

# The Impact of Introducing a Minimum Price on Alcohol in Britain

IFS Briefing Note 109

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## Executive Summary

- The Scottish Health Secretary recently proposed a minimum price of 45p per unit of alcohol as part of a wider Alcohol Bill, though the measure was defeated at the committee stage and may not now be introduced.
- Using data on household's grocery purchases in 2007, we estimate that a minimum price of 45p per unit of alcohol would results in large transfers to alcohol producers and off-license retailers; of the order of £700 million if rolled out across Britain. This contrasts to increases in alcohol taxes, which would largely result in transfers to government in the form of (much needed) tax revenue.
- The largest beneficiary in cash terms would be Tesco (which gains around £230 million), followed by Asda (£130 million) and Sainsburys (£100 million), although some of this would be shared with producers. The biggest relative gains are made by low-price and discount supermarkets, which sell the largest proportion of their alcohol below the 45p threshold.
- Almost 85% of off-licensed alcohol units sold in 2007 retailed at less than 45p, so a national minimum price at that level would affect most households that buy alcohol.
- The types of alcohol that would be most affected are lager (91% of units sold below 45p), cider (90%), spirits (87%) and wine (84%). Only 9% of alcopop units were sold below 45p.
- The average unit of cider sold for only 25p in 2007, compared with 33p for lager. The average unit of alcopops sold for 69p.
- The lowest income households are less likely to buy alcohol, but pay lower prices per unit than richer households when they do. Households

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with incomes below £10,000 paid on average 34p per unit compared with 41p for those on incomes over £60,000.

- Assuming an own price elasticity of demand for alcohol of  $-0.5$  across all households, a minimum price of 45p per unit would reduce the off-licensed alcohol consumption of poorer households with incomes below £10,000 by almost 25%. Households with incomes over £60,000 would see their consumption fall by around 12%.
- Households that purchase a lot of alcohol not only buy more units but also buy cheaper units. Those buying less than 2 units per adult per week on average pay more than 40p per unit, compared with 32p per unit for those buying more than 35 units per adult per week.
- The largest relative reduction in consumption would be for those who buy the most alcohol. Those consuming more than 35 units per adult per week are estimated to reduce consumption by 25%, compared with around 14–16% for those consuming fewer than 9 units per adult per week.
- Minimum prices transfer money from consumers to retailers and producers, whereas higher alcohol taxes allow the gains to be used by the Government. European Directives govern the structure of alcohol taxes, meaning that per-unit tax rates are lower for high-strength wines and ciders. Ultimately it may be desirable to try to change this to allow taxes to be imposed on the alcohol content of all types of drink directly.

## 1. Introduction

On 2<sup>nd</sup> September 2010 the Scottish Health Secretary, Nicola Sturgeon, proposed a minimum price per unit of alcohol set at 45p.<sup>1</sup> Minimum pricing was part of a wider Alcohol Bill in front of the Scottish Parliament<sup>2</sup> and was the first time a figure had been set. However, minimum pricing was recently defeated at the committee stage and may not now be introduced, though the minority SNP Government still supports the measure.<sup>3</sup>

The proposed rate of 45p is slightly lower than the 50p rate advocated last year by England's Chief Medical Officer, Sir Liam Donaldson.<sup>4</sup> Other

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<sup>1</sup> See <http://www.scotland.gov.uk/News/Releases/2010/09/02102755>.

<sup>2</sup> See <http://www.scottish.parliament.uk/s3/bills/34-AlcoholEtc/index.htm>.

<sup>3</sup> See <http://www.bbc.co.uk/news/uk-scotland-11381608>

<sup>4</sup> Donaldson, L. (2009), *Passive Drinking: The Collateral Damage from Alcohol* ([http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_096229.pdf](http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_096229.pdf))

advocates of minimum pricing in recent months have included the House of Commons Health Committee,<sup>5</sup> the Royal College of Physicians<sup>6</sup> and the National Institute for Health and Clinical Excellence (NICE).<sup>7</sup>

A 'unit' of alcohol is equivalent to 10 millilitres of pure alcohol. The number of units in a particular alcohol purchase therefore depends on the volume of product and the alcohol strength, measured as the percentage alcohol by volume (ABV). A minimum price per unit of 45p would, for example, mean that:

- a 75cl bottle of wine at 12.5% ABV could not retail for less than £4.22;
- a pint of beer at 4% ABV could not retail for less than £1.02, and
- a litre of spirits at 40% ABV could not retail for less than £18.

In this Briefing Note, we use detailed data on the grocery shopping of more than 25,000 households during 2007 to provide descriptive evidence of alcohol purchases from supermarkets and other off-licensed premises retailers.<sup>8</sup> We calculate the impact of a 45p per unit minimum price and describe how different households and retailers would be affected. Our calculations are based on a number of assumptions about consumer and firm behaviour which we discuss; more precise estimates would require estimation of a detailed model of household purchasing and firm pricing decisions. Our figures are based on a sample of households from Great Britain and we consider a minimum price that is applied nationally.

At present it looks unlikely that minimum pricing will have the necessary support in the Scottish Parliament to become law, and there has not been any suggestion that a similar policy is to be introduced in England and

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<sup>5</sup> House of Commons Health Committee (2009), *Alcohol: First Report of Session 2009–10, Volume I*, London: The Stationery Office (<http://www.publications.parliament.uk/pa/cm200910/cmselect/cmhealth/151/151i.pdf>).

<sup>6</sup> Royal College of Physicians (2009), *Royal College of Physicians Evidence Submission to the Health Select Committee Inquiry into Alcohol, 2009* (<http://www.rcplondon.ac.uk/professional-issues/Public-Health/Documents/RCP-HSCI-alcohol.pdf>)

<sup>7</sup> National Institute for Health and Clinical Excellence (2010), *Alcohol Use Disorders: Preventing the Development of Hazardous and Harmful Drinking*, London: National Institute for Health and Clinical Excellence (<http://www.nice.org.uk/nicemedia/live/13001/48984/48984.pdf>)

<sup>8</sup> We do not include alcohol sales in pubs, bars, restaurants and other licensed premises as we do not have data on these purchases. Northern Ireland is also excluded from our data.

Wales. In response to Sir Liam's call for a minimum price, then Prime Minister Gordon Brown rejected the policy, claiming:

"We do not want the responsible, sensible majority of moderate drinkers to have to pay more or suffer as a result of the excesses of a small minority."<sup>9</sup>

Current Secretary of State for Health Andrew Lansley also appeared lukewarm on minimum pricing following the NICE (2010) report, suggesting that "... it is not clear that ... [minimum pricing] is the best way to impact price in order to impact demand."<sup>10</sup>

However, previous health-related policies such as the smoking ban in public places were introduced first in Scotland before being rolled out nationally. While there does not appear to be widespread political support for higher prices through minimum pricing across Britain, taxes on alcohol have continued to increase – there were real increases of 6% in 2008 and 2% in 2009 and 2010, with plans for further rises of 2% each year up to and including 2014. These increases also clearly impact on 'responsible, sensible moderate drinkers', but unlike minimum prices raise additional revenue for the Government: a 1% real rise in all alcohol duties is estimated to raise around £55 million, once estimated changes in consumer behaviour are taken into account.<sup>11</sup>

Previous work looking at the possible impact of minimum alcohol prices includes two studies, Meier *et al* (2008) and Meier *et al* (2009), conducted by the School of Health and Related Research (SchHARR) at the University of Sheffield,<sup>12</sup> work commissioned by the group Scottish Health Action on

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<sup>9</sup> See for example, *The Guardian*, 16<sup>th</sup> March 2009 (<http://www.guardian.co.uk/politics/2009/mar/16/gordon-brown-alcohol-pricing>)

<sup>10</sup> See [http://www.dh.gov.uk/en/MediaCentre/Statements/DH\\_116534](http://www.dh.gov.uk/en/MediaCentre/Statements/DH_116534).

<sup>11</sup> See HM Treasury (2009), *Tax Ready Reckoner and Tax Reliefs* ([http://webarhive.nationalarchives.gov.uk/20100407010852/http://www.hm-treasury.gov.uk/d/pbr09\\_taxreadyreckoner.pdf](http://webarhive.nationalarchives.gov.uk/20100407010852/http://www.hm-treasury.gov.uk/d/pbr09_taxreadyreckoner.pdf)). Note that this figure assumes higher taxes are fully passed on to consumers.

<sup>12</sup> Meier, P. *et al* (2008), *Independent Review of the Effects of Alcohol Pricing and Promotion*, SchHARR, University of Sheffield ([http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_091364.pdf](http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_091364.pdf)); Meier, P. *et al* (2009), *Model-based Appraisal of Alcohol Minimum Pricing and Off-Licensed Trade Discount Bans in Scotland*, SchHARR, University of Sheffield (<http://www.scotland.gov.uk/Publications/2009/09/24131201/0>)

Alcohol Problems (SHAAP)<sup>13</sup> and analysis by NHS Health Scotland.<sup>14</sup> An IFS Observation at the time of Sir Liam Donaldson's proposal examined some of the issues around minimum pricing.<sup>15</sup>

We discuss the our findings in relation to the Sheffield stuides in section 5. Relative to the Sheffield and SHAAP studies, we use much more disaggregate data on household's off-license alcohol consumption which also includes (for some types of alcohol) precise information on the strength of the products purchased. The Health Scotland report does not look at household-level price and purchasing behaviour.

The rest of this Briefing Note is organised as follows. Section 2 provides some background information on prices, taxes and consumption levels. Section 3 summarise purchasing patterns and alcohol prices. Section 4 examines the possible impact of a 45p per unit minimum price on different households and retailers. Section 5 discusses possible limitations of our results and their robustness. Section 6 offers some conclusions.

## 2. Background information

Before presenting our analysis of the household level data we summarise some background statistics on prices, taxes and aggregated levels of consumption. These show that the prices of off-licence alcohol have fallen relative to on-sales and prices of other goods, taxes on alcohol in the UK were falling in real terms until around 2008 but have since begun to rise, and that alcohol consumption levels in the UK are high relative to other OECD countries, but have fallen in the most recent years.

### *Alcohol prices*

Over the last decade the price of alcohol sold off-license has fallen substantially both relative to on-license prices, and relative to the prices of other goods. Figures 2.1(a) and (b) show an index of alcohol prices and average earnings relative to average inflation (measured by the all-items

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<sup>13</sup> Ludbrook, A. (2010), *Purchasing Patterns for Low Price Off Sales Alcohol: Evidence from the Expenditure and Food Survey*, Health Economics Research Unit, University of Aberdeen  
([http://www.shaap.org.uk/UserFiles/File/Purchase\\_of\\_low\\_price\\_alcohol\\_analysis.pdf](http://www.shaap.org.uk/UserFiles/File/Purchase_of_low_price_alcohol_analysis.pdf))

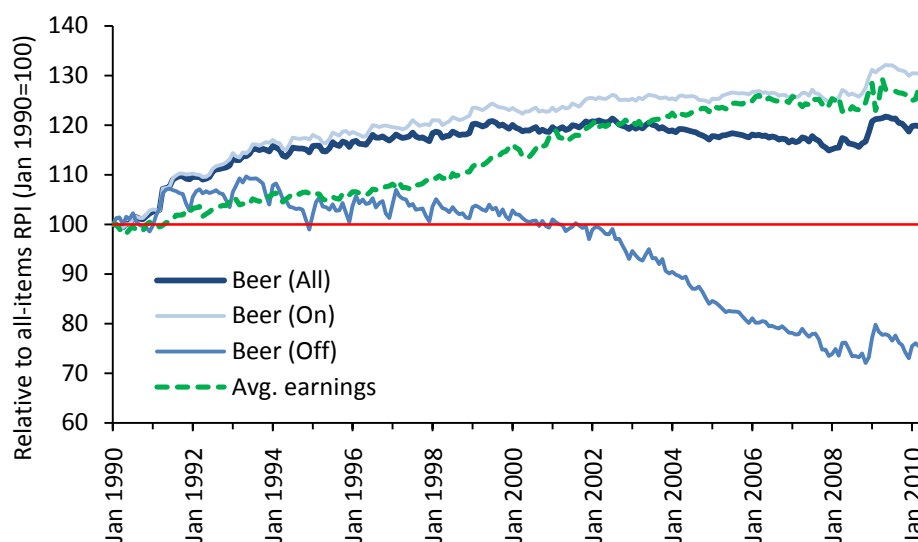
<sup>14</sup> Robinson, M. et al (2010), *Monitoring and Evaluating Scotland's Alcohol Strategy (MESAS): Analysis of Alcohol Sales Data 2005–2009*, Glasgow: NHS Health Scotland (data and report available at <http://www.healthscotland.com/documents/4558.aspx>).

<sup>15</sup> Leicester, A. (2009), *A Minimum Price for Alcohol?*  
(<http://www.ifs.org.uk/publications/4462>)

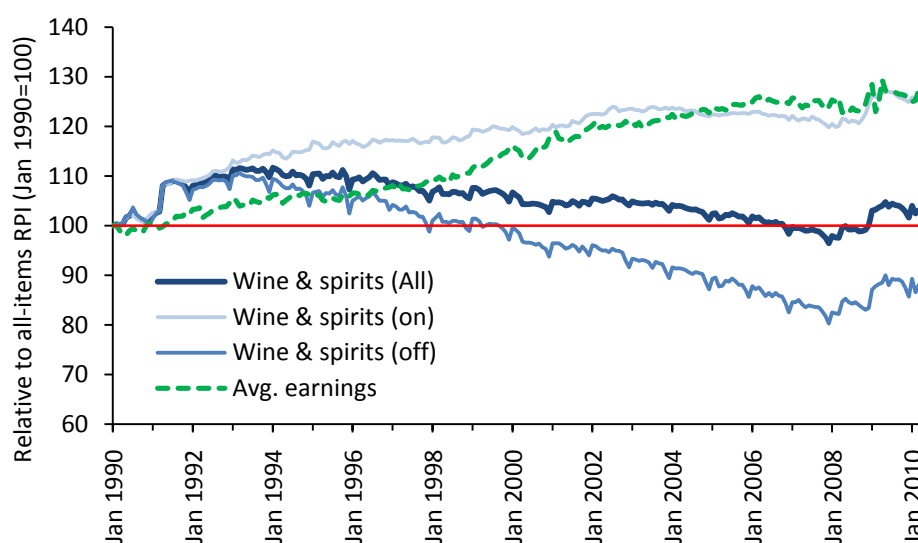
RPI), first for beers and ciders and then for wines and spirits. Since 1990, beer and cider sold off-license has fallen in price relative to the average price level by almost 30%, whereas the price of beer sold on-license has risen by around 30%. The real price of off-license wines and spirits fell by around 20% between 1990 and 2008 though has since risen slightly, whereas the on-license price rose by about 20%. For both beer and wines and spirits, overall prices have lagged behind the growth in real earnings over this period.

**Figure 2.1: Indices of alcohol prices and average earnings relative to all-items RPI, January 1990–June 2010 (January 1990 = 100).**

**(a) Beer and Cider**



**(b) Wines and Spirits**



Source: Price data taken from ONS *Focus on Consumer Prices*, average earnings from ONS Average Earnings Index (<http://www.statistics.gov.uk/StatBase/tsdataset.asp?vlnk=392&More=N&All=Y>).

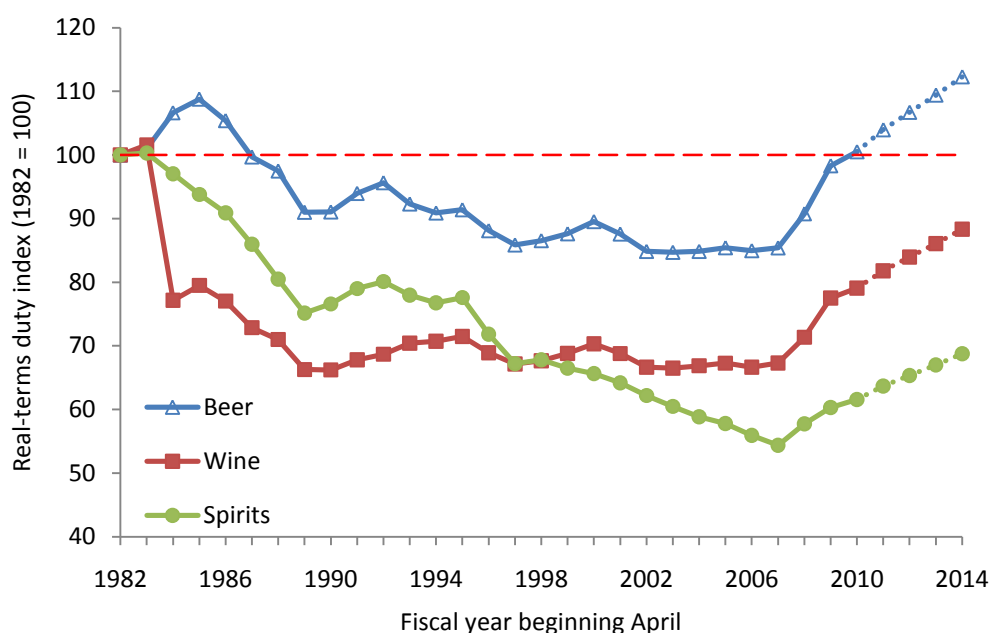


It seems likely that this divergence in prices has contributed to the shift in drinking behaviour, with the proportion of alcohol purchased off-license estimated to have increased from 50% in 2001/02 to 61% in 2008.<sup>16</sup>

### Alcohol taxes

Alcohol duties and VAT make up an important part of the price of alcohol. Duties (particularly those on spirits) have fallen in real terms over the past two decades (see Figure 2.2), but have recently increased owing to an explicit ‘escalator’ policy which saw real duties increased by 6% in Budget 2008,<sup>17</sup> with further increases each year since of 2% which are set to continue until at least 2014. Even if fully implemented, however, these increases will leave real rates of spirits duty at around the levels they were in 1997/98; real duties on beer, by contrast, would be at their highest level in more than 30 years.

**Figure 2.2: Real alcohol duty indices, 1982/83–2010/11 and forecasts to 2014/15 (2010/11 prices, 1982/83 = 100)**



Source: Duty rates from IFS *Fiscal Facts* (<http://www.ifs.org.uk/ff/excise.xls>), converted to 2010/11 values using GDP deflators from HM Treasury ([http://www.hm-treasury.gov.uk/d/gdp\\_deflators.xls](http://www.hm-treasury.gov.uk/d/gdp_deflators.xls)). Figures to 2010 are outturns; figures from 2011 are forecasts based on an assumed real-terms increase of 2% each year over and above the

<sup>16</sup> See [http://www.ic.nhs.uk/webfiles/publications/alcohol10/Statistics\\_on\\_Alcohol\\_England\\_2010.pdf](http://www.ic.nhs.uk/webfiles/publications/alcohol10/Statistics_on_Alcohol_England_2010.pdf), Table 2.7.

<sup>17</sup> There was a further real increase in alcohol duties in December 2008 to ‘offset’ the temporary cut in the main rate of VAT, though these increases were *not* reversed when VAT returned to 17.5% in January 2010.



September RPI forecast taken from the Office for Budget Responsibility ([http://budgetresponsibility.independent.gov.uk/d/junebudget\\_chapterc\\_tables.xls](http://budgetresponsibility.independent.gov.uk/d/junebudget_chapterc_tables.xls), Table C5) and deflated using forecasts for the GDP deflator taken from the same source.

Alcohol excise taxes vary according to the type of alcohol purchased and in some cases the strength measured as the alcohol by volume (ABV) percentage. Current rates are 41p for a pint of beer at 4.2% ABV, £1.69 for a 75cl bottle of wine at 12.5% ABV and £6.66 for a 70cl bottle of spirits at 40% ABV. Total revenue from alcohol taxes for 2010/11 is forecast to be around £9.5 billion, some 2% of total receipts.<sup>18</sup>

Alcohol duties are subject to European Directives that limit how they can be set. These include the basis on which the tax is levied on different types of alcohol and minimum (but not maximum) rates of duty.<sup>19</sup> In particular, for wine, fortified wine, cider and perry, the amount of duty depends on the volume of product and not on the strength, at least within very broad strength bands. For beer and spirits, by contrast, the duty depends both on the volume and the strength. Thus a 500ml can of 5% ABV beer would attract duty of 43p, whereas a 500ml can of 10% ABV beer would attract duty of 86p, meaning the tax per unit of alcohol is unchanged. However, a bottle of wine at 9% ABV attracts the same duty as a bottle of wine at 14% ABV, meaning the duty per unit falls.<sup>20</sup>

### *Alcohol consumption*

Government figures for England in 2008 (based on the General Household Survey) show that on average men consumed 16.8 units and women 8.6 units per week. They also suggest that 28% of men and 19% of women consumed more than the recommended weekly intakes of 21 units or 14 units respectively. In recent years, the proportion of adults and young people who reported drinking alcohol in the previous week has declined slightly (see Figure 2.3). Between 1998 and 2008, the proportion of men reporting drinking the previous week fell from 75% to 71%, women from 59% to 56% and young people aged 11–15 from 21% to 18%.

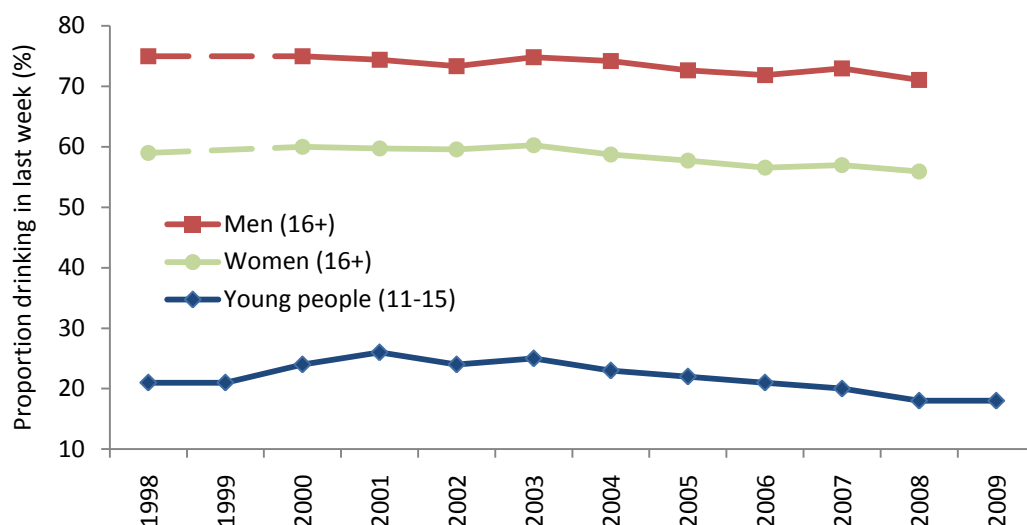
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<sup>18</sup> See [http://budgetresponsibility.independent.gov.uk/d/junebudget\\_annexc.pdf](http://budgetresponsibility.independent.gov.uk/d/junebudget_annexc.pdf), Table C11.

<sup>19</sup> See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0083:en:HTML>.

<sup>20</sup> For a graphical illustration, see the figure on page 10 of Featherstone, H. and C. Storey (2009), *Hitting the Bottle: Minimising the Harms from Alcohol Misuse*, Policy Exchange Research Note ([http://www.policyexchange.org.uk/images/publications/pdfs/Hitting\\_the\\_bottle\\_FIN.AL.pdf](http://www.policyexchange.org.uk/images/publications/pdfs/Hitting_the_bottle_FIN.AL.pdf)).

**Figure 2.3: Proportion of adults & young people reporting drinking in last week, England, 1998–2009**

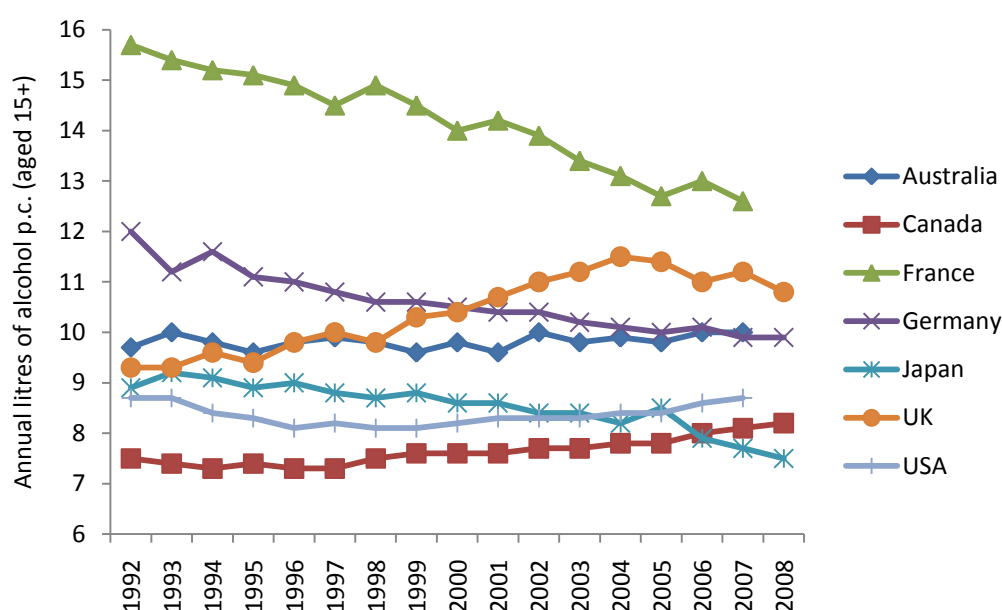


Source: Department of Health Information Service data on drinking (latest figures). Note: data for adults are missing for 1999, and the most recent figures are for 2008 only. See <http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/alcohol/statistics-on-alcohol-england-2010>, Table 2.2 for adult data and [http://www.ic.nhs.uk/webfiles/publications/Health%20and%20Lifestyles/sdd2009/SDD\\_2009\\_Report.pdf](http://www.ic.nhs.uk/webfiles/publications/Health%20and%20Lifestyles/sdd2009/SDD_2009_Report.pdf), Table 4.5 for young people.

OECD *Health Statistics* data allow for international comparisons of alcohol intake over time.<sup>21</sup> For the UK, these figures show annual intake of pure alcohol per capita (aged 15 and over) increasing from 6.1 litres in 1965 to 9.8 litres in 1979; this figure remains roughly constant until around 1998 and then intake levels rise again, peaking at 11.5 litres in 2004 and falling slightly to 10.8 litres in 2008. The rise in UK consumption appears to have gone against a general downward international trend. Figure 2.4 shows per capita annual intake for the UK compared with six other large industrial countries; the UK has seen a substantial sustained increase over the period since 1992. Compared with 22 OECD economies for which data are available over the period, the UK rose from the 12<sup>th</sup> highest per capita alcohol consumption in 1992 to the 6<sup>th</sup> highest in 2008.

<sup>21</sup> Data are available from <http://www.ecosante.org/index2.php?base=OCDE&langs=ENG&langh=ENG> (alcohol data under “Non-Medical Determinants of Health – Life Styles and Behaviour”)

**Figure 2.4: International trends in alcohol intake, litres per capita, 1992–2008**



Source: OECD Health Data 2010. Note: Data not available for 2008 for all countries.

### 3. Alcohol purchases and prices

To analyse the effect of minimum prices, we use data from the “Worldpanel” of market research company Kantar.<sup>22</sup> The data record the grocery purchases of a large representative sample of British households. We use data covering a 52-week period from mid-November 2006 to mid-November 2007, the most recent period available to us.<sup>23</sup> We use a sample of 25,248 households that report purchases consistently.<sup>24</sup>

The data report alcohol purchases and not alcohol consumption, though the two are likely to be similar over a long period. The data are recorded at the household level, we do not know who in the household is buying or consuming alcohol.

To calculate alcohol units, we need to know the strength (ABV) as well as the volume of each product. Volume is known for all purchases. For beer, cider, lager and alcopops (sometimes called ‘fabs’ – flavoured alcoholic

<sup>22</sup> For previous analysis and description of this data, see Leicester, A. and Z. Oldfield (2009), ‘Using scanner technology to collect expenditure data’, *Fiscal Studies*, 30 (3–4), 309–337 and Griffith, R. and M. O’Connell (2009), ‘The use of scanner data for research into nutrition’, *Fiscal Studies*, 30 (3–4), 339–365.

<sup>23</sup> We refer to the data period as “2007”.

<sup>24</sup> We divide the data into 13 four-week periods and select households that report spending at least £25 (adjusted for household composition) in three or more periods).

beverages), the strength is also known precisely. For wines and spirits we have obtained information on the strength from manufacturer and retailer websites where possible; where this has not been possible, we have used standard conversion factors from the ONS which are in effect a set of assumed strengths for different types of alcohol.<sup>25</sup> In the case of wine, we have used the standard strength of 12.5% ABV. We assess the impact of changing this assumption in Section 5.

For a variety of reasons, and in common with other data sources, it is possible that the data under-record household's off-license alcohol purchases. We therefore use purchase weights that are designed to take account of this and to 'gross up' purchases in the data to national totals.

Our data comes from 2007. We discuss what may have changed since then and how it might affect our estimates in Section 5. We do not adjust for price inflation between 2007 and today in setting the minimum. There has been no clear indication in the Scottish Alcohol Bill, for example, as to whether or how the minimum price would be increased over time to take account of inflation. If the minimum price were not uprated, then over time its impact would lessen. If it were uprated, then there would be a question as to whether it should be increased in line with general prices, with alcohol prices or with off-license alcohol prices.

Our data record the purchase of more than 11.8 million off-licensed alcohol units in 2007; applying purchase weights gives a grossed up total of 24.4 billion off-licensed alcohol units. Table 3.1 shows how this breaks down by alcohol type and how these units are priced.

**Table 3.1: Alcohol units purchased and price by alcohol type, 2007**

	Units (million)	Share of total	Average price/unit	Fraction less than 45p/unit
Wine	8,898	37%	38p	84%
Spirits	6,521	27%	35p	87%
Lager	4,724	19%	33p	91%
Cider	1,449	6%	25p	90%
Beer	1,134	5%	43p	62%
Sparkling wine	868	4%	41p	75%
Fortified wine	609	3%	35p	80%
Fabs (alcopops)	179	1%	69p	9%
<b>Total</b>	<b>24,383</b>	<b>100%</b>	<b>36p</b>	<b>85%</b>

Source: calculated from Kantar Worldpanel data, 2007

<sup>25</sup> Goddard, E. (2007), *Estimating Alcohol Consumption from Survey Data: Updated Method of Converting Volumes to Units*, National Statistics Methodological Series No. 37

([http://www.statistics.gov.uk/downloads/theme\\_compendia/drinkingmethodologyfinal.pdf](http://www.statistics.gov.uk/downloads/theme_compendia/drinkingmethodologyfinal.pdf))

Wine is the largest category, accounting for more than a third of all units purchased. More than a quarter of units are spirits, and almost 20% are lager.

The vast majority of alcohol units – 85% – were priced below 45p in 2007. Around 90% of lager and cider units were under this threshold. Just under two-thirds of beer (including e.g. bitters, ales and stouts) units were under 45p. The only category where the majority of units were over the threshold is alcopops, where just 9% of units were sold below this price. However, alcopops make up just 1% of all units purchased in our data. The average off-licensed alcohol unit retailed for 36p, around 9p below the proposed minimum, but there was significant variation across alcohol types, with cider prices being 20p below the threshold and beer prices just 2p below on average.

Table 3.2 shows examples of popular branded products within each category and the extent to which they were sold below 45p per unit. Within each category there are typically some products that are always or almost always sold below 45p, some that are rarely or never sold below 45p and some that vary, perhaps because their price is close to the threshold or because they are sometimes sold on promotion below this level but normally retail above it. Larger multipacks are much more likely to be below 45p per unit (for example, 20 440ml cans of John Smith's were always below, whereas a four-pack was below only one-third of the time); stronger products within category are more likely to be lower priced per unit (for example, relatively lower strength spirits drinks like Baileys, which is 17% ABV, were never below this threshold).

Perhaps more interesting in thinking about the possible impact of a minimum price is not just whether alcohol is sold below this level but how far below; we saw in Table 3.1 that there was considerable variation across alcohol types on average in the retail price of a unit. Figure 3.1 summarises the distribution for different alcohol types. The parts of the bar shaded red are sold below 45p; the darker colours are further below and subject to a larger price increase following a minimum price policy at this level. The parts shaded green and dotted are above 45p, with darker colours priced further above.

**Table 3.2: Popular brands by alcohol category & frequency of purchase < 45p/unit**

Category	Strength (ABV)	Share of category spending	Units sold < 45p
<i>Beers</i>			
John Smith's Draught, 18 × 440ml	4%	5.1%	100.0%
John Smith's Draught, 4 × 440ml	4%	2.7%	33.7%
Guinness Draught, 4 × 440ml	4.1%	2.2%	0.3%
Newcastle Brown Ale, 550ml	4.7%	1.2%	5.6%
<i>Ciders</i>			
Strongbow Dry, 18 × 440ml	5.3%	9.5%	100.0%
Magners Original Dry, 750ml	4.5%	2.8%	0.0%
Bulmers Original Dry, 12 × 568ml	4.5%	1.5%	53.4%
Diamond White, 4 × 440ml	7.5%	1.1%	100.0%
<i>Fabs (Alcopops)</i>			
Smirnoff Ice Vodka & Lemon, 12 × 275ml	4.5%	7.2%	0.0%
Bacardi Breezer Calypso Orange, 4 × 275ml	5.4%	2.8%	0.6%
VHF Assorted, 18 × 275ml	4%	1.3%	93.0%
<i>Fortified Wines</i>			
Harvey's Bristol Cream Sherry, 1 litre	17.5%	8.6%	88.5%
Taylor's Port, 75cl	20%	3.1%	65.0%
Martini Vermouth Extra Dry, 1.5 litre	15%	1.6%	0.0%
<i>Lager</i>			
Stella Artois, 20 × 284ml	5.2%	6.1%	100.0%
Budweiser, 20 × 300ml	5%	2.9%	92.9%
Stella Artois, 4 × 440ml	5.2%	1.6%	68.9%
Tennants Super, 4 × 500ml	9%	1.3%	99.8%
<i>Sparkling Wine and Perry</i>			
Lambrini Perry, 1.5 litre	7.5%	5.8%	100.0%
Moet Champagne, 75cl	12%	3.1%	0.0%
Asti Martini, 75cl	7.5%	2.6%	0.0%
Babycham Perry, 4 × 20cl	6%	0.8%	77.3%
<i>Spirits</i>			
Bells Scotch Whisky, 1 litre	40%	2.7%	99.9%
Smirnoff Vodka, 1 litre	37.5%	2.3%	100.0%
Baileys, 1 litre	17%	2.0%	0.0%
Gordon's Gin, 1 litre	37.5%	2.0%	99.6%
Jack Daniel's, 70cl	40%	1.0%	0.0%
Pimms, 1 litre	25%	0.6%	53.8%
<i>Wine</i>			
Gallo White Grenache, 75cl	9.5% <sup>a</sup>	0.7%	71.5% <sup>a</sup>
Blossom Hill White Zinfandel, 75cl	10% <sup>a</sup>	0.6%	55.6% <sup>a</sup>
Hardys Cabernet Shiraz, 75cl	14% <sup>a</sup>	0.6%	99.1% <sup>a</sup>
Jacobs Creek Cabernet Shiraz, 75cl	13.5% <sup>a</sup>	0.5%	94.9% <sup>a</sup>

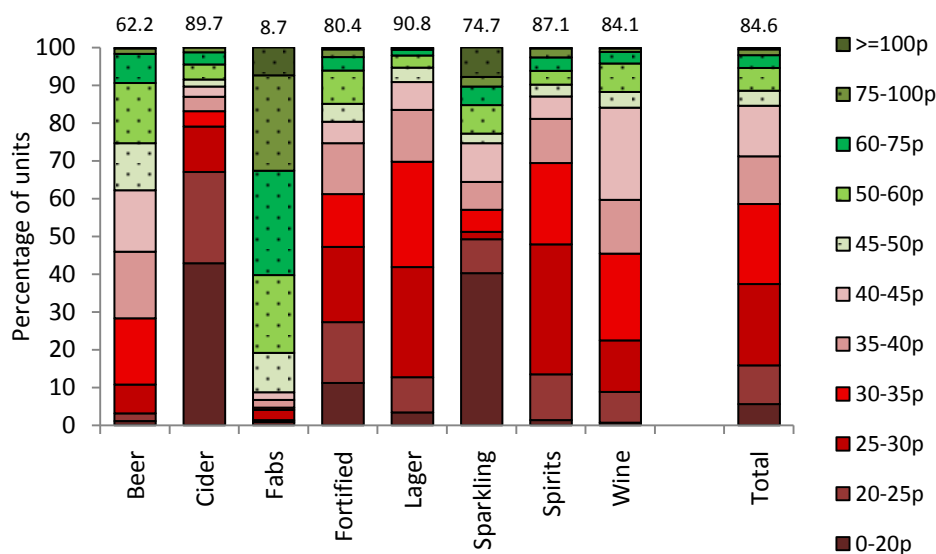
Source: Calculated from Kantar Worldpanel data, 2007.

<sup>a</sup> Strengths reported for these wines are the actual strengths based on retailer website information. However, as discussed at the start of Section 3, the calculation of the fraction of units below 45p and the results in the rest of this Note assume all wines, including these examples, are 12.5% ABV. As shown here, popular brands include some which are stronger and weaker than this level.

There is large variation in the distribution of unit prices for different types of alcohol. Cider and lager provide interesting comparisons. In both cases, around 90% of all units are sold below 45p. However, almost 43% of cider

units sold for less than 20p in 2007, meaning their price would have more than doubled as a result of the policy. By contrast, just 3% of lager units retailed at less than 20p. Another interesting case is sparkling wines: about three-quarters of units sold for less than 45p, but there were both a large number of very cheap units (40% sold for less than 20p) and very expensive units (8% sold for more than £1), reflecting the presence both of expensive champagnes and cheap perry in this category. A minimum price of 50p per unit would have a relatively large effect on beer and fabs, but little additional impact on any of the other categories, whereas a minimum of 40p would substantially reduce the effect on wine and beer.

**Figure 3.1: Distribution of price per alcohol unit by alcohol type, 2007**



Source: calculated from Kantar Worldpanel data, 2007. Note: figures above bars show proportion of units purchased below 45p. The range 30–35p, for example, means a price greater than or equal to 30p but strictly less than 35p.

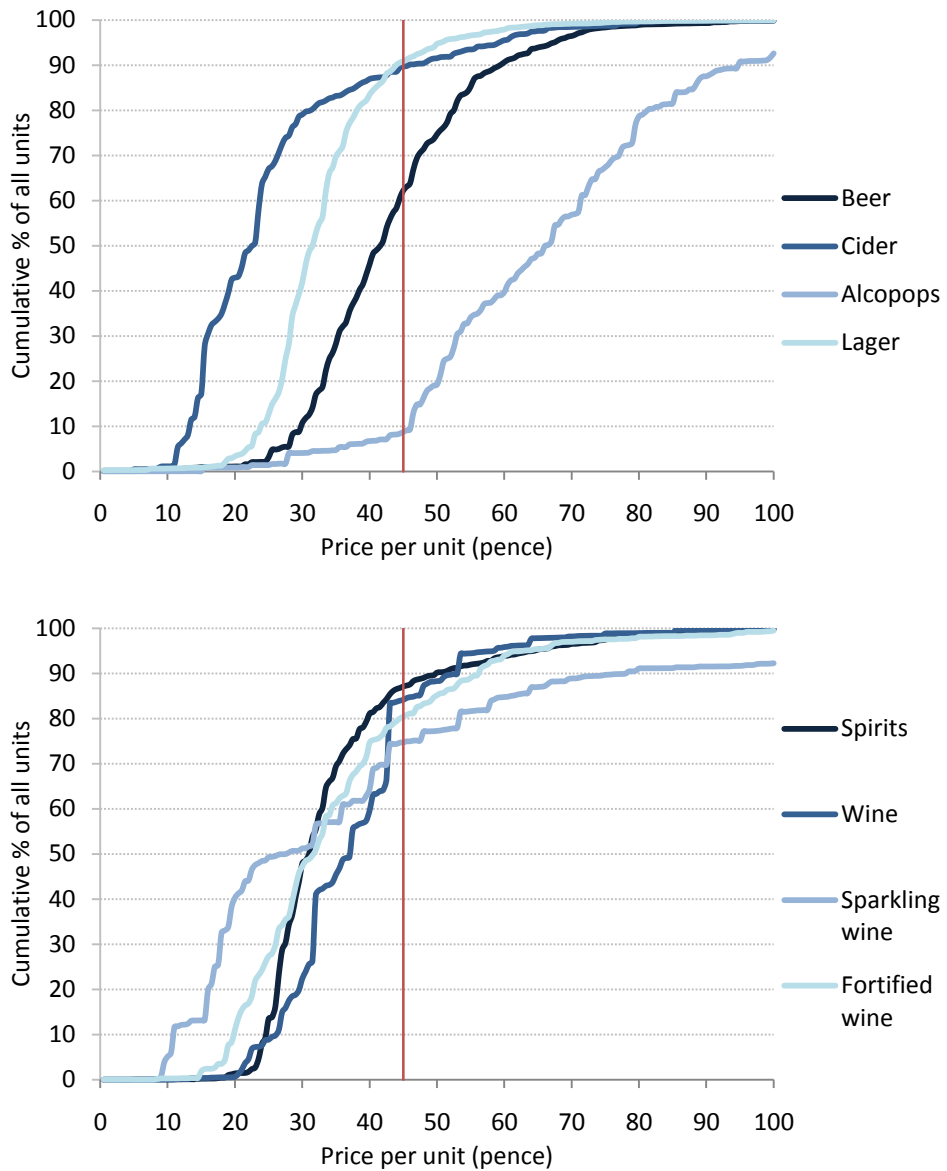
Figure 3.2 shows the cumulative distribution of per-unit prices for each type of alcohol. The horizontal axis shows the price while the vertical axis shows the percentage of total units of each type that cost less than the price. The red line shows 45p per unit. This Figure also demonstrates clearly that while the proportion of lager and cider units below 45p is very similar, there are many more very cheap cider units than lager units.

Almost a quarter of wine units cost between 40 and 45p. We do not observe the ABV strength of each wine product in our data and assume a common strength for all wine products based on ONS estimates. If many wines are in fact lower strength then our estimate of the proportion of wine units affected would fall. We explore this in section 5.





**Figure 3.2: Cumulative distribution of price per alcohol unit, 2007 (pence), by alcohol type**



Source: calculated from Kantar Worldpanel data, 2007

## *Alcohol purchases and prices paid, by household type*

### Household income

We start by looking at the relationship between household income and alcohol purchasing. In the Kantar Worldpanel for 2007, household income is recorded in eight bands of £10,000 for a subset of around two-thirds of households; no income data is reported for the other third, though they are included in the final row of Table 3.3 showing results for all households in the data.

**Table 3.3: Alcohol purchasing behaviour by household income group, 2007**

	N	Buys alcohol	Alcohol > 5% of budget	Mean budget share	Mean units bought (adult/week)	Average price / unit	Fraction of units < 45p
< £10,000	2,182	80.0%	33.9%	6.1	4.9	33.9p	88.4%
£10,000-£20,000	4,886	86.5%	39.9%	7.2	5.7	34.0p	87.9%
£20,000-£30,000	4,182	90.2%	45.5%	7.7	5.8	35.5p	84.6%
£30,000-£40,000	2,787	92.6%	49.1%	8.2	5.9	36.3p	83.9%
£40,000-£50,000	1,758	93.7%	52.0%	8.6	6.1	37.4p	82.3%
£50,000-£60,000	958	94.1%	57.2%	9.2	6.1	39.2p	79.2%
£60,000-£70,000	433	93.5%	56.4%	9.0	6.0	41.1p	74.6%
> £70,000	574	94.8%	53.8%	8.9	6.0	41.0p	74.6%
<b>All</b>	<b>25,248</b>	<b>88.1%</b>	<b>43.9%</b>	<b>7.5</b>	<b>5.5</b>	<b>35.8p</b>	<b>84.5%</b>

Source: calculated from Kantar Worldpanel data, 2007. Note: Figures include households that do not purchase alcohol. "All" includes households with unreported income data so will not sum to total of column above.

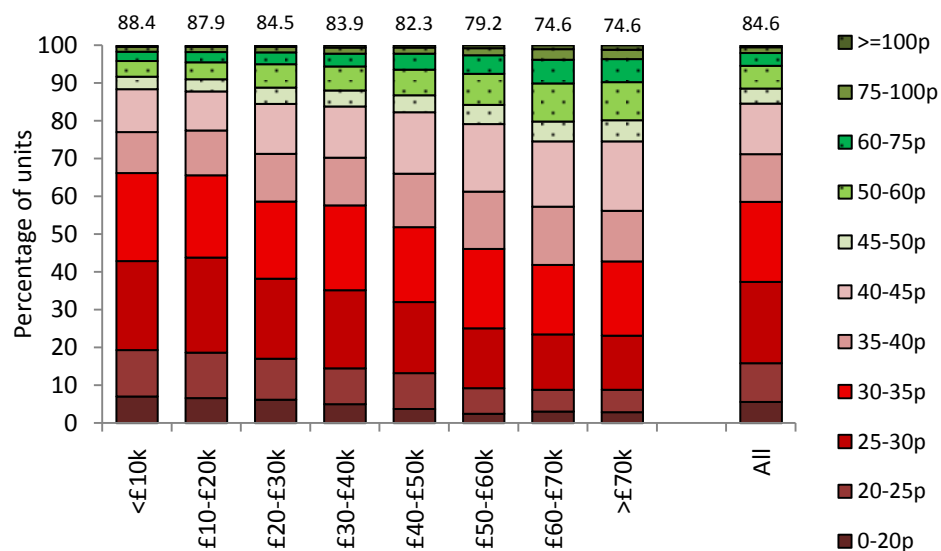
Richer households are more likely to buy alcohol. 80% of households on less than £10,000 bought alcohol at least once during 2007 compared with almost 95% of those on more than £70,000. Including households that do not buy alcohol at all, the data show that the poorest households on average spent about 6% of their grocery budget on alcohol and bought the equivalent of around 4.9 units per adult each week. The alcohol grocery budget share rises with income, reaching around 9% for those on £50,000 or more. The average number of units per adult per week jumps significantly to 5.7 for those between £10,000 and £20,000 per year, but then rises slowly with income and appears to level off at around 6 units for richer households. If we look only at households that buy any alcohol at all, there is no clear relationship between income and the number of units bought per adult per week.

Perhaps unsurprisingly, the price paid for alcohol increases with income. Whilst on average richer households do not buy that much more off-sales alcohol than poorer households (except for the very poorest group), the fact that they buy more expensive alcohol helps explain why the budget share continues to rise with income (at least to around £60,000) even as

the number of units bought levels off. For those on more than £70,000, the average price per unit is more than 20% higher than those on less than £10,000, at 41p and 33.9p respectively.

Figure 3.3 shows the distribution of per-unit prices paid by households with different levels of income. Over 88% of units bought by those on less than £10,000 were under the proposed minimum of 45p, compared with less than three-quarters for those with incomes over £60,000. For those with incomes under £20,000, almost one in five units cost less than 25p. Had the minimum been set at 40p, the differences across income groups would have been even stronger; a minimum price of 60p would make the differences much smaller.

**Figure 3.3: Distribution of price per alcohol unit by household income group, 2007**



Source: calculated from Kantar Worldpanel data, 2007. Note: figures above bars show the percentage of units purchased below 45p. The range 30–35p, for example, means a price greater than or equal to 30p but strictly less than 35p.

Households could pay different prices per unit for many reasons: poor households could buy cheaper alcohol types such as cider rather than beer; or they could buy stronger or cheaper drinks within each category (including buying more alcohol on temporary special offer). Looking within alcohol type, we find that the per-unit price tends to rise with income. In some cases, the differences are very large: those on more than £70,000 pay on average 33.6p per cider unit, for example, compared with 21.1p for those on less than £10,000. In other cases the differences are small: 46.3p and 42.7p respectively for beer, for example. Lager is the only category where there is no clear relationship between price and income.

There is also some evidence of a switch in the types of alcohol bought as income rises; in particular, richer households buy much more wine and less spirits. For the lowest income group, 40% of units were spirits and 28% wine; for the highest income group, 16% of units were spirits and 52% wine. Since spirits are on average slightly cheaper per-unit than wine this also accounts for some of the difference in price across income groups.

There is no evidence that low income households are more likely to buy alcohol on special offer: 25% of the units bought by the poorest group had some temporary offer attached compared with 32% of units bought by the richest group. If we look at the price paid, the special offer units bought by poor households were on average very slightly *more* expensive than the non-promoted units (34.2p and 33.8p respectively) suggesting that special offers encourage poorer households to switch brands or alcohol types. For richer households, special offer units were cheaper than non-promoted units (38.8p and 42.1p for those over £70,000, for example).

#### Number of units purchased per adult per week

Table 3.5 shows purchase and price data according to the number of alcohol units purchased by the household per adult per week.<sup>26</sup> this measure. These results exclude households that never buy alcohol, such that the “all” row gives averages across alcohol-buying households, whereas Tables 3.3 and 3.4 included households that did not buy.

**Table 3.5: Alcohol purchasing behaviour by units per adult per week bought, 2007**

	N	Alcohol > 5% of budget	Average share of budget	Average units bought (adult/week)	Average price / unit	Fraction of units < 45p
<1 unit	5,982	1.7%	1.3	0.5	42.6p	69.2%
1-2 units	3,508	16.1%	3.4	1.5	40.2p	74.7%
2-3 units	2,306	40.8%	5.2	2.5	39.4p	76.8%
3-4 units	1,655	65.1%	7.1	3.5	39.0p	78.6%
4-5 units	1,254	80.9%	8.4	4.5	38.6p	79.0%
5-6 units	959	91.3%	9.7	5.5	37.9p	80.5%
6-7 units	827	94.8%	11.0	6.5	37.9p	80.6%
7-8 units	691	97.1%	12.2	7.5	37.3p	82.0%
8-9 units	564	97.7%	13.5	8.5	37.3p	83.3%
9-10 units	490	99.2%	14.6	9.5	36.6p	83.5%
10-12 units	750	99.3%	15.5	11.0	36.6p	83.0%
12-14 units	572	99.7%	18.3	12.9	36.5p	83.7%
14-16 units	452	99.8%	19.8	15.0	36.1p	83.7%
16-18 units	356	100.0%	21.0	17.0	35.3p	87.5%
18-20 units	296	100.0%	23.3	19.0	34.9p	87.7%
20-25 units	535	99.8%	24.9	22.4	34.7p	86.9%

<sup>26</sup> In particular, we divide the total units bought by the number of days for which the household is observed and multiply by seven; the result is then divided by the number of adults aged 18+ in the household.

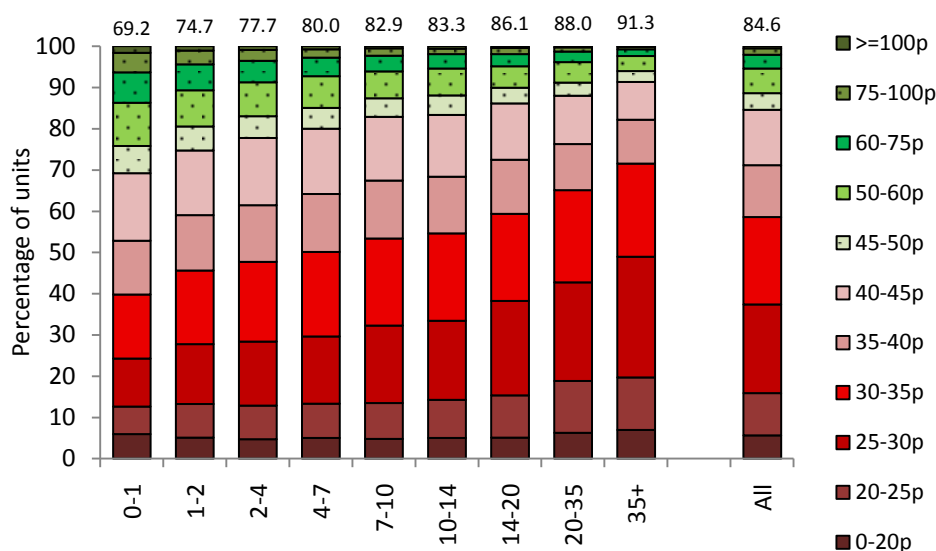
25-30 units	304	100.0%	28.2	27.4	33.4p	88.5%
30-35 units	208	100.0%	28.9	32.3	33.4p	89.3%
35+ units	546	100.0%	38.1	51.9	32.3p	91.3%
<b>All</b>	<b>22,255</b>	<b>49.8%</b>	<b>8.5</b>	<b>6.3</b>	<b>35.8p</b>	<b>84.5%</b>

Source: calculated from Kantar Worldpanel data. Excludes households purchasing no alcohol. The range 2–3 units, for example, means greater than or equal to 2 units but strictly less than 3.

Unsurprisingly, households that purchase large numbers of units spend larger amounts of their total grocery budget on alcohol – households buying 20 units per adult per week or more devote a quarter or more of their budget to alcohol. There is a clear negative relationship between the amount of alcohol purchased and the average unit price paid. Those buying small amounts, less than 2 units per adult per week, pay on average more than 40p per unit compared with under 34p for those buying 25 units or more. This means that a minimum price of 45p per unit will affect a larger proportion of units bought by households that buy large amounts of alcohol – less than three-quarters of units are affected for those buying under 2 per week, compared with more than 90% of the units bought by the households drinking the most (in excess of 35 off-sales units per adult per week). Thus a minimum price is likely to impact on those households that buy large amounts of alcohol not only because they buy more units, but also because they buy more low-priced units.

This is also clear from Figure 3.5, which shows the distribution of the per-unit price by the number of units purchased. For those buying less than 2 units per adult per week, more than a fifth of all units exceeded 50p in 2007, compared with just 6% of the units bought by those buying more than 35 units per adult per week. As the number of units bought rises, there is a large increase in the share bought for 25–30p, from 12% of units for those buying less than 1 unit per adult per week on average to almost 30% of units for those buying more than 35.

**Figure 3.5: Distribution of price per alcohol unit by number of units purchased per adult per week, 2007**



Source: calculated from Kantar Worldpanel data, 2007. Note: figures above bars show the percentage of units purchased below 45p. The range 30–35p, for example, means a price greater than or equal to 30p but strictly less than 35p.

#### 4. Impact of a 45p per unit minimum price

In this section, we explore the impact of a 45p per unit minimum alcohol price. In order to do this we need to make a number of assumptions about how consumers and retailers respond. In particular, we assume that:

- all households respond in the same way to a price increase: that is they have the same (constant) price elasticity of demand for alcohol;
- the price of alcohol retailing for less than 45p per unit increases to 45p per unit, but retailers do not respond in any other way.

We take  $-0.5$  as our estimate of the price elasticity of alcohol: this means that a 10% increase in alcohol prices reduces alcohol demand by 5%. This is a central estimate of the alcohol elasticity from two recent meta-analyses;<sup>27</sup> we show the impact of changing this assumption in Section 5. To estimate the effect of the policy on each household, we calculate the increase in the average per-unit price they face as a result of the minimum price and reduce the total volume of alcohol bought by applying the

<sup>27</sup> Gallet, C. (2007), 'The demand for alcohol: a meta-analysis of elasticities', *Australian Journal of Agricultural and Resource Economics*, 51 (2), 121–135; Wagenaar, A.C., M.J. Salois and K.A. Komro (2009), 'Effects of beverage alcohol taxes and prices on consumption: a systematic review and meta-analysis of 1,003 estimates from 112 studies', *Addiction*, 104 (2), 179–190.



elasticity of  $-0.5$  commonly to all their observed purchases. This means that households that never buy alcohol below 45p per unit are assumed to be unaffected (as, of course, are households that never buy alcohol).

### *Effect by store type*

We first describe the impact of a 45p per unit minimum price on alcohol expenditure in different stores. A minimum price would transfer money from alcohol consumers to the producers and retailers of alcohol through higher prices. Under the assumptions discussed, we can estimate how total alcohol spending in different stores will change. We present the total amount that would be transferred from consumers to retailers and producers as if all the gains go to retailers, but some are likely to be passed through to alcohol producers.

The extent to which different retailers gain depends on the amount of alcohol they sell and how much the households that shop in that store bought below the minimum price. We assume that consumers all respond in the same way, and that their response is the same across stores and types of alcohol.

Table 4.1 summarises our estimate of the impact of introducing a 45p minimum price by retailer. Overall, we estimate that this policy would transfer £710 million from consumers to retailers and producers (see the final row of column 6). We select households that report purchases in at least 3 four-week periods during 2007, meaning we drop around 8% of households. This means that the aggregate figure is likely to be higher.

Different stores gain different amounts. The largest beneficiary overall is Tesco, which gains around £230 million, followed by Asda (£130 million) and Sainsburys (£100 million). These stores are the largest retailers of alcohol which explains why they gain the most in cash terms. The biggest gains relative to pre-policy sales are made by low-price and discount supermarkets which sell the largest proportion of their alcohol below the 45p threshold, whilst the smallest gains are made by Waitrose and Marks & Spencer, since they sell fewer units below the minimum price.

**Table 4.1: Estimated impact of a 45p/unit minimum price, by store**

	(1) Units (m)	(2) Units < 45p	(3) Mean price/unit	(4) Alc. spend (£m)	(5) Post-policy spend (£m)	(6) Change (£m)	(7) Change (%)
Aldi	760	95%	30p	230	270	40	16%
Asda	3,650	89%	33p	1,210	1,340	130	11%
Co-op	1,260	82%	38p	480	500	20	4%
Iceland	250	88%	32p	80	90	10	9%
Lidl	710	96%	29p	200	240	40	20%
M&S	300	64%	49p	150	150	0	0%

Morrisons	2,500	85%	36p	890	960	70	8%
Netto	310	92%	29p	90	100	10	12%
Sainsburys	3,680	80%	39p	1,420	1,520	100	7%
Somerfield	1,070	87%	35p	370	400	30	8%
Tesco	7,150	85%	36p	2,550	2,780	230	9%
Waitrose	650	65%	45p	290	300	10	2%
Other	2,100	81%	37p	780	810	30	4%
<b>ALL</b>	<b>24,380</b>	<b>85%</b>	<b>36p</b>	<b>8,740</b>	<b>9,450</b>	<b>710</b>	<b>8%</b>

Source: Calculated from Kantar World Panel data for 2007. Notes: A 'unit' is 10ml of pure alcohol. Where alcohol strength (ABV %) is not recorded in our data, we use manufacturer and retailer information and standard conversion factors to determine the strength.

(1) Grossed to national levels using weights supplied in data. Rounded to nearest 10 million.

(2) Proportion of units sold under 45p.

(3) Average price per unit sold, rounded to nearest penny.

(4) Grossed to national levels using weights supplied in data. Rounded to nearest £10 million.

(5) Assumes an alcohol elasticity of -0.5 for all households, and that after the policy all alcohol currently sold at less than 45p/unit retails at this level with no other changes in alcohol prices. Rounded to nearest £10 million.

(6) Column (5)–column (4) using unrounded figures, and then rounded to nearest £10 million.

(7) Column (6) expressed as a proportion of column (4), based on unrounded figures.

### *Effect by household type*

We look at the impact of the policy for different types of household. As we saw in the previous section, the vast majority of alcohol units retailed for less than 45p in 2007, so a minimum price would affect most households that buy off-sales alcohol.

Our focus is on the estimated impact on alcohol consumption, under the assumptions discussed above about how households and firms respond to the policy. We also present estimates of the change in average weekly alcohol expenditures faced by different household groups as a result of the minimum price.

We look first at the impact on households according to the amount of alcohol they purchase. Table 4.2 reports our estimates of the effect of a 45p minimum price. The first three columns show the estimated impact on alcohol consumption. On average across all households, alcohol consumption is estimated to fall by around 19% as a result of the minimum price. Households that buy larger numbers of units see the greatest relative reduction in alcohol consumption – this is because they buy larger numbers of units below the minimum price and pay lower average prices such that they see the largest relative price change. On average, alcohol spending rises by around 35p per week or more than £18/year; relative to total grocery spending this is an increase of around 0.7%. Households buying the most alcohol have the largest absolute and relative spending increases.

**Table 4.2: Impact of a 45p/unit minimum, by units purchased per adult per week**

	Units (ad/week) pre	Units (ad/week) post	Change (%)	Avg. spending change (£/week)	As % total grocery spend
<1 unit	0.5	0.4	-15%	0.02	0.1%
1-2 units	1.5	1.3	-14%	0.09	0.2%
2-3 units	2.5	2.1	-15%	0.15	0.4%
3-4 units	3.5	3.0	-14%	0.22	0.6%
4-5 units	4.5	3.8	-15%	0.27	0.7%
5-6 units	5.5	4.6	-15%	0.34	0.8%
6-7 units	6.5	5.5	-16%	0.39	0.9%
7-8 units	7.5	6.3	-16%	0.46	1.0%
8-9 units	8.5	7.1	-16%	0.53	1.2%
9-10 units	9.5	7.9	-17%	0.59	1.3%
10-12 units	11.0	9.1	-17%	0.64	1.3%
12-14 units	12.9	10.7	-17%	0.78	1.6%
14-16 units	15.0	12.2	-18%	0.84	1.6%
16-18 units	17.0	13.8	-18%	1.08	1.9%
18-20 units	19.0	15.4	-19%	1.12	2.2%
20-25 units	22.4	18.0	-20%	1.31	2.2%
25-30 units	27.4	21.4	-22%	1.45	2.5%
30-35 units	32.3	25.3	-22%	1.71	2.7%
35+ units	51.9	38.8	-25%	2.27	3.0%
<b>All</b>	<b>6.3</b>	<b>5.1</b>	<b>-19%</b>	<b>0.35</b>	<b>0.7%</b>

Source: Calculated from Kantar World Panel data for 2007. Note: Figures conditional on households buying any alcohol. The range 2–3 units, for example, means greater than or equal to 2 units but strictly less than 3. Final column expressed as a percentage of pre-policy grocery expenditure. Figures assume a common elasticity of alcohol demand of  $-0.5$  across all households and no wider effects of the policy on store pricing.

These numbers are calculated on the assumption that the responsiveness is the same for all households. It may be that those households who consume the most are least responsive to higher prices: Meier et al (2008) (the Sheffield study for England, see footnote 11), for example, found that the overall alcohol price elasticity was around  $-0.47$  for ‘moderate’ drinkers (those buying less than 14 units/week for women and 21/week for men) but was much smaller at  $-0.21$  for hazardous or harmful drinkers buying more than these levels. This would reduce the impact of the policy in terms of alcohol consumption on those who drink the most and it would increase the size of the transfer from consumers to retailers.

Table 4.3 repeats this exercise for household income groups. As we saw in Section 3, poorer households were less likely to buy alcohol but more likely to buy cheaper units when they did so. Our estimates suggest that as a result, on average off-licensed alcohol consumption would fall by almost a quarter for the lowest income group but only around 12% for the richest households. The differences across income groups could be even larger if in fact low income households are *more* responsive to alcohol prices than richer households (perhaps because they have less flexibility to absorb

higher alcohol prices and maintain consumption levels). The impact on spending is slightly smaller in absolute and relative terms for the poorest group, though overall the effects on expenditure are very similar across the income distribution.

**Table 4.3: Impact of a 45p/unit minimum, by household income group**

	Units (ad/week) pre	Units (ad/week) post	Change (%)	Avg. spending change (£/week)	As % total grocery spend
< £10,000	4.9	3.8	-24%	0.19	0.5
£10,000-£20,000	5.7	4.5	-21%	0.30	0.6
£20,000-£30,000	5.8	4.7	-19%	0.33	0.6
£30,000-£40,000	5.9	4.9	-18%	0.37	0.7
£40,000-£50,000	6.1	5.1	-16%	0.38	0.7
£50,000-£60,000	6.1	5.2	-14%	0.39	0.7
£60,000-£70,000	6.0	5.3	-12%	0.39	0.6
> £70,000	6.0	5.3	-12%	0.39	0.6
<b>All</b>	<b>5.5</b>	<b>4.5</b>	<b>-19%</b>	<b>0.31</b>	<b>0.6</b>

Source: Calculated from Kantar World Panel data for 2007. Note: Figures include households that do not buy any alcohol. "All" row includes households that do not report income. Figures assume a common elasticity of alcohol demand of  $-0.5$  across all households and no wider effects of the policy on store pricing.

## 5. Robustness and limitations

### *Consumer response*

We assume a common elasticity of  $-0.5$  for all households. However, as discussed, responsiveness could vary with characteristics like income and total alcohol consumption as well as factors like age and region; we saw in the previous section estimates from the Sheffield analysis that showed heavy drinkers were less responsive to higher prices than moderate drinkers. In addition, elasticities may vary with unobserved consumer characteristics (such as the 'taste' for alcohol). Minimum prices would also impact on where consumers choose to shop: they may go to different stores, or substitute alcohol purchases to on-sales since the policy would narrow the differential between on- and off-sales prices.

We have also assumed a single elasticity for alcohol; in reality, the extent to which consumers respond will vary across types of alcohol. The Sheffield results show some evidence of this: their estimates are based on own- and cross-price elasticities of demand for high- and low-priced alcohol purchased on- and off-license for four different alcohol categories (beer, wine, spirits and alcopops) using data from four years of the Expenditure and Food Survey. Their estimates of own-price elasticities range from  $-0.24$  for expensive on-license spirits to  $-2.94$  for cheap on-license spirits. Cheap off-license beer, wine, spirits and alcopop own-price

elasticities are estimated at  $-0.55$ ,  $-0.51$ ,  $-0.61$  and  $-0.36$  respectively. These estimates are based on aggregated categories of alcohol purchases and do not allow for the fact that elasticities are likely to vary across products.

For all of these reasons, a more complete exploration of this subject would entail estimating a demand system that allowed for these various forms of heterogeneity in substitution patterns.

Even if it was appropriate to assume a common elasticity for all households, the level we choose has a big effect on our estimated impact. Table 5.1 shows the impact by store type under the assumption that households do not respond at all (a price elasticity of 0) and that households respond more (a price elasticity of  $-1.0$ ). In the former case, the scale of the estimated transfer from consumers to firms increases from £710 million to £2.84 billion; in the latter case, the reduction in demand is so large that total alcohol spending actually falls by around £1.3 billion.

#### *Firm response*

We assume that firms' only response to the policy is that all prices below the minimum increased to the minimum, and there were no effects on the price of other alcohol or non-alcohol products. However, retailers would almost certainly respond by changing other alcohol prices – for example, the price of alcohol currently retailing just above the minimum price might change. In the long-run, there may be implications on the sorts of alcohol manufactured and offered for sale. If consumers stop buying very cheap alcohol brands, because they can no longer compete in price terms with more expensive brands, then manufacturers may be encouraged to switch production into higher quality alcohol instead. A more complete analysis would attempt to model these responses.

**Table 5.1: Impact of a 45p/unit minimum by store assuming different elasticities**

	Original alcohol spend (£m)	Elasticity = 0		Elasticity = -1.0	
		New spend (£m)	Change	New spend (£m)	Change
Aldi	230	350	120 (51%)	190	-40 (-18%)
Asda	1,210	1,710	500 (41%)	990	-220 (-18%)
Co-op	480	600	120 (25%)	410	-70 (-15%)
Iceland	80	120	40 (47%)	60	-20 (-20%)
Lidl	200	320	120 (59%)	170	-30 (-16%)
M&S	150	160	20 (11%)	130	-20 (-11%)
Morrisons	890	1,190	290 (33%)	750	-140 (-16%)
Netto	90	140	50 (60%)	70	-20 (-25%)
Sainsburys	1,420	1,780	360 (25%)	1,260	-160 (-11%)
Somerfield	370	500	130 (36%)	310	-60 (-16%)
Tesco	2,550	3,380	830 (33%)	2,190	-360 (-14%)
Waitrose	290	330	40 (13%)	270	-30 (-9%)

Other	780	1,000	230 (29%)	640	-140 (-18%)
<b>Total</b>	<b>8,740</b>	<b>11,580</b>	<b>2,840 (33%)</b>	<b>7,440</b>	<b>-1,300 (-15%)</b>

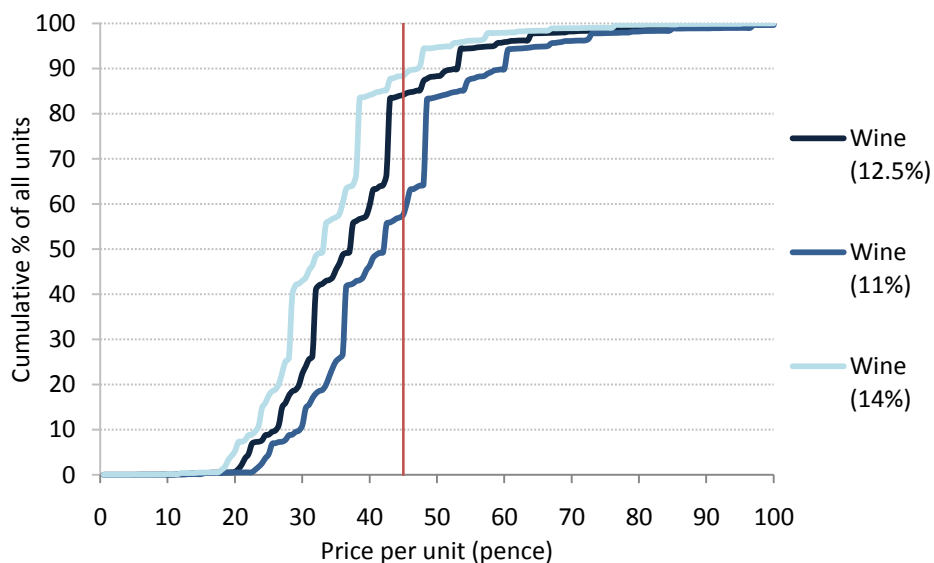
Source: Calculated from Kantar World Panel data for 2007. Figures assume a common elasticity of alcohol demand across all households and no wider effects of the policy on store pricing.

### *Assumed ABV strength for wine*

We do not have information on alcohol ABV values for each individual wine product, and there are such a large number of distinct products with small market shares that it is difficult to obtain them all from external sources. We therefore use a common strength of 12.5% for all wines, in line with the ONS conversion factor from volume to units used in other studies of alcohol consumption. This means we miscalculate the price per unit for particular brands and wines with higher or lower alcohol contents, although assuming the 12.5% factor represents the ‘average’ market strength we should get approximately the right result in aggregate.

As we saw in Figures 3.1 and 3.2, there were a large number of wine purchases just below 45p per unit based on the 12.5% ABV assumption. Here we look at the distribution of wine unit prices if we assume a different ABV strength for all wines; in particular we select 11% and 14% as reasonable estimates of the range for an average ABV of purchased wine (many New World wines are 14% or 14.5%, for example). Figure 5.1 shows the cumulative distribution of the price per unit under these assumptions.

**Figure 5.1: Cumulative distribution of per-unit price for wine under different ABV assumptions**



Source: Calculated from Kantar World Panel data for 2007

The darkest line shows the distribution assuming, as before, a 12.5% ABV strength. 84% of wine units cost less than 45p under this assumption. If instead we assume wines to be only 11% ABV, then the distribution shifts to the right and only 58% of units fall below the threshold. If wines are assumed to be stronger, at 14% ABV, then the proportion priced at less than 45p rises slightly, to 88%. Interestingly, had the proposed minimum price matched the level advocated by Sir Liam Donaldson of 50p per unit, the assumption about wine strength would have had relatively little impact on the proportion of wine units affected.

Since wine makes up the largest share of off-license alcohol units, these changes do have a considerable impact on the overall proportion of alcohol units sold below the 45p threshold. The results are summarised in Table 5.2.

**Table 5.2: Impact of changing assumed ABV strength of wine**

Assumed strength (ABV)	Wine units < 45p	Alcohol units < 45p
11.0%	57.6%	74.9%
12.5%	84.1%	84.5%
14.0%	88.3%	86.1%

Source: Calculated from Kantar World Panel data for 2007

#### *Comparison to Meier, P. et al (2008) (the Sheffield Study)*

The most commonly referenced studies of the impact of minimum pricing are the Sheffield University studies for England and Scotland (see footnote 11) by Meier *et al*, which are based on analysis of alcohol purchase data from the Expenditure and Food Survey.

One of the main differences is that we find that 71.2% of off-sales units are priced at less than 40p per unit and 94.6% are priced at less than 60p. By contrast, the Sheffield study for England found figures of 59% and 83% respectively. There are several possibilities that could explain why their figures are smaller:

1. They use data from England, whereas our data cover Great Britain. If we restrict our sample to English households, we find 70.6% of units are below 40p, still substantially higher than the 59% found in the Sheffield data.
2. Their work is based on EFS data, which measures alcohol purchased during a 2 week period; we use data over a longer time period. It may be that households who buy alcohol relatively infrequently (so who are captured in our data but not the EFS) buy cheaper alcohol but this does not accord with the evidence we found suggesting those who buy the most buy cheaper units on average.



3. EFS alcohol volumes are converted to units using standard conversion assumptions about the strength of different types of drink. For beer, cider, lager and fabs our data record precisely the strength of each product. It may be these standard assumptions underestimate the strength of alcoholic drinks.
4. They use data for the period 2001/2–2005/6, whereas we use data for 2007. Figure 2.1 suggests that the real off-sales alcohol price was trending downwards until around 2008; it may be that unit prices were trending downwards even in nominal terms which could explain why we find larger numbers of cheaper units.
5. The EFS records purchases through a daily diary, whereas we use data recorded via a barcode scanner. It could be that scanner data under-record high-price alcohol purchases – for example, if alcohol bought from corner stores as top-up purchases tends to be both more expensive and less well recorded, this would reduce our estimate of the average price per unit.

Overall, we believe our figures provide a good estimate of the off-sales unit prices paid during 2007, in particular for those products where we know precisely the alcohol content (beers, ciders, lagers and fabs).

Table 28 of Meier *et al* (2008) (p.112) shows estimates of the consumption response to a 40p per unit minimum price. Their baseline figures for the number of off-sales units and expenditure imply an average off-sales price per unit in England in their data of around 44p compared to our estimate of 36p. Our figures would imply a much larger average impact on prices from minimum pricing and therefore a larger reduction in consumption. Using the assumptions discussed in Section 4 to model the impact of a 40p per unit minimum in our data (restricting attention to England only), we estimate an average reduction in off-licensed alcohol consumption of around 13% compared to 6.2% in the Sheffield study.

Table 32 of Meier *et al* (2008) (p.120) estimates that a minimum price of 45p per unit would transfer a total of £864 million to firms, made up of a gain of £424 million for off-license retailers and £440 million for on-license retailers. The gains to on-license retailers come not only from higher prices but also from substitution from off- to on-licensed consumption as a result of the policy. Looking at England alone for comparability, our figures imply a transfer to off-license retailers of £600 million. The fact that this is larger than Meier *et al* (2008) estimates also probably reflects the higher average impact on off-sales prices we find in our data.

### *Time period*

Since 2007 there have been a series of real-terms increases in alcohol taxes, which could have increased retail prices and reduced the proportion of off-sales alcohol sold below 45p per unit. Figure 2.1 suggested there had been some real increase in off-sales alcohol prices, particularly for wines and spirits, over the last couple of years. Figures published by NHS Health Scotland (2010)<sup>28</sup> suggest that the average off-sales retail price per unit of alcohol in Great Britain rose by almost 8% from 40p in 2007 to 43p in 2009,<sup>29</sup> though the unit price of alcopops fell from 82p to 78p, and there were relatively larger increases in the prices of fortified wines and perry. This suggests that applied today, the proportion of off-sales units that would be affected by a minimum price would be lower than we estimate here, though given the average in 2009 was still lower than the proposed minimum and that this average is skewed by a small number of very high priced units, it is still likely that the vast majority of units sold today retail for less than 45p. This also raises the issue mentioned in Section 3 as to how any minimum price would be raised over time to account for inflation.

## **6. Conclusions**

A minimum alcohol price of 45p per unit of alcohol would affect most households that buy off-license alcohol. The vast majority of units sell for less than the proposed minimum, and this is the case for all types of alcohol, except alcopops, which are considerably more expensive per unit of alcohol, but make up a small proportion of total off-license alcohol sales.

Overall, the impact is likely to be greatest for households that buy large amounts of off-licensed alcohol – not only because they buy more units in total, but also because on average they pay less per unit. The effect is on average similar across different income groups, though the lowest income households will be slightly less affected as they are less likely to buy alcohol. Poorer households that do buy alcohol are, however, much more likely to pay less than the proposed minimum price than richer households.

The financial beneficiaries of minimum pricing are firms that produce and retail alcohol, who will gain from being able to charge higher prices. The precise effects are likely to be complicated and impact on household and firm behaviour in a number of ways in both the short- and the long-run.

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<sup>28</sup> Data are available at <http://www.healthscotland.com/documents/4558.aspx>.

<sup>29</sup> This compares to our estimate of the average unit price in Britain in 2007 of 36p.

Nevertheless, we estimate there would be significant transfers from consumers to alcohol producers and retailers as a result of this type of policy.

Higher alcohol taxes would transfer revenues to the government, rather than firms (at a time when there is significant pressure on the public finances).<sup>30</sup> Over the last two decades or so, real-terms alcohol taxes have fallen significantly and have only recently begun to rise in a sustained way.

One argument that has been used to favour minimum pricing rather than increases in alcohol tax is that taxes can be absorbed by retailers and manufacturers, rather than being passed on to consumers, which blunts their usefulness as instruments to affect prices and alcohol consumption. This may or may not be the case and it is important to study this issue using evidence rather than conjecture. Figure 2.1 suggests that off-license alcohol prices have risen (or at least stopped falling) since real-terms increases in alcohol taxes began in 2008, and some empirical studies have concluded that alcohol taxes are passed through *more* than one-to-one to consumers.<sup>31</sup>

A second argument is that minimum prices have a disproportionately large impact on cheaper alcohol and may more effectively target problem drinkers than increases in general alcohol taxes. Consistent with this, we find that households that purchase large amounts of off-sales alcohol are more likely to buy cheaper units. Of course, as alcohol excise taxes are specific (a fixed amount of tax for a given volume of drink), higher taxes that are fully passed on will have a relatively larger impact on cheaper alcohol than more expensive alcohol.

Alcohol taxes could be based in principle directly on the number of alcohol units. To the extent that taxes are passed on, this could ensure that all units are sold for at least some minimum price threshold but would mean any gains are collected as tax revenue rather than higher firm profits. European Directives at present mean it is not possible to restructure alcohol taxes in this way for some types of alcohol. Whilst the tax on an alcohol unit of beer or spirits is constant (currently at 17.3p per unit and

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<sup>30</sup> The Scottish Alcohol Bill contains a proposed “Social Responsibility Levy” on alcohol retailers which it has been suggested could be used to offset some of the financial gain they enjoy from minimum pricing. It is not clear what the details of this would be or how it would be related to the minimum price or any estimate of the retailer gain.

<sup>31</sup> For example, Kenkel, D. (2005), ‘Are alcohol tax hikes fully passed through to prices? Evidence from Alaska’, *American Economic Review*, 95 (2), 273–277.

23.8p per unit respectively), the tax on wine and ciders depends only on the volume of product and not also on the strength. This means, for example, that a 75cl bottle of 9% wine is effectively taxed at 25.0p per unit whilst a bottle of 14% wine is taxed at 16.1p per unit. In the long term, it may be desirable to try to change the way in which alcohol taxes are structured so that the tax can be levied directly on the alcohol content for all alcohol types.