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The National Minimum Wage and In-work Poverty

Holly Sutherland

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Department of Applied Economics
University of Cambridge
Sidgwick Avenue
Cambridge CB3 9DE

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Abstract

The analysis presented in this paper considers the impact on poverty rates of the Labour government's tax and benefit policy changes in combination with the introduction of the National Minimum Wage (NMW). It examines the contribution of the NMW to direct poverty reduction and to "making work pay". It concludes that the main contribution made by the NMW to poverty reduction at the household level is probably through its role in underpinning the operation of in-work top-up benefits.

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Editorial Note

The research reported in this paper was carried out during the latter part of 2000. Since then, the Government has announced an increase in the main rate of National Minimum Wage (NMW) to £4.10 from October 2001 (and £4.20 from October 2002). The baseline level of NMW used in this report is £3.70. While in one sense the results reported here are out of date, we believe that the insights gained from them remain valid.

Summary

The analysis presented in this paper considers the impact on poverty rates of the Labour government's tax and benefit policy changes in combination with the introduction of the National Minimum Wage (NMW). It examines the contribution of the NMW to direct poverty reduction and to "making work pay".

POLIMOD, a tax benefit model based on Family Expenditure survey (FES) household micro-data is used to calculate the impact of the policy changes on poverty and on potential household incomes in work compared with incomes out of work. "Poverty" is measured in relation to *household* incomes, whereas the NMW affects *individual* earnings. Benefits which "top up" low earnings are assessed on the basis of *family* circumstance.

Poverty reduction

The combination of tax-benefit changes and the NMW is calculated to reduce the overall poverty rate from 18.6% to 14.4%. For families with one person in paid work, the poverty rate is lower, but falls no less significantly: from 13.3% to 9.6%. [Table 1]

The contribution of the NMW

The NMW is not particularly well-targeted on poor households: it benefits a similar proportion of working age families in poor households (5%) as families who are not poor (4%). [Table 4] It makes a small contribution to the overall package of policy in reducing poverty rates: the number of people who are poor falls by 23.0% with 1.2 percentage points of this attributable to the NMW. [Table 3]

The NMW has an effect across the whole distribution of income families with paid work. [Figure 1] However, for those with incomes within 50% of the poverty line, 15% are beneficiaries. At the same time, about half of these families receive neither NMW nor in-work benefits. [Figure 2]

Poverty rates are not very sensitive to the level of the NMW, although it has most effect among single people (where the difference between a zero and £5 NMW corresponds to a difference in poverty rates of 16.2% and 15.6%) and among couples with children (where the range of poverty rates is 14.1% to 13.1%). [Table 6]

Total spending on in-work benefits is somewhat more sensitive than the poverty rate. Expenditure would be 2.7% higher if there were no NMW and 5.5% lower if the NMW were set at £5 per hour. The scale of spending is particularly sensitive for groups not eligible for the Working Families Tax Credit (WFTC): single people and couples without children. For example, benefit spending on single people without children would rise by 4.4% if there were no NMW and would fall by 11.5% if it were set at £5 per hour. [Table 8]

The impact of work entry on poverty

"Making work pay" is a key component to the Government's strategy for reducing poverty. Our data suggest that 4 million people are potentially available to enter paid employment, should they wish to. Entry into NMW jobs on this scale for 16 hours per week would reduce

the poverty rate in families with working age adults from 13.5% to 11.5%. Work for 30 and 38 hours would result in respective poverty rates of 7.8% and 6.9%. Some 7% of all people in working age families are in poverty and are not able to use work entry as a route out. [Table 9] Even for those who enter work, this may not guarantee escape from poverty: 3% remain poor while working 45 hours per week. [Table 10]

Making work pay?

The mean weekly increase in family income following work entry on 16 hours is £36.31; at 30 hours it is £70.08 and at 38 hours it is £85.70. Differentiating by family type, average net gains are smaller for single person families (£23.93 at 16 hours) and larger for couples where both enter work. The mean replacement rate (out-of-work income as a proportion of in-work income) falls as weekly earnings rise: from 77 (16 hours) to 66 (30 hours) to 62 (38 hours). [Table 12]

On 16 hours, 32% of families find their out-of-work incomes would replace 90% or more of their potential in-work incomes. A further 33% have replacement rates between 80% and 90%. As hours of work increase, the proportion of families with high replacement rates falls. Working 38 hours on the NMW leaves only 7% of families with replacement rates over 90% and 20% with rates of between 80% and 90%. [Table 12]

Two groups are of special interest in terms of their incentives to take up low paid work. The first is the partners of people already in receipt of the WFTC. For this group, replacement rates are high - more than 80% - for nearly all second earners for work entry on 16 hours. The proportion with very high rates falls substantially as weekly earnings rise, but still leaves the majority with rates of 70% or more on 38 hours. [Table 13]

A second earner on 16 hours is not sufficient to ensure that incomes are above the poverty line. Ten percent of these two-earner families are poor. [Table 13]

The second group of interest from the point of view of making work pay, is the partners of the unemployed. A sizeable proportion of families would be worse off if the partner of the unemployed person entered work for only 16 hours: 58% of couples without children and 25% of couples with children. At the same time, there are some whose incomes rise by the full value of the new earnings or, in the case of couples who qualify for WFTC, by more than that. Overall, the impact on poverty in this group is relatively small. Before work entry about two thirds of the group are poor. After, the proportion falls to 60% with 16 hours work, 32% with 30 hours work and 25% with 38 hours work. Some couples *enter* poverty while others leave it. [Table 14]

Conclusion

Probably the main contribution made by the NMW to poverty reduction is through its role in underpinning the operation of in-work top-up benefits. The effect of these benefits is not all positive: they disadvantage potential second earners in couples and can trap the workers that they cover in subsidised low-waged jobs.

1 Introduction

The National Minimum Wage (NMW) is seen by Government as one of the key components in its package of reforms intended to provide “a decent income” for families (HM Treasury, 2000a, p8). The impact of the NMW in combination with reforms to direct tax and social security are predicted to reduce child poverty by 1.2 million (HM Treasury, 2000b; Box 5.1). An independent analysis by Sutherland and Piachaud (2001) confirms this figure and also provides a detailed breakdown of the distributional and incentive effects of the changes. The analysis presented in this paper builds on the Piachaud and Sutherland work,² extending it to consider the impact of policy on poverty rates for all persons instead of children alone, and to examine the contribution of the NMW to direct poverty reduction and to “making work pay”. The analysis makes use of POLIMOD, a tax benefit model based on Family Expenditure Survey (FES) household micro-data. Section 2 summarises the methods, data and assumptions that are used and discusses a key issue: the relationships between *individual* hourly earnings, social security benefits or tax credits based on weekly *family* income and poverty measures using *household* disposable income.

The NMW has the potential to have an impact on poverty rates in three distinct ways. The first is direct: by increasing the earned income of those on the lowest wages, household income may rise above the poverty line. Previous work has shown that the scale of this direct effect is relatively small because on the one hand, poverty is concentrated in workless households and on the other, the NMW mainly affects employees in households with other sources of income (See Gosling, 1996; Sutherland, 1995). Section 3 examines the size of the direct effect of the introduction of the NMW in the specific context of Labour’s other changes in tax and social security policies. Section 4 goes further by taking the now existing policies as the baseline and examining the sensitivity of poverty rates to changes in the level of the NMW.

The second way that the NMW can have an impact on poverty is by making paid work more attractive and increasing the size of the financial gain from employment relative to out-of-work incomes. This reduction in the unemployment trap is hoped to encourage people into work and thereby reduce the number of poor households without paid work. But two questions are key. First, how many extra people will enter employment, given changes in incentives, and second, will their in-work incomes be sufficient to lift them above the poverty line? The first question is one we do not attempt to answer in full since it depends on what happens in both sides of the labour market. Instead, we examine the *potential* effect on household incomes of entry into paid work on the NMW by all types of unemployed and unoccupied adults. Section 5 explores how many of the households affected are brought out of poverty following employment at various levels of weekly hours, on the NMW. The issue of how many people will actually be affected in this way is at least partly determined by the size of the unemployment trap and incomes in work relative to incomes out of work. Section 6 presents these calculations for a range of situations, including for the partners of the unemployed and for the partners of recipients of Working Families Tax Credit (WFTC).

² See also Piachaud and Sutherland (2000) for a detailed description of the method.

The third way in which the NMW can reduce poverty is also indirect and is not easily quantifiable. It arises because of the *framework* that the NMW provides for the operation of in-work benefits such as WFTC. Extensive and generous in-work benefits would not be possible to introduce without a legal floor to wages. Otherwise wages could fall (in principle, to zero) without damaging the income levels of "protected" (in the sense of subsidised) groups. The role of the NMW in under-pinning the reforms to make work pay has been acknowledged by the Government (Department of Social Security, 1999; chapter 4). Thus where the introduction of the WFTC is seen to lift families above the poverty line, part of the "credit" for this should be due to the NMW in its under-pinning the in-work benefit structure and scale of benefit payment.³ If the level of the NMW were lower, the cost of in-work benefits would be higher, and vice versa. When we consider the impact on poverty rates of increasing the NMW in section 4, we find that any positive effect on household income of increasing gross earnings is partly offset by reduced entitlements to WFTC and other in-work benefits. The concluding comments in section 7 return to this point and attempt to put the modelling that precedes them into a wider context.

2 Data and methods

The starting point of our analysis is the statistics on Households Below Average Income (HBAI) produced by the government (Department of Social Security, 2000a). We would like to be able to answer questions about how many people would be counted as poor in these statistics if various changes in policy were introduced. The household income variable used here to define poverty has been deliberately defined to be as similar as possible to that used in the HBAI statistics, using the 'before housing costs' (BHC) measure. There are some minor departures from HBAI methodology due to the fact that we must simulate taxes and benefits (and earnings, where these are affected by the NMW) in order to evaluate changes in the rules that govern them.⁴

As in the HBAI statistics the poverty line is defined as 50% of mean equivalised household income.⁵ Here, we use 60% of the median, as recommended by Eurostat and in common with Treasury estimates.⁶ In the case of the BHC income measure used here, 60% of the median is only very slightly lower than 50% of the mean (98% of the value). For simplicity throughout this paper we do not re-calculate the poverty line following the impact of policy on incomes, but assume that it stays fixed at the level given by 1997 policy updated to 2000/1 levels of prices and incomes.⁷

³ Throughout WFTC is referred to as a benefit rather than a tax credit, since it replaces (the misleadingly-named) family credit, which was delivered as a cash benefit. From the point of view of family cash incomes, how it is accounted for in terms of public finance is immaterial.

⁴ Here, micro-data are updated to 2000/1 levels of prices and incomes in order to evaluate contemporary policy changes (HBAI statistics for a given year use data collected in that year). In addition, there are some differences which arise because some components of income (taxes and benefits) are simulated rather than using values recorded in the survey data. The main effect of simulating the tax and benefit components of income appears to be to narrow the income distribution to some extent. There are also a few conceptual differences which are introduced in order to capture all the changes in policy on which we focus – notably the change in mortgage tax relief which is not included in HBAI BHC income.

⁵ Using the McClements equivalence scale.

⁶ Treasury estimates use an AHC measure of income (HM Treasury, 2000; Box 5.1).

⁷ The effects of a shifting line are described in Sutherland and Piachaud (2001).

Our analysis is based on Family Expenditure Survey (FES) data for 1994/5 and 1995/6 updated to 2000/1 prices and incomes. To model the immediate affect on incomes POLIMOD calculates liabilities (or entitlements) to income tax, National Insurance contributions (NICs), child benefit, Family Credit (FC) or Working Families Tax Credit (WFTC), Income Support (IS) - including income-related Job Seekers Allowance and pensioners' Minimum Income Guarantee, Housing Benefit (HB) and Council Tax Benefit (CTB). Otherwise, elements of income are drawn from the recorded values in the FES dataset.

We attempt to capture the effects of non- take up of means-tested benefits (FC/WFTC, IS, HB and CTB) by applying the take-up proportions estimated by the Department of Social Security (Department of Social Security, 2000b). For example we assume that some 19% of lone parent families and 42% of two parent families do not receive the FC (or WFTC) to which they are entitled, and 25% of working age families do not receive the IS to which they are entitled. In general we assume that take-up behaviour is not affected by changes in the size of benefit entitlements. (A different assumption is used in the calculation of the effects of work entry in sections 5 and 6.)

We also model the effect of the introduction of the NMW assuming that all with hourly earnings below the relevant minimum are brought up to it, and that working hours do not change. Resulting changes in earnings then affect tax, contributions and benefits.⁸

The introduction of the NMW has its direct impact on *individual* earnings. Income tax and National Insurance contributions (NICs) are deducted from earnings on an individual basis. Most means-tested benefits, which take account of net earnings (and changes in them) in their income assessment are *family*-based benefits, depending on the incomes of both partners in a couple as well as the circumstances of the whole family.⁹ In addition, as described above, poverty is assessed in terms of *household* income (although the poverty line is set in relation to the mean of household incomes calculated over individuals, and poverty rates are calculated in terms of the number of *individuals* in households with income below the poverty threshold). A household may contain more than one family unit and a family unit may contain more than person with earnings. Changes in earnings of one person in a family will affect the family's benefit entitlement and may also affect the income of other families in the household via the housing benefit system; individuals or families with very low incomes may live in rich households. These different levels of analysis complicate the analysis of the effect of minimum wages on household incomes. However, understanding their relationships and linkages lie at the heart of this paper.

As with any analysis based on survey data, the results presented are subject to sampling error. (See Pudney and Sutherland, 1994.) In this case survey data from the mid-1990s are updated using necessarily approximate methods to levels of incomes and prices in 2000/1. Take-up of means-tested benefits is also modelled approximately. More generally, as stated in a recent

⁸ For more information about POLIMOD, see Redmond et al. (1998)

⁹ Here and throughout the term "family" means units of single people or couples together with their dependent children. The term "benefit unit" is sometimes used.

Government report “Models do not give answers, they give insights”. (PIU, 2000; page 62). The modelled scenarios should be treated as illustrations, not forecasts.

3 The effect of the Labour government’s policies on poverty

In this section, before examining the impact of the NMW specifically, we establish the change in poverty due to the combined package of reforms introduced by the Labour Government since April 1997, including the NMW. We start with tax and benefit policy rules as they existed in April 1997 and uprate their values to 2000/1 using the Retail Prices Index (RPI). This is the *counterfactual* – the policy we assume would have prevailed had Labour not come to power.¹⁰ The policy changes that are modelled are listed in detail in the appendix. They include all those that were announced between April 1997 and April 2000, whether or not they were operational in the year 2000/1. New policy is set in terms of 2000/1 prices. As well as the introduction of the minimum wage the changes that we explore include those specifically targeted on children, such as the replacement of family credit by the more generous Working Families Tax Credit (WFTC), increases in the real value of child payments in Income Support and other means-tested benefits, increases in child benefit, and the replacement of the married couples allowance (and additional personal allowance) by the Children’s Tax Credit. We also model some general changes to income tax (including rate reductions, the abolition of relief on mortgage interest and allowances for couples and lone parents) and National Insurance contributions (alignment of earnings thresholds with income tax thresholds), adjustments to benefit rates (apart from price indexation), the introduction of an annual fuel allowance for pensioners, and the increase in capital thresholds for pensioners on Income Support.¹¹

Table 1 shows that the child poverty rate would fall from 24.8% to 15.7% as a result of these changes, on the assumption that there are no other changes influencing child poverty.¹² This is a dramatic reduction - equivalent to 1.2 million children moving across the poverty line and a reduction in child poverty of more than a third. Table 1 also shows the reduction in poverty rate for all persons: by slightly less than one quarter from 18.6% to 14.4%. Poverty rates both before and after the reforms are highly dependent on the number of paid workers in the

¹⁰ Uprating is applied to all monetary values, not just elements of the tax-benefit system that are subject to statutory uprating or are traditionally uprated every year. We use the Rossi index (RPI less housing costs) for means-tested benefits.

¹¹ There are two important aspects of policy relating to children that we do not include in our analysis: the childcare tax credit associated with the Working Families Tax Credit, and changes to Child Support. In both these cases we believe that uncertainty about behavioural responses, combined with lack of suitable data, would make model estimates misleading or unreliable.

¹² These and other results are slightly different to corresponding figures in Sutherland and Piachaud (2001). One reason is that this analysis uses a different level of NMW (£3.70) than in the previous work (£3.60). More generally, this analysis (i) updates by an additional year to 2000/1 instead of 1999/2000; (ii) uses 60% of the median as the poverty line instead of 50% mean and (iii) makes use of revised DSS estimates of benefit take-up, published at the end of 2000. We find that the changed definition of poverty line makes some difference to the proportion of the population counted as poor under 1997 policy (18.6% instead of 19.7%), but that the percentage point reduction in the rate following the policy changes is the same (4.3). While the revised take-up assumptions also make little difference to the overall reduction in poverty rate (4.2 percentage points using the old estimates and 60% of the median) the composition of those counted as poor and those who cross the poverty line is sensitive to the revision. This is because the latest estimated take-up rate for FC/WFTC is higher for lone parents and lower for couples than previously thought. The poverty rate using the new figures is correspondingly lower for lone parent families and higher for couples with children.

family. People in families without paid work - including pensioner families - are twice as likely to be poor as people in general. Those in families with one paid worker are less likely to be poor than the population in general: their poverty rate is 13.3% under pre-Labour policy. People in families with two paid workers had a poverty rate of only 2.1%. The impact of the reforms has the largest absolute effect on poverty rates in workless families but in proportional terms the reduction is larger in families with work: poverty among families with one paid worker falls by 28% whereas it falls by just 21% in workless families. Poverty falls by 40% in two-worker families, but this large proportional reduction amounts to only 150 thousand people, compared with a reduction of 1,590 thousand in workless families.

The NMW can only be expected to have a direct effect on families with someone in work, and an indirect effect on families with adults of working age. Table 2 focuses on the latter group and breaks down the changes in poverty by family type within this group. Interestingly, poverty rates among people in working age families are only slightly lower than those in the whole population, both before and after Labour's reforms. Poverty rates are highest for lone parent families and lowest for couples without children. The impact of the reforms is much greater both in absolute terms and proportionally on families with children. This is not surprising, given the specific targets set by the Government for child poverty reduction. The reforms reduce poverty among single childless people from 16.7% to 16.0% (a reduction of 4%) and among couples without children from 9.8% to 9.3% (a reduction of 5%). The reductions are nearly 50% and nearly 30% for people in one- and two- parent families with children respectively.

Reductions in poverty *rates* do not tell the full story, particularly since they can be due to movements from just below the poverty line to just above it. Tables 1 and 2 also show the reduction in poverty gaps (or poverty *intensity*) due to the reforms.¹³ In some cases the proportional reduction in poverty gap is less than the reduction in poverty rate (lone parent and one-earner couple families) and in others the reverse is the case (couples with children and two-earner couples). In general one can conclude that the reforms have done more than shift families from just below to just above the poverty line.

How much of the poverty reduction can be attributed to the introduction of the NMW? Table 3 shows the poverty rate and poverty gap calculations with and without the inclusion of the introduction of the minimum wage in the reform simulations. It is clear that the NMW has a rather small additional effect: the number of people who are poor is reduced by 21.8% with the tax-benefit changes alone and just an additional 1.2% if the NMW is added. The group most likely to be poor before the reforms and to benefit directly from the NMW are families with one paid worker. In this case, the numbers in poverty are reduced by an additional 2.7% if the NMW is included in the reform package. The contribution of the NMW is higher for two-earner families - the numbers removed from poverty are increased by 12.1%. However, this represents relatively few people (about 40 thousand) compared with the additional numbers brought out of poverty in one-earner families (about 70 thousand). The contribution of the NMW to the reduction in the poverty gap shows a similar pattern but a somewhat larger effect. (The table also shows that there is a small contribution to poverty reduction in families

¹³ The poverty gap is defined here as the sum of the shortfall between equivalised household income and the poverty line, for each person counted as poor.

with no adult in paid work. This is because a few of these families live in households with other people in paid work and affected by the NMW.)

Table 4 confirms the picture of a rather small direct impact, and shows the incidence of the NMW by family type and according to whether or not the family would be a poor household without the NMW (under Labour tax-benefit policy). Just over four percent of all working age families are affected, with poor families somewhat more likely to contain an employee with wages below minimum wage rates. Couple families are more likely to be affected than singles (not least because there are two people who *could* be affected) and poor couples are more likely to benefit than couples in general. The table also shows the composition of those affected: only 16% are from poor families. Of lone parent families affected by the NMW, 23% were poor. The corresponding figure for single childless people is 10% and for lone parent families is 20%. The table also shows that the largest group affected among the poor is couples with children (45% of all poor families affected) and that the smallest is lone parent families (8% of the total).

It is interesting to consider why 84% of families affected by the NMW are not poor. Two thirds of them are in households with significant other sources of income such that household income is more than 50% above the poverty line. Of the remainder, more than half are in households with at least two people in work. An additional 13% of families are covered by WFTC (26% of families with children) and 19% of this group are covered by other in-work benefits.¹⁴ Figure 1 shows the incidence of the NMW and in-work benefits across the whole distribution of income of families with at least one person in paid employment (using the same equivalised household income variable to rank families as in the rest of the analysis). The two darker shades of grey show the location in the distribution of families who benefit from the NMW: in total 6.6% of all families with employees. The darkest area shows families who are also in receipt of in-work benefits (1.3% of families with employees) and the pale grey area shows those on benefits but not the NMW (7.6%).¹⁵ Figure 2 focuses on the bottom half of this distribution and also shows the point in the income distribution that corresponds to the poverty line used in this analysis, and to multiples of this level of income. Of this group, only 3.6% are poor and a further 14.3% have incomes above the poverty line but no more than 50% higher. We can see that for all families within 50% of the poverty line, 15% benefit from the NMW, 39% on average receive in-work benefits (the proportion is higher nearer to the poverty line). About half of these low income families do not receive either in-work benefits or the NMW.

After introduction of the NMW, the proportion affected that remain poor falls to 12.2%. The reduction from 16.1% shows that while the NMW is not generally well-targeted on the poor, of the poor who do benefit 24% are brought across the poverty line. In seeking an explanation for why 12.2% remain poor in spite of receiving the NMW, we find that the majority (73%) is in receipt of in-work benefits. On the one hand this means that benefit withdrawal reduces the impact of increased earnings. On the other hand benefit receipt is not sufficient to *guarantee* an income above the poverty line. This is particularly the case for families who do not receive

¹⁴ A few families are brought clear of the poverty line because the person on the NMW works very long hours.

¹⁵ The distributions have been smoothed.

WFTC either because they have no children, because they work too few hours to qualify, or because they do not claim the benefit.

4 The sensitivity of poverty rates to the level of minimum wage

We have seen that a NMW at the level of £3.70 per hour makes a rather small contribution to the overall poverty reduction achieved by the package of reforms. In this section we consider how sensitive the extent of poverty reduction is to the level of the minimum wage. Our starting point is the 2000/1 tax-benefit system, in 2000/1 prices. Table 5 shows the poverty rate for children, all persons, and all persons broken down by the number of paid workers in the family, for 6 levels of NMW varying between zero and £5 per hour. It shows that the level of the NMW has a very small impact on the poverty rate: a £5 NMW would reduce the all-person rate by about 0.7 percentage points, compared with the situation of no minimum wage. The rate for people in families with one paid worker would fall by 1.1 percentage points (from 10.0% to 8.9%). The difference between poverty rates at levels of NMW that are relatively similar (for example, £3.70 and £4.00 per hour) are so small as to be statistically insignificant. Table 6 shows the same information but restricted to families with a working age adult, broken down by family type. The poverty rate remains relatively insensitive to the level of NMW, although it seems that it has the most effect among single people (where the difference between a zero and £5 NMW corresponds to a difference in poverty rates of 16.2% and 15.6%) and among couples with children (where the range of poverty rates is 14.1% to 13.1%).

Table 7 provides similar information for the poverty gap. An index is constructed so that the poverty gap with the NMW set at £3.70 is the standard (=100). It shows that the poverty gap is 2.6% higher with no minimum wage and 2.7% lower with a £5 NMW. The poverty gap is most sensitive to the level of the NMW for couples, both with and without children.

One of the reasons why the rate and intensity of poverty are relatively insensitive to the level of the NMW is that many low paid workers who are in poor households, are in families who are in receipt of means-tested benefits. Entitlements to these fall if incomes rise, and rise if incomes fall. Thus, other things being equal, we would expect aggregate spending on these benefits to be higher if the NMW is low, and lower if the NMW is increased. Table 8 shows the sensitivity of spending on means-tested benefits/credits to families in work to the level of the NMW. These benefits/credits include WFTC, Housing Benefit and Council Tax Benefit. and an index is constructed with the level of spending when the NMW is £3.70 per hour as the baseline (=100). We see that spending is somewhat more sensitive than the poverty measures. It would be 2.7% higher if there were no NMW and 5.5% lower if the NMW were set at £5 per hour. The scale of spending is particularly sensitive for groups not eligible for the WFTC: single people and couples without children. For example, in-work benefit spending on single people without children would rise by 4.4% if there were no NMW and would fall by 11.5% if it were set at £5 per hour. On the other hand, spending on lone parent families would range from only +1.9% to -4.1%. However, most in-work benefit spending is targeted on families with children (87% of the total with an NMW of £3.70) and levels of NMW considered here are not generally sufficient to result in large reductions in benefit entitlements or to remove families from benefit dependency altogether.

5 Work entry on the NMW: the impact on household incomes and poverty rates

“Making work pay” is a key component to the Government’s strategy for reducing poverty. Here we consider the impact of work entry at minimum wage rates on the chances of remaining poor. To illustrate the potential effect of low paid work we have simulated a scenario in which *everyone* not already in paid work, on invalidity, disability or maternity benefits, over pension age or under 16 or in full-time education enters employment at the minimum wage. We assume that work entry does not occur if this would leave a child aged under 5 without a parent at home. Subject to this assumption, we do not restrict the number of work entrants per family or per household. Work entry on this scale would involve 4 million new jobs and would affect 17% of all working-age families. Table 9 shows that of those with work-entry, 36% are single person families, 9% are lone-parent families and the remainder - in roughly equal proportions - are couples with and without children. The table shows the impact of work entry on poverty under pre-Labour policies and under current policies. In each case we assume that minimum wage rates apply to the work entrants. (Even though there was no reason for them to do so pre-Labour, for simplicity we assume that this was the case.) We also assume 100% take-up of WFTC for work entrants. We explore the effect of work entry at 16 hours (the minimum to qualify for WFTC), 30 hours (qualifying for the WFTC premium) and 38 hours (“full time”). A longer working week (45 hours) is also examined for current tax-benefit policy. First of all, it is clear that our representation of “Work for those who can” (Department of Social Security, 1999) is not particularly well-targeted on people in poor households. Only about 45% of working age families in poor households contain someone who enters work under the conditions we set. This suggests that 55% of poor working-age families do not contain someone available for work. (This figure would be somewhat lower - 50% - if we assumed that young children did not need a parent at home.) About 43% of work entry happens in poor households.

For those poor households where work entry is possible, it has the potential to lift the household out of poverty. The effect is particularly strong in both policy scenarios for families with children. Under 1997 policy, family credit boosts in-work incomes so that on entering work for the minimum hours to qualify (16), poverty rates fall from 35.6% to 26.2% (a reduction of 26%) for people in lone parent families and from 19.4% to 18.3% (a reduction of 6%) for people in two-parent families. The effect is stronger under Labour policy because WFTC is more generous than family credit, its predecessor. A larger proportion of people are brought out of poverty on work entry: 40% and 11% for one- and two- parent families respectively. The effect on families without children is somewhat smaller and there is little difference between the effect under the 1997 policy scenario and the current one. This is because the in-work benefits available to working-age families without children are more restricted and have not been increased significantly in the recent reforms. Most of the effect comes directly from the new earnings themselves.

This picture is confirmed if we focus on families where work entry occurs (Table 10). This shows that poverty rates are very high for this group prior to work entry and that as work hours increase, the impact on poverty reduction also becomes larger for all family types. This is not surprising since weekly earnings are increasing. However, the effect is not proportional

in any of the groups: it falls off as hours increase. For lone parents families most of the potential poverty reduction occurs with work entry on minimum hours (the rate falls from 41% to 10%). For couples with children most of the reduction occurs with work for 30 hours (the rate falls from 31% to 10%). Little additional potential remains after 30 hours as households rise above the poverty line with this much minimum-waged work. However, a few – 3.0% of the families with work entry – remain poor even with work for 45 hours per week. These are mainly couples without children or couples with large numbers of children and low Housing Benefit entitlement (either because they are owner occupiers or tenants with low rent). They may also be families sharing their household with other low income family units: the increase in income is not sufficient to lift a large number of people out of poverty.

Clearly work entry with subsidy from the benefit/credit system can be an effective way of escaping poverty for those families “who can”.¹⁶ The increased generosity of WFTC has made this particularly clear, although working for 30 hours or longer may be necessary for larger households, with greater needs, to rise above the poverty line. For groups without explicit subsidy (but with access - for some - to in-work benefits to cover housing costs and council tax) work on the NMW is clearly also a route out of poverty, although the effect is more directly through earnings and hence hours of work may play more of a role in themselves, rather than as a passport to benefits. This is illustrated in Table 11 which shows the importance of in-work benefits to the incomes of work entrant families, depending on the number of hours worked for the NMW. The top two panels of the table focus on the role of WFTC. Not surprisingly, both the proportions receiving WFTC and the average amount received as a proportion of family income fall as hours of work increase. Couples with children with one work entrant are less likely to receive WFTC than either lone parents or couple parents where both enter work. (Couples with one entrant may already have one person earning a higher wage.) Nearly all lone parents remain on WFTC at 38 hours or work and this benefit continues to make up a significant component of their incomes at this level of hours (one third on average, compared with just under a half at 16 hours).

The bottom two panels of Table 11 show the importance of all in-work benefits together (WFTC, Housing Benefit and Council Tax Benefit). For families with children the patterns are very similar to those for WFTC alone – demonstrating the way in which the generosity of WFTC dominates benefit receipt for this group. For childless couples and single people, in-work benefits play a smaller role which diminishes more quickly as earnings rise. At 16 hours about one third of single people receive benefits, falling to 15% on 38 hours. The proportion of single people's incomes that is made up of benefits is 43% on average at 16 hours but falls to 14% on 38 hours.

If work entry does reduce poverty rates then clearly, on average, families are better off in work than out of work. However, the income concept that is used to assess whether a household is poor or not takes no account of the *costs* of taking paid work. These costs may be direct monetary costs - such as the cost of childcare or travel to work - or they may be indirect costs associated with the time spent away from home, such as spending less time

¹⁶ Of course, movement above the poverty line is not the end of the story. With 30 hours of work, those moved out of poverty do not all move far above the poverty line. Of previously poor people, 35% stay within 10% of the poverty line and less than a quarter achieve incomes that are more than 30% above the line.

bringing up children or on resource-saving domestic pursuits (such as growing vegetables or mending clothing). More generally, the increase in income necessary to bring a poor family across the poverty line may not be large enough to make work entry - and all the adjustments associated with it - attractive enough. How much work on the NMW really does pay - in terms of cash - is the subject of the next section.

6 The impact of the NMW on the unemployment trap

Unemployed (and unoccupied) people seeking work are described as being in the “unemployment trap” when the disposable income they could earn in available paid work is less than, or not much more than, their income out of work. “Making work pay” is all about reducing the size of the unemployment trap, or reducing the replacement rate of out-of-work income to in-work income. Because both the numerator and the denominator of the replacement rate are so dependent on social security benefits assessed at the family level, it is necessary to consider it in terms of family incomes rather than individual incomes. We make use of the calculations reported in the previous section to compare the family incomes of work entrants before and after the entry into paid work. The replacement rate calculations therefore use the same measure of income as is used to calculate the poverty line and household incomes in relation to the line. Components of income received at the household level are allocated to family units within the household (where there is more than one family) and it is assumed that the family containing the head of household is responsible for all household housing costs and council taxes, and that the corresponding benefits are paid to that family.¹⁷ An illustration of how the replacement rate is calculated is shown in the box (shown on the next page).

We explore family income gains and replacement rates for three levels of weekly earnings, all at NMW hourly rates: £59.20 (16 hours), £111.00 (30 hours) and £140.60 (38 hours). Table 12 shows the mean increase in family income for all families with work entry and broken down by family type. For couples, results are shown according to whether one or both enter(s) paid work.¹⁸ At 16 hours the mean weekly increase in family income is £36.31; at 30 hours it is £70.08 and at 38 hours it is £85.70. Differentiating by family type, average net gains are smaller for single person families (£23.93 at 16 hours) and larger for childless couples where both enter work. The mean replacement rate falls as weekly earnings rise: from 77 (16 hours) to 66 (30 hours) to 62 (38 hours). It tends to be lower for single person families and for childless couples where both enter work, and higher for couples with children.

Of course, mean changes disguise a range of different effects. Table 12 also shows the distribution of replacement rates. On 16 hours, 32% of families find their out-of-work incomes would replace 90% or more of their potential in-work incomes. A further 33% have replacement rates between 80% and 90%. At this level of weekly earnings, it is couples with children who are most at risk of high replacement rates (even with WFTC, in-work

¹⁷ If work entry takes place it is assumed that the family receives WFTC, if entitled. Take-up probabilities for housing benefit and council tax benefit for work entrants are assumed to be the same as for the rest of the working age population.

¹⁸ Results for couples where both partners enter work are based on small sample numbers and are therefore not very reliable.

supplements only provide an income a little greater than Income Support for these families). On these low wages, single person families are the most likely group to have low replacement rates that are less than 60%. As weekly earnings rise, the proportion of families with high replacement rates falls across all family types. Working 38 hours on the NMW leaves only 7% of families with replacement rates over 90% and 20% with rates of between 80% and 90%. Most of these families are one-earner couples.

Incomes out of and in work: an illustration

Consider person A who lives in a family with persons B and C. Person D also lives in the household. Person A is not in paid work. Their family income consists of the net incomes of B and C plus any out-of-work benefits that A receives in their own right. If the family receives Income Support (or non-contributory Job Seekers Allowance (JSA)) this is included. In this case Council Tax Benefit (CTB) will be received. If the household has a mortgage, an allowance for mortgage interest may be included. Otherwise, if they pay rent, housing benefit (HB) will be received. If person B or C is in paid work for 16 hours or more and the other person (C or B) is a dependent child, the family may be entitled to WFTC. If the family is not entitled to Income Support (IS) or JSA they may receive HB (if they pay rent) and CTB. They do not then receive help with mortgage interest payments, nor do they receive “passported” benefits that accompany IS/JSA, such as free school meals. Whether the family is on IS/JSA or not, HB and CTB entitlements may be affected by the status and income of person D.

On work entry, person A loses their non-means-tested out-of-work benefits. They receive their gross earnings which may have income tax and National Insurance contributions deducted. Any IS entitlement for the family is re-calculated taking account of person A’s changed income and status. If work entry is for at least 16 hours, IS will not be payable. The family may then be entitled to WFTC (if B or C is a child). If WFTC is already payable, person A’s net earnings will be included in the income assessment and entitlement will fall. After re-calculation of WFTC the family may be entitled to HB and/or CTB.

Two groups are of special interest in terms of their incentives to take up low paid work. The first is the partners of people already in receipt of the WFTC. Additional earnings (after income tax and NICs) reduce WFTC entitlements with a taper of 55% (unless the first earner has net earnings so low as to be below the WFTC income threshold of £91.45 per week in 2000/1). As the figures on the mean increase in family income for this group of potential second earners show (Table 13) the effective tax rate on entry into work at 16 hours is 52% ($= (1 - (28.58/59.20)) \times 100\%$); at 30 hours and 38 hours it is 47%. Depending on circumstances, the tax rate can be much higher. For example, 10% of second earners have tax rates as high as 84% for entry on 16 hours and 69% for entry on 38 hours. Note these are *average* effective tax rates on all earnings, not marginal rates. The effective hourly rate of pay for the average second earner on 16 hours is £1.79 ($=£28.58/16$). For the worst off 10% it is £0.58. This compares with an average effective tax rate for the first earner in a couple with no children on 16 hours (see Table 12) of 18% and a corresponding effective hourly rate of £3.04.

Replacement rates are high - more than 80% - for nearly all second earners in this group for work entry on 16 hours. The proportion with very high rates falls substantially as weekly earnings rise, but this still leaves the majority with rates of 70% or more on 38 hours. Even with the second earner working full-time hours, 37% of these families remain entitled to WFTC. Very few of them remain below the poverty line, although it is interesting to note that a second earner on 16 hours is certainly not sufficient to ensure that incomes are above the poverty line. Ten percent of these two-earner families are poor.

The second group of interest from the point of view of making work pay, is the partners of the unemployed. In this case we focus on couples where one is unemployed (either in receipt of contributory Job Seeker's Allowance (JSA) or declaring themselves to be unemployed and seeking work) and the other appears to have no reason preventing them being available for work, should they wish. This partner of the unemployed person is assumed to enter work on the minimum wage; the unemployed person to remain out of work.¹⁹ Table 14 shows the effect on family income and the replacement rate for all such couples and separately for those with and without children. Replacement rates are generally higher for this group than for the non-employed population as a whole. A sizeable proportion of families would be worse off (i.e. their replacement rate exceeds 100%) if the partner of the unemployed person entered work for only 16 hours: 58% of couples without children and 25% of couples with children. In the former case, if the couple rely on JSA (contributory and/or means-tested) as their sole source of income out-of-work, then earnings from 16 hours on the minimum wage (£59.20) are not sufficient to compensate for its loss (£81.95 per week in 2000/1 terms, not including housing or council tax benefit). In the latter case, although the family may qualify for WFTC, the payments are not always sufficient to compensate for the loss of the payment of mortgage interest with IS/JSA. Families with entitlements to passported benefits may find that the loss of these outweighs any financial gain to working. (For example, the loss of free school meals on moving from IS/JSA to WFTC in a family with large numbers of school-age children can be a significant drop in effective income. The imputed value of these, together with the value of welfare milk, also not received on WFTC, is included in our income calculations.) In these cases, work does not pay. The proportion of couples who are worse off in work is lower for work entry at 30 hours but still represents 7% of all couples considered.

One of the characteristics of work entry on the partners of the unemployed is the wide *range* of possible effects. As well as couples who are worse off in work there are some whose incomes rise by the full value of the new gross earnings or, in the case of some couples who qualify for WFTC, by more than that. There are some instances where the WFTC in combination with the NMW really does make work pay. For couples without children, those that gain significant amounts from working are those where the unemployed partner is not in receipt of JSA (either contributory or means-tested). Typically they have exhausted entitlement to contributory benefit, or were never entitled, and the couple have other incomes or capital which disqualify them from means-tested JSA. In these cases they can benefit from the full value of the new earnings if (i) their incomes are high enough to bring them above entitlement to Housing Benefit or Council Tax Benefit, (ii) where they do not take-up or are not entitled to these benefits before or after work entry, or (iii) where their incomes are low

¹⁹ In the calculations reported in Table 12 in most cases both partners in these couples enter work.

enough to entitle them to maximum levels of these benefits both before and after work entry.²⁰

Overall, the impact of work entry on poverty in this group is relatively small. Before work entry about two thirds of the group are poor. After, the proportion falls to 60% with 16 hours work, 32% with 30 hours work and 25% with 38 hours work. Some couples *enter* poverty while others leave it.

The mean effective tax rate on entering work for 30 hours is 65% $((1-(38.61/111.00)) \times 100\%)$ for partners of the unemployed without children and a similar figure for those with children. Their effective hourly rate of pay is £1.29. This is lower than is generally the case for work entrants on 30 hours – Table 12 shows that the average effective hourly rate of pay is £2.34 ($=£70.08/30$).

7 Concluding comments

The direct effect of the NMW on poverty rates and the intensity of poverty is relatively small. The impact on poverty of increasing the level of the NMW is also small: increasing the NMW from £3.70 to £4.50 per hour would reduce poverty among people in working-age families from 13.5% to 13.2% (a reduction which is unlikely to be statistically significant). On the other hand, spending on in-work benefits following this increase in NMW would fall by 2.7%. As discussed in the introduction, the main contribution of the NMW is in underpinning the strategy of in-work benefits to supplement the family incomes of the low paid. However, it is clear that these benefits are now so generous – particularly for families with children – that even quite large increases in NMW can neither have the effect of increasing family incomes significantly, nor of removing families from benefit dependency and the poverty trap.

The other way in which a NMW can contribute to the reduction in poverty is by helping create situations where work clearly pays and hoping to induce more people from workless families into paid work. Clearly, the NMW does make a positive contribution to in-work income, particularly to families where WFTC, and to a lesser extent, other in-work benefits are not payable. However, there are also cases where work does *not* pay, particularly among the partners of the unemployed who are on benefit. Unless WFTC is payable, work entry on the NMW is only worthwhile if hours of work are long enough to secure weekly earnings greater in value than out-of-work benefits. Movement from Income Support (or means-tested JSA) can be particularly costly for households with mortgage interest payments, as these are not covered by any in-work benefit.

It is also clear that even work for all "who can" is not the solution to poverty among working-age households. Many such households do not contain anyone able to take paid work. While the NMW and in-work benefits can be expected to contribute to poverty reduction among the working poor, other approaches are needed for households without a potential paid worker.

²⁰ The numbers of sample cases in these groups is not large enough to support a quantitative analysis of the frequency of each type of situation.

For entry into work to remove a family from poverty in the short term, three things are necessary:

- First, it needs to make them significantly better off in cash terms than when out of work. This is *necessary* for work to seem worthwhile. (It may not be *sufficient*.) For families with children the WFTC generally ensures that they are better off in work, but does not guarantee it. In cases of large mortgage payments or large entitlements to benefits in-kind passported through out-of-work benefits, or of failure to qualify for, or to take up WFTC, it requires work for long hours, for higher wages, or by two parents would be enough to ensure that the family is better off in paid work.
- Secondly, even if better off in work, they also need to have incomes that take them above the poverty line. Full time work is not always sufficient to guarantee escape from poverty. We have shown that (Table 10) even 45 hours per week is not sufficient to bring all working age households out of poverty. Some large households have needs that exceed what one low wage (and associated in-work benefits) can provide.
- Thirdly, the extra jobs need to be available.

Long-term escape from poverty can only be secured through work if the NMW combined with in-work benefit subsidy acts as a “springboard” to better things. For those on WFTC, this is unlikely to be the prospect for most people. The generosity of WFTC (especially when combined with the child-care credit) means that a large part of in-work income is due to the WFTC. Small increases in earnings result in very small increases in family income. Earnings much higher than those provided by the NMW are needed to escape altogether from the new extended poverty trap. For example, a lone parent with one child aged under 11 working for 16 hours and qualifying for a child care credit of £70 would not exhaust entitlement to in-work means-tested benefits until their earnings reached £26.88 per hour (Department of Social Security, 2000c; Table 1.2c).²¹ This is over seven times the NMW rate of pay. Even then, their disposable income (after housing and child care costs are deducted) would be only just over double what they would receive in a minimum wage job (£215 compared with £102 per week). Settling for the low wage and maximum subsidy combination is a relatively attractive “option” given that the chances of securing such large wage increases must be small. More modest shifts to wages above the minimum may seem more feasible, but the rate of return is rather low. For example, if this same lone parent finds another 16-hour job for 1.5 times the NMW (£5.55 per hour) she would be better off than she is on the NMW by less than £7 per week after income tax, National Insurance contributions and withdrawal of housing benefit and council tax benefit. (In this example she would remain on maximum WFTC even at this higher level of earnings.)

Escaping from poverty through entry into low waged work is an effective route for some, particularly if they are entitled to in-work benefits. The NMW makes this transition more worthwhile and more likely for those not entitled to top-ups, although the effects are small. Some partners of the unemployed remain in a situation where low paid work does not pay at all. The NMW underpins the operation of in-work benefits for families with children. But the

²¹ Without the child care credit the figure would be £18.75 per hour.

effect of these benefits is to disadvantage potential second earners in couples and to trap the workers that it covers in subsidised low-waged jobs.

References

Department of Social Security, 1999, *Opportunity for All: Tackling poverty and social exclusion*, Cm4445. London: TSO.

Department of Social Security, 2000a, *Households Below Average Income, 1994/95-1998/9*. London: TSO.

Department of Social Security, 2000b, *Income Related Benefits: Estimates of Take-Up in 1998-99*. London: DSS Analytical Services Division.

Department of Social Security, 2000c, *Tax-Benefit Model Tables: June 2000* London: DSS Analytical Services Division.

Gosling A., 1996, "Minimum wages: possible effects on the distribution of income", *Fiscal Studies*, 17(4), pp31-48.

HM Treasury, 2000a, *Tackling poverty and making work pay - tax credits for the 21st century*, The Modernisation of Britain's Tax and Benefit System no. 6. London: HM Treasury.

HM Treasury, 2000b, *Budget 2000*. HC346, London: HM Treasury.

Low Pay Commission, 2001, *The National Minimum Wage - Making a Difference: the next steps*, Third Report (volume 2), Cm5175, London: The Stationery Office.

Piachaud, D. and Sutherland, H., 2000, "How Effective is the British Government's Attempt to Reduce Child Poverty?", CASE Paper 38, London School of Economics.

Performance and Innovation Unit, 2000, *Adding It Up: Improving Analysis and Modelling in Central Government*, The Stationery Office.

Pudney, S. and Sutherland, H., 1994, 'How Reliable are Microsimulation Results? An Analysis of the Role of Sampling Error in a UK Tax-benefit Model'. *Journal of Public Economics*, 53: 327-365.

Redmond, G., Sutherland, H. and Wilson, M., 1998, *The arithmetic of tax and social security reform: a user's guide to microsimulation methods and analysis*, Cambridge University Press.

Sutherland H and Piachaud, D, 2001, 'Reducing Child Poverty in Britain: An Assessment of Government Policy 1997-2001', *Economic Journal* 111 (February) F85-F101.

Table 1: Poverty before and after Labour's policies

	Children	All persons			
		All	No. of paid workers in family		
			None	One	Two
Poverty rate, April 1997 policy (%)	24.8	18.6	37.9	13.3	2.1
Poverty rate, Labour policy (%)	15.7	14.4	30.2	9.6	1.2
% point difference	9.1	4.3	7.8	3.7	0.8
% reduction in poverty rate	36.5	23.0	20.5	28.1	40.1
% reduction in poverty gap	39.0	23.6	22.4	25.1	46.2
Net no. removed from poverty (thousand)	1,190	2,460	1,590	720	150
Number in population (thousand)	13,190	57,370	20,450	19,300	17,620

Notes: The poverty line is 60% of median equivalised (BHC) household income under pre-Labour policy. Numbers of people are given to the nearest 10,000. "Paid workers" include the self-employed and others not covered by the NMW (eg employees aged 16-17). They do not include dependent children with "Saturday" jobs. The poverty gap is defined as the sum of the shortfall between equivalised household income and the poverty line, for each person counted as poor. Rows and columns may not add due to rounding. The level of significance with which results are quoted should not be taken to imply formal statistical significance.

Source: POLIMOD.

Table 2: Poverty among people in working-age families before and after Labour's policies

	Persons in working age families				
	All	Family type			
		Single	Single+ch	Couple	Couple+ch
Poverty rate, April 1997 policy (%)	17.9	16.7	35.6	9.8	19.4
Poverty rate, Labour policy (%)	13.5	16.0	17.9	9.3	13.7
% point difference	4.4	0.7	17.7	0.5	5.6
% reduction in poverty rate	24.6	4.1	49.6	4.9	29.0
% reduction in poverty gap	23.3	4.4	39.9	4.3	35.8
Net no. removed from poverty (thousand)	2,120	70	780	60	1,210
Number in population (thousand)	48,090	9,920	4,440	12,280	21,450

Notes: See Table 1.

Source: POLIMOD.

Table 3: Reduction in poverty: the contribution of the NMW

	Children	All persons			
		All	No. of paid workers in family		
			None*	One	Two
<i>% reduction in poverty rate</i>					
Tax-benefit policies and the NMW	36.5	23.0	20.5	28.1	40.1
Tax-benefit policies alone	35.3	21.8	20.4	25.4	28.0
Contribution of the NMW	1.2	1.2	0.1	2.7	12.1
<i>% reduction in poverty gap</i>					
Tax-benefit policies and the NMW	39.0	26.3	22.4	25.1	46.2
Tax-benefit policies alone	36.9	21.9	22.1	20.7	27.1
Contribution of the NMW**	2.1	4.4	0.3	4.4	19.1

Notes: See Table 1.

* Families without paid workers can be affected by the minimum wage if other household members are in paid work.

** net of tax deductions and benefit withdrawal.

Source: POLIMOD.

Table 4: Incidence of the NMW in poor and non-poor working age families
April 2000 tax-benefit policy

	All	Family type			
		Single	Single+ch	Couple	Couple+ch
<i>% affected by the NMW</i>					
Poor (without NMW)	5.1	2.3	4.9	6.7	9.9
Non-poor	4.2	3.8	4.1	4.0	5.0
All	4.3	3.5	4.2	4.3	5.7
<i>% of those affected</i>					
Poor (without NMW)	16.1	10.4	19.7	14.9	22.7
Non-poor	83.9	89.6	80.3	85.1	77.3
All	100.0	100.0	100.0	100.0	100.0
<i>% of those affected</i>					
Poor (without NMW)	100.0	22.8	8.3	24.4	44.5
Non-poor	100.0	37.6	6.6	26.7	29.2
All	100.0	35.2	6.8	26.3	31.6

Notes: See Table 1.

Source: POLIMOD.

Table 5: The sensitivity of poverty rates to the level of NMW

Level of NMW (main/youth rate £/hour)	Children	All persons			
		All	No. of paid workers in family		
			None*	One	Two
<i>Poverty rate %</i>					
no minimum wage	16.0	14.6	30.2	10.0	1.5
£3.60 / £3.00 (-10p)	15.8	14.4	30.2	9.7	1.3
£3.70 / £3.20	15.7	14.4	30.2	9.6	1.2
£4.00 / £3.50 (+30p)	15.6	14.3	30.1	9.5	1.1
£4.50 / £4.00 (+80p)	15.5	14.2	30.0	9.2	1.1
£5.00 / £4.50 (+130p)	15.1	14.0	30.0	8.9	1.0

Notes: See Table 1.

* Families without paid workers can be affected by the minimum wage if other household members are in paid work.

Source: POLIMOD.

Table 6: The sensitivity of poverty rates to the level of NMW: people in working-age families

Level of NMW (main/youth rate £/hour)	All	Persons in working age families			
		Family type			
		Single	Single+ch	Couple	Couple+ch
<i>Poverty rate %</i>					
no minimum wage	13.7	16.2	17.9	9.5	14.1
£3.60 / £3.00 (-10p)	13.5	16.1	17.9	9.3	13.8
£3.70 / £3.20	13.5	16.0	17.9	9.3	13.7
£4.00 / £3.50 (+30p)	13.4	15.9	17.8	9.3	13.6
£4.50 / £4.00 (+80p)	13.2	15.7	17.7	9.3	13.4
£5.00 / £4.50 (+130p)	13.0	15.6	17.5	9.1	13.1

Notes: See Table 1.

Source: POLIMOD.

Table 7: The sensitivity of the poverty gap to the level of NMW: people in working-age families

Level of NMW (main/youth rate £/hour)	Persons in working age families				
	All	Family type			
		Single	Single+ch	Couple	Couple+ch
<i>Poverty gap index (NMW £3.70 = 100)</i>					
no minimum wage	102.6	101.2	101.5	102.5	103.9
£3.60 / £3.00 (-10p)	100.2	100.1	100.2	100.1	100.2
£3.70 / £3.20	100.0	100.0	100.0	100.0	100.0
£4.00 / £3.50 (+30p)	99.5	99.7	99.5	99.5	99.4
£4.50 / £4.00 (+80p)	98.5	99.4	98.3	98.4	98.0
£5.00 / £4.50 (+130p)	97.3	98.9	97.1	97.0	96.4

Notes: See Table 1.

Source: POLIMOD.

Table 8: The sensitivity to the level of NMW of spending on means-tested benefits/credits for families in work

Level of NMW (main/youth rate £/hour)	All	Family type			
		Single	Single+ch	Couple	Couple+ch
<i>Index of in-work social security spending* (NMW £3.70 = 100)</i>					
no minimum wage	102.7	104.4	101.9	104.1	102.9
£3.60 / £3.00 (-10p)	100.2	100.5	100.1	100.2	100.3
£3.70 / £3.20	100.0	100.0	100.0	100.0	100.0
£4.00 / £3.50 (+30p)	99.2	98.4	99.4	99.3	99.1
£4.50 / £4.00 (+80p)	97.2	94.0	98.0	96.0	97.2
£5.00 / £4.50 (+130p)	94.5	88.5	95.9	93.1	94.5
% of spending (NMW=£3.70)	100.0	7.1	36.2	5.7	51.0

Notes: See Table 1.

* WFTC, Housing Benefit and Council Tax Benefit

Source: POLIMOD.

Table 9: The effect of work entry on poverty rates: people in working-age families

	Persons in working age families				
	All	Family type			
		Single	Single+ch	Couple	Couple+ch
% of families with work entry	17	14	22	17	19
% of work-entry families	100	36	9	27	28
<i>1997 policy</i>	<i>Poverty rate %</i>				
No work entry	17.9	16.7	35.6	9.8	19.4
16 hours	15.9	14.9	26.2	8.6	18.3
30 hours	13.2	11.8	21.5	6.7	15.6
38 hours	12.1	9.6	21.0	6.3	14.8
% poor families with work entry	44	37	38	49	57
<i>Labour tax-benefit policy</i>	<i>Poverty rate %</i>				
No work entry	13.5	16.0	17.9	9.3	13.7
16 hours	11.5	14.1	10.8	8.3	12.2
30 hours	7.8	10.7	8.2	6.4	7.2
38 hours	6.9	8.9	8.0	5.9	6.3
45 hours	6.6	8.6	7.9	5.6	6.0
% poor families with work entry	45	37	47	50	59

Notes: See Table 1.

Source: POLIMOD.

Table 10: The effect of work entry on poverty rates in the families affected
April 2000 tax-benefit policy

	Persons in families with work entry						
	All	Family type					
		Single	Single+ch	Couple		Couple+ch	
Number entering work:			+1	+2	+1	+2	
<i>Poverty rate %</i>							
No work entry	37.8	42.0	40.5	23.5	57.2	37.8	75.6
16 hours	28.0	32.3	10.1	17.9	50.0	31.0	67.5
30 hours	9.1	12.7	2.7	11.0	1.8	9.5	3.7
38 hours	4.3	0.9	1.9	8.3	0.0	4.7	1.3
45 hours	3.0	0.3	1.2	6.5	0.0	3.3	0.0

Notes: See Table 1.

Source: POLIMOD.

Table 11: The role of in-work benefits in family income following work entry on the NMW: by hours of work and family type

	Persons in families with work entry						
	All	Family type					
		Single	Single+ch	Couple		Couple+ch	
Number entering work:			+1	+2	+1	+2	
<i>N families (thousand)</i>	3,870	1,410	350	940	100	980	90
<i>% in receipt of WFTC</i>							
16 hours	26.2	-	96.6	-	-	59.7	96.6
30 hours	24.9	-	96.6	-	-	55.2	93.1
38 hours	23.6	-	95.7	-	-	52.9	64.0
<i>WFTC as % of family income for those in receipt:</i>							
16 hours	40.7	-	46.5	-	-	38.1	35.6
30 hours	34.8	-	40.0	-	-	34.2	15.5
38 hours	29.5	-	33.1	-	-	29.3	10.8
<i>% in receipt of any in-work benefit:</i>							
16 hours	44.4	32.6	97.1	19.5	53.6	60.5	96.6
30 hours	37.9	25.6	97.1	13.9	5.4	56.0	93.1
38 hours	32.2	15.3	95.7	11.8	1.8	53.6	64.0
<i>All in-work benefits as % of family income for those in receipt:</i>							
16 hours	45.0	43.3	58.6	25.2	20.0	47.8	40.6
30 hours	30.8	16.1	43.7	18.5	10.5	37.7	17.8
38 hours	27.3	13.5	35.8	15.3	1.9	31.8	13.2

Notes: See Table 1.

Source: POLIMOD.

Table 12: Increases in income and replacement rates for families with work entry on the NMW: by hours of work

	All	Family type					
		Single	Single+ch	Couple		Couple+ch	
Number entering work:				+1	+2	+1	+2
<i>N (thousand)</i>	3,430	1,260	340	810	90	850	80
<i>Hours=16, weekly earnings=£59.20</i>							
<i>Mean increase in family income</i>							
<i>£/week</i>	36.31	23.93	36.77	48.56	53.94	41.17	32.78
<i>Replacement rate (RR)</i>							
Mean (%)	77	66	82	82	73	87	86
<i>% with RR</i>							
<60	13	25	6	5	16	5	4
60-70	12	23	9	4	22	2	12
70-80	10	4	7	24	22	6	6
80-90	33	22	56	40	22	36	21
90-100	32	26	22	27	20	51	58
<i>Hours=30, weekly earnings=£111.00</i>							
<i>Mean increase in family income</i>							
<i>£/week</i>	70.08	56.87	67.44	85.11	120.65	69.75	77.02
<i>Replacement rate (RR)</i>							
Mean (%)	66	50	72	73	53	80	73
<i>% with RR</i>							
<60	32	67	15	12	63	6	19
60-70	11	4	13	22	23	7	19
70-80	21	5	47	30	9	26	29
80-90	26	18	25	26	5	41	20
90-100	10	5	0	11	0	20	14
<i>Hours=38, weekly earnings=£140.60</i>							
<i>Mean increase in family income</i>							
<i>£/week</i>	85.70	73.76	76.70	100.20	160.19	82.96	98.20
<i>Replacement rate (RR)</i>							
Mean (%)	62	44	69	71	46	78	68
<i>% with RR</i>							
<60	35	69	18	18	84	7	19
60-70	15	7	19	27	11	11	26
70-80	23	9	47	27	5	31	38
80-90	20	12	16	17	0	37	12
90-100	7	2	0	10	0	14	5

Notes: See Table 1.

Source: POLIMOD.

Table 13: Second earners and work entry on the NMW in families receiving WFTC: distribution of income gains and replacement rates

		Hours of work of second earner			
		16	30	38	
<i>Increase in earnings (£/week)</i>		£59.20	£111.00	£140.60	
<i>Increase in family income (£/week):</i>					
Mean		28.58	59.11	75.06	
10th percentile		9.22	30.19	43.07	
90th percentile		47.19	89.29	109.72	
<i>Replacement rate (RR)</i>		Mean	90	82	78
% with RR		<70	0	2	13
		70-80	3	41	49
		80-90	40	51	36
		90-100	57	6	1
<i>Family poverty rate %</i>		before	25	25	25
		after	10	5	2
<i>% still on WFTC</i>			72	45	37

Notes: See Table 1. Results in this table are based on small numbers of sample families (total=59), so are unlikely to be statistically significant.

Source: POLIMOD.

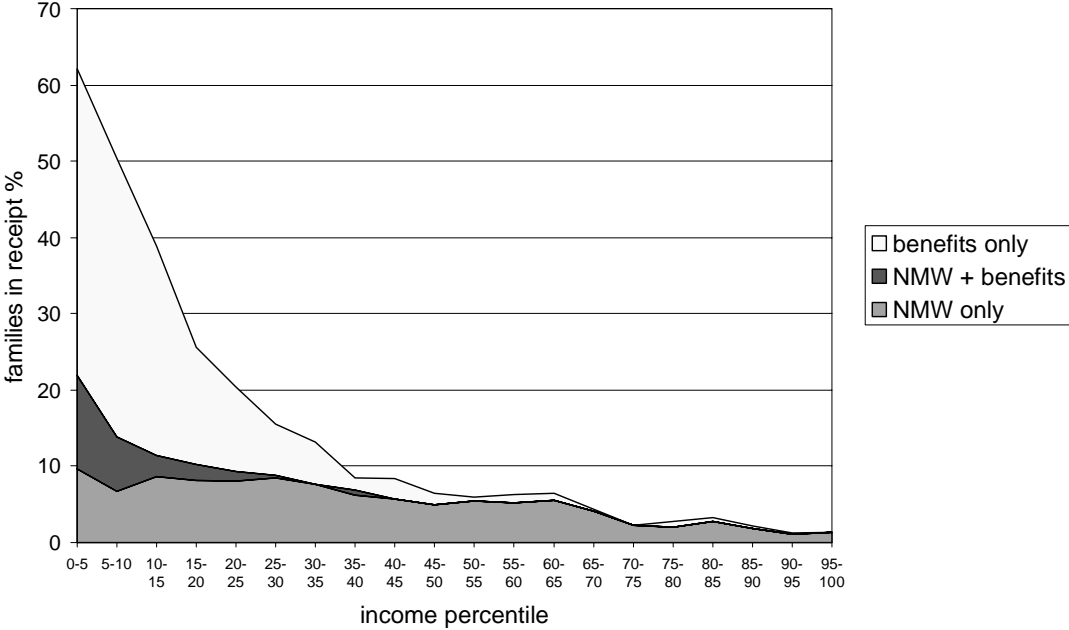
Table 14: Work entry on the NMW by partners of the unemployed: distribution of income gains and replacement rates

Hours of work	All couples			Couples without children			Couples with children			
	16	30	38	16	30	38	16	30	38	
<i>Increase in earnings (£/week)</i>	£59.20	£111.00	£140.60	£59.20	£111.00	£140.60	£59.20	£111.00	£140.60	
<i>Increase in family income (£/week):</i>										
Mean	7.74	38.16	47.49	-0.04	38.61	51.12	10.70	37.99	46.10	
10th percentile	-30.19	12.05	15.12	-66.79	-20.35	0.08	-15.30	17.61	23.74	
90th percentile	59.20	100.20	120.62	59.20	105.56	125.93	41.36	72.34	84.07	
<i>Replacement rate (RR)</i>										
Mean (%)	101	83	80	115	80	73	95	85	82	
% with RR	<70	10	16	22	21	29	44	6	11	14
	70-80	3	10	9	6	15	8	1	9	10
	80-90	9	31	46	8	10	23	9	39	55
	90-100	44	36	18	6	33	17	58	36	18
	>100	34	7	5	58	13	8	25	5	3
<i>Family poverty rate %</i>	before	66	66	66	65	65	65	66	66	66
	after	60	32	25	63	56	54	60	23	14

Notes: See Table 1. Results in this table are based on small numbers of sample families (couples with children=151; couples without children=48), so are unlikely to be statistically significant.

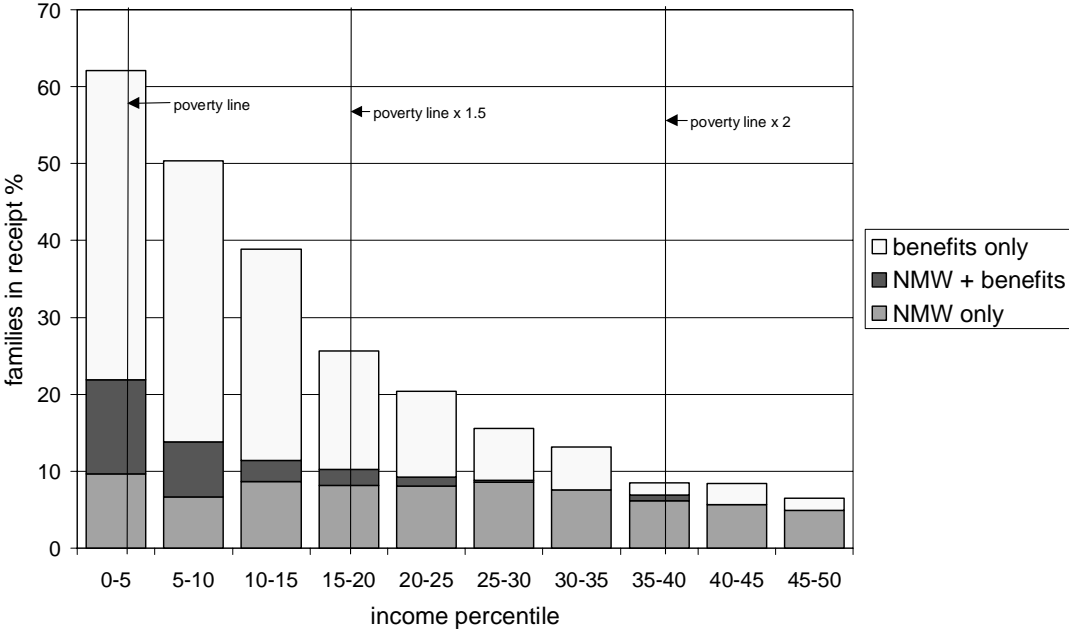
Source: POLIMOD

Figure 1: Incidence of the NMW and receipt of in-work benefits across the income distribution of families with at least one person in work



Source: POLIMOD

Figure 2: Incidence of the NMW and receipt of in-work benefits across the lower half of the income distribution of families with at least one person in work



Source: POLIMOD

Appendix 1: Modelled changes in tax and benefit policy announced between April 1997 and April 2000

Amounts are weekly and in 2000/01 prices and differences are expressed in real terms, unless otherwise specified. Changes announced since April 2000 are not included.

Introduction of a **Minimum wage**. This was originally £3.60 per hour for employees aged 22 and over; £3.00 for employees aged 18-21. It was updated to £3.70 and £3.20 in 2000.

Child benefit increased by £3.25 to £15 for first or only children and £0.40 to £10 for other children. Additional increases of £0.50 per family (and £0.35 for second and subsequent children) are due in April 2001. It is unclear whether these increases are in real terms on top of any indexation for inflation, or whether they include inflation increases. We have assumed the latter and deflated the nominal amount by an assumed rate of inflation of 2.25% (which was the Government's own forecast at the time of the announced increase). Thus the real value of the increase is assumed to be £0.16 for the first child and £0.12 for other children, making the rates £15.16 and £10.12 in 2000/01 prices.

Lone parent benefit abolished (the 1997 benefit would have been £6.50 in 2000/1 in real terms).

Working Families Tax Credit (WFTC) replaces family credit. WFTC has a more generous starting point (by £9.50); a lower taper (55% instead of 70%); a higher adult credit (by £2.55), higher credits for children aged under 11 (by £12.80 per child) and children under 16 (by £4.35 per child) but lower credits for children aged 18 (£10.55 lower). (The childcare tax credit is not modelled.)

Income Support: family premium increased by £2.75; lone parent premium abolished (it would have been worth £5.25 in 2000/1/01); rates for children aged under 11 increased by £13.00, for children aged under 16 increased by £4.65 and those for other children aged under 18 by £0.30; rates for children aged 18 reduced by £9.60; and disability premia increased by £0.75 per person. The earnings disregard in Income Support and Job Seekers Allowance for lone parents, disabled and carers increases by £5 to £20 in April 2001. We have assumed that this is a real increase.

Housing benefit (HB) and **Council tax benefit** (CTB) changes to rates and premia match those for income support *except* that the real value of the 1997 lone parent premia (abolished) is £23.40 (HB) and £11.95 (CTB); there is no reduction in allowance for children aged 18 in HB and CTB.

Minimum Income Guarantee (MIG): the capital limits for MIG (Income Support for pensioners) are increased from £3,000 to £6,000 (so that income from capital less than £6000 per benefit unit is disregarded) and from £8,000 to £12,000 (so that pensioners with capital between £8,000 and £12,000 may be entitled to MIG assuming other conditions are met). Due in April 2001. Premia increased by £5.40 (single) and £8.50 (couples).

Capital thresholds in all means-tested benefits except MIG (and including WFTC) reduced in real value by 6.4% since 1997. (These have not been updated since 1988.)

Winter fuel allowance: £150 per year for households containing a person over state pension age or in receipt of Income Support pensioner premium. (Assumed to be £2.88 per week.)

National insurance contributions: **Class 1** employee contribution lower earnings limit (LEL) increased by £17 (to £84); upper earnings limit (UEL) increased by £40 (to £550); contributions on earnings below the LEL ("entry fee") abolished (worth up to £1.34 per week). **Class 2** (self-employed) contributions reduced by £4.60. **Class 4** (self-employed) lower profits limit aligned with the Class 1 LEL (a reduction of £62); Class 4 upper profits limit aligned with the Class 1 UEL (an increase of £40) and the rate of Class 4 increased from 6% to 7%.

Income tax schedule: introduction of a 10% lower rate on first £1520 of annual taxable income, including income from investments (replaces 20% lower band); standard rate reduced from 23% to 22%.

Married couples allowance (MCA) for couples both aged under 65 and **Additional personal allowance** abolished. (Under 1997 policy this would have been worth 15% of £2000 per year or £5.76 per week in 2000/01 prices.) **Age-related MCA** increased so that pensioner couples do not lose. Age-related personal allowances increased by £130 per year (age 65-74) or £200 per year (age 75+).

Mortgage tax relief abolished. (In 1997 the maximum annual relief was 15% of the annual interest on £30,000.)

Introduction of a **Children's tax credit:** this is for taxpayer families with children aged under 16. If either parent is a higher-rate (40%) taxpayer, the value of the annual credit is tapered at a rate of £1 for every £15 of income per year above the 40% threshold. The credit is to be introduced at the level of £8.50 per eligible taxpaying family when it is introduced in April 2001. We have made the same assumptions about inflation as with child benefit, making the real value about £8.31 per week in 2000/01.

Incapacity benefit is reduced by 50p for every £1 of occupational or personal pension income over £85 per week.

Summary of measures not due for implementation until April 2001:

- additional child benefit increases
- increase in MIG capital limits
- increase in earnings disregard in IS/JSA for lone parents, disabled and carers
- final stage alignment of NIC lower limits with income tax threshold
- introduction of Children's tax credit.