Making Business Sense

Quantification of the economic impact of plain packaging for tobacco products in the UK

Addendum to the report for Philip Morris Ltd.

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This study has been commissioned by Philip Morris Ltd and has utilised a combination of industry data and data available in the public domain through ONS and related sources.

The report does not necessarily reflect the views of Philip Morris Ltd.

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Executive Summary

The key findings of the extension to our study on plain packaging for tobacco to the individual nations and regions of the UK are presented in this addendum.

We find that lower prices for legal tobacco, increased illicit trade and a shift by customers from convenience retailers to larger retailers as a result of increased transaction times and longer queues are expected to have the most significant absolute impacts on small independent retailers (SIRs) in urban and suburban areas of the South East of England, London and the North West regions. But, in relative terms, the same is true of losses in the other nations and regions.

Significant losses are also expected to the East Midlands and Northern Ireland economies as a result of the negative impact of plain packaging on UK tobacco manufacturing, which is concentrated in this region and nation.

For the UK nations and English regions, our key findings include the following:

- Job losses in SIRs are expected to be greatest in the South East of England, London and the North West of England, with 4,466, 3,683 and 3,305 fewer jobs respectively due to the lost tobacco and non-tobacco sales that can be expected to result from plain packaging. These job losses are more likely to be concentrated in urban and suburban areas because the options to switch to larger stores in anticipation of longer tobacco transaction times and queues in SIRs will be more readily available.
- The East Midlands economy is expected to be the worst affected by plain packaging, with a reduction in regional GVA from tobacco manufacturing of between £175 million and £303 million.
- Northern Ireland would, however, experience the greatest percentage reduction in the size of its economy, falling by between 0.4 and 0.7 per cent as a result of the impact of plain packaging.

SIR's will bear the brunt of plain packaging with job losses across all regions of the UK. With so many local communities dependent on SIRs, such effects would have negative implications in terms of the wider social impact of SIRs. Plain packaging would also increase the likelihood of business failures at a time and in circumstances in which retail space occupancy rates on the High Street are already noticeably depressed. Plain packaging would also hit manufacturing at a time when the sector is just starting to recover from the global economic downturn.

1 Introduction and background

During May 2013, Cebr published a report providing a thorough estimation of the impact that compulsory plain packaging of tobacco products will have on the UK's economy. This included the effects on the legal and illicit tobacco markets, on small and independent retailers, and on key macroeconomic variables including GDP, employment, and government finances. The title of this main report is *"Quantification of the economic impact of plain packaging for tobacco products in the UK"*, which can be accessed via the Cebr website at http://www.cebr.com/reports/impact-of-plain-packaging/.

This is a short addendum to that report, providing a separate examination of the impacts of plain packaging in each of the UK nations (England, Wales, Scotland and Northern Ireland) and the English Government Office regions (North East of England, North West, Yorkshire and the Humber, East Midlands, West Midlands, East of England, London, South East and South West of England). This addendum should be read in conjunction with the main report.

1.1 Methodological overview

The purpose of the main report and this addendum was to assess the impact of plain packaging through tobacco manufacturing on UK GDP, employment and the public finances. We used the ONS national accounting framework, as reflected in the supply-use tables to measure these direct impacts and proceeded to use Cebr's in-house input-output models to produce indirect and induced multiplier impacts.

The purpose of this addendum is to extend the analysis of direct and multiplier impacts on GDP and employment to the UK nations and English Government Office regions. Having reported on the UK-level multiplier analysis in the main report, the task was to produce equivalent sets of multipliers for each nation and region. For this, we used a system of so-called 'location quotients'. The key issue with producing regional technical coefficients (an important stage in the production of multipliers) is that regional propensities to import tend to be higher than national propensities. Location quotients involve adjusting UK-wide technical coefficients to take account of differing proportions of local demands being satisfied locally.

They location quotients are interpreted as a measure of the ability of a particular industry in a particular region to supply the demands placed upon it by other industries and by final demand. For these purposes, we applied 'Cross-Industry Location Quotients' (CILQs), which can be interpreted in the following way:

CILQ < 1 $\Rightarrow$ the supplying sector is relatively small compared to the purchasing sector at the regional level, so some of the required inputs need to be imported from elsewhere in the UK.

CILQ > 1 $\Rightarrow$ there is no need to adjust national coefficients as all the needs for the input can be met from within the region.

The result is a distinct Leontief inverse matrix for each of the nations and regions under consideration, from which the regional-level multipliers can be derived. These regional-level multipliers were estimated for each of GVA and employment.

Tobacco also makes contributions to the economy through the retail sector. The main report analyses how these contributions are made and how plain packaging can be expected to affect them. We then narrowed our focus to the deleterious effects of plain packaging on small independent retailers (SIRs), which can be expected to be particularly hard hit due to the likelihood of customers switching from smaller to larger stores in anticipation of longer tobacco transaction times and longer queues in convenience stores. This addendum also extends that analysis to each of the individual UK nations and English regions.

1.2 Structure of this report

The remainder of this addendum is structured as follows:

- Section 2 presents Cebr's estimates of the current 'macro' contributions of tobacco to the constituent national and regional economies of the UK.
- Section 3 assesses the likely impact on the levels and structure of these contributions depending on reactions in the market to plain packaging.
- Section 4 provides our assessment of the potential impacts of plain packaging on retailers with a focus on SIRs in the nations and regions.

2 The macroeconomic impact of tobacco in the UK nations and English regions

Before we could understand the 'macro' impacts of plain packaging, it was necessary to first understand the macro impact of tobacco itself. This section presents Cebr's independent assessment of the contribution made by tobacco to the UK's national and regional economies.

2.1 Contribution of tobacco manufacturing to national and regional GDP

The main report sets out Cebr's estimates that tobacco accounts for approximately 0.84 per cent of UK GDP and that, for every £1 of GVA generated directly by the tobacco manufacturing industry, an additional £0.82 of GVA is generated in the wider UK economy through indirect and induced multiplier impacts. This UK GVA multiplier of 1.82 is decomposed and explained further in Figure 1 below.

Figure 1: GVA multiplier for the tobacco manufacturing industry

Tobacco manufacturing GVA multiplier = £1.82

Direct impact £1 + **Indirect impact £0.46** + **Induced impact £0.36**

Direct impact £1: Expenditure on tobacco generates the industry's supply response. In 'producing' its products, the tobacco industry generates additional value added. Assume sufficient initial expenditure to enable the industry to generate £1 of GVA. This £1 of GVA is the direct GVA impact of the relevant increment in tobacco expenditure

Indirect impact £0.46: To increase its supply, the tobacco industry must increase its demands on its suppliers, who increase demands on their suppliers and so on through the supply chain. This generates the indirect impact, an increase in GVA throughout the supply chain of £0.46 for every additional £1 of tobacco manufacturing GVA

Induced impact £0.36: The combined direct and indirect impacts have an impact on household income throughout the economy, through increased employment, profits etc. A proportion of this income will be re-spent on final goods and services, producing a supply response by the producers of these goods/services and further impacts through their supply chains etc. This produces the induced impact of £0.36 for every additional £1 of GVA generated in tobacco manufacturing

Source: Cebr analysis

But this addendum finds that there are significant variations in the GVA contributions made by the tobacco manufacturing industry to the various national and regional economies of the UK. Table 1 below illustrates the importance of tobacco manufacturing to each of these economies, ranked according to its percentage contribution to the aggregate GVA of the relevant nation or region.[1]

These estimates suggest that tobacco manufacturing is most important to the Northern Ireland economy, contributing 1.43 per cent of that nation's aggregate GVA. This is significantly greater than the 0.11 per cent contribution made by tobacco manufacturing to the UK as a whole. The industry is also significantly more important to the East Midlands economy than to the UK as a whole, with a contribution of 0.78 per cent of aggregate East Midlands GVA. The contribution of tobacco manufacturing to the economy of England is more comparable to the UK-wide contribution at 0.09 per cent.

The largest absolute sub-UK contribution made by tobacco manufacturing is, unsurprisingly, to England's economy at £979 million. Otherwise, the direct GVA contributions are largest in the East Midlands and Northern Ireland. No contribution is made to the economies of the North East of England, Yorkshire and the Humber, Wales or Scotland. But this is not to say that these economies do not benefit at all from tobacco manufacturing (see below).

Table 1: The GVA contributions of tobacco manufacturing to the national and regional economies of the UK – Top 5 Regions

UK nation / English region	Direct GVA contribution (£m)	Percentage of area's economy
Northern Ireland	415	1.43%
East Midlands	623	0.78%
England	979	0.09%
London	189	0.07%
South West	53	0.05%
South East	62	0.03%

Source: Cebr estimates based on the location of tobacco manufacturing jobs (see our estimates of tobacco manufacturing jobs by location in Table 3 below)

Table 2 presents the results of our input output modelling at the level of the UK nations and English regions, showing our Type II GVA multiplier estimates which can be compared with the UK GVA multiplier of 1.82 illustrated in Figure 1 above. The further from 100 per cent is the percentage of 'in-region' impact, the greater the 'leakage' to other nations and regions of some of the impacts of tobacco manufacturing in the region under examination.

[1] The GVA in a region (or indeed a nation) is otherwise known as Gross Regional Domestic Product.

Table 2: Regional GVA multiplier estimates and percentage of 'in-region' impact

UK nation / English region	Type II GVA multiplier	Percentage of impact in-region
Total England	1.80	99%
East of England	1.76	98%
North West	1.76	97%
South East	1.76	97%
West Midlands	1.76	97%
South West	1.76	97%
London	1.70	94%
East Midlands	1.33	73%
Northern Ireland	1.30	71%

Source: Cebr analysis

Manufacturing, agriculture and professional services are the most prominent sectors in the tobacco manufacturing supply chain. Where these industries are relatively large as a share of their regional economies, the demands of tobacco manufacturing can be satisfied to a greater extent within those regions. The effects of an increase in the industry's activities can therefore, in such cases, also be captured to a greater extent within the region, leading to relatively higher regional multiplier estimates.

The estimates presented in Table 2 above suggest that (apart from England as a whole, which would naturally be expected to yield a high national multiplier) the tobacco manufacturing industry in the East, North West, South East, West Midlands and South West of England have the largest multiplier impacts of all the nations and regions. This indicates that increased tobacco manufacturing activity in these regions will create more localised impacts compared to other areas of the UK.

The East Midlands and Northern Ireland are associated with the lowest multiplier impacts, while the London economy also experiences leakage, albeit at a lower rate. The regional economy in these cases is less able to supply the goods and services demanded as a result of increased tobacco manufacturing activity. This means that more of these goods and services must be sourced from outside the region, reducing the multiplier effects realised within the region itself.

However, one nation or region's leakage is another's injection, so the impacts of tobacco manufacturing in nations or regions with low 'in-region' multiplier estimates will spill over to other nations and regions. While tobacco manufacturing is estimated not make any direct contribution to the Scottish and Welsh economies, these may well benefit from the impact leakages from, for example, Northern Ireland. That is, tobacco manufacturing in Northern Ireland is likely to source the inputs that the Northern Ireland economy is incapable of supplying from Scotland, Wales or from parts of England.

2.2 Contribution of tobacco manufacturing to national and regional employment

The main report also presents Cebr's estimate that tobacco manufacturing accounts for 0.01 per cent of total UK employment and that, for every 1 FTE job supported by tobacco manufacturing, an additional 3.58 FTE jobs are supported in the wider economy through indirect and induced multiplier impacts.

This UK employment multiplier of 4.58 is illustrated and explained further in Figure 2 below.

Figure 2: Tobacco manufacturing's employment multiplier

Tobacco manufacturing employment multiplier = 4.58

Direct impact 1 FTE	+	Indirect impact 1.98 FTE	+	Induced impact 1.60 FTE
Expenditure on tobacco triggers the industry's supply response. In 'producing' its products, the tobacco industry hires additional staff. Assume sufficient expenditure on tobacco to generate 1 additional FTE job. This 1 FTE job is the direct employment impact of the relevant increment in expenditure on tobacco		To increase its supply, the tobacco industry must increase its demands on its suppliers, who increase demands on their suppliers and so on down the supply chain. This generates the indirect impact, an increase in employment throughout the supply chain of 1.98 FTEs for every additional FTE in tobacco manufacturing		The combined direct and indirect impacts have an impact on household income throughout the economy, through increased employment, profits etc. A proportion of this income will be re-spent on final goods and services, producing a supply response by the producers of these goods/services and further impacts through their supply chains etc. This produces the induced impact of 1.60 FTEs for every additional FTE in tobacco manufacturing

Source: Cebr analysis

But there is again significant variation in the employment contributions made by the tobacco manufacturing industry to the various national and regional economies of the UK, as illustrated in Table 3 below, which shows the contribution of tobacco manufacturing to each of these economies in terms of employment. The regional percentage shares of the UK total are also presented.

These estimates suggest that (apart from England as a whole) tobacco manufacturing is most important to the East Midlands and Northern Ireland economies in employment terms. Their shares combined account for nearly 75 per cent of all tobacco manufacturing jobs in the UK.

Table 3: The employment contributions of tobacco manufacturing to the national and regional economies of the UK – Top 5 Regions

UK nation / English region	Direct jobs contribution	Regional share of UK tobacco manufacturing employment
England	2,357	70.2%
East Midlands	1,500	44.7%
Northern Ireland	1,000	29.8%
London	454	13.5%
South East	148	4.5%
South West	128	3.8%

Source: TMA website, Annual Reports and Accounts of TMA members and Philip Morris, Cebr analysis

Table 4 displays the results of our input output modelling at the level of the UK nations and English regions, showing our Type II employment multiplier estimates which can be compared with the UK employment multiplier of 4.58 illustrated in Figure 2 above. The further from 100 per cent is the percentage of 'in-region' impact, the greater the 'leakage' to other nations and regions of some of the full impacts of tobacco manufacturing activities in any particular region.

Table 4: National and regional Type II multipliers for tobacco manufacturing and percentage of in-region impact

UK nation / English region	Type II employment multiplier	Percentage of impact in-region
Total England	4.52	99%
East of England	4.37	98%
North West	4.35	97%
South West	4.35	97%
South West	4.34	97%
West Midlands	4.34	97%
London	4.02	94%
East Midlands	2.28	73%
Northern Ireland	2.08	71%

Source: Cebr analysis

Northern Ireland and the East Midlands are associated with the lowest employment multiplier impacts. The regional economy in these cases is less able to supply the goods and services demanded as a result of increased tobacco manufacturing activity. This means that more of these goods and services must be sourced from outside the region which, in turn, means that some of the jobs that are indirectly supported by tobacco manufacturing are supported outside the region in which the tobacco is manufactured. To continue with the previous example, it may well be that tobacco manufacturing in Northern Ireland and the East Midlands indirectly supports jobs in adjacent nations and regions, including those in which there is no tobacco manufacturing.

Tobacco manufacturing in the remaining English regions are associated with high multiplier estimates relative to those for Northern Ireland and the East Midlands, reflecting not only the size of the economies involved but the lack of significant scale in tobacco manufacturing in those remaining regions.

3 The impact of plain packaging on the macroeconomic contributions of tobacco manufacturing to the national and regional economies of the UK

We used our understanding of the contributions made by tobacco manufacturing to the UK's national and regional economies presented in the previous section to estimate the likely impacts of plain packaging on these contributions. These estimates are presented in this section.

3.1 Reduced contribution to national and regional GDP

Table 5 below presents Cebr's estimates of the national and regional breakdown of the direct GVA losses from tobacco manufacturing as a result of plain packaging. While the largest absolute losses can be expected in the East Midlands (£130 million to £224 million), Northern Ireland is the biggest loser in relative terms, where reductions of anything up to 0.5 per cent in the total size of this nation's economy can be expected. The East Midlands economy can be expected to shrink by anything up to a quarter of a percentage point. Outside of these two regions, the losses to national and regional economies are negligible in relative terms, nowhere exceeding 0.05 per cent.

Table 5: Absolute losses of GVA contributions of tobacco manufacturing as a result of plain packaging and percentage reductions in the size of national and regional economies – Top 5 Regions

UK nation / English region	Change in direct GVA contribution (£m)		Percentage reduction in size of national and regional economies as a result of direct GVA losses	
	Minimum	Maximum	Minimum	Maximum
Northern Ireland	-86	-149	-0.296%	-0.512%
East Midlands	-130	-224	-0.162%	-0.280%
England	-203	-352	-0.018%	-0.032%
London	-39	-68	-0.014%	-0.024%
South West	-13	-19	-0.011%	-0.019%
South East	-11	-22	-0.007%	-0.012%

Source: Cebr analysis

Table 6 builds in the adjusted multiplier impacts to produce aggregate losses of national and regional GVA due to plain packaging. The East Midlands economy can be expected to be the worst affected in absolute terms, with a reduction in regional GVA of between £175 million and £303 million. The Northern Ireland economy would, however, still see the greatest percentage reduction in its overall size, falling by anywhere between 0.4 and 0.7 per cent.

Table 6: Aggregate losses of regional GVA as a result of plain packaging including adjusted multiplier impacts – Top 5 Regions

UK nation / English region	Change in aggregate GVA impact (incl. adjusted multiplier effects) (£m)		Percentage reduction in size of national and regional economies as a result of direct and adjusted multiplier GVA losses	
	Minimum	Maximum	Minimum	Maximum
Northern Ireland	-116	-202	-0.397%	-0.692%
East Midlands	-175	-303	-0.218%	-0.380%
England	-275	-470	-0.025%	-0.043%
London	-52	-89	-0.019%	-0.032%
South West	-15	-25	-0.015%	-0.025%
South East	-17	-29	-0.009%	-0.016%

Source: Cebr analysis

Behind these numbers sit Cebr's estimates of the adjusted multiplier impacts of tobacco manufacturing as a result of plain packaging. These are smaller than in the base case for the East Midlands and Northern Irish economies. Despite increases in the volumes of tobacco manufactured, the ability of the rest of these economies to supply the intermediate goods and services demanded as a result of increased tobacco manufacturing activity remains unchanged in absolute terms and actually falls in relative terms.

3.2 Loss of jobs in the nations and regions

Table 7 shows Cebr's estimates of direct job losses in tobacco manufacturing in the nations and regions of the UK as a result of plain packaging. The largest absolute losses can be expected in the East Midlands (between 525 and 921 jobs). Northern Ireland will, however, also be the biggest loser in relative terms with the loss of between 0.07 and 0.12 per cent of all jobs. The absolute losses in the East Midlands amount to percentage reduction of between 0.04 and 0.07 per cent.

Table 7: Absolute losses of direct jobs in national and regional tobacco manufacturing as a result of plain packaging – Top 5 Regions

UK nation / English region	Change in direct jobs contribution	
	Minimum	Maximum
Total England	-824	-1,447
East Midlands	-525	-921
Northern Ireland	-350	-614
London	-159	-279
South East	-52	-91
South West	-45	-79

Source: Cebr analysis

Table 8 builds in Cebr's adjusted multiplier impacts to produce aggregate job losses in the nations and regions due to plain packaging. The East Midlands economy can again be expected to be the worst affected in absolute terms, with a reduction in the number of jobs of between 1,002 and 1,763, a percentage reduction of between 0.07 and 0.13 per cent. The Northern Ireland economy would still fare worse in relative terms however, with aggregate falls in FTE employment of between 0.12 and 0.22 per cent.

Table 8: Aggregate national and regional job losses in national and regional tobacco manufacturing as a result of plain packaging including adjusted multiplier impacts – Top 5 Regions

UK nation / English region	Change in aggregate jobs impact (incl. adjusted multiplier effects)	
	Minimum	Maximum
Total England	-1,570	-2,678
East Midlands	-1,002	-1,763
Northern Ireland	-661	-1,166
London	-290	-496
South East	-96	-164
South West	83	-142

Source: Cebr analysis

4 The impact of plain packaging on SIRs in the nations and regions

There is an expectation that retail customers may shift away from SIRs in anticipation of longer tobacco transaction times and hence longer queues as a result of the introduction of plain packaging. The main report presents our estimates that plain packaging could result in a loss of gross earnings by the SIRs of between £12 and £20 million from a baseline estimate of £92 million gross earnings from tobacco, a loss of between £7 and £12 million in GVA terms, increased **insolvencies amongst SIRs across Great Britain and the loss of between 2,000 and 3,500 full-time equivalent (FTE) jobs in these SIRs**.

The national and regional breakdown of these anticipated losses is presented in Table 9 below. The South East, London and the North West are expected to experience the greatest absolute job losses as a result of SIRs' lost tobacco sales, while England as whole can be expected to account for 81 per cent of these job losses. (The totals in this table are greater than the estimates for Great Britain above due to the inclusion of the impact in Northern Ireland.)

Table 9: Loss of jobs in SIRs as a result of lost tobacco sales following the introduction of plain packaging

UK nation / English region	Loss of jobs in SIRs as a result of lost tobacco sales	
	Minimum	Maximum
North East	-87	-153
North West	-220	-386
Yorkshire and the Humber	-167	-293
East Midlands	-151	-265
West Midlands	-190	-333
East of England	-122	-213
London	-246	-430
South East	-298	-521
South West	-182	-319
Total England	-1,664	-2,912
Wales	-121	-211
Scotland	-215	-377
Northern Ireland	-50	-88
TOTAL	-2,050	-3,588

Source: ACS Local Shops Report, Cebr analysis

But these estimates only include the expectations of the effects of plain packaging through lost tobacco sales. Building in assumptions about the expected tendency to switch from SIRs following the introduction of plain packaging and the fact SIRs could suffer losses of revenues from both tobacco and non-tobacco customers, these estimates increased substantially to:[2]

- A loss of gross earnings by the SIRs of over £300 million from a baseline estimate of £1.6 billion gross earnings from tobacco and non-tobacco sales;

[2] These estimates do not account for reductions in non-tobacco sales to tobacco customers that switch away from SIRs. The estimates presented can, therefore, be considered underestimates.

- A loss of £175 million in GVA terms from a baseline estimate of £926 million GVA generated through SIRs' tobacco and non-tobacco sales.

This would lead to greater numbers of insolvencies and up to 30,000 FTE employees losing their jobs in convenience retailing.

The national and regional breakdown of the estimated job losses in SIRs as a result of lost tobacco and non-tobacco sales is presented in Table 10 below. This shows a very similar pattern to that presented in Table 9 above, except the magnitudes are much greater. Specifically, the South East, London and the North West are expected to experience the greatest job losses, while England would suffer the lion's share.

Table 10: Loss of jobs in SIRs as a result of lost tobacco sales following the introduction of plain packaging

UK nation / English region	Loss of jobs in SIRs as a result of lost tobacco and non-tobacco sales
North East	-1,307
North West	-3,305
Yorkshire and the Humber	-2,508
East Midlands	-2,271
West Midlands	-2,854
East of England	-1,830
London	-3,683
South East	-4,466
South West	-2,732
Total England	-24,956
Wales	-1,812
Scotland	-3,231
Northern Ireland	-753
TOTAL	-30,753

Source: Cebr analysis

Finally, we would note that the more remote is a SIR, the less likely it is to suffer these negative impacts of plain packaging. This is because their customers will have fewer options to switch to larger stores in anticipation of longer tobacco transaction times and queues in SIRs. The loss of SIRs and the loss of jobs they provide are, therefore, more likely to be concentrated in urban and suburban areas, where options to switch to larger stores will be more readily available.

With so many local communities dependent on SIRs, such effects would have negative implications in terms of the wider social impact of SIRs. Plain packaging would also increase the likelihood of business failures at a time and in circumstances in which retail space occupancy rates on the High Street are already noticeably depressed.