

# **Expenditure Patterns Post-Welfare Reform in the UK: Are low-income families starting to catch up?**

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## **Editorial Note**

Paul Gregg is Professor of Economics at University of Bristol and Advisor to the Chancellor of Exchequer as a member of the Council of Economic Advisors, HM Treasury. Jane Waldfogel is Professor of Social Work and Public Affairs at Columbia University School of Social Work, and Research Associate at the Centre for Analysis of Social Exclusion (CASE) at the London School of Economics. Elizabeth Washbrook is a doctoral student and Research Assistant at the Centre for Market and Public Organisation at University of Bristol.

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## **Abstract**

In this paper we provide evidence on how the UK government's welfare reforms since 1998 have affected the material well-being of children in low-income families. We examine changes in expenditure patterns and ownership of durable goods for low- and higher-income families between the pre-reform period (1995-1998) and the post-reform period (2000-2003), using data from the Family Expenditure Survey. The methodological approach is a difference-in-difference-in-difference analysis that exploits the fact that age variation in the reforms favoured low-income families over higher-income ones and families with children age under 11 over those with older children. We find that low-income families with children are catching up to more affluent families, in their expenditures and their possession of durable goods. Moreover, expenditures on child-related items are increasing faster than expenditures on other items.

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## **Introduction**

Since the Labour government came into office in 1997, there has been a raft of reforms to UK labour market and welfare policies, with a particularly important set coming into effect between late 1998 and early 2000. Many of these reforms will have affected mothers' labour market status and child poverty. These include the National Minimum Wage (introduced in April 1999), Child and Working Families Tax Credits (starting in October 1999 and expanded thereafter), National Childcare Strategy (including substantial increases in childcare subsidies in October 1999), improved maternity and family leave provision (starting in 1999), and New Deals for Lone Parents and Partners of the Unemployed (welfare- to-work programs, which started in some areas in October 1997 and were then extended nationwide through 1998). There have also been benefit increases for families with children, whether or not parents are in work, with particularly large increases for families with children age 10 and under (occurring in October 1998, April 1999, October 1999, and April 2000). The rapid pace of reform means that there have been sharp increases in household income among poor families with children, whose incomes have risen faster than incomes on average. As a result, the number of children in poverty, in both absolute and relative terms, has started to fall.

What have these changes in income meant for the material well-being of children in low-income families? Are children in low-income families starting to catch up to children in higher-income families? In this paper, we provide new evidence on this question, examining changes in expenditure patterns and ownership of durable goods for low- and higher-income families. The data used come from the Family Expenditure Survey (and its successor from 2001-02, the Expenditure and Food Survey), the UK's largest and most detailed source of expenditure data. Because many of the reforms we consider are concentrated in the period from late 1998 to early 2000, we pool data from April 1995 to March 1998 to represent the pre-reform period, and we use data from April 2000 to March 2003 (the three most recent survey years) for the post-reform period.

Our overall aim is to determine to what extent low-income families with children are catching up to their more affluent peers, in terms of patterns of household consumption and ownership of goods. We pay particular attention to spending on items that are directly used or consumed by children (such as children's clothing and footwear) or that are likely to promote their learning and development (toys, books, games, computers, etc). We know from prior research that low-income families lag behind others in their spending on these items; we would like to know whether, as incomes rise, low-income families increase their spending and narrow the gaps.

The methodological approach is a difference-in-difference-in-difference analysis. We begin by comparing spending patterns for low-income families

with children to spending patterns of higher-income families with children before and after the policy reforms (this is the difference-in-difference). Then comparisons between these estimates for families with children who are more or less likely to be affected by the reforms are undertaken (this constitutes the difference-in-difference-in-difference). Specifically, we divide families by the age of their children, taking advantage of the fact that families with children age 10 and under have seen far larger benefit increases. We also conduct some analyses isolating effects for children under age 5, as this group not only benefited from the benefit increases but also was targeted by a host of ‘early years’ reforms.

We also examine how measures of material deprivation move as incomes rise. Specifically, we look at the share of low-income families owning durable goods such as a car, telephone, washing machine, tumble dryer, or computer. Understanding how these measures of material deprivation move is important if we are to draw inferences about children’s actual living conditions. What low income means for children’s well-being will depend in part on whether families with low incomes nevertheless possess similar material goods, or whether they are lacking items possessed by more affluent families. Considering measures of material deprivation is also of policy relevance in light of the UK government’s decision to include an indicator of consistent poverty, akin to the Irish measure, in its new official poverty measurement. This indicator will be included in a tiered approach, along with a measure of absolute poverty and relative poverty.<sup>1</sup>

To briefly preview our results, we find that low-income families with children are catching up to more affluent families, in their expenditures and their possession of durable goods. Moreover, expenditures on child-related items are increasing faster than expenditures on other items. Thus, as their incomes have risen, low-income families with children have increased their spending on children’s footwear and clothing, books, and fruit and vegetables, relative to other families with children, but have decreased their spending on alcohol and tobacco. Patterns of ownership of durable goods by low-income families with children are also tending to converge to those of more affluent families, although there are also areas where low-income families are not catching up, most markedly in the presence of computers within the household.

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<sup>1</sup> Material deprivation data on both adults and children will be gathered in the UK’s new Family Resources Survey; the questions relating to child deprivation will identify families who would like to have but can not afford the following items for their children: a holiday away from home at least once a year; swimming at least once a month; a hobby or leisure activity; friends round for tea or snack once a fortnight; a separate bedroom for each child over age 10 of different sex; leisure equipment (such as a bicycle); celebrations on special occasions (such as birthdays); playgroup or nursery at least once a week for preschoolers; and school trips at least once a term for school-age children. See Department for Work and Pensions (2003a) for further details.

So the overall picture that emerges is one of low-income families seeing rising material circumstances and spending the extra money in a way that improves children's material well-being and that narrows the gap between low-income children and their more affluent peers. This must be extremely reassuring to UK policy makers and campaigners arguing for resources to tackle child poverty.

## **Background**

The Labour government of Prime Minister Tony Blair and Chancellor Gordon Brown came into office in 1997, at a time when poverty and 'worklessness' had reached record high levels in the UK. Over the twenty years prior to 1997, children had replaced the elderly as the group with the highest poverty rate in the UK. Indeed, the poorest fifth of children in 1996-97 were in households with real incomes no different in absolute terms than the incomes for the poorest fifth of children in 1979 (Gregg, Harkness, and Machin, 1999; Dickens and Ellwood, 2003). These adverse trends in poverty were related to the increase in 'workless' households – households where no adult had a job. In 1996, just prior to when the Labour government came into office, 19.6 percent of families with children were living in workless households, up from around only 7 percent in the mid-1970s (Gregg, Hansen, and Wadsworth, 1999)

A number of studies have highlighted the material deprivation experienced by Britain's poor (see, most recently, Gordon *et al.*, 2000) and the hardships that children face when they are poor (Middleton *et al.*, 1997; Shropshire and Middleton, 1999). Looking at the period from 1968 to 1995-96, Gregg, Harkness, and Machin (1999) documented how the poorest families with children had fallen further behind other families in spending on children's clothing, shoes, toys and fresh fruit and vegetables, even though low-income families spend proportionately more of their income on these goods, forgoing spending on other items.

Since coming into office in 1997, the Labour government has introduced extensive reforms to welfare and labour market policies, and the real incomes of low-income families with children have risen sharply. Figure 1 (from Sefton and Sutherland, 2004) shows the estimated percentage change of incomes resulting from the welfare reforms for each decile of families with children, compared to a base of the pre-1997 system with benefits simply uprated with prices. The gains are heavily focused on the bottom three deciles, with the change for the poorest decile representing an increase in income of close to 25% in real terms.

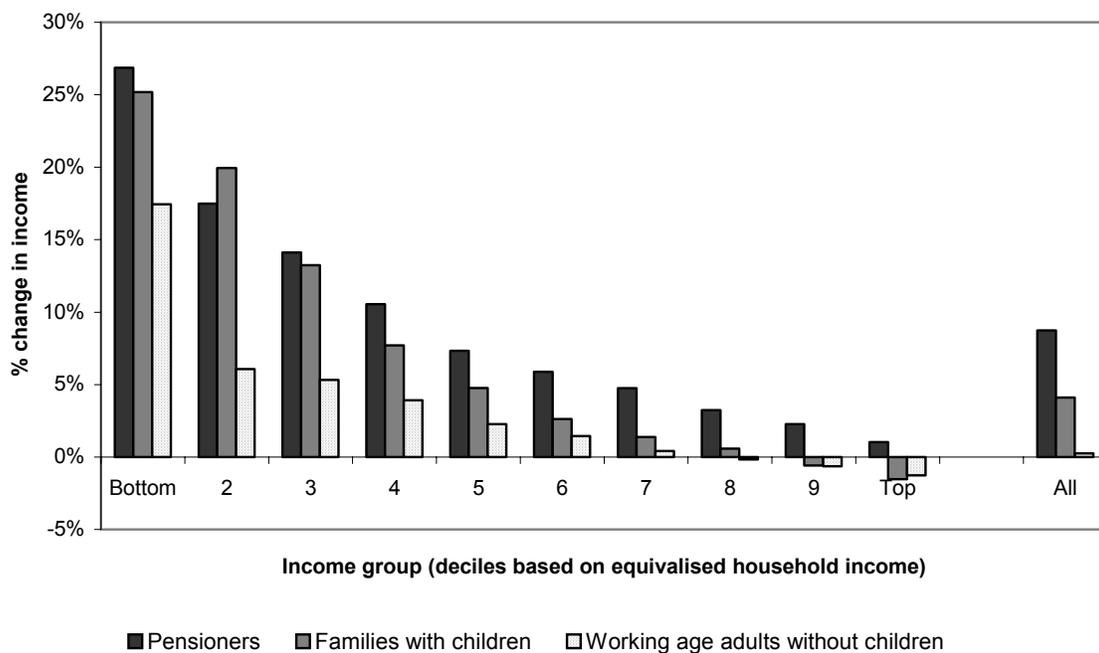
The Labour government's agenda to reduce poverty and improve the life chances of low-income families with children has the overall theme of 'work for

those who can, security for those who cannot’ (Department for Social Security 1998), and includes three main elements:

- a set of measures designed to promote paid work and ‘make work pay’;
- a series of measures to ‘end child poverty within a generation’, including benefit increases for families where parents are not working;
- a set of investments in children, aimed at reducing disadvantage and ‘social exclusion’ (a term that goes beyond poverty to incorporate social dimensions of disadvantage and also long-term and intergenerational poverty).

These reforms have been described in detail elsewhere (see especially Hills and Stewart, 2005; Hills and Waldfogel, 2004).<sup>2</sup> We draw on those reviews in the following sections, which briefly describe each of these elements, and then review the evidence to date as to the impact of the reforms on family incomes and poverty.

**Figure 1: Changes in real income resulting from tax and welfare reforms 1997-2002**



(from Sefton and Sutherland, 2004)

<sup>2</sup> See also Brewer and Gregg (2003) Hills (2004) Waldfogel (2004) Walker and Wiseman (2003a and b).

We provide an overview of the chronology of the reforms in Figure 2.<sup>3</sup> For the purposes of our study, the crucial feature of this timeline is that the major changes in means-tested benefits (such as Family Credit, Income Support, and tax credits) and the universal Child Benefit all occurred in a window between October 1998 and April 2000. Thus, there are no major payment changes in the period between April 1995 and March 1998, our pre-reform period, and all the major changes were in place by April 2000, the beginning of our post-reform period.

***Promotion of paid work and ‘making work pay’***

This aspect of the UK reform package has much in common with US welfare reform (Hills and Waldfogel, 2004). However, the UK’s welfare to work reform for lone parents, the New Deal, is a voluntary program. Lone parents receiving Income Support (the means-tested cash assistance program) must attend a meeting (called a Work Focused Interview, WFI) after 2 months of making a claim and then every 6 months to discuss job search, training, and the benefits and tax credits available to those who work, but they are not required to take up training or work.

To help ‘make work pay’, the Labour government brought in the UK’s first National Minimum Wage in April 1999. This is set at a higher level than in the US.<sup>4</sup> At the same time, various reforms to income tax and National Insurance Contributions have reduced the direct tax burden on both the low paid and their employers.

As a further measure to ‘make work pay’, the government introduced a new tax credit in October 1999, then known as the Working Families Tax Credit (WFTC) (later split into a Working Tax Credit and a new integrated Child Tax Credit, which includes all means-tested support for children, in April 2003), for couples with children or single parents who worked 16 or more hours per week (with higher benefits if they worked 30 or more hours). The WFTC was similar in many respects to the US Earned Income Tax Credit (EITC), but, unlike the EITC, UK tax credits are paid regularly through the year.

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<sup>3</sup> We provide full details of the benefit rates in real terms, as well as the structures throughout this period, in Appendix 1.

<sup>4</sup> In the UK, the minimum wage is equivalent to 45 per cent of median hourly full-time earnings, compared to only 34 per cent of the median in the US (Low Pay Commission, 2003, table A5.2).

## Figure 2: Chronology of UK reforms

July 1995

- **Family credit:** 30 hours credit introduced

April 1996

- Amount to be offset for **childcare** increased from £40 to £60

October 1997

- **Child Benefit** rates for first child equalised for lone parents with that of couples for new claims, existing lone parent claims were frozen in nominal terms.

1997-1998

- **New Deal for Lone Parents** launched in 8 pilot areas and then extended nationally from April 1998.

Oct 1998

- Age 0-10 child rates in **Family Credit** raised by £2.50 in real terms.

April 1999

- **Income Support** rates for children aged 0-10 raised by £2.50 in real terms
- **Child Benefit** first child rate increased by £2.80 per week in real terms
- **National minimum wage** introduced

Oct 1999

- **Working Families Tax Credit** introduced, age 0-10 child rates raised by nearly £5 in real terms. Adult credit raised by £2 per week, earnings allowance before credits withdrawn raised by £10 in real terms and taper rate cut from 70% to 55% of after tax earnings. 70% of **childcare** costs up to limit of £70 for one child and £105 for two or more children can be added to credits
- First **Sure Start** programs get underway.

April 2000

- **WFTC and Income Support** rates for all children under 11 raised by around £6 per week in real terms so as to eliminate differential with rates for those aged 11-16.

April 2001

- Roll-out of **Work Focused Interviews** to enhance effectiveness of NDLP:
- WFTC and Income Support rise in line with prices

April 2002

- WFTC and Income Support rise in line with prices

### ***Improved cash assistance for low-income families and other tax-benefit reforms***

The Labour government also introduced a series of tax and benefit changes aimed at reducing child poverty. Comparing the reformed system with that inherited in May 1997, the key changes include: significant real increases in the value of the universal child allowance, Child Benefit; introduction of a tax credit benefiting all taxpayers with children except those with the highest incomes, doubled in the first year of a child's life; substantial increases in the generosity of in-work tax credits for low-income working families with children under age 11, which are now withdrawn less quickly as earnings rise; and substantial increases in allowances for children under age 11 in non-working families receiving Income Support.<sup>5</sup> As noted earlier (and shown in Figure 2), most of these changes were concentrated in the period from late 1998 to early 2000.

Benefit levels are high by US standards. Families with no adult working receive benefits equivalent to about 70-80 per cent of the poverty line, while families with at least one adult working part-time receive benefits sufficient to bring their income up to at least 110-130 per cent of the poverty line (Hills and Waldfogel, 2004).

The reforms and increasing generosity of the system have led to a substantial increase in the numbers receiving in-work tax credits. As of 2002-03, the WFTC was received by twice as many families as the in-work cash benefit it replaced.<sup>6</sup>

The treatment of child support has also been reformed. Working mothers for whom the father is paying child support can now keep the full amount of their child support payments as well as their tax credits, thus providing another source of stable income as they transition to work. Non-working mothers on Income Support continue to gain little from child support payments, so this change significantly increases the gains from work for some.

In addition, the maternity allowance paid to mothers who worked prior to the birth was extended to a higher share of mothers in 1999, and since April 2003 has been made more generous and is paid for 26 rather than 18 weeks (with the government now committed to increasing the period of paid leave to 9 months and eventually 12 months).<sup>7</sup>

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<sup>5</sup> After the period we examine, in April 2003, all of the various benefits and tax credits for children (apart from Child Benefit) were combined into a single fully refundable Child Tax Credit.

<sup>6</sup> The April 2003 reforms further increased the numbers receiving assistance, and the system became more generous again in real terms in April 2004.

<sup>7</sup> The government has also introduced a system of Child Trust Funds (popularly known as 'baby bonds') for all children born since September 2002. These funds will receive

Taken together, these tax and benefit changes represent a very substantial investment in low-income children and families. In real terms, the cost of benefits, tax credits, and tax allowance related to children rose from £14 billion in 1997-98 to £19 billion in 2002-03 (at 2003 prices; Adam and Brewer, 2004, figure 3.1), an increase equivalent to nearly 0.5% of GDP (Hills and Sutherland, 2004).<sup>8</sup> The Institute of Fiscal Studies undertook micro-simulation estimation of the impact of these changes on incomes and suggest that on average single parent families gained £30.77 per week, no earner couples £42.55, single earner couples £22.51 and two earner couples £7.52 when compared to a base of benefits just rising in line with prices (Brewer, Clark and Wakefield, 2002).<sup>9</sup>

A second wave of reforms occurred in April 2003 and 2004, beyond our study period here, pulling together all child related welfare, tax credits and tax allowances. This second tranche also increased the generosity of support and meant that it is withdrawn less rapidly at low incomes.

### ***Other investments in children***

The UK reform agenda also includes measures designed to reduce disadvantage and combat social exclusion. ‘Early years’ programs that deliver child care or other services for pre-school age children have been particularly emphasized, with the twin goals of promoting mothers’ employment and breaking the intergenerational cycle of disadvantage (HM Treasury, 2001). The ‘Sure Start’ program, begun in 1999, provides families with children age 0 to 3 in low-income areas with an array of services including home visiting, family support, and child care (HM Treasury, 2002). There has also been a substantial increase in support for child care. In 1997, the Labour government pledged to provide at least a part-time nursery place for all 4-year olds. That pledge was fulfilled by 1999, and was then extended to all 3-year olds (and accomplished by September 2004). The government has also sought to improve the quality of child care, through the development of Early Excellence Centres and through the support of child care networks for home-based providers.<sup>10</sup>

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an initial endowment (more for those from poorer families) and will build up through matched savings to produce an asset to be accessed on reaching adulthood.

<sup>8</sup> Spending on children is projected to rise to £23 billion by 2004-05, which would represent an increase equivalent to 0.8% of GDP (Hills and Sutherland, 2004).

<sup>9</sup> Figures in September 2003 prices.

<sup>10</sup> Funding for Sure Start, childcare, and other early education programs was budgeted to double between 2002-2003 and 2005-2006, and is set to increase further as part of the government’s Ten Year Childcare Strategy, announced in December 2004 (HM Treasury, 2004).

Additional spending on education, which rose from 4.5 to 5.1 per cent of GDP between 1999-00 and 2002-3 (and is budgeted to reach 5.6 per cent of GDP in 2005-6) has reduced class sizes in the primary grades and has provided support for other school reforms, such as literacy and numeracy initiatives in the primary schools and efforts to improve quality in struggling secondary schools. Helping adolescents stay in school or make better connections with the labour market has also been a focus of attention.

Taken together, spending on these child-related programs was expected to approach 0.3% of GDP by 2004. Thus, while expenditures in this area were less than in tax credit and benefit increases, they were still substantial.

### ***The impact of the reforms on caseloads and employment***

An important distinction between the UK and US reforms is that, while both emphasized promoting work and making work pay, in the UK benefits for those with children and out of work have also been increased, so that while gains from work relative to non-work have increased, they have not done so nearly as markedly as in the US. Thus, as Hills and Waldfogel (2004) point out, the UK reforms have led to a smaller decline in welfare caseloads than was seen in the US. The number of single parents claiming Income Support (means-tested cash assistance) fell from 1 million in 1997 to 837,000 in 2003, a 17 percent reduction (Department of Work and Pensions, 2003b).

There has been a notable increase in single mother employment. A recent review found that single mother employment in the UK rose by 10 percentage points from 1996 to 2002, a record that compares favourably to that seen in the US under its welfare reforms (Hills and Waldfogel, 2004). As in the US, we do not know how much of this increase is due to policy, versus other factors. Gregg and Harkness (2003) analysed the 6.6 percentage point increase in single mother employment that occurred between 1998 to 2002 and found that most of this (5 percentage points) was due to the policy reforms. It is likely that the expansions in tax credits played a particularly important role (Brewer *et al.*, 2003).

### ***The impact of the reforms on family incomes and poverty***

Although it is still too early to measure the full impact of the range of measures described above, some preliminary evidence is available. Poverty rates (defined in relative terms, as is customary in the UK) fell by one to two percentage points for all households, and by four percentage points for families with children, between 1997-98 and 2002-03 (Department for Work and Pensions, 2004, tables H1 and H2). These reductions, while welcome, were not as large as might have been expected given the scope of the reforms, and also not as large as had been projected in microsimulation modelling. Indeed, analyses released by the Institute for Fiscal Studies in March 2005 indicate that the government did not meet its intermediate target of reducing child poverty by a quarter by

2004-05 (Brewer *et al.*, 2005) even though it had been projected to do so (Brewer, 2004).

Hills and Waldfogel (2004) offer two reasons why the reforms have not had as immediate a poverty impact as might have been expected. One is that not all of the reforms were fully in effect in 2002-03, so later years should show more improvement. For instance, more generous child tax credits took effect in April 2004, although as Brewer *et al.* (2005) point out, administrative problems with the new tax credits resulted in many families having lower than expected incomes in the beginning of 2003/2004. The second reason is that the UK uses a relative, rather than absolute poverty line. Using a relative poverty line means that if incomes are rising elsewhere in the income distribution, the poor will fall further behind; thus, even generous benefit increases may just enable them to hold the line.

If we look at poverty in the UK using an absolute poverty line (such as is used in the US), we can see that there has been a very substantial reduction in poverty. Indeed, the number of children in poverty, if defined by income below 50 per cent of 1996-97 real mean income, fell by 1.6 million, or 12 per cent of all children, from 1997-98 to 2002-03 (Department for Work and Pensions, 2004, p.65).

Hills and Waldfogel (2004) compared the reductions in child poverty in the UK and the US post-reform, using data on the year prior to the reform and the most current data available post-reform (thus, their analysis spans a 5 year period for the UK, and a 9 year period for the US). They found that the UK had been more successful in reducing child poverty. Using the absolute standard, the share of all children in poverty fell by 12 percentage points over the five years of the UK reforms, as compared to 6 percentage points over the nine years of the US reforms. Hills and Waldfogel (2004) also found that the UK reforms have been particularly successful in reducing poverty in single-mother families.

### ***Families' material well-being***

As we saw in Figure 1, low-income families with children have seen substantial income gains since Labour came into office, and recent surveys of low-income families suggest that they have also experienced important declines in financial hardship (Vegeris and Perry, 2003). Yet, we know surprisingly little about what these income gains and declines in hardship have meant in terms of children's material well-being. As incomes have risen for the lowest-income families with children, are these families purchasing more goods that contribute to children's well-being? Are the children better-off? Are they starting to catch up to children in more affluent families?

Prior research sheds little light on these kinds of questions, because few studies have been able to look at how increases in income affect changes in expenditures or consumption. Most prior studies have compared the expenditures of low-income vs. higher-income families at a point in time, or

over a period of time when low-income families have been losing ground. Gregg, Harkness, and Machin (1999) examine family expenditure patterns over the 1968 to 1995-96 period, using FES data and dividing families into fifths of the income distribution, and show that low-income families spend less overall, and fewer pounds on child-related items such as children's clothing, shoes, and toys as well as fresh fruit and vegetables than more affluent families. Moreover, these expenditure gaps between the lowest-income and more affluent families with children grew over the period, such that they were larger in 1995-96 than they had been in 1968, as spending on children in higher-income families grew while holding constant or rising just slightly in lower-income families.

Fewer studies have looked at expenditures when income is increasing. In a study of child benefit reforms in the 1970s, Lundberg, Pollak, and Wales (1997) found that shifting benefits from the man's wallet to the woman's purse led to increases in expenditures on both women's and children's clothing.<sup>11</sup> More recently, a qualitative study of 37 low-income families who had moved from benefits to work between 2000 and 2001 found that as incomes rose, families' expenditures changed in a number of ways (e.g., more money spent on food, resulting in higher quantity and quality of food purchased, and more money spent on clothing) (Farrell and O'Connor, 2003).

In recent work (Gregg, Waldfogel, and Washbrook, 2005), we took a first step toward assessing how family expenditures change as incomes increase, by showing summary information on changes in families' expenditures on children over the 1996-97 to 2000-01 period. The 1996-97 data provided information on the living conditions of children immediately prior to the Labour government reforms, while the 2000-01 data provided a perspective on the situation of families four years later, after the initial phase of tax credit and benefit reforms. We considered the amount that families spent on essential items such as food and clothing for their family, as well as the share of their income that they devoted to these items. We also looked at the ownership of durable items, such as a car, telephone, washing machine, or computer. We found evidence across a number of expenditure categories and durable items that low-income families' spending was converging to that of higher-income families.

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<sup>11</sup> The reforms in our period temporarily shifted benefits in the opposite direction for a small number of families who had previously received Family Credit paid to the mother but now receive in-work benefits through the man's paycheck. Future reforms will shift benefits back toward the mother, in a larger number of cases. We do not examine this aspect of the reforms here but intend to do so in future work. There is also a recent study by Blow, Walker and Zhu (2004) who investigate the extent to which expenditure patterns are affected by the receipt of Child Benefit. They find that Child Benefit is spent differently than other income – not on child assignable goods, but disproportionately on alcohol. They interpret this finding as evidence that parents are altruistic towards their children so that Child Benefit finances spending that would have otherwise occurred.

In this paper, we extend the analysis by more formally testing the links between the policy reforms of the Labour government and changes in family expenditures. As detailed below, we use a difference-in-difference-in-difference approach to compare the changes in expenditures for families most affected by the reforms to changes in expenditures for families not affected (or less affected) by the reforms. Hence, we can test formally whether the differences observed were greater for the families most affected by the policy reforms. Furthermore, by extending the period of comparison undertaken in the analysis we can assess the robustness of the evidence for shifting expenditure patterns around the reforms undertaken.

## Data

Our data prior to 2001-2002 come from the UK Family Expenditure Survey (FES), a continuous survey of household expenditure and income which has been in existence since 1957. Starting in 2001-2002 the FES was merged with the National Food Survey to form the combined Expenditure and Food Survey (EFS).<sup>12</sup> Annual samples of around 7,000 households provide information about household and personal incomes and certain payments that recur regularly (such as rent, gas, electricity and telephone bills and hire purchase payments) and also maintain a detailed expenditure record for 14 consecutive days.

In order to maximise the precision of our results, we pool three years of data to construct each of the before- and after-policy reform samples. As detailed above, the main welfare reform changes occurred between October 1998 to April 2000, hence we pool data from April 1995 to March 1998 to capture expenditure patterns prior to the reforms and data from April 2000 to March 2003 to capture patterns post-reform.

We restrict our samples by excluding households with no children under age 16, households in which the head or spouse is over retirement age or in full time education and also households in which the main source of household income is recorded as self-employment income.<sup>13</sup> Consumption patterns in these

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<sup>12</sup> The definitions of the majority of variables used in this study remained unchanged following the switch from the FES to the EFS in 2001-02. The exceptions are the specific items of expenditure we discuss such as children's, women's and men's clothing, toys, books, etc. The changes to these variables were minor and supplementary analyses that exclude the final two years of EFS data indicate that our results are not substantially affected by these changes. A table on the changes in definitions is available from the authors upon request.

<sup>13</sup> Throughout the term spouse refers to cohabitantes as well as married partners. Note that in the UK, youth age 16 and up are not usually referred to as children. We follow that convention here and so include only families with children under age 16 in our sample

households are likely to differ substantially from those of households of child-bearing age, which is our population of interest and, for students and the self-employed, the relationship between income and expenditure is notoriously noisy. This selection results in sample sizes of 5,565 households for 1995-98 (made up of 1,913, 1,826 and 1,826 households in each of the three years respectively) and 5,729 households for 2000-03 (1,782, 2,108 and 1,839 in each year respectively).

Throughout our analysis, we distinguish between households in the bottom third of the income distribution of all households with children, and those in the top two-thirds of the distribution. Our construction of these income groups gives us confidence that we have separated those most affected by the reforms (the low-income group) from those least affected (the high-income group), while still leaving samples large enough to be analyzed. Note however, that with increases in the universal Child Benefit and changes to tax and National Insurance, all families will be affected by the reforms to some degree, but among the highest income families the net effects are on average small.

The measure of household income used to define these groups is normal weekly disposable household income, that is, gross income from all sources net of National Insurance contributions, income tax and council tax payments. Housing Benefit payments are included in our measure of income (and housing expenditure) regardless of whether they are paid directly to the household or to the landlord. To take account of differences in household size and composition we deflate the income and expenditure figures for each household by the relevant modified Organization for Economic Cooperation and Development (OECD) equivalence scale rate to give its equivalent for a childless couple (i.e., this scale assigns a weight of 0.67 to the first adult, 0.33 to all other persons in the household aged 14 and over, and 0.20 to children under 14; hence a couple without children has a scale rating of 1).<sup>14</sup> The month in which the household is sampled can vary between January and December, and so to take account of within-year inflation, all income and expenditure figures are expressed in terms of the same price level (the All Items Retail Price Index for September 2003). The boundary between the low- and high-income groups is defined separately for each year as the 33<sup>rd</sup> percentile of real equivalised disposable household income in the sample for that year. The upper bound to the low income groups defined on this measure of real equivalised household income are £204, £201

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of families with children. Note also that the unit of observation in the FES is the household. We use the term family and household interchangeably.

<sup>14</sup> We use the modified OECD scale because it is the one now used in official UK and European Union (EU) statistics and will be used in monitoring future progress towards eradicating child poverty.

and £209 per week respectively for the years 1995-98 and £239, £259 and £264 per week for the years 2000-03.

The FES groups spending on individual items into a large number of categories which are then further grouped into 14 broad categories of goods and services. To simplify our analysis we combine a number of these broad categories and comment on nine broad types of expenditure. (Specifically, we group housing with fuel, light and power; alcoholic drink with tobacco; household goods with household services; leisure goods with leisure services; and motoring with fares and other travel costs. Food, clothing and footwear, personal goods and services and miscellaneous expenditure stand alone.) Weekly household expenditure on each of the broad groups is equivalised in the same way as disposable income and expressed in September 2003 prices.

We also present results relating to a number of more narrowly defined goods and services that can be assigned to individual members of the household, or that are of particular relevance for child well-being. The analysis of separate expenditures on children's, women's and men's clothing gives us the rare opportunity to see how spending on a broad category of goods is distributed between different household members. For these expenditures, we do not equivalise using the modified OECD scale but rather by the number of household members of each type (i.e. children under 16, female over 15 and male over 15). Expenditure on toys, hobbies and games (including computer games) is similarly deflated by the number of children in the household. Other narrow groups of expenditure that we examine are books, newspapers, magazines and periodicals; fruit and vegetables; and holidays (these three categories are equivalised in the standard way). As before we present results that express expenditures in terms of the September 2003 All Items RPI. Deflating expenditures on all items by a single price index ignores changes in relative prices; however, the difference-in-difference methodology means that spending changes induced by relative price movements will be netted out of our final estimates.

In addition to examining family spending patterns, we also explore the ownership of consumer durables that make an important contribution to quality of life but that are purchased infrequently and will not show up in weekly expenditure data. We document the proportion of households possessing a range of nine items such as a car or van, telephone, washing machine, and computer.

## **Methodology**

The FES/EFS data allow us to track expenditures of similar types of families over time and to document how expenditures have changed over time. Thus, we can easily track, for instance, the growth in expenditures for families with

children since Labour came into office in 1997. This raw rise in expenditures is given by a simple first difference, which can be defined in one of two ways:

Levels method : 
$$\Delta_{lowik} = \overline{x_{lowik}^{post}} - \overline{x_{lowik}^{pre}}$$

Percentage method: 
$$\Delta_{lowik} = \frac{\overline{x_{lowik}^{post}} - \overline{x_{lowik}^{pre}}}{\overline{x_{lowik}^{pre}}}$$

where  $\overline{x_{lowik}^{pre}}$  is the mean real equivalised expenditure on good  $k$  by low income households of type  $i$  in the pre-reform period and  $\overline{x_{lowik}^{post}}$  is mean expenditure on good  $k$  by low income households of type  $i$  in the post-reform period. Hence under the Levels method,  $\Delta_{lowik}$  gives the absolute change in mean expenditures in £ per week, while under the Percentage method,  $\Delta_{lowik}$  gives the percentage change in mean expenditures.

We cannot infer that these simple changes in spending reflect only the impact of policy-induced income increases after 1997-98. Changing trends and relative prices could have led to changing spending patterns even in the absence of any welfare reforms. As a first way to tackle this problem, we can compare the expenditure changes for low income families, who were the beneficiaries of the reforms, with the spending changes of higher income families of the same type. To do this we calculate the difference-in-difference (DD) estimate:

$$\Delta_{ik}^2 = \Delta_{lowik} - \Delta_{highik}$$

Where  $\Delta_{lowik}$  can be calculated by either of the Levels or Percentage methods above and  $\Delta_{highik}$  is the equivalent estimate for spending on good  $k$  by high-income households of type  $i$ . The D-in-D estimate thus tells us whether spending rose more quickly for low-income households than for the higher-income households who were less affected by the reforms. A positive estimate of  $\Delta_{ik}^2$  indicates an improvement in the position of low-income households (either in absolute terms of £ per week, using the Levels method, or in relative terms, using the Percentage method).

We may still be concerned that expenditures might have been changing differentially for low-income families compared to higher-income families for reasons other than the reforms. Perhaps there was increased awareness among lower-income families of the importance of learning- or nutrition-related items for children and this awareness, not benefit reforms, boosted the child-related expenditures of lower-income families relative to higher-income families. More broadly, we would expect expenditures on ‘necessary’ goods such as housing and food to rise more quickly with income among those with a lower initial

income level, while spending on ‘luxury’ goods should rise more quickly for those with a higher initial income.

To control for these differences we can exploit the specific nature of the reforms introduced under Labour during the 1998 to 2000 period. Among low-income families, those with younger children saw larger benefit increases than those with a youngest child age 11 or more. Other reforms relating to childcare and maternity leave mean that employment opportunities and hence the disposable incomes of those with a child under 5 may have risen even more than for those with a youngest child age 5 to 10. This variation in the impact of welfare reform by household type means that we can use the relative changes for low- and high-income households with a youngest child age 11 to 15 as a base against which to compare the relative expenditure changes for households with younger children. This provides the ‘triple difference’ or D-in-D-in-D estimate for low-income households with a youngest child aged 0 to 10:

$$\Delta_k^3 = \Delta_{0-10k}^2 - \Delta_{11-15k}^2$$

The household type  $i$  in the D-in-D expression above relates first to those with a child under 11 (the 0-10 subscript) and then to those with a youngest child between 11 and 15 (the 11-15 subscript). A similar estimate can be calculated for those with a child under 5 by replacing  $\Delta_{0-10k}^2$  with  $\Delta_{0-4k}^2$ .

It should be noted that in the classic triple difference methodology, the base D-in-D estimate is calculated on a group similar to the group of interest, but which did not receive the policy ‘treatment’. In our case, households with a youngest child age 11 or over did receive some treatment in that they did benefit from welfare reforms, only to a lesser extent than those with younger children. Hence it is likely that we are removing too much of the expenditure change in the D-in-D-in-D estimate – in effect it tells us the effects of welfare reform for those with young children *over and above* the effects for those with older children only. However, by this process we are netting out the impact of general improvements in the labour market on incomes and spending of low-income families and are thus more closely honing in on the differential impact of the welfare reforms on expenditure patterns.

The difference estimates outlined above can be calculated directly from the data. However, in order to provide standard errors for our estimates, and so allow us to test their significance, we use a linear regression framework. For each type of good  $k$  we estimate the following equation by OLS:

$$x_k = \beta_0 + \beta_1 low\_Y + \beta_2 post + \beta_3 ch010 + \beta_4 low\_Y * post + \beta_5 low\_Y * ch010 + \beta_6 ch010 * post + \beta_7 low\_Y * ch010 * post + e_k$$

Where  $x_k$  is expenditure on good  $k$  by an individual household;  $low\_Y$  is a dummy equal to 1 if the household is in the low income group;  $post$  is a dummy equal to 1 if the observation is from the 2001-03 period;  $ch010$  is a dummy equal to 1 if the household has a child under 11 and  $e_k$  is a random error term. The above regression is estimated on all the households with children in our sample. An alternative specification can be estimated by replacing  $ch010$  with a dummy equal to 1 if the household has a child under 5 and dropping those with a youngest child age 5 to 10 from the sample.

It is straightforward to show that the difference quantities outlined above are equivalent to various combinations of coefficients from the regression. So

Level method:

$$\begin{aligned}\Delta_{low0-10k} &\equiv \beta_2 + \beta_4 + \beta_6 + \beta_7 \\ \Delta_{0-10k}^2 &\equiv \beta_4 + \beta_7 \\ \Delta_k^3 &\equiv \beta_7\end{aligned}$$

Percentage method:

$$\begin{aligned}\Delta_{low0-10k} &\equiv \frac{\beta_2 + \beta_4 + \beta_6 + \beta_7}{\beta_0 + \beta_1 + \beta_3 + \beta_5} \\ \Delta_{0-10k}^2 &\equiv \frac{\beta_2 + \beta_4 + \beta_6 + \beta_7}{\beta_0 + \beta_1 + \beta_3 + \beta_5} - \frac{\beta_2 + \beta_6}{\beta_0 + \beta_3} \\ \Delta_k^3 &\equiv \frac{\beta_2 + \beta_4 + \beta_6 + \beta_7}{\beta_0 + \beta_1 + \beta_3 + \beta_5} - \frac{\beta_2 + \beta_4}{\beta_0 + \beta_1} - \frac{\beta_2 + \beta_6}{\beta_0 + \beta_3} + \frac{\beta_2}{\beta_0}\end{aligned}$$

Point estimates, standard errors and t-statistics can be calculated for each combination of coefficients using the ‘delta’ method, an approximation appropriate in large samples. This allows us to test whether the desired estimate is significantly different from zero. We use Huber/White/sandwich estimates of the standard errors as this method allows for arbitrary heteroscedasticity in the data. Given that the variability of expenditures is likely to increase with household income, this method is a more appropriate way to conduct inference than via the standard OLS standard errors.

## Results

### *Changes in total expenditures*

Table 1 summarizes changes in real equivalised total expenditures, in pounds per week, over the 1995-98 to 2000-03 period for low- and higher-income

households with children.<sup>15</sup> The top panel of the table shows that mean expenditures rose by about 13 to 15% of their pre-reform baseline across both the low- and high-income groupings. As noted earlier although benefit changes were directed to lower-income groups, earnings were rising rapidly in the population as a whole and so the D-in-D estimate for expenditure growth as a percent of the baseline is small (and the D-in-D for spending in levels actually favours the higher-income).

The lower three panels of Table 1 show how this pattern varies by age of youngest child. Low-income families with a youngest child age 0 to 10 saw weekly expenditures rising by an average of 33 pounds per week, a 17% increase over the level pre-reform. Comparing this increase to the 12% increase for the equivalent high-income families gives us our first D-in-D estimate of 5 percentage points (marginally significant at  $p < .10$ ). In contrast, low-income families with a youngest child age 11 to 15 saw much smaller increases, both with respect to low-income families with younger children and higher-income ones with children of the same age. In fact, low-income households with older children saw expenditure growth that was 10 percentage points *below* that of the equivalent high-income families ( $p < .05$ ). Subtracting this D-in-D from the 5 percentage point estimate for those with younger children gives a D-in-D-in-D estimate of 15 percentage points ( $p < .01$ ).

Looking at expenditure levels, the D-in-D estimates indicate that the money (pounds and pence) increase for low-income households with a youngest child age 0 to 10 was somewhat less than that seen by higher-income households with children the same age. When we compare these changes with those for households with older children, however, we generate D-in-D-in-D estimates that are strongly positive. Although the expenditures of low-income families with a young child rose by £12.50 less than the expenditures for high income families, the expenditures of low income families with an older child rose by £47 less than their high income counterparts. Hence the D-in-D-in-D estimates point to a significant £34 per week ( $p < .05$ ) increase above the spending changes of lower-income families with older children compared to their higher income equivalents. These changes are large in financial terms and strongly significant. On an annualised basis the gain in levels is worth around \$2,600 at a purchasing power parity exchange rate of \$1.50 to the £1.

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<sup>15</sup> We focus on means, rather than medians, because some expenditures even within these broad categories may be lumpy or sporadic and here averaging over a number of households will give a more accurate picture than concentrating on only a single household at the median position.

**Table 1: Changes in total expenditure over time, by income group and age of child**

Total equivalised household expenditure (Sept 2003 prices)					
	Mean 1995-98	Mean 2000-03	Level difference in mean (in £)		% change in mean
<u>All households with children</u>					
Low income	199.1	228.9	29.8 ***		15.0 ***
High income	375.6	424.5	48.9 ***		13.0 ***
<i>D-in-D</i>			-19.1 ***		2.0
<u>Households with a youngest child aged:</u>					
<u>0-10</u>					
Low income	194.3	227.7	33.4 ***		17.2 ***
High income	375.0	420.9	45.9 ***		12.2 ***
<i>D-in-D</i>			-12.5 *		4.9 *
<u>0-4</u>					
Low income	191.9	223.1	31.2 ***		16.3 ***
High income	377.0	430.8	53.8 ***		14.3 ***
<i>D-in-D</i>			-22.5 **		2.0
<u>11-15</u>					
Low income	223.0	234.0	11.0		4.9
High income	377.5	435.4	57.9 ***		15.4 ***
<i>D-in-D</i>			-47.0 ***		-10.4 **
<u>D-in-D-in-D</u>					
0-10 vs. 11-15			34.4 **		15.4 ***
0-4 vs. 11-15			24.4		12.4 **

Expenditure levels equivalised and expressed in Sept. 2003 prices

\*\*\*, \*\* and \* indicate significance at the .01, .05 and .10 levels respectively

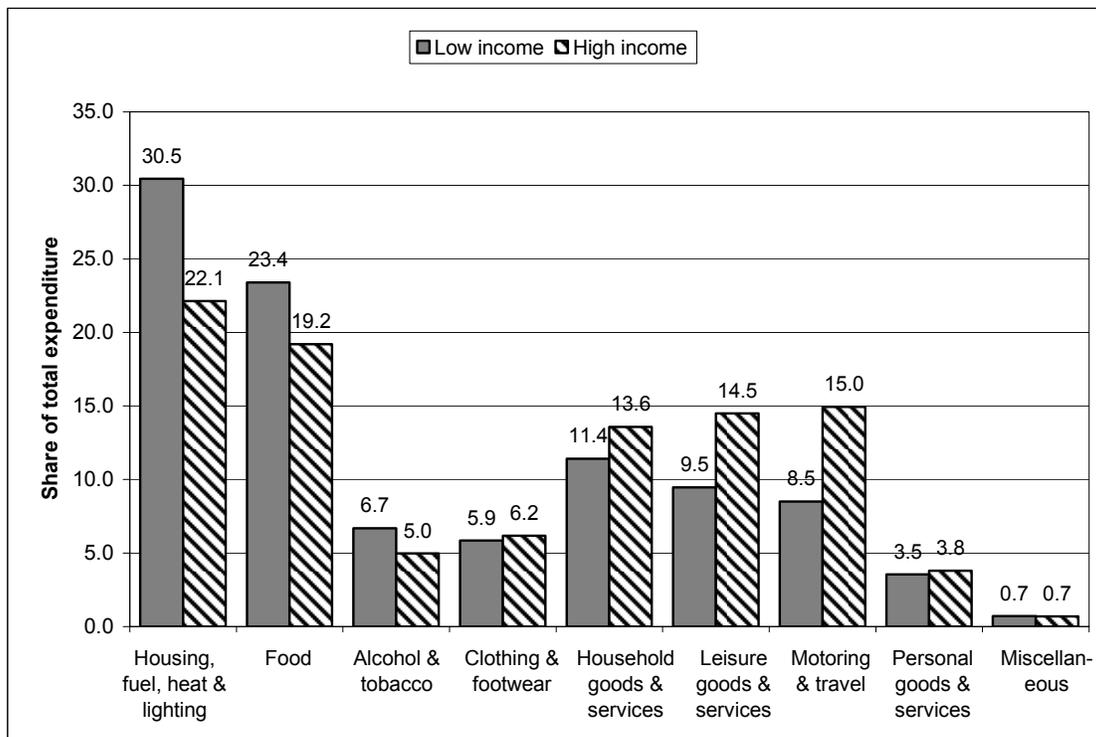
Table 1 also includes a set of estimates comparing expenditure changes for families with children age 0 to 4, to those for families with children age 11 to 15. As discussed earlier, we use children age 0 to 4 as another treatment group, given that they were targeted by ‘early years’ reforms as well as by the tax and benefit changes. Results for this group as well yield a significant D-in-D-in-D estimate for the change in expenditures in percentage terms (12 percentage points,  $p < .05$ ), but no significant difference in level terms.

Taken together, these results suggest that the age variation in the impact of the welfare and tax credit reforms translates through to expenditures and that the D-in-D-in-D methodology will enable us to focus on expenditure variations due to the policy reforms.

***Patterns of expenditure***

Having established that low-income families with young children did experience relatively large expenditure gains over our period, we now turn to patterns of expenditures. Figure 3 summarizes the patterns of spending of lower- and higher-income families with children in our initial pre-reform period. The clear picture is that lower-income households spend a far larger percentage of their income on housing and heating and on food and far less on household goods and services, leisure goods and services and especially motoring and travel. They also spend slightly more on alcohol and tobacco.

**Figure 3: Shares of total real equivalised household expenditure:  
Households with a youngest child aged 0-10, 1995-98**



So these low income families spend their resources disproportionately on housing, heating and food. However, it is hard from such cross-section data to say what would happen to spending patterns if these families had more or fewer resources. We can observe that higher-income households spend differently but it does not follow that giving poor households more resources would lead to the

same patterns of spending. There is no certain way to ascertain whether these households would behave altruistically toward their children if given greater resources. They may just have different tastes or priorities.

Table 2a summarizes the first of our results for the 9 major categories of goods and services recorded in the FES. The table shows simple differences in means and percentage differences in means over the 1995-98 to 2000-03 periods for low-income families with children under age 11, as well as D-in-D and D-in-D-in-D estimates for the level and percentage differences in means. Our treatment group is low-income families with a youngest child age 0 to 10. Our comparison groups are first high-income groups with children of the same age and then in the triple difference the same comparison is made with families with older children (age 11 to 15). Thus, the D-in-D-in-D estimates are the difference between the D-in-D for low- and high-income families with children age 0 to 10 and the D-in-D for low- and high-income families with a youngest child age 11 to 15.

The bottom line of Table 2a, for total expenditures, simply recapitulates the results from Table 1 and shows the strong expenditure gains for low-income families with children age 0 to 10, in both levels and percentage terms. What categories account for this overall increase in expenditures? A simple representation of how lower-income families with children altered their spending patterns can be seen in level and percentage terms in columns 3 and 6 (entitled 1st D). The figures in these columns simply show where extra real resources have been spent by low-income families over this period combined with any shifts due to changes in preferences or relative prices. These families are raising money expenditures on all items except alcohol and tobacco, where spending falls by just over a pound a week, but the increases in housing and personal goods and services are not significant. The largest money and percentage increases in spending are on clothing, household goods, leisure goods and especially motoring and travel.

Turning now to the D-in-D estimates presented in columns 4 (money changes) and 7 (percentage changes), whether we look at the changes in money values or the percentage changes, the D-in-D estimates are significant for four categories. Low-income families with children under 11 increased their spending on food and on clothing faster than higher-income groups in absolute terms, but did not match them in money spending on household and leisure goods and services. However, because their pre-reform spending on leisure goods and services and motoring was so low, even though low-income families fell further behind in pounds spent, the percentage increases on these two categories were significantly faster than among higher income families. Thus, low-income groups were switching resources toward motoring and leisure goods and services, where previously their share of spending on these goods was low. But for food and clothing, extra resources were flowing into areas

where shares of spending were already as high or even higher than for more affluent families.

**Table 2a: Summary of estimates for low-income households with a youngest child age 0 to 10**  
(comparison group households with a youngest child age 11 to 15)

	Mean 1995-98	Mean 2000-03	Level differences in mean (£ per week)			Percentage differences in mean (percentage points)		
			1 <sup>st</sup> D	D-in-D	D-in-D- in-D	1 <sup>st</sup> D	D-in-D	D-in-D-in- D
Housing, fuel, heat & lighting	55.62	57.17	1.56 <i>1.15</i>	-0.80 <i>1.85</i>	7.09 * <i>3.74</i>	2.80 <i>2.09</i>	-0.25 <i>2.83</i>	13.39 ** <i>6.33</i>
Food	43.59	46.19	2.60 *** <i>0.71</i>	1.96 ** <i>1.00</i>	4.02 * <i>2.38</i>	5.98 *** <i>1.67</i>	4.99 ** <i>1.98</i>	8.77 ** <i>4.20</i>
Alcohol & tobacco	12.63	11.52	-1.11 ** <i>0.50</i>	-0.46 <i>0.68</i>	-2.85 * <i>1.60</i>	-8.78 ** <i>3.78</i>	-4.90 <i>4.66</i>	-18.16 * <i>10.70</i>
Clothing & footwear	12.63	16.20	3.58 *** <i>0.74</i>	2.21 * <i>1.13</i>	4.86 * <i>2.74</i>	28.33 *** <i>6.57</i>	22.66 *** <i>7.50</i>	28.41 * <i>15.12</i>
Household goods & services	23.69	30.33	6.64 *** <i>1.16</i>	-4.59 * <i>2.67</i>	3.62 <i>4.60</i>	28.05 *** <i>5.46</i>	8.00 <i>7.29</i>	16.52 <i>13.54</i>
Leisure goods & services	19.65	29.37	9.72 *** <i>1.25</i>	-8.33 *** <i>2.67</i>	12.61 * <i>7.49</i>	49.49 *** <i>7.18</i>	19.01 ** <i>8.42</i>	34.21 * <i>19.99</i>
Motoring & travel	18.08	28.33	10.25 *** <i>1.20</i>	-2.19 <i>2.31</i>	4.86 <i>5.00</i>	56.65 *** <i>7.81</i>	35.65 *** <i>8.62</i>	43.59 *** <i>15.60</i>
Personal goods & services	7.04	7.56	0.52 <i>0.33</i>	-0.49 <i>0.61</i>	1.32 <i>1.81</i>	7.44 <i>4.88</i>	0.27 <i>6.13</i>	9.21 <i>18.13</i>
Miscellaneous	1.42	1.01	-0.41 *** <i>0.14</i>	0.19 <i>0.22</i>	-1.08 * <i>0.57</i>	-28.70 *** <i>8.11</i>	-5.96 <i>9.64</i>	-12.52 <i>14.87</i>
Total	194.34	227.70	33.36 *** <i>3.60</i>	-12.51 * <i>7.02</i>	34.45 ** <i>16.19</i>	17.16 *** <i>1.96</i>	4.93 * <i>2.59</i>	15.36 *** <i>5.82</i>

(Robust) standard errors in italics

\*\*\*, \*\* and \* indicate significance at the .01, .05 and .10 levels respectively

Expenditure levels equivalised and expressed in Sept. 2003 prices

1st D = First difference/percentage change

D-in-D = D-in-D against first difference for high income households with a youngest child age 0 to 10

D-in-D-in-D = D-in-D-in-D against D-in-D for households with a youngest child age 11 to 15

**Table 2b: Summary of estimates for low-income households with a youngest child age 0 to 4**  
(comparison group households with a youngest child age 11 to 15)

	Mean 1995-98	Mean 2000-03	Level differences in mean (£ per week)			Percentage differences in mean (percentage points)		
			1 <sup>st</sup> D	D-in-D	D-in-D-in-D	1 <sup>st</sup> D	D-in-D	D-in-D-in-D
Housing, fuel, heat & lighting	56.66	58.48	1.82 <i>1.51</i>	-0.93 <i>2.43</i>	6.95 * <i>4.06</i>	3.21 <i>2.70</i>	-0.18 <i>3.59</i>	13.46 ** <i>6.71</i>
Food	41.54	43.81	2.27 *** <i>0.87</i>	0.90 <i>1.28</i>	2.96 <i>2.51</i>	5.46 ** <i>2.16</i>	3.28 <i>2.64</i>	7.06 <i>4.55</i>
Alcohol & tobacco	12.36	11.99	-0.37 <i>0.66</i>	-0.94 <i>0.89</i>	-3.33 * <i>1.70</i>	-3.02 <i>5.25</i>	-6.74 <i>6.59</i>	-20.00 * <i>11.67</i>
Clothing & footwear	11.47	15.54	4.07 *** <i>0.90</i>	3.44 ** <i>1.45</i>	6.09 ** <i>2.89</i>	35.53 *** <i>8.89</i>	32.90 *** <i>10.09</i>	38.65 ** <i>16.57</i>
Household goods & services	24.09	29.40	5.30 *** <i>1.49</i>	-10.42 *** <i>3.31</i>	-2.20 <i>5.00</i>	22.02 *** <i>6.86</i>	-4.54 <i>8.75</i>	3.98 <i>14.38</i>
Leisure goods & services	18.64	27.26	8.62 *** <i>1.40</i>	-8.13 ** <i>3.55</i>	12.82 <i>7.85</i>	46.24 *** <i>8.66</i>	16.30 <i>10.74</i>	31.50 <i>21.07</i>
Motoring & travel	18.17	27.01	8.84 *** <i>1.52</i>	-6.20 * <i>3.18</i>	0.85 <i>5.46</i>	48.66 *** <i>9.60</i>	23.95 ** <i>10.86</i>	31.89 * <i>16.94</i>
Personal goods & services	7.95	8.63	0.68 <i>0.46</i>	-0.22 <i>0.89</i>	1.59 <i>1.92</i>	8.55 <i>5.96</i>	2.82 <i>7.75</i>	11.76 <i>18.74</i>
Miscellaneous	0.98	0.98	0.00 <i>0.15</i>	-0.03 <i>0.24</i>	-1.30 ** <i>0.57</i>	0.08 <i>15.36</i>	-1.38 <i>17.93</i>	-7.94 <i>21.20</i>
Total	191.85	223.08	31.23 *** <i>4.30</i>	-22.53 ** <i>9.53</i>	24.43 <i>17.43</i>	16.28 *** <i>2.39</i>	2.02 <i>3.36</i>	12.44 ** <i>6.21</i>

(Robust) standard errors in italics

\*\*\*, \*\* and \* indicate significance at the .01, .05 and .10 levels respectively

Expenditure levels equalised and expressed in Sept. 2003 prices

1st D = First difference/percentage change

D-in-D = D-in-D against first difference for high-income households with a youngest child age 0 to 4

D-in-D-in-D = D-in-D-in-D against D-in-D for households with a youngest child age 11 to 15

As these are D-in-D estimates, common shifts in tastes and relative prices that impact on both the low- and higher-income families are netted out. But so far we have not conditioned out changes in tastes or price shifts to which low-income households are particularly sensitive. Nor have we focused in on the effects of the reforms rather than general shifts in the macroeconomy to which the poorest may be especially sensitive. To adjust for these concerns we go a stage further and net off similar shifts that have happened to families with older children. These families received some benefit increases and would have received improved work incentives from the reductions in the speed at which tax credits are withdrawn and also from tax changes. However, they did not receive the large increases in welfare payments focused on families with younger children detailed above. Our triple difference estimates focus in on welfare reforms that raised the generosity of welfare payments and tax credits focused on poorer families with children under 10.

The D-in-D-in-D estimates (columns 5 and 8) are positive and significant for four of the nine categories – housing, fuel, heat, and lighting; food; clothing and footwear; and leisure goods and services – in terms of differences in pounds. If we instead look at the increases in percentage terms, we find significantly positive D-in-D-in-D estimates for five of the categories, with housing, fuel, heat, and lighting increasing by 13 percent, food by 9 percent, clothing and footwear by 28 percent, leisure goods and services by 34 percent, and motoring and travel by 44 percent. The D-in-D-in-D estimates are negative, and statistically significant, in both levels and percentages for alcohol and tobacco. The evidence is striking that the extra spending by low-income families eligible for more direct financial support from the government than other low-income families (compared to equivalent high-income groups) suggests a clear focus on housing, food, clothing and footwear, leisure, and motoring. There is also a clear switch away from alcohol and tobacco. In money terms the extra spending went mainly on leisure, housing and clothing. In percentage change terms motoring saw the biggest increases in spending.

Table 2b presents the parallel results for our alternative treatment group, low-income families with children age 0 to 4, compared to low-income families with a youngest child age 11 to 15. As in the earlier results for total expenditures, the results are in the same direction as we found when considering the larger treatment group of low-income families with children age 0 to 10, but with some differences. Thus, in Table 2b there are two significant positive D-in-D-in-D estimates in levels (for housing, fuel, heat, and lighting; and clothing and footwear) and three in percentages (for housing, fuel, heat, and lighting; clothing and footwear; and motoring and travel). Compared to the effects in Table 2a, the increase in spending on clothing and footwear is somewhat larger, while the increase in spending on motoring is somewhat smaller, suggesting that the effect of the reforms on families' spending patterns did vary by the age of the children. A point of similarity across Tables 2a and 2b is that we find

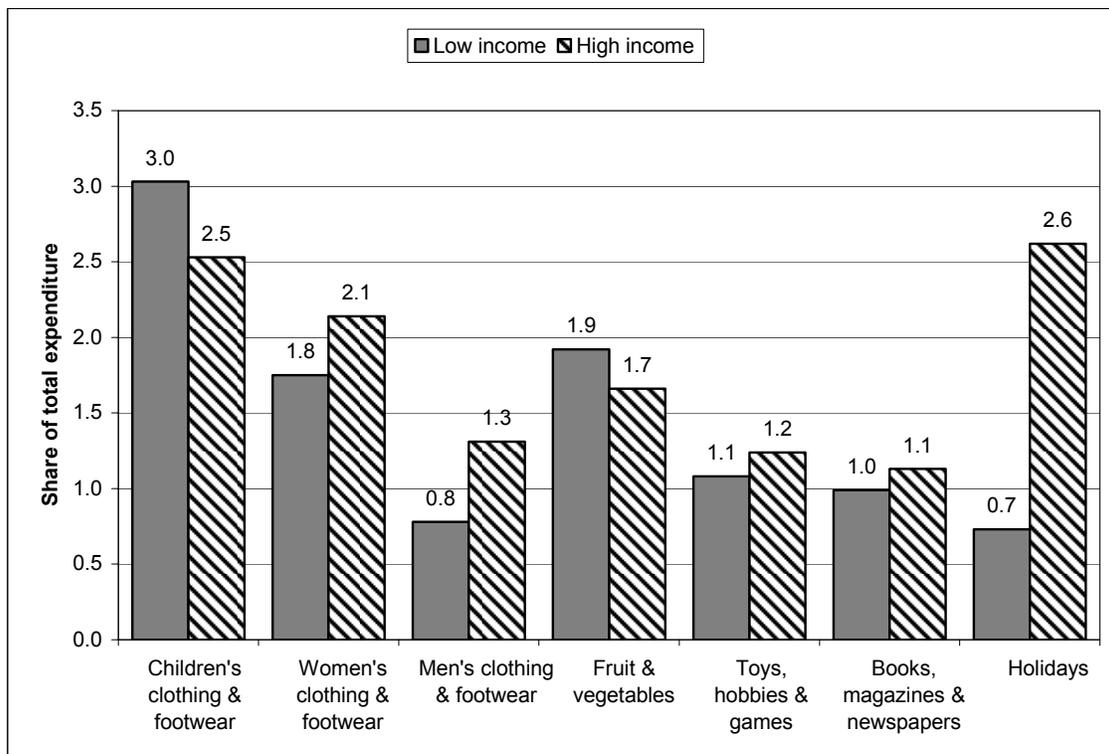
significantly negative D-in-D-in-D estimates for alcohol and tobacco, both in levels and in percentage terms, in both tables.

***Changes in expenditures on children’s items***

We are particularly interested in items that are used by children or that potentially relate to children’s health and development. Accordingly, we next examine detailed expenditure patterns on specific items such as children’s clothing and footwear, toys, books, games, etc. We also examine families’ expenditures on adult clothing and footwear, to see whether low-income families prioritise spending on children or whether as incomes rise, parents who may have been constrained in spending on their own clothing start to catch up.

The expenditure patterns shown in Figure 4 indicate that low-income families with children age 0 to 10 were allocating their expenditures differently pre-reform from more affluent families with children the same age. For instance, the low-income families were spending a higher share of their budgets on children’s clothing and footwear, and a lesser share on adults’ clothing and footwear and especially holidays.

**Figure 4: Shares of total real equivalised household expenditure:  
Households with a youngest child aged 0-10, 1995-98**



The results shown in Table 3a indicate that low-income families increased their spending on children's items over the period, but that they continue to spend low amounts of money on them in terms of pounds and pence. Even in 2000-03, low-income families with a youngest child age 0 to 10 are spending an average of only 2 pounds per week on books, magazines, and newspapers, only 3 or 4 pounds per week on toys, holidays, or fruit and vegetables, and only 5 pounds per week on children's clothing and footwear. These parents are not spending much more on their own clothing, 6 pounds per week on men's clothing and 8 pounds per week on women's clothing.

Nevertheless, these amounts are a significant increase over the levels spent in 1995-98, and in most instances represent gains relative to other families. However, the only items where low-income families with a youngest child age 0 to 10 significantly increased their spending in D-in-D-in-D terms are children's clothing and footwear (D-in-D-in-Ds of 3 pounds in levels, and 38 percentage points), fruit and vegetables (D-in-D-in-Ds of under 1 pound in levels, and 17 percentage points), books, newspapers, and magazines (no significant D-in-D-in-D in pounds but a significant gain of 22 percentage points), and holidays (a 6 pound D-in-D-in-D in levels, but no significant gain in percentage terms).

Results for families with children age 0 to 4, compared to those with a youngest child age 11 to 15, are shown in Table 3b. Here we again find significant D-in-D-in-D estimates for children's clothing and footwear (D-in-D-in-Ds of 3 pounds in levels, and 49 percentage points), books, newspapers, and magazines (no significant D-in-D-in-D in levels, but a gain of 25 percentage points), and holidays (a 6.5 pound D-in-D-in-D in levels, but no significant gain in percentage terms).

These results suggest that as incomes were increasing for low-income families with children, these gains were being spent on items for children, in particular clothing and footwear, books, and holidays. This result is consistent with evidence from qualitative interviews, in which low-income parents report prioritizing spending on children (Farrell and O'Connor, 2003). At the same time, while low-income families with young children were increasing spending on adult clothing, this was common to families with older children who were not getting large increases in financial support for children. This latter result is striking given the evidence in Figure 4 that these families were already constrained in their purchases of adult goods pre-reform.

**Table 3a: Summary of estimates for low-income households with a youngest child age 0 to 10**  
(comparison group households with a youngest child age 11 to 15)

	Mean 1995-98	Mean 2000-03	Level differences in mean (£ per week)			Percentage differences in mean (percentage points)		
			1 <sup>st</sup> D	D-in-D	D-in-D- in-D	1 <sup>st</sup> D	D-in-D	D-in-D-in- D
Children's clothing & footwear	4.37	5.28	0.92 *** <i>0.27</i>	0.87 ** <i>0.40</i>	2.79 * <i>1.50</i>	21.00 *** <i>6.81</i>	20.33 ** <i>7.86</i>	37.75 ** <i>18.45</i>
Women's clothing & footwear	5.10	7.62	2.53 *** <i>0.54</i>	0.58 <i>0.84</i>	1.55 <i>2.17</i>	49.62 *** <i>12.68</i>	33.21 ** <i>13.93</i>	22.73 <i>26.50</i>
Men's clothing & footwear	4.64	6.16	1.52 ** <i>0.76</i>	0.95 <i>1.01</i>	-1.43 <i>2.51</i>	32.82 * <i>18.72</i>	25.81 <i>20.51</i>	-17.06 <i>43.28</i>
Fruit & Vegetables	3.55	3.76	0.21 * <i>0.11</i>	-0.36 ** <i>0.16</i>	0.70 * <i>0.39</i>	6.05 * <i>3.29</i>	-4.04 <i>3.94</i>	17.09 ** <i>7.99</i>
Toys (inc. Computer games)	1.65	2.71	1.05 *** <i>0.24</i>	0.10 <i>0.38</i>	0.10 <i>0.96</i>	63.80 *** <i>17.98</i>	40.68 ** <i>19.69</i>	-21.06 <i>62.36</i>
Books, magazines & newspapers	1.89	2.10	0.21 ** <i>0.09</i>	0.50 *** <i>0.16</i>	0.54 <i>0.36</i>	11.15 ** <i>5.14</i>	18.34 *** <i>6.04</i>	21.80 ** <i>10.67</i>
Holidays	1.81	3.10	1.29 *** <i>0.40</i>	-2.22 ** <i>0.91</i>	5.78 ** <i>2.44</i>	71.50 ** <i>27.91</i>	39.96 <i>29.15</i>	61.86 <i>60.99</i>

(Robust) standard errors in italics

\*\*\*, \*\* and \* indicate significance at the .01, .05 and .10 levels respectively

Expenditure levels equivalised and expressed in Sept. 2003 prices

1<sup>st</sup> D = First difference/percentage change

D-in-D = D-in-D against first difference for high-income households with a youngest child aged 0 to 10

D-in-D-in-D = D-in-D-in-D against D-in-D for households with a youngest child aged 11-15

**Table 3b: Summary of estimates for low-income households with a youngest child age 0 to 4**  
(comparison group households with a youngest child age 11 to 15)

	Mean 1995-98	Mean 2000-03	Level differences in mean (£ per week)			Percentage differences in mean (percentage points)		
			1 <sup>st</sup> D	D-in-D	D-in-D- in-D	1 <sup>st</sup> D	D-in-D	D-in-D-in- D
Children's clothing & footwear	3.99	4.94	0.95 *** <i>0.31</i>	1.57 *** <i>0.49</i>	3.49 ** <i>1.52</i>	23.85 *** <i>8.73</i>	31.78 *** <i>9.91</i>	49.21 ** <i>19.42</i>
Women's clothing & footwear	4.41	7.52	3.11 *** <i>0.70</i>	1.67 <i>1.11</i>	2.64 <i>2.29</i>	70.36 *** <i>19.55</i>	58.37 *** <i>20.96</i>	47.89 <i>30.78</i>
Men's clothing & footwear	4.16	6.13	1.97 ** <i>0.87</i>	0.83 <i>1.26</i>	-1.55 <i>2.63</i>	47.31 * <i>24.91</i>	32.75 <i>27.80</i>	-10.12 <i>47.19</i>
Fruit & Vegetables	3.35	3.48	0.13 <i>0.14</i>	-0.79 *** <i>0.22</i>	0.27 <i>0.42</i>	3.93 <i>4.20</i>	-12.77 ** <i>5.27</i>	8.36 <i>8.73</i>
Toys (inc. Computer games)	1.71	2.61	0.90 *** <i>0.31</i>	0.63 <i>0.47</i>	0.63 <i>1.00</i>	52.38 ** <i>22.21</i>	46.28 * <i>23.75</i>	-15.46 <i>63.77</i>
Books, magazines & newspapers	1.70	1.92	0.22 * <i>0.11</i>	0.47 ** <i>0.21</i>	0.50 <i>0.39</i>	13.07 * <i>6.98</i>	19.62 ** <i>8.32</i>	23.08 * <i>12.11</i>
Holidays	1.51	2.63	1.12 ** <i>0.48</i>	-1.40 <i>1.07</i>	6.59 *** <i>2.51</i>	74.64 * <i>40.55</i>	48.90 <i>41.98</i>	70.80 <i>68.07</i>

(Robust) standard errors in italics

\*\*\*, \*\* and \* indicate significance at the 1, 5 and 10% levels respectively

Expenditure levels equivalised and expressed in Sept. 2003 prices

1<sup>st</sup> D = First difference/percentage change

D-in-D = D-in-D against first difference for high-income households with a youngest child aged 0 to 4

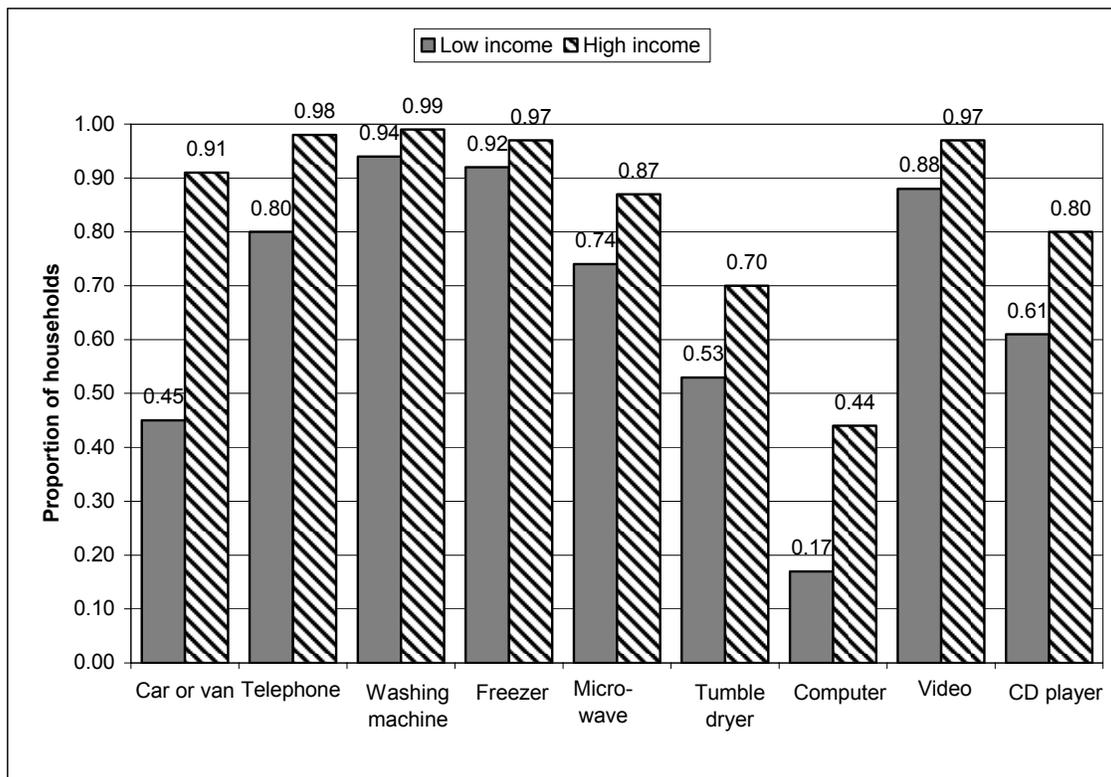
D-in-D-in-D = D-in-D-in-D against D-in-D for households with a youngest child aged 11 to 15

### ***Changes in possession of durable goods***

As families' incomes rise, they may also be more likely to possess durable goods such as a car or van, telephone, computer, and so on. We consider a broad set of goods: a car or van; telephone; washing machine; freezer; microwave; tumble dryer; computer; video cassette recorder; and CD player. Some of these goods may make a direct contribution to a child's health and development, while others may make an indirect contribution by helping the family connect with employment or leisure activities or by reducing parental stress and isolation. The spread of some of these goods within society will reflect falling relative prices rather than changing incomes.

Figure 5 shows the gaps that existed in ownership of our broad set of durable goods pre-reform. Low-income families with children age 0 to 10 were substantially less likely to own a car or computer than were higher-income families with children in the same age range. Gaps also existed in the ownership of consumer goods such as a telephone, microwave, or CD player.

**Figure 5: Proportion of households possessing item: Households with a youngest child aged 0-10, 1995-98**



In Table 4a, we show in column 4 that there were sharp increases in ownership of all these goods among low-income families. When comparing to higher-income groups with children of the same age (D-in-D) there is evidence of substantial catch-up for all goods except tumble dryers and computers, but the gains were especially large for car ownership and telephones (including mobile phones). Many of these items were increasingly found in low-income households with older children but again car ownership and having a telephone saw faster increases (relative to higher-income households) among those eligible for large increases in welfare and tax credit payments. These results indicate a good deal of catch-up over the period in the ownership of durables by low-income families with young children. Low-income families with a youngest child age 0 to 10 significantly increased their ownership of each of the items shown in the table. For two of the items – a car or a van, and a telephone – their increased ownership significantly outpaced that of other groups. It is worth noting that there are two items where low-income families may have lost ground in D-in-D-in-D terms – computers and CD players – although in neither case is the estimate statistically significant.

Results for families with children age 0 to 4 relative to families with children age 11 to 15, shown in Table 4b, present a somewhat similar pattern. Here we find a significant gain in households having a telephone (D-in-D-in-D of .08,  $p < .01$ ), and again a non-significant loss in households having a computer (D-in-D-in-D of -.06, not significant).

Thus, the results for durable goods are mixed. On the one hand, we find gains in car ownership and having a telephone, items that are likely to be important in terms of connecting families to social networks and to employment. On the other hand, we find that low-income families if anything lost ground in computer ownership, because although low-income families increased their ownership of computers, their gains were dwarfed by even larger gains by higher-income families. Given the rapid rise in the use of computers in UK schools and the emphasis being placed on information technology as a core subject in primary schools, the continued lower rates of computer ownership among low-income families with young children are worrisome.

**Table 4a: Summary of estimates for low-income households with a youngest child age 0 to 10**  
(comparison group households with a youngest child age 11 to 15)

	Mean 1995-98	Mean 2000-03	Level differences in proportion possessing good		
			1 <sup>st</sup> D	D-in-D	D-in-D- in-D
Car or van	0.45	0.57	0.12 *** <i>0.02</i>	0.11 *** <i>0.02</i>	0.09 ** <i>0.05</i>
Telephone (any type)	0.80	0.96	0.15 *** <i>0.01</i>	0.14 *** <i>0.01</i>	0.05 ** <i>0.03</i>
Washing machine	0.94	0.97	0.03 *** <i>0.01</i>	0.03 *** <i>0.01</i>	0.01 <i>0.02</i>
Freezer	0.92	0.97	0.05 *** <i>0.01</i>	0.03 *** <i>0.01</i>	0.01 <i>0.02</i>
Microwave	0.74	0.89	0.15 *** <i>0.01</i>	0.08 *** <i>0.02</i>	0.00 <i>0.04</i>
Tumble dryer	0.53	0.58	0.05 ** <i>0.02</i>	0.03 <i>0.02</i>	0.02 <i>0.05</i>
Computer	0.17	0.44	0.27 *** <i>0.02</i>	-0.03 <i>0.02</i>	-0.04 <i>0.05</i>
Video	0.88	0.94	0.05 *** <i>0.01</i>	0.04 *** <i>0.01</i>	0.02 <i>0.02</i>
CD player	0.61	0.88	0.26 *** <i>0.01</i>	0.09 *** <i>0.02</i>	-0.03 <i>0.04</i>

(Robust) standard errors in italics

\*\*\*, \*\* and \* indicate significance at the .01, .05 and .10 levels respectively

Figures relate to the proportion of the relevant group possessing the item

1st D = First difference

D-in-D = D-in-D against first difference for high income households with a youngest child aged 0 to 10

D-in-D-in-D = D-in-D-in-D against D-in-D for households with a youngest child aged 11 to 15

**Table 4b: Summary of estimates for low-income households with a youngest child age 0 to 4**

(comparison group households with a youngest child age 11 to 15)

	Mean 1995-98	Mean 2000-03	Level differences in proportion possessing good		
			1 <sup>st</sup> D	D-in-D	D-in-D- in-D
Car or van	0.45	0.54	0.09 *** <i>0.02</i>	0.09 *** <i>0.02</i>	0.06 <i>0.05</i>
Telephone (any type)	0.78	0.95	0.17 *** <i>0.02</i>	0.16 *** <i>0.02</i>	0.08 *** <i>0.03</i>
Washing machine	0.94	0.96	0.03 *** <i>0.01</i>	0.02 ** <i>0.01</i>	0.01 <i>0.02</i>
Freezer	0.92	0.97	0.05 *** <i>0.01</i>	0.04 ** <i>0.01</i>	0.02 <i>0.02</i>
Microwave	0.74	0.89	0.15 *** <i>0.02</i>	0.09 *** <i>0.02</i>	0.01 <i>0.04</i>
Tumble dryer	0.51	0.58	0.07 *** <i>0.02</i>	0.04 <i>0.03</i>	0.02 <i>0.05</i>
Computer	0.13	0.38	0.24 *** <i>0.02</i>	-0.06 ** <i>0.03</i>	-0.06 <i>0.06</i>
Video	0.86	0.92	0.06 *** <i>0.01</i>	0.05 *** <i>0.02</i>	0.03 <i>0.03</i>
CD player	0.63	0.88	0.25 *** <i>0.02</i>	0.09 *** <i>0.02</i>	-0.03 <i>0.04</i>

(Robust) standard errors in italics

\*\*\*, \*\* and \* indicate significance at the .01, .05 and .10 levels respectively

Figures relate to the proportion of the relevant group possessing the item

1<sup>st</sup> D = First difference

D-in-D = D-in-D against first difference for high income households with a youngest child age 0 to 4

D-in-D-in-D = D-in-D-in-D against D-in-D for households with a youngest child age 11 to 15

## Conclusions

The Labour government that came into office in 1997 inherited a legacy of rising child poverty and income inequality. Led by Prime Minister Tony Blair and Chancellor Gordon Brown, the new government made tackling child poverty and improving the life chances of children a priority, increasing spending on children by close to 1% of GDP and implementing a wide range of reforms that continue to the present day.

Prior research has documented that the reforms brought about by the Labour government since 1997 have translated into sizeable income gains for low-income families with children. These gains have been sufficient to substantially reduce levels of child poverty in absolute terms, and have also made headway in reducing child poverty in relative terms. However, prior research has been mostly silent on the question of what the money has been spent on and in isolating the impact of benefit increases from other income gains such as earnings.

Our analysis provides new evidence that the reforms have helped children in the lowest-income families catch up to children in higher-income families, in terms of both family expenditures on items used by children as well as family ownership of durable goods that most middle-class families now own. We find children in low-income families catching up in terms of their families' spending in the overall areas of housing and utilities, food, clothing, leisure goods and services, and motoring and travel. The evidence also suggests reduced spending on alcohol and tobacco, perhaps because of an increase in other opportunities for leisure or because of a decrease in stress or depression. Moreover, when we look in detail within these broad spending categories, we find gains for low-income children in spending on specific items such as children's clothing and footwear, fruit and vegetables, and books. Low-income families with children are also catching up in terms of ownership of durable goods, in particular, a car or van, and a telephone, both items that are increasingly essential for employment and for social relations.

What do these changes in expenditures and ownership of durables mean in terms of family hardship and child well-being? The overall pattern of our results suggests that low-income families with children should be experiencing less hardship and improved well-being, and this is indeed what the recent Families and Children Survey (FACS) found. Analyses of cross-sections of low-income families in 1999, 2000, and 2001 indicated that as family incomes rose, there were substantial drops in hardship (as measured by items such as problems with heat or accommodation, money worries, or shortfalls in food, clothing, consumer durables, or leisure items), leading the authors to conclude that 'families are using their extra finances to improve living conditions for their children' (Vegeris and Perry, 2003, p.140).

How important are these gains in income, and reductions in hardship, for children living in low-income families? Although parents try hard to protect their children from the effects of low-income and hardship, even young children are aware of their parents' financial situation and the constraints that it places on their families (Middleton *et al.*, 1997; Shropshire and Middleton, 1999). And, many of the items that money can buy – items such as books, or outings – matter for child health and development (Burgess *et al.*, 2004; Duncan and Brooks-Gunn, 1997). As incomes rise and those constraints are eased, and parents are able to purchase more items for their children, we would expect to see improvements in child health and development. How large those improvements are, and in what areas of health and development, is a topic we hope to tackle in further research.

Another interesting direction for further research would be to carry out this type of analysis for the US, where welfare reforms have also led to increases in employment and income for low-income families, but where the effects on expenditures and the material well-being of children and families have been little studied (Blank, 2002). This too is a topic we would like to tackle in further research.

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### Appendix 1 Timeline of benefits reported in 2000 prices

	April 1995	April 1996	April 1997	April 1998	November 1998	April 1999	October 1999	April 2000	April 2001	April 2002
<b>Child Benefit Rates</b>										
1st Child (couple)	12.30	12.41	12.39	12.47		15.31		15.64	15.85	15.75
1st Child (Lone)	19.75	19.65	19.17	18.62		18.18		18.30	17.95	17.55
2 <sup>nd</sup> + Child	9.99	10.11	10.09	10.13		10.21		10.43	10.59	10.55
<b>Income Support</b>										
<u>Lone Parent</u>	55.00	55.05	55.11	54.84		54.65		54.44	54.26	53.95
<u>Couple</u>	86.34	86.43	86.51	86.04		85.76		85.47	85.15	84.65
<b>Dependent children</b>										
Under 11	18.87	18.91	18.95	18.84		21.48		27.74	32.17	33.50
11 to 15	27.68	27.70	27.75	27.61		27.54		27.74	32.17	33.50
16 to 17	33.12	33.16	33.19	33.00		32.91		33.11	32.99	34.50
<b>Family Credit/Working Families Tax Credit<sup>a</sup></b>										
Adult Credit	53.34	53.39	53.43	53.15	52.63	52.95	55.24	55.43	59.75 <sup>b</sup>	59.00
30 hour credit <sup>c</sup>	11.83	11.84	11.83	11.76	11.65	11.75	11.67	11.73	11.71	11.65
<b>Child Credit</b>										
Under 11	13.48	13.50	13.51	13.45	16.01	16.11	20.97	26.56 <sup>d</sup>	26.59	26.45
11 to 15	22.35	22.35	22.37	22.27	22.05	22.22	22.08	26.56 <sup>d</sup>	26.59	26.45
16 to 17	27.74	27.76	27.81	27.66	27.39	27.59	27.41	27.34 <sup>d</sup>	27.36	27.20
<b>Applicable Earnings</b>										
before WFTC	86.34	86.43	86.51	86.04	85.19	85.76	95.06	94.87	95.02	94.50
withdrawn (at taper rate)	(70%)	(70%)	(70%)	(70%)	(70%)	(70%)	(55%)	(55%)	(55%)	(55%)

- a. Working families tax credit was introduced in October 1999 to replace Family Credit.
- b. Increased June 2001.
- c. Introduced July 1995.
- d. Increased in June 2000.