

Estimates of poverty in the UK adjusted for expenditure on tobacco

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Introduction

Landman Economics has been commissioned by Action on Smoking and Health (ASH) to analyse the impact of tobacco expenditure on poverty rates in the UK. This report aims to answer the following questions:

1. If tobacco expenditure is subtracted from household expenditure, how many more households would be in poverty under the official UK government definition of poverty? (below 60 percent of median household net income, adjusted for family size)
2. Within these households, how many extra adults and children are in poverty, taking into account household tobacco expenditure?
3. What is the specific poverty rate for households with positive expenditure on tobacco? (i.e. households containing smokers) How much higher is poverty among households containing smokers than the overall average poverty rate?
4. What is the specific impact of tobacco expenditure on poverty rates adjusted for tobacco expenditure among households with smokers in them?

Choice of dataset

The official measure of poverty in the UK is published each summer by the UK Department for Work and Pensions's [DWP]'s *Households Below Average Income* statistics [HBAI], with the most recent data available at the time of writing (April 2015) being the 2012/13 tax year¹ (Since 1994 the HBAI publication has used the Family Resources Survey (FRS) as its data source. FRS is the most detailed and accurate source of household survey data on incomes in the UK, with a sample size of approximately 20,000 households per year.

It is not possible to use the FRS to calculate poverty rates adjusted for tobacco expenditure because the FRS does not include any data on household spending.

¹ [Households below average income \(HBAI\): 1994/95 to 2012/13](#) Dept. for Work & Pensions, 2014

Instead, it is necessary to use the Living Costs and Food Survey (LCF) for this analysis. LCF includes data on household expenditure (including expenditure on tobacco products) as well as detailed data on household incomes. The LCF has two drawbacks compared to the FRS for modelling poverty rates:

1. The sample size of the LCF is much smaller – only around 6,000 households per year, which is less than a third the sample size of the FRS.
2. The income data in the LCF is not quite as detailed as the data in the FRS (although it is still detailed enough to produce reasonably accurate poverty estimates, and indeed before the FRS was established in 1994 the Family Expenditure Survey, which was the forerunner of the LCF, was the main source of household data on the distribution of income in the UK).

The analysis in this report overcomes the first of these drawbacks (small sample size) by combining three consecutive years of LCF (2010, 2011 and 2012)² into a pooled sample of around 18,000 households – giving roughly the same level of accuracy as one year of FRS. This is the same approach that is taken by HM Treasury in their microsimulation model of the tax-benefit system (which uses LCF rather than FRS), so we are confident that this technique has credibility among government researchers. To check that the second drawback (lower quality income data) is not a serious problem for the analysis, this report compares estimated household poverty rates for the 2010-12 LCF sample with the estimated household poverty rate in the 2011-12 FRS and shows that the overall poverty rates are very similar (see Table 1 below).

Definition of net income and poverty

The poverty measure used in this report is the Before Housing Costs relative poverty measure. This is calculated for the FRS in the HBAI report by calculating net incomes for each household in the FRS controlling for family size (equivalisation), taking the median net income in the sample, and then classifying all households below 60% median income as poor. The FRS net income measure is calculated as follows (see DWP 2014, *HBAI Quality and Methodology Information Report 2012/13*, pp18-19³):

The income measure used in HBAI is weekly net (disposable) equivalised household income. This comprises total income from all sources of all household members including dependants.

² Note that the LCF data are collected on a calendar year basis (January-December) whereas the FRS data are collected on a fiscal year basis (April-March).

³ [Households Below Average Income \(HBAI\) Quality and Methodology Information Report – 2012-2013](#) Department for Work and Pensions, July 2014

*Income is adjusted for household size and composition by means of **equivalence scales**, which reflect the extent to which households of different size and composition require a different level of income to achieve the same standard of living. This adjusted income is referred to as **equivalised income**.*

In detail, income includes:

- *usual net earnings from employment;*
- *profit or loss from self-employment (losses are treated as a negative income);*
- *state support - all benefits and tax credits;*
- *income from occupational and private pensions;*
- *investment income;*
- *maintenance payments, if a person receives them directly;*
- *income from educational grants and scholarships (including, for students, top-up loans and parental contributions);*
- *the cash value of certain forms of income in kind (free school meals, free school breakfast, free school milk, free school fruit and vegetables, Healthy Start vouchers and free TV licence for those aged 75 and over).*

Income is net of the following items:

- *income tax payments;*
- *National Insurance contributions;*
- *domestic rates / council tax;*
- *contributions to occupational pension schemes (including all additional voluntary contributions (AVCs) to occupational pension schemes, and any contributions to stakeholder and personal pensions);*
- *all maintenance and child support payments, which are deducted from the income of the person making the payment;*
- *parental contributions to students living away from home;*
- *student loan repayments.*

When constructing a net income measure using the Living Costs and Food Survey, we replicate the methodology used for the FRS in the HBAI publication as closely as possible given the information available in the LCF data. All elements of the disposable income measure used for the FRS are available in the LCF, although in some cases (for example student loan repayments) the data are not as detailed as in the FRS. The equivalisation of income to take account of family size can be performed for the LCF in exactly the same way as for the FRS. All incomes are updated to January 2015 prices using the Consumer Prices Index to ensure comparability across the three years of LCF being used.

Analysis of the LCF and FRS data shows that calculated poverty rates across the three years 2010-2012 in the LCF match the 2011-12 FRS rates fairly closely. Table 1 shows the calculated poverty rates for households, adults and children in the LCF

and compares them with the equivalent rates in the 2011-12 FRS. For the overall household measure of poverty there is almost no discrepancy between the two datasets (0.1 percentage points). For the percentage of adults in poverty there is a slight discrepancy between the two datasets (0.5 percentage points). For the percentage of children in poverty there is a bigger discrepancy between the two datasets (1.8 percentage points); this is probably explained by the fact that recording of benefit and tax credit receipt is not quite as good in the LCF as the FRS (see Reed and Portes, 2014, ch 2⁴) and thus the LCF may underestimate income for low-income families with children compared with the FRS.

Table 1. 2011-12: Poverty rates in the 2010-12 LCF and the 2010-11 FRS

| Poverty measure | Percentage in poverty: | |
|-----------------|------------------------|-------------|
| | LCF 2010-12 | FRS 2011-12 |
| Households | 16.8 | 16.7 |
| Adults | 15.5 | 15.0 |
| Children | 19.2 | 17.4 |

Calculating an 'after tobacco expenditure' measure of poverty

The 'after tobacco expenditure' measure of poverty is calculated by subtracting tobacco expenditure for each household from net income (adjusting for family size) and then calculating how many extra households fall below the poverty line after tobacco expenditure is subtracted. Across the 2010-12 FRS, average expenditure on tobacco products (including cigarettes, cigars and hand rolling tobacco), uprated to January 2015 prices using the Consumer Price Index, is £5.00 per week across all households, and £21.60 per week across the subgroup of households with any expenditure on tobacco at all during the two-week period for which households in the LCF sample complete expenditure diaries. (23.1 percent of households in the LCF survey report positive expenditure on tobacco over the 2010-12 period).

However, the LCF suffers from a problem common to household expenditure surveys – the households in the LCF under-report their tobacco expenditure on average⁵, meaning that estimated total tobacco expenditure in the UK using FRS is considerably lower than estimated overall tobacco expenditure when derived from HM Revenue and Custom's figures for duty receipts. Analysis of data for 2012 suggests that grossed-up tobacco expenditure in the LCF (in nominal terms) was £6.57 billion, whereas aggregate tobacco expenditure estimated from HMRC duty

⁴ H Reed and J Portes (2014). [Cumulative Impact Assessment](#) Equality and Human Rights Commission Research Report 94.

⁵ See Appendix C of H Reed (2011) [Tobacco Taxation, Smuggling and Smoking in Ireland](#). Irish Heart Foundation, for a detailed analysis of the extent of under-reporting of tobacco expenditure in various household expenditure surveys for different countries.

receipts was £12.60 billion⁶. Therefore this analysis multiplies tobacco expenditure in the LCF 2010-12 sample by a factor of 1.92 to correct the under-reporting in the survey and reconcile the estimates with HMRC data.

Results

Households in poverty

Table 2 shows the impact of tobacco expenditure on household poverty. Before taking tobacco expenditure into account, the overall household poverty rate is 16.8% of households – just over 4.5 million households in poverty. After taking tobacco expenditure into account, the number of households in poverty increases to 18.8% - just over 5 million households. The inclusion of tobacco costs moves an extra half a million households into poverty.

Looking at the subsample of households with positive tobacco expenditure, the poverty rate before tobacco spending is taken into account is 20.6% - higher than the rate for households as a whole. This rises by over 8 percentage points, to 29.0%, once tobacco spending is taken into account.

⁶ In order to produce an estimate of total tobacco expenditure in the UK from the HMRC figures on duty receipts, a multiplier of $(1/0.77) = 1.299$ was applied to the HMRC figure of £9.7 billion for total tobacco duty receipts in the 2012 calendar year (See HMRC *Tobacco Duty Bulletin*, March 2015, <https://www.uktradeinfo.com/Statistics/Tax%20and%20Duty%20Bulletins/Tobacco0315.xls>). The multiplier is based on statistics from the Tobacco Manufacturers' Association showing that in 2012, 77 percent of the average price of a packet of cigarettes was made up of duty and tax payments. (See <http://www.the-tma.org.uk/tma-publications-research/facts-figures/uk-cigarette-prices/>)

Table 2. Household poverty rates before and after tobacco expenditure is taken into account

| | Whole sample | Households with positive tobacco expenditure only |
|---|---------------------|--|
| Proportion of households in poverty | % | % |
| Before smoking costs | 16.8 | 20.6 |
| After smoking costs | 18.8 | 29.0 |
| Percentage point increase in poverty rate once smoking costs are taken into account | 1.9 | 8.4 |
| Number of households in poverty (1000s) | | |
| Before smoking costs | 4514 | 1276 |
| After smoking costs | 5026 | 1788 |
| Increase in poverty rate once smoking costs are taken into account | 512 | 512 |

Adults and children

Tables 3 and 4 show the corresponding figures for the number of adults living in poverty (Table 3) and the number of children living in poverty (Table 4) before and after tobacco spending is taken into account, calculated using the LCF data. Table 3 shows that subtracting tobacco expenditure from household income increases the adult poverty rate by 1.8 percentage points, from 15.6% to 17.4% - an extra 870,000 adults in poverty. Table 4 shows that the equivalent figures for children are an increase in the child poverty rate of 1.4 percentage points, from 19.2% to 22.0% - an extra 370,000 children in poverty.

Table 3. Adult poverty rates before and after tobacco expenditure is taken into account

| | Whole sample | Households with positive tobacco expenditure only |
|--|---------------------|--|
| Proportion of adults in poverty | % | % |
| Before smoking costs | 15.6 | 18.8 |
| After smoking costs | 17.4 | 25.8 |
| Increase in poverty rate once smoking costs are taken into account | 1.8 | 7.0 |
| | | |
| Number of adults in poverty (1000s) | | |
| Before smoking costs | 7730 | 2326 |
| After smoking costs | 8597 | 3192 |
| Increase in poverty rate once smoking costs are taken into account | 866 | 866 |

Table 4. Child poverty rates before and after tobacco expenditure is taken into account

| | Whole sample | Households with positive tobacco expenditure only |
|---|---------------------|--|
| Proportion of children in poverty | % | % |
| Before smoking costs | 19.2 | 23.9 |
| After smoking costs | 22.0 | 33.8 |
| Percentage point increase in poverty rate once smoking costs are taken into account | 2.7 | 9.9 |
| | | |
| Number of children in poverty (1000s) | | |
| Before smoking costs | 2569 | 879 |
| After smoking costs | 2934 | 1244 |
| Increase in poverty rate once smoking costs are taken into account | 365 | 365 |

Pensioner and non-pensioner adults

Table 5 shows the figures for the numbers of pensioners⁷ and non-pensioners in poverty before and after tobacco expenditure costs are taken into account. Across the whole LCF sample, 13.6 percent of pensioners are in poverty compared to 16.2 percent of non-pensioners. Subtracting tobacco expenditure from the income definition results in an increase in the poverty rate of 1.5 percentage points for pensioners (approximately 180,000 extra pensioners in poverty) and an increase of 1.8 percentage points for non-pensioners (approximately 690,000 extra non-pensioners in poverty). The poverty rates for the subsample of households with positive tobacco expenditure increase by just over 6 percentage points for non-pensioners and just under 12 percentage points for pensioners.

Regional and country analysis

Tables 6a and 6b show an analysis of poverty by region (nine English regions plus Scotland, Wales and Northern Ireland). Before tobacco expenditure is taken into account, poverty rates range from 14.2 percent in the South East of England to 20.3 percent in Wales. Once tobacco expenditure is taken into account, the poverty rate increases by between 1 and 3 percentage points in each region. The highest regional poverty rate after taking tobacco costs into account is Northern Ireland, at 23 percent. Among the subsample of households with positive tobacco expenditure, poverty rates (before taking tobacco expenditure into account) vary widely, from 10.7 percent in London to 30.6 percent in Wales. Including tobacco expenditure in the poverty calculations increases poverty rates for households with positive tobacco expenditure by between 4.4 and 12.4 percentage points, with the smallest increases in Wales and South West England, and the largest increases in North East and North West England and Northern Ireland.

⁷ For the purposes of this analysis, 'pensioners' are defined as all men aged 65 and over, and all women aged 62 and over. 'Non-pensioners' are defined as all adults below these ages.

Table 5. Adult poverty rates for pensioners and non-pensioners before and after tobacco expenditure is taken into account

| | Whole Sample | | Households with positive tobacco expenditure only | |
|---|----------------|------------|---|------------|
| | non-pensioners | pensioners | non-pensioners | pensioners |
| Proportion of adults in poverty | % | % | % | % |
| Before smoking costs | 16.2 | 13.6 | 19.7 | 12.7 |
| After smoking costs | 18.1 | 15.1 | 26.0 | 24.5 |
| Percentage point increase in poverty rate once smoking costs are taken into account | 1.8 | 1.5 | 6.3 | 11.8 |
| Number of adults in poverty (1000s) | | | | |
| Before smoking costs | 6159 | 1568 | 2133 | 192 |
| After smoking costs | 6846 | 1746 | 2821 | 370 |
| Increase in poverty rate once smoking costs are taken into account | 688 | 178 | 688 | 178 |

Table 6a: Percentage and number of households in poverty by region and country – whole sample

| | England: | | | | | | | | | Wales | Scotland | N Ireland |
|---|------------|------------|----------------|---------------|---------------|-----------------|--------|------------|------------|-------|----------|-----------|
| | North East | North West | Yorks & Humber | East Midlands | West Midlands | East of England | London | South East | South West | | | |
| Proportion of households in poverty (%) | | | | | | | | | | | | |
| Before smoking costs | 17.1 | 16.3 | 19.6 | 19.9 | 17.7 | 15.9 | 15.2 | 14.2 | 14.6 | 20.3 | 17.8 | 20.0 |
| After smoking costs | 20.1 | 19.2 | 21.7 | 21.8 | 20.0 | 17.3 | 16.6 | 15.8 | 15.7 | 21.2 | 20.2 | 23.0 |
| Percentage point increase in poverty rate once smoking costs are taken into account | 3.0 | 2.9 | 2.2 | 1.9 | 2.3 | 1.5 | 1.5 | 1.6 | 1.1 | 1.0 | 2.4 | 3.0 |
| Number of households in poverty (1000s) | | | | | | | | | | | | |
| Before smoking costs | 195 | 494 | 440 | 382 | 411 | 391 | 507 | 512 | 335 | 484 | 234 | 146 |
| After smoking costs | 229 | 582 | 489 | 418 | 463 | 426 | 557 | 570 | 361 | 507 | 265 | 168 |
| Increase in poverty rate once smoking costs are taken into account | 34 | 87 | 49 | 36 | 52 | 36 | 49 | 58 | 26 | 23 | 32 | 22 |

Table 6b: Percentage and number of households in poverty by region – households with positive tobacco expenditure only

| | England: | | | | | | | | | Wales | Scotland | N Ireland |
|---|------------|------------|----------------|---------------|---------------|-----------------|--------|------------|------------|-------|----------|-----------|
| | North East | North West | Yorks & Humber | East Midlands | West Midlands | East of England | London | South East | South West | | | |
| Proportion of households in poverty (%) | | | | | | | | | | | | |
| Before smoking costs | 22.6 | 18.8 | 24.3 | 26.8 | 23.3 | 22.6 | 10.7 | 15.2 | 16.7 | 30.6 | 23.7 | 23.1 |
| After smoking costs | 35.0 | 30.3 | 32.9 | 35.4 | 32.5 | 29.2 | 18.0 | 22.8 | 22.1 | 35.0 | 32.5 | 33.3 |
| Percentage point increase in poverty rate once smoking costs are taken into account | 12.4 | 11.6 | 8.6 | 8.7 | 9.2 | 6.5 | 7.2 | 7.6 | 5.4 | 4.4 | 8.8 | 10.2 |
| Number of households in poverty (1000s) | | | | | | | | | | | | |
| Before smoking costs | 61 | 142 | 138 | 112 | 133 | 123 | 73 | 116 | 79 | 158 | 85 | 49 |
| After smoking costs | 95 | 229 | 187 | 148 | 185 | 159 | 122 | 174 | 105 | 181 | 117 | 71 |
| Increase in poverty rate once smoking costs are taken into account | 34 | 87 | 49 | 36 | 52 | 36 | 49 | 58 | 26 | 23 | 32 | 22 |

Comparison with other recent research

Researchers at Nottingham University have recently completed an analysis of the impact of tobacco expenditure on poverty rates in the UK using a different methodology to that used here⁸. The Nottingham research uses data from the 2012 2011/12 Family Resources Survey on low income and combines this with data on smoking prevalence from the 2012 Opinions and Lifestyle Survey to estimate the number of children living in poor households containing smokers; the expenditure of typical smokers in these households on tobacco; and the numbers of children drawn into poverty if expenditure on smoking is subtracted from household income. The results show that an extra 430,000 children are classified as in poverty using the UK Government's official "Households Below Average Income" measure (income below 60% of median income before housing costs, taking family size into account) if tobacco expenditure is subtracted from household income. The results of the Nottingham analysis of child poverty and tobacco expenditure are approximately the same as the results in this paper (to the nearest 100,000) which is reassuring given that the two papers use different methodologies.

Analysis

The results in this paper show that when expenditure on tobacco is taken into account, around 500,000 extra households, comprising over 850,000 adults and almost 400,000 children, are classified as in poverty in the UK compared to the official Households Below Average Income figures. This shows that tobacco imposes a real and substantial cost on many low-income households.

It is important, however, to avoid concluding from these results that a suitable policy response would be to reduce tobacco taxation to make tobacco products more affordable. Previous research shows that increases in tobacco taxation are potentially a *progressive* measure in economic and health terms because poorer smokers are more likely to quit, and young people less likely to take up smoking, when tobacco prices increase because poorer households and young people are more sensitive to price increases⁹. Indeed, raising tax is the only tobacco control intervention which has been proven to have a greater effect on more disadvantaged smokers at population level and so contribute to reducing health inequalities¹⁰.

⁸ C Belvin, J Britton, J Holmes and T Langley. [Parental smoking and child poverty in the UK: An analysis of national survey data](#). BMC Public Health 2015; 15:507

⁹ The World Bank. [Curbing the epidemic: governments and the economics of tobacco control](#). 1999

¹⁰ Amos A, Bauld L, Clifford D et al. [Tobacco control, inequalities in health and action at a local level](#). York, Public Health Research Consortium, 2011.

However, poorer smokers who do not quit are disproportionately disadvantaged in economic terms because of the negative impact of tobacco tax increases on their already small incomes.

This poses a dilemma which can be resolved by ensuring that all efforts are made to motivate and support smokers in quitting. ASH supports increasing tobacco taxation as long as at the same time the UK Government continues to provide adequate funding for measures to help smokers to quit and population level measures to reduce smoking.