

# Did the Minimum Wage Change Consumption, Saving and Debt Behaviour?

Report to the Low Pay Commission

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# 1 Summary

This study looks at the effects of the UK national minimum wage (NMW) on first, the consumption patterns and second, the savings and debt behaviour of households affected by the minimum wage relative to other households. The economic theory of consumer behaviour suggests that individuals will change their spending behaviour when faced with either price or income changes. Since the minimum wage boosts the gross earned income of those covered, it might be expected to generate an income effect and so change a recipients consumption patterns relative to those who did not benefit. This seems worthy of study for a country like the UK, where the NMW has been associated (Low Pay Commission, 2013) with, either higher real increases for its recipients or lower real wage falls compared to those along much of the rest of the wage distribution. As a consequence, relative incomes have risen for those at the bottom of the wage distribution.

Equally it is also possible that rising incomes facilitate debt financed purchases (of consumer durables), help with savings or repayment of outstanding debts. As yet, we know little about household debt behaviour and management in UK. However it is also possible that firms who employ minimum wage workers could have passed on higher labour costs in the form of higher prices. As we show below, the consumption bundles of NMW households can differ from those of other households, so if there have been differential price changes between different goods over time, and different households consume different goods, then this may also have induced differential consumption behaviour.

In the first half of what follows we use Family Expenditure Survey data (FES) and its successors the Expenditure and Food Survey (EFS) and Living Costs and Food Survey (LCFS), to outline the characteristics of minimum wage households and document the change in consumption patterns of households in which minimum wage workers live over the period from the minimum wages inception in 1999 to the present. We contrast the consumption patterns with other households in which the changes to the minimum wage will have had little effect. We estimate Engel curves of budget shares against total expenditure for different consumer goods for different household types. This allows us to determine whether the Engel curves for different

household types varied substantially both within goods and over time.

In the second half of the paper, we look at the extent to which minimum wage households differ in their saving, self-reported levels of deprivation and debt behaviour from other household types and how saving and debt behaviour has evolved alongside changes in the NMW.

## 2 Key findings

### 2.1 Consumption

- Minimum wage households are generally poorer than non-minimum wage working households. The average disposable income is around 50% lower in adult minimum wage households than in other households with occupants in work.
- There is considerable heterogeneity of income among minimum wage households group (as among other working households). The 90/10 expenditure ratios are around 3.8 for both groups.
- Around 10% of working households relied on minimum wage workers as their main source of wage income. In around 4% of working households, NMW workers were the only source of wage income and in around 8% of all working age households, NMW workers were the main source of any income.
- Only 1% of all households with working occupants have more than one minimum wage worker.
- Around 30 per cent of minimum wage workers live in households with an aggregate income less than sixty per cent of the median household income for all households with at least one employee (compared with a 1 per cent share among all other working households). Two thirds of minimum wage workers live in households with a total income below the median for all working (employee) households.

- The modal household type for a minimum wage worker is the couple with dependent children. Around 30% of minimum wage workers live in this arrangement, as do employees paid above the minimum. Around 8% of minimum wage workers are single parents and 8% are single adults without dependents.
- There are few significant differences in expenditure patterns across household types, although adult NMW households appear to spend a slightly larger fraction of their income on food, compared to other households with non-NMW workers.
- There are relatively few statistically significant differences in the shapes of the Engel curves - which measure the responsiveness of the proportion of the total household budget (the budget share) spent on a given item - between minimum wage households and other working households.
- Difference-in-difference analysis estimated over data pooled over successive cross-sections suggests that in the period after the minimum wage was introduced there appears to have been some fall in the budget share of alcohol in NMW households over and above that of other working households.

## 2.2 Savings and Debt

- In any way we can measure, indebtedness and deprivation are worse for NMW households than they are for other working households but that the position of the non-working households is significantly worse still.
- From the FRS we get clear evidence that on a whole range of deprivation measures NMW households are worse off than other working households by between 2-10%. The corresponding effect for non-working households relative to other working households is between 7-24%. We find that the most persuasive estimates are for ability to save and the ability to heat ones own residence.
- There is evidence from the FRS that deprivation on a number of dimensions, notably: being able to heat the house, and being able to save regularly has got appreciably worse

over the years of the recession.

- From the BHPS and Understanding Society data we understand that the biggest effect on NMW individuals has been the decline in saving of around 20% over the 1999-2010 period. This has been mirrored in the decline in saving of non-working households of around 40-50% over the same period.
- From the BHPS and Understanding Society we find that NMW individuals have experienced a 1% increase in difficulty with their current financial position relative to other working households. This figure is around 4% for non-working households.
- There is a paucity of good data on debt and material deprivation. The main surveys we have to answer these questions, the FES(EFS/LCFS), FRS and BHPS (and Understanding Society) have all changed their form and content over the years. Most frustratingly the main questions of use are sometimes not continued. We suggest that this be rectified by encouraging those responsible to include the same questions from preceding waves of their surveys and if the survey changes its form then previous questions need to be adopted for consistency.

### 3 Introduction

This study looks at the effects of the UK national minimum wage (NMW) on first, the consumption patterns and second, the savings and debt behaviour of households affected by the minimum wage relative to other households. When the national minimum wage was introduced in Britain, much effort focused on establishing the possible effects on the hours and employment prospects of those workers affected by its introduction. The consensus that emerged has been that the overall effect on the level of employment in Britain was broadly neutral (see for example Stewart (2004a, 2004b)). Given this lack of an employment effect research shifted toward establishing that the margin of adjustment was spread elsewhere. Stewart and Swaffield (2008) established that there may have been a small fall in the number of hours worked by low wage workers. Draca, Machin and Van Reenen (2006) produced evidence to suggest that productivity may have risen more in firms that employ more low wage workers and that profitability may have fallen in firms that were more affected by the minimum wage introduction. Wadsworth (2010) shows that prices of some goods produced with a larger share of NMW workers also rose faster than the prices of other goods.

There is also another channel through which the effects of the minimum wage could be directed, namely adjustments in consumer demand. The economic theory of consumer behaviour suggests that individuals will change their spending behaviour when faced with either price or income changes. Since the minimum wage boosts the gross earned income of those covered, it might be expected to generate an income effect and so change a recipients consumption patterns relative to those who did not benefit. This seems worthy of study for a country like the UK, where the NMW has been associated (Low Pay Commission, 2013) with, either higher real increases for its recipients or lower real wage falls compared to those along much of the rest of the wage distribution. As a consequence, relative incomes have risen for those at the bottom of the wage distribution.

In a similar way it is also possible that firms who employ minimum wage workers could have passed on higher labour costs in the form of higher prices. If this varies across sectors, then this

might also influence the pattern of consumer demand. The more inelastic the demand elasticity for the good in question other things equal, the easier it would be to increase prices. Wadsworth (2010) finds that prices of several minimum-wage sectors (notably, domestic services, hotel services, canteen meals and take-away food) rose by a significantly greater rate - in the order of 0.5 to 2 percentage points a year - than the prices of other goods in the period after the minimum wage was introduced. As we show below, the consumption bundles of NMW households can differ from those of other households, so if there have been differential price changes between different goods over time and different households consume different goods then this may also have induced differential consumption behaviour.<sup>1</sup>

In short, the general equilibrium effects of the NMW could also include a change to the relative demand in different sectors with associated effects on the amounts and prices (wages, profits) of factors needed to produce them - relative to others.

Wadsworth (2007) looks for any evidence of changes in the pattern of demand between minimum wage and other households over the period from the introduction of the NMW to 2004. He finds little evidence of any large significant differences in or changes in expenditure patterns across household types over this period.<sup>2</sup> However it is an empirical matter as to whether these patterns observed in earlier data have continued or changed over time.

Higher incomes are generally associated with a shift in consumption patterns away from economic necessities toward economic luxury items.<sup>3</sup> Equally it is also possible that rising incomes facilitate debt financed purchases (of consumer durables), help with savings or repayment of outstanding debts. As yet, we know little about household debt behaviour and management in UK.

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<sup>1</sup>The press release accompanying Barack Obamas 2013 State of the Union address also suggests that a real boost in the NMW could have a positive impact on US consumption <http://www.whitehouse.gov/the-press-office/2013/02/13/fact-sheet-president-s-plan-reward-work-raising-minimum-wage>.

<sup>2</sup>There is some fall in the budget share of tobacco in NMW households over and above that of other working households and a relative rise in the share of minimum wage household expenditure on fuel and household services.

<sup>3</sup>A luxury good has an income elasticity of demand greater than one so that demand rises more than proportionately than income, a necessary good has an income elasticity of the demand less than one.

Earnings from other jobs, unearned income and (for those with a partner) any income of a spouse all mean that receipt of the NMW does not necessarily equate to low gross family income. Similarly, any increases in gross real wages may, of course, be offset to a certain extent by the workings of the tax and benefit system and in particular the rates of withdrawal of welfare payments and tax credits that accompany any rise in earned income for many less well off households. There is some evidence to suggest that this is indeed the case with regard to the NMW. Brewer, May and Phillips (2009) estimate that only 12% of NMW families would receive the full amount of any NMW rise. A further 50% would receive at least two thirds of any increase, but some 30% would receive less than a third of any NMW rise.

To get an idea of the typical increase in household income resulting from a rise in the NMW, recall that the last two (2012, 2013) increments to the hourly NMW rate were 11 and 12 pence respectively. Assuming the average (median) NMW worker works 25 hours a week<sup>4</sup> and that, as we show below, there is typically only 1 NMW worker in any household, then the average gross weekly rise for an individual was around £3 a week or £150 a year. This is an upper bound on the net income gain and, following Brewer et al. (2009) the typical NMW household would receive something nearer to an additional £100 a year.<sup>5</sup>

In the first half of what follows we use Family Expenditure Survey data, (FES) and its successors the Expenditure and Food Survey, (EFS) and the Living Costs and Food Survey (LCFS), to outline the characteristics of minimum wage households and document the change in consumption patterns of households in which minimum wage workers live over the period immediately before the minimum wages inception in 1999 to the present. We contrast the consumption patterns with other households in which the changes to the minimum wage will have had little effect. We estimate Engel curves of budget shares against total expenditure for different consumer goods for different household types. This allows us to determine whether the Engel curves for different household types varied substantially both within goods and over time.

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<sup>4</sup>Source: 2012 Annual Population Survey. Authors calculations.

<sup>5</sup>The largest (real and nominal) gross change was in October 2001 when the NMW rose by 40 pence an hour, an average of £10 a week or £520 a year.

In the second half of the paper, we use savings data from the British Household Panel Survey (BHPS) and its successor Understanding Society along with measures of material deprivation from the Family Resources Survey (FRS) to identify the extent to which savings and material deprivations differ between minimum wage and other households.

## 4 Consumption

### 4.1 Theoretical Framework

#### 4.1.1 Demand and Income Changes

Simple consumer demand theory suggests that individuals will change their spending behaviour when faced with either price or income changes. Historically rising real incomes have been associated with a shift away from staples (housing, food and heating), toward items like personal goods and services where there is more discretion over what to buy, (Blow 2003). Since 2009, real wages have been falling across most of the wage distribution, including at the bottom which is influenced in the main by the NMW. Falling real wages should also generate (reversed) income effects in consumption. However since the real value of the NMW has fallen by less than real wages in most other parts of the wage distribution then the relative bite of the NMW has risen almost each year since its inception (Low Pay Commission, 2013).

The UK welfare system means that not all households will benefit equally from an increase in the minimum wage. Those in receipt of Family Credit, or its successor the Working (Families) Tax Credit would receive less of an increase in net household income for a given gross increase in the NMW because of the marginal tax rates embedded in in-work benefit supplements.<sup>6</sup> Similarly those in receipt of housing benefit will not experience the full benefit of the minimum wage, since their housing benefit will be reduced accordingly (see Sutherland, 2001). Indeed the main beneficiaries appear to be those in the middle of the household income distribution, who typically will be working full-time but not claiming welfare benefits (Metcalf, 2007). Moreover, the effect of an increase in the NMW will be mitigated somewhat in the presence of other household members in work. Gregg, Waldfogel and Washbrook (2006) examine differential consumption patterns between low and high income (but not NMW) households in Britain, concluding that there was convergence in the spending patterns of low income households toward that of other households in the period 1997-2003, after the set of welfare reforms initiated by the 1997 Labour government.

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<sup>6</sup>In practice, just 4% of working age households were claiming Family Credit in the 1998 FES. Some 10% of minimum wage households in the data set receive Family Credit. HM Treasury (2006) estimates the net average household nominal gain from a 25p increase in the minimum wage to be around £4.50 a week.

The usual way of classifying the relationship between goods and income is based on the income elasticity of demand which measures the percentage change in demand for good  $i$ ,  $x_i$ , following a given percentage change in income,  $X$ ,  $\eta = (X/x_i)\partial x_i/\partial X$ . A luxury good has an income elasticity of demand greater than one, so that demand for the good rises more than proportionately for a given change in income. Similarly, a necessary good has an income elasticity of demand less than one and an inferior good has an income elasticity of demand less than zero so that demand for inferior goods falls as income rises. Income elasticities are typically determined in the literature by estimating “Engel curves”, which relate the share of household expenditure given to good  $i$ ,  $s_i$  (the budget share), to the log of total household expenditure.

$$s_i = a_i + b_i * \log(x) + u \quad (1)$$

The coefficient  $b_i$  is a semi-elasticity and gives the percentage point change in the budget share of each item following a 1% change in total household expenditure, multiplied by 100.<sup>7</sup> If the budget share is unchanged following an income change then  $b_i = 0$ . Downward sloping Engel curves result when the good in question is expenditure inelastic: as total expenditure rises, the expenditure share of the good falls, ( $b_i < 0$ ). Any good with a negative elasticity is therefore classed as an economic necessity. The larger the absolute value of  $b$  the more elastic is the responsiveness of the consumption of good to a given income change. Upward-sloping Engel curves define luxury goods, ( $b_i > 0$ ). Spending on luxuries will rise as total expenditure rises; spending on necessities will fall as total expenditure rises. Food, for example, is often considered a typical necessity. So we would expect the budget share on food to fall as living standards increase. The expenditure elasticity of budget share is defined as

$$\epsilon = \frac{\partial \log s_i}{\partial \log X} = \frac{\partial s_i}{\partial X} * \frac{X}{s_i} = \frac{\partial s_i X}{\partial X} * \frac{1}{s_i} = \beta_1 * \frac{1}{s_i} \quad (2)$$

(since  $\beta_1 = ds_i/d\log(X)$ )

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<sup>7</sup>  $dw_i/d\log(x) = b_i = dw_i/(dx/x) =$  unit change in  $w$  with respect to a 1 percentage change in  $x * 100$ .

Using the quotient rule to differentiate (2)<sup>8</sup>, the income elasticity of demand satisfies:

$$\eta = (X/x_i)\partial x_i/\partial X = \epsilon + 1 \quad (0 < \eta < 1 = \text{necessity}, \eta > 1 = \text{luxury}, \eta < 0 = \text{inferior}) \quad (3)$$

The shape of Engel curves also varies with household characteristics like age and region (see Browning and Meghir (1991) and Blundell, Pasharedes and Weber (1993)).

It is now common to present non-parametric estimates of Engel curves in graphical form which effectively portray how the budget share varies with household expenditure by weighting all household budgets within a given range of expenditures. If the slope of the graph is not constant, then neither are the budget share and income elasticities. Sometimes these graphs indicate that the relationship between budget shares and expenditure may be modelled better by a quadratic in log expenditure in which case:

$$s_i = a_i + b_i * \log(x) + d_i * \log(x)^2 + u \quad (4)$$

and the budget share elasticity  $\epsilon$  is now  $\frac{b_i+2d_i\log(x)}{s_i}$  with the income elasticity, again given by  $\eta = \epsilon + 1$ , becoming  $\eta = 1 + \frac{b_i+2d_i\log(x)}{s_i}$ . Now the income elasticity varies with the level of expenditure,  $x$ .

#### 4.1.2 Price Changes

Microeconomic consumer and labour demand theories tell us that the ability of firms to pass on higher prices following a rise in labour costs as generated by the minimum wage depends on several factors.<sup>9</sup>

1. In the case of a cost increase induced by the minimum wage then all domestic firms producing the same product will be subject to the same cost pressures, which will differ only by the share of labour in production. Firms which use a higher share of minimum wage labour in their

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<sup>8</sup>  $\epsilon = \frac{\partial s_i}{\partial X} * \frac{X}{s_i} = \partial \left( \frac{p_i x_i}{X} \right) / \partial X * \frac{X}{(p_i x_i / X)} = \left[ \frac{X p_i \partial x_i / \partial X - p_i x_i \partial x_i / \partial X}{X^2} \right] * \frac{X^2}{p_i x_i} = \frac{X}{x_i} \frac{\partial x_i}{\partial X} - 1 = \eta - 1$

<sup>9</sup> See Lemos (2006) for an earlier survey of the effects of the NMW on prices.

production process will be subject to the highest cost pressures, other things equal. In addition if there are any wage spillovers from the minimum wage, increasing wages further up the wage distribution, then the effect on costs will be magnified.

2. The prices of substitutes and complements for the good also matter for pricing decisions. These prices in turn depend on the input costs of these substitutes and complements. If labour is a substitute for capital then firms can react to a rise in labour costs through capital substitution, reducing the number of employees, cutting hours, or by making productivity improvements. In many services the scope for capital substitution is limited and the labour share typically higher than for many manufactured goods. If so then these sectors should face higher upward pressures on costs. The more substitutes for a good, the more price elastic the demand. Moreover, the more a good competes with a potential substitute produced abroad not affected by the UK minimum wage, the harder it will be for UK firms to pass on cost increases and so maintain market share, other things equal. In this regard, we might expect many services, which are typically not traded abroad, to be able to pass on cost increases, other things equal. In short, the less competitive the market, the easier it is to pass on increases in the costs of production and maintain profit levels.

3. Demand for luxury goods, as defined by the size of the goods income elasticity, is thought to be more price elastic than the demand for necessities. This is because, in addition to substitution effects, price changes generate income effects through their effects on real incomes. So if the good is highly income elastic, demand will tend to be more responsive to price changes, other things equal because a given change in price generates a larger income effect which then reinforces the substitution effect.

4. The larger the budget share of the good, the greater the change in real incomes from any price change. However this does not guarantee that the proportionate change in demand will be greater, since this will only happen if the good is a luxury. So goods that comprise a high fraction of the budget share are not automatically price elastic goods.

One benchmark measure that will summarise the ability of the firms to pass on prices following a rise in labour costs is the own price elasticity of demand,  $\frac{\partial q_i}{\partial P_i} * \frac{P_i}{q_i} = \eta_{ii}$ . Own price elasticities are generally negative, since an increase in the price of a good usually leads to a fall in demand for that good. Goods with an own price elasticity between zero and (minus) one,  $-1 < \eta_{ii} < 0$ , are said to be price inelastic, (demand changes less than proportionately with price). Goods with an own price elasticity below (minus) one,  $\eta_{ii} < -1$ , are said to be price elastic, (demand changes more than proportionately with price). Producers of elastic price goods may find it harder to pass on price increases following from the NMW since demand for these goods and services would fall away quicker than demand for price inelastic goods.<sup>10</sup> Similarly total expenditure on price inelastic goods will tend to increase if prices rise since the increase in revenue generated by a rise in price more than offsets the fall generated by the (small) fall in demand - while total expenditure on price elastic goods will tend to fall.

The above assumes that, at any point in time, all individuals face the same price for a given good. To identify both income and substitution effects of the minimum wage we would ideally combine data on real incomes with data on relative prices. One way to do this, (Deaton and Muelbauer, 1980) is to pool observations over time and estimate a model of the form

$$s_{it} = a_i + b_i * \log(x_t/P_t) + \sum_{j=1}^J \gamma_{ij} \log P_{jt} \quad (5)$$

where there are  $J$  (categories of) goods with price levels  $P_j$ , and  $P_t$  is an index of general prices at time  $t$ , often measured as a weighted average of the prices of the  $J$  goods where the weights are the budget shares,  $P_t = \sum_{j=1}^J s_{jt} \log P_{jt}$ . The  $J-1$  other goods can be thought of as substitutes or complements for the  $i^{th}$  good under consideration. The  $\gamma_{ij}$  coefficients can then be manipulated to give estimates of the own and cross-price elasticities,  $\eta_{ij}$ . Since the own price elasticity<sup>11</sup> of

<sup>10</sup>Cross price elasticities can be negative, positive or zero, depending on whether an increase in the price of one good generates: a fall in the quantity demanded of another good (the goods are complements); an increase in the quantity demanded of another good (the goods are substitutes); no effect on the quantity demanded of another good (the goods are unrelated).

<sup>11</sup>This follows from the fact that a)  $\frac{\partial(p_i q_i)}{\partial p_i} = p_i \frac{\partial q_i}{\partial p_i} + q_i \frac{\partial p_i}{\partial p_i} = \left[ \frac{p_i}{q_i} \frac{\partial q_i}{\partial p_i} + \frac{q_i}{q_i} \right] q_i = [\eta_{ii} + 1] q_i$  and b) if the price of one good rises then expenditures on all goods are rearranged such that total expenditure,  $X$ , still equals total income, hence  $dX/dp_i = 0$ . Then apply the quotient rule to differentiate the budget share elasticity  $\frac{\partial(p_i q_i)/X}{\partial p_i} * \frac{p_i}{(p_i q_i)/X} = \left( \frac{X[\eta_{ii} + 1]q_i - 0}{X^2} \right) * \frac{X}{q_i} = [\eta_{ii} + 1]$ .

the budget share,  $\frac{\partial s_i}{\partial P_i} * \frac{P_i}{s_i} = 1 + \eta_{ii}$  it follows that

$$\eta_{ii} = -1 + \frac{\partial s_i}{\partial P_i} * \frac{P_i}{s_i} = -1 + \frac{\partial s_i}{\partial \log(P_i)} * \frac{1}{s_i} = -1 + \frac{\gamma_{ij}}{s_i} - b_i \quad (6)$$

While consistent with the established tenets of consumer demand theory, the practical problem with estimating such a model is that the prices of many goods are collinear, particularly over the small time dimensions allowed by most data sets (see Lewbel (1997), Honderlein and Lewbel (2006) for some discussion of this issue). Since disaggregate price data that vary across regions or local areas are not readily available, most researchers are obliged to work with national, aggregate monthly price data. The result of this is that many of the time series of the different prices are highly collinear. Moreover, the richer the model the smaller the number of goods or equivalently the higher the degree of aggregation of goods that can be practically dealt with by the estimation process. One way of circumventing the problem is to appeal to the notion of separability to define the set of  $J$  goods. In this way consumers are thought to allocate expenditures over a broad category of goods and then allocate expenditures within each category. This strategy then either restricts the set of goods analysed in (5) to those in the immediate sub-group or allows aggregation of goods into broad categories.

It is also possible that there will be a difference between the short-run and long-run response of firms to an increase in their production costs and of consumers to changes in prices. It is easier for firms to switch production techniques in the long-run and this will tend to reduce upward pressure on prices. It is also easier for consumers to change their consumption patterns over time away from more expensive goods, making demand more price elastic in the long run, which should also act to maintain downward pressure on prices.

### 4.1.3 Incidence of Price Changes

Who buys goods and services produced by minimum wage workers also matters for the real income effects of a minimum wage. Since any given nominal rise in wage income could theoretically be offset by a rise in prices, then if the prices of goods and services consumed by minimum wage workers increased proportionately in response to the minimum wage, recipients of the minimum wage would be no better off in real terms.<sup>12</sup> If consumption of minimum wage goods and services were distributed evenly across the population, we would expect these households to account for a similar share of total consumption. However, if minimum wage households were the only consumers of minimum wage goods then any price effects of the NMW would be exclusive to NMW households. Wadsworth (2010) shows that while the share of total consumption of most minimum wage goods and services is higher than the population share of NMW households, these households never account for more than 18% of total expenditure on these goods. In short, any price effects are likely to be experienced across most households, but may have a disproportionate effect on the budget constraints of NMW households.

## 4.2 Data

The main source of data on consumption is the Family Expenditure Survey (FES) and its successors the Expenditure and Food Survey (EFS) which began in 2001 and the Living Costs and Food Survey (LCFS) which began in 2008.<sup>13</sup> The FES is a sample of around 6700 households and contains detailed information on household level expenditures, based on a diary of expenditure patterns over two week, alongside the individual characteristics of each household occupant. We restrict our estimates throughout to “working age” households, where the head is below statutory retirement age, since the minimum wages principal impact will be among working age households. This restricts the sample to around 5000 households each year.

Each adult is asked to provide information on their employment circumstances and, if in work,

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<sup>12</sup>This point was made almost 100 years ago in the debate surrounding the introduction of the Wages Councils, see Webb and Webb (1911), pp. 780-83.

<sup>13</sup>We use the abbreviation FES to capture all 3 surveys in the rest of the report.

their gross weekly wage. As such, the hourly wage has to be derived for all employees currently in work by dividing gross weekly pay by usual normal hours plus usual paid overtime. This generates a degree of measurement error and any measurement error in continuous or dummy variables will generate attenuation bias in a regression analysis (Aigner, 1973). However, unlike, say, the LFS it is impossible to assess the extent of measurement error since the FES does not have “true” measures of hourly pay with which to benchmark the hourly pay estimates.<sup>14</sup> This hourly wage is calculated for around 6000 employees, (adults and youths aged 18 to 20 or 21),<sup>15</sup> in each year of the FES. Since there are separate minimum wages for youths, adults and agricultural workers we separate the sample accordingly into each category.<sup>16</sup> Our definition of a minimum wage worker is anyone who earns between 60 and 105% of the NMW in the relevant sample year.<sup>17</sup> Table A1 in the appendix gives the estimated average (mean) hourly and weekly wages derived in this way. The estimates are close to those estimated from another household survey data set, the LFS.

Around 5 percent of employees in the sample also hold second jobs, a fraction of which could presumably also be paid at or below the minimum wage. However while there is data on weekly wages in second jobs, there is no information on hours. Hence a so minimum wage indicator in second jobs can not be calculated. The effect of this is will be to bias down the estimate of the number of minimum wage households.

The BHPS (and its successor Understanding Society) follows individuals and households over time. There are regular questions on hourly wages (since 1999), household consumption on durables and food, foregone consumption and debt. It is possible therefore to a) estimate which individuals and hence households are minimum wage households, and b) estimate any changes in consumption patterns following a NMW increase. The Family Resources Survey (FRS) also has questions on earnings, debt and material deprivation that are used to build a complementary data

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<sup>14</sup>Figure A1 indicates that the derived FES hourly wage data for 1999 does not appear to have a spike at £3.60. Instead the spike appears a little further up the distribution.

<sup>15</sup>The adult NMW was extended to cover 21 year olds in 2011.

<sup>16</sup>The Agricultural Wages Board set separate youth and adult minima for agricultural workers until its abolition in 2013. These rates tended to be a little above the minima for other employees (see <http://www.defra.gov.uk> for more details).

<sup>17</sup>We experimented with different threshold cutoffs near to these limits and our results do not change significantly. Available on request. Aaronson, Agarwal, and French (2012) use 60 to 120% of the US federal minimum wage in their study.

set to that of the BHPS. The advantage of the FRS is that the sample is much larger (24,000) than that of the BHPS (though smaller than the Understanding Society sample of 40,000 households). The disadvantage is that it is not longitudinal and so more effort is needed to identify minimum wage effects.

#### **4.2.1 Minimum wage households**

The FES only identifies household-level expenditure, so we examine expenditure patterns of minimum wage households, comparing expenditure patterns of households affected by the minimum wage and those not. This means that we count the number of NMW workers in each household. A minimum wage household is then any household that contains at least 1 individual receiving the adult NMW or is headed by an individual under the age of 22/21 in receipt of the youth NMW.

As a result any effects of minimum wage on consumption will be blurred somewhat, by the presence of and changes in, other incomes in the household. Some households will contain one adult, others more than one so we can also examine how expenditure patterns vary with the number of occupants in the household. Similarly, some minimum wage households contain only workers subject to the youth NMW, others only adults subject to the adult NMW. In order to provide a benchmark, control household whose consumption patterns will not have been affected much by the NMW, in the main we compare the consumption patterns of minimum wage households against households with at least one resident employee. We do however sometimes compare the expenditure patterns of working age workless households. We drop all households with any measured total expenditure zero or less and concentrate our analysis on the population of households with a head of household below pensionable age.

By 2010/11, around 12% of adults are estimated to be in receipt of an hourly wage that is between 60 and 105% of the NMW according to the FES (Table 1). This estimate has risen by some 4 percentage points compared to 1999/2000, the start of the sample period. Some 30% of young employees are estimated to receive the youth rate, up from an estimate of 11.6% in 1999/2000. This suggests that the bite of the NMW may be rising over time and/or that more

employers are more likely to pay their younger workers the youth rate rather than the adult rate.

Most households only contain 1 minimum wage worker (row 3, Table 1). Consequently the estimated percentage of minimum wage households with at least one adult on the minimum wage is close to the estimated percentage of NMW individuals, around 11% in 2010/11.

### **4.3 What do Minimum Wage Households look like?**

There are, typically more people living in a minimum wage households than in other types of household, (Table 2). The average working age household occupancy in 1999/2000 was 3 individuals. The mean number of occupants in a minimum wage household was 3.4. The modal household type for a minimum wage worker is the couple with dependent children. Around 35% of minimum wage workers live in this arrangement, as do employees paid above the minimum. However NMW households are less likely than other household types to be single with no dependent children and more likely be comprised of the residual other category. So there is more heterogeneity among NMW households and these differences appear to be quite stable over time.

Table 1: Minimum Wage Workers and their Distribution Across Working Age Households

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
% adult employees 60-105%	6.8	5.4	7.1	7.0	8.1	9.0	8.7	10.4	11.2	11.2	12.4	11.9
% youth employees 60-105%	11.6	11.2	15.1	18.3	17.6	18.7	20.4	25.3	20.2	24.4	29.5	31.6
% household with at least 1 adult NMW	6.9	5.8	6.7	8.5	10.2	11.5	11.2	9.8	10.2	10.6	11.5	10.8
% household with at least 1 youth NMW	0.1	0.06	0.10	0.1	0.07	0.2	0.09	0.2	0.1	0.2	0.3	0.06
% household with at least 1 NMW worker	7.6	6.6	7.7	9.7	11.4	12.9	12.5	11.0	11.3	11.7	12.9	12.0
% household with 2 NMW workers	0.4	0.3	0.4	0.7	0.9	1.0	0.8	0.8	1.0	1.0	1.2	1.0
% household with >2 NMW workers	.	.	0.04	0.06	0.03	0.06	0.06	0.06	0.1	0.09	0.07	0.1

*Note:* A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW

*Source:* FES (1999-2001), EFS (2002-2007), LCFS (2008-2010).

Table 2: Minimum Wage Households and Their Occupants

	1999			2004		
	Min. wage household	Other working HH	Non -working HH	Min. wage workers	Other working HH	Non -working HH
No. of occupants	3.4 (0.08)	2.9 (0.02)	3.0 (0.03)	3.8 (0.08)	3.4 (0.03)	3.6 (0.04)
No. of adults	2.6 (0.05)	2.4 (0.02)	2.4 (0.02)	3.8 (0.05)	3.7 (0.02)	3.8 (0.03)
No. of dep. children	2 (0.07)	1.8 (0.02)	2.0 (0.03)	1.9 (0.06)	1.9 (0.03)	2.0 (0.04)
% single no dep. children	7.9 (1.3)	18.8 (0.6)	15.6 (0.8)	9.1 (1.1)	15.9 (0.6)	14.0 (0.8)
% single parents	8.7 (1.3)	5.5 (0.4)	16.0 (0.8)	4.8 (0.8)	5.8 (0.4)	13.4 (0.8)
% couple no dep. children	26.0 (2.1)	28.0 (0.7)	24.6 (1.0)	29.7 (1.8)	31.2 (0.8)	24.5 (1.0)
% couple with children	35.4 (2.3)	34.3 (0.8)	28.1 (1.0)	33.4 (1.9)	31.6 (0.8)	30.0 (1.1)
% other	22.0 (2.0)	13.3 (0.6)	15.6 (0.8)	23.1 (1.7)	15.5 (0.6)	18.1 (0.9)
	2010					
No. of occupants	3.0 (0.05)	2.6 (0.02)	2.7 (0.03)			
No. of adults	3.8 (0.05)	3.8 (0.02)	3.7 (0.03)			
No. of dep. children	1.6 (0.05)	1.7 (0.02)	1.8 (0.04)			
% single no dep. children	9.1 (1.3)	17.6 (0.8)	17.0 (1.0)			
% single parents	7.0 (1.1)	4.9 (0.4)	13.8 (0.9)			
% couple no dep. children	27.0 (2.0)	31.6 (0.9)	24.3 (1.2)			
% couple with children	32.4 (2.1)	32.2 (0.9)	27.5 (1.2)			
% other	24.5 (1.9)	13.8 (0.7)	17.3 (1.0)			

*Note:* Standard errors in parentheses. A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW.

*Source:* Authors' calculations from FES (1999), EFS (2004), LCFS (2010).

All this makes it important to “equivalise” household income and expenditure patterns to take account of differential household size. Since there is no agreement in the literature regarding the appropriate equivalising weighting, we simply divide household expenditure and incomes by the square root of the number of occupants. This should help control for economies of scale in household consumption. The logic is that two individuals do not need twice as much as one individual to be equally well off, however this takes no account of differential consumption needs by age.<sup>18</sup>

Income in the FES is calculated at the household level, based on an aggregation of all income sources reported by individuals in the household. Again these incomes are equivalised by dividing the net household weekly income totals in the data set by the square root of the number of occupants in the household.

<sup>18</sup>The McClements scale attempts to deal with this second issue in a somewhat arbitrary way. Blow, Leicester and Oldfield (2003) show that different equivalising methods affect the level but not the trend in expenditure patterns.

Just under 5% of working age households rely on a single minimum wage earner, (Table 3) and in some 10% of working age households the NMW is the highest income source. The second panel of Table 3 indicates that the minimum wage earner is the highest income source in around three quarter of all minimum wage households and the only wage source in around forty per cent of all minimum wage households.

Minimum wage households are approximately the same age and ethnicity, but concentrated outside the capital in the low paying regions of the county (Table 4).

Table 3: Minimum Wage Workers and Sources of Income Across Working Age Households

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
% working households where NMW worker is only earner	2.1	1.8	2.6	1.9	2.7	2.5	2.6	3.8	3.8	4.1	4.4	4.5
% working households where NMW worker is highest wage source	6.9	5.9	6.8	8.6	10.3	11.5	11.4	9.8	10.4	10.6	11.5	10.8
% working households where NMW worker is highest income source	4.9	3.7	4.6	5.1	6.2	6.9	6.3	5.9	6.7	6.2	8.3	8.0
<i>Conditional on being being a NMW worker:</i>												
% working households where NMW worker is only earner	29.7	30.4	38.1	22.1	26.5	21.8	22.8	38.6	37.0	38.9	38.4	41.6
% working households where NMW worker is highest wage source	100	100	100	100	100	100	100	100	100	100	100	100
% working households where NMW worker is highest income source	70.7	62.8	67.4	59.5	60.0	59.8	55.9	59.5	64.6	58.5	72.0	74.0
<i>Percentages among households with at least 1 individual in work:</i>												
% working households where NMW worker is only earner	3.3	2.8	4.0	3.0	4.2	3.8	4.0	5.9	5.9	6.4	6.9	7.1
% working households where NMW worker is highest wage source	11.1	9.4	10.5	13.4	15.9	17.6	17.6	15.2	16.0	16.4	17.9	17.2
% working households where NMW worker is highest income source	7.8	5.9	7.1	8.0	9.5	10.5	9.8	9.1	10.3	9.6	12.9	12.7

*Note:* A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW.

*Source:* Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010).

Table 4: Minimum Wage Households by Age, Region and Ethnicity

	Min. wage household	Other working HH	Other non-working HH
<b>1999</b>			
Age of head	44.5 (11.6)	43.1 (11.4)	47.1 (14.1)
% London	4.9	12.0	9.0
% North-West	13.0	9.4	11.6
% Yorkshire	12.6	7.5	8.0
% non-white head	4.9	5.0	4.3
<b>2004</b>			
Age of head	46.1 (11.4)	44.1 (11.4)	47.7 (13.4)
% London	4.3	10.1	9.7
% North-West	11.4	10.0	11.0
% Yorkshire	11.2	7.8	8.5
% non-white head	13.9	15.8	16.2
<b>2010</b>			
Age of head	45.8 (11.4)	44.9 (11.3)	49.1 (13.0)
% London	6.8	10.8	7.6
% North-West	12.1	10.3	12.3
% Yorkshire	11.4	8.6	9.3
% non-white head	11.4	9.5	7.6

*Note:* Standard deviations in parentheses. A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW.

*Source:* Authors' calculations from FES (1999), EFS (2004), LCFS (2010).

Minimum wage households are generally poorer than other working households. Not surprisingly workless households are poorer still. In 1998/99, the real mean (median) weekly equivalised disposable income of a minimum wage household was around £314 (£293) compared to £455 (£386) for a non-minimum wage working household, (Table 5 and Figure 1). The average disposable income is around 50% lower in adult minimum wage households than in other working households. There is also considerable heterogeneity of income within the minimum wage household group as among other working households. The 90/10 expenditure ratios in 1999/2000 were around 3.6 and 3.8 for NMW and other working households respectively, although the 90th percentile income of the adult minimum wage household was only equivalent to the 67th percentile of the income distribution for other working households in 1998/99.

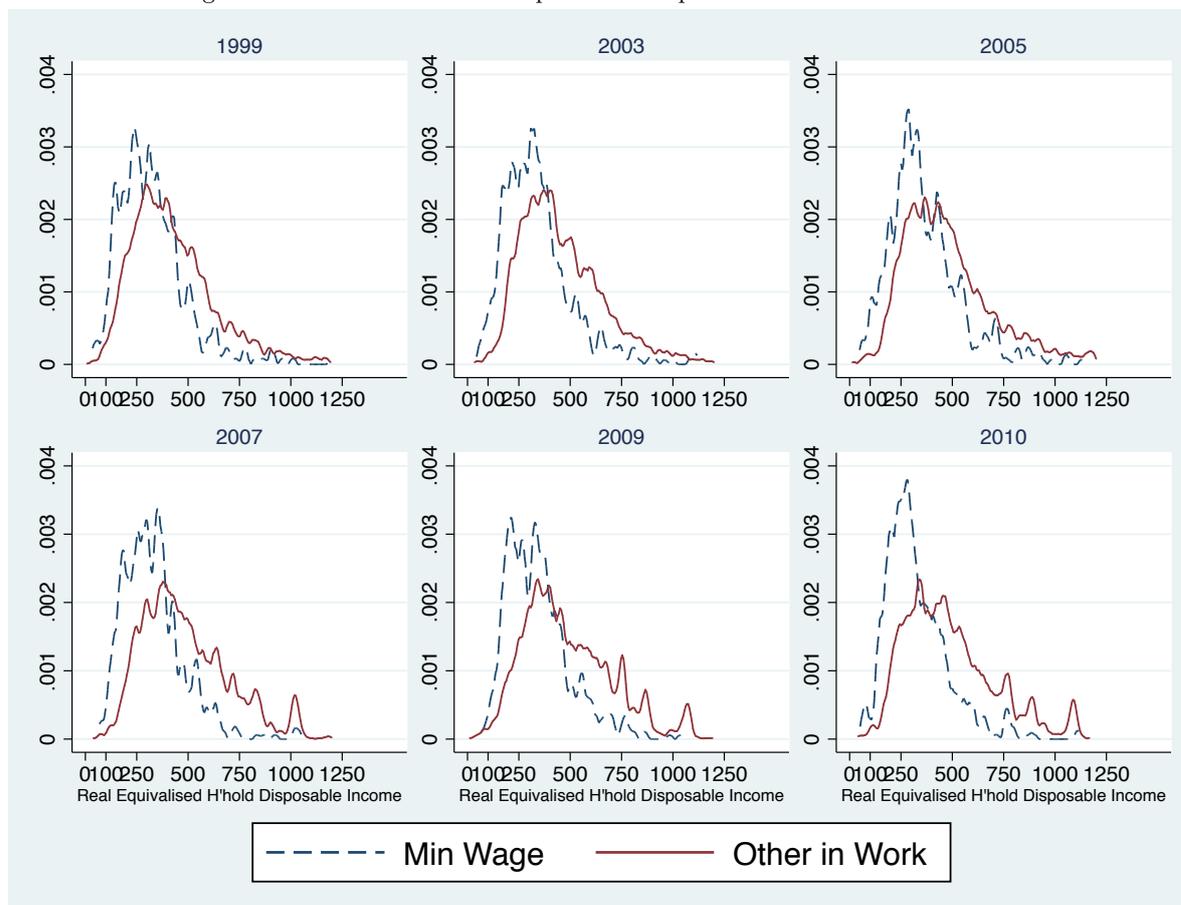
Table 5: Per Capita Equivalised Gross Real Weekly Disposable Income Across Households

	Min. wage household	Other working HH	Non-working HH
<b>1999</b>			
Mean	314.7	455.3	207.1
Median	293.4	386.7	160.6
10th percentile	142.4	188.2	83.9
90th percentile	507.5	734.3	380.2
Standard Dev.	161.7	522.8	151.3
Coef var.	0.5	1.1	0.7
N	453	3519	1326
<b>2004</b>			
Mean	348.4	488.3	248.0
Median	316.6	418.6	198.3
10th percentile	169.2	223.4	96.5
90th percentile	539.5	790.1	444.2
Standard Dev.	184.9	370.5	183.8
Coef var.	0.5	0.8	0.7
N	688	3271	1137
<b>2007</b>			
Mean	326.1	482.8	252.4
Median	305.6	439.5	204.4
10th percentile	158.0	230.0	88.0
90th percentile	528.1	799.4	476.5
Standard Dev.	150.8	231.6	181.8
Coef var.	0.5	0.5	0.7
N	597	2784	1159
<b>2010</b>			
Mean	321.7	475.2	220.3
Median	290.4	436.3	184.7
10th percentile	165.0	215.6	77.8
90th percentile	511.5	788.3	391.9
Standard Dev.	151.8	236.1	175.7
Coef var.	0.5	0.5	0.8
N	527	2444	855

*Note:* A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW.

*Source:* Authors' calculations from FES (1999), EFS (2004, 2007), LCFS (2010).

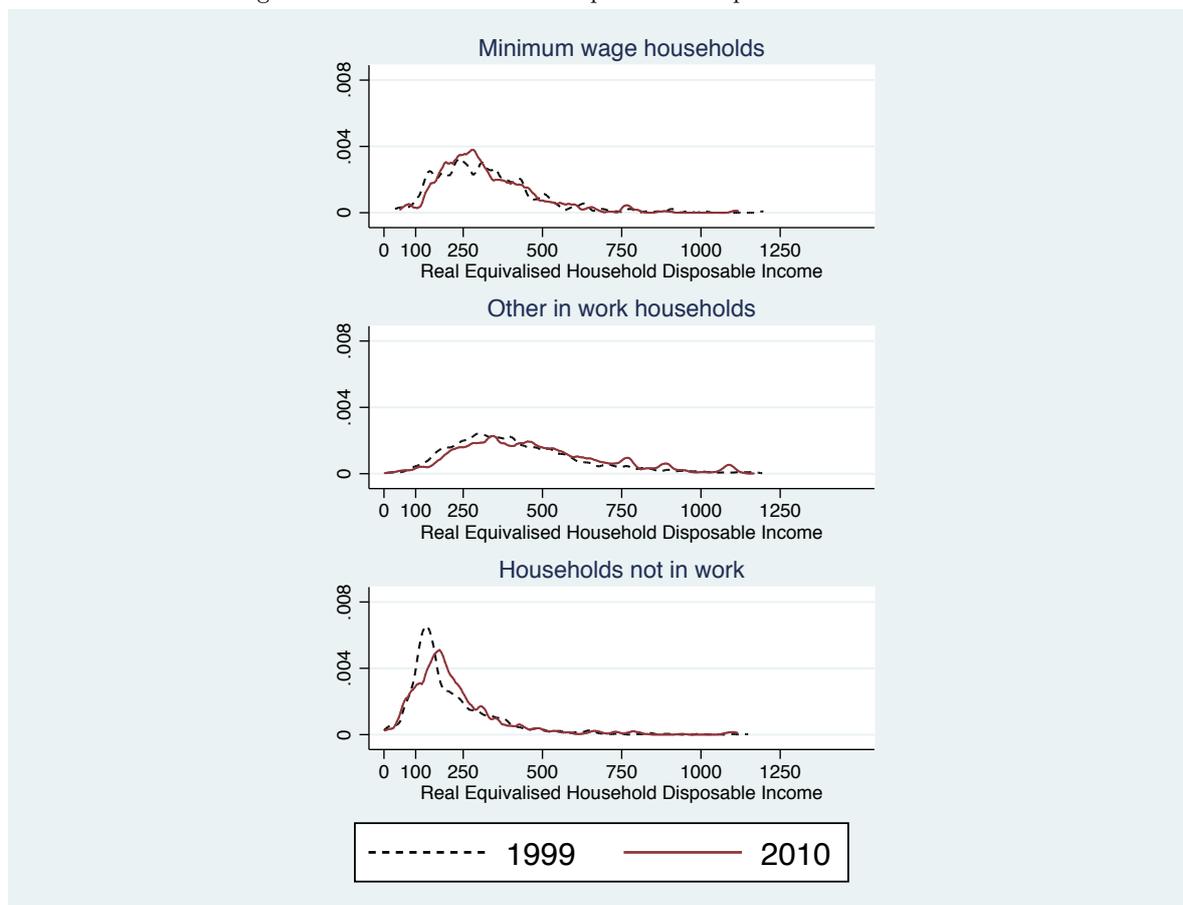
Figure 1: Distribution of Real Equivalised Disposable Income over time



*Note:* A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW. Other in work refers to all other working age households with at least one household member in employment. *Source:* Authors' calculations from FES (1999), EFS (2003, 2005, 2007), LCFS (2009, 2010).

Over the full sample period, as Table 5 and Figure 2 show, the income distribution of all household types has shifted to the right. Since 2007 however, average real disposable incomes for all household types have fallen back, more so for workless households than other groups. Average (median) real disposable incomes for NMW households in the FES sample fell by around 5% between 2007 and 2010. Average (median) real disposable incomes for other working households in the FES sample fell by around 5% over the same period. So the relative improvement of the NMW relative to average wages (Low Pay Commission, 2013) does not seem to be mirrored in real disposable incomes of NMW households.

Figure 2: Distribution of Real Equivalised Disposable Income



*Note:* A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW. Other in work refers to all other working age households with at least one household member in employment. *Source:* Authors' calculations from FES (1999), LCFS (2010).

#### 4.4 Household Consumption Patterns

We now examine the change in consumption patterns over time for different household types. We take the households (equivalised) expenditure on each of 14 broad consumption categories and divide it by total (equivalised) household spending to give the share of the good in total expenditure, the budget share, ( $s_i = p_i q_i / x$  where  $p_i$  is the price of good  $i$ ,  $q_i$  is the quantity bought and  $x$  is total expenditure).<sup>19</sup> Given this, we can graph or tabulate the level of, and changes in, average budget shares for different goods for different household groups and there-

<sup>19</sup>We use the square root of the number of household occupants to equalise.

fore examine whether the consumption patterns of NMW households have changed relative to other household types.

Table 6 gives the average total amounts spent by each household type over time and the distribution of total expenditures around those averages. The average (median) weekly level of per capita total expenditure by minimum wage households is, at around £180, some 50% that of other working households and around 10% more than that of the average workless household. This relative pattern does not appear to have changed much over time.

Table 7 outlines the budget shares by type and over time. Figure 5 tracks the changes in the budget shares of these items over the sample period for different household types. As in many previous studies, the data show that around one half of household spending is taken up by the basics of food, clothing, housing and fuel. Food expenditure is the modal category of expenditure for each housing type, with housing related expenditure second. The poorer the household, the larger the share of total expenditure on food. Consequently NMW households spend a statistically significantly larger fraction of their income on food, compared to other working households with non-NMW workers.<sup>20</sup>

Price changes affect the level of real disposable incomes over time. Figure 3 traces the average change in retail prices of these broad groups over the sample period. It is clear that prices for different groups have risen at different rates over time. While the average prices, as measured by the all-items RPI, grew by 50%, fuel and tobacco prices grew by over 100% between 1998 and 2012. In contrast, clothing prices fell by around 25% over the same period. Housing prices have eased off in recent years following the 2008 crash.<sup>21</sup>

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<sup>20</sup>The standard errors around these shares are in the range of 4 to 12 percentage points.

<sup>21</sup>The RPI component for housing includes an estimate of the cost of servicing a mortgage rather than the price of housing. This will in part also be determined by the level of interest rates.

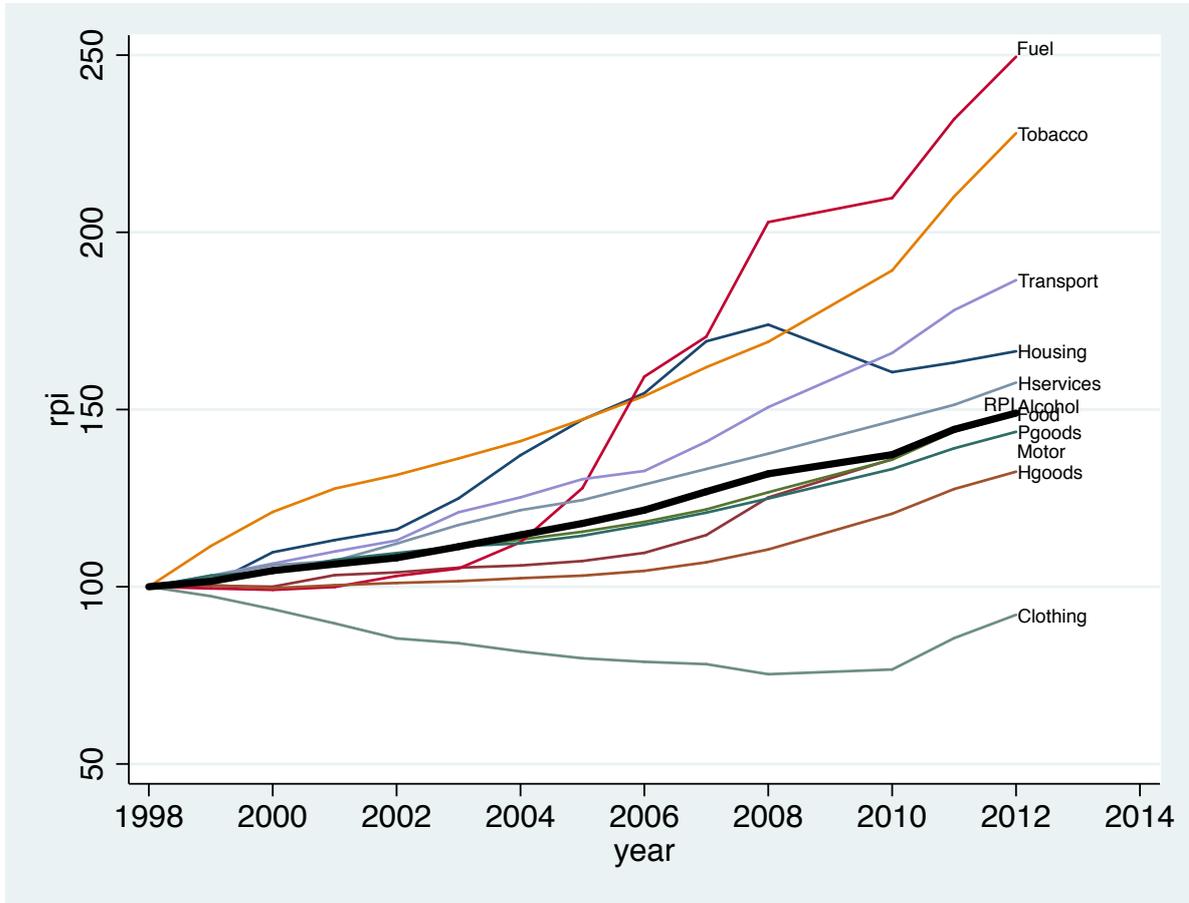
Table 6: Per Capita Real Weekly Expenditure Across Households

	Min. wage household	Other working HH	Non-working HH
<b>1999</b>			
Mean	194.8	284.7	167.4
Median	168.3	234.1	122.9
10th percentile	85.7	112.7	48.7
90th percentile	317.0	506.3	326.9
Standard Dev.	120.5	200.3	151.4
Coef var.	0.6	0.7	0.9
N	453	3519	1326
<b>2004</b>			
Mean	214.0	282.6	188.5
Median	183.6	237.8	148.1
10th percentile	92.7	113.5	67.8
90th percentile	350.1	497.4	341.7
Standard Dev.	135.1	191.1	156.7
Coef var.	0.6	0.7	0.8
N	688	3271	1137
<b>2007</b>			
Mean	183.1	287.0	196.2
Median	161.9	232.6	155.9
10th percentile	80.8	118.4	66.4
90th percentile	301.0	507.1	356.8
Standard Dev.	103.4	202.0	151.9
Coef var.	0.6	0.7	0.8
N	597	2784	1159
<b>2010</b>			
Mean	177.3	264.8	184.9
Median	154.1	221.3	139.9
10th percentile	81.1	110.4	60.9
90th percentile	288.5	460.1	348.1
Standard Dev.	114.4	176.7	169.3
Coef var.	0.6	0.7	0.9
N	527	2444	855

*Note:* A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW.

*Source:* Authors' calculations from FES (1999), EFS (2004, 2007), LCFS (2010).

Figure 3: RPI (1998-2012)



Note: Authors' calculations from ONS RPI data. See Table B1 for a description of each category.

These differential price changes will influence the expenditure patterns of households along with income changes. Over the sample period, the proportion of disposable income spent on food has remained broadly constant for NMW and other working households, at around 20% and 18% respectively, but fallen for workless households, for whom, fuel and housing shares have risen. The housing budget share has also risen significantly, by around 2 percentage points, among NMW households, but fallen for other working households. This reflects the larger incidence of home ownership among the latter group who benefit more from the fall in servicing mortgages following the lowering of interest rates in the wake of the 2008 crash. The spread around these mean estimates is quite large. 10% of the NMW households spend 36% of their budget on housing, while 10% of NMW households only spend 3% of their budget on housing. The 90th

percentile food share is 32% for NMW households. Again these spreads are rather similar to that of there working households. The budget spreads for workless households are wider still.<sup>22</sup>

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<sup>22</sup>Results available from authors' on request.

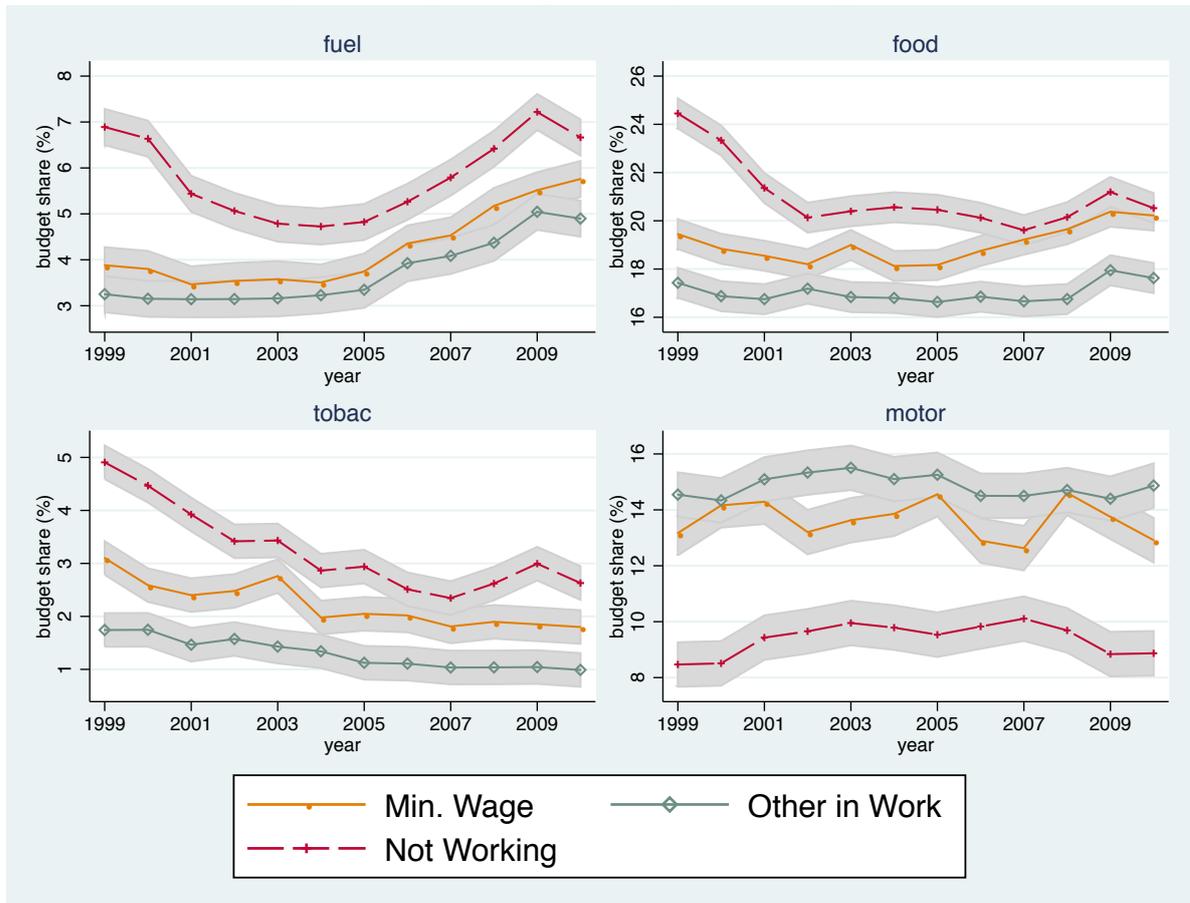
Table 7: Minimum Wage Workers and Household Budget Shares

	Min. wage households					Other working households					Non-working households				
	1999	2004	2010	1999	2004	2010	1999	2004	2010	1999	2004	2010	1999	2004	2010
Housing	15.2 (0.3)	15.5 (0.3)	17.2 (0.4)	17.0 (0.1)*	16.2 (0.1)*	16.7 (0.2)	12.8 (0.2)*	17.2 (0.3)*	18.3 (0.4)*	12.8 (0.2)*	17.2 (0.3)*	18.3 (0.4)*	12.8 (0.2)*	17.2 (0.3)*	18.3 (0.4)*
Fuel	3.7 (0.09)	3.4 (0.06)	5.5 (0.1)	3.1 (0.03)*	3.1 (0.03)*	4.7 (0.05)*	5.5 (0.09)*	4.2 (0.08)*	6.1 (0.1)*	5.5 (0.09)*	4.2 (0.08)*	6.1 (0.1)*	5.5 (0.09)*	4.2 (0.08)*	6.1 (0.1)*
Food	19.7 (0.2)	18.6 (0.2)	20.3 (0.3)	17.8 (0.09)*	17.2 (0.10)*	18.1 (0.1)*	23.0 (0.2)*	20.5 (0.2)*	20.8 (0.2)	23.0 (0.2)*	20.5 (0.2)*	20.8 (0.2)	23.0 (0.2)*	20.5 (0.2)*	20.8 (0.2)
Alcohol	4.5 (0.2)	3.8 (0.1)	3.4 (0.1)	4.5 (0.06)	3.8 (0.06)	3.4 (0.06)	4.3 (0.1)	3.6 (0.1)	3.0 (0.1)*	4.3 (0.1)	3.6 (0.1)	3.0 (0.1)*	4.3 (0.1)	3.6 (0.1)	3.0 (0.1)*
Tobacco	2.8 (0.1)	2.0 (0.1)	1.8 (0.1)	1.7 (0.04)*	1.3 (0.04)*	1.0 (0.04)*	4.0 (0.1)*	2.5 (0.10)*	2.1 (0.1)*	4.0 (0.1)*	2.5 (0.10)*	2.1 (0.1)*	4.0 (0.1)*	2.5 (0.10)*	2.1 (0.1)*
Clothing	6.3 (0.2)	6.4 (0.2)	5.3 (0.2)	6.1 (0.09)	5.6 (0.08)*	5.1 (0.09)	5.9 (0.1)	5.7 (0.1)*	4.8 (0.1)*	5.9 (0.1)	5.7 (0.1)*	4.8 (0.1)*	5.9 (0.1)	5.7 (0.1)*	4.8 (0.1)*
Household goods	7.8 (0.3)	7.5 (0.2)	5.9 (0.2)	7.5 (0.1)	7.5 (0.1)	6.6 (0.1)*	8.4 (0.2)	7.5 (0.2)	7.2 (0.2)*	8.4 (0.2)	7.5 (0.2)	7.2 (0.2)*	8.4 (0.2)	7.5 (0.2)	7.2 (0.2)*
Household services	4.5 (0.1)	5.8 (0.1)	5.8 (0.1)	5.2 (0.07)*	6.2 (0.07)*	6.3 (0.09)*	5.2 (0.09)*	5.6 (0.1)	5.5 (0.1)	5.2 (0.09)*	5.6 (0.1)	5.5 (0.1)	5.2 (0.09)*	5.6 (0.1)	5.5 (0.1)
Personal Goods	3.6 (0.1)	3.6 (0.10)	3.2 (0.1)	3.7 (0.05)	3.6 (0.05)	3.7 (0.07)*	3.7 (0.08)	3.5 (0.09)	3.4 (0.1)	3.7 (0.08)	3.5 (0.09)	3.4 (0.1)	3.7 (0.08)	3.5 (0.09)	3.4 (0.1)
Motoring	13.9 (0.4)	14.4 (0.3)	13.8 (0.3)	14.9 (0.2)*	15.6 (0.2)*	15.3 (0.2)*	10.7 (0.2)*	11.4 (0.3)*	11.5 (0.3)*	10.7 (0.2)*	11.4 (0.3)*	11.5 (0.3)*	10.7 (0.2)*	11.4 (0.3)*	11.5 (0.3)*
Fares	2.4 (0.2)	2.4 (0.1)	2.9 (0.2)	2.4 (0.06)	2.1 (0.05)*	2.7 (0.09)	2.3 (0.08)	2.3 (0.09)	2.6 (0.1)	2.3 (0.08)	2.3 (0.09)	2.6 (0.1)	2.3 (0.08)	2.3 (0.09)	2.6 (0.1)
Leisure goods	4.9 (0.2)	5.1 (0.2)	4.0 (0.2)	4.9 (0.08)	4.9 (0.09)	3.8 (0.09)	5.0 (0.1)	5.0 (0.1)	3.8 (0.1)	5.0 (0.1)	5.0 (0.1)	3.8 (0.1)	5.0 (0.1)	5.0 (0.1)	3.8 (0.1)
Leisure services	10.4 (0.4)	10.9 (0.3)	10.3 (0.3)	10.7 (0.1)	12.2 (0.2)*	12.1 (0.2)*	8.8 (0.2)*	10.5 (0.2)	10.5 (0.3)	8.8 (0.2)*	10.5 (0.2)	10.5 (0.3)	8.8 (0.2)*	10.5 (0.2)	10.5 (0.3)
Other	0.4 (0.04)	0.5 (0.03)	0.5 (0.06)	0.4 (0.02)	0.6 (0.02)	0.6 (0.03)	0.3 (0.03)	0.4 (0.02)*	0.5 (0.05)	0.3 (0.03)	0.4 (0.02)*	0.5 (0.05)	0.3 (0.03)	0.4 (0.02)*	0.5 (0.05)

*Note:* Standard errors in parentheses. A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW. Results of *t* tests (significant at 5%) of the equality of means between household types are reported. For each year, in the column for other working households the mean is compared to the value for the corresponding year for minimum wage households. For each year in the column for non-working households the mean is also compared to the corresponding value for each year for minimum wage households.

*Source:* Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010).

Figure 4: Changes in Budget Shares by Household Type



Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

The share of total spending accounted for by each household type is broadly in line with the share of each household type in the population, (Table 8). As a result, minimum wage households comprise around 13% of all working age households and account for around 12% of all expenditures. Non-minimum wage working households comprise 66% of households and 64% of all expenditure in 2010/11. Table 9 gives the different household share of expenditure for each of the 14 sub-categories. Since NMW households spend relatively more on tobacco, the share of total tobacco expenditure account for by NMW households is relatively higher, at around 18% in 2010/11. Conversely the share of household goods accounted for by NMW households is, at around 11%, lower than the average. The average weekly amounts spent per head on each category are around 50% lower for minimum wage households than among other households

with someone in work, with the exception of travel and alcohol and tobacco, where the weekly amounts are broadly similar.

Table 8: Distribution of household types

	1999	2004	2010
Proportion of Minimum Wage households	8.6 (0.004)	13.5 (0.005)	13.8 (0.006)
Proportion of other working households	66.4 (0.006)	64.2 (0.007)	63.9 (0.008)
Proportion of Non-working households	25.0 (0.006)	22.3 (0.006)	22.3 (0.007)

*Note:* Standard errors in parentheses.

*Source:* Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010).

Since Table 7 confirms that different household types consume different bundles of goods and services and Figure 3 shows that inflation rates of the different goods are not uniform, this means that prices, and hence real incomes of different household types, will grow at different rates. Figure 5 combines the budget share estimates with the item specific price changes to calculate an Expenditure index for each household type (This is an Expenditure index rather than a strict price index as it uses changing prices and changing budget shares to produce an overall percentage change year on year in expenditure). The Figure shows that average price index for NMW households has risen at broadly the same rate over time as that for other working households. In other words while the household groups have different consumption bundles the combined effect of differential price movements across different budget shares (over time) produces a similar aggregate price index. In contrast, the consumption patterns of workless households are such that prices for the goods consumed by this household type have risen at a slower rate over the sample period. This suggests that the total expenditure of workless households has not kept pace with a general measure of how prices are rising. This figure also shows how the corresponding expenditure of a pensioner household has exceeded the rate of growth of the RPI.

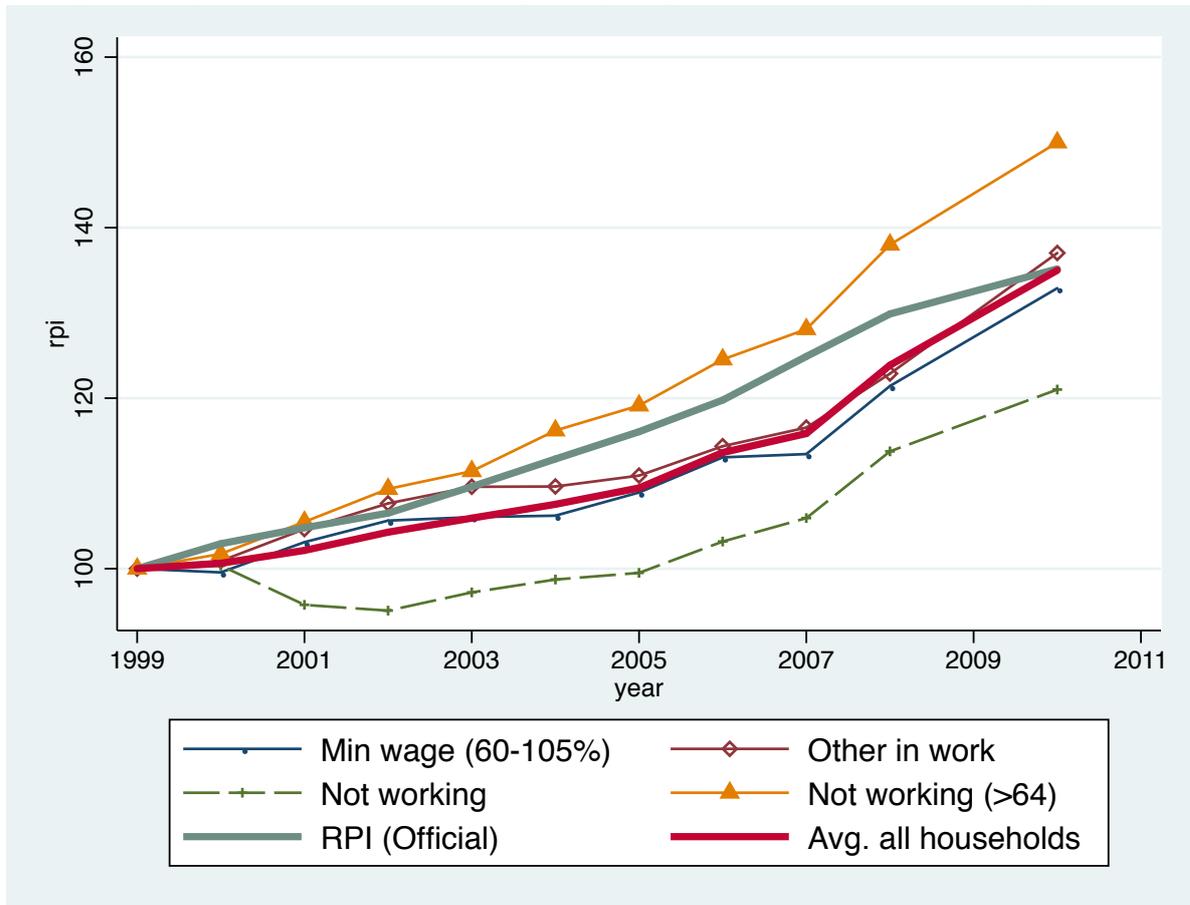
Table 9: Minimum Wage Workers and Share of Total Expenditure

	Min. wage households			Other working households			Non-working households		
	1999	2004	2010	1999	2004	2010	1999	2004	2010
Housing	7.4	12.6	12.3	74.0	67.8	64.6	18.6	19.7	23.2
Fuel	8.4	13.5	13.6	62.0	62.5	59.4	29.7	24.0	27.0
Food	8.7	13.7	13.6	66.1	64.2	61.2	25.2	22.1	25.3
Alcohol	8.4	13.0	12.6	70.7	67.4	66.2	20.9	19.6	21.2
Tobacco	11.0	16.3	17.9	55.7	55.6	48.3	33.3	28.1	33.7
Clothing	8.1	14.9	13.4	71.2	65.5	64.0	20.6	19.6	22.6
Household goods	8.3	13.4	11.3	67.9	66.8	63.1	23.8	19.7	25.6
Household services	6.8	11.8	11.8	69.9	69.0	67.1	23.3	19.2	21.2
Personal Goods	7.8	12.5	11.4	69.0	67.2	65.6	23.2	20.3	23.0
Motoring	7.6	12.8	11.7	72.9	70.9	67.5	19.6	16.3	20.8
Fares	7.4	15.1	11.9	73.0	64.3	64.7	19.5	20.6	23.4
Leisure goods	7.8	12.2	13.4	69.6	65.8	63.8	22.6	21.9	22.9
Leisure services	8.5	11.7	11.3	70.8	68.9	64.1	20.7	19.4	24.6
Other	8.1	13.7	11.8	73.6	72.2	66.2	18.3	14.1	22.0
Total	8.0	12.9	12.3	70.0	67.2	64.0	22.0	19.8	23.6

*Note:* A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW.

*Source:* Authors' calculations from FES (1999), EFS (2004), LCFS (2010).

Figure 5: Expenditure indices and RPI weighted by budget shares of different household types



Authors' calculations using data on budget shares from the FES/EFS/LCFS, and ONS RPI data. See the text for a full description of data construction.

#### 4.5 Estimation of Engel Curves

Another way to compare consumption behaviour of different household types is to estimate Engel curves, which trace the relationship between budget shares and household expenditures. Any differences in the shape or slope of these curves across household types can be indicative of whether certain consumption goods have different characteristics across household types. The estimation methodology is quite simple. Given the budget share and measures of household income and expenditure we estimate a simple regression of the budget share as a function of the log of household expenditure according to (1). Blow (2003) applies a similar methodology to

compare expenditure patterns across different household types.<sup>23</sup>

The non-parametric estimates of the Engel curves graphed below are based on weighted averages of the budget share around each level of expenditure, with the weights based on Epanechnikov kernel density smoothing. The level of aggregation across goods affects Engel curve estimates. Demand for a narrowly defined good tends to vary erratically across consumers and over time. Engel curves based on broad aggregates, like food, are affected more by variation in the mix of goods purchased. The aggregate necessity food, for example, could include both inferior goods and luxuries, which may have very different Engel curve shapes.

Figures 6 and 7 summarise the non-parametric estimates for Engel curves for different household types over time for four consumption goods, food, fuel, tobacco and motoring. The shaded areas represent the 95% confidence interval around the central estimate. The regression estimate equivalents are given in Table A5 of the appendix along with Figures A4 to A6 for the non-parametric Engel curves for the other goods.

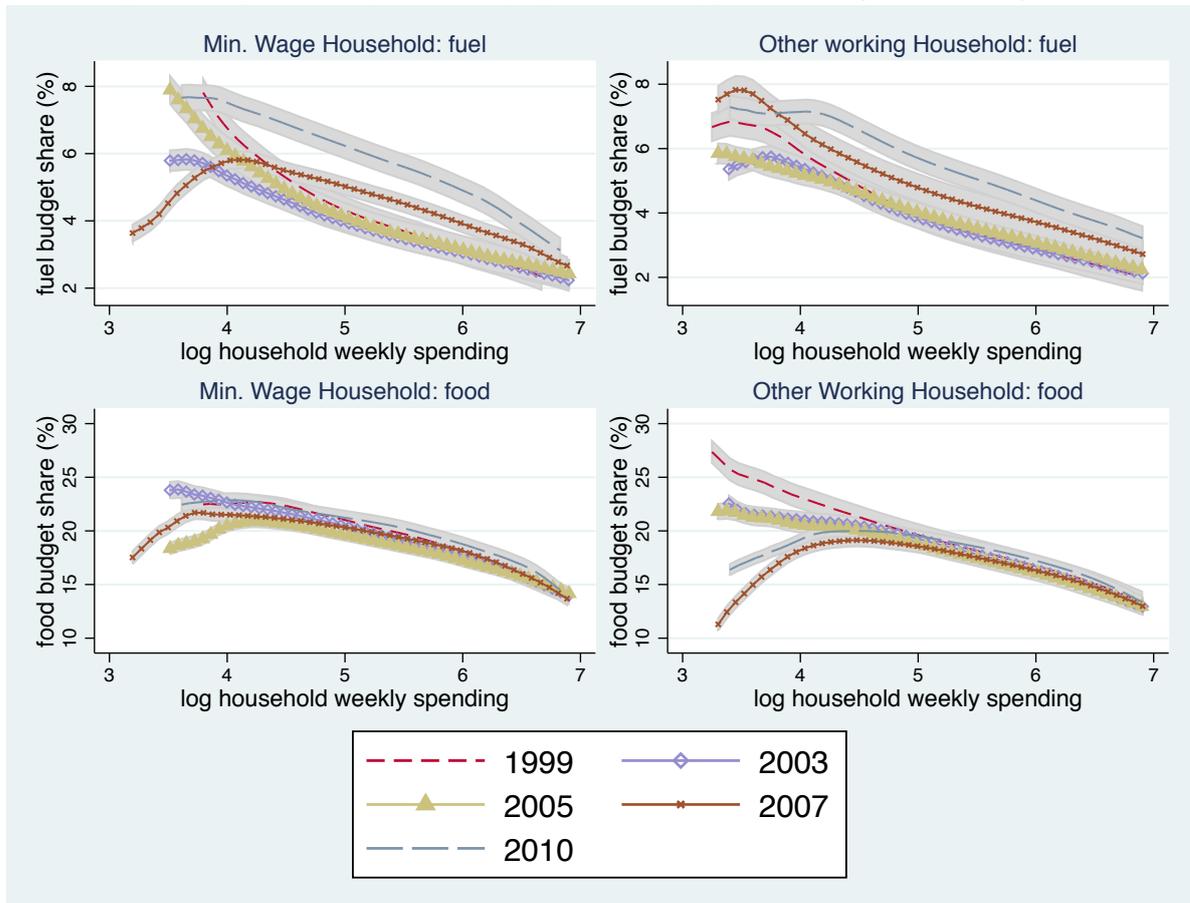
The slopes of the Engel curves for each household type are similar in each period, suggesting that the goods are consumed in a similar way across the different household types.<sup>24</sup> Over time, the slopes Engel curves for both fuel and in particular food appear to go from downward sloping and monotonic to non-monotonic. The share of the household budget spent on food and fuel now rises at low incomes and falls at higher incomes. This suggests that food and fuel are economic luxuries for many poorer households or rather that households will spend more on food and fuel if their incomes allow them to.

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<sup>23</sup>For more complex analysis that requires a much longer time series of data than afforded by the period in which the minimum wage has been in existence see for example Banks, Blundell and Lewbel (1997).

<sup>24</sup>The fuel and food intercepts for workless households is higher however in the earlier part of the sample suggesting that the share of expenditures in these goods is higher at lower incomes.

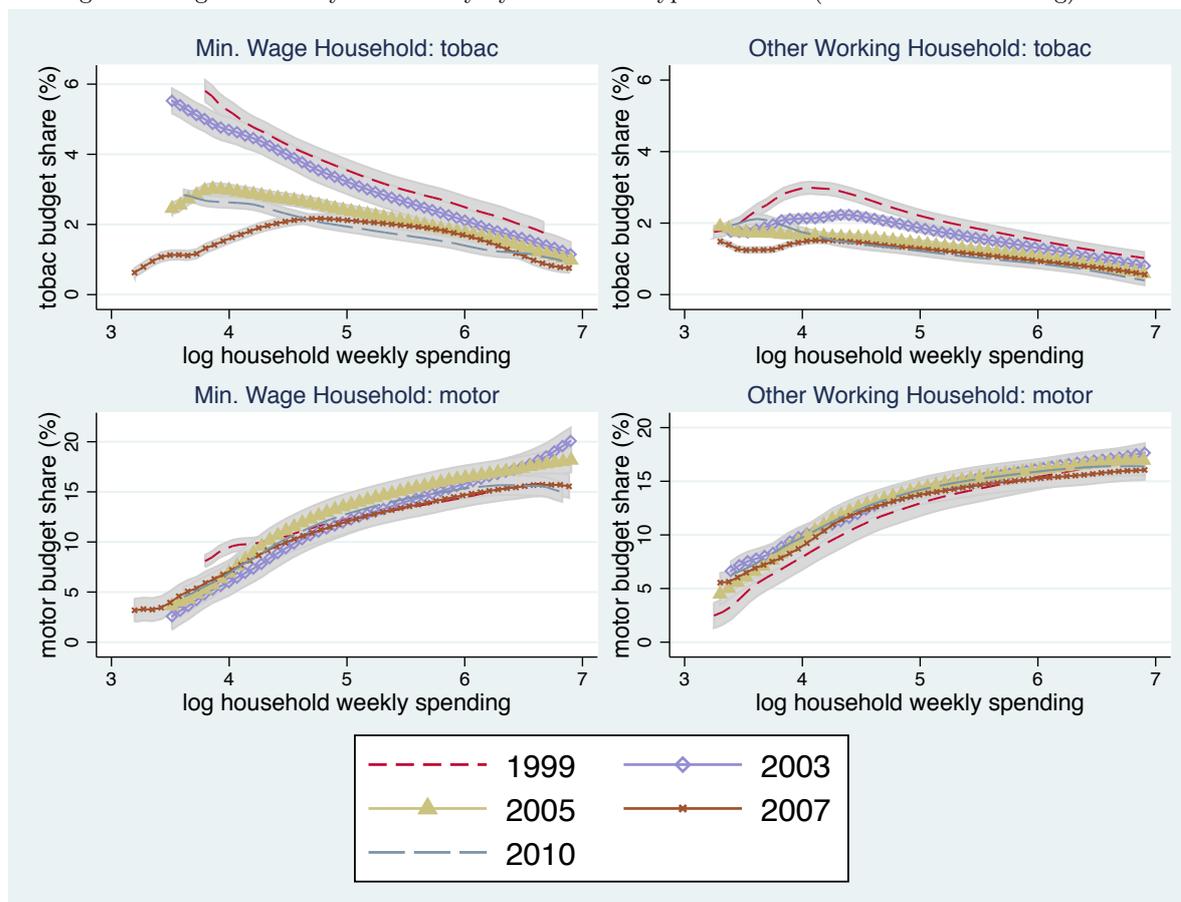
Figure 6: Engel Curves by Commodity by Household Type over time (Fuel and Food)



Source: Authors' calculations from FES (1999), EFS (2003-2007), LCFS (2010). See Table B1 in the Appendix for a full description of each category.

A similar pattern can be seen for Tobacco in Figure 7. The share of tobacco in total expenditure has been falling for all household types over time, most of all for poorer NMW and workless households (compare the intercepts of the Engel curves in the two panels). In contrast, the Engel curves for motoring expenditures are largely similar and unchanged over time across household types. For most other commodities the Engel curve estimates are similar across household types. The difference in the size of the tobacco budget shares by income within household types, however, is much less than the variation in expenditures by income for food.

Figure 7: Engel Curves by Commodity by Household Type over time (Tobacco and Motoring)



Source: Authors' calculations from FES (1999), EFS (2003-2007), LCFS (2010). See Table B1 in the Appendix for a full description of each category.

## 4.6 Income Elasticities

These different patterns across different goods are reflected in significantly different estimates of the average income, expenditure and price elasticities over time, based on equations (2), (3) and (6) and outlined in Table 10.<sup>25</sup> The estimated expenditure elasticities for food are negative confirming the findings of many previous studies, namely that the average share of the household budget spent on food falls as households become wealthier. Household goods, personal goods, leisure goods and motoring expenditures are all luxury items (positive expenditure elasticities,

<sup>25</sup>If the analysis suggests that the relationship between the commodity and expenditure may be modelled better by a quadratic we report the results based on this specification. Note that these averages obscure the different expenditure patterns by income observed in Figures 6 and 7.

income elasticities greater than one). Spending on these goods rises more than proportionately with income. Along with housing, food and fuel, alcohol and tobacco appear to be economic necessities (income elasticities less than one). Spending on these goods rises less than proportionately with income. These income and expenditure elasticity estimates do not change much over time. The price elasticities, estimated over the entire sample period, by necessity, are all greater than one, in absolute terms, with the exception of household services. This suggests that demand is price elastic for most of these goods. Household goods, motoring and leisure services appear to be particularly price elastic. The estimated elasticities for minimum wage households are not significantly different from the other two household groups, (compare panels 1, 2 and 3).

Table 10: Estimated elasticities by Household Type

	Min. wage households			Other working households			Non-working households		
	1999	2004	2010	1999	2004	2010	1999	2004	2010
<i>Income elasticities</i>									
Housing	0.5	0.4	0.2	0.5	0.4	0.3	0.8	0.3	0.3
Fuel	0.2	0.3	0.4	0.3	0.4	0.4	0.2	0.4	0.6
Food	0.7	0.7	0.8	0.6	0.7	0.7	0.7	0.8	0.9
Alcohol	1.0	0.8	0.9	0.8	0.7	0.8	0.7	0.8	0.7
Tobacco	0.4	0.5	0.6	0.5	0.5	0.5	0.7	0.7	0.9
Clothing	1.1	1.1	1.1	1.2	1.1	1.1	1.0	1.0	1.1
Household goods	1.5	1.4	1.4	1.4	1.4	1.5	1.2	1.2	1.5
Household services	0.8	0.8	0.9	0.9	0.9	1.0	0.7	0.8	0.8
Personal goods	1.1	1.0	1.3	1.1	1.2	1.1	1.0	1.3	1.3
Motoring	1.0	1.2	1.1	1.2	1.2	1.1	1.1	1.2	1.2
Fares	0.9	1.2	0.9	0.9	0.8	1.1	0.9	1.0	1.1
Leisure goods	1.3	1.0	1.5	1.3	1.3	1.3	1.2	1.3	1.3
Leisure services	1.7	1.6	1.7	1.6	1.6	1.7	1.4	1.5	1.5
<i>Expenditure elasticities</i>									
Housing	-0.5	-0.6	-0.8	-0.5	-0.6	-0.7	-0.2	-0.7	-0.7
Fuel	-0.8	-0.7	-0.6	-0.7	-0.6	-0.6	-0.8	-0.6	-0.4
Food	-0.3	-0.3	-0.2	-0.4	-0.3	-0.3	-0.3	-0.2	-0.1
Alcohol	-0.0	-0.2	-0.1	-0.2	-0.3	-0.2	-0.3	-0.2	-0.3
Tobacco	-0.6	-0.5	-0.4	-0.5	-0.5	-0.5	-0.3	-0.3	-0.1
Clothing	0.1	0.1	0.1	0.2	0.1	0.1	-0.0	-0.0	0.1
Household goods	0.5	0.4	0.4	0.4	0.4	0.5	0.2	0.2	0.5
Household services	-0.2	-0.2	-0.1	-0.1	-0.1	-0.0	-0.3	-0.2	-0.2
Personal goods	0.1	0.0	0.3	0.1	0.2	0.1	-0.0	0.3	0.3
Motoring	0.0	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2
Fares	-0.1	0.2	-0.1	-0.1	-0.2	0.1	-0.1	-0.0	0.1
Leisure goods	0.3	-0.0	0.5	0.3	0.3	0.3	0.2	0.3	0.3
Leisure services	0.7	0.6	0.7	0.6	0.6	0.7	0.4	0.5	0.5

Note: Elasticities evaluated at the means of log household expenditure and respective budget shares.

Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010).

## 4.7 Budget Share Changes in the Minimum Wage

We now look to see if there is any evidence that consumption patterns changed differently in the periods when the NMW rose by different amounts. The larger the NMW hike the larger the income boost to a NMW household and so the larger any treatment.<sup>26</sup> We can summarise any relative change in minimum wage household budget share or expenditure patterns more formally using the following difference-in-difference analysis estimated over data pooled over successive cross-sections:

$$s_{it} = b_0 + b_1 NMW_i + b_2 time_i + b_3 NMW_i * time_i + u_{it} \quad (7)$$

$i = 1, ..H$  households,  $t = 1, ..T$  time periods

where  $NMW$  is a dummy variable that takes the value 1 if for NMW households and zero otherwise and  $time$  is a dummy variable that indicates whether the observation is from the second period. The coefficient  $b_1$  indicates the baseline difference in the budget share of minimum wage households relative to other households in the base year, the coefficient  $b_2$  is the change in the budget shares for non-NMW households between the base and second time periods and  $b_3$  measures any additional change in the budget share specific to NMW households in the second period. We estimate (7) over three separate time periods, with and without a set of socio-demographic controls that may proxy differences in consumer tastes.<sup>27</sup>

Table 11 gives the estimated relative change in the budget share of minimum wage households relative to other working households. The Table indicates that there has been little significant shift in the average relative amounts spent by minimum wage households on any of these broad categories, with the possible exception of alcohol, for which minimum wage households appear to have been reduced expenditure relatively more than other working households in recent years.

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<sup>26</sup>Since the weekly change to household income from the NMW depends on how many hours each NMW occupant works, then it may be the NMW treatment effect is different across households. The more hours worked the larger the income boost from the NMW and hence the more likely a change in consumption behaviour would be observed. Since the FES is not a panel, it is not possible to track households over time. It is possible however to look at consumption patterns of NMW households working similar hours over time. We leave this for future work.

<sup>27</sup>The controls are age, gender, ethnicity, marital status, years of education and number of children of the head of household along with a set of 11 regional dummy variables.

Table 11: Difference-in-Difference Estimates of Changes in Household Budget Shares

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Housing	Food	Fuel	Alcohol	Tobacco	Clothing	Household goods	Household services	Personal goods	Motoring	Fares	Leisure goods	Leisure services
1999/2000	-1.801 (1.574)	0.262 (1.195)	-0.097 (0.579)	0.221 (0.835)	1.146 (1.110)	-0.380 (1.267)	2.289 (1.293)	-1.336 (0.692)	0.276 (0.605)	-0.639 (1.875)	-0.223 (1.128)	1.013 (0.884)	1.073 (1.603)
2004/2005	1.482 (1.501)	-0.507 (0.953)	-0.469 (0.356)	-1.938** (0.711)	-0.337 (1.053)	0.588 (0.968)	0.104 (1.038)	-0.555 (0.684)	0.329 (0.504)	-1.165 (1.526)	0.977 (0.935)	1.116 (0.786)	0.897 (1.412)
2009/2010	-1.115 (1.870)	-0.203 (1.155)	-0.964 (0.549)	-1.425* (0.716)	-1.213 (1.138)	-0.667 (0.920)	2.086 (1.082)	0.592 (0.702)	-0.203 (0.563)	2.247 (1.547)	-0.438 (1.188)	0.131 (0.824)	-0.661 (1.529)

Note: Robust standard errors in parentheses. Coefficients give percentage point change in real expenditure for minimum wage households relative to other working households. From the regression:  $s_{it} = b_0 + b_1NMMW_i + b_2time_i + b_3NMMW_i * time_i + u_{it}$ , where time is a pair of years as indicated.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## 5 Minimum Wage, Material Deprivation, Savings and Debt

### 5.1 Introduction Concepts of Debt, Savings and Material Deprivation and Conceptual Caveats.

In this section of the report we describe the available information regarding savings, debt, household family financial circumstances and deprivation. This description is limited by the data which is available in the major surveys. We explored all of these data to attempt to develop the most complete picture.

In Appendix B we list all of the available survey instruments which relate to these dimensions of the lives of respondents. As in the previous sections of this report we make a fundamental distinction between Minimum Wage households, Other Working Households and Non-Working Households in our attempt to benchmark how the minimum wage has affected households finances since 1999. Table B2 lists all the relevant available data from the FRS. Likewise Appendix Table B3 lists all the relevant questions from the BHPS and Table B4 lists all the relevant variables from the Understanding Society data.

What should be noted at the outset is that there is no clear and definitive data on household debt and material circumstances which has been collected in a directly comparable way over the course of the last 20 or so years. This means that it is very difficult to appraise the position in comparative terms for households (or indeed individuals) over this period. One important problem faced by this study is the clarification and measurement of debt and what is meant by indebtedness. Clearly any family with their own home and a mortgage may be hugely indebted compared to a family who lives in rented accommodation. However the renting family may endure much more day to day and weekly hardship if they cannot meet their food and energy costs. Hence working out the appropriate concept of indebtedness and its measurement in data is a central problem for this area of research.

At the outset it should be recognized that there are important conceptual problems in getting

good information on debt and an individuals (or households) financial position. Most importantly - when questions are asked about debt it is difficult to extract household debt - in terms of mortgages for housing - from debt borne of overspending on consumption to contribute to their everyday material circumstances. Debt associated with house purchase is obviously going to be much higher for those on higher incomes - but this is because this mortgage is not really debt, but largely investment. Truly poor households in difficult circumstances cannot take on mortgages and may need to borrow money to feed or clothe themselves or their children. This is a different form of debt and should be the type which most concerns us. Nonetheless, this kind of debt is difficult to measure - making sure it excludes the debt relating to house purchase.

Further problems arise with the concept of indebtedness when one considers how the relevant information can be elicited. Specifically, consider the case of credit card debt. Most credit card debt incurred by working households is routinely paid off at the end of the month - in this sense this is not really debt - it is just deferred spending. In the case of minimum wage households or non-working households this kind of debt may not be paid off at the end of the month - and in that sense this is real debt which, with interest payments owing, can grow at an alarming rate. Also, the very fact that someone is working, and on a high income, will mean that their credit card limit is very high compared to others. In this sense the credit card bill at the end of the month (reported as debt) is not really debt but just a measure of the potential size of how well-off a person is, in terms of the level of potential deferred spending which they can undertake.

A second area of considerable conceptual difficulty relates to how one reliably measures deprivation. Deprivation is a relative concept which will always be debatable. It is inherently difficult to determine what indicators of deprivation one can reliably compare across household. Families have very different priorities and so making an absolute judgment on what level of the inability to eat out, or not being able to take holidays, or decorate one's house constitute deprivation is difficult. Some households may regard themselves as deprived if they cant do any of these things - others would not regard themselves as deprived if they could not do all of these.

A further area of difficulty is in terms of how one measures savings. In some sense the biggest

item of most households saving in the UK is their house purchase, but since this is usually done through a mortgage then this is often thought of as debt. Getting reliable data on the extent of other saving is problematic. Most households do not have regular savings plans on a monthly basis. By default most households only know what they may be able to save when they find they have a surplus in their current account at the end of the month (or year). Hence asking people how much they save on a monthly basis is unlikely to yield much valuable information for a sensible proportion of the sample. In addition, if our household of interest is the minimum wage household - we are even more unlikely to find that they are saving on a regular basis. Additional difficulties are posed by trying to use variables like the amount or fraction of savings compared to household income. By definition, the latter will be an amalgam of several separate income streams and hence prone to several sources of measurement error. To compound this measurement error by using this as a denominator in a ratio relating to current savings in the numerator seems flawed.

An alternative way of approaching the problem of trying to assess the relative material position of those in receipt of the minimum wage is to look at their material circumstances and specifically their relative material deprivation. The problem with this kind of analysis is that such judgements are often not comparable across households. For example, most households would consider themselves deprived if they did not have a television. For a limited number of households this is their positive preference and nothing to do with deprivation.

Taken together these measurement and reporting problems in trying to understand the size of debt and savings in households or the extent of household deprivation seem to be quite imposing. This should be taken into account when assessing the evidence which follows in this report.

## **5.2 Evidence from the Family Resources Survey**

Data from the FRS allow us to compare the position of the household types over the years 2004-2010 on an annual basis. The data is limited for our purposes in that it does not have a NMW

pre-period to allow us to compare the treatment household (MW household) before and after the uprating of the NMW with the ‘control’ households of non-working households, and working households. This is a direct limitation to our analysis which is beyond our control.

In Table 12 we report Probit estimation results relating to whether the household is in material deprivation with respect to particular circumstances. Figures 8 to 10 simply graph the descriptive statistics relating to the fraction who report each form of deprivation. The dimensions of material deprivation which are reported come directly from the questions in the FRS and are being able to/or have: Take a holiday once a year, Eat out for a social meal once a week, Two pairs of all weather shoes; Keep a home decorated; Take out household contents insurance; Make regular savings; Replace worn furniture; Replace/repair electrical goods, Have money for self; Afford a hobby or leisure activity; Keep up with the bills; Heat the home adequately.

Table 12: Probit Estimates of household measures of material deprivation (2004-2010)

		Dep. variable: measure of material deprivation										
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		holiday	meal	shoes	decorate	insure	regsave	furn	elect	money	leisure	warmhouse
Min wage hhold		0.087*** (0.014)	0.049*** (0.011)	0.019* (0.008)	0.048*** (0.012)	0.044*** (0.011)	0.102*** (0.014)	0.092*** (0.014)	0.083*** (0.013)	0.061*** (0.012)	0.051*** (0.011)	0.018* (0.008)
Non-working hhold		0.211*** (0.009)	0.152*** (0.008)	0.113*** (0.007)	0.167*** (0.009)	0.162*** (0.008)	0.240*** (0.009)	0.212*** (0.009)	0.205*** (0.009)	0.178*** (0.008)	0.097*** (0.007)	0.075*** (0.007)
2005		0.001 (0.005)	-0.001 (0.003)	-0.004 (0.002)	-0.006 (0.004)	0.001 (0.003)	-0.003 (0.005)	0.002 (0.005)	0.003 (0.004)	-0.002 (0.004)	-0.008** (0.003)	-0.000 (0.002)
2006		0.001 (0.005)	-0.006 (0.003)	-0.003 (0.002)	-0.003 (0.004)	0.003 (0.003)	-0.007 (0.005)	-0.001 (0.005)	0.003 (0.004)	-0.005 (0.004)	-0.007* (0.003)	0.009*** (0.002)
2007		0.006 (0.005)	-0.001 (0.003)	-0.003 (0.002)	-0.003 (0.004)	0.003 (0.003)	0.001 (0.005)	-0.006 (0.005)	-0.002 (0.004)	-0.003 (0.004)	-0.008* (0.003)	0.015*** (0.003)
2008		0.021*** (0.005)	0.013*** (0.004)	0.001 (0.002)	0.003 (0.004)	0.004 (0.003)	0.021*** (0.006)	0.013*** (0.005)	0.013** (0.004)	0.012** (0.004)	0.002 (0.003)	0.030*** (0.003)
2009		0.035*** (0.005)	0.015*** (0.004)	0.000 (0.002)	0.003 (0.004)	-0.004 (0.003)	0.024*** (0.006)	0.023*** (0.005)	0.018*** (0.004)	0.012* (0.005)	0.004 (0.004)	0.029*** (0.003)
2010		0.044*** (0.005)	0.011** (0.004)	-0.001 (0.002)	-0.004 (0.004)	-0.003 (0.003)	0.024*** (0.006)	0.028*** (0.005)	0.022*** (0.004)	0.012* (0.005)	0.007 (0.004)	0.026*** (0.003)
N		121341	119242	121671	109013	109804	120642	107853	107445	121138	120865	113532
Chi2		-63328.80	-33361.41	883.87	-34045.50	-20911.15	-66494.03	-50971.95	-38589.70	-50035.82	-25354.52	-12778.45

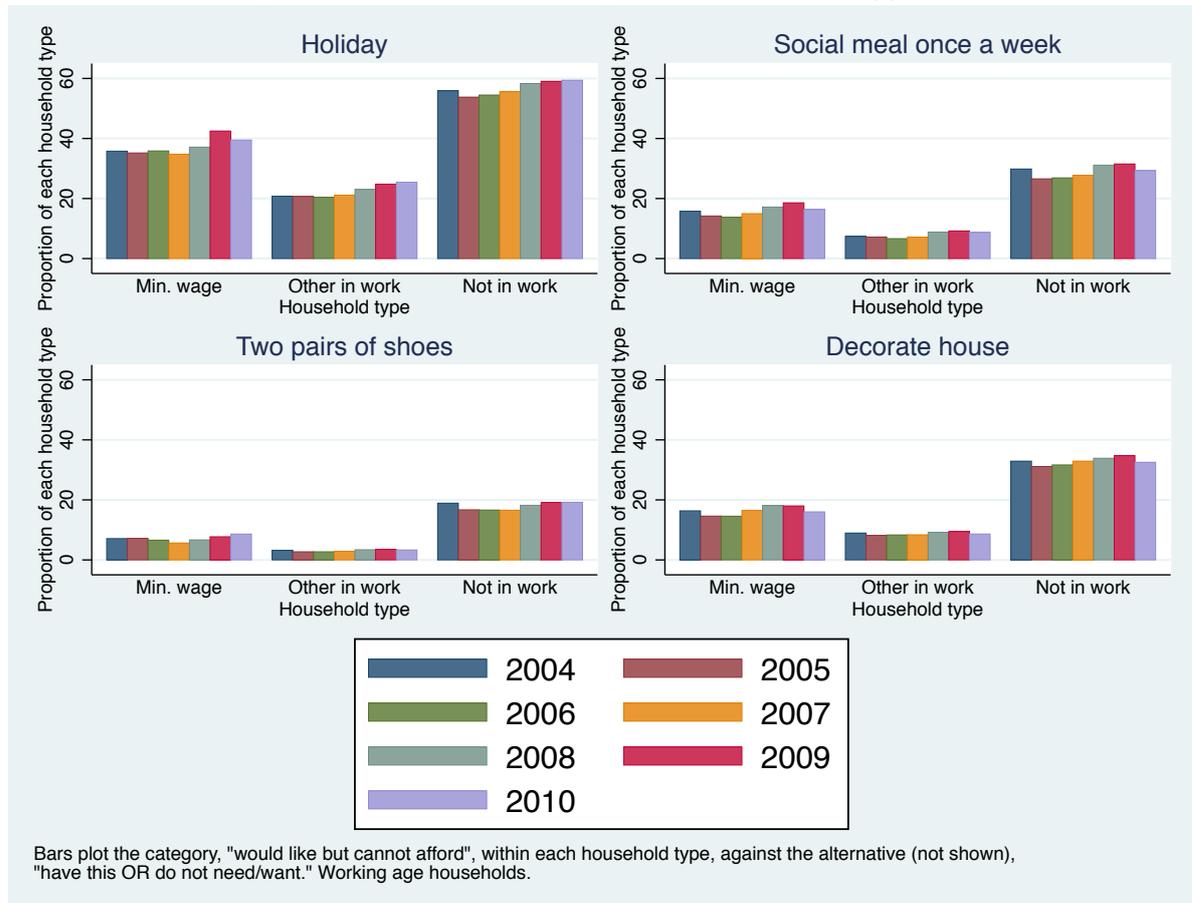
Note: Robust standard errors in parentheses. Marginal effects reported.

The dependent variable is one of 11 measures of material deprivation. Controls included but not reported are NMW type\*year interactions, dummies for sex, age groups, household type, marital status, number of kids, qualifications, housing tenure and region. Working age households.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

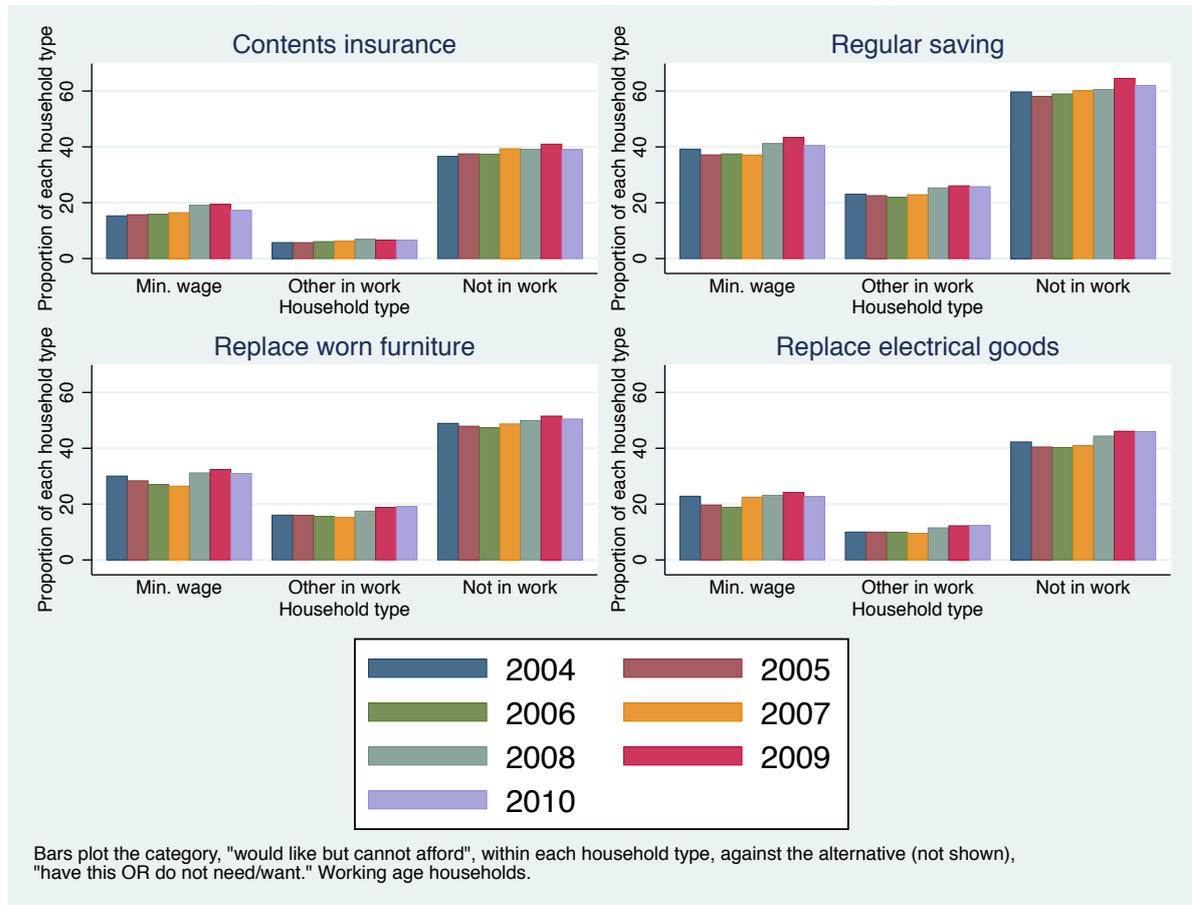
Source: Calculations from Family Resources Survey (2004-2010).

Figure 8: Measures of Material Deprivation from the FRS (1)



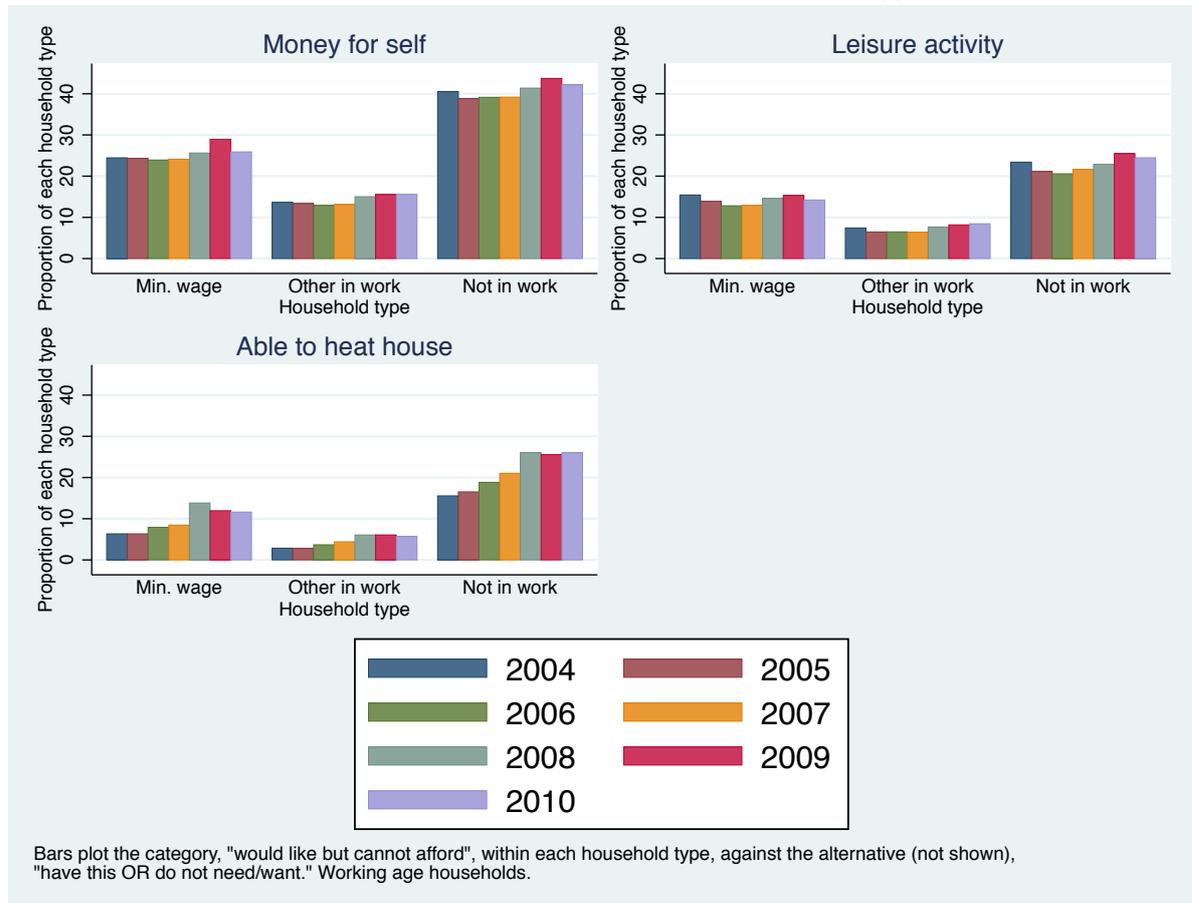
Authors' calculations from the Family Resources Survey (FRS).

Figure 9: Measures of Material Deprivation from the FRS (2)



Authors' calculations from the Family Resources Survey (FRS).

Figure 10: Measures of Material Deprivation from the FRS (3)



Authors' calculations from the Family Resources Survey (FRS).

Not surprisingly, in terms of the descriptive statistics on all these dimensions graphed in Figure 8, the position of the workless households is much worse than that of the NMW households - but that both these groups are worse off than the working households. In terms of the absolute size of the deprivation effect - it is highest for not having holidays in Figure 8, Regular saving in Figure 9 and, Money for Self in Figure 10. But in all dimensions the minimum wage household is materially worse off than the Working Household. Looking at the fraction of those who report problems across years we do not see, for the most part, a rise in deprivation over time for any group - within that group. One clear exception is that of being able to heat the home, in Figure 10. Although the fraction who report this problem is relatively low (between 5-10% for minimum age households) it does seem to be rising over the period 2004-10. This is especially true for the

Non-working Household and may directly reflect the rising fuel prices we saw in Figure 3.

The descriptive statistics presented in Figures 8, 9 and 10 are directly mirrored in the Probit estimation results in shown in Table 12, and the figures relating to the measured coefficients in Figures 11 and 12 (and in the appendix). Specifically, controlling for year effects, age groups, marital status, number of children, qualifications, housing tenure and region we find, that relative to the reference group of the working household, the NMW household, and the non-working household are always statistically significantly worse off in material deprivation terms. The reported coefficients vary from around .02 - i.e. 2% to .09 - or 9% for NMW households but from 7% to 21% for workless households.

Table 12 also shows that the effects have got significantly worse in the recession years of 2008, 2009 and 2010 for Holidays, Meal, Regular Savings, Furniture, Electrical Goods, Money and a Warm House.

A visual impression of these estimation results are shown for perhaps the most important dimensions of deprivation in Figure 11 and Figure 12. Figure 11 shows the effects for Regular Savings which indicates that the minimum wage household is worse off by around 8% and the Workless Household by around 23% compared to the Working Household. This figure also shows that the effect has got slowly worse over the recession years of 2008-10.

Figure 12 shows the material deprivation effects for Being Able to Heat Ones House which indicates that the NMW household is worse off by around 3% and the Workless Household by around 9% compared to the Working Household. This figure also shows that the effect has got worse year on year escalating up to around 5% worse per year by 2008 and staying at that level over the recession years of 2008-10. This directly reflects what we have seen in terms of the effect of fuel price rises in Figure 3.

Figure 11: Probit Estimates of Material deprivation: Regular savings

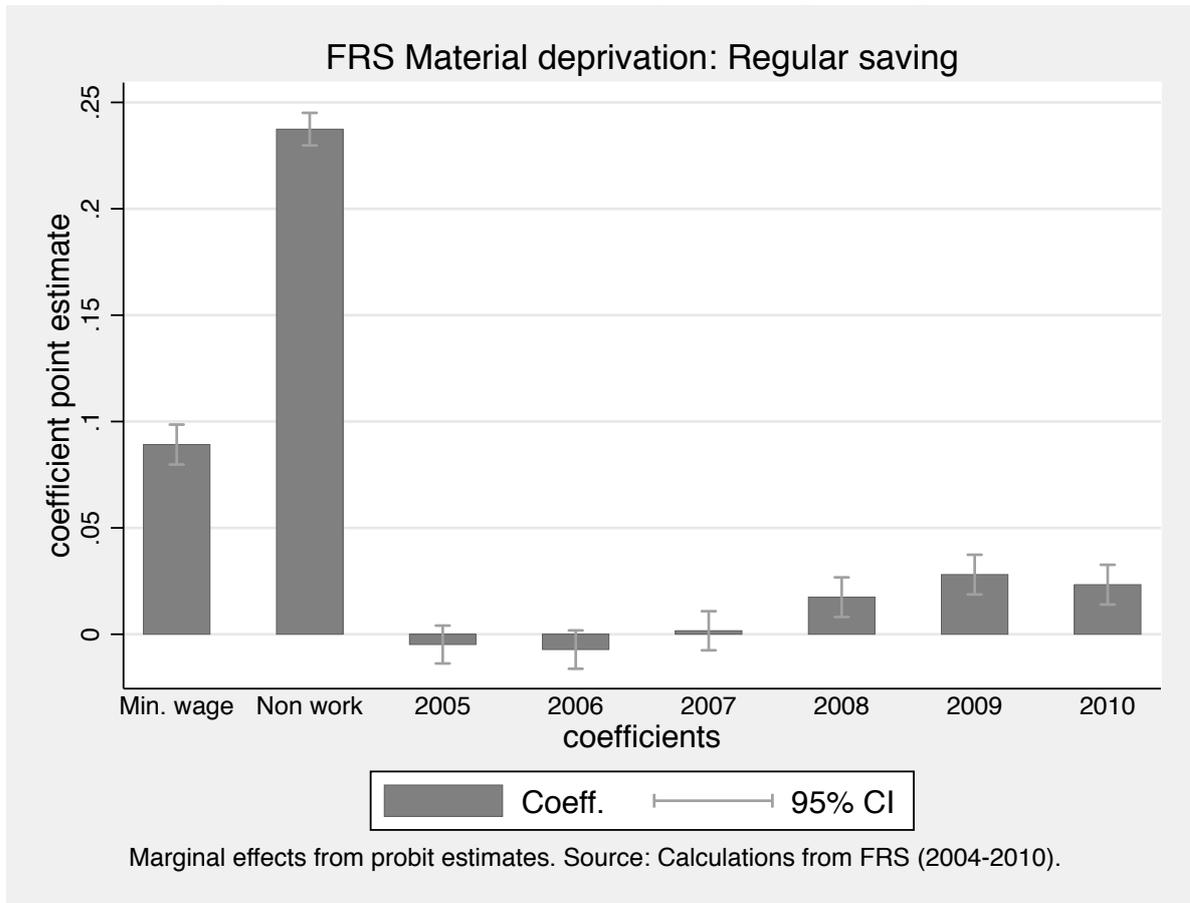
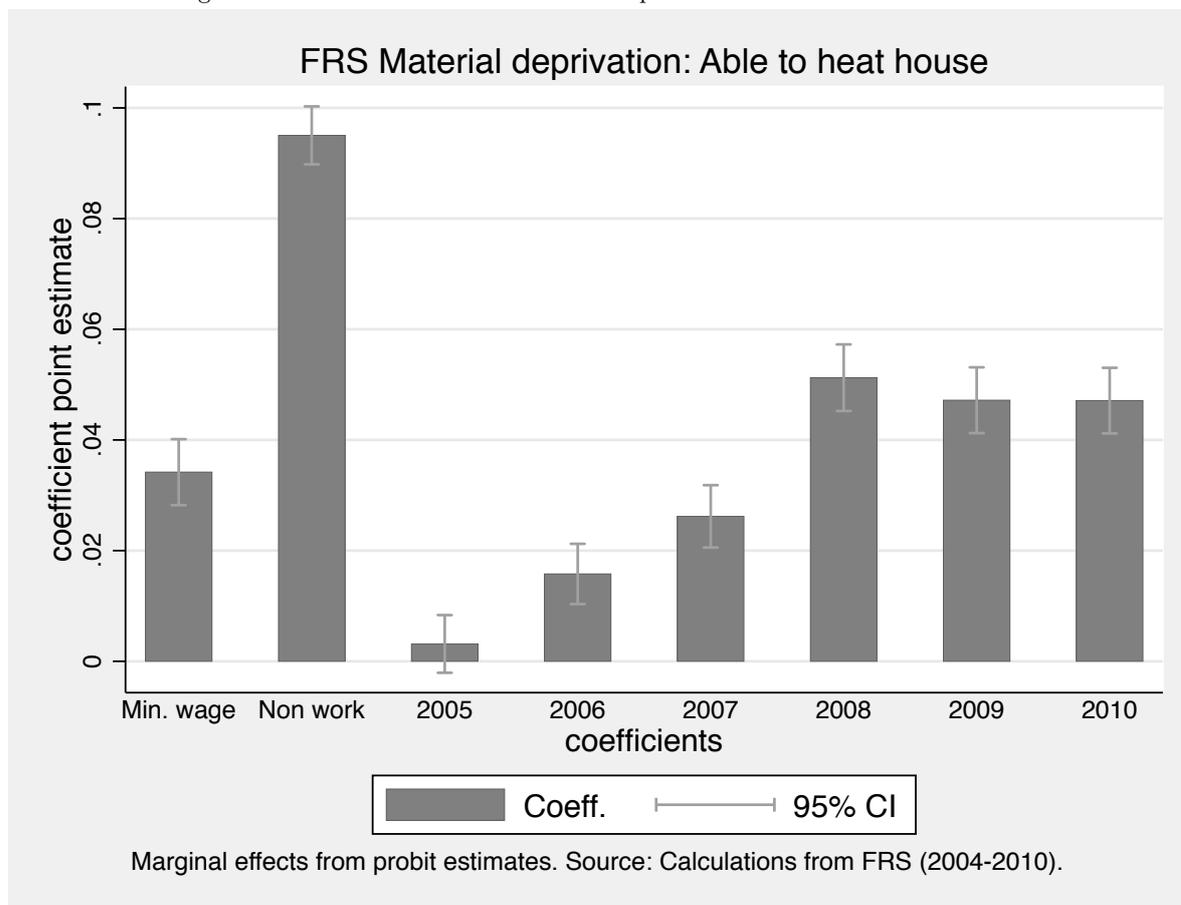


Figure 12: Probit Estimates of Material deprivation: Able to heat house



### 5.3 Evidence from the BHPS and Understanding Society Data

In this section we describe the evidence which is available to us from the analysis of the BHPS and its successor the Understanding Society survey. This data follows 5,000 households initially and then this is expanded to 40,000 households in Understanding Society.

In Table 13 we tabulate the Real Amount Owed by the different types of Household in the BHPS over the years 1995, 2000 and 2005. These questions are asked specifically of the respondent with respect to money owed, credit cards, student loans, DWP social fund, and Hire Purchase. Hence we can be reasonably confident that we are not including ‘investment-like’ debt associated with house purchase and the like. What we see from Table 13 is that working households are

more in debt than minimum wage households and that these households are more in debt than non-working households. This is not surprising as this debt will consist predominantly of credit card debt and those in work are more likely to commit to larger credit card bills than those who are either on the NMW or not working. Table 13 also shows that the real amount owed is rising for each type of household over this decade. So that minimum wage households are more in debt in 2005 than they were in 1995 and that this is also true of the other working, and workless households. One should caution that these results are limited by the size of the minimum wage household sample which varies from only 97 in 1995 to 200 in 2005. This means that since these figures do not relate to the same households one cannot compute difference-in-difference estimates from these three types of household over the three years to infer how the NMW household may have fared relative to the other working households or workless households. This is regrettable but unavoidable. It is also regrettable that the Understanding Society survey does not ask these questions relating to credit card and other forms of debt in the same way as the BHPS reported here.

Table 13: Real Amount Owed (1995, 2000, 2005)

	Min. wage household	Other working HH	Non-working HH
<b>1995</b>			
Mean	1,983	3,653	1,660
Median	434	1,600	495
10th percentile	73	145	58
90th percentile	6,109	8,681	4,364
Standard Dev.	3,434	7,574	3,986
Observations	97	2,283	671
<b>2000</b>			
Mean	3,816	5,326	3,126
Median	1,142	2,602	1,143
10th percentile	76	254	89
90th percentile	12,691	12,691	8,884
Standard Dev.	6,004	11,480	5,202
Observations	148	3,721	1,297
<b>2005</b>			
Mean	5,900	7,863	4,247
Median	3,377	4,509	1,353
10th percentile	152	338	113
90th percentile	14,661	16,909	11,273
Standard Dev.	7,641	15,955	6,885
Observations	200	3,251	990

*Note:* Tabulation based on the question, “About how much in total do you owe?” Individual survey. Values for minimum wage workers in 1995 are based on minimum wage workers in 1999 also being minimum wage workers in 1995.

*Source:* Authors’ calculations from the BHPS.

Table 14: Financial Situation Now by Household Type

	1999		2001		2003		2005		2007		2008		2010	
	freq	pct												
<b>Minimum Wage Households</b>														
Living comfortably	87	21.0	86	16.4	109	24.3	108	18.9	75	17.4	85	16.7	126	20.6
Doing alright	158	38.2	206	39.2	184	41.1	232	40.6	218	50.6	212	41.7	224	36.5
Just about getting by	126	30.4	183	34.9	130	29.0	184	32.2	108	25.1	141	27.8	187	30.5
Finding it quite difficult	24	5.8	31	5.9	21	4.7	32	5.6	22	5.1	52	10.2	57	9.3
Finding it very difficult	19	4.6	19	3.6	4	0.9	16	2.8	8	1.9	18	3.5	19	3.1
Total	414	100	525	100	448	100	572	100	431	100	508	100	613	100
<b>Other Working Households</b>														
Living comfortably	2408	30.2	3052	32.4	2910	35.3	2536	31.2	2489	31.7	2078	27.9	1479	29.1
Doing alright	3124	39.2	3952	42.0	3543	43.0	3552	43.6	3412	43.5	3115	41.8	2068	40.7
Just about getting by	1953	24.5	1967	20.9	1475	17.9	1677	20.6	1544	19.7	1802	24.2	1211	23.8
Finding it quite difficult	360	4.5	347	3.7	243	3.0	290	3.6	311	4.0	362	4.9	267	5.2
Finding it very difficult	122	1.5	99	1.1	64	0.8	84	1.0	85	1.1	91	1.2	62	1.2
Total	7967	100	9417	100	8235	100	8139	100	7841	100	7448	100	5087	100
<b>Non-Working Households</b>														
Living comfortably	801	20.9	1004	21.3	905	24.4	860	23.3	831	24.4	759	22.8	532	20.9
Doing alright	1092	28.4	1531	32.5	1305	35.1	1319	35.7	1201	35.3	1066	32.0	857	33.6
Just about getting by	1249	32.5	1455	30.9	1039	28.0	1026	27.8	948	27.9	1000	30.0	760	29.8
Finding it quite difficult	416	10.8	461	9.8	291	7.8	303	8.2	270	7.9	322	9.7	260	10.2
Finding it very difficult	281	7.3	255	5.4	176	4.7	184	5.0	153	4.5	187	5.6	140	5.5
Total	3839	100	4706	100	3716	100	3692	100	3403	100	3334	100	2549	100

Note: All working age adults. Minimum wage workers are those earning between 60-105% of the NMW. Individual response (varies between reference person and spouse within household).

Source: Authors' calculations from the BHPS (1999-2008), and Understanding Society (2010).

In Table 14 we consider some descriptive statistics relating to the Financial Situation of the Household by household type from 1999 to 2010. The three different types of household were asked to describe their overall financial position as either: Living Comfortably; Doing Alright; Just About Getting by; Finding it Quite Difficult; Finding it Very Difficult. The descriptive statistics suggest that the fraction of NMW households finding it quite difficult has risen from 5.8% in 1999 to 9.3% in 2010. The corresponding rise for other in-work households is 4.5% to 5.2% over the 1999-2010 period. For non-working households this fraction had fallen from 10.8% to 10.2% over the same period. It should be stressed though that Table 14 overall does not indicate that there have been dramatic movements in how any of our three household types feel about their overall financial position.

In Table 15 the households were asked about their financial expectations over the same period. For the minimum wage households we see that the fraction who report that they expect their financial position to get worse has risen from 7.2% in 1999 to 11.6% in 2010. The corresponding figure for other working households has also risen from 7.3% in 1999 to 13.3% by 2010. Likewise the figure for workless households has risen from 12.4 in 1999 to 15.1 in 2010. These summary statistics suggest that understandably, household financial expectations have become gradually more pessimistic with the onset of the recession.

Interestingly Table 16 shows very little difference in the fraction who report problems paying for housing over the 1999-2010 period irrespective of household type. The fraction who report problems has remained about the same at 16.9% for NMW households, 8.3% for other working households and 11.5% for workless households. These descriptive statistics are mirrored in the estimates for the Real Amount of Money Owed (Table A.7 in Appendix A); as well as those reported in the text - namely - the Estimate of the Financial Situation Now in Table 17 and Problems Paying for Housing in Table 18.

Table 15: Financial Expectations for year ahead by Household Type

	1999		2001		2003		2005		2007		2008		2010	
	freq	pct												
<b>Minimum Wage Households</b>														
Better than now	124	30.9	190	37.3	146	33.7	188	34.2	118	28.6	138	28.6	182	29.7
Worse than now	29	7.2	22	4.3	22	5.1	35	6.4	21	5.1	62	12.9	71	11.6
About the same	248	61.8	298	58.4	265	61.2	326	59.4	273	66.3	282	58.5	359	58.7
Total	401	100	510	100	433	100	549	100	412	100	482	100	612	100
1999                      2001                      2003                      2005                      2007                      2008                      2010														
<b>Other Working Households</b>														
Better than now	3000	38.8	3260	35.5	2707	33.7	2669	34.6	2423	31.8	1884	26.5	1317	26.1
Worse than now	563	7.3	646	7.0	519	6.5	574	7.4	549	7.2	1116	15.7	673	13.3
About the same	4173	53.9	5266	57.4	4815	59.9	4465	57.9	4645	61.0	4122	57.9	3052	60.5
Total	7736	100	9172	100	8041	100	7708	100	7617	100	7122	100	5042	100
1999                      2001                      2003                      2005                      2007                      2008                      2010														
<b>Non-Working Households</b>														
Better than now	1069	29.4	1250	27.8	986	27.5	987	28.6	859	26.3	807	25.8	714	28.4
Worse than now	452	12.4	396	8.8	330	9.2	363	10.5	265	8.1	558	17.8	380	15.1
About the same	2117	58.2	2852	63.4	2263	63.2	2102	60.9	2136	65.5	1762	56.3	1423	56.5
Total	3638	100	4498	100	3579	100	3452	100	3260	100	3127	100	2517	100

Note: All working age adults. Minimum wage workers are those earning between 60-105% of the NMW.

Individual response (varies between reference person and spouse within household).

Source: Authors' calculations from the BHPS (1999-2008), and Understanding Society (2010).

Table 16: Problems Paying for Housing

	1999		2001		2003		2005		2007		2008		2010	
	freq	pct												
<b>Minimum Wage Households</b>														
Yes	24	16.4	29	14.9	19	12.7	26	13.8	19	13.1	30	19.7	37	16.9
No	112	76.7	160	82.1	123	82.0	153	81.4	120	82.8	114	75.0	182	83.1
100% rent rebate	10	6.8	6	3.1	8	5.3	9	4.8	6	4.1	8	5.3		
Total	146	100	195	100	150	100	188	100	145	100	152	100	219	100
1999                      2001                      2003                      2005                      2007                      2008                      2010														
<b>Other-Working Households</b>														
Yes	331	9.3	320	7.7	200	5.6	207	6.1	224	7.1	234	7.8	170	8.3
No	3182	89.7	3806	91.6	3328	93.9	3140	93.1	2895	92.2	2739	91.7	1875	91.7
100% rent rebate	34	1.0	29	0.7	17	0.5	27	0.8	22	0.7	13	0.4		
Total	3547	100	4155	100	3545	100	3374	100	3141	100	2986	100	2045	100
1999                      2001                      2003                      2005                      2007                      2008                      2010														
<b>Non-Working Households</b>														
Yes	192	14.2	182	11.8	113	9.7	121	12.1	105	11.2	114	12.6	137	11.5
No	799	58.9	818	53.0	629	54.2	541	54.3	530	56.6	508	56.2	1056	88.5
100% rent rebate	365	26.9	542	35.1	419	36.1	334	33.5	301	32.2	282	31.2		
Total	1356	100	1542	100	1161	100	996	100	936	100	904	100	1193	100
1999                      2001                      2003                      2005                      2007                      2008                      2010														

Note: All working age adults. Minimum wage workers are those earning between 60-105% of the NMW. Household response.

Source: Authors' calculations from BHPS (1999-2008), and Understanding Society (2010).

In Table 17 we report the Probit estimates of the individual's financial situation now, over the period 1999-2010, where the person is recorded as a 1 if they report that their situation is 'Finding it quite difficult' or 'Finding it very difficult'. The estimation results suggest that NMW households have had an increased chance of around 1% of difficulty over the whole period and that workless households have had a corresponding increase of around 4% in the probability of finding it difficult. Interestingly the overall effect of year on year effects suggest that the financial position has improved over time steadily by around 1% per year. These effects are graphed in terms of the main coefficients in Figure 13 and show the significant difference between the NMW households and the other working households and the sizeable difference between other working households and the workless households.

Table 18 present estimates of the Probit model of having problems paying for housing. The estimated coefficients suggest that the household reference person has between a 2-3% higher chance of having such a problem than someone who is in a (non-NMW) working household. Interestingly the problem has a lower probability of occurring for a person in a non-working household as our estimates report that this is only around 1% higher probability in such a household than a (non-NMW) working household. This must be because those who are not working in our sample are most likely to be on benefits and most specifically housing benefit. Figure 14 graphs these marginal effects by household type and also shows the significant negative year on year effects for the years 2001-2007. This is likely to be due to the relative low level of mortgage interest rate levels over these years.

Table 17: Estimates of Financial situation now, 1998-2010 (Probit)

	Individuals		Household reference person	
	(1)	(2)	(3)	(4)
Minimum wage household	0.012*** (0.002)	0.013*** (0.002)	0.012*** (0.003)	0.014*** (0.003)
Non-working household	0.042*** (0.002)	0.045*** (0.002)	0.060*** (0.003)	0.065*** (0.003)
1999	0.003 (0.002)	0.002 (0.002)	0.003 (0.004)	0.001 (0.004)
2000	-0.001 (0.002)	-0.003 (0.002)	-0.006 (0.004)	-0.007 (0.004)
2001	-0.007*** (0.002)	-0.009*** (0.002)	-0.014*** (0.004)	-0.016*** (0.004)
2002	-0.010*** (0.002)	-0.011*** (0.002)	-0.016*** (0.004)	-0.017*** (0.004)
2003	-0.014*** (0.002)	-0.016*** (0.002)	-0.023*** (0.004)	-0.026*** (0.004)
2004	-0.012*** (0.002)	-0.013*** (0.002)	-0.018*** (0.004)	-0.019*** (0.004)
2005	-0.011*** (0.002)	-0.011*** (0.002)	-0.020*** (0.004)	-0.020*** (0.004)
2006	-0.010*** (0.002)	-0.010*** (0.002)	-0.019*** (0.004)	-0.019*** (0.004)
2007	-0.012*** (0.002)	-0.011*** (0.002)	-0.020*** (0.004)	-0.020*** (0.004)
2008	-0.001 (0.002)	0.003 (0.003)	-0.010** (0.004)	-0.004 (0.005)
2010	-0.000 (0.002)	-0.003 (0.005)	-0.018*** (0.004)	-0.017* (0.007)
<i>N</i>	140492	128190	69640	63465
PID	23010.00	22335.00	15008.00	13034.00
Chi2	10325.11	7809.96	5437.53	4235.09
rho	0.55	0.51	0.57	0.53
panel level st dev	1.10	1.03	1.15	1.07

*Note:* Standard errors in parentheses. Marginal effects reported.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

The first two columns report the results for individuals only, columns (3) and (4) for the household reference person. The dependent variable is equal to one if households report difficulties in their financial situation, and zero otherwise. Columns (1) and (3) include household dummies, year dummies, and household-year interactions (not reported).

Columns (2) and (4) include the following additional controls (not reported): dummies for sex, age groups, household type, marital status, number of kids, qualifications, housing tenure and region.

*Source:* Authors' calculations from the BHPS and Understanding Society.

Table 18: Problems paying for housing, 1998-2010 (Probit)

	Individuals		Household reference person	
	(1)	(2)	(3)	(4)
Minimum wage household	0.023*** (0.003)	0.019*** (0.004)	0.030*** (0.006)	0.019*** (0.006)
Non-working household	0.014*** (0.001)	0.002 (0.002)	0.019*** (0.002)	0.008* (0.003)
1999	-0.002 (0.003)	-0.002 (0.003)	-0.001 (0.004)	-0.001 (0.005)
2000	-0.002 (0.003)	-0.001 (0.003)	-0.001 (0.004)	-0.001 (0.005)
2001	-0.011*** (0.003)	-0.009** (0.003)	-0.013** (0.004)	-0.012** (0.004)
2002	-0.020*** (0.003)	-0.019*** (0.003)	-0.019*** (0.004)	-0.018*** (0.004)
2003	-0.022*** (0.003)	-0.021*** (0.003)	-0.023*** (0.004)	-0.022*** (0.004)
2004	-0.022*** (0.003)	-0.021*** (0.003)	-0.023*** (0.004)	-0.021*** (0.004)
2005	-0.018*** (0.003)	-0.016*** (0.003)	-0.019*** (0.004)	-0.016*** (0.005)
2006	-0.017*** (0.003)	-0.014*** (0.003)	-0.019*** (0.004)	-0.016*** (0.005)
2007	-0.015*** (0.003)	-0.011*** (0.003)	-0.018*** (0.004)	-0.013** (0.005)
2008	-0.008** (0.003)	-0.001 (0.003)	-0.010* (0.004)	-0.003 (0.005)
2010	-0.006 (0.003)	-0.009 (0.006)	-0.009 (0.004)	-0.014 (0.009)
<i>N</i>	107888	100214	54621	50773
PID	19856.00	19287.00	12630.00	11222.00
Chi2	6498.92	4622.05	3259.17	2380.49
rho	0.51	0.46	0.51	0.46
panel level st dev	1.02	0.92	1.03	0.93

*Note:* Standard errors in parentheses. Marginal effects reported.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

The first two columns report the results for individuals only, columns (3) and (4) for the household reference person. The dependent variable is equal to one if households report problems paying for housing, and zero otherwise. Columns (1) and (3) include household dummies, year dummies, and household-year interactions (not reported). Columns (2) and (4) include the following additional controls (not reported): dummies for sex, age groups, household type, marital status, number of kids, qualifications, housing tenure and region.

*Source:* Authors' calculations from the BHPS and Understanding Society.

Figure 13: Probit estimates of Current financial situation now

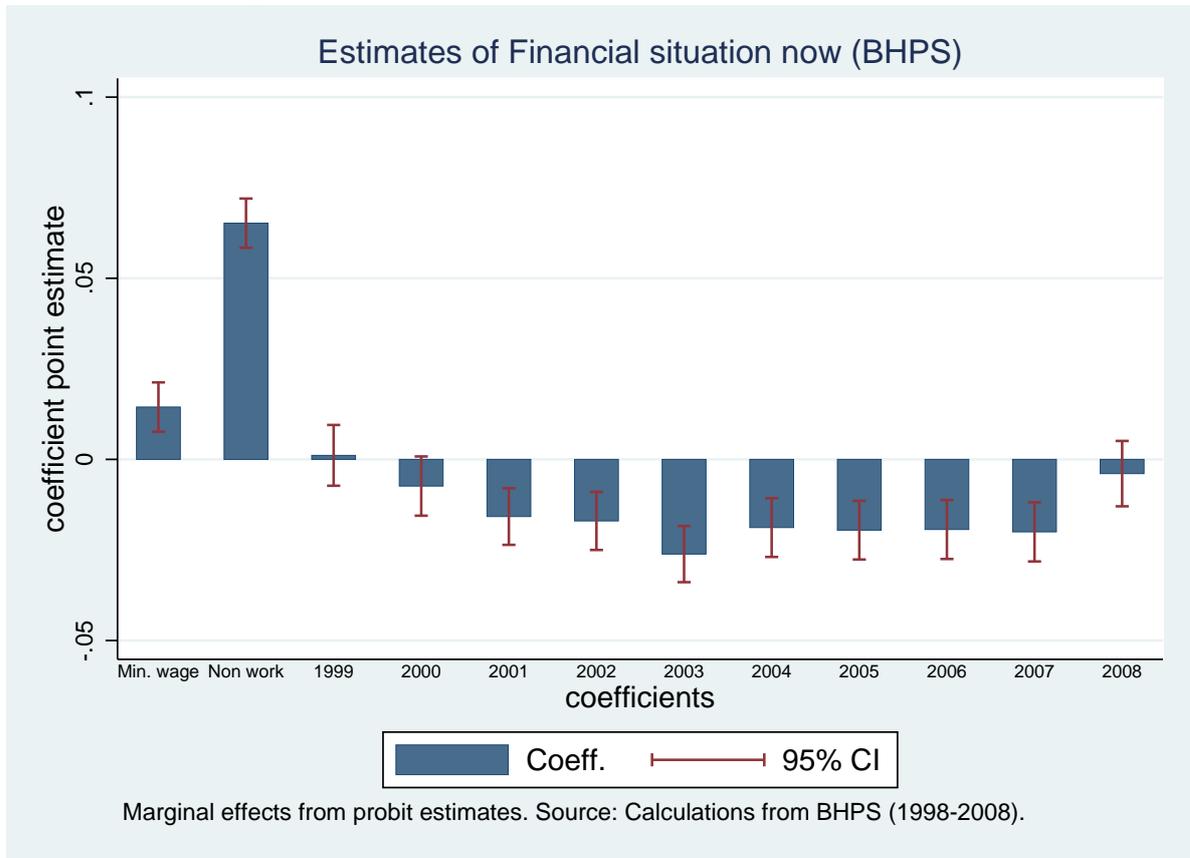
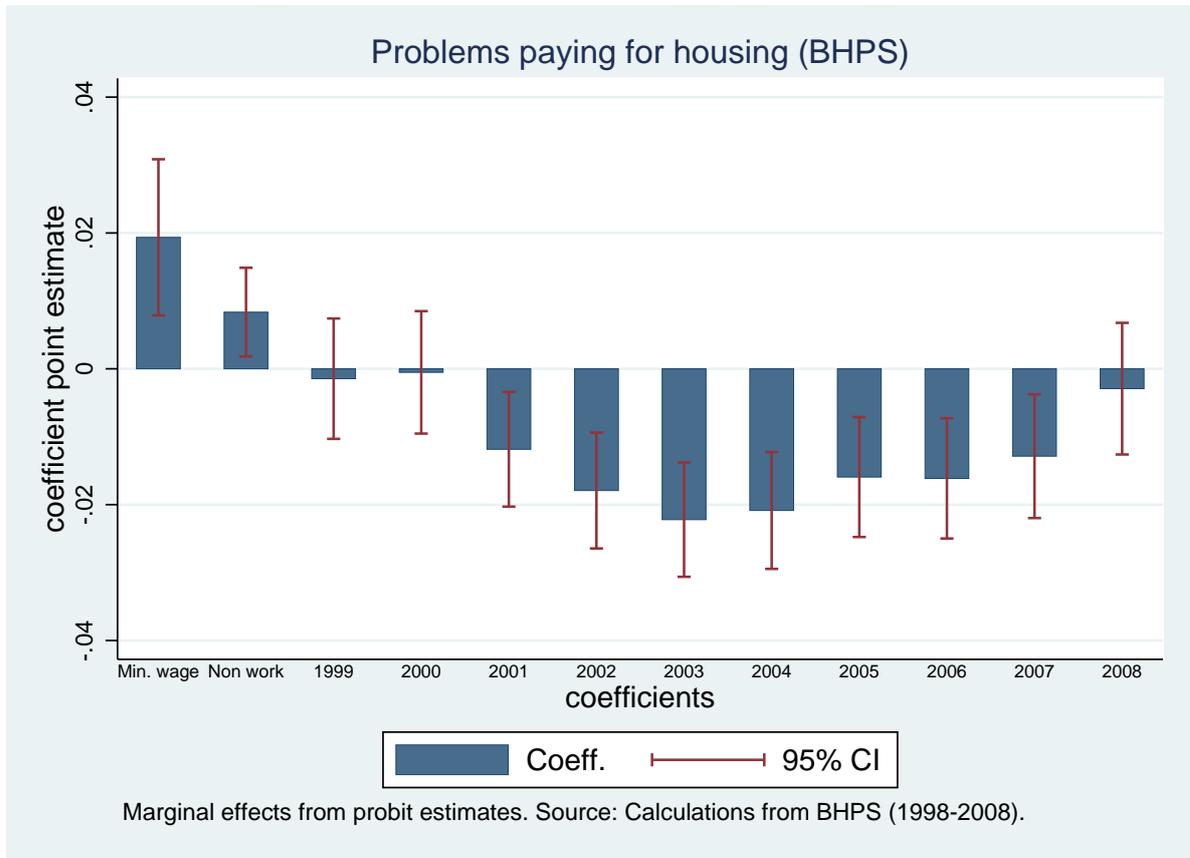


Figure 14: Probit estimates of Problems paying for housing



## 6 Conclusion

Any rise in the minimum wage will boost the gross earned income of those covered. It might then be expected to generate an “income effect” and so change a recipient’s consumption patterns relative to those who did not benefit. Since 1999 the NMW has risen faster than prices in most years prior to the onset of recession in 2008. Since then, wages of those in receipt of the minimum have continued to rise relative to many other employees, despite falls in the real value of the NMW. However the evidence assembled here suggests that there is little evidence of any significant change in the spending patterns of households in receipt of a minimum wage income relative to other working households over the period 1999 to 2010. Whether this is because the actual income impacts of the small amounts induced by changes in the minimum wage were so small as to be unable to make much difference to household spending patterns or because some of any income boost is clawed back by high marginal tax rates operating elsewhere in the welfare regime, or simply because measurement error in the available data precludes precise estimation of its effects remains a matter for future research.

The aim of the study was to provide an assessment of the impact of the minimum wage on the consumption and spending of low-paid NMW workers and understand the scale and scope of the indebtedness. We were also interested in the interaction of consumer spending with indebtedness. This was done by examining the latest available data from the BHPS (and Understanding Society), FES(EFS/LCFS), and FRS. We also provided a more complete understanding of indebtedness amongst the low paid and how it has changed over the last 15 years.

### 6.1 Substantive Conclusions

- Minimum wage households are generally poorer than non-minimum wage working households. The average disposable income is around 50% lower in adult minimum wage households than in other households with occupants in work.
- There is considerable heterogeneity of income among minimum wage households group (as among other working households). The 90/10 expenditure ratios are around 3.8 for both

groups.

- Around 10% of working households relied on minimum wage workers as their main source of wage income. In around 4% of working households, NMW workers were the only source of wage income and in around 8% of all working age households, NMW workers were the main source of any income.
- Only 1% of all households with working occupants have more than one minimum wage worker.
- Around 30 per cent of minimum wage workers live in households with an aggregate income less than sixty per cent of the median household income for all households with at least one employee (compared with a 1 per cent share among all other working households). Two thirds of minimum wage workers live in households with a total income below the median for all working (employee) households.
- The modal household type for a minimum wage worker is the couple with dependent children. Around 30% of minimum wage workers live in this arrangement, as do employees paid above the minimum. Around 8% of minimum wage workers are single parents and 8% are single adults without dependents.
- There are few significant differences in expenditure patterns across household types, although adult NMW households appear to spend a slightly larger fraction of their income on food, compared to other households with non-NMW workers.
- There are relatively few statistically significant differences in the shapes of the Engel curves - which measure the responsiveness of the proportion of the total household budget (the budget share) spent on a given item - between minimum wage households and other working households.
- Difference-in-difference analysis estimated over data pooled over successive cross-sections suggests that in the period after the minimum wage was introduced there appears to have been some fall in the budget share of alcohol in NMW households over and above that of other working households.

- In any way we can measure, indebtedness and deprivation are worse for NMW households than they are for other working households but that the position of the non-working households is significantly worse still.
- From the FRS we get clear evidence that on a whole range of deprivation measures NMW households are worse off than other working households by between 2-10%. The corresponding effect for non-working households relative to other working households is between 7-24%. We find that the most persuasive estimates are for ability to save and the ability to heat ones own residence.
- There is evidence from the FRS that deprivation on a number of dimensions, notably: being able to heat the house, and being able to save regularly has got appreciably worse over the years of the recession.
- From the BHPS and Understanding Society data we understand that the biggest effect on NMW individuals has been the decline in saving of around 20% over the 1999-2010 period. This has been mirrored in the decline in saving of non-working households of around 40-50% over the same period.
- From the BHPS and Understanding Society we find that NMW individuals have experienced a 1% increase in difficulty with their current financial position relative to other working households. This figure is around 4% for non-working households.

## 6.2 Methodological Conclusions

The concept of indebtedness and measuring the scale of debt by NMW households (or any other type of household) is inherently very difficult. Problems associated with the nature of mortgage debt as investment and credit card debt as deferred consumption propensity are difficult to overcome.

There is a paucity of good data on debt and material deprivation. The main surveys we have to answer these questions, the FES(EFS/LCFS), FRS and BHPS (and Understanding Society) have all changed their form and content over the years. Most frustratingly the main questions of use

are sometimes not continued. We suggest that this be rectified by encouraging those responsible to include the same questions from preceding waves of their surveys and if the survey changes its form then previous questions need to be adopted for consistency.

One dataset which would have been of great use to this research is the Wealth and Assets Survey (WAS) this data was not available to us in its complete form for this research.<sup>28</sup> We strongly encourage the LPC to consider funding a study of this data when it becomes available in the near future.

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<sup>28</sup>WAS is a longitudinal survey with two waves, Wave 1 (July 2006 - June 2008), and Wave 2 (July 2008 - June 2010). Wave 3 (July 2010 - June 2012) is due to be released in December 2013 according to the ONS release calendar. 30,595 households (53,300 adults) were interviewed in Wave 1, and of these, 20,170 (34,500 adults) were re-interviewed in Wave 2. Unfortunately for our purposes, Wave 1 did not ask for hours worked and it is therefore not possible to accurately identify workers earning at or near the minimum wage. As well as basic demographic and labour market characteristics, the WAS contains a wealth of data on debt, assets, borrowing and saving.

## 7 Appendix A

Table A1: Nominal and Real Net and Gross Wages

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<i>FES/EFS/LCFS data:</i>												
Gross nominal hourly wage	7.8	8.2	8.7	8.9	9.2	9.4	10.0	10.4	10.5	11.1	11.2	11.7
Gross real hourly wage	11.2	11.4	11.9	12.1	12.0	12.0	12.5	12.5	12.1	12.3	12.5	12.4
Gross weekly wage	281.1	295.9	314.5	324.2	329.1	340.6	358.2	363.0	373.2	399.6	390.2	406.4
Gross real weekly wage	404.3	413.7	431.6	438.2	432.1	434.2	444.1	436.2	429.9	442.6	434.6	432.8
Usual hrs (NMW workers)	30.8	30.8	34.5	34.8	34.3	34.3	34.9	33.6	33.9	34.7	34.2	33.4
Usual hrs (Other in work)	35.5	35.5	36.3	36.2	36.2	36.3	35.8	36.0	36.0	36.2	35.2	35.4
Observations	6,559	6,237	7,097	6,802	6,614	6,638	6,240	6,157	5,777	5,456	5,400	4,628
<i>Labour Force Survey data:</i>												
Adult share		0.06	0.05	0.07	0.06	0.07	0.07	0.07	0.09	0.09	0.09	0.09
Youth share		0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Gross nominal hourly wage		8.6	9.1	9.5	9.9	10.5	10.9	11.4	11.7	12.3	12.4	12.8
Gross nominal weekly wage		316.7	333.8	347.2	356.0	376.8	391.7	412.5	422.7	443.2	443.6	457.1

*Source:* Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). *Note:* Real values are in Jan. 2010 pounds.

Table A2: Minimum Wage Households and Their Occupants, FRS (NMW worker earning between 60-105% of the NMW)

	1999				2004				
	>1 NMW workers	Other working HH	Non -working HH	>1 NMW workers	Other working HH	Non -working HH	>1 NMW workers	Other working HH	Non -working HH
No. of occupants	3.0 (0.04)	2.7 (0.01)	2.2 (0.01)	3.0 (0.04)	2.7 (0.01)	2.2 (0.01)	3.0 (0.04)	2.7 (0.01)	2.2 (0.01)
No. of adults	2.2 (0.03)	2.1 (0.007)	1.7 (0.007)	2.2 (0.02)	2.0 (0.006)	1.7 (0.006)	2.2 (0.02)	2.0 (0.006)	1.7 (0.006)
No. of dep. children	1.8 (0.04)	1.8 (0.01)	2.0 (0.02)	1.8 (0.03)	1.7 (0.01)	1.9 (0.02)	1.8 (0.03)	1.7 (0.01)	1.9 (0.02)
% single no dep. children	8.7 (0.9)	16.0 (0.3)	27.8 (0.4)	9.4 (0.7)	18.0 (0.3)	27.9 (0.4)	9.4 (0.7)	18.0 (0.3)	27.9 (0.4)
% single parents	8.7 (0.9)	5.2 (0.2)	7.5 (0.2)	8.4 (0.7)	5.6 (0.2)	6.6 (0.2)	8.4 (0.7)	5.6 (0.2)	6.6 (0.2)
% couple no dep. children	27.1 (1.4)	31.9 (0.4)	34.1 (0.4)	29.2 (1.2)	31.9 (0.4)	35.8 (0.4)	29.2 (1.2)	31.9 (0.4)	35.8 (0.4)
% couple with children	34.9 (1.5)	32.1 (0.4)	13.6 (0.3)	30.6 (1.2)	30.7 (0.4)	13.2 (0.3)	30.6 (1.2)	30.7 (0.4)	13.2 (0.3)
% other	20.5 (1.2)	14.8 (0.3)	17.0 (0.3)	22.4 (1.1)	13.7 (0.3)	16.5 (0.3)	22.4 (1.1)	13.7 (0.3)	16.5 (0.3)
2010									
No. of occupants	3.8 (0.04)	3.2 (0.02)	2.8 (0.02)	3.8 (0.04)	3.2 (0.02)	2.8 (0.02)	3.8 (0.04)	3.2 (0.02)	2.8 (0.02)
No. of adults	2.9 (0.03)	2.5 (0.01)	2.3 (0.01)	2.9 (0.03)	2.5 (0.01)	2.3 (0.01)	2.9 (0.03)	2.5 (0.01)	2.3 (0.01)
No. of dep. children	1.8 (0.03)	1.8 (0.01)	1.9 (0.02)	1.8 (0.03)	1.8 (0.01)	1.9 (0.02)	1.8 (0.03)	1.8 (0.01)	1.9 (0.02)
% single no dep. children	8.5 (0.6)	17.6 (0.3)	27.6 (0.4)	8.5 (0.6)	17.6 (0.3)	27.6 (0.4)	8.5 (0.6)	17.6 (0.3)	27.6 (0.4)
% single parents	8.2 (0.6)	5.9 (0.2)	5.8 (0.2)	8.2 (0.6)	5.9 (0.2)	5.8 (0.2)	8.2 (0.6)	5.9 (0.2)	5.8 (0.2)
% couple no dep. children	33.5 (1.0)	32.7 (0.4)	37.7 (0.4)	33.5 (1.0)	32.7 (0.4)	37.7 (0.4)	33.5 (1.0)	32.7 (0.4)	37.7 (0.4)
% couple with children	28.1 (1.0)	31.6 (0.4)	12.4 (0.3)	28.1 (1.0)	31.6 (0.4)	12.4 (0.3)	28.1 (1.0)	31.6 (0.4)	12.4 (0.3)
% other	21.8 (0.9)	12.2 (0.3)	16.6 (0.3)	21.8 (0.9)	12.2 (0.3)	16.6 (0.3)	21.8 (0.9)	12.2 (0.3)	16.6 (0.3)

Note: Standard deviations in parentheses. NMW household: 1 or more workers earning between 60-105% of the NMW.

Source: Authors' calculations from FRS.



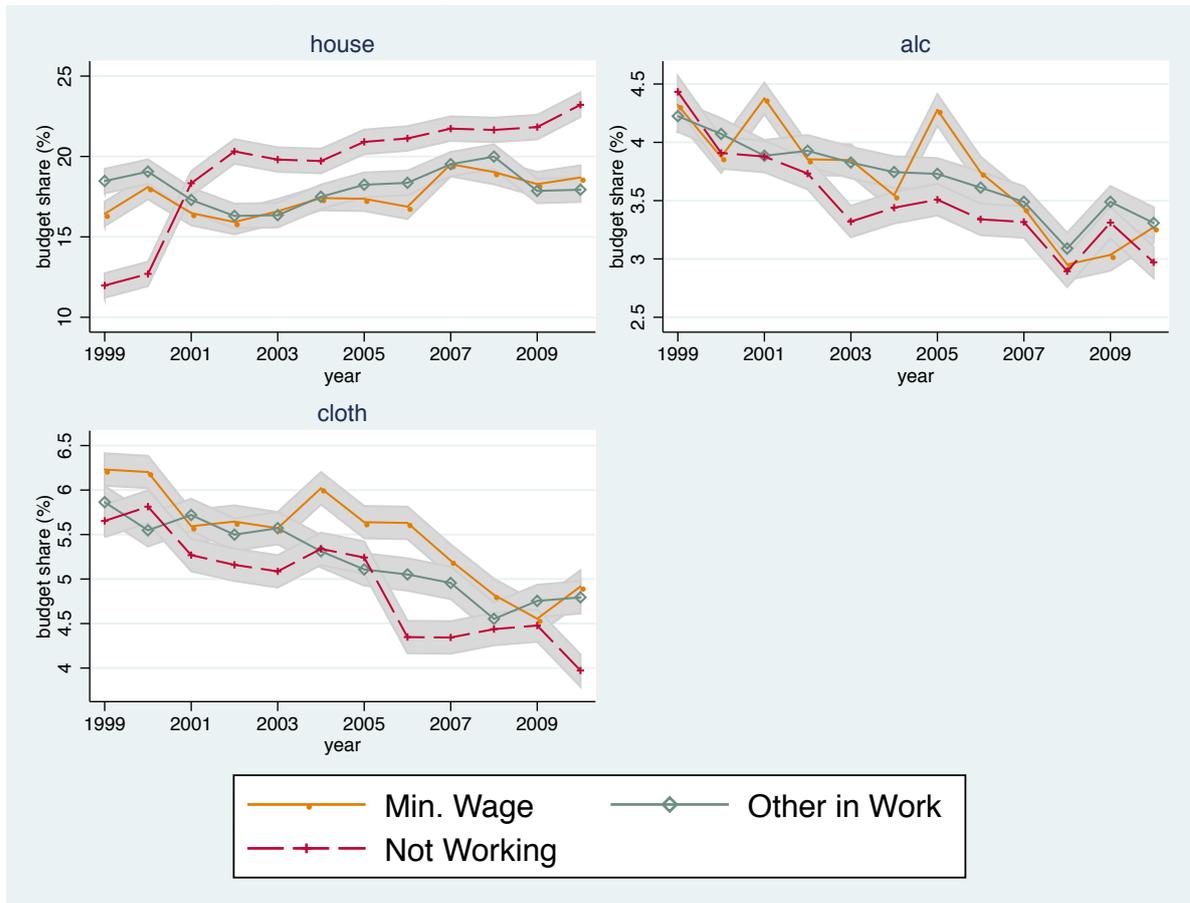
Table A4: Per Capita Equivalised Gross Nominal Weekly Disposable Income Across Households

	Min. wage household	Other working HH	Non-working HH
<b>1999</b>			
Mean	219.2	316.5	143.9
Median	205.2	268.9	111.5
10th percentile	99.9	130.8	58.0
90th percentile	353.6	510.5	264.4
Standard Dev.	112.7	364.2	105.1
Coef var.	0.5	1.2	0.7
N	453	3519	1326
<b>2004</b>			
Mean	273.2	383.1	194.6
Median	249.7	328.3	155.7
10th percentile	134.0	174.6	75.9
90th percentile	426.0	620.6	348.4
Standard Dev.	144.6	290.8	144.5
Coef var.	0.5	0.8	0.7
N	688	3271	1137
<b>2007</b>			
Mean	283.1	419.2	219.0
Median	265.3	382.1	176.3
10th percentile	137.9	199.7	76.6
90th percentile	455.4	695.6	413.6
Standard Dev.	130.6	201.0	157.6
Coef var.	0.5	0.5	0.7
N	597	2784	1159
<b>2010</b>			
Mean	301.9	446.2	206.9
Median	273.6	409.9	172.9
10th percentile	156.5	201.9	72.7
90th percentile	472.5	732.8	364.5
Standard Dev.	142.0	221.5	165.7
Coef var.	0.5	0.5	0.8
N	527	2444	855

*Note:* A minimum wage household is defined as a household with one or more workers earning between 60-105% of the NMW.

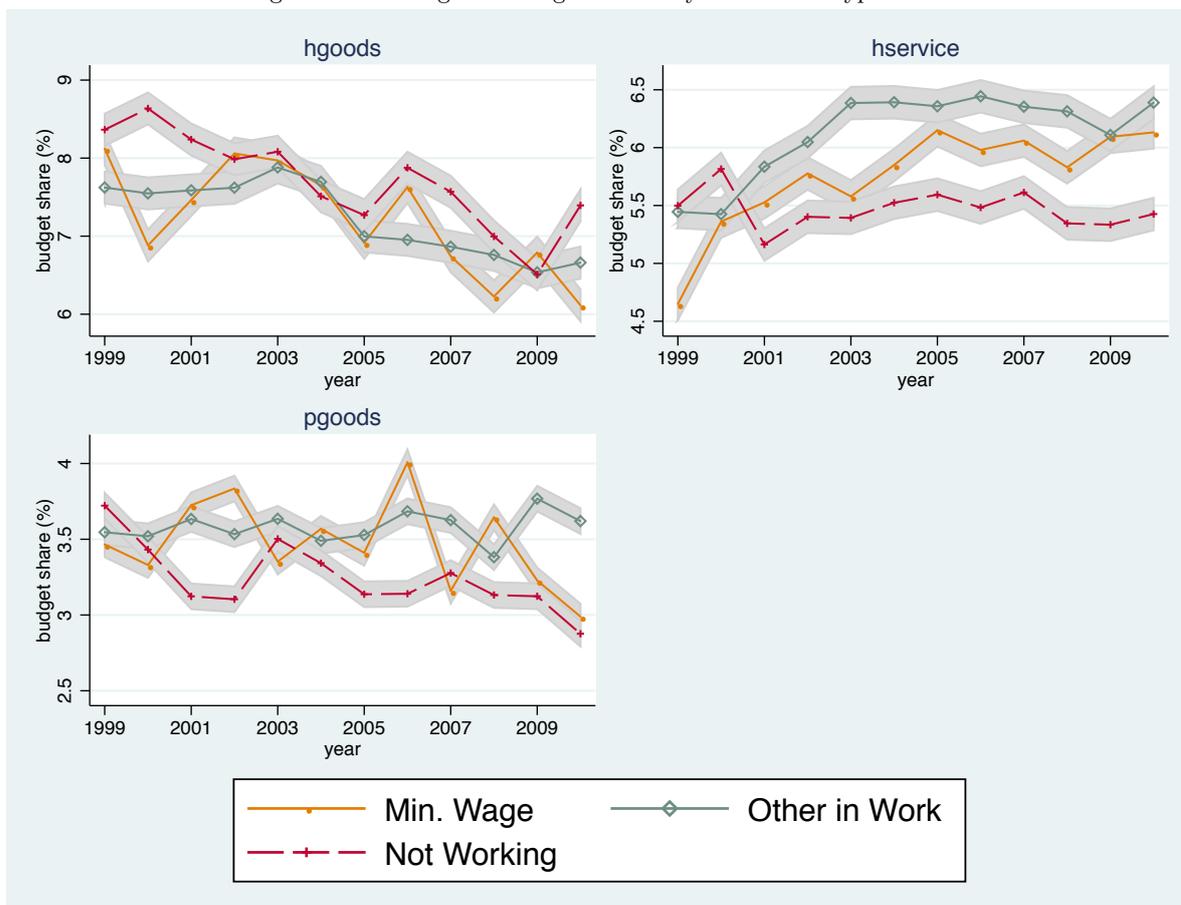
*Source:* Authors' calculations from FES (1999), EFS (2004, 2007), LCFS (2010).

Figure A.1: Changes in Budget Shares by Household Type



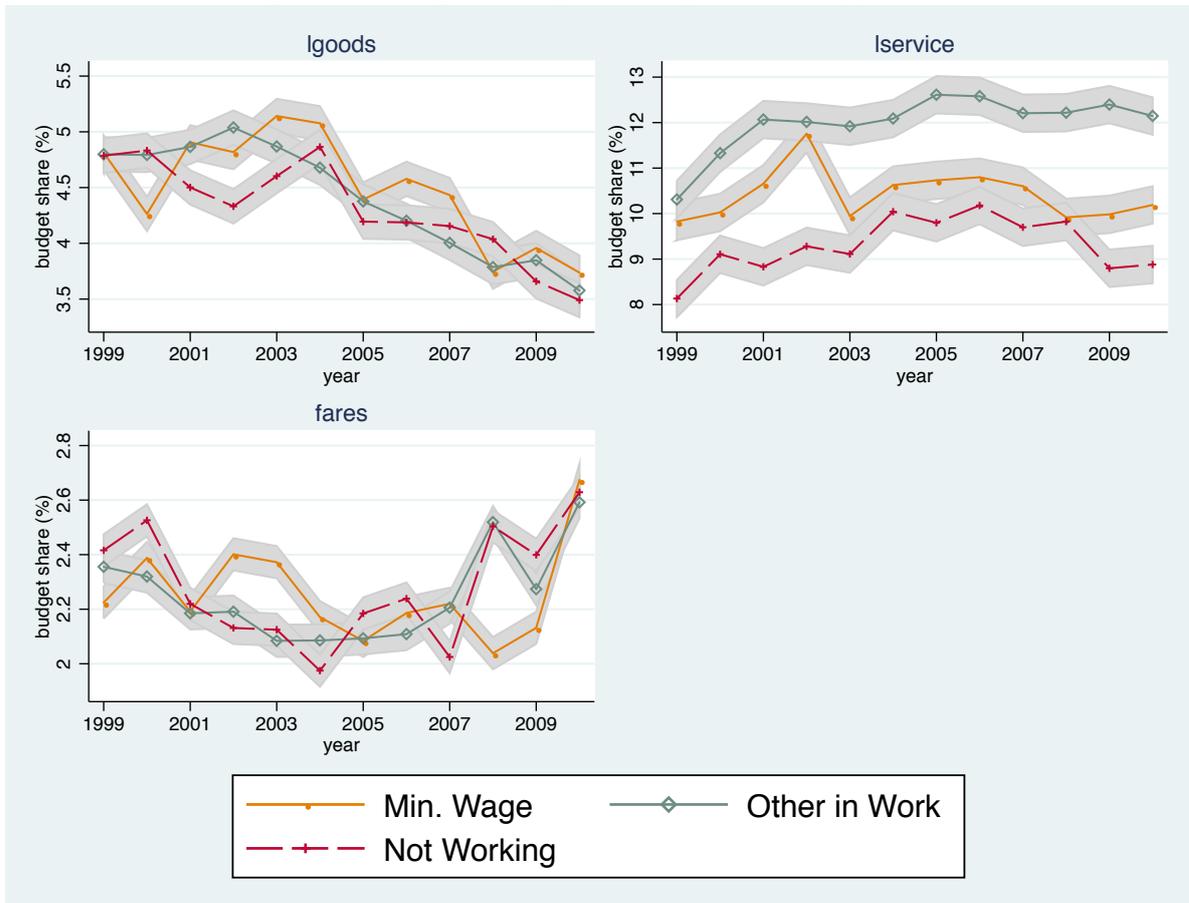
Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

Figure A.2: Changes in Budget Shares by Household Type



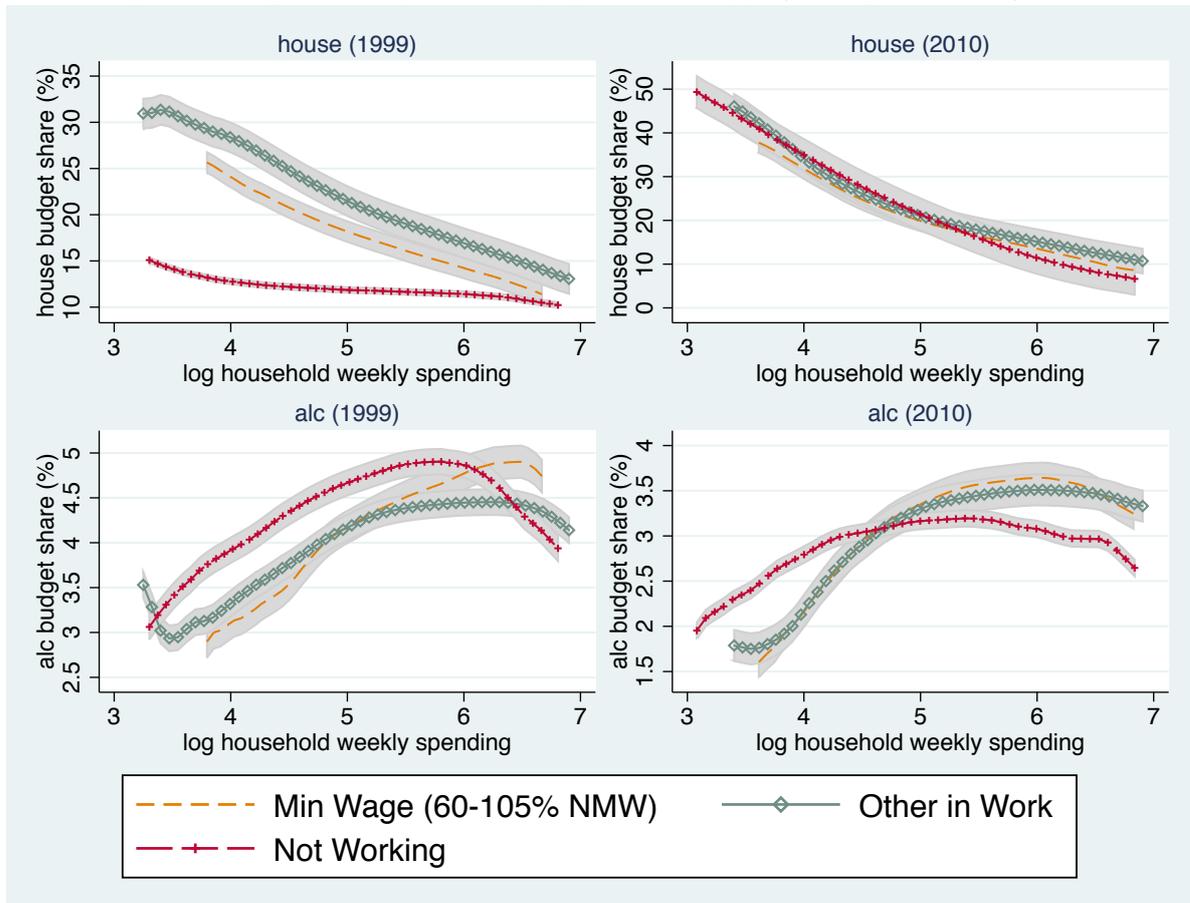
Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

Figure A.3: Changes in Budget Shares by Household Type



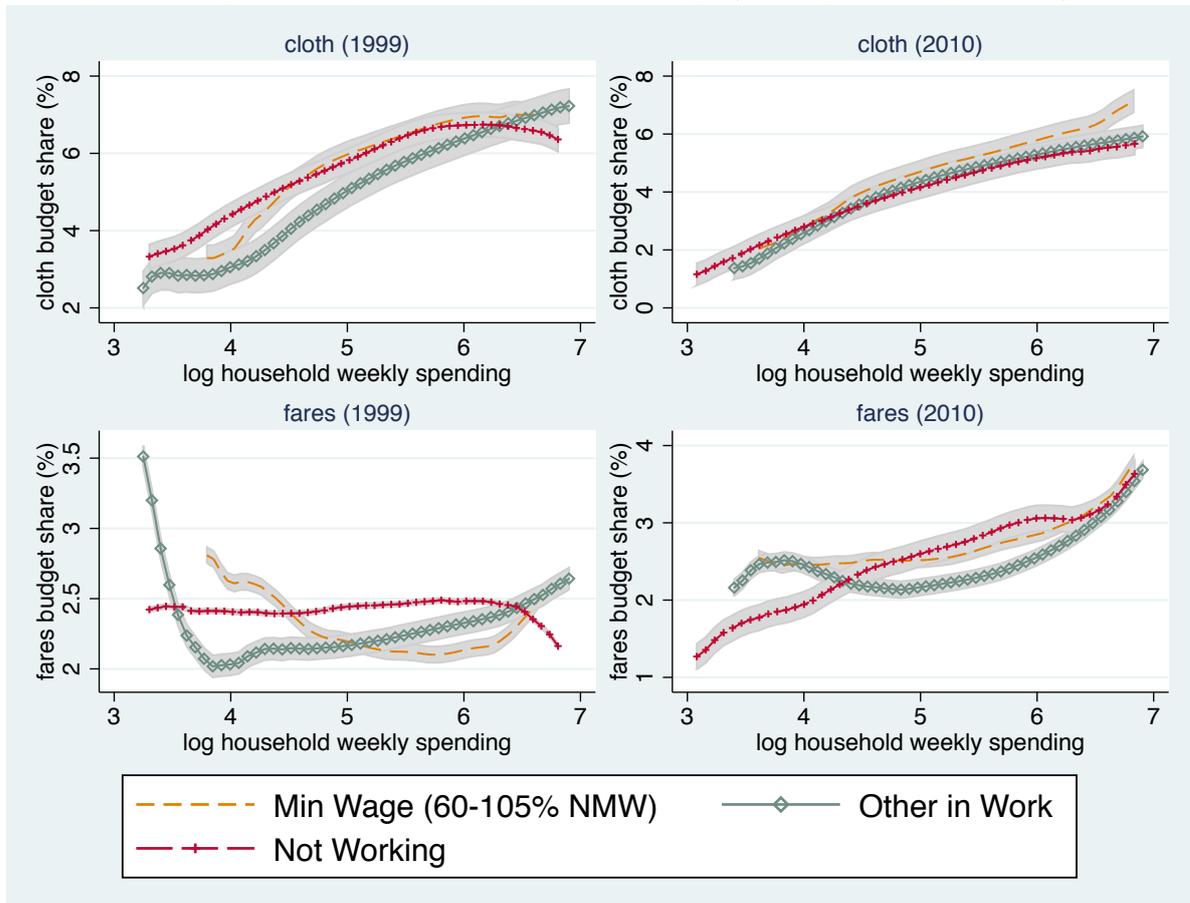
Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

Figure A.4: Engel Curves by Commodity by Household Type (Housing and Alcohol)



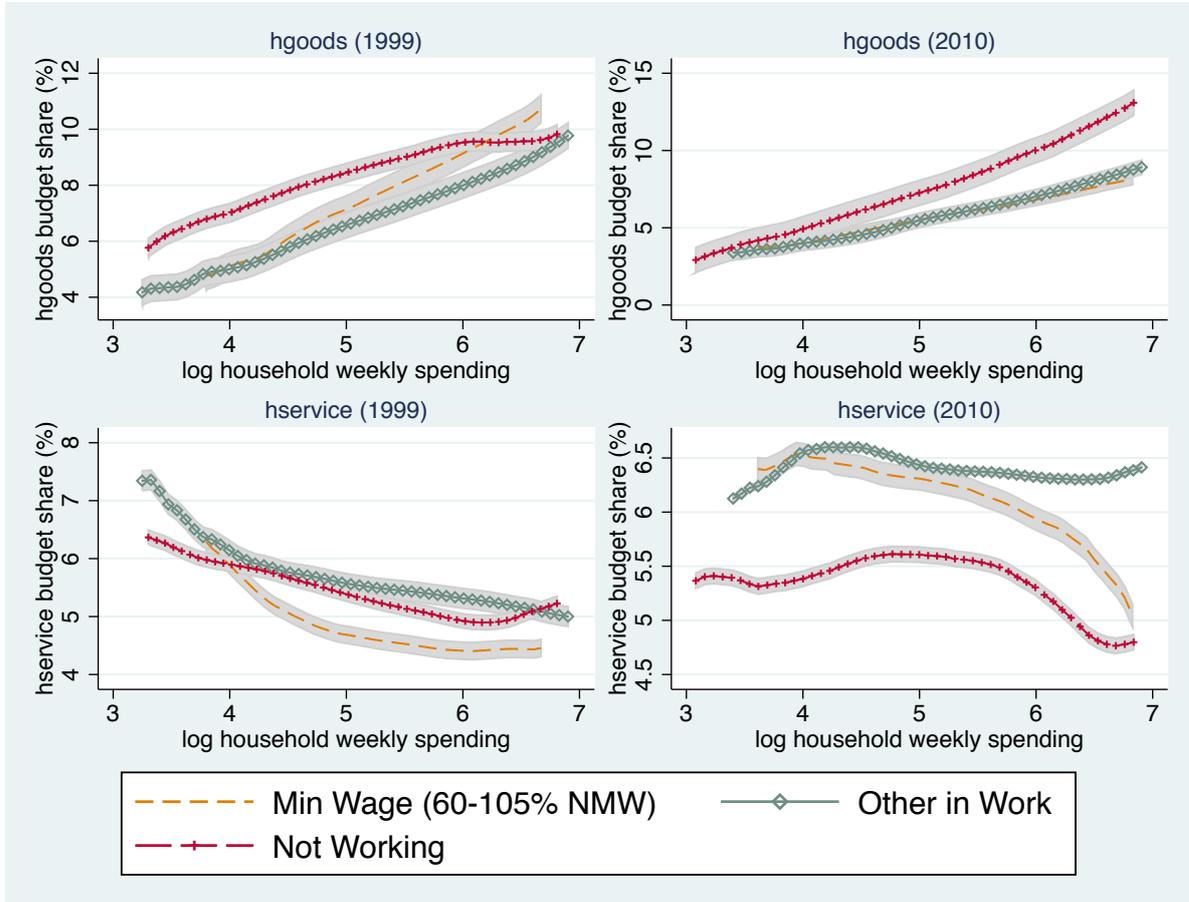
Source: Authors' calculations from FES (1999), LCFS (2010). See Table B1 in the Appendix for a full description of each category.

Figure A.5: Engel Curves by Commodity by Household Type (Clothing and Transport Fares)



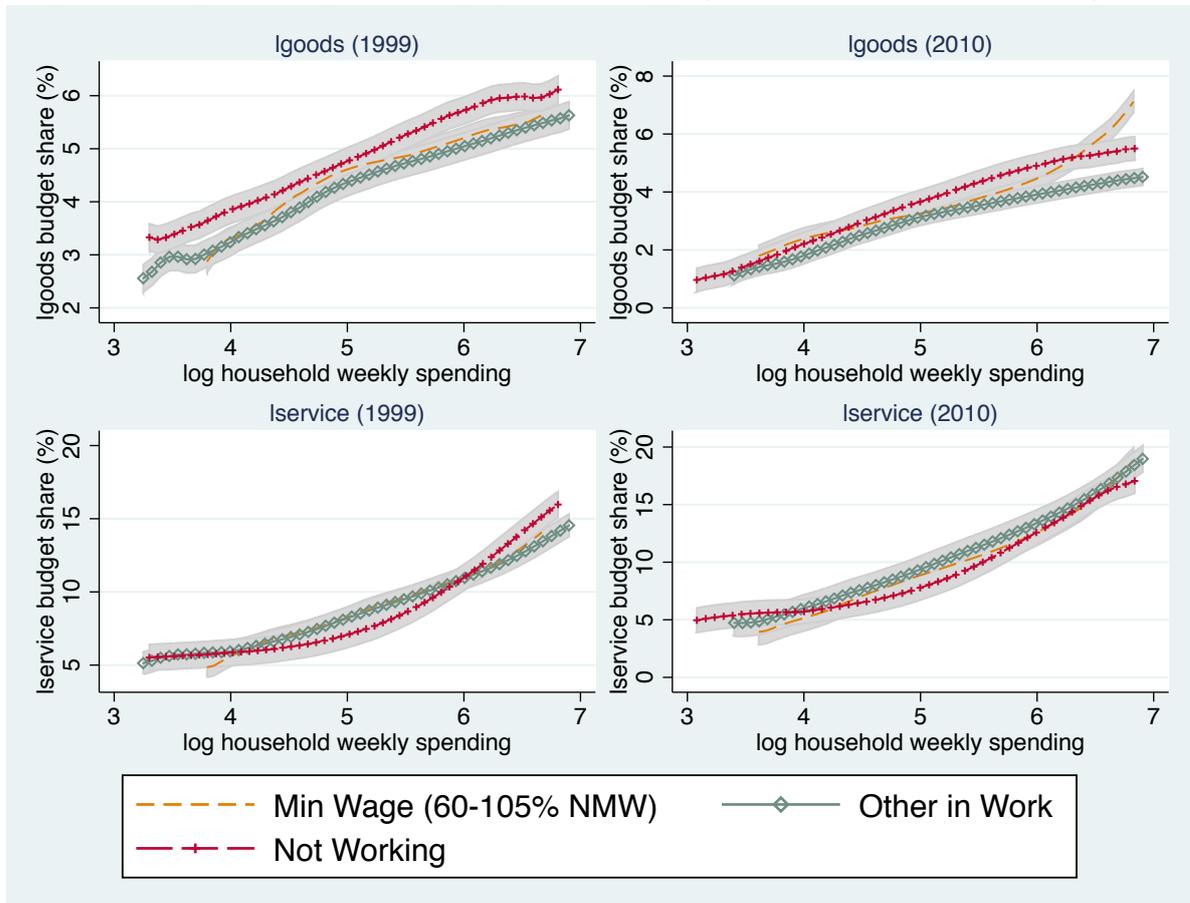
Source: Authors' calculations from FES (1999), LCFS (2010). See Table B1 in the Appendix for a full description of each category.

Figure A.6: Engel Curves by Commodity by Household Type (Household Goods and Household Services)



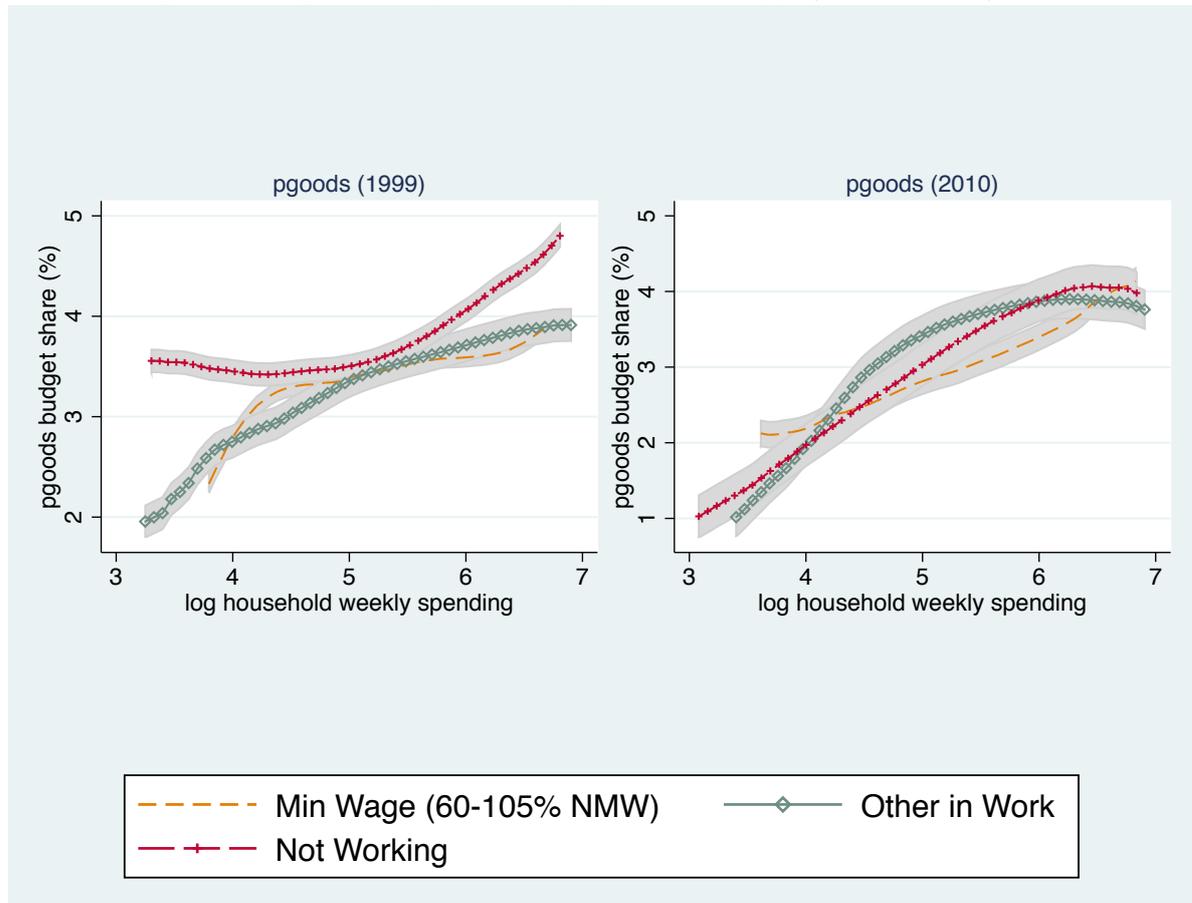
Source: Authors' calculations from FES (1999), LCFS (2010). See Table B1 in the Appendix for a full description of each category.

Figure A.7: Engel Curves by Commodity by Household Type (Leisure Goods and Leisure Services)



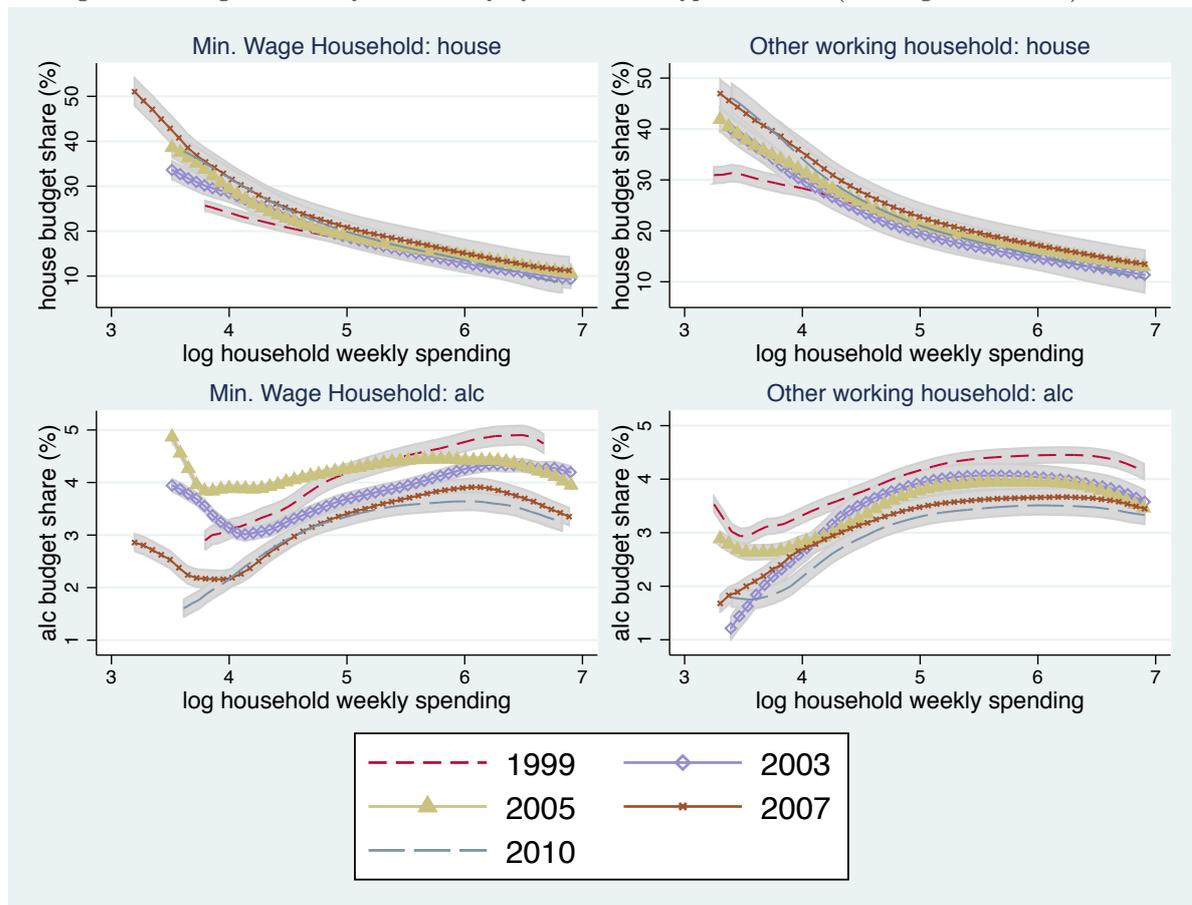
Source: Authors' calculations from FES (1999), LCFS (2010). See Table B1 in the Appendix for a full description of each category.

Figure A.8: Engel Curves by Commodity by Household Type (Personal Goods)



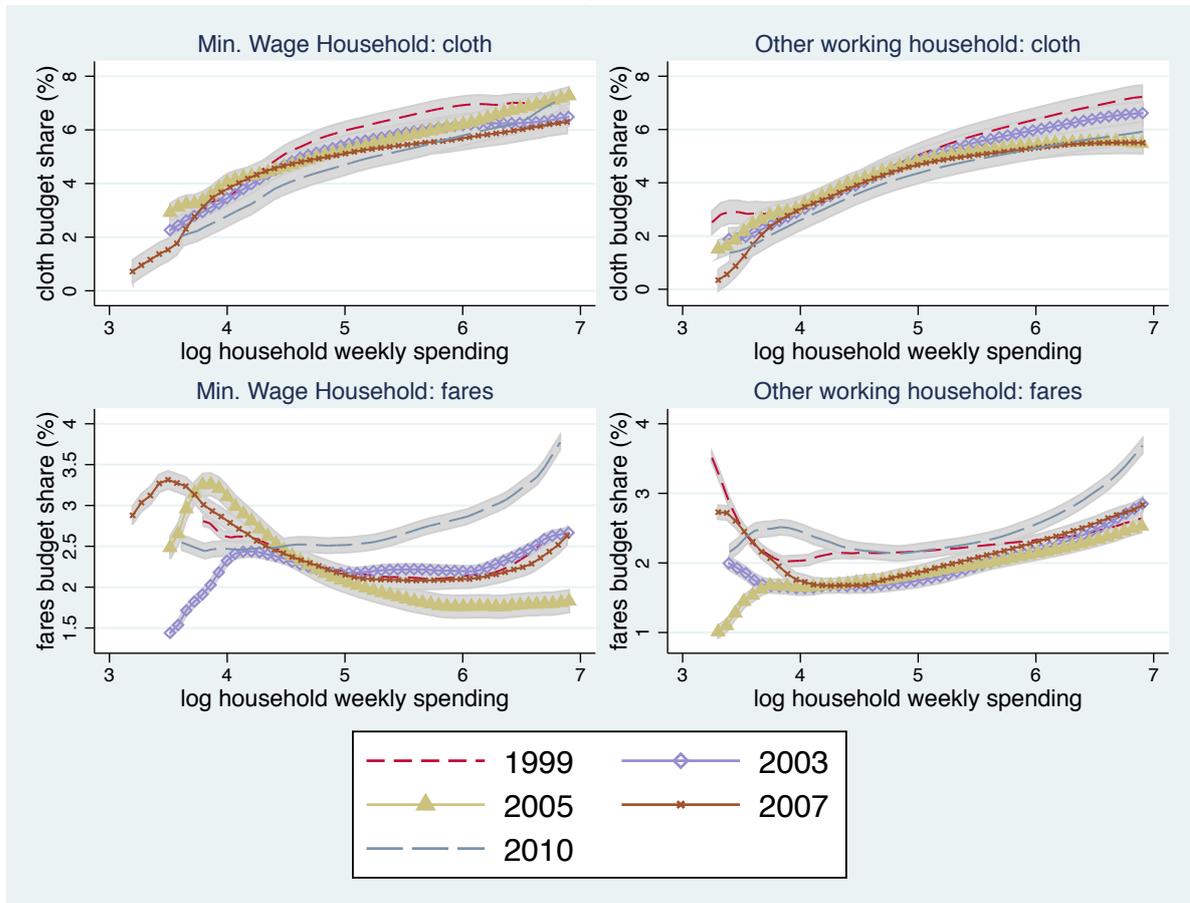
Source: Authors' calculations from FES (1999), LCFS (2010). See Table B1 in the Appendix for a full description of each category.

Figure A.9: Engel Curves by Commodity by Household Type over time (Housing and Alcohol)



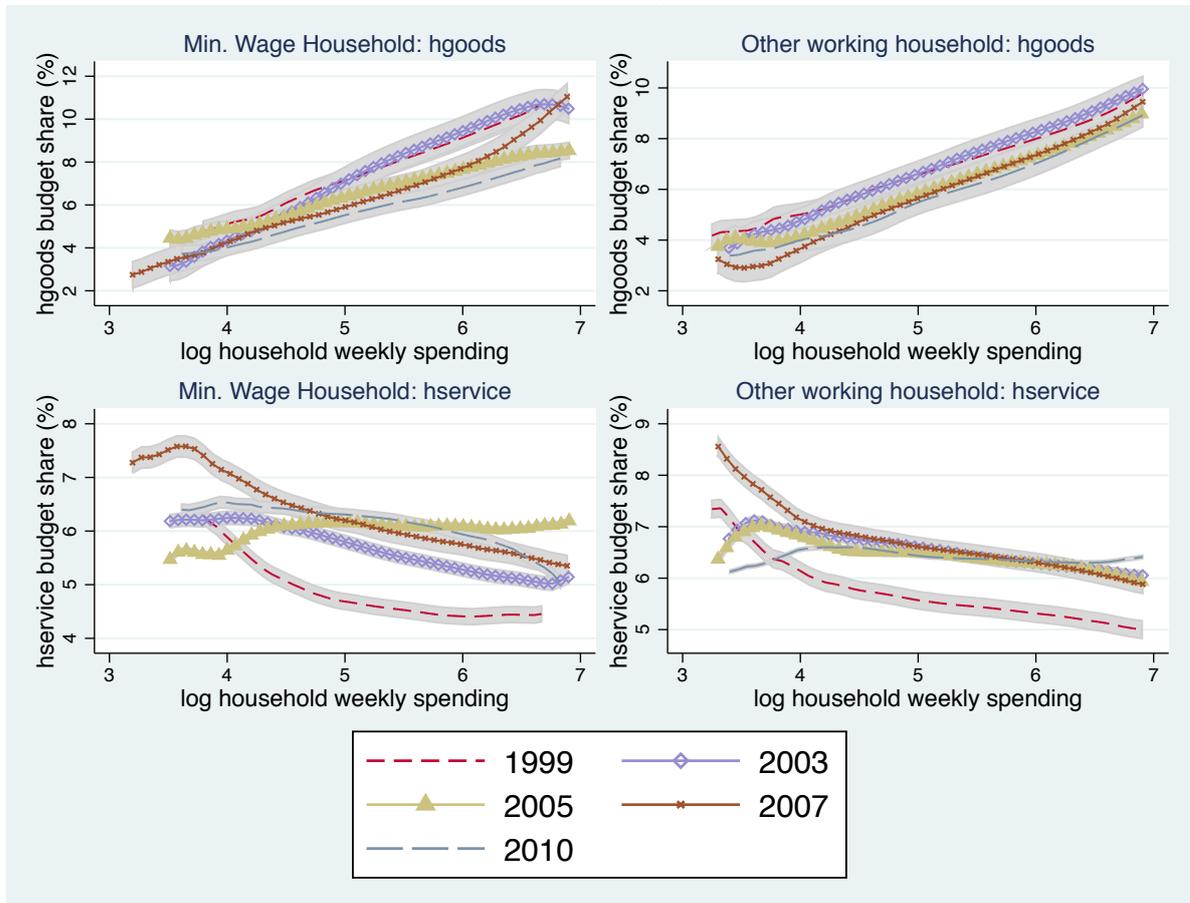
Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

Figure A.10: Engel Curves by Commodity by Household Type over time (Clothing and Transport Fares)



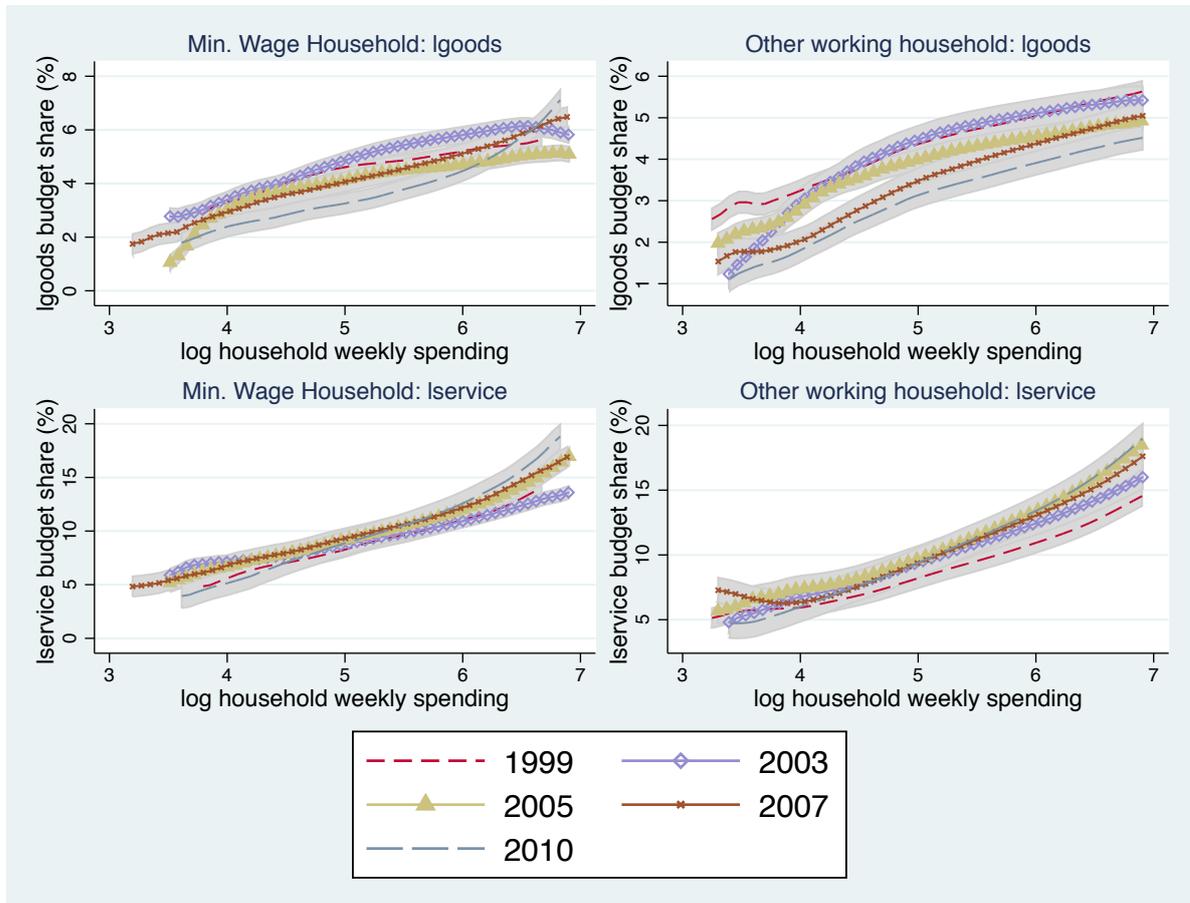
Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

Figure A.11: Engel Curves by Commodity by Household Type over time (Household goods and household services)



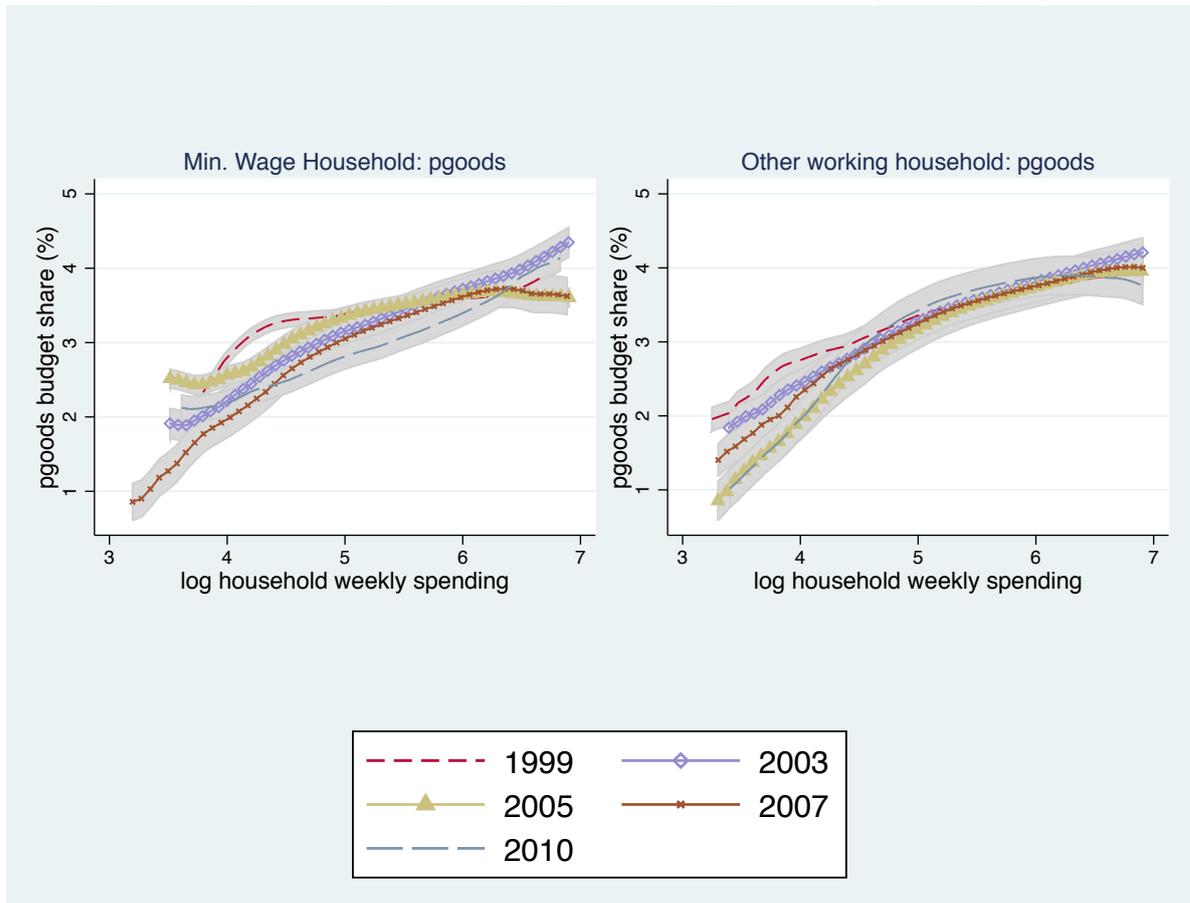
Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

Figure A.12: Engel Curves by Commodity by Household Type over time (Leisure goods and leisure services)



Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

Figure A.13: Engel Curves by Commodity by Household Type over time (Personal goods)



Source: Authors' calculations from FES (1999-2001), EFS (2002-2007), LCFS (2008-2010). See Table B1 in the Appendix for a full description of each category.

Table A5: Engel Curve Estimates of Household Expenditure Shares by Minimum Wage Status

	Min. wage household (1)	Other working HH (2)	Non-working HH (3)
<b>Food</b>			
1999: Ln(Expenditure)	-6.017*** (0.677)	-6.225*** (0.287)	-8.504*** (0.423)
2004: Ln(Expenditure)	-4.778*** (0.630)	-5.250*** (0.291)	-3.851*** (0.472)
2010: Ln(Expenditure)	-4.345*** (0.856)	-4.061*** (0.343)	-1.960*** (0.524)
<b>Fuel</b>			
1999			
Ln(Expenditure)	-23.997** (8.870)	-10.898*** (2.008)	-23.108*** (4.094)
Ln(Expenditure) <sup>2</sup>	1.895* (0.790)	0.752*** (0.173)	1.717*** (0.377)
2004			
Ln(Expenditure)	-8.162** (2.909)	-7.030*** (2.117)	-6.025 (3.548)
Ln(Expenditure) <sup>2</sup>	0.520* (0.256)	0.427* (0.183)	0.257 (0.328)
2010			
Ln(Expenditure)	-7.199 (4.106)	-7.540** (2.520)	-2.430 (4.464)
Ln(Expenditure) <sup>2</sup>	0.319 (0.363)	0.408 (0.219)	-0.094 (0.418)
<b>Alcohol</b>			
1999			
Ln(Expenditure)	12.880 (7.517)	6.446 (3.534)	5.137 (5.470)
Ln(Expenditure) <sup>2</sup>	-1.179 (0.677)	-0.632* (0.305)	-0.689 (0.505)
2004			
Ln(Expenditure)	8.532 (4.617)	-2.068 (3.905)	4.624 (4.596)
Ln(Expenditure) <sup>2</sup>	-0.848* (0.413)	0.065 (0.335)	-0.538 (0.427)
2010			
Ln(Expenditure)	10.020* (4.863)	1.789 (2.968)	-0.844 (5.205)
Ln(Expenditure) <sup>2</sup>	-0.988* (0.441)	-0.218 (0.261)	-0.070 (0.490)

Note: Robust standard errors in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A5 continued

	Min. wage household (1)	Other working HH (2)	Non-working HH (3)
<b>Tobacco</b>			
1999: Ln(Expenditure)	-3.889*** (0.842)	-2.614*** (0.220)	-3.742*** (0.459)
2004: Ln(Expenditure)	-2.975*** (0.746)	-2.397*** (0.380)	-2.140*** (0.500)
2010: Ln(Expenditure)	-2.392*** (0.574)	-2.237*** (0.311)	-0.531 (0.495)
<b>Clothing</b>			
1999: Ln(Expenditure)	0.556 (0.888)	1.368*** (0.286)	-0.342 (0.437)
2004: Ln(Expenditure)	0.501 (0.662)	0.583* (0.246)	-0.181 (0.373)
2010: Ln(Expenditure)	0.991 (0.633)	0.873** (0.275)	0.587 (0.384)
<b>Household goods</b>			
1999: Ln(Expenditure)	4.005*** (0.929)	2.904*** (0.321)	1.537*** (0.435)
2004: Ln(Expenditure)	2.984*** (0.632)	2.957*** (0.334)	1.385** (0.448)
2010: Ln(Expenditure)	2.342*** (0.627)	3.112*** (0.353)	3.616*** (0.615)
<b>Household services</b>			
1999: Ln(Expenditure)	-0.943* (0.401)	-0.742*** (0.169)	-1.510*** (0.286)
2004: Ln(Expenditure)	-1.382** (0.432)	-0.794*** (0.215)	-1.177*** (0.326)
2010: Ln(Expenditure)	-0.910* (0.370)	-0.363 (0.217)	-0.923** (0.316)
<b>Personal goods</b>			
1999: Ln(Expenditure)	0.291 (0.424)	0.385* (0.152)	0.052 (0.276)
2004: Ln(Expenditure)	0.032 (0.314)	0.639*** (0.153)	1.296*** (0.278)
2010: Ln(Expenditure)	0.990* (0.402)	0.592*** (0.150)	0.979*** (0.230)
<b>Motoring</b>			
1999: Ln(Expenditure)	0.669 (1.333)	2.774*** (0.466)	2.047* (0.830)
2004: Ln(Expenditure)	3.527*** (1.019)	2.546*** (0.475)	2.970** (1.003)
2010: Ln(Expenditure)	1.360 (0.865)	1.156* (0.493)	3.211** (1.000)

Note: Robust standard errors in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A5 continued

	Min. wage household (1)	Other working HH (2)	Non-working HH (3)
<b>Fares</b>			
1999: Ln(Expenditure)	-0.628 (0.995)	-0.346 (0.287)	-0.395 (0.437)
2004: Ln(Expenditure)	0.715 (0.726)	-0.903*** (0.247)	-0.130 (0.553)
2010: Ln(Expenditure)	-0.451 (0.804)	-0.078 (0.416)	0.545 (0.729)
<b>Leisure goods</b>			
1999: Ln(Expenditure)	1.527 (0.931)	1.277*** (0.249)	0.964** (0.339)
2004: Ln(Expenditure)	0.039 (0.436)	1.449*** (0.258)	1.900*** (0.476)
2010: Ln(Expenditure)	2.251*** (0.659)	1.267*** (0.228)	1.554*** (0.342)
<b>Leisure services</b>			
1999: Ln(Expenditure)	6.193*** (1.112)	5.843*** (0.396)	4.277*** (0.566)
2004: Ln(Expenditure)	5.856*** (0.815)	6.244*** (0.430)	4.452*** (0.637)
2010: Ln(Expenditure)	7.324*** (0.939)	7.548*** (0.473)	4.564*** (0.597)

*Note:* Robust standard errors in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

*Source:* Authors' calculations from FES (1999), EFS (2004), LCFS (2010).

Table A6: Difference-in-Difference Estimates of Changes in Real Equivalised Expenditures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Housing	Food	Fuel	Alcohol	Tobacco	Clothing	Household goods	Household services	Personal goods	Motoring	Fares	Leisure goods	Leisure services
1999/2000	-7.423 (4.458)	-3.725 (2.442)	-1.529 (1.110)	-0.638 (2.217)	2.135 (2.003)	-2.784 (3.277)	5.036 (4.418)	-3.770 (2.134)	-0.694 (1.765)	-9.296 (6.103)	-1.425 (3.276)	2.721 (3.664)	-0.357 (5.515)
2004/2005	9.698* (4.622)	-1.232 (2.199)	-0.341 (0.665)	-3.122 (1.727)	-1.174 (2.121)	1.578 (2.995)	4.314 (3.881)	-2.225 (2.258)	1.550 (1.488)	-1.204 (5.551)	7.684** (2.957)	1.804 (2.391)	4.900 (5.362)
2009/2010	-0.109 (4.253)	0.339 (2.222)	-0.795 (0.904)	-3.106* (1.573)	-2.513 (2.122)	-1.092 (2.616)	6.913* (3.275)	0.869 (1.767)	-2.830 (1.834)	6.184 (4.436)	1.504 (3.293)	-1.366 (2.662)	-2.423 (5.287)

Note: Robust standard errors in parentheses. Coefficients give percentage point change in real expenditure for NMW households relative to other working households. From regression:  $exp_{it} = b_0 + b_1MIN_i + b_2time_i + b_3MIN_i * TIME_i + u_{it}$ , where time is a pair of years as indicated.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Figure A.14: Probit Estimates of Material deprivation: Social meal once a week

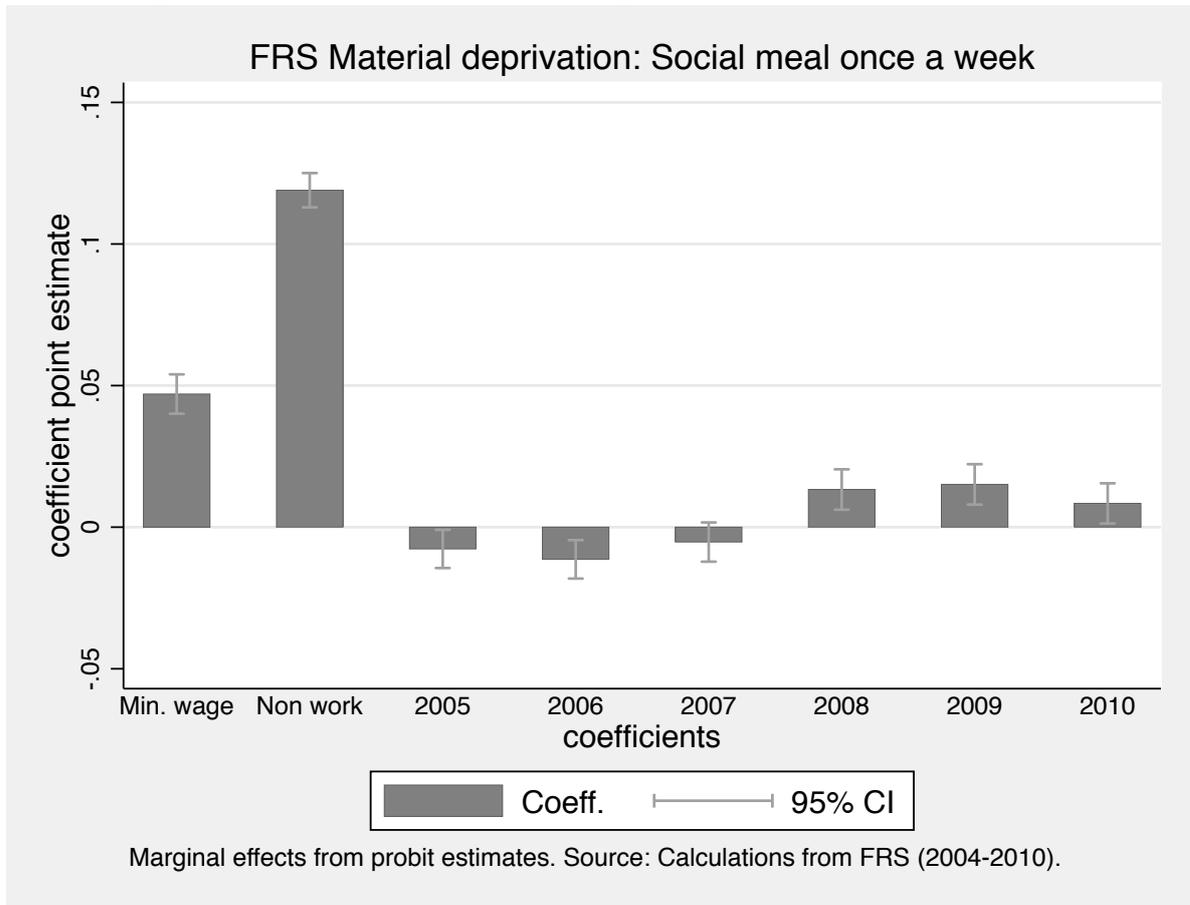


Figure A.15: Probit Estimates of Material deprivation: Own two pairs of shoes

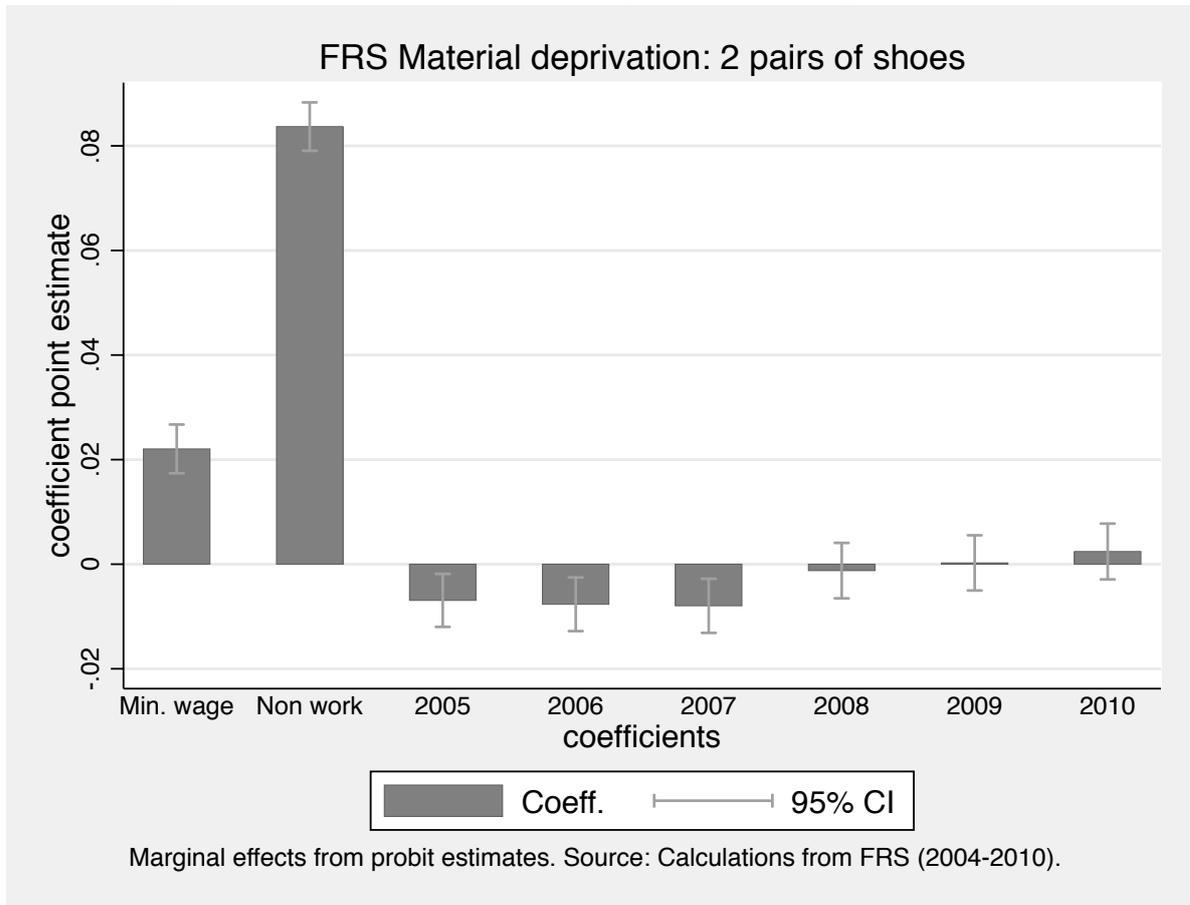


Figure A.16: Probit Estimates of Material deprivation: Able to decorate house

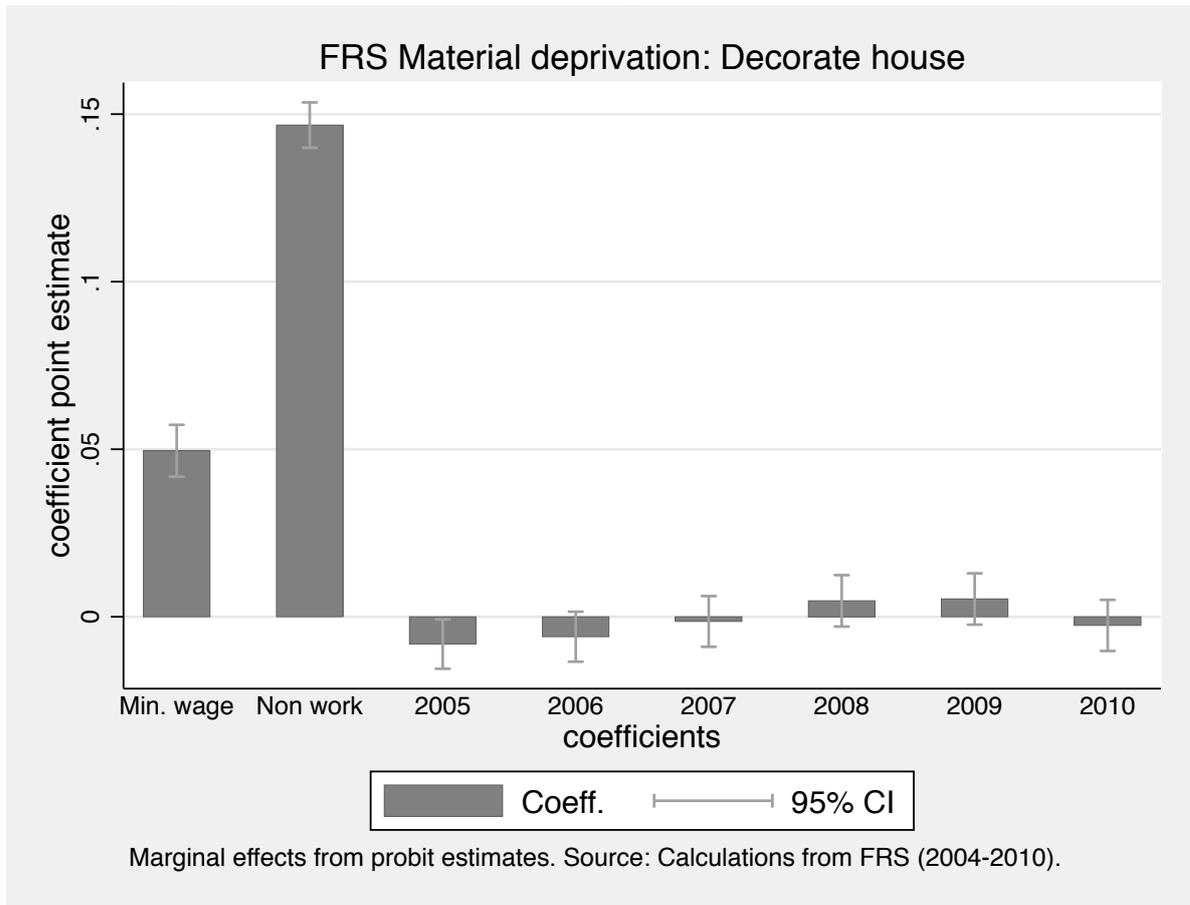


Figure A.17: Probit Estimates of Material deprivation: Have house contents insurance

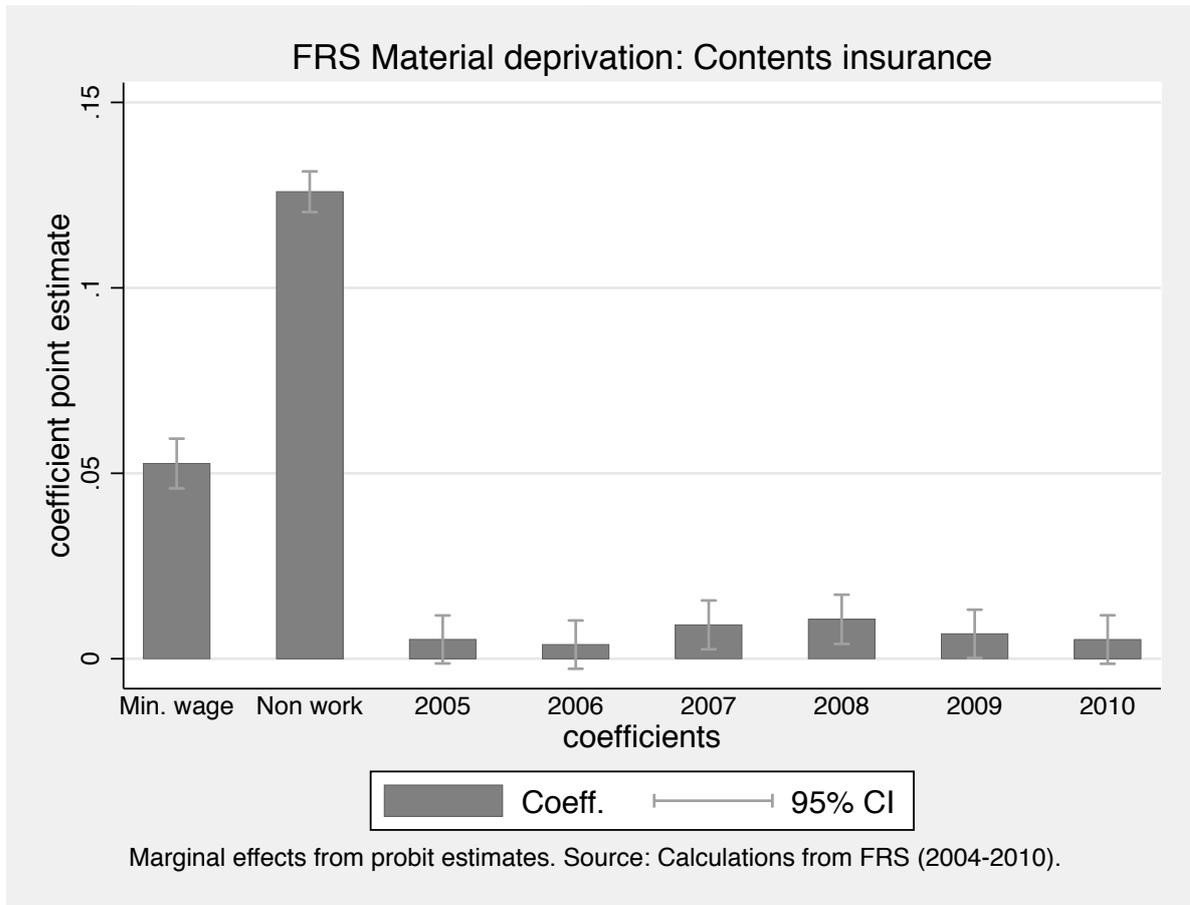


Figure A.18: Probit Estimates of Material deprivation: Able to replace worn furniture

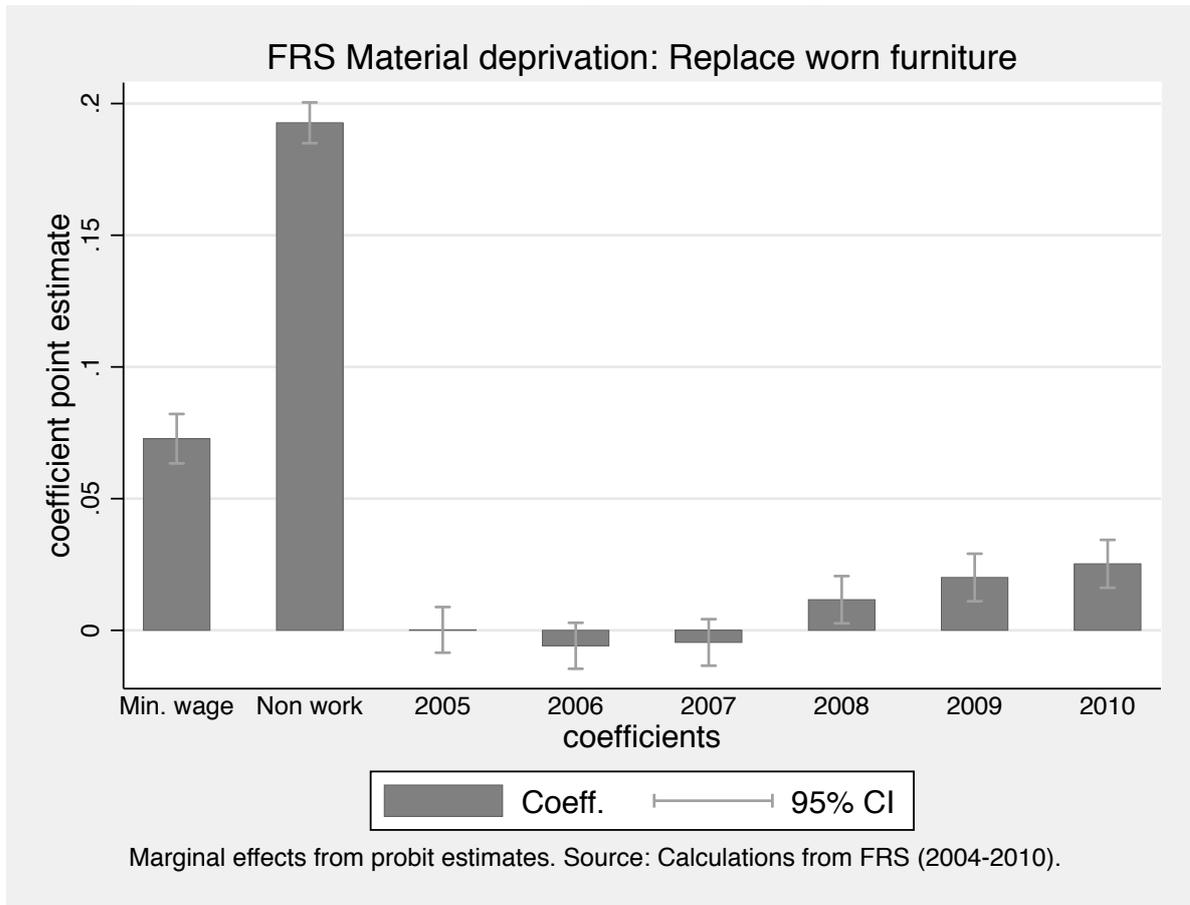


Figure A.19: Probit Estimates of Material deprivation: Able to replace electrical appliances

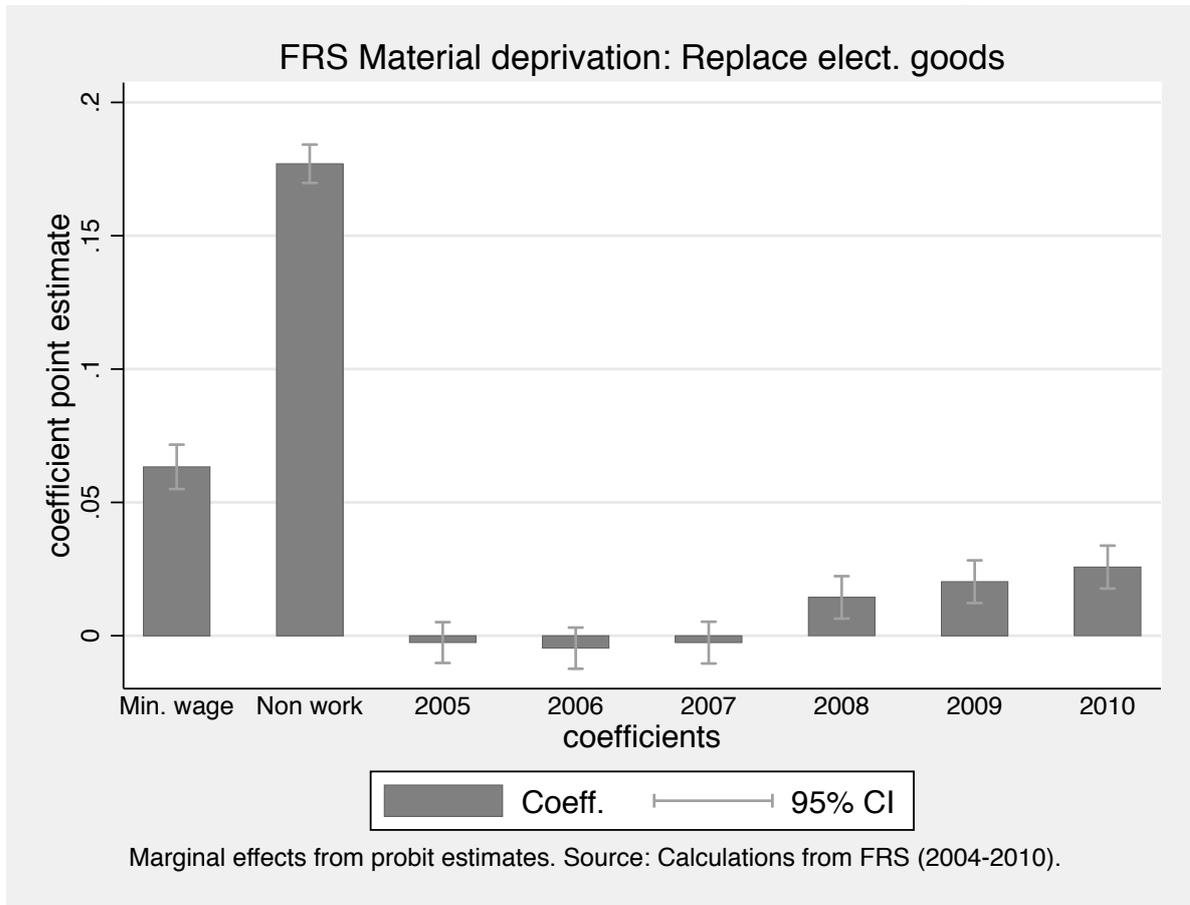


Figure A.20: Probit Estimates of Material deprivation: Have money for own spending on non-necessities

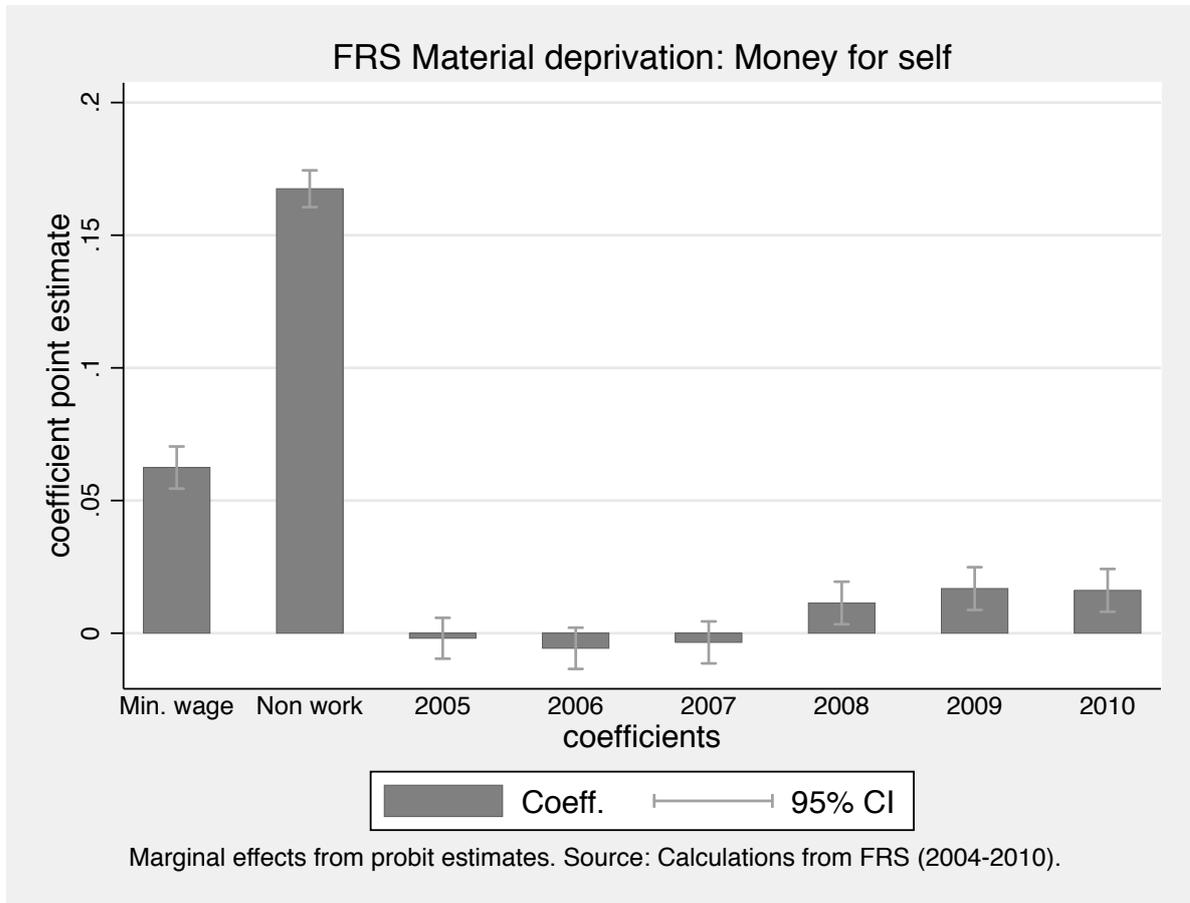


Figure A.21: Probit Estimates of Material deprivation: Able to afford a leisure activity

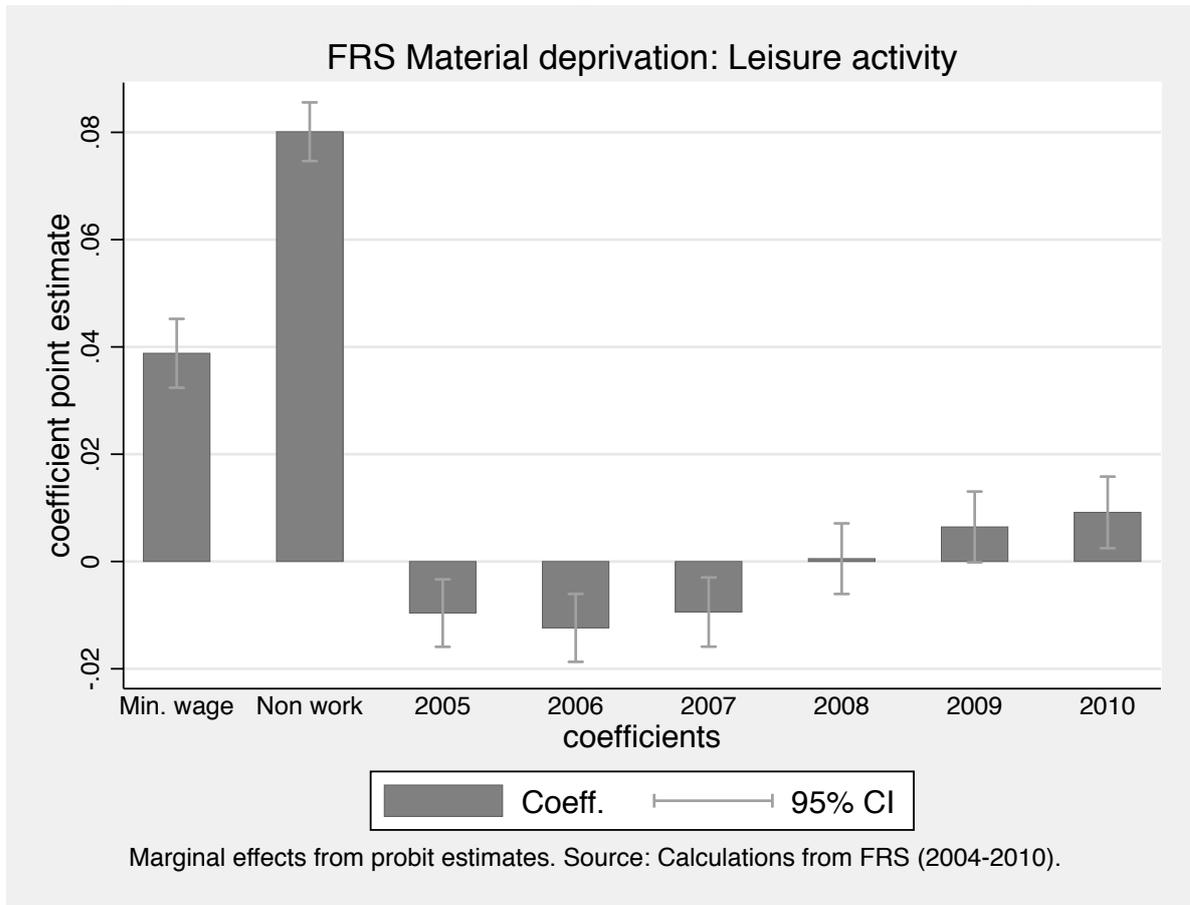


Table A7: Estimates of real amount of money owed

	Individuals		Household ref. person	
	(1)	(2)	(3)	(4)
Minimum wage household	-0.070 (0.233)	-0.080 (0.233)	-0.698** (0.216)	0.053 (0.307)
Non-working household	-0.661*** (0.121)	-0.551*** (0.124)	-1.058*** (0.100)	-0.357 (0.184)
2000	0.459*** (0.052)	0.450*** (0.062)	0.443*** (0.053)	0.491*** (0.088)
2005	0.722*** (0.060)	0.703*** (0.091)	0.782*** (0.056)	0.685*** (0.127)
<i>N</i>	12658	12413	6658	6547
<i>R</i> <sup>2</sup>	0.08	0.10		0.10
PID	9144	8954	4997	4906

*Note:* Robust standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

The first two columns report the results for individuals only, columns (3) and (4) for the household reference person. The dependent variable is the log of real debt. Columns (1) and (3) include household dummies, year dummies, and household-year interactions (not reported). Columns (2) and (4) include the following additional controls (not reported): dummies for sex, age groups, household type, marital status, number of kids, qualifications, housing tenure and region. Data is only available for 1995, 2000, and 2005. For 1995, a household defined as a minimum wage household in 1999, is defined as a minimum wage household in 1995 as well.

*Source:* BHPS (1995, 2000, 2005).

## 8 Appendix B: Summary of Datasets

Table B1: FES Expenditure Categories

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### **Food**

includes all food prepared and consumed in the home and all food purchased and consumed on premises outside the home, and takeaway foods eaten at home.

### **Alcohol**

includes both alcoholic drink bought at off-licences and alcoholic drink consumed on licensed premises.

### **Tobacco**

includes cigarettes, pipe tobacco and cigars.

### **Domestic Fuel**

domestic fuel and lighting costs such as gas bills, electricity bills, coal and bottled gas.

### **Household Durables**

includes goods such as furniture and soft furnishings, electrical appliances, gardening equipment and furniture, and kitchen utensils.

### **Household Services**

covers telephone calls (the cost of the calls themselves rather than the costs of purchasing the phones) including mobile telephone calls and domestic services such as childcare costs, laundry services and repairs.

### **Clothing**

includes mens, womens and childrens clothing and footwear.

### **Personal Goods**

The category private health care includes private medical insurance, over-the counter medicines, membership of health clubs, spectacles and contact lenses, and toiletries (such as cotton wool and toothpaste used in personal care).

### **Motoring**

This covers the private costs of motoring other than the purchase of the vehicles themselves. It includes petrol, tax, insurance, repairs and accessories, the purchase of new and second-hand cars, motorbikes, vans.

### **Fares**

includes rail and bus fares and season tickets and the costs of air travel where these are easily distinguished from air travel costs included as part of a package holiday deal.

Where these costs cannot be distinguished, the air travel is included in our holidays variable (see below).

### **Leisure Goods**

This category includes audio-visual equipment and smaller leisure goods such as CDs, books, newspapers and garden plants.

### **Leisure Services**

Includes entertainment expenditures on TV licences, cinema and theatre admissions, entry fees to sporting events and subscriptions to sports and social clubs and the costs of UK and foreign holidays, including air travel where the individual costs cannot be distinguished. It also includes money spent abroad and costs of currency conversion and travellers cheques, school fees, costs of school trips and payments made for university education.

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Table B2: Family Resources Survey (FRS)

Question	Detail
<b>Income</b>	
Any other sources of income	Pension/Trust/Annuity
Royalties (amount)	Rent from any property Royalties Income as sleeping partner Foreign pension
<b>Savings and Investments</b>	
Do you have any accounts	Bank/Bldg Soc./P. Office/S'mkt/Other
Type of account	Eg. Current a/c, Investment a/c, ISA, Savings, Credit Union
How much interest received from any account (last 12mths)	
Money in any investments, shares, bonds	Eg. Govt stock, Unit trusts, Stocks, profit sharing
Total amount of interest/dividends from investments	
Questions on child trusts/investments.	
Total interest from savings and investments	
Total savings	banded
Current account balance	banded, if negative recorded as zero.
Amount in bank accounts	
How many bonds/shares/units	
Value of holding	
Period of plan	Gilt-edged stock
National Savings	Type of issue, value of issue
Pensions and SAYE	
<b>Adult and Child Social Deprivation</b>	
Holiday once a year	
Social meal once a week	
Two pairs of all weather shoes	
Keep home decorated	
Hhold contents insurance	
Make regular savings	
Replace worn furniture	
Replace/repair electrical goods	
Money for self	
Hobby or leisure activity	
Able to keep up with bills	
Home adequately warm	
More questions on child deprivation	
More questions on pensioner deprivation	
Up to date with bills	Behind with electricity/gas/CT/insur/phone/ TV rental/HP/water
No. of TV's	
<b>Financial assistance</b>	
Help received from family/friends	For various items (e.g. food, paying bills, trips)
Help given to family/friends	For various items (e.g. food, paying bills, trips)
<b>Housing: Rent, Mortgage and Loan Details</b>	
Mortgage loan (year, amount, length)	
Remortgage loan (year, amount, reason)	
Amount outstanding on mortgage	107
Amount of last mortgage payment	
Whether still have second mortgage	

*Note:* Based on 2010-11 documentation.

Table B3: BHPS debt and savings data

Question	Time period (BHPS wave)	
	Annual	Occasional
<b>Savings and Bank accounts</b>		
Has credit cards		EJO
Savings/Investments (various types) (y/n)		EJO
Over 1000/5000/15000/50000 in investments		EJO
Total value of investments		EJO
Over 500/1000/5000/10000 in savings		JO
Over 100/500/1000/2500/5000/10000 in interest/dividends	I-R	
Amount received interest/dividends	I-R	
Income last year from interest/dividends	A-H	
Saves from current income	A-R	
Amount saved each month	A-R	
Savings mainly long or short term	J-R	
Saves on a regular basis	J-R	
<b>Credit and debt</b>		
Owe money		EJO
Owe: money/HP/loans/credit cards/DWP social fund/ student loan/something else		EJO
Over 100/500/1500/5000 owed		EJO
Total amount owed		EJO
Repayments on HP or loans (y/n)	E-R	
Repayments a burden on hold (heavy/somewhat/not)	E-R	
Housing payments required borrowing	A-R	
Housing payments required cutbacks	A-R	
Been 2+ months late with housing payment	A-R	
Problems paying housing for over a year	A-R	
<b>Other</b>		
Financial situation (Living comfortably/Doing alright/Just about getting by/ Finding it quite difficult/Finding it very difficult)	A-R	
Change in financial position last year (better/worse/about same)	A-R	
Financial expectations for year ahead (better/worse/about same)	A-R	
Received lump payment (y/n)	E,G-R	
Source of lump payment (insur/redund/bonus/inherit/lottery)	E,G-R	
Amount of lump payment (insur/redund/bonus/inherit/lottery)	E,G-R	
Amount spent on leisure per month	G-R	
Amount spent eating out per month	G-R	
Consumer durables in accommodation (list of items)	A-R	
Number of cars in household	C-R	
<b>Internal &amp; external transfers</b>		
Rent/housekeeping/bills/allowances/education payments		
Internal		A-E
External	A-R	

Note: Wave A = 1991 etc. EJO = 1995, 2000 & 2005. Ignored anything asked in a single/few waves only.

Table B2 contd: BHPS debt and savings data

Question	Time period (BHPS wave)	
	Annual	Occasional
<b>Housing: Rent, Mortgage and Loan Details</b>		
Original purchase price of property	A-R	
Value of property	A-R	
Value of other property	J-R	
Year became owner	A-R	
Years left to pay mortgage	A-R	
Amount of additional mortgage on home	A-R	
Total mortgage on all property	C-R	
Last monthly total mortgage payment	A-R	
Taken out additional mortgage on home	A-R	
Extra loan (for reason)	A-R	
Net Amount of last rent payment	A-R	
Gross rent including HB	A-R	
Net and Gross monthly housing costs	A-R	
<b>Material well-being</b>		
Keep home adequately warm	F-R	
Pay for annual holiday	F-R	
Replace furniture	F-R	
Buy new clothes	F-R	
Eat meal on alternate days	F-R	
Feed visitors once a month	F-R	

*Note:* Wave A = 1991 etc. EJO = 1995, 2000 & 2005. Ignored anything asked in a single/few waves only.

Table B4: Understanding Society debt and savings data

Question	U.S. wave	
	Wave 2	BHPS
<b>Savings and Bank accounts</b>		
Over 100/500/1000/2500/5000/10000 in interest/dividends	2	y
Amount received interest/dividends	2	y
Saves on a regular basis	2	y
Amount saved each month	2	y
Savings mainly long or short term	2	y
<b>Credit and debt</b>		
Problems paying housing for over a year	2	y
<b>Other</b>		
Financial situation (Living comfortably/Doing alright/Just about getting by/Finding it quite difficult/Finding it very difficult)	2	y
Financial expectations for year ahead (better/worse/about same)	2	y
Consumer durables in accommodation (list of items)	2	y
Number of cars in household	2	y
<b>Housing: Rent, Mortgage and Loan Details</b>		
Original purchase price of property	2	y
Value of property	2	y
Year became owner	2	y
Years left to pay mortgage	2	y
Amount of additional mortgage on home	2	y
Last monthly total mortgage payment	2	y
Taken out additional mortgage on home	2	y
Extra loan (for reason)	2	y
Net amount of last rent payment	2	y
Gross rent including housing benefit	2	y

*Note:* Only Wave 2 of Understanding Society can be linked with the BHPS. Remittances module in Wave 1 has data on payments of loans.

Note: Wave 1 of Understanding Society contains the new sample but not the BHPS sample. The BHPS sample is included in Understanding Society from wave 2 onwards, so wave 2 of Understanding Society is effectively wave 19 of the BHPS (and hence there is a one year break in the 'BHPS' series: 1991-2008, and wave 2 (19): 2010-12 (collected over a 2 year period)).

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