Who Benefits from Child Benefit?

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Abstract

This paper is concerned with the extent to which household expenditure patterns are affected by Child Benefit (CB), a transfer payment that depends on the number of children in the household. Despite the fact that CB is cash, we find that it is spent differently than other income – not on child assignable goods, but disproportionately on alcohol. We find, surprisingly, that this effect is much larger for couples that for lone mothers but this would be consistent with the idea that parents free-ride when it comes to child quality investment. Thus, our evidence suggests that the answer to our question is that - it is parents who benefit from CB. This would be consistent with two extreme views: parents place little weight on the welfare of their children; or parents place so much weight that they fully insure their children against shocks. We decompose CB variation into anticipated (inflation driven) variation, and (reform driven) surprises. We find that the alcohol spending result is driven by surprises – consistent with the view that parents are altruistic towards their children.

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1. Introduction

This paper is concerned with the impact of exogenous changes in a lump sum cash transfer that is made to all parents on their household spending patterns. Such transfers are usually motivated by concern for the welfare of children. Implicitly such arguments presume that there is some market failure that prevents parents from investing in the desired quality and/or quantity of children throughout their lives. This might arise, for example, through child quality being a household public good giving rise to parental free-riding in quality investments. Indeed, particular concern might arise for children in poor households and the US and the UK share the distinction of having child poverty rates that are considerably higher than that in most other countries. UNICEF (2000) estimates that child poverty (defined as living in a household with equivalised income below half the median) is 15% in the UK and 22% in the US compared to 5% in Denmark, 11% in Germany, and 12% in France[1].

Indeed, in many countries governments do make financial transfers to children via one or both of their parents: all EU countries make such transfers, as do most OECD countries. In some countries such transfers are contingent on household income while in others they are lump-sum[2]. The USA has recently introduced, and subsequently extended, a Child Tax Credit that makes such transfers. In the UK the Child Benefit (CB) programme provides a lump-sum tax-free transfer, usually made monthly and almost invariably to mothers, which is equivalent to approximately 5% of average household total expenditure – and considerably more for poorer households[3].

Dickens and Ellwood (2003) show that (relative) child poverty (after deducting housing costs) in the UK has grown considerably over time[4] from around

[1] See also Micklewright (2004).

[2] In addition many in-kind transfers are made either to parents or directly to the children, such as free or subsidised nutrition supplementation, health care, and education. An excellent survey of how such arrangements differ across many countries can be found in Bradshaw and Finch (2002).

[3] In addition to CB there are supplements to other welfare programmes that depend on the children in the household. The UK also has some in-kind transfers (nutrition supplementation, money for housing costs, and vouchers and hypothecated transfers for childcare which are all means-tested, as well as the cover provided to all under the National Health System) but otherwise relies largely on cash support.

[4] See also Gregg, Harkness and Machin (1999) who use UK data from the Family Expenditure Surveys from 1968 to 1996 to show that the proportion of dependent children who live in households with incomes below 60% of median income (the official UK definition of child poverty) had grown from 10% in 1968 to 35% in 1996.

15% in 1978 to around 32% in the early to mid 1990's and that it has fallen only slightly since then to approximately 30% in 2000/1[5]. The US has conventionally used an absolute measure and this has fallen consistently since the early 1980's. However, the National Centre for Child Poverty used a relative measure of US child poverty (defined as having a household income below double the Federal poverty level) and found that this rose from 16.2% of children in 1979 to 22.5% in 1993 and then fell back to 18.7% in 1998 (see Bennett and Lu (2000)). This US definition is not strictly comparable to the UK one and Dickens and Ellwood (2003) helpfully derived a relative measure from the US CPS data that is comparable to the UK figures. These US relative figures show that US child poverty has remained high, even by UK standards, at around 36% since the early 1980's.

Since much of the policy concern over child poverty arises because of the possible sensitivity of child development to parental resources these figures are alarming. The existence of this sensitivity is supported by the strong correlation between low parental income and bad child outcomes. Many outcome dimensions have been considered in the literature. In the UK, for example, Gregg, Harkness and Machin (1999) find that poor long term health, crime, low wages, and low levels of educational achievement are associated with earlier low parental incomes. Similar findings have been reported in the US (see, for example, Currie (1994) and Mayer (1997)) and a review of the evidence, including the extent to which such correlations are causal, can be found in Haveman and Wolfe (1995).

To the extent that the association between child poverty and poor child outcomes is a causal effect, this evidence provides some motivation for child poverty policy and the UK has recently adopted an explicit long run objective of eliminating child poverty. One policy directed at this objective has been to increase CB levels[6]. CB, in 2003, is worth £16.05 per week for the first child[7] and £10.75 for subsequent ones) and this has recently been joined by Children's Tax Credit which is a further programme that provides a tax credit for children worth £10.40 per week structured in

[5] See Brewer, Clark and Goodman (2003) for an explanation for recent UK changes in child poverty.

[6] Income Support (IS) and Job Seekers Allowance (JSA), the out-of-work welfare programmes (mainly for poor lone parents, the disabled and the unemployed), have also benefited from increasingly generous additions for dependent children, as has Working Families' Tax Credit (WFTC), the main in-work welfare programme.

[7] £17.55 per week for a lone parent who has been entitled to the supplementary One Parent Benefit (OPB) since prior to April 1998.

such a way that its value only falls as income rises at a level of income that is far above the mean level of household income[8]. This credit was further superseded in April 2003[9] by Child Tax Credit (CTC), worth slightly more than the Children's Tax Credit where the means testing starts higher up the income distribution. Child-related cash benefits now amount to 7% of GDP in the UK. Indeed, the recent reforms to the welfare system have been driven by the desire to ensure that absolute amount of cash support for children is independent of parental circumstances such as unemployment, sickness and disability[10].

Our aim here is to try to complement existing research on the relationship between child outcomes and household income by trying to infer how CB is spent – in particular, we are interested in how CB affects spending on adult and child specific goods. Thus, this paper takes a direct approach as to whether "money matters" by investigating the effect of variations in transfers to households with children on household spending decisions. Since such transfers are the means by which policy hopes to affect outcomes, we seek to establish the extent to which they affect household spending decisions which is one mechanism through which a causal effect may operate. We are particularly concerned with spending on "child goods" and use spending on children's clothing as a measure of this. In contrast to this, we also look at how transfers to parents affect spending on "adult goods" and use alcohol, tobacco, and adult clothing as examples of these. Thus, we investigate the impact of Child Benefit on household spending patterns with a view to estimating its impact on goods that are "assignable" to either children or adults.

The plan of the paper is as follows: Section 2 outlines the existing literature on child outcomes and parental incomes which motivates our analysis and reviews the

[8] WFTC and Children's Tax Credit has recently been replaced by WTC and Child Tax Credit but they retain the earlier structure (see Brewer (2003)). In contrast to the extensive cash support for children in the UK and the relative unimportance of means-testing, the US, until recently, relied heavily on in-kind transfers such as food stamps, targeted nutrition schemes such as the school breakfast programme, the health care cover provided by MedicAid, and Temporary Assistance for Needy Families (TANF) which typically provides extensive childcare support but rather little explicit cash. Indeed, the cash that is provided is time limited. A Child Tax Credit was introduced in 2001 in the US and has subsequently been made more generous.

[9] At the same time WFTC became Working Tax Credit, WTC. Unlike WFTC, WTC is available to low income working individuals without children as well as to parents.

[10] See Adam and Brewer (2004) for a review of the development of all UK child-related benefits including CB.

few existing papers that investigate parental spending patterns; section 3 summarises our data on CB variation and on household spending patterns; section 4 provides our empirical findings that relates the two; and section 5 concludes. Our conclusion is that CB *is* spent differently: it is spent on *adult*-assignable goods and not *child*-assignable goods. Thus, it is parents who benefit from Child Benefit and they do so because they are altruistic towards their children, not because they are not. The findings have important implications for policy towards child poverty: raising CB, as has been done in recent years will mechanically reduce measures of child poverty but the evidence here suggests that the impact on children is unlikely to be large.

2. Literature

There is an extensive literature that establishes strong correlations between child outcomes and parental incomes, whereas there is little evidence to show that giving poor parents more money makes for better children. Indeed, rather few studies attempt to establish the causal effect of parental incomes on child outcomes. The evidence points to child poverty being strongly *associated* with bad child outcomes but the evidence that reducing financial poverty is good for those outcomes suggests small, and generally insignificant, effects. While the presumption behind child-oriented cash transfer programmes is that children do indeed benefit from them, it turns out that we have little quantitative evidence to support or deny this.

For the USA, Mayer (1997) examines how rich, middle-class, and poor parents spend their income on items that may be helpful to child development. Differences in spending, across income groups, on items regarded as necessities, such as shelter, food consumed at home, and health care, are far narrower than differences in spending on less essential items. The result is that the difference in resources available to poor and middle-class youngsters is typically quite small. Mayer finds that very poor children see doctors almost as frequently, and live in homes that are almost as un-crowded, almost as clean, and only a little less likely to have air conditioning or central heating, as middle-class children. Mayer argues that these differences are small because low-income parents devote a large percentage of their income to purchasing items they regard as important for their own or their children's welfare.

Mayer goes on to examine the idea that additional resources will improve the welfare of family members, arguing that it may not if parents are incompetent, myopic, or selfish. In which case, additional resources may have only limited effects in improving children's welfare or enhancing their success as adults. She presents simple correlations that might suggest, that for example, doubling annual family income from $15,000 (approximately the poverty line) reduces out-of-wedlock childbearing by 18 percentage points and cuts the high school dropout rate by almost 13 percentage points. However, Mayer is rightly suspicious of these simple correlations since the unobservable factors that cause parents to be successful in the labour market may also help them achieve success in raising their children. When she uses alternative strategies to identify the effect of extra family income, she finds that the causal effects of extra income turn out to be modest in magnitude and the conclusion is compelling: while children's opportunities are very unequal, income inequality is not an important causal determinant of that inequality of opportunities[11].

Economists take it for granted that giving additional income to an individual will improve their welfare. But understanding how important giving additional income to parents is likely to be for the well being of children is more complex. This is because children depend on the behaviours and decisions made by their parents to determine how much, and in what way, they will benefit from additional income into the household. Most straightforwardly, parental income could be important for child outcomes because parents could use additional income to buy goods and services that are good for their children and represent an investment in their children's future well being. Such theories of parental investment in their children have been the focus of many economists' thinking about the role of parental income in determining children's outcomes (see Becker and Tomes (1986)).

[11] In the same vein, Shea (2000) uses US PSID data, and instruments parental incomes, to show that "exogenous" variation in parental incomes has only small effects on their children's abilities. In that paper the estimates exploit the income variation due to union status, industry, and job loss as instrumental variables. Duflo (2000) uses a South African data where black pensioners were given substantial increases in pension incomes in a "natural experiment". Using a simple "difference in differences" methodology the author shows that exogenous increases in the incomes of grandmothers makes for better (in terms of nutrition) grand-daughters. However, the effect on boys (grandsons) was found to be small, and there was no significant effect of pensions received by men (grandfathers). These latter results suggest that households do not function as unitary entities, so that the effectiveness of public transfer programs may depend on the gender of the recipient.

Recent work on spending on child and adult clothing by Kooreman (2000) for the Netherlands suggest that the fact that the money is labelled as child benefit motivates households to indeed spend it disproportionately on child goods because of a "mental accounting" effect[12]. That paper exploits differential variation in CB by age of child for one-child households and finds that the estimated marginal propensity to spend on child clothing is higher for CB than for other income and so argues that this is evidence of a "labelling effect". However, identification relied on a single change in the rate for young children versus older children that was almost coincident with the change in the payment mechanism so that the recipient, in the overwhelming number of cases, ceased to be the head of household and became the mother. Thus the paper places great weight on the presumption that this "wallet to purse" transfer had an equal effect on spending patterns across households with different aged children. Since maternal market labour supply may be affected by the intra-household transfer this seems unlikely. Moreover, further work on Slovenia by Edmonds (2002) found no significant effects. However, this work exploited the dependence of Slovenian CB on household income and the number of children in the *previous* year and so requires that these have no direct effect on current expenditure patterns – something that seems unlikely because of serial correlation in incomes, habit persistence, and the fact that changes in the number of children in the household are likely to be anticipated.

As in the Netherlands, UK CB over the period 1980 to 2000 was a universal (not means-tested) programme, where payments depended on the current number of dependent children, went to the mother, payments were not subject to taxation, and participation was effectively 100%[13]. Thus the UK offers an interesting laboratory to study the effect of CB because we do not have to correct for programme non-participation. Indeed it was this absence of selectivity that allowed Lundberg *et al* (1997) to investigate the impact of the UK "wallet to the purse" reform in the late 1970's. The argument for such a reform was that mothers are better agents for their children than fathers. The authors show, in grouped data, that there is an increase in spending on child clothing relative to adult clothing and female adult clothing relative to male adult clothing following the reform which gave mothers control over this

[12] See Thaler (1990) for why this phenomenon might exist and why it leads to differences in marginal propensities to consume out of different forms of income.

[13] Private correspondence with DWP confirms that this also applies to the supplement for lone parents – One Parent Benefit (OPB).

source of income. This finding has subsequently been substantiated by Ward-Batts (2000) using household level data. These findings, that household members fail to pool their resources in making spending decisions, have been echoed in other studies[14] and suggest a rejection of the unitary model of household behaviour. Here, we abstract from these considerations by only using data post 1979 by when the wallet-to-purse reform had been fully implemented[15].

3. Data and Identification

Our analysis covers the 21 years from 1980 (when CB had finally entirely replaced the earlier system of Family Allowances) to 2000 (after which tax credits for parents were introduced which would complicate our analysis because these credits were means tested and were subject to a take-up problem). Across the 1980-2000 period there have been wide variations in real CB within years induced by differences in inflation across years, and large changes in the real value of CB between years driven by reforms. For example, a large reform occurred in 1991 whereby CB entitlement of the youngest child rose by a considerable amount, and a further increase for the youngest child occurred in 1999.

Figure 1 shows the two sources of variation in real CB for first and subsequent children and for lone parents and couples separately[16]. The sawtooth shape in the 1980's clearly shows the effects of inflation, something that is not obvious in later years when inflation was considerably lower. The real reductions over the period 1984 to 1990 shows the effect of not uprating in line with price inflation in the period when the Conservative government of the day had adopted a policy of targeting support on the very poorest households through real rises in the generosity of the in-work welfare programme for parents (then called Family Credit) at the expense of CB. In 1991 a large real rise in CB for the first child of a couple was introduced – this distinction between first and subsequent children that had always been a feature of CB for lone parents (lone parents received a supplement to CB known as One Parent Benefit,

[14] See Phipps and Burton (1998) and Bourguignon *et al* (1993) for example. However, these studies simply examine whether spending patterns are affected by the individual composition of household income without regard to the potential endogeneity of that composition.

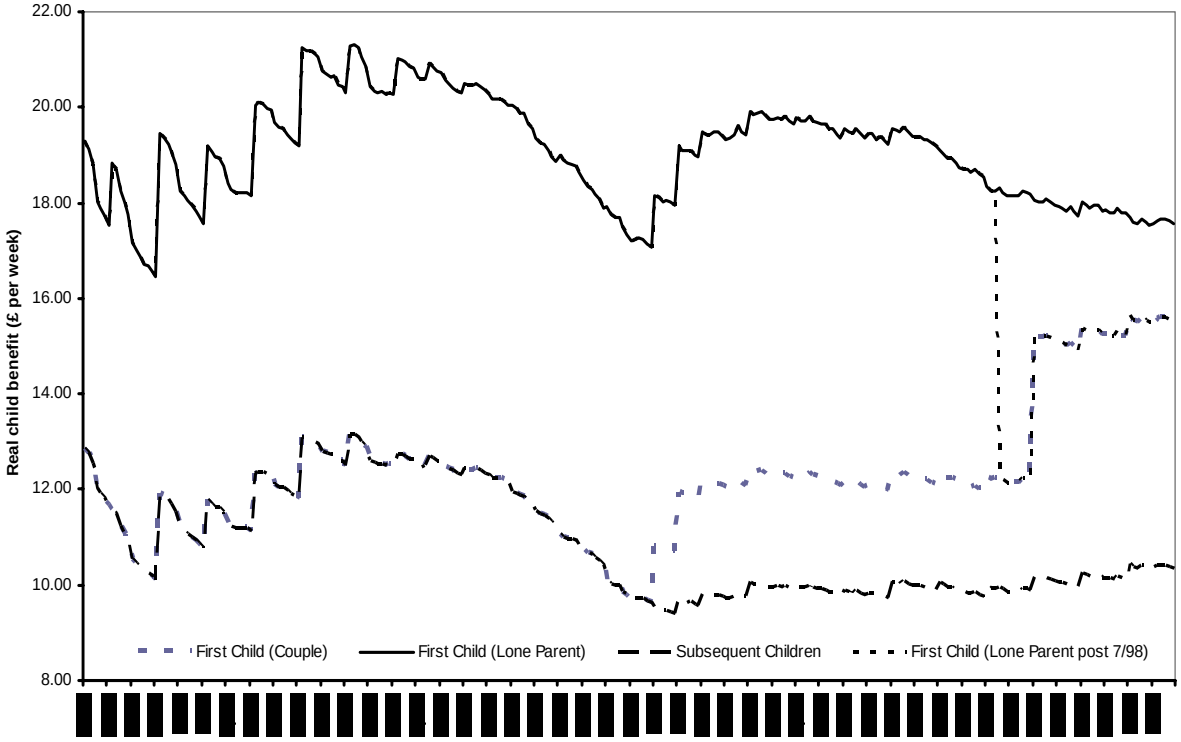
[15] Our data record who receives the CB in the household: the proportion of two parent households where the mother is the recipient is 99.1%.

[16] See Greener and Cracknell (1998) for the historical background and development of Child Benefit in the UK.

OPB) but not for couples. In a controversial change in 1997 the new Labour government abolished the OPB and so effectively eliminated the distinction between couples and lone parents[17]. Moreover, the adverse effect on (new) lone parents was soon ameliorated when the rate for all first children was subject to a large real increase.

It is easy to forget that until 1999, and the Labour government's commitment to abolish child poverty, the real value of CB was lower than it had been when it was first introduced back in 1978 and that remained the case for the first children of lone parents and for all subsequent children in 2001, and still remains to the present. The real value of CB for the first children of lone parents has fallen by more than 10% while the value for all subsequent children had fallen by more than 15%. It is only with the recent introduction of the means-tested supplement to CB known as Child Tax Credit (CTC) the real values of child-contingent financial support enjoyed by parents back in 1979 have been matched.

Figure 1 Real CB 1979-2001 (£ per week in 2003 prices)



[17] Those lone parents who were already in receipt of One Parent Benefit prior to 1997 were allowed to retain it.

We rely in our analysis on the real variation in CB for given household types. That is, we make no attempt to exploit the variation in CB across household types. We do this because we do not want to rely on functional form assumptions about how different numbers of children affect household spending.

We use Family Expenditure Survey (FES) data on household spending patterns, which contain detailed expenditure information, constructed from two consecutive weekly diary records supplemented with information about regular payments. The expenditure data is regarded as being quite accurate with the exception

Table 1: Summary statistics: Household types (Numbers and proportions)

	1 children			2 children			3+ children			
	Married	Lone	All	Married	Lone	All	Married	Lone	All	Total
Not on welfare	8575	744	9319	12967	570	13537	4502	165	4667	27523
	0.87	*0.25*	*0.73*	*0.88*	*0.25*	*0.80*	*0.76*	*0.16*	*0.67*	*0.75*
On *Out of work* welfare	948	1836	2784	1255	1453	2708	1000	783	1783	7275
	0.10	*0.63*	*0.22*	*0.09*	*0.65*	*0.16*	*0.17*	*0.76*	*0.26*	*0.20*
On *In-work* Welfare	288	340	628	441	216	657	422	81	503	1788
	0.03	*0.12*	*0.05*	*0.03*	*0.10*	*0.04*	*0.07*	*0.08*	*0.07*	*0.05*
Total	9811	2920	12731	14663	2239	16902	5924	1029	6953	36586

Table 2: Summary statistics: Expenditure Patterns for Households with 1 Child Weekly amounts (£) and standard deviations

	Couples				Lone Parents			
	Not on welfare	*Out of work* welfare	On *In-work* welfare	Total	Not on welfare	*Out of work* welfare	On *In-work* welfare	Total
Child clothing	7.72	4.51	5.23	7.34	9.16	4.81	6.60	6.13
	(12.49)	(8.90)	(8.49)	(12.13)	(15.78)	(8.35)	(10.47)	(11.11)
Women's clothing	10.24	4.25	4.59	9.50	11.65	4.01	7.34	6.35
	(19.08)	(10.09)	(8.62)	(18.28)	(23.75)	(8.80)	(15.48)	(15.20)
Men's clothing	6.64	3.08	3.38	6.20	1.85	0.59	0.99	0.96
	(18.34)	(8.88)	(8.93)	(17.47)	(8.91)	(4.75)	(3.71)	(6.02)
Food	68.06	46.51	52.70	65.52	46.93	30.34	38.53	35.52
	(27.83)	(18.69)	(22.51)	(27.77)	(20.95)	(13.96)	(16.39)	(17.79)
Alcohol	14.63	9.03	9.51	13.94	6.54	2.61	4.80	3.86
	(19.02)	(14.05)	(14.28)	(18.56)	(9.96)	(5.14)	(7.83)	(7.21)
Tobacco	7.15	12.06	10.98	7.74	4.61	6.67	6.15	6.09
	(10.86)	(11.80)	(12.23)	(11.11)	(7.42)	(7.61)	(7.84)	(7.64)
Child Benefit	11.38	11.44	12.16	11.41	15.91	14.93	17.12	15.44
	(1.91)	(1.60)	(1.93)	(1.89)	(3.35)	(3.55)	(2.51)	(3.47)
Other expenditure	298.30	157.03	188.71	281.43	205.34	90.52	136.47	125.12
	(181.7)	(96.07)	(106.0)	(179.1)	(158.3)	(54.47)	(72.59)	(106.1)
Household Income	395.59	213.77	245.47	373.62	254.97	117.09	178.79	159.41
	(239.5)	(133.2)	(123.9)	(235.9)	(208.9)	(55.65)	(55.71)	(130.1)
No. Obs	8575	948	288	9811	744	1836	340	2920

of alcohol and tobacco[18] which are under-recorded relative to other sources of information. Moreover, there is considerable consistency over time. The data also records sources of income and their levels and periodicity, and the detailed characteristics of respondent households including the number and ages of children[19]. Table 1 shows the breakdown of the data by household type. Table 2 shows some summary statistics for households with exactly one child (the Appendix shows corresponding statistics for larger households).

4. Parametric Analysis

We follow the earlier work that conducts parametric Engel curve estimation, and tests for differential marginal propensities to consume out of CB compared to other income for different commodity groups. Unlike earlier research, we model the whole of household non-housing spending, both child assignable goods as well as those that are adult-assignable and those that are not assignable at all. Identification relies on the sizeable real variation in CB over time. We choose not to exploit the variation that has occurred by the number of children because we would be concerned that the results would not be robust to the specification of the demographic variables in the model. Thus, we present estimates based on samples of households that contain only one child and relegate other results to the Appendix.

We assume that expenditure on good *i* by household *h* is given by $e_i^h = f_i\left(x^h, CB^h\right) + Z^h\beta + \varepsilon_i^h$ where x^h is household *h*'s other income[20] apart from CB (defined as total expenditure minus CB), Z^h is vector of exogenous

[18] See Tanner (1998) for an analysis of the reliability of FES expenditure data. The deficiency in the alcohol and tobacco categories is thought to be largely associated with differential response rates of smokers and drinkers and not because of under-recording by respondents.

[19] We also drop all households where the youngest child is 16 and over because the FES treats the clothing of children aged 16 and over as adult clothing. We also exclude multiple benefit unit households so that our sample consists of nuclear families only.

[20] We use total expenditure (minus CB) as our explanatory variable rather than income. This is to ensure that the modelling is consistent with an intertemporally separable lifecycle maximising model. See Blundell and Walker (1986). Results using total (net of tax and welfare) income (minus CB) are essentially the same and are available on request.

characteristics and ε_i^h captures the unobservable determinants of spending patterns[21]. Since each of the expenditure equations contain the same explanatory variables we estimate the system using the usual Seemingly Unrelated Regression method to allow us to test cross equation restrictions. We impose adding-up in the usual manner of omitting one arbitrary equation. We omit all other expenditure apart from the assignable ones (male, female and child clothing, alcohol, and tobacco) and food so just six equations are reported.

In our parametric analysis below, we further assume that $f_i\left(x^h, CB^h\right)$ is linear and additively separable. This follows earlier research by Kooreman (2000) and Edmonds (2002) who estimate simple specifications where expenditure on each good is assumed to be a linear function of CB and of total expenditure less CB. To ensure that our results are as robust as possible we select relatively homogenous samples to minimise the importance of *Z*. Our objective is to test whether $f_i\left(x^h, CB^h\right)$ is such that child benefit has the same effects on expenditures as total expenditure less CB does – we refer below to this latter effect as the Engel curve slope[22].

We estimate separate systems for couples and lone parents. We are particularly interested in this distinction for two reasons. Firstly, the single parents sample is immune from the problem that there may be an intrahousehold pooling issue which might cause CB, which is given to mothers, different from other sources of income since all sources of income are at the disposal of the mother. Secondly, if underinvestment in child quality arises because each parent free-rides on the other then this would be reflected in the behaviour of couples and not in the behaviour of lone mothers.

The basic results are shown in Table 3 which provides estimates using the couples and lone parents data separately for the food and assignable goods equations (the residual spending equation is not presented and the estimates are independent of the excluded equation). The F and P statistics test for the restriction that marginal propensity to spend out of CB income is the same as that out of other income (defined

[21] Excluding relative prices does not affect our estimates. We do not control for the relative prices here because we tested for the time series correlation between CB and monthly relative prices and found an insignificant partial correlation of only 0.088.

[22] We experimented with nonlinear Engle curves. For example, we found that when we entered CB quadratically the marginal effects, evaluated at the means, were essentially unchanged.

as total expenditure minus CB). The restriction that the marginal propensities to spend out of CB and other income are the same is rejected for alcohol in the couples sample, and for women's clothing in the lone parent sample. The overall F and P values test the restrictions, across all goods, that the effects of CB and other expenditure are the same. We strongly reject this restriction for couples although the value for lone parents is not significant. However, the rejection is restricted to lone mothers with two children (see Appendix).

In the case of couples the CB effect on alcohol, and for lone parents the effect of CB on mother's clothing, are more than ten times larger than the Engel curve slope[23]. The rejection arises for an *adult* assignable good, and not for child assignable good – and results in the Appendix are similar for other samples.

In subsequent tables below we test the robustness of these basic results. The identification of the CB coefficients in Table 3 derives entirely from the time series variation. While the real value of CB does not exhibit a time trend (and, in any event our modelling includes both a linear trend and a set of month controls) we first test for the robustness of the results in Table 3 by re-estimating over the 1980's data (1980-1989) separately from the 1990's (1990-2000) data. These results are presented in Table 4a for the 1980's and in Table 4b for the 1990's. The results in Table 3 for the pooled data over the whole period are confirmed – with alcohol being the source of rejection for couples in both periods, men's clothing in the latter period, and women's clothing being the problem for lone mothers but only in the 1990's[24]. Similar results can be found for other samples in the Appendix.

[23] Clearly part of the variation in real CB arises because of differential inflation rates across years. There is a possibility that the differential effect on spending patterns inflation is due to business cycle effects that are correlated with inflation and not adequately controlled in the model by the inclusion of total expenditure. If the variation in the expenditures of households with children was being affected by the business cycle rather than by real CB variation then we would expect the same to be true of households without children. We investigated this by looking at the correlation matrix between expenditures and inflation for both singles and couples without children. We found no correlation. Thus we feel that our results are not contaminated by omitted business cycle effects.

[24] One further complication is that CB is counted as income when Family Credit (FC) and Income Support (IS) are computed. The same is true of the previous in-work welfare programme, Family Income Supplement, the subsequent programme, Working Families' Tax Credit, and of the earlier out-of-work welfare programme, Supplementary Benefit. While it is true that FC and IS rates include allowances for children these allowances were not always uprated to the same degree as CB. The sample sizes of the FC and IS recipients are too small for separate analysis and because of concern that such households may differ in other ways from the non-recipient households we drop them from our principal analyses above.

Table 3 Engel Curves: Parents with one child not on welfare, 1980-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=8575						
CB	0.015	0.156	0.213	0.177	0.523	-0.015
	(0.2)	(1.2)	(1.7)	(1.1)	(4.0)	(0.2)
Other income	0.017	0.039	0.028	0.075	0.033	-0.000
	(22.7)	(34.8)	(24.7)	(51.3)	(28.7)	(0.4)
$F_{(CB = Other\ inc)}$	0.00	0.84	2.11	0.38	**14.29**	0.04
P	0.98	0.36	0.15	0.54	**0.00**	0.85
Overall F, p			**F(6,8526) = 2.82**	**p = 0.01**		
Lone Parents, N=744						
CB	0.118	0.663	0.040	-0.047	0.188	-0.019
	(0.6)	(2.6)	(0.4)	(0.2)	(1.7)	(0.2)
Other income	0.025	0.064	0.006	0.065	0.019	0.000
	(6.4)	(11.9)	(3.0)	(14.7)	(8.2)	(0.3)
$F_{(CB = Other\ inc)}$	0.25	**5.54**	0.11	0.28	2.43	0.05
P	0.62	**0.02**	0.74	0.59	0.12	0.82
Overall F, p			F(6,694) = 1.41	p = 0.21		

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample. See Appendix Table A3a for corresponding results for all one child households including those on welfare, and see Appendix Tables A3b and A3c for results for households with two and three+ children respectively. See Appendix Table 3d for estimates that use net income directly as the explanatory variable rather than total expenditure. The results do not differ in any substantial way.

Preferences may differ between smokers and non-smokers for several reasons. Thus, in Tables 5a and 5b we estimate separate equations for households with positive tobacco expenditure and those with zero tobacco expenditure. In the case of smokers, the significance of results falls but, in the case of non-smokers, rejection occurs for alcohol in both couples and lone parents and for men's clothing in couples.

There is considerable evidence that fathers favour sons (see Lundberg and Rose (2002)) and so we might expect mothers, who are almost invariably the recipients of the CB, to compensate by favouring daughters. So, in Tables 6a and 6b, we disaggregate into households with one daughter and only one son separately. Rejection occurs for both sons and daughters samples. In the case of couples the problem arises with alcohol for both sons and daughters, and also men and women's clothing in the case of sons. In the case of lone parents, rejection only occurs for the sons subsample, because of women's clothing. So the results in Table 6a and 6b also confirm our simple specification and confirm the robustness of the conclusion that rejection arises because of *adult*, and not child, assignable goods.

Table 4a Engel Curves: Parents with one child not on welfare, 1980-1989.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=4554						
CB	0.035	-0.363	-0.386	-0.161	0.607	-0.061
	(0.2)	(1.5)	(1.7)	(0.5)	(2.3)	(0.4)
Other income	0.017	0.045	0.033	0.075	0.045	0.002
	(16.0)	(26.0)	(20.1)	(35.2)	(22.8)	(1.8)
$F_{(CB = Other\ inc)}$	0.01	2.90	3.35	0.65	**4.37**	0.19
P	0.91	0.09	0.07	0.42	**0.04**	0.66
Overall F, p			F(6,4516) = 1.93 p = 0.07			
Lone Parents, N=325						
CB	0.162	0.154	0.099	0.245	0.098	-0.047
	(0.5)	(0.4)	(0.5)	(0.8)	(0.7)	(0.4)
Other income	0.030	0.057	0.012	0.068	0.015	0.002
	(3.9)	(5.7)	(2.3)	(9.1)	(3.9)	(0.5)
$F_{(CB = Other\ inc)}$	0.19	0.06	0.19	0.37	0.31	0.15
P	0.66	0.80	0.66	0.54	0.58	0.70
Overall F, p			F(6, 286) = 0.22 p = 0.97			

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample. See Appendix Table A4a for corresponding results for the sample that includes welfare recipients.

Table 4b Engel Curves: Parents with one child not on welfare, 1990-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples , N=4021						
CB	-0.010	0.325	0.443	0.396	0.512	-0.008
	(0.1)	(2.1)	(2.7)	(1.9)	(3.7)	(0.1)
Other income	0.017	0.036	0.024	0.075	0.026	-0.002
	(15.9)	(23.6)	(15.4)	(36.3)	(18.9)	(1.7)
$F_{(CB = Other\ inc)}$	0.06	3.37	**6.60**	2.26	**12.08**	0.00
P	0.81	0.07	**0.01**	0.13	**0.00**	0.95
Overall F, p			**F(6,3982) = 3.51 p = 0.00**			
Lone Parents, N=419						
CB	0.161	1.050	-0.044	-0.390	0.277	0.022
	(0.7)	(3.0)	(0.4)	(1.3)	(1.7)	(0.2)
Other income	0.022	0.066	0.004	0.063	0.020	-0.001
	(4.9)	(10.2)	(2.3)	(11.2)	(6.9)	(0.3)
$F_{(CB = Other\ inc)}$	0.31	**7.70**	0.23	2.18	2.51	0.03
P	0.58	**0.00**	0.63	0.14	0.11	0.86
Overall F, p			**F(6, 379) = 2.27 p = 0.04**			

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample. See Appendix Table A4b for corresponding results for the sample that includes welfare recipients.

Table 5a *Engel Curves for Smokers:*
Parents with one child not on welfare, 1980-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=3973						
CB	0.123	-0.091	-0.173	-0.064	0.361	-0.062
	(1.1)	(0.6)	(1.2)	(0.3)	(2.1)	(0.5)
Other	0.019	0.038	0.025	0.084	0.041	0.005
income	(16.4)	(23.3)	(17.3)	(38.3)	(24.1)	(4.6)
$F_{(CB = Other\ inc)}$	0.79	0.62	1.81	0.45	3.49	0.35
P	0.37	0.43	0.18	0.50	0.06	0.56
Overall F, p			F(6,3924) = 1.55 p = 0.16			
Lone Parents, N=281						
CB	0.129	0.264	0.187	-0.049	0.021	-0.063
	(0.4)	(0.8)	(1.0)	(0.2)	(0.1)	(0.5)
Other	0.029	0.060	0.007	0.053	0.021	0.005
income	(4.1)	(7.1)	(1.5)	(7.0)	(4.2)	(1.5)
$F_{(CB = Other\ inc)}$	0.12	0.34	0.99	0.10	0.00	0.26
P	0.73	0.56	0.32	0.75	1.00	0.61
Overall F, p			F(6, 232) = 0.29 p = 0.94			

Table 5b *Engel Curves for Non-smokers*
Parents with one child not on welfare, 1980-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol
Couples, N=4602					
CB	-0.082	0.384	0.574	0.485	0.736
	(0.6)	(2.0)	(2.8)	(2.0)	(3.9)
Other	0.017	0.040	0.030	0.069	0.029
income	(16.1)	(25.5)	(17.9)	(34.7)	(18.6)
$F_{(CB = Other\ inc)}$	0.59	3.10	**7.01**	2.87	**13.71**
P	0.44	0.08	**0.01**	0.09	**0.00**
Overall F, p			**F(5, 4553) = 4.80 p = 0.00**		
Lone Parents, N=463					
CB	-0.024	0.744	0.040	-0.206	0.314
	(0.1)	(2.0)	(0.3)	(0.7)	(2.3)
Other	0.024	0.067	0.007	0.069	0.016
income	(4.9)	(9.1)	(2.5)	(12.3)	(6.0)
$F_{(CB = Other\ inc)}$	0.04	3.19	0.06	0.88	**4.79**
P	0.85	0.08	0.81	0.35	**0.03**
Overall F, p			F(6, 414) = 1.85 p = 0.10		

Table 6a *Engel Curves: Couples with one child not on welfare, 1980-2000.*

	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Son, N=4371						
CB	0.040	0.354	0.498	0.240	0.479	-0.036
	(0.4)	(2.4)	(3.2)	(1.1)	(2.6)	(0.4)
Other income	0.016	0.034	0.026	0.073	0.035	0.000
	(14.9)	(23.5)	(16.9)	(35.7)	(19.9)	(0.3)
$F_{(CB = Other\ inc)}$	0.05	**4.54**	**9.22**	0.64	**5.96**	0.13
P value	0.82	**0.03**	**0.00**	0.42	**0.01**	0.72
Overall			**F(6,4322) = 3.01 p = 0.01**			
Daughter, N=4204						
CB	-0.000	-0.186	-0.295	0.084	0.529	-0.000
	(0.0)	(0.8)	(1.4)	(0.3)	(2.8)	(0.0)
Other income	0.019	0.045	0.030	0.078	0.030	-0.001
	(17.3)	(25.6)	(18.1)	(36.8)	(21.2)	(1.0)
$F_{(CB = Other\ inc)}$	0.02	1.05	2.25	0.00	**7.20**	0.00
P value	0.89	0.31	0.13	0.98	**0.01**	1.00
Overall			F(6,4155) = 1.80 p = 0.10			

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; and a quadratic in age of household head. See Appendix Table A6a for corresponding results for the sample that includes welfare recipients.

Table 6b *Engel Curves: Lone parents with one child not on welfare, 1980-2000.*

	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Son, N=413						
CB	0.345	1.019	0.026	-0.158	0.240	-0.022
	(1.6)	(3.0)	(0.2)	(0.5)	(1.6)	(0.2)
Other income	0.021	0.062	0.007	0.060	0.016	0.001
	(5.1)	(9.4)	(2.1)	(10.6)	(5.6)	(0.7)
$F_{(CB = Other\ inc)}$	2.26	**7.77**	0.02	0.56	2.27	0.04
P value	0.13	**0.01**	0.90	0.46	0.13	0.84
Overall			F(6, 363) = 2.11 p = 0.05			
Daughter, N=331						
CB	-0.079	0.292	-0.021	0.079	0.074	-0.019
	(0.2)	(0.7)	(0.2)	(0.2)	(0.4)	(0.1)
Other income	0.038	0.067	0.009	0.078	0.025	0.001
	(4.4)	(6.5)	(3.6)	(9.7)	(5.7)	(0.4)
$F_{(CB = Other\ inc)}$	0.11	0.28	0.09	0.00	0.08	0.02
P value	0.74	0.59	0.77	1.00	0.78	0.89
Overall			F(6, 281) = 0.10 p = 1.00			

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; and a quadratic in age of household head. See Appendix Table A6 for corresponding results for the sample that includes welfare recipients.

Infrequency of purchase is clearly an issue in short survey datasets. This gives rise to a measurement error problem that would lead to biased estimates. Keen (1986) shows that this can resolved by instrumenting total expenditure and here we using total household income[25]. The results are reported in Table 7 and, while there are some changes in magnitude, there is no change in the pattern or significance of results. Similar results can be found in the Appendix. In Table 8 we re-estimate using Tobit to allow for the zeroes in the expenditures. There is no change for couples but for lone parents the result for women's clothing becomes insignificant and alcohol becomes significant. Similar results can be found in the Appendix.

A further issue is that CB and other income may have different periodicities. Table 9 shows the pattern in the post 1986 data from when there is a period code in the data. CB was delivered weekly up to 1984 but monthly payments were phased in thereafter and only lone parents on benefit were entitled to continue to receive weekly CB by default[26]. Mental accounting (see Thaler (1990)) might suggest that weekly income sources be allocated to regular items of expenditure such as food. However Table 10, for households with one child, shows no rejection of pooling. Comparing all of the panels in Table 10 with the top half of Table 3 we see that the Alcohol results, which were responsible for the pooling rejection in Table 3, are similar in magnitude but not quite as precise and we are therefore not able to reject pooling. It is only the monthly-weekly panel where we are able to reject pooling - on the basis of child clothing. However, the Appendix shows results for two-child households where we find that the pooling restriction is rejected because of the alcohol equation.

Despite the weight of evidence here that suggests that variations in CB are reflected in alcohol spending and not spending on child-assignable goods it would be inappropriate to conclude that the lack of equivalence between CB and other income implies that parents put less weight on the welfare of their children than on their own so that, at the margin, they favour expenditure on adult goods. Rather an alternative

[25] Another issue is the potential under-reporting of alcohol expenditure. Under-reporting of spending on any good induces non-classical measurement error in total expenditure and, because of adding up it seems likely that bias will affect all equations. However, there do not appear to be any analytical results of the effects of this sort of measurement issue in the literature so we simulated some data with varying degrees of under-recording and our consequent estimates (not shown here but available from the authors upon request) suggest that the basic findings still hold, even with substantial degrees of under-reporting (for example, with up to half of households underreporting true alcohol expenditure by 50% on average).

[26] Other groups could claim hardship and continue to receive CB weekly.

Table 7 *IV Estimates of Engel Curves: Parents with one child not on welfare, 1980-2000.*

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=8560						
CB	-0.004	0.113	0.196	0.059	0.474	0.001
	(0.0)	(0.8)	(1.5)	(0.3)	(3.5)	(0.0)
Other income	0.006	0.015	0.007	0.035	0.015	-0.003
	(10.6)	(15.9)	(8.3)	(28.5)	(16.1)	(6.2)
$F_{(CB = Other\ inc)}$	0.01	0.53	2.06	0.02	**11.76**	0.00
P	0.91	0.47	0.15	0.89	**0.00**	0.95
Overall F, p			**F(6,8511) = 2.34 p = 0.03**			
Lone Parents, N=738						
CB	0.138	0.670	0.043	-0.014	0.223	-0.014
	(0.7)	(2.4)	(0.4)	(0.1)	(2.0)	(0.2)
Other income	0.007	0.024	0.003	0.028	0.008	-0.000
	(2.2)	(5.6)	(1.7)	(7.6)	(4.7)	(0.4)
$F_{(CB = Other\ inc)}$	0.47	**5.51**	0.16	0.03	3.70	0.02
P	0.49	**0.02**	0.69	0.86	0.05	0.88
Overall F, p			F(6,688) = 1.54 p = 0.16			

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample. Households with negative other incomes are excluded. See Appendix Table A7for results for two child households.

Table 8 *Tobit Estimates of Engel Curves: Parents with one child not on welfare, 1980-2000.*

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=8575						
CB	-0.060	0.164	0.057	0.177	0.554	0.011
	(0.4)	(0.8)	(0.2)	(1.1)	(3.7)	(0.1)
Other income	0.024	0.054	0.057	0.075	0.038	-0.004
	(21.3)	(32.2)	(22.3)	(51.4)	(29.1)	(2.5)
$F_{(CB = Other\ inc)}$	0.38	0.31	0.00	0.38	**12.10**	0.01
P	0.54	0.57	1.00	0.54	**0.00**	0.92
Lone Parents, N=744						
CB	0.098	0.683	0.523	-0.045	0.363	0.079
	(0.3)	(1.8)	(0.8)	(0.2)	(2.4)	(0.4)
Other income	0.039	0.086	0.028	0.065	0.025	-0.000
	(6.3)	(10.9)	(2.1)	(15.3)	(7.8)	(0.0)
$F_{(CB = Other\ inc)}$	0.04	2.34	0.55	0.30	**4.85**	0.14
P	0.84	0.13	0.46	0.59	**0.03**	0.71

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample. See Appendix Table A8 for results for two child households.

Table 9 *Periodicity of Income Sources: Numbers (%) of Couples with one child not on Welfare, 1986-2000*

CB - WAGE payment	Benefit Status: Not on welfare	*Out of work* welfare	On *In-work* welfare	Total
Monthly-Monthly	1,669 (32.13)	17 (6.32)	20 (9.05)	1,706 (30.01)
Monthly-Weekly	1,091 (21.00)	68 (25.28)	66 (29.86)	1,225 (21.55)
Weekly-Monthly	1,179 (22.69)	25 (9.29)	25 (11.31)	1,229 (21.62)
Weekly-Weekly	1,256 (24.18)	1595 (9.11)	1104 (9.77)	1,525 (26.82)
Total	5,195 (100)	269 (100)	221 (100)	5,685 (100)

Table 10 *Engel Curves and Actual Payment Periodicity: Couples with 1 Child Not on Welfare, 1986-2000.*

Explanatory Variables	Children's clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
MONTHLY CB – MONTHLY INCOME, N=1669						
CB	0.032	0.367	-0.147	1.081	0.691	0.197
	(0.1)	(0.6)	(0.2)	(1.4)	(1.4)	(0.7)
Other income	0.014	0.036	0.031	0.066	0.025	-0.000
	(8.6)	(14.0)	(10.0)	(20.3)	(11.8)	(0.4)
$F_{(CB = Other\ inc)}$	0.00	0.30	0.06	1.74	1.79	0.53
P value	0.96	0.58	0.80	0.19	0.18	0.47
Overall F, p	F(6, 1626) = 0.58 p=0.74					
MONTHLY CB – WEEKLY INCOME, N=1091						
CB	1.510	0.490	-0.214	-0.859	0.495	-0.271
	(3.1)	(0.7)	(0.4)	(1.0)	(0.8)	(0.5)
Other income	0.023	0.041	0.026	0.076	0.031	0.003
	(9.7)	(12.1)	(9.1)	(18.0)	(10.0)	(1.1)
$F_{(CB = Other\ inc)}$	**9.58**	0.45	0.18	1.26	0.57	0.31
P value	**0.00**	0.50	0.67	0.26	0.45	0.58
Overall F, p	**F(6, 1048) = 2.25 p=0.04**					
WEEKLY CB – MONTHLY INCOME, N=1179						
CB	-0.086	0.458	0.485	0.252	0.358	0.084
	(0.5)	(2.0)	(2.1)	(0.8)	(1.9)	(0.8)
Other income	0.016	0.039	0.026	0.078	0.027	0.000
	(7.8)	(12.7)	(8.2)	(19.2)	(10.8)	(0.0)
$F_{(CB = Other\ inc)}$	0.42	3.39	3.83	0.33	3.19	0.59
P value	0.52	0.07	0.05	0.57	0.07	0.44
Overall F, p	F(6, 1136) = 1.86 p=0.08					
WEEKLY CB – WEEKLY INCOME, N=1256						
CB	0.006	-0.074	0.156	0.366	0.467	-0.162
	(0.0)	(0.4)	(1.0)	(1.4)	(1.46)	(1.1)
Other income	0.023	0.032	0.031	0.087	0.064	0.004
	(10.0)	(11.5)	(11.8)	(21.0)	(11.8)	(1.6)
$F_{(CB = Other\ inc)}$	0.01	0.38	0.60	1.16	1.46	1.19
P value	0.90	0.54	0.44	0.28	0.23	0.27
Overall F, p	F(6, 1213) = 0.86 p=0.52					

Note: Other Expenditure is defined as total expenditure minus CB. Figures in parentheses are absolute t values. See Appendix Table A10 for results for two child households.

explanation might be that parents may place so much weight on the welfare of their children that they fully insure them against income variations so that, at least unanticipated, variation in incomes do not affect spending on the children. There is some qualitative evidence that suggests that parents (especially mothers) are likely to "go without" to protect spending on their children in the face of adverse shocks[27].

To investigate this issue we assumed that households form static expectations of real CB. That is, we assume that households expect real CB to fall within years according to the actual inflation rate and that between year changes are assumed to uprate real CB to be the same as in the previous uprating date. That is we assume that households assume that CB will be increased in line with inflation since the last increase. Thus, we decompose real child benefit according to the following formula:

$$CB^{a}_{ym} = \left(\frac{CB_{y-12}}{P_{y-m} / P_{y-12}} \right)$$

where CB^{a}_{ym} is the level of child benefit that would be anticipated in year *y* some *m* months after the uprating, CB_{y-12} is the nominal value of CB at the last uprating and P_{y-m}/P_{y-12} is the inflation adjustment over the last *m* months since the uprating. This captures the variation in CB arising from the inflation that has occurred since the last uprating. The difference between actual CB and anticipated CB captures the change in CB that has occurred because of the nominal uprating that last occurred – which we assume is unpredictable and call unanticipated CB, CB^{u}_{ym}. We allow for there to be a differential effect of these two components by writing our Engel curves as

$$e_i^h = \alpha_i CB^a + \gamma_i CB^u + \eta_i M^h + Z^h \beta_i + \varepsilon_i^h$$

where *M* is other incomes. The results are reported in Table 11. The top panel in Table 11 shows some benchmark results for a parsimonious version of the earlier results from Table 3a.

[27] A recent example of such work is Middleton *et al* (1997). However, the small datasets used in this work are drawn from households on (means-tested) welfare programmes and formal hypothesis tests are not conducted. Indeed, that qualitative research makes no attempt to distinguish between anticipated and unanticipated variation in income in any very formal way. Thus, the work here complements that qualitative research.

The anticipated CB effects are generally badly determined and therefore are not significantly different from the coefficients on other expenditure. However, the unanticipated effects are consistent with our earlier results and with the interpretation that parents do insure their children against shocks so that unanticipated CB is spent disproportionately on adult goods – for couples, spending on alcohol out of unanticipated CB is significantly different from spending out of other income, and for lone parents the same is true for both alcohol and women's clothing. The F and P statistics show that in the couples sample the restriction that the marginal propensity to consume out of unanticipated CB is the same as that out of other income jointly for all equations is strongly rejected. However, the same restrictions can not be rejected in the lone parent sample due to a smaller sample size and a lack of precision.

Table 11 Anticipated vs Unanticipated CB effects: Parents with one child not on welfare, 1980-2000.

Couples, N=8575	Kid's clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Anticipated CB	0.327	-0.325	-0.494	-0.736	-0.154	0.242
	(0.8)	(0.6)	(0.9)	(0.9)	(0.3)	(0.7)
Unanticipated CB	-0.017	0.131	0.224	0.092	0.499	-0.009
	(0.2)	(1.0)	(1.7)	(0.5)	(3.7)	(0.1)
Other income	0.006	0.014	0.007	0.035	0.015	-0.003
	(10.6)	(15.9)	(8.3)	(28.6)	(16.2)	(6.2)
$F_{(antCB= other\ inc)}$	0.69	0.34	0.77	0.96	0.08	0.53
P	0.41	0.56	0.38	0.33	0.77	0.47
Overall F,p			F(6,51048) = 0.57 p = 0.76			
$F_{(unantCB=other\ inc)}$	0.07	0.73	2.65	0.10	**12.81**	0.00
P	0.79	0.39	0.10	0.76	**0.00**	0.95
Overall F,p			**F(6,51048) = 2.61 p = 0.02**			
Lone Parents N=744						
Anticipated CB	-1.533	2.080	-1.410	-1.877	0.123	-0.154
	(0.9)	(0.9)	(1.6)	(1.0)	(0.1)	(0.2)
Unanticipated CB	0.148	0.661	0.052	-0.002	0.224	-0.013
	(0.8)	(2.5)	(0.5)	(0.0)	(2.1)	(0.2)
Other income	0.007	0.024	0.003	0.028	0.008	-0.000
	(2.4)	(5.7)	(31.9)	(8.0)	(4.9)	(0.4)
$F_{(antCB= other\ inc)}$	0.90	0.78	2.66	0.95	0.01	0.04
P	0.34	0.38	0.10	0.33	0.90	0.83
Overall F,p			F(6,4100) = 0.90 p = 0.49			
$F_{(unantCB=other\ inc)}$	0.58	**5.74**	0.25	0.02	**3.98**	0.02
P	0.45	**0.02**	0.62	0.89	**0.05**	0.88
Overall F,p			F(6,4100) = 1.63 p = 0.13			

Note: Other income is defined as total income minus CB. Figures in parentheses are absolute t values. See Appendix Table A11 for households with two children. The lone parents equations include a dummy variable for lone father.

6. Conclusions

Our analysis finds that CB is disproportionately spent on *adult* assignable goods: in particular, on alcohol. The results for couples suggest that more than a quarter of CB, and perhaps as much as a half, is spent on alcohol. Results for lone parents are less strong. These findings directly contradict the resultss in Kooreman (2000), which exploits variation in Dutch CB, and those of Edmonds (2002), based on data from Slovenia.

A weakness of this line of research is that it is unclear what inferences can be drawn from an equivalence (or lack of it) of CB and other income. One might be tempted to conclude that CB is treated differently because there is something different about it. For example, CB is often given to the mother so that a lack of equivalence may suggest imperfect pooling of household incomes. However, our results are also true for lone parents where there is no intra-household distributional issue, so this cannot account for all of this lack of equivalence. It is true that the effect for lone parents is less pronounced - the alcohol coefficient for CB is around half the size as the couples samples and this is consistent with the idea that there is free-riding between partners which does not occur in single parent households.

A second issue is that CB may be paid with a different frequency than other incomes and this might imply an apparent lack of equivalence because imperfect smoothing encourages mental accounting that attempts to match sources of income with forms of expenditure[28]. However, even where CB and other income are received with the same periodicity we reject for two child households because of alcohol (although not for one child households).

Finally, a simple but important innovation in this work has been to distinguish between anticipated and unanticipated variation in CB. We find that it is unanticipated CB variation which is reflected in adult assignable good expenditure suggesting that parents are successful in insuring their children. This finding suggests a high degree of altruism on the part of parents and the implication is that CB may simply finance spending on children that would have otherwise occurred.

[28] See Thaler (1990).

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Appendix

Table A2a Summary statistics: Households with 2 children

	Couples				Lone Parents			
	Not on welfare	Out of work welfare	On In-work welfare	Total	Not on welfare	Out of work welfare	On In-work welfare	Total
Child clothing	11.66 (16.80)	5.77 (9.97)	8.17 (12.85)	11.05 (16.31)	12.13 (17.55)	7.11 (11.26)	8.70 (12.40)	8.54 (13.42)
Women's clothing	9.35 (17.15)	3.25 (7.41)	5.25 (11.62	8.70 (16.50)	10.44 (21.45)	3.68 (8.62)	7.16 (11.67)	5.74 (13.67)
Men's clothing	5.96 (15.97)	3.06 (10.37)	3.50 (10.18)	5.64 (15.45)	1.31 (6.63)	0.41 (2.48)	1.51 (6.98)	0.75 (4.48)
Food	79.51 (30.66)	52.87 (20.35)	59.28 (21.81)	76.62 (30.75)	57.38 (24.28)	38.29 (16.26)	49.26 (20.53)	44.21 (20.77)
Alcohol	14.09 (17.16)	8.51 (12.00)	11.18 (14738)	13.53 (16.79)	6.02 (12.04)	2.49 (5.15)	4.30 (6.84)	3.56 (7.80)
Tobacco	6.60 (10526)	11.72 (11580)	9.65 (12.00)	7.13 (10.76)	4.61 (7.66)	6707 (7.55)	6.31 (8.33)	6.13 (7.70)
Child Benefit	21.36 (2.18)	21.40 (2.56)	21.75 (2.47)	21.37 (2.23)	25.46 (4.09)	24.49 (3.93)	26.62 (3.32)	24.94 (3987)
Other expenditure	306.84 (183.10)	161.52 (100.29)	198.58 (105.92)	291.15 (180.99)	218.97 (162.98)	100.11 (60.17)	161.63 (131.58)	136.30 (115.84)
Household Income	415.64 (361.45)	231.74 (147.76)	253.38 (124.97)	395.02 (348.04)	270.34 (297.83)	135.94 (52.89)	214.01 (66.84)	177.69 (168.05)
No. Obs	12967	1255	441	14663	570	1453	216	2239

Table A2b Summary statistics: Households with 3+ children

	Couples				Lone Parents			
	Not on welfare	Out of work welfare	On In-work welfare	Total	Not on welfare	Out of work welfare	On In-work welfare	Total
Child clothing	15.31 (28.52)	8.66 (15.19)	9.85 (14.66)	13.80 (26.07)	14.91 (22.12)	9.38 (15.57)	14.53 (23.23)	10.67 (17.60)
Women's clothing	8.28 (16.71)	3.11 (7.61)	4.67 (9.92)	7.15 (15.26)	8.70 (18.96)	3.39 (8.31)	6.61 (11.65)	4.49 (11.16)
Men's clothing	5.35 (14.67)	2.91 (8.94)	4.17 (10.70)	4.85 (13.64)	1.31 (7.57)	0.63 (3.71)	0.50 (2.31)	0.72 (4.48)
Food	89.16 (33.78)	61.73 (25.51)	73.51 (27.33)	83.41 (33.79)	68.32 (32.85)	46.49 (18.88)	61.88 (24.78)	51.20 (23.75)
Alcohol	12.76 (15.79)	7.59 (11.53)	7.80 (12.06)	11.54 (15.07)	5.22 (9.80)	2.23 (5.02)	4.44 (9.22)	2.88 (6.52)
Tobacco	7.56 (11.41)	13.48 (12.64)	11.72 (13.57)	8.86 (12.02)	4.58 (7.80)	7.83 (8.85)	8.40 (9.62)	7.35 (8.83)
Child Benefit	33.17 (5.12)	34.66 (6.26)	34.91 (5.98)	33.54 (5.43)	35.69 (5.67)	35.90 (6.13)	37.82 (4.96)	36.02 (5.99)
Other expenditure	307.37 (191.36)	159.43 (102.81)	212.79 (135.10)	275.66 (185.02)	220.95 (206.12)	104.55 (60.67)	178.33 (108.57)	129.02 (111.80)
Household Income	419.22 (278.07)	235.04 (124.77)	268.91 (99.35)	377.42 (260.15)	291.21 (244.62)	153.46 (54.72)	239.91 (75.71)	182.35 (122.76)
No. Obs	4502	1000	422	5924	165	783	81	1029

Table A3a Engel Curves: All parents with one child, 1980-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=9811						
$F_{(CB = Other\ exp)}$	0.04	0.74	0.77	1.71	7.58	0.65
P	0.99	0.53	0.51	0.16	**0.00**	0.58
Overall F, p			**F(18, 9756)=1.91 p=0.01**			
Lone Parents, N=2920						
$F_{(CB = Other\ exp)}$	0.75	3.85	0.34	0.72	3.47	0.33
P	0.52	**0.01**	0.80	0.54	**0.02**	0.80
Overall F, p			F(18,2864)=1.58 p=0.06			

Note: Other Expenditure is defined as total expenditure minus CB. Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample.

Table A3b Engel Curve: All Parents with 2 children, 1980-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=14663						
$F_{(CB = Other\ exp)}$	0.46	0.32	0.33	1.05	2.79	0.79
P	0.71	0.81	0.81	0.37	**0.04**	0.50
Overall F, p			F(18, 14608)=0.89 p=0.59			
Lone Parents, N=2239						
$F_{(CB = Other\ exp)}$	5.81	1.18	2.40	0.46	0.40	1.52
P	**0.00**	0.32	0.07	0.71	0.75	0.21
Overall F, p			**F(18,2183)=1.85 p=0.02**			

Note: Other Expenditure is defined as total expenditure minus CB. Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample.

Table A3c Engel Curve: All Parents with 3 or more children, 1980-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=5924						
$F_{(CB = Other\ exp)}$	1.33	2.75	0.54	1.50	5.19	0.93
P	0.26	**0.04**	0.65	0.21	**0.00**	0.42
Overall F, p			**F(18, 5868)=1.88 p=0.01**			
Lone Parents, N=1029						
$F_{(CB = Other\ exp)}$	0.32	0.39	1.12	4.02	5.09	1.07
P	0.81	0.76	0.34	**0.01**	**0.00**	0.36
Overall F, p			**F(18,972)=1.90 p=0.01**			

Note: Other Expenditure is defined as total expenditure minus CB. Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample.

Table A4a Engel Curves: All parents with one child, 1980-1989.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=5127						
$F_{(CB = Other\ exp)}$	0.17	1.11	1.13	1.24	4.11	2.07
P	0.92	0.34	0.33	0.29	**0.01**	0.10
Overall F, p			**F(18,5083)=1.76 p=0.02**			
Lone Parents, N=1043						
$F_{(CB = Other\ exp)}$	0.61	0.41	0.61	0.27	0.97	0.59
P	0.61	0.74	0.61	0.84	0.41	0.62
Overall F, p			F(18, 998)=0.61 p=0.90			

Note: Other Expenditure is defined as total expenditure minus CB. Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy .

Table A4b Engel Curves: All parents with one child, 1990-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples , N=4684						
$F_{(CB = Other\ exp)}$	0.01	1.68	2.15	0.76	5.09	0.78
P	1.00	0.17	0.09	0.52	**0.00**	0.50
Overall F, p			F(18,4639)=1.53 p=0.07			
Lone Parents, N=1877						
$F_{(CB = Other\ exp)}$	0.32	6.78	0.56	0.73	2.96	0.04
P	0.81	**0.00**	0.64	0.53	**0.03**	0.99
Overall F, p			**F(18,1831)=1.93 p=0.01**			

Note: See Table A4a.

Table A6a Engel Curves: All couples with one child, 1980-2000.

	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Son, N=5107						
$F_{(CB=Other\_exp)}$	0.11	1.80	2.94	2.04	3.06	1.86
P value	0.95	0.14	**0.03**	0.11	**0.03**	0.13
Overall			**F(18,4962)=1.87 p=0.01**			
Daughter, N=4794						
$F_{(CB=Other\_exp)}$	0.01	0.72	0.71	0.42	4.92	0.08
P value	1.00	0.54	0.55	0.74	**0.00**	0.97
Overall			F(18,4739)=1.25 p=0.21			

Note: See Table A4c

Table A6b Engel Curves: Lone parents with one child, 1980-2000.

	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Son, N=1550						
$F_{(CB=Other\_exp)}$	1.76	7.86	0.37	0.20	2.95	0.76
P value	0.15	**0.00**	0.78	0.90	**0.03**	0.52
Overall			**F(18,1494)=2.25 p=0.00**			
Daughter, N=1314						
$F_{(CB=Other\_exp)}$	0.14	0.10	0.21	1.04	0.92	1.97
P value	0.94	0.96	0.89	0.37	0.43	0.12
Overall			F(18,1314)=0.74 p=0.77			

Note: See Table A4a.

Table A7 IV Estimates of Engel Curves: Parents with 2 Children not on welfare, 1980-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=12959						
CB	0.120	0.117	0.053	0.434	0.349	0.010
	(1.3)	(1.3)	(0.6)	(2.8)	(3.7)	(0.2)
Other income	0.004	0.008	0.004	0.016	0.005	-0.001
	(10.2)	(17.8)	(8.8)	(22.8)	(12.3)	(4.7)
$F_{(CB = Other\ exp)}$	1.59	1.39	0.31	**7.00**	**13.49**	0.04
P	0.21	0.24	0.58	**0.01**	**0.00**	0.85
Overall F, p			**F(6,12910) = 2.90 p = 0.01**			
Lone Parents, N=563						
CB	0.504	-0.123	-0.176	-0.056	-0.212	-0.120
	(2.4)	(0.5)	(2.3)	(0.2)	(1.5)	(1.4)
Other income	0.003	0.006	0.000	0.012	0.001	-0.001
	(1.3)	(1.9)	(0.0)	(3.4)	(0.6)	(0.7)
$F_{(CB = Other\ exp)}$	**5.86**	0.26	**5.52**	0.06	2.27	1.83
P	**0.02**	0.61	**0.02**	0.80	0.13	0.18
Overall F, p			**F(6,513) = 2.59 p = 0.02**			

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample. Households with negative other incomes are excluded.

Table A8 Tobit Estimates of Engel Curves: Parents with 2 Children not on welfare, 1980-2000.

Explanatory Variables	Child clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Couples, N=12967						
CB	0.193	0.047	0.206	0.275	0.312	0.026
	(1.6)	(0.3)	(1.0)	(1.9)	(3.0)	(0.2)
Other expenditure	0.035	0.045	0.055	0.078	0.031	-0.005
	(31.8)	(37.5)	(30.0)	(59.2)	(32.5)	(4.5)
$F_{(CB = Other\ exp)}$	1.69	0.00	0.52	1.91	**7.34**	0.06
P	0.19	0.99	0.47	0.17	**0.01**	0.80
Lone Parents, N=570						
CB	0.855	-0.248	-0.528	0.163	0.005	-0.199
	(3.0)	(0.7)	(0.9)	(0.7)	(0.0)	(1.0)
Other expenditure	0.054	0.081	0.037	0.072	0.029	0.011
	(8.2)	(9.5)	(3.0)	(12.9)	(6.1)	(2.4)
$F_{(CB = Other\ exp)}$	**8.19**	0.81	0.83	0.16	0.01	1.12
P	**0.00**	0.37	0.36	0.69	0.90	0.29

Note: Figures in parentheses are absolute t values. Other explanatory variables are: a linear trend; month, region and year dummies; dummy variables for whether the child was aged 0-4, 5-10 or 11-15; a quadratic in age of household head; and a lone father dummy in the lone parent sample.

Table A10 Engel Curves and Actual Payment Periodicity: Couples with two children not on welfare, 1986-2000.

Explanatory Variables	Children's clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
MONTHLY CB – MONTHLY INCOME, N=2681						
CB	0.273	-0.133	0.226	0.134	-0.190	-0.098
	(1.1)	(0.6)	(1.0)	(0.4)	(0.9)	(0.9)
Other	0.027	0.032	0.026	0.066	0.021	-0.001
expenditure	(14.6)	(17.3)	(14.6)	(24.2)	(13.5)	(1.5)
$F_{(CB = Oth\ exp)}$	1.05	0.47	0.73	0.04	1.03	0.83
P value	0.31	0.49	0.39	0.85	0.31	0.36
Overall F, p			F(6, 2638) = 0.67 p=0.67			
MONTHLY CB – WEEKLY INCOME, N=1747						
CB	0.248	0.368	0.079	0.093	0.251	-0.122
	(1.0)	(1.5)	(0.3)	(0.2)	(0.9)	(0.6)
Other	0.032	0.035	0.029	0.071	0.030	0.000
expenditure	(14.2)	(14.8)	(13.5)	(19.3)	(11.3)	(0.1)
$F_{(CB = Oth\ exp)}$	0.81	1.76	0.05	0.00	0.61	0.39
P value	0.37	0.19	0.83	0.95	0.43	0.53
Overall F, p			F(6, 1704) = 0.55 p=0.77			
WEEKLY CB – MONTHLY INCOME, N=1485						
CB	-0.015	0.134	-0.202	-0.167	0.176	0.022
	(0.1)	(0.5)	(0.8)	(0.4)	(0.7)	(0.2)
Other	0.023	0.030	0.026	0.079	0.033	0.000
expenditure	(10.1)	(11.5)	(10.8)	(19.9)	(12.8)	(0.3)
$F_{(CB = Oth\ exp)}$	0.03	0.16	0.87	0.38	0.30	0.03
P value	0.87	0.69	0.35	0.54	0.58	0.87
Overall F, p			F(6, 1442) = 0.33 p=0.92			
WEEKLY CB – WEEKLY INCOME, N=1744						
CB	0.043	0.102	0.173	0.704	1.147	0.200
	(0.2)	(0.5)	(1.1)	(2.0)	(4.9)	(1.2)
Other	0.035	0.033	0.021	0.089	0.030	0.001
expenditure	(14.2)	(14.3)	(11.1)	(21.7)	(11.1)	(0.6)
$F_{(CB = Oth\ exp)}$	0.00	0.12	0.86	2.93	**22.55**	1.35
P value	0.97	0.73	0.35	0.09	**0.00**	0.25
Overall F, p			**F(6, 1701) = 4.15 p=0.00**			

Note: Other Expenditure is defined as total expenditure minus CB. Figures in parentheses are absolute t values.

Table A11 *Anticipated vs Unanticipated CB effects:*
Parents with two children not on welfare, 1980-2000.

Couples, N=12967	Kid's clothing	Women's clothing	Men's clothing	Food	Alcohol	Tobacco
Anticipated CB	0.609	0.142	0.441	0.283	0.221	-0.336
	(1.4)	(0.3)	(1.1)	(0.4)	(0.5)	(1.2)
Unanticipated CB	0.096	0.116	0.034	0.441	0.355	0.027
	(1.0)	(1.2)	(0.4)	(2.7)	(3.7)	(0.5)
Other income	0.004	0.008	0.004	0.016	0.005	-0.001
	(10.3)	(17.8)	(8.8)	(22.9)	(12.3)	(4.7)
$F_{(antCB= other\ inc)}$	1.94	0.09	1.10	0.13	0.24	1.50
P	0.16	0.76	0.30	0.72	0.63	0.22
Overall F,p			F(6,77442) = 0.72 p = 0.63			
$F_{(unantCB=other\ inc)}$	0.95	1.30	0.11	6.92	13.35	0.23
P	0.33	0.25	0.74	0.01	0.00	0.63
Overall F,p			**F(6,77442) = 2.83 p = 0.01**			
Lone Parents N=570						
Anticipated CB	0.609	0.142	0.441	0.283	0.221	-0.336
	(1.4)	(0.3)	(1.1)	(0.4)	(0.5)	(-1.2)
Unanticipated CB	0.096	0.116	0.034	0.441	0.355	0.027
	(1.0)	(1.2)	(0.4)	(2.7)	(3.7)	(0.5)
Other income	0.004	0.008	0.004	0.016	0.005	-0.001
	(10.3)	(17.8)	(8.8)	(22.9)	(12.3)	(-4.7)
$F_{(antCB= other\ inc)}$	0.21	0.30	0.69	1.12	0.75	0.00
P	0.65	0.58	0.41	0.29	0.39	0.97
Overall F,p			F(6,4100) = 0.48 p = 0.82			
$F_{(unantCB=other\ inc)}$	6.42	0.28	6.03	0.07	2.53	2.02
P	0.01	0.60	0.01	0.79	0.11	0.16
Overall F,p			**F(6,3060) = 2.84 p = 0.01**			