market segments

	Premium/mid-price	Economy/ULP
Price	8.15	7.18
Ad valorem duty	1.34	1.18
Specific duty	3.68	3.68
Total duty	5.03	4.87
VAT	1.36	1.20
Price less duties and less VAT	1.76	1.12

Possible losses from any increases in cross-border shopping (CBS) or the illicit market

Illicit and Cross Border Shopping (CBS)

172. The Chantler review set out the Illicit product categories as follows:

- **Contraband:** legally manufactured by the major tobacco companies. Smuggled into the UK either from other countries (where they are duty paid in that country but due to higher UK duty are still worth smuggling into the UK). Typical examples of this in the UK would be French cigarettes in French packs
- **Illicit Whites:** legally manufactured by companies often based in emerging economies with the intent on exporting illegally to other countries through a smuggling network. Brands are typically imitation brands, copying the “look and feel” of well-known legal brands. Known illicit white brands are ‘Manchester’ and ‘Jin Ling’
- **Counterfeit:** illegally manufactured copies of well-known existing brands. Often very high quality copies of the pack, but distinguishable from legal duty free through the lack of identifiable production/security markings. Product quality is often poor.

173. People travelling from the EU may legally bring unlimited¹¹⁴ amounts of duty paid (but not UK duty) tobacco products bought in another EU country back into the United Kingdom for their own use, subject to United Kingdom customs regulations. This legal practice is known as “cross-border shopping” (CBS).

Recent trends in Illicit and CBS share

174. According to HMRC data (Table 4), the size of the illicit cigarette and HRT markets has been steadily declining since 2000 with the exception of a recent rise. This is due to the success of the Government’s strategy on illicit tobacco that includes sustained investment in enforcement activity. Based on 2013 tax gap data, the loss of duty and VAT from a 9% illicit cigarette market share was £1,100m in 2012/13.¹¹⁵ For HRT, the loss in duty and VAT from a 36% illicit market share was £900m.

175. Table 4 shows that legitimate CBS of factory made cigarettes has decreased to a plateau of around 3% over the last few years, the main reason for this being a sharp decline in passenger journeys from UK residents to the EU and the less favourable £/€ exchange rate. However, we would expect the CBS share of the UK tobacco market to increase towards pre-2008 levels as these external factors unwind. Indeed, tobacco industry surveys show an increased market share of UK duty unpaid cigarettes in 2012,

¹¹⁴ This is correct if people can prove that it is for their own use. However there are minimum indicative levels in place which are used to determine if tobacco is for peoples' own, personal use.

¹¹⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/249543/131009_Publication_of_Tobacco_Tax_Gap_estimates_2012-13.pdf

and this is backed up by ONS data showing an increase in UK passenger travel in late 2012 and an improved exchange rate.

Table 4: Components of the UK tobacco market

	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Cigarettes													
UK Tax Paid Consumption	72%	72%	74%	72%	76%	78%	79%	82%	83%	86%	88%	90%	88%
Illicit Market	22%	21%	18%	20%	17%	15%	15%	12%	12%	11%	9%	7%	9%
Cross-Border Shopping	6%	7%	9%	9%	6%	7%	6%	6%	5%	3%	3%	3%	3%
Hand rolling tobacco (HRT)													
UK Tax Paid Consumption	27%	28%	28%	31%	30%	33%	36%	42%	41%	50%	55%	58%	57%
Illicit Market	61%	56%	55%	54%	62%	59%	55%	49%	50%	42%	38%	35%	36%
Cross-Border Shopping	12%	16%	16%	15%	8%	8%	9%	9%	8%	8%	7%	6%	6%

Source: Tax gap data¹¹⁵ and correspondence with HMRC

176. Another recent development is the knowledge that the new TPD will be introduced. It is worth noting that the TPD includes measures against illicit trade of tobacco such as an EU-wide tracking and tracing system for the legal supply chain and visible and invisible security features (e.g. holograms) aimed to facilitate law enforcement and help authorities and consumers detect illicit products (Annex E). While not removing the threat from illicit trade, and having more impact on some aspects of the illicit market than others (e.g. potentially more impact on counterfeit rather than illicit whites), these measures may help to reduce this risk relative to a world without TPD.

Reasons for considering a potential increase relative to trend in the Illicit and CBS share due to standardised packaging

177. Loss of excise duty and VAT would result from any increase in the share of the market represented by the illicit trade and any increase in CBS. Estimates are available for the impact on duty receipts of an increase in the share of the market accounted for by the illicit trade but not the impact of standardised tobacco packaging on this share. It is hard to predict the potential impact on the complex and dynamic nature of the illicit trade and CBS.

178. Although compliance measures are in place to mitigate generic risks associated with illicit tobacco goods, HMRC assesses that “ *We have seen no evidence to suggest the introduction of standardised packaging will have a significant impact on the overall size of the illicit market or prompt a step-change in the activity of organised crime groups. We anticipate that it would, however, prompt some changes to the mechanics of the fraud and to the composition of the illicit market.*” Further to this, an increase in CBS cannot be mitigated where it involves travellers from the EU legally importing unlimited quantities of duty paid (but not UK duty) tobacco products for their own use. A potential increase in the size of the illicit market, apart from the adverse effect on tax receipts, may limit the potential influence of future tobacco duty policy.

179. It has been argued that standardised tobacco packaging would be easier to copy, so increasing the supply of counterfeit tobacco in standardised packs. Against this, standardised tobacco packs would still need to carry coloured picture warnings as well as authentication markings and any new TPD security features. It is also clear that counterfeiters are already able to copy tobacco packaging on the market in the UK at present, as well as producing other types of sophisticated and accurately replicated goods.

180. It has also been argued that standardised tobacco packaging would be cheaper to copy, so increasing the supply of counterfeit tobacco in standardised packs. From the point of view of counterfeit and Illicit White manufacturers, the production costs are sufficiently low, that a fall in production costs may provide relatively little additional incentive for these operators. It has been estimated that a packet of Jin Ling (an ‘illicit white’ brand intended solely for the illicit market) can be produced for €0.16 and that the rate of profit on Jin Ling is as much as 900%.¹¹⁶

¹¹⁶ JTI (2010). DG SANCO’s consultation on the possible revision of the Tobacco Products Directive 2001/37/EC (TPD): JTI’s full response. Weybridge: Japan Tobacco International.

181. However, if cheaper offset lithography printers could be used instead of more expensive gravure machines and counterfeits were cheaper to produce, then standardised packaging may lead to easier market entry for new counterfeit suppliers leading to an overall increase in the supply of counterfeit cigarettes.
182. Another advantage claimed for the counterfeit trade is that consumers will be less able to detect a genuine standardised pack from a counterfeit pack although it has also been noted that a counterfeit pack sells for around half the price of a legitimate pack, a possibly more important indicator (for consumers and suppliers) of a pack's legal status.
183. Consultation has identified these potential risks of the illicit market increasing if standardised packaging is introduced. Although consultation has provided no definitive basis to quantify a change (either an increase or decrease) in the tax gap, it is important to consider the potential impacts if it did. However, others are not of the views discussed above. The risks to illicit trade are not inherently new (i.e. contraband, illicit whites and counterfeit already exist) and may have no impact on the overall size of the illicit market, but may restructure it (e.g. increase the amount of illicit whites relative to counterfeit). It should be noted that the independent review led by Sir Cyril Chantler said "*The industry has argued in particular that standardised packaging would be easier to counterfeit. But both HMRC here, and tobacco companies themselves in Australia tell me they are not convinced*" and concluded "*I am not convinced by the tobacco industry's argument that standardised packaging would increase the illicit market, especially in counterfeit cigarettes. There is no evidence that standardised packaging is easier to counterfeit, and indeed in Australia, hardly any counterfeit standardised packages have been found to date.*"
184. It has been argued that smokers may be more likely to seek out branded products in a standardised packaging environment. If this was to occur the CBS share could increase in the UK, especially if standardised packaging was not introduced in other EU countries. We note that two countries with close borders to the UK, France¹¹⁷ and Ireland¹¹⁸ have committed to introduce standardised packaging. Similarly it has been argued that, as branded packs, contraband and Illicit White sales may also increase. While attempts to sell tobacco bought in other countries could be identified by law enforcement, legitimate CBS may yet mitigate some of the benefits of standardised packaging in the adult population and result in a loss of revenue to the Exchequer. This is potentially a large risk as an increase in CBS when undertaken for personal use cannot be mitigated. In a related area to CBS, tobacco sold in UK airport duty-free shops compete with tobacco products sold in other international duty-free shops (rather than being in competition with other UK domestic stores). International travellers who wish to buy tobacco and have a preference for branded tobacco, controlling for all other factors, may be more likely to purchase their tobacco either while flying or at their destination away from the UK. A potential increase in purchases of tobacco outside of the UK may, therefore, arise as a result of travelling smokers who would ordinarily purchase duty-free tobacco in UK airports deferring their purchase to later in their journey for consumption in the UK.

Mitigating factors

185. For the size of the illicit tobacco market to increase, there would need to be increased demand for and supply of such products. On the demand side, it has been argued that smokers may be more likely to seek out branded products in a standardised packaging environment, whether these are counterfeit branded packs, illicit whites or contraband, with price perhaps being the determining factor. Indeed, it is argued in consultation responses from tobacco industry respondents that high prices of tobacco in the UK, resulting from high rates of duty, are the motivating factor behind the illicit trade. We assume that the price of any given tobacco product as seen by the consumer does not materially change due to standardised packaging. However, there is a chance of increased price competition due to standardised

¹¹⁷ The French Government published a new tobacco control strategy at the end of September. The first action in their new strategy is a commitment to move ahead with legislation for standardised packaging.

¹¹⁸ In May 2013 the Irish Government gave approval to the Minister for Health to proceed with the development of standardised packaging. After a review by a Parliamentary joint Committee in early 2014, Ireland introduced into its Parliament a Standardised Packaging Bill in June 2014. Ireland notified the draft legislation to the World Trade Organisation and to the EU Commission under the Technical Standards Directive.

packaging and to the extent that this occurred and was not mitigated against by increases in duty, this may be a factor mitigating the risk of an increase in the illicit trade.

186. Another mitigating factor is that standardised packaging could make it easier to identify UK duty unpaid product, making it harder to engage in the illicit trade. For example, if a large consignment of branded tobacco was identified, it would be easier to challenge its' legitimacy if the packets were not in standardised packaging.

Australian Illicit Market Evidence

187. Measuring the size of the illicit market is methodologically challenging for many reasons. It is an illegal activity, and illegal traders are unlikely to record their activity as legal traders do. For security reasons data on illicit trade is usually difficult to collect, as law enforcement agencies often prefer not to publicise the scope of their activity. All methods to estimate illicit trade have their limitations and not all studies clearly describe their methodology or their limitations. Also, the data source may bias the estimate.
188. The Australian Tobacco Plain Packaging Act 2011 prescribed that all tobacco products were to be sold in standardised packaging from December 1st 2012 (manufacturers could not produce branded packs from October 1st 2012 but retailers were able to sell any branded tobacco remaining in stock).
189. The National Drug Strategy Household Survey (NDSHS) reports estimates for unbranded tobacco consumption (an Australian term for illegal tobacco). The survey shows a drop in the percentage of those aged 14 years and over currently smoking unbranded tobacco from 6.1% in 2007, 4.9% in 2010 to 3.6% in 2013⁶⁰. This was a statistically significant change between 2007 and 2013, but note that significance testing has only been performed between 2007 and 2013 (not 2010)¹¹⁹.
190. Although on first examination Australian Customs & Border Protection Service Data shows there has been an increase in the amount of tobacco smuggling detected through the sea cargo stream (which account for 99% of tax revenue evaded),¹²⁰ this is not outside of the observed historic year on year variation. During 2012/13 the total amount of tobacco detected came to about 343 tonnes (183 tonnes of loose tobacco plus 200 million cigarette sticks – assumes a cigarette stick contains 0.8g of tobacco). This compares to 2011/12 figures of 289 tonnes (177 tonnes of loose tobacco plus 141 million cigarette sticks). For a longer term perspective, the amount detected annually between 2007/08 – 2010/11 were 373, 220, 365 and 324 tonnes respectively. The detected amount in 2012/13, therefore, is not inconsistent with the general variation that is seen from year to year. It is also important to note that 2012/13 is based on the Australian financial year running from July 1st 2012 to June 30th 2013. As such it includes approximately 5 months of data when standardised packaging was not in place and coincided with a period of change in policy including an increase in tobacco prices for consumers, therefore the specific impact of standardised packaging cannot easily be disentangled from this data.
191. The Industry funded KPMG report¹²¹ suggested an increase in the illicit market of 2.1 percentage points from 2012 to 2013 (11.8% of total tobacco consumption in 2012 to 13.9% in 2013). When commenting on the earlier version of this report Sir Cyril stated: *“Tobacco manufacturers cite the industry funded KPMG report on illicit tobacco in Australia, which purports to show that there has been a large increase in illicit trade since the introduction of plain packaging. I have considered both this report and a critique. My team have also met with KPMG in order to understand their methods. I note that Australian Government departments, both Health and Customs, appear to be strongly of the view that KPMG’s methodology is flawed. These Departments point to official Customs data which shows no significant effect on illicit tobacco following the introduction of plain packaging, backed by analysis undertaken by the Cancer Council Victoria (based on data from the National Drug Strategy Household Survey) that suggests that illicit tobacco in Australia is only 10-20% of the level proposed by KPMG. In a situation*

¹¹⁹ Survey questions relating to unbranded loose tobacco were modified in 2010 and only asked respondents about awareness and use of unbranded loose tobacco whereas in 2007 and 2013 respondents were asked about awareness and use of unbranded loose tobacco and unbranded cigarettes. This should be taken into account when comparing the 2010 results with the 2007 and 2013 results. The placement of the questions in the 2013 survey may have also impacted how people responded to these questions and results should be interpreted with caution.

¹²⁰ Annual Report 2012-13, <http://www.customs.gov.au/site/page4283.asp>

¹²¹ Illicit tobacco in Australia 2013 Full Year Report 3 April 2014, by KPMG, available at https://www.imperial-tobacco.com/assets/files/cms/KPMG_FY2013_Illicit_Trade_Report___FINAL___11_April_2014.pdf

where estimates differ by such magnitudes, I do not have confidence in KPMG's assessment of the size of – or changes in – the illicit market in Australia.”

Illicit Market and CBS assumptions

192. We conclude that there is a sizeable likelihood that there will be no discernible increase in the illicit market. However, we also conclude there is a chance that there will be an increase in the illicit market. This IA aims to provide an 'expected value' for the NPV estimate. In general terms the 'expected value' is the average outcome. If one possible outcome is zero and the others are positive, the average outcome is greater than zero. Therefore, we assume a value greater than zero for the increase in the illicit market. Similarly, we also assume an expected increase in CBS.
193. We can divide tobacco consumers into two groups - those that currently engage in the illicit market and those that don't. Both groups decide on their illicit consumption given current characteristics of the UK tobacco market (such as price). Assuming all variables do not change except for those included under standardised packaging, it may introduce an additional incentive for both groups to wish to increase their illicit tobacco consumption. Despite an increase in demand, however, the supply of illicit products may be capped, especially compared to similar movements in legal product markets. Considering this and the evidence from Australia which varies from no significant effect to an industry funded estimate up to 2.1 percentage points, we therefore believe it is not unreasonable to assume a small positive value as an impact of around 0-0.25 percentage points (for factory made cigarettes this would represent approximately a 0-3% increase). This estimate is uncertain and the sensitivity of the NPV to this value is investigated in the sensitivity analysis.
194. We note that CBS for factory made cigarettes has varied between 3% and 9% over the last 13 years, and hence the variation has had a magnitude of 6 percentage points. 13 years is a relatively long time period and the CBS market has developed quite a lot during this time, so we also note that over the more recent period of 5 years it has varied between 3% and 5%, and hence the variation is 2 percentage points. The value of interest is not how much this changes, but how much this may change due to standardised packaging.
195. The section considering the health benefits of this policy suggests around a 3.8% decrease in the overall market due to standardised packaging. This 3.8% is for the whole of the UK spending the majority of their time in the UK, and could be considered a high benchmark for an increase in CBS for those occasionally travelling abroad.
196. The difference in price between UK packets and foreign packets can broadly be considered as the main driver for the levels of CBS. This is driven by various factors such as the £/€ exchange rate. Other factors that affect CBS such as the proportion of people who go on holiday, tend to have a relatively small impact on CBS. Another example where one may have expected an increase in CBS was the introduction of picture warnings on UK packs from October 2008 to September 2009. However, CBS continued to fall after the introduction of picture warnings. Therefore, smokers seeking out branded packets are assumed to have a relatively small impact on CBS.
197. Similarly to the illicit market, we can divide tobacco consumers into two groups - those that currently cross border consume and those that don't. Both groups decide on their cross border consumption given current characteristics of the UK tobacco market (such as price). Assuming all variables do not change except for those included under standardised packaging, it may introduce an additional incentive for both groups to wish to consume tobacco from abroad. Since this market is legal, however, the level of supply is unlikely to be capped to the same degree as under illicit trade. This suggests we should estimate a slightly larger potential impact for CBS than illicit trade.
198. Considering the paragraphs above, a plausible assumption is that standardised packaging could cause an increase in CBS of around 0-0.5 percentage points (for factory made cigarettes this would represent approximately a 0-17% increase). We believe this is not an unreasonable assumption. This estimate is uncertain and the sensitivity of the NPV to this value is investigated in the sensitivity analysis.
199. With the current UK tax paid market at 88% for factory made cigarettes (Table 4) an estimated increase in CBS of 0-0.5 percentage points taken together with an estimated 0-0.25 percentage point increase in

illicit trade gives a 0-0.75 percentage point increase. This represents around a 0.4% transfer from the UK duty paid market to UK duty unpaid market for factory made cigarettes. We assume the same 0.4% transfer for the HRT market noting that HRT is a relatively small part of the tobacco market and hence the NPV is relatively insensitive to this assumption. This estimate is uncertain and the sensitivity of the NPV to this value is investigated in the sensitivity analysis.

Impact of a 0.4% transfer to the UK duty unpaid market

200. Firstly we estimate the quantity of factory made cigarettes and HRT diverted to the UK duty unpaid market. This estimate is based on 0.4% of the HMRC data for tobacco released for home consumption^{122 123}, alongside forecasts for tobacco clearances^{124 125} and adjusted for the expected decrease in prevalence due to standardised packaging. This gives around 6.7 million packs diverted in 2016 reducing to 5.0 million in 2025 and 28,000 Kilograms of HRT diverted in 2016 increasing to 29,000 Kilograms of HRT in 2025.
201. An average loss of duty and VAT to the Exchequer of £6.19 per cigarette pack is assumed (consistent with values in table 3). An average loss of duty and VAT to the Exchequer of £236 per Kilogram of HRT is assumed (using price data supplied by a cigarette manufacturer and 2014 tax rates¹²⁶). These figures are applied to the quantities diverted to the UK duty unpaid market, and discounted. This gives a 10 year loss to the NPV calculation of £340 million.
202. We assume an average profit loss to manufacturers of 22p per pack diverted. This assumption is informed by Tobacco manufacturers' annual reports, and notes that not all the diverted packs will result in decreased profit (e.g. if smokers buy the same international brand when CBS). A similar figure per unit weight of tobacco (26p per 14 grams) is assumed for HRT. We again assume 10% of the profits of multinational tobacco companies are received by UK shareholders. These assumptions are applied to the quantity of tobacco diverted to the UK duty unpaid market, and discounted. This gives a 10 year loss to UK shareholders, and therefore to the NPV calculation of £1.4 million (this would be £14 million if 100% of the profits of multinational tobacco companies are received by UK shareholders).
203. We assume an average profit loss to distributors (e.g. wholesalers and retailers) of 48p per pack diverted. A similar figure per unit weight of tobacco (48p per 14 grams) is assumed for HRT. This is informed by distributors' annual reports and evidence from the retail sector of the retailers' margin on cigarettes. We assume that 100% of the profits of wholesalers and retailers is retained in the UK. These assumptions are applied to the quantity of tobacco diverted to the UK duty unpaid market, and discounted. This gives a 10 year loss to the UK, and therefore to the NPV calculation of £30 million.
204. Additionally, we have received various consultation submissions outlining the potential effects on UK airports. We discussed briefly how standardised packaging may affect the UK airport market earlier in this IA. For illustrative purposes, we show the potential impact on UK airports were consumers to relocate their tobacco purchases outside of the UK. We assume that the 0-17% estimated increase in CBS is a credible estimate for the increase in the amount of tobacco bought outside of the UK in place of UK airports. We take the current market share of tobacco sold in UK airports as a proportion of total UK sales (approximately 1% based on consultation submissions) and apply it to our market projections, and then assume 0-17% of these UK airport market sales move outside the UK. The total estimated 10-year discounted loss to UK airports based on these assumptions would be £0-10 million. The true effect may even be negative (that is, an increase in expenditure in UK airports) should UK tobacco prices fall as a result of standardised packaging, which could not be countered by an increase in duty for duty-free

¹²² Tobacco Bulletin May 2014 available at <https://www.uktradeinfo.com/statistics/pages/taxanddutybulletins.asp>

¹²³ Forecast for Hand Rolled Tobacco Clearances 23 April 2014 available at <http://budgetresponsibility.org.uk/wordpress/docs/HRTforecastBud14.pdf>

¹²⁴ Office for Budgetary Responsibility's forecast of cigarette clearances table 2.10: http://budgetresponsibility.org.uk/pubs/83723-March_2014_EFO_Fiscal_Supplementary_Tables.xls

¹²⁵ Office for Budgetary Responsibility's fiscal sustainability report <http://budgetresponsibility.org.uk/wordpress/docs/FSR2011.pdf>

¹²⁶ Rates from March 2014 from Tobacco Bulletin May 2014 available at <https://www.uktradeinfo.com/statistics/pages/taxanddutybulletins.aspx>

shopping. This would lead to an increase in international competitiveness in duty free shops. The figures here are provided for illustrative purposes only. We do not include these in the NPV due to the uncertainty in the value, and uncertainty to what extent it is covered already in the CBS figures and because its inclusion, or otherwise, is subsumed by the uncertainties described in this section that are further discussed in the sensitivity and risk analysis section. This illustrative value is also not included in the EANCB because it is an indirect effect since it is contingent on the changing of behaviour by smokers.

Health benefits consequent upon reduced uptake and improved quit rates

205. The evidence review¹²⁷ found that there is consistent evidence to support the recommendations set out in the FCTC implementation guidelines relating to the role of standardised tobacco packaging in helping to reduce smoking rates, as one part of a comprehensive tobacco control strategy. Evidence from the systematic review suggests that mechanisms by which it might be an effective tobacco control measure include reduced pack and product appeal, increased prominence of the health warning and reduced confusion and false beliefs about the harmfulness and strength of cigarettes. Anecdotally, there are indications that research findings on the link between pack colour and taste (see the 'Perceived quality' section of the evidence review) have been borne out in practice. Cancer Council Australia has received reports of some smokers suspecting that the flavour of the tobacco in the standardised packs has been adversely altered.¹²⁸
206. Despite the limitations of the studies that were considered as part of the evidence review, the authors concluded that:
- there was consistency in study findings regarding the potential impacts of plain packaging. This consistency of evidence can provide confidence about the observed potential effects of plain packaging. If and when introduced, existing evidence suggests that plain packaging represents an additional tobacco control measure that has the potential to contribute to reductions in the harm caused by tobacco smoking now and in the future.*
207. The evidence on whether and to what extent the introduction of standardised packaging might influence consumption patterns is inevitably mainly indirect because such a policy has been introduced for the first time in only one country, the Australian Tobacco Plain Packaging Act 2011 having been implemented throughout Australia as recently as December 2012. The DH commissioned systematic review of the literature provides indicative research evidence on the direction of impact on smoking behaviour but DH has supplemented this work with information received through consultations.
208. There is some direct evidence from Australia, however at this time it is difficult to conclude what the impact of standardised packaging on Australian smoking prevalence has been, due to confounding issues of a general decreasing trend and changes to tobacco prices. There are also general difficulties of sample size when investigating impacts that are expected to be relatively small. Also the policy is at an early stage and data on medium and longer term trends do not exist yet. However the evidence that is available is consistent with a hypothesis such as the one described below that the policy would contribute to a modest decrease in prevalence.
209. A quantified estimate of the impact of standardised packaging on smoking behaviour has been based on the findings of a research project undertaken by the Policy Research Unit (PRU) on Behaviour and Health at the University of Cambridge (Pechey et al., 2013).¹²⁹ The Unit receives research funding through the DH Policy Research Programme. The project elicited informed judgements from three groups of internationally-renowned experts on tobacco control, one group recruited from each of Australasia, the UK and North America, with about 10 experts in each group. Participants were provided

¹²⁷ Moodie, C., Stead, M., Bauld, L., McNeill, A., Angus, K., Hinds, K., Kwan, I., Thomas, J. and Hastings, G. (2012). *Plain tobacco packaging: a systematic review*. Public Health Research Consortium, University of Stirling, Stirling.

¹²⁸ <http://www.cancer.org.au/news/media-releases/tobacco-in-plain-packs-tastes-worse.html>.

¹²⁹ Pechey R, Spiegelhalter D, Marteau T M (2013). Impact of plain packaging of tobacco products on smoking in adults and children: an elicitation of international experts' estimates. *BMC Public Health* 13:18-24.

with the results of the systematic review by Moodie et al. (2012) and asked to state what they believed to be the likely impact of standardised packaging on the prevalence of smoking in adults and the prevalence of children trying smoking. This study was intended to support the development of this IA and inform wider policy-making efforts, in the absence of other evidence on the impact of standardised packaging on smoking behaviour. A summary of the methods and results is included at Annex B.

Value of reduced take-up of smoking

210. We start by considering the Pechey et al. (2013) study, the median estimate for the most likely change in the percentage of children trying smoking two years after the introduction of standardised packaging (holding other factors constant) is a decline of 3 percentage points. All respondents considered a reduction in the percentage of children trying smoking to be the most likely outcome. We note that there was some uncertainty around this figure, with the lowest and highest likely values being no change and a 6.1 percentage point reduction, respectively. This estimate was originally set when 27% of 11-15 year olds categorised as 'have ever smoked' drawn from the survey of Smoking, Drinking and Drug Use among Young People in England 2010.
211. The Pechey et al. estimates were made holding other factors constant. Two factors have changed. First the implementation of the display ban and second the introduction of TPD. The expected effect of both of these is a decrease in smoking prevalence. To address this we do not consider the Pechey et al. decrease in absolute terms but instead in relative terms, i.e. that this represents a fall of around 11% (3 in 27). As described in Annex E, the TPD will contain measures that overlap with some elements covered by standardised packaging legislation (as set out in the 2012 consultation) such as "lipstick"-style packs no longer being allowed. We take the 11% reduction and then take account of the shared impact of standardised packaging and TPD (1%) to prevent double-counting. This implies a net reduction of approximately 10% relative to the counterfactual baseline (i.e. Option 1).
212. Some have argued that other factors will not remain constant, suggesting that the price of tobacco will decrease and there will be an increased availability of illicit cigarettes. In this IA assume that the price of any given product as seen by the consumer does not materially change due to standardised packaging on the basis of the Chantler review (see the sensitivity and risk analysis - decrease in tobacco price section). If this assumption proved to be incorrect, there would be uncertainty in the number of people quitting or not taking up smoking, the uncertainty and impact of this uncertainty is considered in the sensitivity and risk analysis sections: people quitting or not taking up smoking, as well as the Illicit market and CBS.
213. We do not derive our estimate for the value of reduced take up of smoking directly from the 11-15 year olds categorised as 'have ever smoked'. Instead we do this indirectly and using an estimate for the reduction in the number of 15 year olds classed as regular smokers. This is because they are older and smoke more regularly, and hence are only a few months away from being considered an "adult (i.e. aged 16+) smoker.
214. Next we consider the amount of smoking we expect for the counterfactual baseline Option 1 when standardised packaging is expected to commence. Option 1 includes the display ban and TPD. The Smoking, Drinking and Drug Use among Young People in England for 2013¹³⁰ (the latest survey) found that the proportion of 15 year olds classed as regular smokers was around 8%. We expect the result of the display ban to be a reduction in this proportion to around 7.3% (To reach this figure, we have applied the estimate of effectiveness that was used in the IA on the prohibition of tobacco displays at the point of sale). We assume the TPD is expected to reduce prevalence by a factor of 1.9% over five years, consistent with our prevalence reduction assumed for adults from information in the European TPD IA (see Annex E for further details).¹³¹ We assume this reduction will be evenly spread out over the five

¹³⁰ Smoking, drinking and drug use among young people in England in 2013, Health & Social Care Information Centre. Available at <http://www.hscic.gov.uk/catalogue/PUB14579>

¹³¹ The EU TPD IA does not dissect the total impact on consumption between adults and children. Without any further evidence, therefore, we assume the impact on different ages is distributed uniformly

years following the introduction of the TPD.¹³² This suggests the proportion 15 year olds classed as regular smokers in 2016 for Option 1 would be just under 7.3%.

215. Applying the 10% reduction to the 7.3% of 15 year olds classed as regular smokers for Option 1 gives a reduction after 2 years of 0.73 percentage points due to standardised packaging. After the 2 years, applying this reduction to the UK population aged 15 corresponds to around 5,500 fewer smokers in each cohort, and in each successive cohort of young people, over and above the benefit attributed to the display ban and TPD.
216. We value the health benefits gained for each quitter or individual who refrains from starting to smoke, in a similar way to the IAs on the legislation to stop the sale of tobacco from vending machines and legislation to end the display of tobacco display in shops. For every young person who no longer takes up smoking, there is a lifetime benefit through increased life expectancy of 2.1 years (1.0 years discounted¹³³), valued at around £60,000 (£60,000 per year¹³⁴). Further details of the calculations of health benefits are given in Annex A.
217. This scale of reduction in young people smoking would generate an additional lifetime benefit of around £310m per year if that reduction in the proportion of young people who are regular smokers were realised immediately. As the expert survey asked respondents to state the change in prevalence two years after the introduction of standardised packaging, we attribute the full benefit to year two onwards, with one half of this benefit being attributed to year one.¹³⁵ We have limited the time horizon to 10 years following the expected implementation of standardised packaging; the discounted value of health gains over this period is around £2.8bn. Extending the time horizon would increase the number of cohorts of young people for whom we register benefits.

Value of improved quit rates

218. We start by considering the Pechey et al. (2013) study, the median estimate for the most likely change in the percentage of prevalence two years after the introduction of standardised packaging (holding other factors constant) is a decline of 1 percentage point. All respondents considered a reduction in prevalence to be the most likely outcome. We note that there was some uncertainty around this figure, with the median estimates for the lowest and highest likely values being 0 and a 2.25 percentage point reduction, respectively. This estimate was originally set against a 21% prevalence from the General Lifestyle Survey/Opinions and Lifestyle survey.
219. The Pechey et al. estimates were made holding other factors constant. As previously we consider the display ban and TPD. Again we consider the Pechey et al. decrease in relative terms, i.e. this represents a fall of around 4.8% (1 in 21). As described in Annex E, the TPD will contain measures that overlap with some elements covered by standardised packaging legislation (as set out in the 2012 consultation). We take the 4.8% reduction and then take account of the shared impact of standardised packaging and TPD (1%) to prevent double-counting. This implies a net reduction of approximately 3.8% relative to the counterfactual baseline (i.e. Option 1).
220. Some have argued that other factors will not remain constant, suggesting that the price of tobacco will decrease and there will be an increased availability of illicit cigarettes. In this IA assume that the price of

¹³² This is a modelling decision that reflects comments in the European TPD IA that the drop in tobacco consumption is expected to develop gradually. A year by year estimate is not available.

¹³³ Discounting effects coupled with lack of precise data about the harm incurred by smoking under the age of 35, causes this discounted value to be lower than that of adult quitters. More detail is available in Annex A

¹³⁴ DH assigns a value of £60,000 to a Quality Adjusted Life Year. Where Quality Adjusted Life Year estimates are not readily available, and it is appropriate this value is used for Life Years. This is consistent with similar valuation of policies that mitigate mortality or morbidity risk by other government departments, based upon studies of what members of the public are on average willing to spend to reduce their own mortality risk, or to improve their own health outcomes.

¹³⁵ We feel this is the best assumption given the evidence available, and appropriateness of modelling complexity. For example, it would be unreasonable to assume no change in prevalence for 2 years followed by a step change in prevalence. This assumption drives the estimate of £160m in this first year which is small when considered against the NPV and considering the uncertainty in the other key variables.

any given product as seen by the consumer does not materially change due to standardised packaging on the basis of the Chantler review (see the sensitivity and risk analysis - decrease in tobacco price section). To the extent that this assumption is incorrect, there would be uncertainty in the number of people quitting or not taking up smoking, the uncertainty and impact of this uncertainty is considered in the sensitivity and risk analysis sections: people quitting or not taking up smoking, as well as Illicit and CBS.

221. Next we consider the amount of smoking we expect for the counterfactual baseline Option 1 when standardised packaging is expected to commence. Option 1 includes the display ban and TPD. The General Lifestyle Survey/Opinions and Lifestyle Survey for 2012 (the latest survey) found a prevalence of 19.9%. We expect the result of the display ban to be a reduction in this proportion to around 19.8% (To reach this figure, we have applied an annual 0.04 percentage point decrease, taken from the IA for the ending of tobacco displays). We assume the TPD is expected to reduce prevalence by a factor of 1.9% over five years, from information in the European TPD IA (see Annex E for further details). We assume this reduction will be evenly spread out over the five years following the introduction of the TPD. This suggests the prevalence in 2016 for Option 1 would be about 19.7%.
222. Applying the 3.8% reduction to the 19.7% prevalence for Option 1 gives a reduction after 2 years of 0.74 percentage points due to standardised packaging. After the 2 years, applying this reduction to the UK population aged 16 and over in 2016 corresponds to around 390,000 quitters, over and above the benefit attributed to the display ban and TPD.
223. We value the health benefits gained for each quitter or individual who refrains from starting to smoke, in a similar way to the IAs on the legislation to stop the sale of tobacco from vending machines and legislation to end the display of tobacco display in shops. For every additional adult smoker who quits, there is a lifetime benefit through increased life expectancy of 2.0 years (1.2 years discounted), valued at around £70,000 (£60,000 per year¹³⁶). Further details of the calculations of health benefits are given in Annex A.
224. The expert survey asked respondents to state the change in prevalence two years after the introduction of standardised packaging. We assume that half of these quitters quit in the first year of Standardised Packaging and the other half in the second. We assume no quitters due to standardised packaging after the second year. We feel this is the best assumption given the evidence available, and appropriateness of modelling complexity. For example, it would be unreasonable to assume no change in prevalence for 2 years followed by a step change in prevalence. Since this assumption drives when the benefit occurs, as opposed to its size, the NPV is relatively insensitive to this considering the uncertainty in the other key variables. The discounted value of these health gains are around £26bn. This estimate does not allow for improvements in quality of life gains in non-smokers as opposed to smokers.

Reduced Child and Adult Ill-health from Second Hand Smoke and avoidable treatment Costs

225. An additional benefit of standardised packaging would be a reduction in exposure to second hand smoke (SHS) from reduced rates of smoking. While exposure to SHS is harmful to anyone, children are particularly vulnerable to health conditions caused by SHS exposure. A report by the Royal College of Physicians identifies links between SHS and a number of causes of morbidity in infants and children. The report puts the costs of primary care and hospital admissions related to childhood disease caused by SHS at £23.3m per annum in the UK¹³⁷ in addition to the impact of SHS on adult morbidity and mortality. We expect this to decrease if legislation to make private vehicles carrying children smokefree

¹³⁶ DH assigns a value of £60,000 to a Quality Adjusted Life Year. Where Quality Adjusted Life Year estimates are not readily available, and it is appropriate this value is used for Life Years. This is consistent with similar valuation of policies that mitigate mortality or morbidity risk by other government departments, based upon studies of what members of the public are on average willing to spend to reduce their own mortality risk, or to improve their own health outcomes.

¹³⁷ Royal College of Physicians (2010). Passive smoking and children. London: Royal College of Physicians.

is introduced. We would expect this cost to be reduced in proportion to any reduction in adult smoking which might result from a standardised packaging policy.

226. The impact of smoking reduction on the use of health care resources has been illustrated in a study conducted by Sims et al. (2010)¹³⁸ who reported a statistically significant 2.4% reduction in the number of hospital admissions for myocardial infarction (heart attack) in the year following the introduction of smokefree legislation in England. Significant reductions were observed for men and women aged 60 or older and men, but not women, aged less than 60. As in previous IAs, we have not included an impact on NHS costs for the treatment of patients with smoking-related illnesses, despite evidence of the immediate impact on hospital admissions of smokefree legislation. Recent evidence suggests that quitting may, in addition, lead to a reduction in costs over the lifetime compared with continuing to smoke. Modelling has estimated that, if 1% of the total prevalent smoker population of England over the age of 35 were to quit, then the total lifetime cost savings would be around £162m.¹⁸ However, the model is too speculative to be relied upon as it requires assumptions regarding the costs of the alternative causes of death for those who gain longevity from reduced smoking prevalence. We have therefore excluded impacts on health care costs from this IA.

Reduction in health inequalities

227. Although we expect a greater impact of standardised packaging on smoking prevalence among smokers of high price than low price brands, inequalities within lower income groups are likely to narrow as the gap between those who quit smoking and low income non-smokers is reduced. This health gain amongst lower income groups is likely to be more important than the corresponding gain amongst higher income groups – as the latter contain fewer smokers (albeit more of the smokers are likely to smoke high price brands).

Improved Workplace Productivity

228. In relation to economic productivity, Policy Exchange have estimated the costs of lost productivity due to smoking breaks (£2.9 bn) and tobacco-related absenteeism (£2.5 bn) in the UK¹³⁹, while supplementary analysis undertaken for a NICE appraisal of workplace-based smoking cessation interventions estimated a potential productivity gain of £6,000 per treated employee (with the inclusion of the costs of smoking breaks).¹⁴⁰ The main analysis carried out for the appraisal estimated a lifetime productivity loss per person in the absence of any smoking cessation intervention of £3,458¹⁴¹, based on the 2005 ASHE average hourly wage rate. Uprating this figure for the increase in hourly wages between ASHE 2005 and the latest provisional 2013 ASHE, adjusted to 2014 prices, gives a productivity benefit of £4,300 per employed adult quitter. Adjusting for the proportion of smokers in employment of 58% (quoted in NICE's tobacco return on investment toolkit) gives a lifetime productivity gain per adult quitter of £2,500. It should be noted that there are alternative estimates such as £8.7 billion in lost productivity every year, carried out for the British Heart Foundation by Centre for Economics and Business Research¹⁴².
229. This productivity gain per adult quitter is applied to the expected number of adult quitters due to this policy (see health benefits section), and discounted. This gives a 10 year gain to the NPV calculation of £900 million.

¹³⁸ Sims M, Maxwell R, Bauld L, Gilmore A (2010), Short-term impact of smoke free legislation in England: retrospective analysis of hospital admissions for myocardial infarction. *BMJ* 340:c2161.

¹³⁹ Nash R, Featherstone H (2010). Cough up: balancing tobacco income and costs in society. London: Policy Exchange.

¹⁴⁰ Flack S, Taylor M, Trueman P (2007). Cost impact analysis of workplace-based interventions for smoking cessation: sensitivity analysis of time lost due to smoking. Supplementary report. York: York Health Economics Consortium.

¹⁴¹ Flack S, Taylor M, Trueman P (2007). Cost-effectiveness of interventions for smoking cessation: Final report. York: York Health Economics Consortium.

¹⁴² See <http://www.cebr.com/reports/smoking-costs-uk-businesses-8-7bn/>

Cleaner streets

230. It has been estimated that, in 2007, local authorities in England spent £342m¹⁴³ to remove cigarette litter from the streets. As a result of reduced smoking prevalence consequent on standardised packaging, we would therefore expect some savings (unquantified here) to local government, and to businesses such as public houses and entertainment venues, related to the costs of removing cigarette litter on the streets and in business premises.

Consumer surplus

231. Normally if a desired feature of a product were removed, this would be counted as a loss, of “consumer surplus”¹⁴⁴, to the consumer. In the case of addictive products, this theory is more difficult to apply in both principle and practice.
232. The orthodox approach in cost-benefit analysis is based on rational consumer behaviour. If smokers were making a rational trade-off between the utility they gained from smoking (together with avoiding the pain of withdrawal) versus the harm to their health then it could be argued that their current consumption level is a product of that trade-off. Further, anything that reduced the current pleasure from smoking would tip the balance in favour of health, and a lower level consumption would then be rationally chosen. By this argument, lower consumption would be the consequence of the cost of the loss of pleasure from smoking. In this case, this would be an indicator that loss of branding was felt to be a loss of part of the pleasure of smoking. However, in the case of addictive goods, this theory of rational trade-offs is not the only possible approach.
233. As the Chantler Report has noted, “addiction to nicotine involves multiple processes, with evidence suggesting adolescents can experience a loss of autonomy very soon after the first cigarette. None of these processes requires conscious awareness, rather there is a powerful urge to smoke in the presence of stimuli associated with previous absorption of nicotine, which increases as opportunities for smoking become more frequent, especially after the school years. Although two-thirds of current smokers report wanting to give up smoking, quitting is extremely difficult and most smokers make multiple quit attempts before they succeed. Although the number of children taking up smoking has been falling since the 1990s, an estimated 207,000 children aged 11-15 still take up smoking each year in the United Kingdom.”
234. In the case of addictive goods like tobacco, branding may act as a cue that stimulates the craving for the good. Removing the cue, in such circumstances, helps the addict to realise their true preferences. An alternative approach to cost-benefit analysis could reflect this, and if so any reduction in consumption due to plain packaging would be taken as indicating that smokers’ demand had moved to a level that better reflected their true preferences. Consequently, the former level of demand would not be seen as a reflection of true welfare, but rather a reflection of addiction. Hence that former level of consumption could be regarded as a cost without a compensating benefit.
235. The Chantler Report also notes that “the aim of standardised packaging is to reduce the tobacco package’s visual identity and appeal as an advertisement for the product. There is very strong evidence that exposure to tobacco advertising and promotion increases the likelihood of children taking up smoking. Industry documents show that tobacco packaging has for decades been designed, in the light of market research, with regard to what appeals to target groups. Branded cigarettes are ‘badge’ products, frequently on display, which therefore act as a “silent salesman.” Tobacco packages appear to be especially important as a means of communicating brand imagery in countries like Australia and the UK which have comprehensive bans on advertising and promotion. It is notable that Japan Tobacco International responded to the decision to introduce tobacco plain packaging in Australia by attempting to sue the Australian Government for taking possession of its mobile “billboard”.

¹⁴³ Keep Britain Tidy: Reducing Smoking Related Litter, a guide for businesses.
http://www.nerwai.org.uk/uploaded/file/Smoking%2520Related%2520Litter_615.pdf

¹⁴⁴ Consumer surplus is typically measured as the difference between the amount the consumer would have been willing to pay and the actual price.

236. Another feature of branding is to distinguish ‘premium products’ from ordinary products. Premium cigarettes are not prohibited by standardised packaging. However, the conspicuous consumption of a premium product will be inhibited. This would represent a loss – again of consumer surplus – to those who wished to consume a premium product conspicuously. It could, though, at the same time represent a gain to those who felt their consumption was made less enjoyable, or were made to feel inferior, by the conspicuous consumption of premium products by others.
237. The measurement of consumer surplus is thus highly complex in such circumstances. We acknowledge that under “rational choice” assumptions, people who stop smoking, or lose the pleasure of branding, may lose some consumer surplus. Also, many who quit will, in the early stages of becoming ex-smokers, suffer from withdrawal symptoms, although for many this will be temporary. On the other hand, there is another view that becoming free from an addiction enhances consumer surplus rather than diminishes it, and branding may have negative external impacts as well as positive. More detailed discussion on the consumer surplus implications of removing branding is in Annex F.

Pecuniary benefits to quitters and withdrawal pains

238. There may be thought to be a gain for those who wished to give up, and whose unrealised preferences for quitting are now realised, even above the value of the health gain: they have been aided to realise their second-order preferences (their preference not to choose to buy cigarettes). They now understand the branding to have conveyed misinformation that beguiled them into sustaining an addiction. Drawing on models of addiction with time inconsistent preferences, such as those of Gruber and Kőszegi (2008)¹⁴⁵ and Weimer et al. (2009)¹⁴⁶, there are reasonable grounds to assign to these individuals a benefit equivalent to their reduction in expenditure on tobacco, which we expect them to spend on other goods and services. On the basis of our pricing and consumption assumptions, an illustrative estimate 10-year NPV estimate for this saved expenditure is around £5.7bn, which we expect them to spend on other goods and services.
239. Although smokers that decide to quit do so voluntarily and out of their own choice, there may also be grounds to include any withdrawal pains quitters endure. This is likely to be of material value and comparable to the pecuniary benefits highlighted above, since, if it was not, rational choice theory would suggest the smoker would already have quit. Rational choice theory falls short, however, given the potential for high discount rates and time inconsistent preferences for smokers. We do not make a quantitative estimate for the withdrawal pains quitters endure.
240. Since we do not make a quantitative estimate for the withdrawal pains quitters endure nor of smoking-related pleasure foregone and do not include it in the NPV, in part to balance this, we also do not include the pecuniary benefits accrued by quitters in our NPV calculation.

Pecuniary benefits from reduced uptake

241. There may be thought to be a gain for those who no longer take up smoking due to Standardised Packaging as they would become smokers and too have unrealised preferences for quitting as described in the previous section. Again there are reasonable grounds to assign to these individuals a benefit equivalent to their reduction in expenditure on tobacco, which we expect them to spend on other goods and services. On the basis of our pricing and consumption assumptions, an illustrative estimate 10-year NPV estimate for this saved expenditure is around £880m, which we expect them to spend on other goods and services.
242. Unlike current smokers, children who are yet to take up smoking are not addicted and hence there are no grounds to include any counteracting withdrawal pains. Hence there are very good reasons to include

¹⁴⁵ Gruber J, Kőszegi B (2008). A modern economic view of tobacco taxation. Paris: International Union against Tuberculosis and Lung Disease.

¹⁴⁶ Weimer D L, Vining A R, Thomas R K (2009). Cost-benefit analysis involving addictive goods: contingent valuation to estimate willingness-to-pay for smoking cessation. *Health Economics* 18:181-202.

£880m in the NPV, though again there may be a stream of pleasure foregone to some individuals. Quantifying the net impact would require assumptions that would be too speculative currently to include. We also note that whether the £880m is or is not included in the NPV does not change its sign.

Summary of impact

243. Our quantified estimates of lifetime health benefit are based on the information presented earlier for the lifetime benefits per young person not taking up smoking or adult quitting multiplied by the reduced numbers of young people becoming regular smokers and the increased numbers of adults we expect to quit as a result of standardised packaging. We report annual costs and benefits over a ten year period from implementation of the policy, with health benefits discounted at 1.5% per year and other flows of costs and benefits at 3.5% per year. In the base case, we use the assumption of 2016 implementation, with impacts occurring from 2016 onwards. We distinguish those impacts due to changes in smoking behaviour, expressed in terms of lifetime impact (discounted back to an individual year), from those relating to the overall tobacco market (primarily the effects associated with downtrading), where impacts are related to the specific years in which they occur.
244. The *summary of impacts table – costs and benefits* below has the lifetime impacts of health gains, productivity gains and duty and VAT loss from fewer smokers highlighted in rows A, B, G and Z. If there were no impact on smoking behaviour, all these figures would revert to zero. The summary table also reports the in year impacts related to changes in the overall market of serving time, illicit and CBS impacts, losses in profit associated with a reduction in branding (including brand value for manufacturers), decrease in production costs, redundant machinery and loss of duty and VAT in rows E, H, K, L, N, Q, R, S, V, α and β .
245. The lifetime health benefits are the dominant effect in the analysis. If the lifetime health benefits of the magnitude suggested by the expert panel could be achieved, then benefits would be substantially greater than costs. The overall monetised net benefit gives an idea of the magnitude of the loss of any qualitatively discussed impacts such as consumer surplus/freedom for those continuing to smoke valued brands which would be necessary to outweigh the benefits of the policy. When considering these possible unquantified costs it should be recalled that there are also potential unquantified increases in benefits as well such as reduced expenditure, which recent theoretical approaches to the analysis of addiction suggest can also be counted as a benefit.

Summary of impacts table - costs and benefits

Stakeholder		Impact	Quantified and in NPV(✓orX)? How?	Quantified Present Value (£m rounded)	IA ref (para)
General population of smokers, quitters & non-smokers	A	Health gain, and lower inequalities in health, from reduced smoking	✓Health gain measured in life-years, and monetised using WTP	26,000	218-224, 227, Annex A
	B	Health gain from reduced uptake of children smoking	✓Health gain measured in life-years, and monetised using WTP	2,800	210-217, 227, Annex A
	C	Health gain from reduced second-hand smoke	X In principle measurable in life-years and could be included. Discussed qualitatively in IA		225-226
	D	Loss of consumer surplus if prefer branded tobacco Save money and incur pecuniary benefits for quitters and non-starters Some incur disutility from withdrawal pains	X Usually included, but offset by following points: · Tobacco is addictive, so consumption does not reflect true preferences · Lower consumption level better reflects preferences · Branding also produces negative externalities		231-242. Annex F
	E	Time taken to buy tobacco in standardised packaging	✓Time impact measured, and valued as leisure time	-0.30	146-153
	F	Reduced: litter from packaging environmental damage, etc.	X In principle - discussed only qualitatively in IA		230
Businesses who employ smokers	G	Fewer smokers at work improves business productivity	✓Gain from less smoking: shorter breaks, and less time off sick; valued as avoided loss of work time	900	228-229
Retailers of tobacco	H	Time taken to sell tobacco	✓ Measured by research study, and valued at retailers' time costs	-0.50	146-153

	I	Profits decreased due to reduced tobacco sales due to fewer smokers	X Is quantified but reduced profits from reduced spending on tobacco equal to I+J+M+O+P assumed roughly equal to U, therefore, net effect is zero.		115-127
	J	Profits decreased due to downtrading	X Is quantified but reduced profits from reduced spending on tobacco equal to I+J+M+O+P assumed roughly equal to U, therefore, net effect is zero.		115-127, Annex D
	K	Profits decreased due to reduced tobacco sales due to potential increase in illicit trade and CBS	✓ Measured from profit lost per pack and 0.4% transfer out of UK duty paid market (n.b not compensated for by T)	-20	172-204
	L	Reduced profits associated with any reduction in branding	✓ measured as reduced profits to retailers from Premium/Mid-price brands i.e. reduction in Premium/Mid-price smokers from quitting and downtrading.	-150	115-127
Wholesalers of tobacco	M	Profits decreased due to reduced tobacco sales due to fewer smokers	X Is quantified but reduced profits from reduced spending on tobacco equal to I+J+M+O+P assumed roughly equal to U, therefore, net effect is zero.		115-127
	N	Profits decreased due to reduced tobacco sales due to potential increase in illicit trade and CBS	✓ Measured from profit loss per pack and 0.4% transfer out of UK duty paid market. (n.b not compensated for by T)	-10	172-204
Tobacco manufacturers & their shareholders	O	Profits decreased due to reduced tobacco sales due to fewer smokers – for UK.	X Is quantified but reduced profits from reduced spending on tobacco equal to I+J+M+O+P assumed roughly equal to U, therefore, net effect is zero.		115-127
	P	Profits decreased due to downtrading – for UK.	X Is quantified but reduced profits from reduced spending on tobacco equal to I+J+M+O+P assumed roughly equal to U, therefore, net effect is zero.		115-127, Annex D
	Q	Profits decreased due to reduced tobacco sales due to potential increase in illicit trade and CBS	✓ Measured from profit loss per pack and 0.4% transfer out of UK duty paid market. (n.b not compensated for by T)	-1.4	172-204

	R	Reduced profits associated with any reduction in brand value– for UK.	✓measured as reduced profits to Manufacturers from Premium/Mid-price brands i.e. reduction in Premium/Mid-price smokers from quitting and downtrading. Only include impact on UK shareholders	-35	115-127
	S	Production costs reduced – for UK.	✓measured from reduced production costs per packet of tobacco. Only include impact on UK shareholders	23	154-156
	T	Saved expenditure on designing and implementing regular branding changes	X Is considered a direct benefit, discussed qualitatively in IA		112, 154
Manufacturers, retailers & wholesalers of other goods and services	U	Profits increase from Ex-smokers and downtraders spending more on, e.g., recreation and entertainment	X Increased profits assumed roughly equal to I+J+M+O+P, therefore, net effect is zero.		115-127
Tobacco packaging printing companies & their shareholders	V	Printing may switch from gravure printing to cheaper offset lithography so some gravure machines may become redundant	✓asset value of gravure machines in current use - included (as higher estimate)	-15	128-138
	W	Reconfiguration of machinery (e.g. plates) to comply with new packs.	X Assumed to be no incremental cost over and above TPD requirements		139-140
NHS treatment costs	X	Fewer A&E attendances, inpatients, outpatients, GP visits, medication, etc.	X In principle measurable as saved NHS expenditure and could be included. Discussed qualitatively in IA and is partially counteracted by α		225-226
	Y	Change in healthcare use due to longer life expectancy	X In principle measurable as increased NHS expenditure and could be included. Discussed qualitatively in IA and considered lower than Z		225-226
HMRC & Taxpayers	Z	Tax and duty decreased due to reduced tobacco sales due to fewer smokers. Increase in tax from other goods and service. Other tax payers pay more to make up net shortfall.	✓Estimate the average net tax and duty loss from a quitter / child who does not take up smoking at current market share	-4,500	157-165, Annex A

α	Tax and duty decreased due to downtrading. Increase in tax from other goods and service. Other tax payers pay more to make up net shortfall.	✓ Measured from net tax and duty differential on Premium/mid-price compared to Economy/ULP and change in Market Share	-130	166-171, Annex D
β	Tax and duty decreased due to reduced tobacco sales quantity due to potential increase in illicit trade and CBS. Other tax payers pay more to make up net shortfall.	✓ Measured from tax and duty lost per pack and 0.4% transfer out of UK duty paid market	-340	172-204

One in two out (OITO) calculation

246. Costs and savings to businesses have been discussed throughout and more thoroughly in the main body of this IA. They are summarised here and their relevance for OITO is discussed here and summarised in the table below.
247. Impacts we have identified as being relevant for OITO are:
- Direct costs to retailers from increase in serving time.
 - Direct costs for packaging manufacturers from the lost profit stream from capital already invested in gravure machinery.
 - Direct costs to retailers, wholesalers and tobacco manufacturers due to the anticipated drop in the number of smokers.
 - Direct costs to retailers and tobacco manufacturers due to downtrading.
 - Direct savings to tobacco manufacturers associated with changes in production processes.
248. We expect there to be a very short lived (a matter of weeks) increase in serving time whilst shop assistants familiarise themselves with the new system and customers become aware of the change in appearance. We expect retrieval times to be materially unaffected in the longer term. We value this loss of time to tobacco retailers at £0.50m (10 years discounted). The corresponding value is included in the Equivalent Annual Net Cost to Business (EANCB).
249. The direct cost for packaging manufacturers (from the lost profit stream from capital already invested in gravure machinery) was estimated at £10m-£15m. In attributing a share of impact to the UK, for OITO and EANCB purposes a “GDP approach” is adopted to assess the direct impact on UK-based activities. Since the estimate was derived from UK production, all of this £10m -£15m¹⁴⁷ cost is included in the OITO calculation as a direct UK-based activity cost and the corresponding value is included EANCB.
250. Only direct impacts on business should be counted for OITO purposes. Losses of profits to tobacco companies and others in the supply chain due to reduced consumption of tobacco or downtrading are contingent on the changed behaviour of smokers and so were excluded from OITO calculations in the Consultation Stage IA. The Regulatory Policy Committee have now advised that policies which ban or severely restrict a particular activity, that explicitly prohibit a form of promotional activity, and have a primary objective to reduce sales (even if by promoting behaviour change) should be considered as having a direct impact on businesses. In this IA we therefore treat these profit losses as a direct impact for OITO purposes. We note that the Better Regulation Executive’s Framework review is considering the question of the definition of “Direct” for OITO purposes.
251. Standardised packaging is expected to result in fewer smokers and hence lower sales volumes and resulting profits. The direct UK-based costs to retailers and wholesalers due to this were estimated at £190m, and £92m respectively (10 years discounted). The corresponding value is included in the EANCB. A sizeable proportion of retail sales of tobacco are through Small and Micro Businesses and this is discussed in more detail in the Small and Micro Business Assessment later.
252. Standardised packaging may result in smokers downtrading from more profitable higher priced brands to less profitable lower priced brands. The direct UK-based cost to retailers due to this was estimated at £90m for retailers (10 years discounted). The corresponding value is included in the EANCB.
253. In attributing a share of impact to the UK, for OITO and EANCB purposes a “GDP approach” is adopted to assess the direct impact on UK-based activities. This requires an assessment of the proportion of the gross value added by a particular activity that is provided by businesses based in the UK. For wholesalers and retailers we assume 100% of the profits come from companies with 100% UK based activity. For tobacco manufacture, the estimate of the share of value added that is UK based is more complex.
254. There are two multinational tobacco manufacturing companies with UK-based production, the Imperial factory in Nottingham and the JTI factory in Lisnafillan. These two companies supply around 44% and

¹⁴⁷ The higher end of this range is included in the EANCB estimate

41% of the UK tobacco market respectively¹⁴⁸. We assume that all the value added by tobacco manufacturing comes from factory production (ignoring both any exports from these plants and any value added by importers – as most of the latter would be attributable to wholesalers and retailers.). Therefore, using these market share figures, we attribute 85% of current gross manufacturing value added consumed in the UK to UK based producers.

255. Imperial has announced the closure of this factory, and it is not scheduled to be producing when a standardised packaging policy is due to start¹⁴⁹. JTI have also announced the closure of its factory and we anticipate that all manufacture would cease by mid-2017¹⁵⁰, one year after the introduction of standardised packaging. Therefore, in the 10 year period after the introduction of standardised packaging the proportion of UK consumed tobacco that comes from UK-based production from these factories is around 4.1%.
256. Such an approach implicitly assumes that the decision to close these factories is unrelated to the proposal to introduce standardised packaging. One takes the projected share of UK value added of manufactured tobacco products that is produced in the UK to be invariant between Option 1 (current planned policies including TPD) and Option 2 (Option 1 with standardised packaging). However, it may be argued that the success of tobacco control policies in general, including standardised packaging, must be relevant to the decision where to locate production. Although tobacco manufacturing is global and tobacco consumed in the UK does not have to be manufactured in the UK (and vice versa), clearly any expected reduction in branded tobacco consumption in the UK will have weakened the case for maintaining production within the UK, notwithstanding that other factors are also critical in choosing a location for production (for example, relative shipping and labour costs).
257. To resolve this issue, we propose to assume that the decision to close these factories is influenced by the standardised packaging policy but only in proportion to its expected impact upon smoking prevalence in the UK. In contextualising the contribution that anticipation of this policy change might have had on these closure decisions, a decision time frame must be selected. We suggest that it is implausible that changes in smoking prevalence that took place more than a decade ago are having a significant influence upon location decisions now: factories rendered unviable by changes in smoking behaviour that long ago would in general already have been relocated or closed.
258. Conversely, we cannot be confident that the decision has not been influenced by more recent changes in prevalence. It is clear that an unexpected drop in actual or projected prevalence will not lead to the immediate closure of a factory. For production will continue at an unviable factory if revenue exceeds variable costs. It is only at the point that major renewal of capital is required that the cumulative impact of recent declines in profitability will be brought to bear on the decision whether or not to persist with the current location.
259. The precise timeframe will depend upon discount rates and the life expectancy of the fixed capital employed in tobacco manufacturing. Ten years seems a reasonable estimate, and creates a not implausible weight for the impact of this particular impact.
260. Suppose therefore that the decision to close is therefore affected by changes in consumption over the last decade, as well as by prospective changes in the near future.
261. We note that smoking prevalence has decreased by around 7 percentage points over 10 years, and this policy is expected to decrease smoking prevalence by around 0.74 percentage points. If there is an

¹⁴⁸ ASH factsheet 18 tobacco Industry, quoting Annual Cigarette Synopsis. Citi Research, 25 March 2014 as original source. Available at http://www.ash.org.uk/files/documents/ASH_123.pdf. Note that although 85% of the UK market may be supplied by them some of that production may be non-UK based. The Imperial factory produces around 17 billion sticks per year i.e. equivalent to around 46% of the 37 billion in the UK market (see Imperial press release 15/4/2014 available at <http://www.imperial-tobacco.co.uk/index.asp?page=78&newsid=2000>). The proportion exported is not known.

¹⁴⁹ Closure date May 2016. Nottingham Post 18/6/2014 available at <http://www.nottinghampost.com/Redundancy-package-agreed-Imperial-Tobacco-staff/story-21255473-detail/story.htm>

¹⁵⁰ Correspondence from JTI to Northern Ireland Office 7/10/14 “all manufacture at Lisnafillan ceasing by the second quarter of 2017”. Consistent with JTI press release 7/10/14 which discusses closure of this factory as well as one in Belgium stating “factory closures completed between 2016 and 2018.”

equal chance that any particular decrement in prevalence would have tipped the decision against the continued UK location of these factories, then there is a one in ten chance that this policy was critical to the decision.

262. Against that background, to estimate the statistically expected impact upon UK business, we reckon a one tenth chance in the absence of these policies the factories would have stayed open. In which case there is a one tenth chance that 85% of the tobacco manufacturing profits are UK-based. But there is a nine tenths chance that they would have closed any case, in which case, as above 4.1% of the tobacco manufacturing profits are UK-based. Weighting these possibilities together gives an expected proportion of profits that are UK based of 12% over the period. This 12% is applied to the profit loss or gain of the tobacco manufacturers to derive a direct UK-based figure from these factories for OITO and EANCB purposes.
263. It should also be noted that any uncertainty in the 12% estimate is partially mitigated by the fact that the costs to tobacco manufacturers (noted below), although larger are of a similar magnitude to the cost savings.
264. Therefore, when considering UK-based impacts for tobacco manufacturers due to reduced sales a total discounted loss over 10 years of £21m is used (as opposed to £180m including non-UK-based profits). Similarly, when considering UK-based impacts for tobacco manufacturers due to increased downtrading a total discounted loss over 10 years of £26m is used (as opposed to £210m including non-UK-based profits). The corresponding values are included in the EANCB.
265. We expect a reduction in production cost of around 2 pence per packet, benefiting the profits of tobacco manufacturing companies. This gives an expected benefit to UK-based business over 10 years of £28m (10 years discounted) (as opposed to £230m including all non-UK-based profits. The corresponding value is included in the EANCB.
266. Taken together the direct business net present value (under the definitions used in this IA) is -£400m¹⁵¹. The EANCB for this policy would therefore be recorded as an IN with and EANCB of £37m (£36.78m¹⁵² to the nearest £10,000).

¹⁵¹ To 2 significant figures, 2014 price base year and PV base year. This value is -£402.70m to 5 significant figures required for the EANCB 4 significant figure calculation. Care should be taken when considering precision required for the OITO programme and accuracy.

¹⁵² This value has been calculated using the BIS Impact Assessment Calculator. The calculator uses data sets that are updated regularly. This uses "GDP deflators: December 2014 (Quarterly National Accounts)" available at <https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-december-2014-quarterly-national-accounts>. The calculator is used so that the EANCB value can be compared against other EANCB values using the same calculator. It is known that there are some inconsistencies with the use of financial year and calendar year data in the calculator and that these inconsistencies can cause small differences in the precise EANCB value calculated. Using calendar year GDP deflator values changes the EANCB to £36.66m.

Summary of Impact on Businesses Considered for OITO (increased costs shown as negative)

Stakeholder		Impact	Included in EANCB (✓orX)?	Quantified? How?	OITO present value (£m rounded)	IA ref (para)
Retailers of tobacco	H	Time taken to sell tobacco	✓	✓ Measured by research study, and valued at retailers' time costs	-0.50	146-153, 248
	I	Profits decreased due to reduced tobacco sales due to fewer smokers	✓	✓ Evidence on decrease in smoking applied to profits per pack	-190	115-127, 251
	J	Profits decreased due to downtrading	✓	✓ measured as reduced profits to from people still smoking but smoking lower profit, lower price brands	-90	115-127, 252, Annex D
Wholesalers of tobacco	M	Profits decreased due to reduced tobacco sales due to fewer smokers	✓	✓ Evidence on decrease in smoking applied to profits per pack	-92	115-127, 251
Tobacco manufacturers with UK-Based production	O	Profits decreased due to reduced tobacco sales due to fewer smokers – for UK.	✓	✓ Evidence on decrease in smoking applied to profits per pack produced in the UK	-21	115-127, 253-264
	P	Profits decreased due to downtrading – for UK.	✓	✓ measured as reduced profits to from people still smoking but smoking lower profit, lower price brands produced in the UK	-26	115-127, 253-264, Annex D
	S	Production costs reduced – for UK.	✓	✓ measured from reduced production costs per packet of tobacco. Applied to the portion of packets of tobacco that are produced in the UK.	28	154-156, 253-265
	T	Saved expenditure on designing and implementing regular branding changes	X Is considered a direct benefit, but not quantified.	X Is considered a direct benefit, discussed qualitatively in IA	0	112, 154
Tobacco packaging printing companies with UK-Based production	V	Printing may switch from gravure printing to cheaper offset lithography so some gravure machines may become redundant	✓	✓ asset value of gravure machines in current use - included (as higher estimate)	-15	128-138, 249

	W	Reconfiguration of machinery (e.g. plates) to comply with new packs.	X Direct but no incremental cost over and above TPD requirements	X Assumed to be no incremental cost over and above TPD requirements	0	139-140
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Sensitivity and Risk Analysis

267. The analysis suggests that the expected Net Present Value of a standardised packaging policy is considered to be highly positive. There are always uncertainties in any measurement or assumption and we therefore consider the sensitivities of this finding to certain key variables, as well as other risks. This section does not cover all uncertainties and there will be many that effect the NPV but to a much lower extent.

People quitting or not taking up smoking

268. The most sizable benefits of this policy are the health benefits from people quitting or not taking up smoking. The only cost of a similar magnitude is the cost to the exchequer due to lost duty and taxes from people quitting or not taking up smoking. The key variables that define the size of both these benefits and cost are the number of people quitting or not taking up smoking. Fundamentally these key variables are derived from the work of Pechey et. al. as described previously and in Annex B.
269. Pechey found the overall median estimate for the absolute change in the prevalence of adults smoking two years after the introduction of plain packaging was -1 percentage point (between-expert range -3 to 0 percentage points). The overall median estimate for the absolute change in the percentage of children trying smoking two years after the introduction of plain packaging was -3 percentage points (between-expert range -7.1 to -0.4 percentage points). We therefore illustrate the sensitivity to these key variables by considering the approximate impact on NPV under two separate scenarios. First, that standardised packaging has no impact on both adult and young peoples' smoking prevalence. The second scenario increases the impact of standardised packaging on both adult and young people smoking prevalence by a factor of 3 (compared to our base case analysis). Both scenarios are approximations to the expert ranges quoted above.
270. Work by Kaul et al discussed previously⁶⁶ suggests that the impact on prevalence may be lower than our central estimate, and not inconsistent with zero (beyond the current trend). We also suggest that the observed drop is not inconsistent with assumptions similar to the central Pechey et al estimate. These uncertainties lie within the 2 scenarios we consider below.
271. Under the no impact scenario, we clearly assume that the marginal impact of standardised packaging consists of no additional adult quitters and no fewer child smokers. Under the scenario where we scale up the impact by a factor of 3, we estimate that standardised packaging will result in around 1,200,000 adult quitters and around 16,000 fewer child smokers each year. These compare to our base model which estimates that standardised packaging will result in around 390,000 additional adult quitters and 5,500 fewer child smokers each year.
272. Under the no impact scenario, nearly all costs and benefits that impact on the NPV would reduce to 0. The costs relative to the NPV that remain would be the loss of profits associated with any reduction in branding, the losses to the exchequer due to downtrading, the temporary increase in transaction times the potential losses to packaging companies due to redundant machinery and the losses to the exchequer, manufacturers and distributors from a 0.4% transfer to the UK duty unpaid market (due to increases in the illicit market and CBS). The benefits that remain would be the benefit of manufacturing cost savings. These remaining costs and benefits will be of very similar values to those estimates previously, and so the NPV would reduce to around -£680m.
273. If the number of people quitting or not taking up smoking was increased by a factor of 3 (compared to our base case analysis), then all of the most sizeable costs and benefits such as the health benefit would also increase by a factor of 3. The costs and benefits that would not increase by a factor of 3 (the ones discussed in the previous paragraph) are of a different order of magnitude and hence have little relative impact on the NPV in such a scenario. Therefore, in such a situation, the NPV would increase by a factor of 3 to around £75bn.

274. Although the key variables of people quitting or not taking up smoking are derived from the Pechey et al. work, this is not to say the Pechey at al. estimates are the only variables with an impact. For example, there is uncertainty in the prevalence in Option 1 which too will have an impact (e.g. uncertainties in the impact of the display ban, or if e-cigarettes will have a larger impact on prevalence). However, these estimates are more certain and have less of an impact since the NPV is driven by the difference between Option 1 and Option 2, rather than the absolute values of either Option 1 or Option 2. Sticking with the same example of the uncertainty in Option 1. For this to have the same impact on the NPV as the 0 impact on prevalence or three times impact illustrated above, the UK would need to have no smokers in 2016 (analogous to the 0% impact above) or prevalence would have to have trebled to around 60% about the highest in the UK's historical record.

Loss of tax from reduced consumption

275. As discussed previously, the lifetime losses of duty and VAT are estimated at £4.5bn using a ten year time horizon. These estimates of lost receipts are indicative and do not allow for future changes in rates of duty per cigarette or per Kg of HRT, nor do they allow for a change in the number of cigarettes or weight of HRT per smoker. These future changes are uncertain, especially when considered over the time frame of a lifetime. Along with considering the uncertainty in each of these variables, we also consider how they may interact.

276. Data is not available for how duty per cigarette or per Kg of HRT will change over a lifetime. However, in the March 2014 Budget there was announcement that tobacco duty rates will rise by RPI + 2% until the end of the next Parliament. This illustrates the potential for the duty rate to change, and the likelihood that it will increase. All other variables remaining the same, an increase in duty would mean more duty is lost when someone stops smoking, and the £4.5bn would be an underestimate. However, as discussed later, there are interactions between variables hence it would be unlikely for all other variables to remain the same.

277. Data is not available for how the number of cigarettes or weight of HRT smoked per smoker will change over a lifetime. The last 16 years' worth of available data suggests that the average number of cigarettes smoked per day has remained reasonably constant (see table 5). However, there has been a decrease more recently, and an increase in duty is likely to drive a further decrease in the near future. However, there may be other drivers suggesting an increase in the average number of cigarettes smoked per day, for example if it is the light smokers who quit, the resulting average may rise.

Table 5: Average number of cigarettes smoked per day per smoker

	1998	2000	2002	2004	2006	2008	2010	2012
Male	15	15	15	15	15	14	14	12
Female	13	13	13	13	13	13	12	11

Sources: General Lifestyle Survey and Opinions and Lifestyle Survey, ONS¹⁵³

278. There is an interaction between the duty per factory made cigarette or per Kg of HRT, and the number of cigarettes or weight of HRT per smoker. Since duties make up a large proportion of tobacco prices, changes to duty rates can lead to substantial changes in prices. Smokers are expected to respond to price increases by reducing their consumption of tobacco. This interaction is illustrated in the Budget 2014 policy costing¹⁵⁴, where the RPI+2% escalator is estimated to raise £795m more in 2018/19 assuming no behavioural effects (i.e. assuming no interaction between duty rate and tobacco consumed per smoker). However, once behavioural effects are taken into account this is drastically reduced to £135m. Therefore, any uncertainty in the loss of tax due to standardised packaging due to the uncertainty in future duty rates is likely to be substantially counteracted by the interaction with the amount of tobacco consumed per smoker.
279. The duty rate changes cause an increase in the amount of duty raised per year, until after 4 years, £135m more per year is being raised. This represents around 1.4% of the £9.7bn duty raised per year¹⁵⁴, and so around a 0.35 percentage point change per year. We use this value to illustrate how sensitive tax loss estimates are to different tax rates and consumption. We do this by assuming this deviation from our Option 2 assumptions could continue over a life time. The average person is about halfway through their life and so have around 40 years left to live. A 0.35 percentage point change per year would mean a difference of 14% after 40 years and so 7% on average over the 40 years. Therefore, an illustration of the uncertainty in the £4.5bn tax loss is that it could be around 7% lower and hence around £320m lower. If the deviation from the Option 2 assumptions was to cause the tax loss to increase by 7% the value would be £320m higher. £320m is small relative to the estimated NPV of this policy.

The Illicit Market and CBS

280. We concluded that there is a sizeable likelihood that standardised packaging will cause no discernible increase in the UK duty unpaid market (where the UK duty unpaid market is the combination of the Illicit market and CBS). However, we also conclude that there is a chance that there will be an increase in the UK duty unpaid market. This highlights that there is uncertainty in the estimates of any potential change in the illicit market or CBS. To explore this we have undertaken a critical value analysis which explores what increase in the share of this market is required to yield a zero NPV of the policy. We model two possible groups that could be sources of an increase in the UK duty unpaid market
- Those who continue to smoke cigarettes or HRT under standardised packaging divert to the UK duty unpaid market
 - Those who would otherwise quit smoking under standardised packaging divert to the UK duty unpaid market.
281. We assume a percentage of the first group, those who continue to smoke under standardised packaging, divert from the UK duty paid market to the UK duty unpaid market. This reduces the amount of UK tax for the exchequer, the profits of manufacturers and the profits of wholesalers and retailers¹⁵⁵, thus decreasing the NPV of the policy. The steps of this estimate are described in the section “Impact of a 0.4% transfer to the UK duty unpaid market” the only difference being that various percentages are used to arrive at a critical value as opposed to a fixed 0.4%
282. We assume a percentage of the second group, those who would have quit under our base case assumptions, firstly, no longer quit, and secondly transfer to the UK duty unpaid market. This reduces the health benefits and the workplace productivity benefits of these people, thus decreasing the NPV of the policy. Relative to the base case there is a smaller loss in brand value attributable to the reduction in the extra Premium/Mid-price profits from those who quit smoking entirely (since fewer people quit). Relative to the base case, there is assumed to be no impact on other benefits and costs. As well as being a simplifying assumption for this illustrative sensitivity analysis, it is the case for the costs due to tax loss, which is the largest cost. This is because, in our base case the second group have all quit and

¹⁵⁴ HM Government Budget 2014: policy costing March 2014 available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/295067/PU1638_policy_costings_bud_2014_with_correction_slip.pdf

¹⁵⁵ Other variables such as production cost savings and saving from reduced transaction time are also affected but are not all listed since the calculation is not sensitive to these changes.

hence do not pay duty, and once they transfer to the UK duty unpaid market in this critical value analysis, they still do not pay any duty thus causing no change to the largest cost.

283. Some have argued that smokers (including potential quitters) may be more likely to continue to smoke seeking out branded products in a standardised packaging environment. If such behaviour was to happen to a small extent beyond the base case assumptions, one would expect a small increase in both groups relative to the base case. Similarly, if such behaviour was to happen to a large extent beyond the base case assumptions, one would expect a large increase in both groups relative to the base case. The exact relationship is unknown, so we assume the percentage of the first group that divert is the same as the second group that quit and divert.
284. This percentage is increased until it reaches 21% when we find the NPV of the policy has reduced to zero. Therefore the conclusion is that 21% of the UK duty paid market would need to transfer to the UK duty unpaid market, and 21% of those who would otherwise have quit smoking need to divert to the UK duty unpaid market for this policy not to have a positive NPV.
285. The proportion of the cigarette market that is UK duty unpaid is currently around 12% (see table 4). If 21% of the UK duty paid cigarette market was to transfer to the UK duty unpaid cigarette market¹⁵⁶, the UK duty unpaid cigarette market would become 30% of the overall cigarette market. The proportion of the HRT market that is UK duty unpaid is currently around 42% (see table 4). If 21% of the UK duty paid HRT market was to transfer to the UK duty unpaid HRT market, the UK duty unpaid HRT market would become 54% of the overall HRT market.
286. Any enhancement or diversification of the risk posed by the illicit market and CBS may have wider implications for the Government's strategy in limiting tobacco consumption. Monitoring this risk will need to take account of sources of evidence such as the Empty Packs Survey and data collected by HMRC who estimate the extent of CBS and the duty free market on the basis of the International Passenger Survey and commercially provided data about deliveries of cigarettes to ferries. The illicit market is estimated as the sum of declared consumption, based on the Opinions and Lifestyle Survey¹⁵⁷, and undeclared consumption, based on the Health Survey for England, less UK duty paid consumption (based on HMRC clearances), CBS and duty free sales.
287. When considering mitigation of the risk of an increase in the illicit market, Chantler concluded: "that the solution to illicit use is instead to have an effective enforcement regime, and the enforcement agencies in the UK have already demonstrated that an effective enforcement regime and appropriate sanctions can keep illicit to low levels, even in a relatively high tax jurisdiction."
288. There may be ways to mitigate the risk of an increase in the illicit market through strengthened controls and regulation. In Australia, criminal offences were created for those smuggling, conveying or possessing smuggled tobacco products shortly before standardised packaging came into effect. CBS is more difficult but joint EU action has been considered on cross border distance (internet) sales in the context of a revised Tobacco Products Directive.
289. There will be various methods to address this risk, one of which may be to increase the resource devoted to increased enforcement. We have considered the potential impact on HMRC costs of increasing enforcement to mitigate any risks arising from standardised packaging. To put the magnitude of the costs into context, the public accounts committee minutes¹⁵⁸ identified that HMRC's tobacco strategy cost "£67.4 million in 2012-13". Taking an extreme example, even if such costs were to approximately double due to standardised packaging, the NPV would remain clearly positive, reducing from around £24.7bn to around £24bn, It should be noted that these costs do not cover the work by the

¹⁵⁶ In terms of people, the first group is very much smaller than the second group (total quitters being less than 0.4m and smokers around 10m). Therefore, the number of people entering the UK duty unpaid market from the first group combined with the second group is approximately the same as just considering the first group. Hence 21% is used here, and it would not be appropriate to use 20%+20%=40%.

¹⁵⁷ This was previously named General Lifestyle Survey

¹⁵⁸ House of Commons Committee of Public Accounts HM Revenue & Customs: Progress in tackling tobacco smuggling Twenty-third Report of Session 2013-14 available at <http://www.publications.parliament.uk/pa/cm201314/cmselect/cmpubacc/297/297.pdf>

Border Force which is also important in terms of the tobacco strategy. HMRC's tobacco strategy remains in place and will adapt to any changes in risk as it has successfully done so over many years.

Decrease in tobacco price

290. There is a chance that standardised packaging may result in increased price competition between tobacco manufacturers since they are less able to compete through product differentiation using different packaging. If this theoretical eventuality was to occur, on the one hand there may be a small additional benefit from a monetary gain to consumers as well as a potential for accelerated product innovation to exploit other avenues for product differentiation. However, on the other hand if this theoretical eventuality was to occur, there would be potential¹⁵⁹ costs. Firstly, if tobacco prices reduced, one would expect tobacco consumption to increase (all other factors being equal) and hence the health benefits would be expected to reduce. Secondly, if tobacco prices were to decrease, tax revenue may decrease (due to lost ad valorem duty and VAT per pack/HRT sold) but tax revenue may also increase since one would expect tobacco consumption to increase due to the lower prices.
291. Sir Cyril Chantler considers this in his report in Box 4 and in further detail in Annex C of his report. He also considers downtrading which we consider throughout this IA and is not the focus of this section. Sir Cyril concludes *“tobacco companies have argued that standardised packaging will result in falling prices that in turn will increase the consumption of tobacco. They argue that, in the long-run at least, standardised packaging will reduce brand loyalty, causing smokers to switch to cheaper brands and encouraging price competition between manufacturers. However, early evidence from Australia does not show falling prices; rather price rises have continued over and above tax increases. There is some evidence of trading down towards cheaper brands, but this appears to be a continuation of an ongoing market trend.”* Sir Cyril Chantler also states in his report that *“it is my view that the risk of such effects undermining the objectives of a standardised packaging policy are small and that the impacts could be readily mitigated through taxation if nevertheless they were to materialise.”*
292. After consideration of the Chantler report's Australian evidence as well as the possible mitigation actions highlighted in the Chantler report, we assume that the price of any given tobacco product as seen by the consumer does not materially change due to standardised packaging.

Downtrading

293. In this IA we assume that the rate of downtrading from higher price to lower price brands under standardised packaging occurs at twice the trend. Consultation responses sighting Australian data have suggested this is a good estimate (see Annex D for further details). However, there is uncertainty in this assumption. To illustrate the sensitivity of the analysis to this uncertainty we have explored the impact of an immediate 100% switch from Premium / mid-price brands to Economy/ULP brands.
294. The 100% downtrading sensitivity analysis has no impact on nearly all of the costs and benefits identified. However, the tax losses due to downtrading would be larger moving from around £130m to around £520m. Such severe downtrading would also suggest that the loss of profits to tobacco companies' UK shareholders from reduced profits associated with any reduction in brand value due to downtrading, previously estimated at £21m would become £81m. Similarly the loss of profits associated with any reduction in branding for retailers due to downtrading, previously estimated at £90m would become £350m.

¹⁵⁹ Potential, is used here due to considerations of mitigation discussed later in this section

Shareholdings

295. We have assumed that 10% of the profits of multinational tobacco companies are received by UK shareholders. The uncertainty in this assumption remains after both consultations. The 10% is not based on any one specific source, but was stated clearly at consultation stages. However, it does draw on 3 pieces of information. Firstly 10% is a figure used for previous IAs for the proportion of multinational profits that should be considered in the NPV.¹⁶⁰ Secondly there is some information on the shareholdings of multinational tobacco companies, however, this is information about the institutional shareholdings rather than the individual shareholdings. Thirdly, if one was to assume a perfectly globalised market where all companies were multinational, then the proportion of profits received by UK shareholders would be approximately the ratio of GDP for the UK to that of the world which is around 3-4%¹⁶¹
296. This assumption has no material effect on whether the NPV of this policy is positive or negative since if it was 0% or 100% in the base case, the NPV would remain large and positive. After consultation responses, we have given an indication of the sensitivity to this assumption in the IA by generally quoting what the value would be if 100% of the profits were received by UK shareholders.
297. For others such as retailers and wholesalers we have assumed UK shareholders receive 100% of the profits from spend in the UK. Consultation responses have pointed out that this value is likely to be under 100% however, we were not given a clear source of evidence of what this value might be. If not 100% we expect this value to be high, and proportionate to model the value as 100%. For example, 46% of tobacco sales are through small and micro businesses¹⁶², so a value at least larger than 46% is appropriate. This assumption has no material effect on whether the NPV of this policy is positive or negative since if it was 0% or 100% in the base case, the NPV would remain large and positive.

¹⁶⁰ Statutory scheme for pricing branded medicines Impact Assessment available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/207886/impact_assessment_statutory_scheme_branded_med.pdf

¹⁶¹ IMF - World Economic Outlook Database available at <http://www.imf.org/external/pubs/ft/weo/2012/02/weodata/index.aspx> using 2014 figures, current prices i.e.no purchasing power parity adjustment which would decrease the value to 2-3%

Specific Impact Tests

Small and Micro Business Assessment

298. This IA has considered impacts on business under each of the various sections. The section headed “Categorisation of benefits and costs” provides an outline of these potential impacts.
299. With respect to Small and Micro Businesses (SMBs), the IA considers the following four impacts:
- Retail transaction costs
 - Consumption of tobacco products
 - Consumption of other goods and services
 - Improved workplace productivity

Retail transaction costs are discussed in detail above in the “increase in retail transaction costs” section. Costs to retailers in the form of increased serving time are expected to be materially unaffected in the longer term, but there may be some very short lived increases (a matter of weeks). Using a 2011 market research report¹⁶², we estimate that approximately 46% of tobacco sales are through small and micro businesses. These include convenience stores, independent small grocers, tobacco specialists, and newsagent-tobacconists/kiosks. We therefore, allocate about £0.23m of the increased transaction costs to SMBs. For additional context, the 2009 impact assessment on the display ban of tobacco products estimated the number of small shops selling tobacco in England at around 49,800 (made up of convenience stores and petrol forecourts). Since these costs are expected to occur as a direct effect of standardised packaging, they are quantified and relevant to the Equivalent Annual Net Cost To Business (EANCB) calculation.

300. The Local Shop Report 2013 from the Association of Convenience Stores suggests that 20.1% of sales are due to tobacco.¹⁶³ Since this is an average, clearly some stores will have lower proportion of sales due to tobacco, while others higher. Responses to the 2012 consultation suggest that tobacco may account for up to 30% of the revenue of a convenience store although, anecdotally, the profit margins on the sale of tobacco may be relatively low. For small retailers the reduction in tobacco sales due to standardised packaging will act as a continuation in the trend of increased shifts in demand for non-tobacco goods caused by falling prevalence rates. Therefore, convenience stores that are SMBs are expected to incur costs in the form of reduced profits from their tobacco sales. It is expected that the estimated fall in smoking prevalence rates will lead to a reduction in overall tobacco consumption. The potential impact on SMBs may arise two-fold: first, from the overall reduction in the quantity of cigarette and HRT sales (brought about by reduced prevalence and any potential small increase in the UK non-duty paid market) and, second, the downtrading from more profitable higher priced brands to less profitable lower priced brands. Making the same assumptions of 46% of tobacco sales through SMBs suggests around a £95m loss to retailer’s profits due to reduced tobacco sales and £42m due to downtrading (values discounted over 10 years¹⁶⁴).
301. As consultation responses have highlighted, SMBs may also incur lost income from reduced footfall-related sales. These are sales of non-tobacco goods bought in addition to tobacco. If one assumes that per unit of tobacco sold, footfall related sales make up a larger share of profit for SMBs compared to larger businesses, it may be argued that under this specific definition SMBs will be disproportionately affected by the policy. Without data and robust evidence of consumer behaviour, however, we are unable to quantify the value of these potential indirect losses (under OITO) to SMBs.

¹⁶² “Cigarettes in the United Kingdom”, Euromonitor International, 2011

¹⁶³ The Local Shop Report 2014, a report by the Association of Convenience Stores. available at: <http://www.acs.org.uk/download/acs-local-shop-report-2014/>

¹⁶⁴ Note that this is not the lifelong sales of quitters/those who don’t take up who make that behavioural change over 10 years. It is 10 years’ worth of sales.

302. There are many trends already impacting on small retailers such as confectionary/ tobacconist/ newsagents (CTNs). They include: sales via the internet; economic cycles; the rise of big supermarkets; town planning strategies; demographic change; the long-run decline of smoking; long-run changes in demand for hard-copy newspapers; and trends affecting confectionery sales. Therefore, small retailers such as CTNs, in order to thrive in this changing world, are planning their future business strategies, considering diversifying, and thinking about how to cope with all the trends and shocks that are likely to affect them. Reduction in tobacco sales due to standardised packaging will act as a reasonably small continuation for small retailers in the trend of increased shifts in demand for non-tobacco goods caused by falling prevalence rates. Planning how to cope with changing demand may be more difficult for small retailers than for larger supermarkets and chains.
303. Whilst SMBs are expected to face reduced profits from a reduction in their tobacco sales (and potential reduction in footfall-related sales), it is expected that consumers will reallocate their income expenditure to other goods and services in the economy. Since SMBs are a component of the economy, losses from reduced tobacco sales will be at least partially offset by consumption of their other products (the extent of this partial offset is dependent on if footfall-related sales disproportionately affect SMBs).
304. There may also be an impact on businesses that derive demand from the sale of tobacco products. These include suppliers of tobacco accessories, such as cigarette lighters, customised rolling paper, disposable filters and other goods. The manufacturing and distribution of these products are both internationally and domestically based (an example of a UK based business is the Black Swan Specialist Tobacconist). Some of these will be small and micro businesses.
305. Firms involved in the manufacturing and branding of tobacco packaging are thought to be large businesses (e.g. large creative and design agencies). This IA acknowledges however that, given the difficulty in obtaining detailed and comprehensive data, that there may be impacts on small UK businesses if any are actually involved in the manufacturing and branding of tobacco packaging. Consistent with earlier discussions any reduction in profits accruing to these firms will be offset by consumption transferring to goods and services in other areas of the economy
306. This IA highlights the productivity gains due to the expected decrease in smoking. This was estimated at around £900m over the lifetime of the adult quitters. As employers, SMBs are expected to gain a share of this benefit.
307. The benefits of the policy are likely to be severely diminished if the selling of tobacco in standardised packaging was not mandated across all businesses. Therefore it would not be appropriate to exempt small and micro retailers from this legislation.

Equality Test

308. In a recent survey there were no significant differences by ethnicity or education level when rating standardised tobacco and branded packs in terms of appeal.¹⁶⁵ There are not expected to be any differences in how appealing a standardised tobacco pack is to different socio-demographic groups. If branded packaging is one means by which smoking is propagated in lower socioeconomic groups, standardised packaging should have a favourable impact on smoking-related health inequalities.
309. Whilst both females and males find standardised tobacco packs less appealing, females are particularly negative about standardised tobacco packaging. Gallopel-Morvan et al. (2011) found women more likely than men to rate standardised tobacco packs as “repulsive”.¹⁶⁶ However, Bansal-Travers et al. (2011) could find no significant differences by gender of respondent (n=397).

¹⁶⁵ Bansal-Travers M, Hammond D, Smith P, Cummings KM (2011). The impact of cigarette pack design, descriptors and warning labels on risk perceptions. *American Journal of Preventive Medicine*, 40: 674-682 in Moodie C, Stead M, Bauld L, McNeill A, Angus K, Hinds K, Kwan I, Thomas J, Hastings G (2012). Plain tobacco packaging: a systematic review. Stirling: University of Stirling.

¹⁶⁶ Gallopel-Morvan K, Moodie C, Hammond D, Eker F, Beguinot E, Martinet Y (2011). Consumer understanding of cigarette emission labelling. *European Journal of Public Health*, 21: 373-375 in Moodie C, Stead M, Bauld L, McNeill A,

310. Standardised packaging is also likely to help address an equity objective with regards to deprivation and geography. Public Health England states that the benefits (in terms of quitters having more cash since they are not spending it on tobacco) will be over £500m per year, with the benefit concentrated in areas of higher social deprivation. They go on to say “*So, for instance, according to this illustration smokers in London would save a total of £61.3 million, in Birmingham £9.2 million, in Hull £4.4 million and in Plymouth £3.3 million.*” They point out that “*only around 7-9% of the value of tobacco sales is retained by the retailer, with the rest going straight to tobacco manufacturers and the Exchequer*”¹⁶⁷, hence it is likely that, when spent, a larger proportion of that money would be retained in the local economy.

Competition Test

311. Standardised tobacco packaging will limit competition through limiting packaging and brand differentiation. However, there is a chance that it may increase price competition, which may result in process innovation as companies improve the efficiency of the production process. Standardised tobacco packaging may result in product innovation as tobacco companies invent new ways of differentiating their products. The policy may also encourage innovation in the wider market for nicotine products that would not be subject to standardised packaging, such as e-cigarettes.

Sustainability Test

312. It is not thought that a change to standardised packaging of tobacco will change the sustainability of tobacco packaging from the current situation.

Environmental test

313. It is not thought that a change to standardised packaging of tobacco will change the environmental impact of tobacco packaging. Should there be a change, then it is likely to be due to a reduction in tobacco consumption, a fall in the number of tobacco products and therefore in the packaging produced and discarded.

Angus K, Hinds K, Kwan I, Thomas J, Hastings G (2012). Plain tobacco packaging: a systematic review. Stirling: University of Stirling.

¹⁶⁷ Public Health England: Response to the government consultation on the introduction of regulations for standardised packaging of tobacco products August 2014 available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/341309/PHE_response_to_the_government_consultation_on_the_introduction_of_regulations_for_standardised_packaging_of_tobacco_products.pdf

Option 3

314. It is recognised that there may be a case for delaying a decision on standardised packaging until further evidence from Australia, and any other jurisdiction that introduces standardised packaging, becomes available. If option 3 is taken, then the available data from Australia will allow for greater clarity about the impacts of standardised packaging, particularly on smoking prevalence. However there are likely to be costs to delaying the decision (relative to Option 2). If the estimates in the IA are broadly correct then a delay will result in a loss of the health benefits of reduced smoking. To illustrate this, let us consider a delay of one year and assume that all of an additional cohort of children, who wouldn't have taken up smoking under standardised packaging, would take up smoking.¹⁶⁸ Under this illustration the value of the life years lost due to this 1 year delay would be around £310m. There would also be further health loss due to a delay, from smokers smoking for an extra year, since it may be that extra year of smoking that contributes to their death or causes a smoking related disease. If the delay was to increase to 2 years these losses would approximately double.
315. On the other hand if the estimates in the IA regarding smoking prevalence turn out to be completely incorrect, and there is in fact no additional impact from standardised packaging on smoking prevalence (which, given the evidence cited and the Pechey et al expert judgment work discussed, is a very unlikely but still possible outcome), then delaying could prevent the costs that would be incurred from implementing the policy. The vast majority of the impacts come from the health benefits and the costs to the exchequer due to reduced prevalence, both of which reduce to zero if there is no reduction in prevalence. In this case impacts are limited to production cost savings, increased serving times, losses associated with increased illicit trade and CBS, losses due to downtrading, losses of profit associated with branding, and the cost of redundant machinery. As demonstrated in the sensitivity analysis, the NPV under this scenario would be -£480m, and so represents the potential benefit of delaying the decision, if we knew standardised packaging had no impact on prevalence. If the delay was to increase to 2 years these losses would not double but would remain approximately the same.
316. Even if the true impact of standardised packaging is smaller than the assumptions in the IA it would still likely be beneficial to act now. Let us consider a scenario where the reduction in smoking prevalence is just 2% of our assumptions, this would be the equivalent of a very small change in prevalence where only 1 in 1,300 smokers quit. Under such a scenario the health benefits would be valued at £590m, and would still outweigh the costs of £480m (see above) plus a £91m cost to the exchequer.
317. Furthermore, it may take a number of years before Australian data is collected, analysed and published, and the long term trends in smoking prevalence can be better established. Even when this data becomes available, there will still be considerable uncertainty surrounding the impact of standardised packaging. This is because of the difficulty of separating the impact of standardised packaging from that of the other tobacco control measures implemented at the same time, and the generalizability of the evidence to the UK. For example Australian experience is unlikely to shed light on the implications of standardised packaging for cross-border flows of tobacco into the UK. There would also be general difficulties of sample size when investigating impacts that are expected to be relatively small. The Chantler review said that even after prevalence surveys are available "Even then, it will be difficult to distinguish the impact of plain packaging from other drivers of prevalence." For the reasons discussed in this section the intervention is considered to be worth pursuing now.

¹⁶⁸ We note that this would not actually be all of the cohort, but rather the majority since this IA estimates that one year later, when these children are aged over 16 years, that some of them would quit smoking due to standardised packaging

Annex A: Life Years Gained and Money Not Spent from Reduced Smoking Prevalence

318. This Annex describes the method and data sources behind the estimation of:
- The discounted number of life years saved for each young person who does not take up smoking.
 - The discounted number of life years saved for a randomly chosen adult who quits smoking today.
 - The discounted amount of money not spent per £1 spent on a 20-pack of cigarettes for each young person who does not take up smoking. This value can be applied to find estimates such as the lost duty per adult quitter.
 - The discounted amount of money not spent per £1 spent on a 20-pack of cigarettes for a randomly chosen adult who quits smoking today. This value can be applied to find estimates such as the lost duty per adult quitter.
319. Estimates take account of the fact that many smokers quit during their lifetime, thus reducing the expected number of life years lost from starting to smoke in the first place, and reducing the expected number of life years gained by quitting today. There is a similar effect for monetary estimates.
320. The following main sources of data are used:
- Opinions and Lifestyle Survey (OLS, 2012) source data used to identify the age distribution of smokers and the relationship between age and the percentage of smokers who have quit. It is also used to estimate the average daily cigarette consumption.
 - Doll, Peto, Boreham and Sutherland (2004), 'Mortality in relation to smoking: 50 years' observations on male British doctors' (*BMJ* 2004;328;1519) reports the impact of smoking on mortality, split by age of quitting smoking (if applicable).
 - Office for National Statistics (ONS) National life tables, United Kingdom, 2010-12, report population mortality estimates used to transform the outputs of the doctors' study into life years saved.
321. The following steps are followed:
- 1. Identify an estimate of the percentage of smokers who have quit by each year of age.** We use data from OLS (2012) which reports the numbers of those who have never smoked (never smokers), current smokers and ex-smokers, by single year of age. Over time, quitting behaviour results in a decline in the proportion of current smokers among those who have ever smoked (ever smokers). This percentage declines at a fairly steady and constant rate as age increases. A linear relationship was estimated between age and the percentage of ever smokers who are currently smoking¹⁶⁹; the results imply that 35% of ever smokers have already quit by age 35, with 1.1 percentage points of ever smokers quitting in each year thereafter. This is broadly consistent with a quit rate among current smokers of 2.5% per annum, a figure used in the literature as the background rate of quitting.
 - 2. Estimate the proportion of children, who take up smoking, that will quit at various ages.** We assume that children who take up smoking now will quit at the same rate as the historical data above. The results are shown below in table A1. This is important as mortality amongst ex-smokers depends on the age at which they quit. The results are collated into different age bands defined by when they quit (alongside "lifelong smokers"), described below as the "Quit age band".

¹⁶⁹ This is done using the 75 data points from those aged 16 to 89 inclusive. Ages over 89 are excluded so this value is not overly affected by variations due to small numbers in older ages (note the linear relationship is not very sensitive to this choice).

Table A1: Proportion of children, who take up smoking, that quit in the given quit age bands, or are 'Lifelong Smokers' and never quit (note may not sum to 100 due to rounding)

Quit age band	
Under 35	35%
35 to 44	11%
45 to 54	11%
55 to 64	11%
Lifelong Smokers	33%

- 3. Estimate the proportion of smokers that will quit at various ages.** We consider 5 age bands of current adult smokers. We use the information in table A1 to produce this estimate. We note that for a current smoker to be picked at random, they need to have already reached their age category. For example a current smoker picked at random aged 55 to 64 could not have quit at 40, since that would mean they are not a current smoker, and could not have been picked. This is also taken into account for age bands with corresponding quit age bands. For example if a 35 year old smoker is picked from the age band 35 to 44 the chances they quit in the quit age band 35 to 44 is $11\% / (11\% + 11\% + 11\% + 33\%) = 17\%$. However, if a 44 year old was picked the day before their 45th Birthday, there is a near 0% chance they will quit in the 35 to 44 age band. Therefore, the corresponding value in table A2 of 9% is around half of 17% (when you consider rounding).

Table A2: Proportion smokers that quit in the given quit age bands, or are 'Lifelong Smokers' and never quit

Quit age band	Smoker age				
	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	21%				
35 to 44	13%	9%			
45 to 54	13%	18%	11%		
55 to 64	13%	18%	22%	14%	
Lifelong Smokers	40%	55%	67%	86%	100%

- 4. Identify mortality data (by year of age and sex) for lifelong non-smokers and for the five "quit age bands".** Mortality data are taken from Doll, Peto, Boreham and Sutherland (2004, Table 5), which lists number of deaths per 1,000 people at ages 35-44, 45-54, 55-64, 65-74 and 75-84. This information is presented at these age bands for lifelong non-smokers, as well as:
 - those who have quit between age 35-44,
 - those who have quit between age 45-54,
 - those who have quit between age 55-64, and
 - those who continue to smoke beyond age 65

These categories of smoker correspond to our quit age bands (alongside an "Under 35" band). The data are converted into relative risks by dividing the number of deaths per 1,000 in each of these four categories by the equivalent number of deaths (i.e. the number of deaths in the same age band) for the lifelong non-smokers. The Doll et al. (2004) study does not report results for all ages and quit bands and so we assume:

- The relative risk of smokers aged Under 35 is 1.
 - The relative risk of those in the Under 35 quit band is 1.
 - The relative risk of those in the same age as quit band (e.g. a smoker aged 45-54 in the quit band 45-54) is the same as a smoker in that age band.¹⁷⁰
 - The relative risk of smokers aged 85 or over is 1.

We then observe that the average mortality rate observed in the population is made up from the mortality rates of any subpopulations weighted by the size of each sub population. We also observe that we have defined relative risk, relative to never-smokers. For any year of age and sex, these observations provide us with 6 simultaneous equations and 6 unknown mortality rates. Solving these gives us the following formulae:

¹⁷⁰ This is a simplification and will probably slightly overstate the relative risk for quitters. However slightly reducing these causes two effects – one to slightly increase the life years saved for adult quitters, the other to slightly reduce the life years saved estimates for children and so, overall, the NPV is not sensitive to this assumption.

- $M_{ns} = M / (P_{ns} + R_{qu35} P_{qu35} + R_{q40} P_{q40} + R_{q50} P_{q50} + R_{q60} P_{q60} + R_{ll} P_{ll})$
- $M_{qu35} = M R_{qu35} / (P_{ns} + R_{qu35} P_{qu35} + R_{q40} P_{q40} + R_{q50} P_{q50} + R_{q60} P_{q60} + R_{ll} P_{ll})$
- $M_{q40} = M R_{q40} / (P_{ns} + R_{qu35} P_{qu35} + R_{q40} P_{q40} + R_{q50} P_{q50} + R_{q60} P_{q60} + R_{ll} P_{ll})$
- $M_{q50} = M R_{q50} / (P_{ns} + R_{qu35} P_{qu35} + R_{q40} P_{q40} + R_{q50} P_{q50} + R_{q60} P_{q60} + R_{ll} P_{ll})$
- $M_{q60} = M R_{q60} / (P_{ns} + R_{qu35} P_{qu35} + R_{q40} P_{q40} + R_{q50} P_{q50} + R_{q60} P_{q60} + R_{ll} P_{ll})$
- $M_{ll} = M R_{ll} / (P_{ns} + R_{qu35} P_{qu35} + R_{q40} P_{q40} + R_{q50} P_{q50} + R_{q60} P_{q60} + R_{ll} P_{ll})$

Where:

- M is the mortality estimate from the ONS life tables
- the subscripts represent the quit age bands:
 - ns for lifetime non-smoker
 - qu35 for a smoker who quits before they are 35
 - q40 for a smoker who quits between age 35-44 (i.e. around 40)
 - q50 for a smoker who quits between age 45-54 (i.e. around 50)
 - q60 for a smoker who quits between age 55-64 (i.e. around 60)
 - qll for a lifelong smoker
- R is the relative risk of mortality compared to a lifelong non-smoker estimated using the Doll et al study
- P is the proportion that this subpopulation represents. P_{ns} is assumed to be the simple average of this value for those aged 16-90¹⁷¹ of 59%. The remaining 41% of the population is split by the values in table A1 to derive the other P values.

- **5. Identify the number of life years lived from now by children (by sex), for lifelong non-smokers and for the five “quit age bands”.** For each combination of quit age band (or lifelong non-smokers) and sex, life tables are calculated following the method of Chiang (1984). These life tables are used to model the expected number of life years lived per capita for a child turning 16 (repeated for each combination of sex and quit age band). The sum of these values across all years of age (from 16 to 100) equals the number of life years lived by the specified combination of quit age band (or lifelong non-smoker) and sex. The results are seen in table A3 below.

Table A3: Life years lived from now by a child turning 16

Quit age band	Male	Female
Never Smoker	65.0	68.5
Under 35	65.0	68.5
35 to 44	63.7	67.5
45 to 54	60.7	65.0
55 to 64	59.4	63.8
Lifelong Smokers	57.7	62.0

- **6. Identify the number of life years lived from now by adults (by age band and sex), and for the five “quit age bands”.** The previous step is repeated for the age bands: Under 35, 35-44, 45-54, 55-64, and Over 65. This is done by representing the age band by approximately the median age in each of these age bands of 25, 40, 50, 60 and 70 respectively. The results for males are seen in table A4 below and the results for females are similar and are not displayed for presentational reasons, however they are considered separately throughout this analysis.

Table A4: Life years lived from now – Male

Quit age band	Smoker age				
	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	56.2				
35 to 44	55.0	40.8			
45 to 54	51.9	37.7	28.8		
55 to 64	50.7	36.3	27.4	19.6	
Lifelong Smokers	48.9	34.5	25.6	17.5	11.0

¹⁷¹ i.e. the average of the 75 data points from those aged 16 to 89 inclusive. Older ages are excluded so this value is not overly affected by variations due to small numbers in older ages (note the average is not very sensitive to this choice).

7. Identify the amount of money spent, per £1 spent on a 20-pack of cigarettes by children, adults (by age band and sex), for lifelong non-smokers and for the five “quit age bands”. The life tables described above are used to estimate the expected number of packs bought each year from now per capita for each of the various combinations. Two further assumptions are needed: First Opinions and Lifestyle Survey data is used for the average daily cigarette consumption. Secondly we assume that people in the quit age bands Under 35, 35-44, 45-54, and 55-64, quit on their 25th, 40th, 50th, and 60th birthdays respectively. The sum of these values across all future years of age equals the total number of packets bought. This value is multiplied by £1 so that a per £1 spent on a pack figure is derived. This is done so that the outputs from this model can be used to easily estimate any value that is proportionate to the number of packs bought. The results for males are seen in table A5 and A6 below and the results for females are similar.

Table A5: Money spent from now by a child turning 16, per £1 spent on a 20-pack of cigarette – Male (values rounded to nearest £100)

Quit age band	
Never Smoker	-
Under 35	1,900
35 to 44	5,100
45 to 54	7,100
55 to 64	9,100
Lifelong Smokers	12,300

Table A6: Money spent, per £1 spent on a 20-pack of cigarette – Male (values rounded to nearest £100)

Quit age band	Smoker age				
	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	-				
35 to 44	3,200	-			
45 to 54	5,300	2,100	-		
55 to 64	7,200	4,100	2,100	-	
Lifelong Smokers	10,400	7,400	5,500	3,700	2,400

- 8. Discount the numbers of year of life lived and money spent.** As the life years occur in the future, they should be discounted appropriately. The money spent discount rates used are equal to those in the Treasury Green Book¹⁷². For life years the discount rates used are equal to Green Book rates minus 2%. The ‘minus 2%’ takes account of the fact that the monetary value per life-year can be expected to grow at the same rate as real economic growth. The 2% figure for this is taken from the Social Rate of Time Preference assumptions underlying the Green Book discount rates. In the short to medium term, life years are discounted at 1.5% per annum (3.5% less 2%) but this declines for survival gains occurring more than 30 years into the future. The sum of the discounted amount of money spent at each year of age equals the discounted amount of money spent by the specified combination of quit age band and sex. The sum of the discounted numbers of life years lived at each year of age equals the discounted number of life years lived by the specified combination of quit age band and sex. This gives corresponding values to those in tables A3 to A6 which are shown below in tables A7 to A10 respectively. The results for females are similar.

Table A7: Discounted life years lived from now by a child turning 16 – Male

Quit age band	
Never Smoker	42.9
Under 35	42.9
35 to 44	42.3
45 to 54	40.9
55 to 64	40.3
Lifelong Smokers	39.5

¹⁷² 3.5% p.a. reducing into the future. Green Book available at <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

Table A8: Discounted life years lived from now – Male

Quit age band	Smoker age				
	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	38.8				
35 to 44	38.1	30.4			
45 to 54	36.5	28.5	23.0		
55 to 64	35.8	27.7	22.1	16.6	
Lifelong Smokers	35.0	26.7	20.9	15.1	9.9

Table A9: Discounted money spent by a child turning 16, per £1 spent on a 20-pack of cigarette – Male (values rounded to nearest £100)

Quit age band	
Never Smoker	-
Under 35	1,700
35 to 44	3,500
45 to 54	4,300
55 to 64	4,800
Lifelong Smokers	5,400

Table A10: Discounted money spent from now, per £1 spent on a 20-pack of cigarette – Male (values rounded to nearest £100)

Quit age band	Smoker age				
	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	-				
35 to 44	2,500	-			
45 to 54	3,600	1,800	-		
55 to 64	4,300	3,000	1,800	-	
Lifelong Smokers	5,100	4,200	3,500	2,700	1,900

- 9. Identify the life years and money saved for each child who does not take up smoking (by sex), for the five “quit age bands”.** The difference between the life years lived for each quit age band and Never Smokers in table A3 is used to estimate these values. For example, table A3 suggests a child turning 16 who is going to be a lifelong smoker expects to live for another 57.7 years, but if they were not to take up smoking they would expect to live for another 65.0 years. Therefore the difference of 7.3 years is the life year gain for that quit age band. Under 35 quit age band has a 0 figure in table A11 this is because of the lack of data and the assumption made at stage 4 above that the relative risk of smokers aged Under 35 is 1 rather than a deduced true effect. Similarly this is done for the money saved due to not taking up smoking, and repeated for corresponding discounted values as well. The results are presented in tables A11 to A14. The results for females are similar.

Table A11: Life years saved by a child turning 16 not taking up smoking – Male

Quit age band	
Under 35	0.0
35 to 44	1.2
45 to 54	4.3
55 to 64	5.6
Lifelong Smokers	7.3

Table A12: Discounted life years saved by a child not taking up smoking – Male

Quit age band	
Under 35	0.0
35 to 44	0.6
45 to 54	2.1
55 to 64	2.7
Lifelong Smokers	3.5

Table A13: Money saved by a child not taking up smoking, per £1 spent on a 20-pack of cigarette – Male (values rounded to nearest £100)

Quit age band	
Under 35	1,900
35 to 44	5,100
45 to 54	7,100
55 to 64	9,100
Lifelong Smokers	12,300

Table A14: Discounted money saved by a child not taking up smoking, per £1 spent on a 20-pack of cigarette – Male (values rounded to nearest £100)

Quit age band	
Under 35	1,700
35 to 44	3,500
45 to 54	4,300
55 to 64	4,800
Lifelong Smokers	5,400

- 10. Identify the life years and money saved per quitter (by age band and sex), for the five “quit age bands”.** The difference between the life years lived for each quit age band and the life years lived if a smoker quit at their current age in table A4 is used to estimate these values. For example, table A4 suggests a 40 year old who is going to be a lifelong smoker expects to live for another 34.5 years, but if they were to quit now they would expect to live for another 40.8 years. Therefore the difference of 6.2 years is the life year gain for that quit age band. Similarly this is done for the money saved due to quitting, and repeated for corresponding discounted values as well. The results are presented in tables A15 to A18. The results for females are similar.

Table A15: Life years saved by quitting – Male

Quit age band, before intervention	Smoker age				
	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	0.0				
35 to 44	1.3	0.0			
45 to 54	4.3	3.1	0.0		
55 to 64	5.6	4.4	1.4	0.0	
Lifelong Smokers	7.4	6.2	3.2	2.0	0.0

Table A16: Discounted life years saved by quitting – Male

Quit age band, before intervention	Smoker age				
	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	0.0				
35 to 44	0.7	0.0			
45 to 54	2.3	1.9	0.0		
55 to 64	3.0	2.7	0.9	0.0	
Lifelong Smokers	3.8	3.7	2.1	1.5	0.0

Table A17: Money saved per quitter, per £1 spent on a 20-pack of cigarette – Male (values rounded to nearest £100)

Quit age band, before intervention	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	-				
35 to 44	3,200	-			
45 to 54	5,300	2,100	-		
55 to 64	7,200	4,100	2,100	-	
Lifelong Smokers	10,400	7,400	5,500	3,700	-

Table A18: Discounted money saved per quitter, per £1 spent on a 20-pack of cigarette – Male (values rounded to nearest £100)

Quit age band, before intervention	Smoker age				
	Under 35	35 to 44	45 to 54	55 to 64	Over 65
Under 35	-				
35 to 44	2,500	-			
45 to 54	3,600	1,800	-		
55 to 64	4,300	3,000	1,800	-	
Lifelong Smokers	5,100	4,200	3,500	2,700	-

- **11. Estimate the proportion of current smokers by the 5 age categories.** This is done using OLS 2012 and is used to provide an estimate of the probability of the age of a current smoker picked at random. The results are shown in table A19

Table A19: Proportion of current smokers by age.

Smoker age				
Under 35	35 to 44	45 to 54	55 to 64	Over 65
39%	20%	18%	12%	11%

- **12. Estimate the life years and money saved per quitter and child who does not take up smoking and their discounted values.** Male and female estimates of life years gained and discounted life years gained are then downscaled to 65% and 61% of their calculated value respectively. This reflects the fact that the median doctor from the doctors' study smoked 18 cigarettes per day, whereas current averages for men and women are lower: 11.7 and 10.9, respectively (OLS 2012). Current smokers can therefore be expected to experience less harm and hence quitting or not starting means less health benefit. Note that the money values are not downscaled since they already use the current OLS figures. The final numbers are then calculated by weighting the downscaled values in tables A11 to A18 (and corresponding female ones) by the values in the corresponding tables A1, A2 and A19. The male and female results are then averaged to give the following main results:
 - The discounted number of life years saved for each young person who does not take up smoking of 1.0 (2.1 not discounted).**
 - The discounted number of life years saved for a randomly chosen adult who quits smoking today of 1.2 (2.0 not discounted)**
 - The discounted amount of money not spent per £1 spent on a 20-pack of cigarettes for each young person who does not take up smoking of £3,600 (£6,900 not discounted)¹⁷³**
 - The discounted amount of money not spent per £1 spent on a 20-pack of cigarettes randomly chosen adult who quits smoking today of £2,700 (£4,600 not discounted)**

¹⁷³ This is because a young person who does take up smoking would buy 6,900 packs on average, giving a spend of £6,900 per £1 spent (£3,600 when discounted) or, for example, £55,200 if each pack cost £8

322. The following factors may bias the central estimate of benefit presented above downwards (factors a-e) or upwards (factors f-g):

- (a) They do not take account of the improved quality of life that results from quitting smoking. For example, quitters may escape diseases that reduce their quality of life as well as reduce their life expectancy (such as chronic obstructive pulmonary disease).
- (b) It is assumed that no harm is incurred by smoking over the age of 84. There is likely to be some harm here (which would increase the measured benefits if counted), but there is a lack of precise data. In any case, as the cohort is fairly small by this age, the results are not particularly sensitive to this assumption.
- (c) It is assumed that no harm is incurred by smoking under the age of 35. Again, there is likely to be a benefit from not smoking at this age, but there is a lack of precise data. It is worth noting that means that health benefits for children who do not take up smoking, under this modelling assumption, therefore take some time to develop, and more time than an adult who quits. Therefore when discounting this causes the discounted life years saved to be larger for adult quitters than for children who do not take up smoking.
- (d) It is assumed that quitting after the age of 65 yields no health benefit. There is also likely to be a small benefit here, but again, there is a lack of precise data.
- (e) We cut off our estimated lifetime benefits to 10 years' worth of cohorts for children who no longer uptake smoking. Even were the regulation revoked after ten years, the likelihood would be that the recreation of brand value if attempted, would take some time, so that further cohorts of children and would be quitters would benefit from its absence. Health benefits to these groups are not included
- (f) The benefit we don't include described in factor (d) also leads to a small upward bias in our estimated health benefits. By assuming that all adults who are smoking at age 65 go on to be lifelong smokers, the benefits of quitting and not taking up smoking are slightly overestimated.
- (g) The Doll, Peto, Boreham and Sutherland (2004) study does not explicitly adjust for confounding factors (although it does control for social class, given that its sample consists only of doctors). For example, if smokers are also more likely to drink heavily, this may exaggerate the mortality impact of smoking. However, a similar cohort study (based in The Netherlands) does adjust for a long list of confounding factors, including socioeconomic status, alcohol use and body mass index. The authors conclude that adjusting for confounding factors reduces the estimated number of (undiscounted) life years lost due to smoking by half a year out of seven years. Given that the estimates presented in this annex are discounted and take account of future quit propensities, any reduction to take account of confounding factors would be considerably less than half a life year.

323. Other limitations of the estimate include:

- (a) It is assumed that the same smoking mortality impacts hold for both men and women. The Doll, Peto, Boreham and Sutherland (2004) study only covers male doctors.
- (b) It is assumed that the number of life years lost is linearly related to the average daily number of cigarettes smoked throughout life. The relationship is unlikely to be perfectly linear in practice.
- (c) It is assumed that the average daily number of cigarettes smoked throughout life remains constant.

Lost tax revenues

324. Using price data supplied by a cigarette manufacturer we estimate the amount of specific tax and ad valorem duty that is charged per 20-pack of factory made cigarettes in each market segment based on 2014 tax rates. The segments defined are premium, mid-price, economy and ultra-low price (ULP). We also take the equivalent in hand-rolled tobacco (HRT) of a 20-pack of factory made cigarettes, as

measured in tobacco weight.¹⁷⁴ This is equivalent to 14g of HRT. The amount of duty charged for HRT is calculated using the 2014 tax rates.¹⁷⁵ This is shown in Table A20.

Table A20: Price and tax assumptions

	Projected Information to 2014				
	Premium	Mid-price	Economy	ULP	HRT
Price	8.46	7.75	7.51	6.97	4.65
Ad valorem duty	1.40	1.28	1.24	1.15	
Specific duty	3.68	3.68	3.68	3.68	
Total duty	5.08	4.96	4.92	4.83	2.53

325. Table A21 is created by taking the above estimates for each market segment and multiplying them by the main results after stage 12 above:

- (a) The discounted amount of money not spent per £1 spent on a 20-pack of cigarettes for each young person who does not take up smoking of £3,600
- (b) The discounted amount of money not spent per £1 spent on a 20-pack of cigarettes randomly chosen adult who quits smoking today of £2,700

Table A21: Discounted lifetime lost duty per adult quitter and per child who does not take up smoking for each market

	Premium	Mid-price	Economy	ULP+Others	HRT
discounted lifetime lost duty per adult quitter (assuming all quitters paid UK duty) £	13,687	13,372	13,265	13,023	6,809

	Premium	Mid-price	Economy	ULP+Others	HRT
discounted lifetime lost duty per child who does not take up (assuming all non starters paid UK duty) £	18,417	17,993	17,850	17,524	9,163

326. The estimates at this point imply that all quitters or children not taking up smoking would have been purchasing UK duty paid tobacco. We adjust this by taking only the share of the factory made cigarette and HRT market which is UK duty paid of 88% and 57% respectively (see table 4). This will reduce the estimated losses to reflect that those consuming non-UK duty paid tobacco will not have been paying duty in the first instance.

327. The average value is then calculated in two steps. First, the duty lost by HRT is weighted by 2014/15 HMRC figures for HRT market share¹⁷⁶ (measured in clearance volumes, millions of kilograms). Second, once the HRT market share is accounted for, the factory made cigarettes are weighted by their respective market share (as provided by a cigarette manufacturer).

¹⁷⁴ We estimate one factory made cigarette to contain approximately 0.7g of tobacco (based on <http://www.health.gov.au/internet/publications/publishing.nsf/Content/philip-morris-tobacco-ingredients-2012~marlboro-varieties>)

¹⁷⁵ Rates from March 2014 from Tobacco Bulletin May 2014 available at <https://www.uktradeinfo.com/statistics/pages/taxanddutybulletins.aspx>

¹⁷⁶ Forecast for Hand Rolled Tobacco Clearances 23 April 2014 available at <http://budgetresponsibility.org.uk/wordpress/docs/HRTforecastBud14.pdf>

328. We then estimate the difference between expected VAT lost from reduced UK duty paid tobacco consumption and VAT gained from the expenditure from those smokers on other goods and services. We assume the average VAT rate in the economy to be 13.2% compared to 20% for tobacco. VAT losses amount to around £1,060 per young person who no longer takes up smoking and around £790 per adult quitter. Non UK duty paid smokers do not pay VAT hence we assume there is no VAT loss from them quitting or not taking up smoking. (There may actually be a VAT gain from non UK duty paid smokers quitting since the money they save is more likely to spent in the UK economy)
329. In total we assume that £14,600 in duty and VAT is lost per young person who does not take up smoking and £10,900 per adult quitter. These are discounted values over the course of each person's lifetime.

Changes since the 2014 Consultation IA

330. The method described above is similar to that used in the 2014 consultation IA. The main difference is that the 2014 consultation IA followed various non-smoking / smoking / quitting cohorts, from birth, and estimated the discounted life years saved by quitting. The method above follows various non-smoking / smoking / quitting cohorts, from various ages, not just from birth.
331. Once the 2014 consultation IA had followed these birth cohorts, it controlled for the fact that a smoker picked at random, aged for example 50 cannot have quit aged 35 to 44. Since the 2014 consultation IA followed all cohorts from birth, the intermediate¹⁷⁷ values are an estimate of the life years saved (or tax amounts) between *new-borns who become smokers who we know smoke to a certain age, and may quit in the future* and *new-borns who become smokers who we know smoke to a certain age, and quit at that certain age*. For example, an intermediate estimate was made for the discounted life years saved for a child who smokes to around 50 (the 45 to 54 band) and then quits, and a child who smokes to around 50 (the 45 to 54 band) and then has various chances of quitting as they get older (or remaining a lifelong smoker).
332. Without discounting, the results of both methods are very similar. However, with discounting, the results vary, with the duty and tax results varying more since the discount rate of 3.5% is larger than the health discount rate of 1.5%. It should be noted that the NPV is not very sensitive to these changes, since the increase in health gains are similar to the increase in duty and VAT losses. They are also immaterial to the NPV of standardised packaging being positive or negative.

¹⁷⁷ By this we mean an intermediate mathematical step along the way that is needed to derive the final value, such as those presented in table A3 of the 2014 consultation IA.

Annex B: Impact of Plain Packaging of Tobacco Products on Smoking in Adults and Children: International Experts' Estimates

Overall aim

333. Pechey et al. (2013)¹²⁹ elicited experts' judgments regarding the likely impact of the introduction of a standardised packaging policy for tobacco products on (i) the number of smokers and/or (ii) the number of children trying smoking.

Key research questions

334. What do experts judge to be the likely impact of the introduction of a standardised packaging policy on: (i) the number of smokers and (ii) the number of children trying smoking?
335. What reasons do experts give for their judgements?

Background

336. The Australian Government has introduced legislation requiring all tobacco products to be sold in standardised packaging, and the UK Government has consulted on the possible introduction of such a policy. A key difficulty in evaluating this policy, however, is the lack of quantifiable evidence on the likely impact of standardised packaging, given that Australia is the first country to introduce this measure (and that only in December 2012). One approach to address this limitation is to elicit subjective judgments on the likely impact of standardised packaging from a range of experts in this area.
337. Elicitation of experts' judgments allows us to construct a probability distribution that represents each expert's knowledge and uncertainty regarding the issue in question. Following this elicitation process, these individual distributions can be aggregated to a distribution that encapsulates the beliefs of a group of experts. While this process must be undertaken carefully given that human judgements can fall prey to certain biases (e.g., availability, representativeness and/or anchoring heuristics), steps can be taken to overcome these during elicitation. Indeed, elicited experts' judgments have previously been used in a range of areas, including quantifying the risk of volcanic eruptions, the value of ambulatory treatments for major depression and the chances of survival following gastric surgery.

Method

338. In keeping with established methods for this procedure, experts were recruited and briefed so that they knew why judgements were needed and understood the procedure for their elicitation. The elicitation process involves obtaining summaries for experts' distributions and fitting probability distribution for these values. These steps are described below.

Sample and recruitment

339. The sample consisted of three groups of internationally-renowned experts on tobacco control policies, one group recruited from each of Australasia, the UK and North America. 15 experts from each region were invited to participate. 33 of these accepted (14 in the UK, 12 in Australasia and seven in North America), numbers found to be sufficient in previous studies. Experts met Hora and Von Winterfeldt's

(1997)¹⁷⁸ first four requirements for participation, that is: (a) tangible evidence of expertise (as evidenced by publications), (b) reputation (as indicated by peer-nomination), (c) availability and willingness to participate, and (d) understanding of the general problem area (in addition to being a requirement for recruitment, participants were provided with papers on the topic area to ensure sufficient knowledge). The final two requirements suggested by Hora and Von Winterfeldt (impartiality and lack of an economic or personal stake in potential findings) are considered impractical in this area, and so instead a description of the participants' employment and expertise was included for transparency.

340. Experts were identified from countries of interest using editorial lists for relevant publications (Addiction; Tobacco Control, and Nicotine Tobacco Research), the membership list of the Society for Research on Nicotine and Tobacco, and consultation with key experts in this area. A third party, employed by a private company, wrote to potential participants, informing them of the study aim and requirements. Informed consent for participation in a one-off telephone interview was obtained at this stage.

Email prior to interview

341. Following recruitment, times were arranged by the third party for each participant to be interviewed. Approximately one week prior to the interview, participants were provided via email with the Moodie et al. (2012) review on the possible impact of plain packaging. The importance of reading this information, and of giving some thought to likely impact, was emphasised.

Interview

342. Semi-structured interviews were used to elicit subjective judgments for the impact of standardised packaging on the prevalence of smoking and the percentage of children trying smoking. Interviews took place by telephone and were recorded. The researcher asked the interviewee to identify him/herself in terms of the region where he/she worked (UK, Australasia, North America), so that this categorisation would be on the recording/transcript. Participants were asked not to provide any details that could allow them to be identified, and the time and date of the data collection were not recorded. Participants were asked to estimate the expected value, and the lowest and highest likely values, measures that have been used previously in similar studies.

Judgement elicitation

343. An outline of the areas covered in the interview script is as follows:
1. Checking whether participants had engaged with materials sent and if necessary briefly reviewing the current evidence available.
 2. Reiterating the definition of the exact quantities to elicit: best guess estimate and highest and lowest of possible values for the percentage of (a) smokers and (b) children trying smoking two years after the introduction of plain packaging in their country of residence (or Canada for US experts/Australia for NZ experts).
 - a. Emphasising the comparison of the policy against a 'do nothing' approach, all other things being equal:
 - i. other controls regarding the sale of tobacco would still be in force;
 - ii. the price would be stable.
 3. The elicitation order itself (the order of questions on all smokers and children, and elicitation of highest or lowest possible outcomes) would be counterbalanced:
 - a. a neutral script to start with outlining the possibility of positive, no or negative impact.
 - b. For all smokers and for children trying smoking:
 - i. ask for estimate of best guess;
 - ii. ask for the highest and lowest estimates of prevalence, such that the expert would be extremely surprised if the actual value fell outside this range: 'extremely' is defined as a 1% chance.
 - iii. Use of subsidiary questions to explore range.
 - iv. Confirm that the expert is happy with the final result.

¹⁷⁸ Hora S C, Von Winterfeldt D (1997). Nuclear waste and future societies: a look into the deep future. *Technological Forecasting and Social Change* 56(2):155-170.

- v. Ask for reasons for estimates.

Analysis

344. Elicited judgments were linearly pooled to estimate the most likely value(s) and range for the impact of plain packaging on each outcome. Impact, measured as percentage change, was plotted against the number of experts judging such a change as possible. Comparisons between the judgments made by different groups of experts were made using forest plots to distinguish within-person uncertainty from between-subject variability, and highlight any differences by experts' region. Degree of consensus was judged using standard methods for assessing heterogeneity used in meta-analysis, such as the I^2 statistic.
345. Content analysis was conducted on the reasons provided for the estimates. Responses were compared between different groups of experts to assess for any systematic differences.

Results

346. The overall median estimate for the absolute change in the prevalence of adults smoking two years after the introduction of standardised packaging was -1 percentage point (between-expert range -3 to 0 percentage points). Median estimates for the lowest and highest values were -2.25 and 0 percentage points. The overall median estimate for the absolute change in the percentage of children trying smoking two years after the introduction of plain packaging was -3 percentage points (between-expert range -7.1 to -0.4 percentage points). Median estimates for lowest and highest values were -6.1 and 0 percentage points. No respondent expressed a positive best estimate of the effect of standardised packaging (an increase in smoking). For 26 of 31 experts, the best estimate for the absolute effect on children was significantly larger than that for adults. Reasons stated for a larger impact on children were that younger people would be more affected by less appealing packs, less brand identification and changes in social norms around smoking. No experts thought that the most likely outcome would be an increase in smoking rates for either adults or children. There was therefore a strong consensus that standardised packaging would reduce consumption, other factors remaining constant.

Annex C: 2012 Consultation Questions

347. The consultation stage impact assessment accompanied the consultation document *Consultation on standardised packaging of tobacco products*. To further develop the consultation stage impact assessment, additional evidence was sought on a number of questions specifically related to the evidence contained within the impact assessment.

Consultation questions

- i. Which option do you favour?
 - Do nothing about tobacco packaging (i.e., maintain the *status quo* for tobacco packaging)
 - Require standardised packaging of tobacco products
 - A different option for tobacco packaging to improve public health
- ii. If standardised tobacco packaging were to be introduced, would you agree with the approach set out on page [5-6] of the consultation?
- iii. Do you believe that standardised tobacco packaging would contribute to improving public health over and above existing tobacco control measures, by one or more of the following:
 - discouraging young people from taking up smoking?
 - encouraging people to give up smoking?
 - discouraging people who have quit or are trying to quit smoking from relapsing? and/or
 - reducing people's exposure to smoke from tobacco products?
- iv. Do you believe that standardised packaging of tobacco products has the potential to:
 - Reduce the appeal of tobacco products to consumers?
 - Increase the effectiveness of health warnings on the packaging of tobacco products?
 - Reduce the ability of tobacco packaging to mislead consumers about the harmful effects of smoking?
 - Affect the tobacco-related attitudes, beliefs, intentions and behaviours of children and young people?
- v. Do you believe that requiring standardised tobacco packaging would have trade or competition implications?
- vi. Do you believe that requiring standardised tobacco packaging would have legal implications?
- vii. Do you believe that requiring standardised tobacco packaging would have costs or benefits for manufacturers, including tobacco and packaging manufacturers?

- viii. Do you believe that requiring standardised tobacco packaging would have costs or benefits for retailers?
- ix. Do you believe that requiring standardised tobacco packaging would increase the supply of, or demand for, illicit tobacco/non-duty paid tobacco in the United Kingdom?
- x. Those travelling from abroad may bring tobacco bought in another country back into the United Kingdom for their own consumption, subject to UK customs regulations. This is known as “cross-border shopping”. Do you believe that requiring standardised tobacco packaging would have an impact on cross-border shopping?
- xi. Do you believe that requiring standardised tobacco packaging would have any other unintended consequences?
- xii. Do you believe that requiring standardised tobacco packaging should apply to cigarettes only, or to cigarettes and hand rolling tobacco?
- xiii. Do you believe that requiring standardised packaging would contribute to reducing health inequalities and/or help the Department of Health and Devolved Administrations fulfil their duties under the Equality Act 2010?
- xiv. Please provide any comments you have on the consultation stage impact assessment. Also, please see the specific impact assessment questions at Appendix B of this consultation document and provide further information and evidence to answer these questions if you can.
- xv. Please include any further comments on tobacco packaging that you wish to bring to our attention. We also welcome any further evidence about tobacco packaging that you believe to be helpful.

Specific impact assessment questions (as at Annex B of the consultation document)

To better understand the likely costs and benefits if standardised packaging were introduced, and to develop the consultation stage impact assessment, further evidence was sought on the following questions:

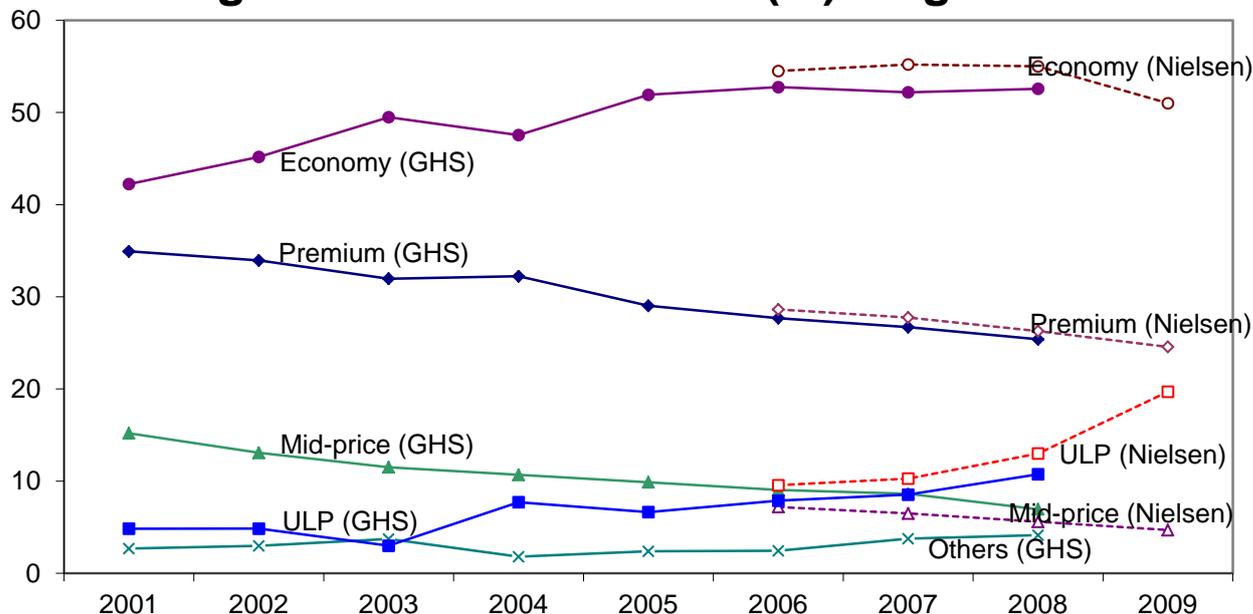
- i. What would be the costs to tobacco and packaging manufacturers of re-designing packs and re-tooling printing processes if standardised packaging were introduced?
- ii. Would the cost of manufacturing cigarette packs be less if standardised packaging were introduced, compared with the current cost of manufacturing packs?
- iii. How often do cigarette manufacturers amend the design of tobacco packaging for brands on the United Kingdom market, and what are the costs of doing so?
- iv. How many different types of shape of cigarette pack are currently on the United Kingdom market?
- v. Would retailing service times be affected, and if so why and by how much, if standardised packaging were introduced?
- vi. How could standardised packs be designed to minimise costs for retailers?
- vii. Would retailers bear any other costs if standardised tobacco packaging were introduced?
- viii. What is the average price of a packet of cigarettes in the following segments?
 - Premium cigarette brands
 - Mid price cigarette brands

- Economy cigarette brands
 - Ultra low price cigarette brands
- ix. What percentage of total cigarette sales in the United Kingdom are in each of the following segments?
- Premium cigarette brands
 - Mid price cigarette brands
 - Economy cigarette brands
 - Ultra low price cigarette brands
- x. How does the total price of a packet of cigarettes break down into manufacturing costs, distribution costs, tax, other costs, profits for retailers and profits for the tobacco manufacturer in the following segments?
- Premium cigarette brands
 - Mid price cigarette brands
 - Economy cigarette brands
 - Ultra low price cigarette brands
- xi. Would there be an impact on down trading from higher priced to lower priced tobacco if standardised tobacco packaging were introduced?
- xii. Of the total cigarette market in the UK, what proportion of cigarettes are sold in cartons rather than in individual packs?

Annex D: Trends in the Tobacco Market

348. From IAs prepared in relation to other tobacco control policies, we have estimates of the health gain and impact on tobacco duty per quitter/young person who no longer takes up smoking. In the particular case of standardised packaging, we anticipate some more subtle effects related not to the overall level of tobacco consumption but to potential shifts within the overall market. We expect the impacts of standardised tobacco packaging to manifest themselves over an extended time period. To understand the possible impact of standardised packaging, it is useful to review the trends we have observed in the market in the recent past. These form the basis for considering the costs and benefits associated with downtrading effects resulting from standardised packaging.
349. The cigarette market is typically divided into a number of segments by price. As different manufacturers will offer different ranges of products, prices will also vary by manufacturer. In this IA, we use information provided by a tobacco manufacturer post-2014 consultation for appropriate market segmentation and prices of those segments (prices are adjusted using Producer Price Inflation and 2014/15 duty rates).
350. Research by Tavakoly et al. (2012)¹⁷⁹ shows that a noteworthy development in the cigarette market over the last decade has been a fall in the market share of expensive premium cigarette brands and an increase in the market share of cheaper economy and ultra low price (ULP) brands. Figure D1 shows estimates of market share based on analysis of General Household Survey (GHS) data and Nielsen data since 2006 (shown as the dotted lines) for four market segments (premium, mid-price, economy and ultra low price).
351. As the shares of premium and mid-priced cigarette brands have declined, so the shares of economy brands and ultra low price or 'value' cigarette brands have increased. The ultra low price/value category emerged around 2006 when the major tobacco companies began acquiring cheaper existing brands and launching new ones and has become an established part of the market.

Figure D1: Market shares (%) - cigarettes



Source: Tavakoly et al. (2012)

¹⁷⁹ Tavakoly B, Taylor G, Reed H, Gilmore A (2012). Section 2. A report on tobacco industry pricing, product substitution and downtrading in the British tobacco market: implications for tobacco control and tobacco tax policies. In PPACTE consortium. PPACTE work package 5: Deliverable 5.1. Industry and market response: synthesis report. Bath: University of Bath.

352. We consider past trends in the erosion of the market share of premium brands and mid-price brands combined and the corresponding increase in the market share of economy and ULP brands combined. The share of the former fell from 50.1% to 29.3% between 2001 and 2009. The rate of decline of this market share is taken as the trend rate of downtrading (table D1) and is applied to the market segmentation provided by the tobacco manufacturer. Although the manufacturer's market segments are not the same as those in Tavakoly, they are broadly consistent. The 6.5% downtrading value varies year by year between around 1% and 10% and therefore is a broad, evidence based assumption that can be appropriately applied to a different (but similar) market segmentation.

Table D1: Erosion of premium brands (UK)

Year	Premium/mid-price share	Rate of downtrading p.a.
2001	50.1%	
2009	29.3%	6.5%

Sources: Information Centre; Tavakoly et al. (2012); DH calculations.

353. The impact of standardised packaging is assessed relative to a counterfactual baseline (i.e. Option 1) in which the historical trend of downtrading between premium/mid-price and economy/ULP packs continues and the overall number of packs smoked falls from 2012 due to the impact of the display ban and from 2016 due to the EU Tobacco Products Directive. Our central estimate for downtrading under standardised packaging is a doubling of the existing downtrading trend. Consultation responses sighting Australian data have suggested this estimate may be fairly accurate. For example, Australian data shows that downtrading from the top 2 segments to the bottom 2 segments was around 3.9% before Standardised Packaging and around 9.9%¹⁸⁰ after. However, some of this change is likely to be the result of the tax increases in Australia. Thus, in the base case, we assume that the historical downtrading trend will continue and that standardised packaging will add as much again to that trend. This is equivalent to a reduction of around 33m premium and mid-price packs relative to trend in the first year of standardised packaging.
354. We have explored the impact of an immediate 100% switch from Premium/Mid-price to Economy/ULP brands in the sensitivity and risk analysis section.

Supply and demand

355. The observed trends in the market for cigarettes have come about as a result of the interaction of the forces of demand and supply in the tobacco market. To the extent that standardised packaging can be expected to influence this interaction, it could be argued that the result will be a fall in prices and an increase in consumption.¹⁸¹ We express caution in proposing a simple linkage between a fall in price and an increase in consumption brought about by standardised packaging,¹⁸² while a separate wide ranging review of standardised packaging presents a rather more complex picture of the market dynamics. Europe Economics have suggested that, in the short- to medium-term, prices might fall as price differentials can no longer be maintained for premium products but, in the long term, prices might be higher partly as a result of reduced competition. The view that prices will fall makes no allowance for the way in which tobacco taxes may change in the future.
356. We may note that the observed trend of downtrading to cheaper cigarettes and HRT will have brought about lower average prices than would have been observed without downtrading. At the same time, downtrading has been accompanied by a continued decline in smoking prevalence. On this view of the market, changes in demand conditions have resulted in changes in price, rather than vice versa.

¹⁸⁰ Considering the average of 2010/2011 and 2011/2012 changes as pre standardised packaging and 2012/2013 and 2013/2014YTD as post. InfoView Data from ACS submission published online at <http://www.acs.org.uk/download/acs-submission-to-standardised-packaging-consultation/> 22. ACS Submission to Standardised Packaging Consultation.pdf

¹⁸¹ Padilla J (2010). The impact of plain packaging of cigarettes in Australia: a simulation exercise. Brussels: LECG Consulting Belgium.

¹⁸² Reed H (2011). Analysis and review of J. Padilla "The impact of plain packaging of cigarettes in the UK: a simulation exercise". Colchester: Landman Economics.

Nevertheless, there are supply side factors associated with standardised packaging (e.g. lower cost production processes, a possible increase in the supply of illicit product) which could potentially reduce prices for individual brands and lead to increased consumption. Where there are factors which might threaten the effectiveness of standardised packaging as a tobacco control measure, we treat these as risks. When considering these risks Sir Cyril Chantler also states in his report that *“that the impacts could be readily mitigated through taxation if nevertheless they were to materialise.”* So policy options could be explored as a means of offsetting any observed reduction in prices and maintaining (at least) the current affordability of tobacco.

Competition and innovation

357. It has been suggested that standardised tobacco packaging would represent a further restriction on tobacco companies' ability to compete by way of packet differentiation as consumers' loyalty to previously branded products is undermined. The JTI response to consultation argues, based on commissioned analysis, that standardised packaging would increase barriers to entry for new brands. Firstly, it should be noted that the cigarette market in the UK is highly concentrated¹⁸³ and is likely to remain so irrespective of the regulatory environment. Cigarette manufacture is not characterised by entry of small manufacturers. Secondly, brands themselves can represent an important barrier to entry in the cigarette (and other) markets. Thirdly, standardised packs would not prevent the communication of product characteristics to consumers. It would not restrict communication by means of the brand name appearing on the price list (which might include some indicator of taste or origin). Standardised packaging could result in an acceleration of non-pack product innovation (inventing other ways of differentiating a product from competitors) and process innovation (improving the efficiency of the production process) if there was greater price competition that threatened profits. Fourthly, any negative impact on consumers of reduced brand competition could potentially be offset by an increase in price competition, should it occur, which the JTI analysis predicts would intensify as a result of standardised packaging (but the complexities in pricing discussed above should be noted here).
358. The ways in which tobacco manufacturers would respond to the introduction of standardised packaging may serve to offset some of the negative impacts on brand innovation identified here (and possibly reduce the health benefits as well if the industry attracts or retains smokers). For example, product innovation may enable companies to recover some of the brand equity lost with standardised packs. The extent to which companies could differentiate their products will depend on the provisions set out in legislation, should the decision be made to introduce standardised packaging. It is not for DH to imagine what tobacco companies might do in response to standardised packaging but it is an industry that has a reputation for finding alternative ways to market and promote its products as promotional channels are closed down through legislation.

¹⁸³ Gilmore A B, Branston J R, Swenor D (2010). The case for OFSMOKE: how tobacco price regulation is needed to protect the health of markets, government revenue and the public. *Tobacco Control* 19:423-430.

Annex E: Tobacco Products Directive

359. The revised Tobacco Products Directive governing the manufacture, presentation and sale of tobacco and related products was officially adopted by the Council on 14 March 2014 following its formal approval by the European Parliament on 26 February 2014.

Requirements

360. Requirements of the TPD include mandatory picture and text health warnings covering 65% of the front and the back of cigarette packs - to be placed on the top edge. 50% of the sides of packs will also be covered with health warnings (e.g. "smoking kills – quit now"; "tobacco smoke contains over 70 substances known to cause cancer"), replacing the current printing of tar, nicotine and carbon monoxide (TNCO) levels.
361. There will be minimum dimensions for the health warnings and slim, 'lipstick'-style cigarette packs, which are often targeted to young women, will no longer be allowed.
362. In order to ensure the visibility of health warnings, cigarette packs will be required to have a cuboid shape and each pack will contain a minimum of 20 cigarettes.
363. No promotional or misleading features or elements will be allowed on packs. This includes, for example, references to lifestyle benefits, to taste or flavourings or their absence (e.g. "free of additives"), special offers or suggestions that a particular product is less harmful than another.
364. Similar rules will apply to roll-your-own tobacco (RYO) packs, which will also have to carry 65% combined health warnings on the front and back as well as the additional text warnings. RYO products can have a cuboid or cylindrical shape, or be in the form of a pouch, and each pack will contain a minimum of 30g of tobacco.
365. Flavourings in cigarettes and RYO tobacco must not be used in quantities that give the product a distinguishable ('characterising') flavour other than tobacco. The Directive prohibits cigarettes and RYO tobacco with any such characterising flavour. Member States and the Commission may consult an independent European advisory panel before taking decisions in this regard. Tobacco products with menthol as a characterising flavour will be banned after a phase-out period of four years – a period which applies to all products with more than a 3% market share in the EU.

Illicit trade

366. The new Directive includes measures against illicit trade of tobacco products to ensure that only products complying with the Directive are sold in the EU. It introduces an EU-wide tracking and tracing system for the legal supply chain and visible and invisible security features (e.g. holograms) aimed to facilitate law enforcement and help authorities and consumers detect illicit products. The measures foreseen in the new Directive will help to redirect tobacco trade to legal channels, and may also help Member States restore lost revenue. Tracking and tracing of tobacco products will be phased in, with cigarettes and RYO the first required to comply, followed by all other tobacco products.

TPD impact on consumption

367. The European TPD impact assessment estimates a reduction in consumption of around 2% within a five year period after transposition. The European TPD IA breaks up this reduction as follows (note that STP refers to smokeless tobacco products and NCP to nicotine containing products):

Contributions of individual policy areas to the projected decrease of cigarette/RYO consumption

Policy area		Foreseen contribution to the decrease in %
Scope	(STP)	0.2-0.3
	NCP	
	(Herbal)	
Packaging & Labelling		1-1.5
Ingredients		0.5-0.8
TOTAL		1.7-2.6%

Standardised packaging

368. We anticipate some overlap between the measures proposed under standardised packaging and by the TPD due to the “Packaging & Labelling” aspect of the TPD. This is because some aspects of TPD, such as cigarettes packs having to have a cuboid shape, or “lipstick”-style packs no longer being allowed, would also be covered by standardised packaging legislation (as set out in the 2012 consultation). We take the lower end of the 1-1.5% range for the estimated reduction in consumption caused by packaging and labelling above, that is 1%, and assume that this reduction is due to aspects that would have been covered by standardised packaging legislation (as set out in the 2012 consultation). We note that attributing more than 1% as overlap would likely be an overestimate for the reasons outlined below:
369. The changes to picture warnings were not part of the standardised packaging proposals set out in the 2012 consultation. The potential impact of larger/increased picture warnings was therefore not incorporated in the Pechey et. al estimates of the impact of standardised packaging. Therefore, the proportion of the 1-1.5% reduction quoted that is due to the picture warning aspects of TPD should not be seen entirely as overlap. The majority of evidence quoted in the European TPD IA is based on estimated impacts of picture warnings on prevalence varying from 0.3% - 6%, so the impact of picture warnings is likely to make up the majority of the 1-1.5% reduction quoted.
370. The estimated impact of picture warnings expressed in the European TPD IA is partly based on evidence from the 2007 UK Regulatory Impact Assessment on warnings. The UK is, therefore, likely to have already experienced some of the reduction in smoking prevalence associated with larger visual health warnings (although the UK’s implementation was one-sided only compared to the TPD’s two-sided requirement).
371. The final TPD adopted differs slightly from the options assessed in the European TPD IA. The IA assumed warnings would cover 75% of the packets and that slim cigarette sticks would be banned (slim cigarettes falling under the packaging and labelling heading in the table). The final TPD has the coverage slightly reduced to 65% and slim cigarettes are not prohibited.
372. Taking 1% as opposed to 1-1.5% for packaging & labelling would change the range in the table above to 1.7%-2.1%. We use the mid-point of this range to assume a 1.9% reduction in tobacco consumption due to the TPD.
373. We assume that changes in consumption translate to proportionate changes in prevalence. As noted above, often evidence on the changes of prevalence are used when considering changes of consumption. Also for this assumption to be incorrect there would need to be a change in the average number of cigarettes smoked per day per smoker. Historically the average number of cigarettes smoked per day per smoker has remained reasonably constant (see table 5) although there has been a decrease

more recently. To have an estimate for the change in prevalence some assumption is required and the European TPD IA does not provide a specific quantitative relationship between consumption and prevalence. We note that for tax (the main cost in the standardised packaging IA) this uncertainty is not important since a reduction in consumption either via reduced prevalence or by a reduction in the number of cigarettes smoked per day has the same tax impact. For health benefits (the main benefit in the standardised packaging IA) and other values this uncertainty is of relatively little importance when considering the other uncertainties in the NPV discussed in the Sensitivity and Risk Analysis section.

Annex F: Consumer surplus from branded packaging: rationale for approach

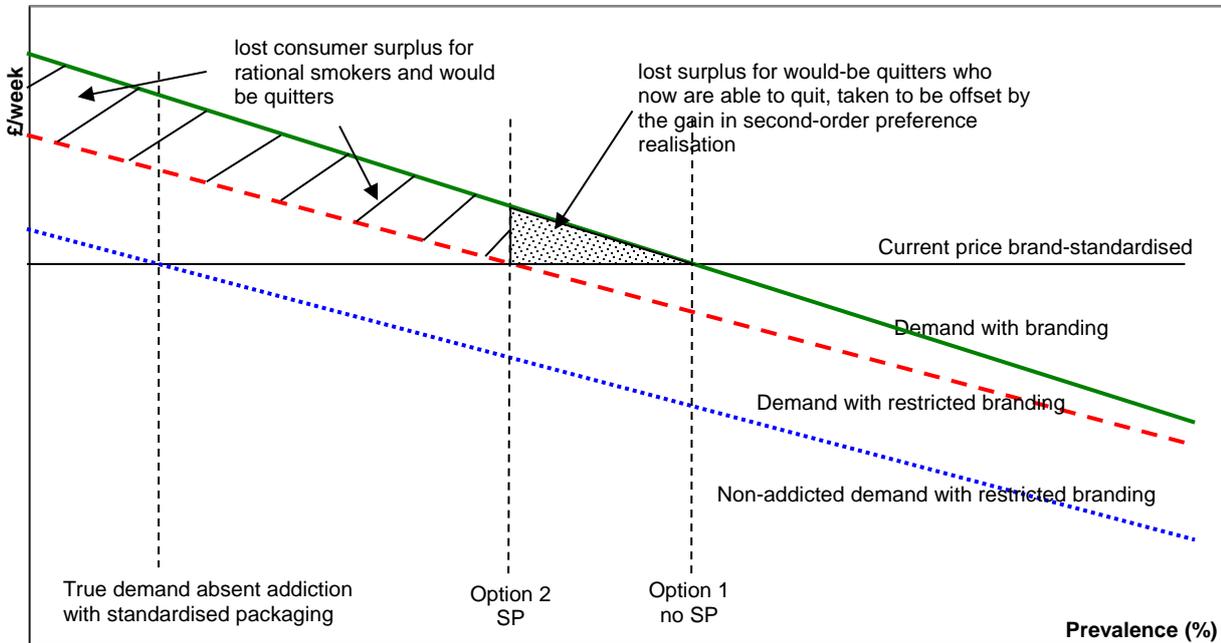
374. Standardised packaging is designed to undermine brand appeal which creates an attractive self-image for the smoker. Brand appeal is thought to be something that people are willing to pay for when they purchase cigarettes – and probably a larger proportion of what they are willing to pay for premium brands. Restricting packaging does not eliminate the market for premium brands. However, there is an aspect of brand superiority that is destroyed, and what is lost for consumers needs to be considered when deciding whether to take this regulatory step. Estimating the extent of this loss is very hazardous. Demand elasticity estimates are not relevant because it is precisely the inframarginal consumers – those who would have continued to buy the brand even were it much more expensive – whose loss will be the greatest.
375. We acknowledge a consumer surplus loss to those who do not give up as a consequence of the packaging change. These smokers suffer from frustrated preferences – they wished to express something through their brand loyalty that is now being denied them. This loss in welfare is captured by the “consumer surplus” concept. We must assess whether this loss is justified by offsetting gains, including those health and welfare gains for those who themselves express a wish to give up.
376. However, for those who do not give up, even those who would still like to quit, the loss of branding is a loss in freedom. Of the projected 9.9m smokers in the UK, post plain packaging, around 1.4m (those who mainly smoke UK duty paid factory made cigarettes in the premium or mid-price segments) might be considered to fall into this category.
377. Against this, there are other arguments for discounting the value attached to a branded as opposed to a standardised pack. For example, as a result of branding, premium cigarettes may become a “positional good”, particularly for young people. Because consumption of positional goods by one consumer creates a negative consumption externality (Frank, 2008)¹⁸⁴ for others, standardised packaging could increase consumer surplus among the majority of smokers. Interviews with youth smokers in Norway suggest that smokers can feel embarrassed about their own brand of cigarettes compared with those smoked by others and that some brands may even engender feelings of hostility in others (Scheffels, 2008)¹⁸⁵. Branding might therefore be seen as a zero sum game. Standardised packaging could reduce the social signalling element of cigarette smoking, while young smokers have ready substitutes to replace the lost signalling such as mobile phones, clothing etc. without the costs of addiction.
378. For adult smokers, it has been argued that cravings are triggered by environmental cues, with packaging ranking highly amongst these cues. To the extent that standardised packaging eliminates a strong cue, consumer welfare can be increased. Demand by a cued individual can be regarded as a pure transfer from consumers to producers and therefore as generating an overall welfare loss equal to the marginal cost of production. The optimal regulatory response will be to rely on policies which lessen the role of environmental cues (of which evidence suggests branding is an important one) for addictive goods. As well as helping to address the ‘internality’ individuals impose upon themselves, if standardised packaging was successful as a tobacco control measure, it would give intergenerational benefits as future young people would be less likely to smoke.
379. Notwithstanding the shortcomings of conventional consumer theory in dealing with addictive substances, attempts have been made to address the issue of consumer surplus within this framework. For example, Weimer et al. (2009) propose demand schedules in the presence and absence of addiction. Figure 4 provides an illustration, together with a demand schedule in the presence of addiction but with the removal of branding. The area between the addicted demand curves with and without branding indicates where potential consumer surplus losses would have been if these consumers had not “changed their minds” about their demand. The steeper downward slope of the demand curve with branding (the top line) reflects higher consumer surplus being attributed to those willing to pay more for cigarettes – perhaps those who are willing to pay for branding.

¹⁸⁴ Frank R (2008). Consumption externalities. *The New Palgrave Dictionary of Economics*.

¹⁸⁵ Scheffels J (2008). A difference that makes a difference: young adult smokers’ accounts of cigarette brands and package design. *Tobacco Control* 17:118-122.

380. While this is a useful conceptual approach, it is insufficiently developed to provide a quantified estimate of the loss of consumer surplus as a result of standardised packaging, both because of the role of branding in addiction and a lack of evidence on the value of brands to non-addicted smokers. In common with the approach adopted for interventions targeted at reducing the consumption of alcohol, in which the issue of addiction is also relevant, we do not attempt to provide a monetary estimate of consumer surplus loss.

Figure F1: Consumer surplus from branding



Annex G: Methodologies of brand valuation

381. We briefly describe in the following section the various methodologies for estimating brand value as suggested in consultation submissions.

Cost approach

382. In this method, asset values are measured by the expenditures necessary to replace the assets in question. In this instance it requires the measurement of actual expenditures which were necessary for building value in the brand. This approach does not give an indication of the economic benefit derived from ownership and utilisation of the brand and is thus a minimum estimate.

Income approach

383. This approach estimates the future income stream expected from the asset under valuation. The asset under question, in this case brand, is worth the present value of future income streams that will accrue to the owner. The method used in this IA is a form of the income approach. Rather than gross income streams, the IA looks at net income streams to estimate the value net of cost added to firms from owning premium brands.

Market approach

384. This approach looks at the value of intangible assets by comparing recent sales or other transactions involving similar assets in similar markets. Most intangible assets are not traded frequently enough to be able to establish a value based on market-based comparisons. Moreover, it is very difficult to get enough detail on the similar transactions to be certain that all the elements of value that make a good comparable have been considered.

Relief from loyalty approach

385. This approach can be seen as a combination of the income approach and market approach. The value of intangible assets are calculated as the present value of the royalties that the company is relieved from paying as a result of ownership of the assets. Royalties are payments made to owners for the use of property and copyrighted work etc. It can be seen as compensation to the owner for the use of its asset(s).

IA approach

386. As mentioned above, the IA's method of valuing brand is akin to the income approach. We are of the view that all approaches (except the cost approach) are fundamentally based on the estimated present value of future economic benefit attributable to the brand. The market approach and relief from loyalty approach are seen as indirect methods of measuring this economic benefit whereas the income approach is a direct method.

Annex H: 2014 Consultation Questions

387. The consultation stage impact assessment accompanied the 2014 *Consultation on the introduction of regulations* for standardised packaging of tobacco products. Four questions were asked at Appendix A of the consultation document, with question four being specifically related to the evidence and information contained in the impact assessment

388. The four questions contained in the consultation document were:

- Do you have any observations about the report of the Chantler Review that you wish to bring to our attention?
- Do you have any information, in particular any new or additional information since the 2012 consultation, relating to the wider aspects of standardised packaging, that you wish to bring to our attention?
- Do you have any comments on the draft regulations, including anything you want to draw to our attention on the practicalities of implementing the regulations, as drafted?
- Are you aware of any further evidence or information which would improve the assumptions or estimates we have made in the consultation-stage impact assessment?"