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The Fiscal and Distributional Implications of Alternative Universal Basic Income Schemes in the UK

Dr Luke Martinelli

IPR Research Associate, University of Bath

IPR Institute for Policy Research

Abstract

In line with a dramatic resurgence of interest in basic income in recent years, there have been a number of studies analysing the fiscal and distributional consequences of specific basic income schemes. These 'microsimulation' studies use representative household surveys to examine the effects of hypothetical reforms at the national level and for specific demographics.

We make several original contributions to this burgeoning literature, modelling a number of original basic income schemes. These include a wide variety of schemes with full coverage and a number of schemes with partial coverage. We also carry out a detailed analysis of four revenue-neutral full schemes.

- Among systems with 'full' coverage, we have modelled four levels of generosity, and four types of compensatory tax and benefit reform for each.
- For the partial coverage schemes, we model how expansion of coverage could be sequenced in order to distribute the fiscal burden over a longer period of time.
- The revenue-neutral schemes assume that increases in expenditure must be broadly matched by increases in tax revenue. We suggest that besides the elimination of the personal income tax allowance and national insurance lower and upper thresholds, the income tax rate would have to increase by 4% (for a basic income set at the standard level of existing benefits) and 8% (for one with premiums for individuals determined as disabled) to pay for our schemes.

For each scheme, we discuss the fiscal implications and the implications for levels of poverty and inequality. For the revenue neutral schemes, we provide a more detailed breakdown of distributional effects, disaggregating changes in household income levels by income quintile, family type, number of children, and labour market status. The main argument of the paper is that we are faced with a series of trade-offs with respect to policy design, between the goals of meeting need / alleviating poverty, controlling cost, and eliminating means-testing. Our schemes aims to replace a large range of existing benefits with a basic income. The unavoidable reality is that such schemes either have unacceptable distributional consequences or they simply cost too much. The alternative – to retain the existing structure of means-tested benefits – ensures a more favourable compromise between the goals of meeting need and controlling cost, but does so at the cost of administrative complexity and adverse work incentive effects.

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Introduction

Definitions and Debates

"An income unconditionally paid to all on an individual basis, without means test or work requirement"

Universal basic income (UBI) – variously referred to as 'citizen's income', 'minimum guaranteed income', 'basic income guarantee' or simply 'basic income' – refers to a range of schemes or policies involving cash transfers that are universal and unconditional (indeed, the 'U' in 'UBI' can stand for either term). The standard definition, following Van Parijs (2004), is: "an income unconditionally paid to all on an individual basis, without means test or work requirement". Payments are made automatically to all; they are **universal**, applying to the entire population. Eligibility is not withdrawn as individuals' financial circumstances change (as in means-tested systems), it is not subject to the contributory principle (as in the case of social insurance schemes), nor are behavioural requirements (such as the requirement to look for work) imposed on recipients. Finally, in most conceptualisations, payments are made on an individual rather than household basis and so are not affected by marital status or family composition; indeed, Van Parijs (2004) considers this an essential attribute of basic income proposals[1]. In other words, as a result of these characteristics, payments are **unconditional**.

In fact, universality and non-conditionality are two sides of the same coin: universality suggests that the whole population is covered, rather than a subset thereof, and benefits can only be universal in the absence of conditions restricting benefits to those with particular characteristics or in specific circumstances[2].

UBI is currently experiencing a dramatic resurgence of interest. While the reasons for UBI's apparent desirability need not overly concern us here, there is increasing recognition that important features of mature welfare states – means-testing, contributory insurance principles, and 'active' labour market requirements – are increasingly unfit for purpose. They are stigmatising, intrusive and bureaucratic (Offe, 2004); they discourage work by giving rise to poverty and unemployment traps (Gamel et al, 2006); and they distort incentives for family formation and communal living (Griffiths, 2017). Furthermore, labour market changes have left a growing number of people, including

1. For Callan et al. (1999) basic income schemes can operate, in principle, on the basis of the family or household as the unit of assessment. This would permit payments to be varied depending on family or household structure, thus more accurately reflecting costs of living and potentially reducing costs, but would also introduce a type of conditionality that could contribute to administrative complexity and affect incentives for family formation. Therefore, we follow Van Parijs' (2004) analysis, noting that a system of uniform, individualised payments "dispenses with any control over living arrangements, and it preserves the full advantages of reducing the cost of one's living by sharing one's accommodation with others". Furthermore, individual payments are supported by theoretical arguments that the provision of independent incomes to all would promote greater equality in the distribution of resources within households, and gender equality more broadly; these arguments are explored in greater depth below. Therefore, in the following analysis, we take individualisation as a central component of UBI.

2. Clasen and Clegg (2007) distinguish conditions of *category*, *circumstance* and *conduit* (or behaviour). Following De Wispelaere (2015), category conditions essentially refer to "membership of a politically defined social support category". However, benefits restricted by conditions of category are not conditional in the usual parlance, which is usually taken to refer to restrictions based on financial circumstances, the establishment of a prior contributions record, and adherence to behavioural requirements attached to the receipt of benefits.

burgeoning numbers of precarious and low-paid workers, with inadequate incomes (European Parliament, 2016; Gregg et al., 2014; Goos and Manning, 2007). To varying degrees, UBI promises to solve or ameliorate these varied problems. More recently, the spectre of rapid automation and technological unemployment has fuelled further enthusiasm for UBI (Srnicek and Williams, 2015).

Of course, as well as proponents, UBI has a significant number of detractors. Some of the criticisms of UBI are normative or ethical in nature; Offe (2008) summarises the three major objections as "the idle should not be rewarded, the prosperous don't need it, and there are so many things waiting to be done in the world". These normative questions are largely moot, being essentially value judgements, although they have important implications for UBI's political feasibility. Other criticisms relate to the potential for unconditional payments to reduce or distort the labour market – but arguably, given the theoretical ambiguity of issues involved, labour market effects can only be reliably inferred from empirical evidence, of which very little exists[3].

Design Features and Trade-Offs

It should be mentioned at this point that the definition of UBI provided above masks a great deal of potential variation in the actual design of UBI schemes (De Wispelaere, 2015). UBI schemes differ crucially with respect to the level of 'generosity' they offer, and the extent to which they are expected or intended to cover basic needs; the way in which they are intended to interact with other benefits (i.e. whether the scheme in question is intended to replace, or run concurrently with, them); and the method by which they should be financed, including any changes to the tax system they necessitate. The implications of varying these design features are explored in the models we examine in this paper.

Much of the microsimulation literature relates to concerns about UBI's financial and administrative feasibility. As noted by Torry (2016b), financial feasibility involves two separate issues: *fiscal feasibility*, pertaining to the

3. There is a large and longstanding literature on how UBI might affect labour market participation, but in the absence of empirical evidence, it is largely ambiguous. Theoretically, complexity arises because UBI reforms tend to involve income and substitution effects that pull in opposite directions. Individuals, at least among lower income groups, would tend to face lower marginal effective tax rates, which would encourage greater work effort – but at the same time, a UBI would increase real income at all levels of work effort, which may result in employed individuals choosing to enjoy more leisure time. In addition, the implication of the unconditional nature of UBI – the disentangling of 'active' job search requirements from benefit eligibility – is difficult to determine ex ante. Furthermore, labour market effects will vary according to individuals' personal preferences as well as circumstances such as their proximity to the labour market and the value of their labour. Finally, of course, effects also depend upon the level of the UBI as well as other design aspects such as interaction with other benefits. See Parker (ed.) (1991) *Basic Income and the Labour Market;* Gamel et al. (2006) *The impact of basic income on the propensity to work: Theoretical issues and micro-econometric results;* Pasma (2010) *Working Through the Work Disincentive;* and Sommer (2016) *A Feasible Basic Income Scheme for Germany: Effects on Labor Supply, Poverty, and Income Inequality*.

impacts ofpotential reforms on government finances[4]; and *household financial feasibility*, pertaining to the gains and losses experienced by households as a result of reforms. Torry (2016a) and others (Reed and Lansley, 2016) have used microsimulation in order to design UBI schemes which strike an acceptable balance between these two types of feasibility.

However, there appear to be a series of irreconcilable trade-offs with respect to UBI design, mirroring the familiar *iron triangle* of welfare reform (Blundell, 2001). In Blundell's conceptualisation, it is impossible (in the short term) to meet each of three conflicting goals of social security design: controlling cost, meeting need, and maintaining work incentives. One can achieve at most two of these goals[5]. For example, in order to ensure that a UBI scheme is fiscally feasible, net spending on other benefits needs to be reduced. One way to achieve this is simply to eliminate a substantial proportion of existing benefits, risking losses at the household level. Another way, and that deemed as the most feasible transition to UBI by Torry (2016) and Reed and Lansley (2016), is to retain means-tested benefits, taking UBI payments into account in their recalculation. However, this solution sacrifices administrative simplicity – often cited as one of UBI's keys strengths[6] – and retains high marginal withdrawal rates which cause poverty and unemployment traps.

"It is impossible to design a UBI scheme which is fiscally feasible, has no adverse distributional consequences, and is sufficiently generous to eliminate the need for means-testing"

We therefore contend that we are faced with a trade-off – or indeed a series of trade-offs – with respect to UBI design. It is impossible to design a UBI scheme which is fiscally feasible, has no adverse distributional consequences, and is sufficiently generous to eliminate the need for means-testing; we must sacrifice one of these policy goals. In Hirsch's (2015: 35) analysis, there is necessarily a "huge tension... between finding a politically acceptable version of the scheme and retaining its advantages in terms of both simplification and adequacy". It is the nature and magnitude of these apparent trade-offs with which this paper is concerned.

4. It should be noted at this point that one can take a much more radical view on fiscal feasibility than the framework proposed by Torry (2016b) and largely employed in this paper. We take the existing structure of the tax system, and overall levels of taxation considered as broadly acceptable, to be fixed. It may well be possible – and indeed desirable, as some advocates argue – to consider UBI as more radical and fundamental than a prosaic matter of welfare reform, as an exercise in 'realistic utopianism'. These arguments are highly intriguing, but we refrain from such discussion for the purposes of the present paper.

5. Parker (1989: 108-109) discusses this trade-off in terms of the 'unavoidable arithmetic imperatives' of integrated tax and benefit systems, but arguably the problem applies more generally.

6. As De Wispelaere and Stirton (2011, 2012, 2013) demonstrate, there are good reasons to doubt exaggerated claims that UBI is straightforward and cheap to administer. To simplify and condense their argument, UBI still requires a *cadaster* of eligible recipients and a means through which to make payments; there would have to be monitoring and policing functions to eliminate the incidence of fraudulent applications; and in order to achieve substantive as well as nominal universality, efforts would need to be taken to ensure vulnerable demographics would be reached. Nevertheless, a hybrid system – in which means-tested benefits and their associated administrative systems are retained – may represent the worst of both worlds: UBI may be unable to 'piggyback' on existing systems and institutions, requiring brand new ones operating alongside those that already exist. In such a situation, UBI could represent greater rather than reduced administrative effort and cost – not to mention complexity and risk. Thus we concur with Offe's (2004) conclusion that UBI "radically economizes on the administrative overhead costs of fighting poverty" but only when it "is sufficiently high to afford the basic means of subsistence".

Contributions and Structure of this Paper

We aim to make several contributions to the basic income literature. We model a number of original schemes, covering a number of gaps in the microsimulation literature identified by Reed and Lansley (2016: 22)[7]; these include a wide variety of schemes with full coverage and a number of schemes with partial coverage. We also carry out a detailed analysis of four revenue-neutral full schemes.

- Among systems with 'full' coverage, we have modelled four levels of generosity, and four types of compensatory tax and benefit reform for each. One of our most important contributions is an attempt to compensate disabled individuals for their loss of income under a uniform UBI compared to the existing system.
- For the partial coverage schemes, we model how expansion of coverage could be sequenced in order to distribute the fiscal burden over a longer period of time.
- The revenue-neutral schemes are aimed towards minimising adverse distributional outcomes while retaining administrative simplicity and improving work incentives (addressed in a separate forthcoming working paper).

"The design and implementation of UBI involves a series of difficult political choices; we should not pretend that these can be avoided"

Again, our aim is not to arrive at an immediately 'feasible' scheme, defined as one with 'politically acceptable' fiscal and household financial implications. There are two reasons for this: firstly, such a task has been adequately addressed in recent papers by Torry (2016a) and Reed and Lansley (2016). Secondly, it may be contested that fiscal and household financial feasibility are the only or most important criteria for determining feasibility, since, as discussed above, they can only be achieved at the cost of retaining the disadvantages – in terms of administrative complexity and high marginal withdrawal rates – of the majority of existing means-tested benefits. In our view, it should at least be recognised that much of the normative and theoretical literature justifying UBI does so on the grounds that it allows much of the existing benefits structure to be swept away. The design and implementation of UBI involves a series of difficult political choices; we should not pretend that these can be avoided solely by 'optimising' the trade-off between fiscal and household financial feasibility. We aim to explore systematically these trade-offs by comparing a large number of schemes with different design features.

The paper is structured as follows. Section 2 provides the methodology, including a justification for the microsimulation approach, the operationalisation of key variables and the specification of the UBI schemes examined in

7. As they observe, their paper only presents a limited number of options: "additional simulations might examine: the cost and impact of a standalone citizen's pension; the cost and impact of a standalone basic income for children; the cost and impact of converting existing personal tax allowances into a small basic income, paid in full to all those in work and withdrawn from the higher paid through adjustments to the tax system; the separate impact of the two central elements of such schemes, the payment of flat-rate benefits and the changes in tax and NICs; and the potential stages in the transition from a modified towards a full scheme".

the study. Section 3 provides the first set of findings, pertaining to 'full' UBI schemes (i.e. those with comprehensive coverage of the population). We look at revenue implications and effects on the incidence of poverty and inequality. In section 4, we turn to the partial schemes, and the effects of appending them sequentially to model a feasible transition from partial to complete coverage. In section 5, we pay greater attention to the issue of fiscal feasibility. This involves the identification of a smaller number of schemes for which we engage in an iterative process to identify the levels of income tax commensurate with revenue neutrality. Again these scenarios are analysed for their cost and distributional effects, including more detailed distributional analysis of average gains and losses by income quintile, family type, number of children, and labour market status. Section 6 concludes.

2

Methodology

Principles, Strengths and Limitations of the Microsimulation Approach

Microsimulation is an approach to evaluating the effects of tax and benefit reforms[1]. The term refers to the way in which the approach simulates the effects of changes on individual 'micro' units – such as individuals, households, or firms – combining 'real' data on variables of interest across the population of units, and analysing how the variables change when subject to alternative policy scenarios.

Thus the basic idea of microsimulation is to compare outcomes between a base scenario and one or more alternative scenarios. Alternative scenarios can model the effects of the same policy across different time periods or under different circumstances (such as imputed demographic change), or alternatively represent alternative (hypothetical) policy systems, as in the case of the present paper.

"Microsimulation has been enabled by the advance of computing power from the 1980s onwards, coupled with the availability of the requisite micro-data"

For the evaluation of tax and benefit reforms, we are primarily concerned with how prospective or hypothetical changes to tax liabilities and benefit entitlement affect three main types of outcome variable, pertaining to fiscal/cost implications (expenditure and revenue); income (operationalised in various ways to enable meaningful comparison of poverty levels and living standards between different groups); and financial work incentives (based on a comparison of net income implied by different working patterns).

Microsimulation has been enabled by the advance of computing power from the 1980s onwards, coupled with the availability of the requisite micro-data from large, representative surveys. In the UK context, tax/benefit microsimulation is based on data from the *Family Resources Survey* (FRS, formerly *Family Expenditure Survey*), which surveys 20,000 households on their financial position and a host of characteristics that jointly determine their tax liabilities and benefit entitlements. Importantly, the survey contains information that allows distributional effects to be disaggregated by numerous individual, family and household characteristics, such as labour market status, family size and composition, disability status, age, and sex.

Financial data from the household survey can be 'uprated' using various parameters to estimate the effects of inflation and wage growth, for example when we are interested in simulating policy reforms in time periods beyond the one in which the survey was conducted. It is also possible to apply uprating parameters to the tax and benefits rates and thresholds; this means that the impacts of policy changes can be estimated for future years, with the plausibility of estimations determined by the veracity of the uprating parameters. When the government announces prospective changes to the tax and benefit system, these could plausibly be incorporated into the model in the years in which changes are due to take place, for example increases in the income tax

1. Following Figari et al. (2014), they can be applied ex ante to evaluate policy reforms not yet implemented or *ex post* to evaluate the actual observed effects of a given policy with a hypothetical counterfactual. Thus, "the cross-fertilisation between ex-ante and ex-post approaches has contributed to the increasing credibility of analysis based on detailed microsimulation models, making them a core part of the causal policy evaluation literature" (ibid.: 8).

personal allowance. However, reality is often complex, with "some parts of the tax and benefit system (...) uprated by earnings growth, other parts by prices and some not at all" (Sutherland et al., 2008); the implications of different uprating schemes, therefore, can be profound.

In this study, we have commissioned the use of the IPPR microsimulation model[2]. The base scenario, with which our alternative scenarios (UBI reforms) are to be compared, is the existing tax/benefit system, prior to the implementation of Universal Credit (UC). The model has been updated with the current set of policy parameters (2016-17 tax year) and the most recent available FRS dataset (2014-15), which has been uprated for 2016-17. For completeness, we have also modelled an alternative base scenario under the assumption that UC has been rolled out nation-wide.

"Microsimulation examines the effects of policy reforms over a representative sample, which enables an accurate picture of overall impacts on the income distribution at the national level"

An alternative to microsimulation for examining the impact of tax and benefit reforms on income levels is the model family or household approach (Hufkens et al., 2016). This approach involves the specification of a range of 'typical' family characteristics. Following IFS (2015) "the effect on a particular household will depend on (among other things) their age, family structure, disability status, housing tenure and spending patterns". So we can illustrate, for example, how a family composed of two adults and two children supported by a single earner working full time at minimum wage and living in a private tenancy would be affected by a set of reforms. However, given the vast number of potential permutations of family and household characteristics, "examining a particular example household cannot give us a good guide to the 'typical' impact of the changes" (IFS, 2015). Furthermore, as Torry (2016c) notes, "it will often not be clear to what proportion of households a particular household specification might apply, and so even if calculations generate a list of expected gains and losses for a wide variety of household types, no overall picture of gains and losses will be delivered".

In contrast, microsimulation examines the effects of policy reforms over a representative sample, which enables an accurate picture of overall impacts on the income distribution at the national level. The findings are 'grossed up' by a factor relating the sample to the population size. However, weights are incorporated into the grossing factors to adjust for the under- and over-representation of particular demographic and income groups through non-response to the survey (specifically, the FRS under-represents households at the extremes of the income distribution).

This type of tax/benefit microsimulation is a static model: the characteristics of the micro-units remain constant throughout the analysis. Static models – also termed arithmetic models – are essentially calculators, adding and subtracting different income components for a given sample of households. In particular, individuals' involvement in the labour market is the same regardless of changes to the financial incentives they might face under different policy scenarios. When modelling a policy reform such as UBI, to which one might

2. Today there are four microsimulation programmes capable of evaluating the UK tax and benefit system in a comprehensive manner: the DWP/HMT model, used for in-house governmental analysis; TAXBEN, operated by the Institute for Fiscal Studies; EUROMOD, operated by the Institute for Social and Economic Research (ISER) at the University of Essex, in conjunction with the European Union; and the model operated by the Institute for Public Policy Research (IPPR).

expect behavioural response with respect to labour market participation, this represents a major shortcoming of the analysis.

Operationalisation of Key Output Variables

Fiscal/cost implications

The IPPR model provides a categorised break-down of the national benefit expenditure and personal tax revenue implied by each policy system, based on the grossing procedure described above. The categories in which we are most interested are those affected by the implementation of different UBI systems: means-tested benefits (including Tax Credits); non-means-tested benefits (excluding UBI); combined National Insurance and income tax revenue; and of course expenditure on the UBI itself. We are interested in calculating the net fiscal cost of UBI schemes in comparison to the base scenario, to the extent that gross UBI expenditure may be offset by reduced benefit payments and increased tax revenues. For ease of exposition, we also report changes in the net fiscal position as percentages of total benefit expenditure in the base scenario.

Distributional variables

We report, variously, absolute levels of weekly equivalised disposable income, the absolute change (gain or loss) in weekly equivalised disposable income, and the percentage change in the average gain or loss compared to the base scenario. We report these data as averages for households aggregated by the following grouping variables: income quintile, family type, number of children, and labour market status (working or workless).

All of the distributional variables we use in this study are based on equivalised household income data[3]. These data are used to calculate indicators of poverty incidence and inequality, and are reported in aggregated form for different groups, based on categories of household income level in the base scenario (i.e. income quintiles or deciles) and/or household characteristics (i.e. family type, number of children, or labour market status).

We provide data on the numbers of households and children living in

3. Equivalisation adjusts net income for household size and composition, in order to better assess material living standards in terms of the level of consumption of goods and services permitted by a given income. Equivalisation usually takes the income of a couple without children as the reference point, and "then increases relatively the income of single person households (since their incomes are divided by a value of less than one) and reduces relatively the incomes of households with three or more persons, which have an equivalence value of greater than one" (DWP, 2015: 12). There are two alternative equivalence scales commonly employed in the empirical literature, the McClements and (modified) OECD scales; we use the latter, in congruence with most of the empirical literature. The modified OECD scale implies that, in order to maintain the same standard of living within the household, an individual adult living alone requires 67% of the income required by a couple; each additional adult or child over 14 years of age requires 33% of the amount required by the couple; and children under the age of 14 require 20% of the income required by the couple.

poverty. Data are reported for three alternative poverty indicators: below 60% of median income before housing costs, below 60% of median income after housing costs, and below 50% of median income before housing costs. We also calculate poverty lines using both pre- and post-reform income distributions. The indicators of inequality calculated in the study are the Gini coefficient, 90:10 ratio and 75:25 ratio.

Specification of Schemes Modelled in this Paper

Coverage

Whilst one of the core definitional attributes of UBI is that it is universal, this is necessarily a conditional and contested attribute; the population within which universality applies is always restricted within the boundaries of a relevant political community. UBI schemes are usually restricted on the basis of citizenship or residency criteria, excluding foreign nationals and recently arrived migrants. Thus, benefits that are usually defined and understood as universal and unconditional are only so in the context of a (politically) defined population.

Perhaps more pertinently, UBI does not preclude the different treatment of individuals based on age, this being seen as perhaps the only legitimate manner in which coverage may be restricted or payments varied. Indeed, in the models below we follow the UK system in modelling UBI which varies in generosity depending on whether individuals are dependent children, working age adults or old age pensioners. We also model several partial scenarios in which eligibility is restricted to specific age groups, and these models form the basis of our analysis of a possible sequenced transition, in which eligibility is extended in stages. The analysis that follows distinguishes schemes with full coverage from partial transitional schemes, presenting and analysing them in separate sections.

"UBI does not preclude the different treatment of individuals based on age, this being seen as perhaps the only legitimate manner in which coverage may be restricted"

The different partial schemes modelled in this paper are as follows:

- Working age UBI
- Adult UBI
- Citizen's Pension
- Child Benefit Plus
- Young adult UBI
- Third age UBI

These schemes are interesting in themselves, but also, crucially, in terms of their potential for gradually expanding coverage in stages. The rationales for covering each specific demographic are discussed in Section 4 below as we review the findings of the models.

Payment level

Technically speaking, as Van Parijs (1992: 4) observes, the expression 'basic

income' only implies "that any income from other sources will come on top of the basis it provides [...] not [...] a link with so-called basic needs... a basic income can in principle fall short of as well as exceed whatever level of income is deemed sufficient to cover a person's basic needs"[4]. In any case, the level of income required to ensure an individual's basic needs are covered is a contentious issue. Possible organising principles include setting payments at: the current rates of means-tested benefits for individuals of various ages; relative poverty thresholds; the equivalent of the national minimum wage; or the acceptable minimum income standard.

"We model four main levels of payment, ranging from modest/inadequate to generous"

With this in mind, we model four main levels of payment, ranging from modest/inadequate to generous. The levels are set in relation to existing financial thresholds, for ease of illustration and to facilitate modelling the accompanying tax/benefit changes (discussed below). Following IFS (2014), weekly figures are calculated based upon there being 365/7 weeks per year where benefit rates are quoted per annum, and for yearly figures where benefits rates are quoted per week.

1. UBI set at the level of the tax saving implied by personal income tax allowance (PITA).

This equates to £2,200 p.a. (£42.19 p.w.) in the 2016/17 tax year.

2. UBI set at the level of existing benefits.

This implies differentiated payments for children, working age adults and pensioners. For simplicity, and due to the lack of clear grounds for such a distinction, we do not distinguish between younger and older working age adults, who are currently paid different rates of certain means-tested benefits. Payments, based on the benefit levels in the 2016/17 tax year, are as follows:

- £3,494.36 p.a. (£67.01 p.w.) for dependent children 0 – 17. This is based on the rates of Child Benefit (CB) paid for second and subsequent children (£13.70 p.w.), plus the maximum child element of Child Tax Credit (CTC) (£2,780 p.a.)
- £3,811.65 p.a. (£73.10 p.w.) for working age adults (18 – 64 for males, 18 – 62 for females). This is based on the basic payments for Employment and Support Allowance (ESA), Income Support (IS) and Jobseekers Allowance (JSA).
- £8,113.45 p.a. (£155.60 p.w.) for pensioners (65+ for males, 63+ for females). This is based on the level of the Pension Credit (PC) standard minimum guarantee.

4. It should be noted that BIEN has mooted proposals (at the BIEN 2016 Congress in Korea) to amend the group's official definition to state that UBI "secures a livelihood (material existence) and enables participation in the political community (country) for everyone", notwithstanding the possibility of "a partial basic income as a step toward a full basic income", and that there should be "no presumption that basic income replaces other welfare entitlements".

3. UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled.

Individuals and households in certain circumstances currently receive top-ups (also called premiums or supplements) to the 'standard' payment levels. One condition under which these supplements are awarded is when individuals have medical conditions or disabilities; they are paid in addition to benefits explicitly designed to compensate individuals for the additional costs of disability (i.e. Disability Living Allowance (DLA) and Personal Independence Payment (PIP)). Therefore, paying a uniform UBI to able-bodied and disabled people alike is likely to leave the latter group worse off. The UBI analysed here provides one attempt at mitigating losses among households affected by disability by making an additional payment, designed to compensate for the loss of premiums that are associated with withdrawn working age benefits such as ESA and Working Tax Credit (WTC).

The IPPR model has 'markers' indicating whether individuals are disabled or severely disabled, based on responses in the FRS. These are defined based on whether individuals satisfy any of the following criteria:

	Disabled	Severely Disabled
Adult	• In receipt of any type of Incapacity Benefit or Severe Disablement Allowance • In receipt of any type of Disability Living Allowance or Attendance Allowance • Registered disabled • Has a long-standing condition which limits activities • Disability prevents work	• In receipt of Severe Disablement Allowance • In receipt of the middle or higher rate of the Disability Living Allowance care component
Child	• In receipt of any type of Disability Living Allowance • Registered disabled • Has a long-standing condition which limits activities	• In receipt of the middle or higher rate of the Disability Living Allowance care component

In determining the levels at which premiums should be paid to disabled and severely disabled individuals, the intention has been to replace existing supplements and premiums as far as possible. Therefore:

- Disabled adults receive an additional £35.75 per week, being the amount of the ESA Support Group premium. For comparison, the IS disability premium is £31.85, and the WTC disability element is £56.29. However, proposed UBI payments exceed WTC payments considerably, implying that disabled WTC claimants would still be better off despite the smaller premium.
- Severely disabled adults receive an additional £76.65 (on top of the disability premium), being the sum of the ESA/IS enhanced disability (£15.55) and severe disability (£61.10) premiums. While the latter is only paid to those

with more significant care needs who are not living with a carer, it is an important consideration not to make these extremely vulnerable individuals worse off. Furthermore, there is a clear deficit between the costs of disability and disability benefits aimed at compensating for additional living costs, i.e. DLA and PIP, suggesting that it would be beneficial to increase payments to individuals with high care costs anyway. Finally, this amount (£76.65) compares reasonably with the higher rate of Attendance Allowance (£81.30), ensuring that individuals receiving this benefit would only be marginally disadvantaged.

- Disabled children receive an additional £59.45, the amount of the disabled child premium in CTC.
- Severely disabled children receive an additional £24.07 (on top of the disability premium), the amount of the severely disabled child premium in CTC.

4. UBI set at the level of existing benefits plus tax saving implied by PITA.

Details as for 1 and 3 above, with payments as follows:

- £5,694.36 p.a. (£109.20 p.w.) for dependent children 0 – 17.
- £6,011.65 p.a. (£115.29 p.w.) for working age adults (18 – 64 for males, 18 – 62 for females).
- £10,313.45 p.a. (£197.79 p.w.) for pensioners (65+ for males, 63+ for females).

Tax/benefit changes accompanying UBI

One of the core areas of debate with respect to UBI schemes relates to other changes that are desirable and/or necessary in order to facilitate successful implementation of the scheme.

There are a great number of possible permutations of benefit changes, since in principle we can withdraw any number of existing benefits – or indeed, amend them to better complement the UBI scheme in question; for example, they could be recalculated taking the new payment into consideration. Here, the goal has been to model the most realistic or 'sensible' proposals.

"Part of the rationale for the introduction of UBI is the administrative simplicity and economic efficiency afforded by the elimination of means-testing"

Part of the rationale for the introduction of UBI is the administrative simplicity and economic efficiency afforded by the elimination of means-testing, contributory mechanisms and employment-related conditions from the benefits system. The withdrawal and replacement of means-tested benefits, in particular, strengthens the rationale for the implementation of a UBI in terms of administrative savings, the reduction of stigma, and the elimination of poverty and unemployment traps through high withdrawal rates. For this reason, it may be intrinsically desirable for existing benefits to be removed in line with the implementation of UBI, as well as contributing to the fiscal feasibility of reform. However, as noted above, it may be difficult to achieve this while at the same time ensuring that existing recipients of means-tested benefits are not worse off and/or that fiscal costs are not excessive.

Broadly speaking, there are four ways in which the benefit system can be adjusted alongside the introduction of basic income:

1. UBI paid in addition to the existing tax and benefit system, with no other changes
2. UBI paid in addition to existing benefits, but this payment taken into account in the calculation of means-tested benefits[5]
3. UBI combined with the elimination of benefits/tax allowances which it is broadly designed to replace, with no other changes
4. UBI combined with the elimination of benefits/tax allowances which it is broadly designed to replace, *and* UBI payment is taken into account in the calculation of other (remaining) means-tested benefits

Changes required to achieve revenue neutrality

Although the elimination of benefits and income tax allowances in the scenarios above goes some way towards reducing the net cost to the exchequer, the main intention of the first stage of our analysis is simply to compare the revenue and distributional implications of the various full-coverage schemes. However, acknowledging that fiscal implications affect the political feasibility of UBI, we also model, for two of the schemes (2.4 and 3.4), the tax changes required to achieve revenue neutrality. These schemes are described in greater detail in Section 5, below.

Given that one of the core arguments in favour of UBI is the integration and simplification of tax and benefits systems (e.g. Atkinson, 1995), it seems entirely appropriate that one aspect of the scheme would be to eliminate the system of personal income tax allowances and National Insurance contributions thresholds such that all earned income is subject to positive rates of income tax.

Thus, in these schemes, benefits and personal income tax allowances are eliminated as before and, in addition, the national insurance contributions (NICs) system is modified so that the lower and higher earnings limits are abolished, i.e. NICs above the Upper Earnings Threshold are raised from 2% to 12% and the Lower Earnings Limit is reduced to zero.

We then follow an iterative process to arrive at the rates of income tax required to achieve approximate revenue neutrality[6] for two alternative tax systems:

- The existing (progressive) tax band structure
- A flat rate (uniform) tax structure

A full list of all schemes is provided in Appendix 1.

5. It is also possible to consider an intermediate option between 2 and 3: the UBI could replace relevant non-means-tested benefits and tax allowances but means-tested benefits are retained, with UBI taken into account in their recalculation. We aim to examine this option in future work.

6. For discussion of the procedure see Callan et al. (1999) and Figari et al. (2014).

3

Full Coverage Schemes with Payments Approximating Existing Benefits and Tax Allowances

Revenue Implications

Revenue implications of the main schemes are shown in Table 1, with a more complete breakdown provided in Appendix 2. At this stage in the analysis, we do not model the corresponding changes to the tax system that are required for fiscal neutrality (this is dealt with for a selected number of models in Section 5); for this reason, in analysing the revenue implications of these schemes, it is perhaps useful to put the figures in the context of estimates for the revenue implications of potential changes to the tax system. According to HMRC (2015, 2016), changes to various tax rates and allowances would increase revenue by the following amounts:

- Increase in base rate of income tax by one percentage point: £3.9bn.
- Increase in higher rate of income tax by one percentage point: £0.785bn.
- Elimination of personal income tax allowance: £72bn.
- Elimination of National Insurance lower earnings threshold: £21.2bn.
- Elimination of National Insurance upper earning threshold: £25.1bn.

Turning first to the UBI schemes with full coverage, for each level of payment, overall revenue implications depend on whether the UBI is paid in addition to existing benefits with no corresponding adjustments, whether it is taken into account in the (re)calculation of other means-tested benefits, and whether any corresponding benefits are withdrawn. Of course, these factors also affect the core distributional variables, as discussed in subsequent sections.

UBI set at the level of the tax saving implied by personal income tax allowance

The total cost of paying the entire population a uniform rate of £2,200 per annum is approximately £140bn (Model 1.1). Taking this payment into account as income in the calculation of other means-tested benefits would reduce the net cost of implementing UBI by approximately £21bn (Model 1.2). Moving towards a more realistic proposition from a fiscal perspective, Model 1.3 illustrates the implications of eliminating the personal income tax threshold as well as Child Benefit. However, this scheme would still have a net cost of £59bn, equivalent to approximately 28% of existing welfare expenditure; for individuals who earn more than the £11,000 threshold, the fiscal cost of the UBI and the increase in income tax revenue are equivalent, but for everyone else the UBI will represent a net revenue loss to the exchequer. The magnitude of the overall loss at a national level would be greater than the increases in revenue accrued by the elimination of both NI thresholds and a rise in income tax by 2-3 percentage points, so even a moderate UBI such as this would require some fairly substantial – although arguably feasible – changes to the tax system. Model 1.4, in which the UBI is taken into account in the recalculation of means-tested benefits, would have a net cost of £36bn.

Table 1: Revenue Implications of Main Schemes

Model	Reduced Benefit	Increased Tax/NI Revenue	Additional fiscal cost	Additional fiscal cost as % of total base scenario benefit expenditure
UBI set at the level of the tax saving implied by personal income tax allowance (UBI cost: £140bn)				
Model 1.1 - no other changes	0	0	140	67
Model 1.2 - UBI taken into account in calculation of means-tested benefits	21	0	119	57
Model 1.3 - CB and PITA eliminated	0	80	59	28
Model 1.4 - CB and PITA eliminated, and UBI taken into account in calculation of means-tested benefits eliminated, and UBI taken into account in calculation of means-tested benefits	24	80	36	17
UBI set at the level of existing benefits (UBI cost: £288bn)				
Model 2.1 - no other changes	0	0	288	137
Model 2.2 - UBI taken into account in calculation of means-tested benefits	41	0	247	118
Model 2.2.1[1] - CB and BSP eliminated, and UBI taken into account in calculation of means-tested benefits	121	0	167	80
Model 2.2.2[1] - CB, BSP and PITA eliminated, and UBI taken into account in recalculation of means-tested benefits	121	65	102	49
Model 2.3 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated	140	65	83	40
Model 2.4 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated, and UBI taken into account in calculation of CTB and HB	147	65	76	36
UBI set at the level of existing benefits, with premiums for individuals determined as disabled / severely disabled (UBI cost: £326bn)				
Model 3.1 - no other changes	0	0	326	156
Model 3.2 - UBI taken into account in calculation of means-tested benefits	50	0	276	132
Model 3.2.1[1] - CB and BSP eliminated, and UBI taken into account in calculation of means-tested benefits	129	0	197	94
Model 3.2.2[1] - CB, BSP and PITA eliminated, and UBI taken into account in recalculation of means-tested benefits	129	65	132	63
Model 3.3 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated	140	65	121	58
Model 3.4 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated, and UBI taken into account in calculation of CTB and HB	149	65	112	53

Table 1 continued

UBI set at the level of existing benefits plus tax saving implied by PITA (UBI cost: £427bn)				
Model 4.1 - no other changes	0	0	427	204
Model 4.2 - UBI taken into account in calculation of means-tested benefits	52	0	375	179
Model 4.2.1[1] - CB and BSP eliminated, and UBI taken into account in calculation of means-tested benefits	132	0	296	141
Model 4.2.2[1] - CB, BSP and PITA eliminated, and UBI taken into account in recalculation of means-tested benefits	132	65	231	110
Model 4.3 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated	140	65	222	106
Model 4.4 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated, and UBI taken into account in calculation of CTB and HB	153	65	210	100

UBI set at the level of existing benefits

As illustrated in Model 2.1, the total cost of a UBI paid at the rates of 'basic' existing benefits for each age group (as defined in Section 2.3 above) is £288bn, which corresponds to a sum far greater than the existing welfare bill (approximately £210bn). Taking payments into account in the calculation of means-tested benefits saves about £41bn (Model 2.2), but such a scheme clearly remains fiscally infeasible, requiring an increase in welfare spending of 118% compared to the current welfare bill. Models 2.2.1 and 2.2.2 estimate the effects of eliminating the BSP and CB, and BSP, CB and PITA respectively while retaining means-tested benefits; this saves around £80bn for Model 2.2.1 and £145bn for Model 2.2.2. Turning to Model 2.3, removing the mainstay of family, working-age and old-age benefits generates savings of £140bn from reduced benefit spending with another £65bn of increased tax revenue due to the elimination of personal tax allowances. While this is still a substantial fiscal cost compared to the base scenario, requiring the exchequer to raise an additional £83bn to retain revenue neutrality, it is arguably within the realms of feasibility. Combining the withdrawal of the same range of benefits with amendments to remaining means-tested payments (so that the UBI is taken into account in their recalculation) saves an additional £6bn for the exchequer. This scheme is modelled with some additional amendments to the income tax structure in Section 5, when we turn the focus to achieving revenue neutrality.

UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled

Implementing this scheme, with no compensating changes to the tax/benefit system, would cost £326bn per year – an additional £38bn compared to the UBI schemes presented in the preceding section, as shown for Model 3.1. Model 3.2 takes this UBI into account in the recalculation of entitlements to other benefits, and would save £50bn – a greater saving compared to that shown in Model 2.2, reflecting the more generous payment levels. Both of these options are clearly outside the feasible set, with a net fiscal cost of 156 and 132 percent

of the existing welfare bill respectively. Models 3.2.1 and 3.2.2 estimate the additional impact of eliminating the BSP and CB, and BSP, CB and PITA respectively. Eliminating the BSP and CB saves approximately £79bn, and eliminating the PITA generates an additional £65bn in revenue. Turning to Model 3.3, withdrawing the same benefits as in Model 2.3 would save the same amount, £140bn, imposing a fiscal cost of around 58% of the current level of welfare spending; Model 3.4 is only marginally cheaper. Both of these latter schemes require approximately an additional £100bn to render them revenue neutral – necessitating considerable but arguably feasible rises in income tax levels, as analysed in Section 5.

UBI set at the level of existing benefits plus tax saving implied by PITA

Implementing this generous scheme would cost £427bn, twice the amount of existing benefit expenditure. As shown in Model 4.2, £52bn of this could be saved through reductions in means-tested benefit expenditure. As before, eliminating the BSP and CB would save around £80bn while eliminating the PITA would generate an additional £65bn of tax revenue (Models 4.2.1 and 4.2.2). Eliminating working age benefits and tax credits would save an additional £8bn – a relatively small amount, because at such a generous level of UBI, means-tested benefit payments would already have fallen considerably (Model 4.3). Reductions in housing and council tax benefit payments (Model 4.4) represent savings of an additional £13bn. Thus, even with the compensatory withdrawal of benefits, and taking the UBI into account in the recalculation of other benefits, these schemes impose net fiscal costs of approximately £200bn – around the size of existing welfare expenditure. It is difficult to see how these levels of payment could be remotely affordable, even in the longer term.[1]

Implications for the Incidence of Poverty and Inequality

The implications of the main schemes in terms of the incidence of poverty and inequality are shown in Table 2.

Table 2 shows, for each scenario, three indicators and their percentage change in comparison to the base scenario: poor households as a proportion of total households; child poverty – the number of children living in poor households as a proportion of total children; and the Gini coefficient measure of inequality. Poverty measures are reported using a poverty line of 60% of median income after housing costs. The data are reported using the base scenario poverty line, rather than recalculating the line based on post-reform incomes. These data are supplemented by additional indicators in the

1. We were not able to simulate every scheme on which data were required. Models are author's estimations based on output for other models. E.g. Model 2.2.1 is constructed by subtracting CB and BSP costs from Model 2.2. This is possible because the IPPR microsimulation output provides a detailed breakdown of the costs of individual benefits. Interaction or 'knock-on' effects associated with the elimination of CB and BSP are likely to be minimal, but such estimations should still be interpreted with caution.

appendices[2].

UBI set at the level of the tax saving implied by the personal income tax allowance

For all four ways in which payment can be combined with changes to the tax and benefit system, this level of UBI has a very large and significant impact on poverty levels. In Model 1.1, in which the UBI is paid with no corresponding changes to the tax or benefit system, the number of households in poverty falls by about half, while child poverty falls by nearly three quarters. We find that child poverty rates fall more dramatically than household poverty rates across all models examined here, as a result of our decision to set payments for children at relatively high rates compared to working age adults, in comparison to other schemes examined in the literature, such as Reed and Lansley (2016)[3]. There is also a significant reduction in inequality. Making compensatory adjustments to the tax and benefit system (Models 1.2, 1.3 and 1.4) dilutes effects on poverty and inequality – but reductions remain large and significant, especially with respect to child poverty. As expected, there is a clear trade-off between the fiscal affordability of proposals, and the magnitude of their distributional impacts.

UBI set at the level of existing benefits

Given the more generous level of payment, it is no surprise that a UBI set at the level of existing benefits with no compensatory changes (Model 2.1) has an even more dramatic impact on poverty and inequality. The number of households living with less than 60% of median income in the base scenario falls by three quarters, and the number of children living in poor households falls by almost 90%. There is also an impressive reduction in the Gini coefficient. Taking the UBI into account in the recalculation of means-tested benefits obviously weakens these effects, although not dramatically (Model 2.2). However, when we remove the mainstay of child, working age and old-age benefits alongside the introduction of the UBI, as in Model 2.3 – moving towards a UBI that is fiscally feasible, administratively more efficient and in which incentives

2. In Appendices 3-5, statistics are reported for a number of additional indicators. We report an additional measure of poverty – % of adults living in poverty – and for all three measures of poverty, we report two further alternative poverty line indicators: below 60% of median income, and below 50% of median income, both before housing costs. In terms of the relative effects of different policy scenarios, these indicators are largely equivalent, with no systematic biases involved with the selection of one over the others; they are included in the appendices for completeness. In addition, in Appendices 6-8, we report the implications for the incidence of poverty, recalculating poverty lines using post-reform income distributions. For the most part, findings are similar but poverty reductions are less pronounced using the latter methodology since, in general, the poverty line tends to rise as a consequence of the uniform UBI accruing to high- and middle-income as well as the poorest households – leaving greater numbers below it. Turning to inequality, Appendix 9 compares an additional two indicators of inequality: the 90:10 ratio (ratio of income at the 90th percentile compared to income at the 10th percentile) and the 75:25 ratio (ratio of income at the 75th percentile compared to income at the 25th percentile). Again, we report the absolute figure and the percentage change compared to the base scenario.

3. Indeed, our decision to set payments for children at relatively high levels is partly motivated by a desire to avoid the adverse distributional consequences described for the full schemes in that paper.

to work are improved – the observed reduction in poverty levels falls to negligible levels (1.5%) in terms of households, and falls dramatically in terms of child poverty to approximately 20% (a reduction that would still, of course, represent an impressive achievement). Withdrawing the aforementioned benefits as well as taking the UBI into consideration in the recalculation of other means-tested benefits (Model 2.4) in fact leads to an increase in the number of households living in poverty of 3.2%; both Models 2.3 and 2.4 lead to increased inequality as measured by the Gini coefficient. Thus, while compensatory measures (withdrawing benefits and recalculating others taking UBI payments into account) make these schemes more affordable, they naturally reduce the magnitude of transfers already targeted at the poor; to the extent that the uniform level UBI does not fully compensate for the loss of these transfers if individuals have entitlements greater than the 'standard' rate, this will equate to some households – including ones that are already poor – losing out.

Table 2: Implications for Incidence of Poverty and Inequality

Model	H'holds below 60% median AHC	% change from base scenario	Children below 60% median AHC	% change from base scenario	Gini coeffic't	% change from base scenario
UBI set at the level of the tax saving implied by personal income tax						
Model 1.1 - no other changes	10.2	-53.2	8.0	-73.6	0.3	-13.3
Model 1.2 - UBI taken into account in calculation of means-tested benefits	13.8	-36.8	12.2	-59.9	0.3	-7.8
Model 1.3 - CB and PITA eliminated	13.0	-40.7	12.4	-59.1	0.27	-10.6
Model 1.4 - CB and PITA eliminated, and UBI taken into account in calculation of means-tested benefits	18.0	-17.6	18.7	-38.4	0.29	-3.9
UBI set at the level of existing benefits						
Model 2.1 - no other changes	5.5	-74.6	3.3	-89.2	0.23	-22.3
Model 2.2 - UBI taken into account in calculation of means-tested benefits	8.8	-59.7	6.7	-78.1	0.26	-14.1
Model 2.3 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated	21.5	-1.5	23.9	-21.2	0.31	5.0
Model 2.4 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated, and UBI taken into account in calculation of CTB and HB	22.5	3.2	25.4	-16.4	0.32	6.3

Table 2 continued

UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled						
Model 3.1 - no other changes	4.0	-81.7	2.7	-91.3	0.22	-25.1
Model 3.2 - UBI taken into account in calculation of means-tested benefits	7.7	-64.8	6.1	-79.8	0.25	-16.3
Model 3.3 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated	16.6	-24.1	20.4	-32.9	0.29	-3.2
Model 3.4 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated, and UBI taken into account in calculation of CTB and HB	17.8	-18.5	21.9	-27.9	0.29	-1.6
UBI set at the level of existing benefits plus tax saving implied by PITA						
Model 4.1 - no other changes	2.2	-90.0	0.7	-97.8	0.21	-29.6
Model 4.2 - UBI taken into account in calculation of means-tested benefits	5.7	-74.0	2.7	-91.1	0.24	-20.1
Model 4.3 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated	12.1	-44.4	8.7	-71.4	0.27	-7.8
Model 4.4 - PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC eliminated, and UBI taken into account in calculation of CTB and HB	13.4	-38.7	9.5	-68.7	0.28	-5.4

UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled

As discussed above, one possible (partial) solution to the fact that entitlements often exceed standard payment rates, is to model an additional payment designed to replace supplements and premiums received by disabled individuals, such as those attached to ESA and WTC. All of these models (3.1 – 3.4) have dramatic effects on levels of poverty and inequality, and unlike Models 2.3 and 2.4 above, we observe no increases in poverty when benefits are reduced or withdrawn. As previously, when moving from a UBI with no compensatory changes to one with compensatory withdrawal and recalculation of benefits, the magnitude of reductions in poverty and inequality diminishes in line with the falling cost of the schemes.

UBI set at the level of existing benefits plus tax saving implied by PITA

At such a high level of payment, it is unsurprising that the reduction of poverty and inequality should be so impressive. Even when other benefits are withdrawn (Models 4.3 and 4.4), this level of UBI still promises reductions in household poverty of approximately 40% and in child poverty of around 70%. However, as we have argued previously, the levels of expenditure required to achieve this are astronomically high; similar reductions in poverty could be attained at much lower cost by targeting transfers towards low-income households.

4

Partial Schemes and Sequenced Expansion of Coverage

Revenue Implications

Working age/adult UBI

Both the working age and adult scenarios could represent desirable ends in themselves, based on a more residual conception of UBI – for example, as envisaged by the likes of Charles Murray (2006) – in which UBI is paid only to adults, thus diminishing perverse incentives that arise when welfare payments increase in line with family size. Alternatively, they could be seen as a step towards more universal coverage.

In Model 5.1, we simulate a UBI of £2,200 per year in conjunction with the elimination of the personal income tax allowance. Spending on non-UBI (means-tested) benefits rises by £9bn, as individuals' net incomes fall as a result of the change to the tax system, and the UBI itself costs £84bn; the elimination of the PITA generates an additional £80bn of revenue. This equates to additional net costs of £13bn compared to the base scenario, approximately 6% of existing benefit expenditure. Model 5.2 is paid at the more generous rate of £3,811.65 per year (£73.10 per week), but includes the withdrawal of a greater number of benefits on top of the PITA: Carers' Allowance, Employment and Support Allowance, Income Support, Jobseekers' Allowance, and Working Tax Credit. The elimination of these benefits generates savings of £39bn to the welfare bill; added to the increased tax revenue of £79bn, offsetting these savings against the £146bn cost of the UBI leaves a net cost of around £28bn – approximately 13% of the total current welfare bill.

Model 6 extends coverage beyond working age to pensioners. The scheme is as Model 5.2 for working age adults, with more generous payments of £155.60 per week for pensioners. This scheme requires additional spending, compared to the base scenario, of around £51bn, which can be viewed as a fairly modest cost for such a wide-ranging policy change. Again, the question remains as to the desirability of the distributional impacts, to which we turn in the next section.

Citizen's Pension

Perhaps the most feasible starting point on a route towards expanded coverage, this scheme has the benefit that it only requires relatively small changes to the existing system. Although based on the contributory principle, the current system has for some time been moving towards universality through incremental changes to the contributory principle, including a reduction in the number of years required to qualify for a full Basic State Pension (BSP) and the introduction of Home Responsibilities Protection (subsequently replaced by National Insurance credits for parents and carers). The move to a single-tier BSP is intended to eliminate means-testing from the pension system, being paid at the rate of the previous means-tested Pension Credit. Nevertheless, despite these reforms, gaps in coverage and pensioner poverty levels remain high, partly as a result of low take-up rates for means-tested supplements – issues which a Citizen's Pension would address, at some additional cost. As shown for Model 8, the elimination of old-age benefits would reduce

expenditure by £77bn, but tax revenue would fall by £6bn and the UBI would cost a total of £95bn. The additional net cost would be approximately £24bn: around 12% of current benefit expenditure.

Table 3: Revenue Implications: Partial and Transitional Schemes

Model	Saving from reduced benefit payments (compared to base scenario)	Saving from increased tax / NI revenue	UBI	Additional fiscal cost (compared to base scenario)	Additional fiscal cost as % of total base scenario benefit expenditure
Partial coverage scenarios					
Model 5.1 – UBI at the value of PITA, with elimination of PITA, for working age adults	-9	80	84	13	6
Model 5.2 – UBI at rate of existing benefits, with elimination of PITA, CA, ESA, IS, JSA and WTC, for working age adults	39	79	146	28	13
Model 6 – UBI at rate of existing benefits / pensions, with elimination of PITA, BSP, CA, ESA, IS, JSA, PC and WTC, for all working and pension age adults	124	65	241	51	24
Model 7 – Citizen's Pension – UBI at rate of minimum guarantee for single pensioners, with elimination of BSP and PC	77	-6	95	24	12
Model 8 – Child Benefit Plus – UBI at rate of payment of CB and CTC for second and subsequent children at highest means-tested levels, with elimination of CB and CTC	27	0	46	19	9
Model 9 – Young Adult's Income – UBI at rate of existing benefits for 18-25 year olds, with elimination of ESA, IS and JSA for that age group	2	0	26	23	11
Model 10 – Third Age Income – UBI at rate of existing benefits for individuals between 50 and state pension age, with elimination of ESA, IS and JSA for that age group	5	0	42	37	18

Table 3 continued

A transitional scheme with gradual expansion of coverage					
Model 11.1 – Citizen's Pension and Child Benefit Plus	104	-6	141	43	21
Model 11.2 – Citizen's Pension, Child Benefit Plus, and UBI at the value of PITA combined with the elimination of PITA	100	66	225	59	28
Model 11.3 – Citizen's Pension, Child Benefit Plus, UBI at the value of PITA combined with the elimination of PITA, and Young Adult's Income	102	66	237	68	33
Model 11.4 – Citizen's Pension, Child Benefit Plus, UBI at the value of PITA combined with the elimination of PITA, Young Adult's Income, and Third Age Income	111	66	254	77	37

Child Benefit Plus

Another feasible starting point for a transitional scheme would be a UBI for children. Until recently, the existing Child Benefit system conformed closely to the principle of universality, and there is already an appropriate administrative structure. It is interesting to note that Child Benefit was initially opposed on many of the same grounds that UBI proposals are criticised – that such benefits are costly, ill-targeted and reduce the imperative for individuals to provide for themselves and their dependents. Despite these objections, Child Benefit has continued in more-or-less the same form since its introduction in 1977, although in the principle of universalism has been diluted by the introduction of differentiated payments for first and subsequent children in 1990, and the recent introduction of the 'High Income Child Benefit charge', which reduces payments for households in which at least one adult earns £50,000 per annum, eliminating payments entirely for earnings over £60,000. In terms of other policies aimed at redistributing towards families with children, while the current system of Child Tax Credit (CTC) – introduced by Labour in 2003 in accordance with the principle of 'progressive universalism' – has been lauded for its contribution to the attainment of child poverty alleviation targets (CPAG, 2012), its means-tested nature has contributed to unemployment and poverty traps among families with children (Adam et al., 2006). Thus, while the current government has moved away from the principle of universality in favour of more stringent means-testing, an alternative approach, which avoids penalising working families and generating disincentives for individuals to enter work and progress, would be to increase the generosity of universal payments for children.

Model 8 simulates a payment of £3,494.36 per year, based on the standard rate of payment per child under Child Tax Credit and the rate paid for second and subsequent children under Child Benefit; these benefits are eliminated.

The UBI's cost of £46bn is offset by a saving of £27bn, resulting in a net cost of £19bn.

Young Adults' Income

As Torry (2013: 50) notes, the provision of a secure income for young people – who are at greater risk of unemployment, have to bear the costs of education and training, and are subject to less coherent income support structures – has been a preoccupation of the basic income movement since the 1980s. It would also be easy – and perhaps more favourable politically – to make such payments conditional on activities such as education, volunteering or care work, as in 'participation income' models (Atkinson, 1996).

Model 9 simulates a UBI paid at a rate of £3,811.65 per year (£73.10 per week) for 18 to 25 year olds, alongside the elimination of the main working age benefits (ESA, IS, and JSA) for this age group. This scheme only saves approximately £2bn on existing benefits, and implies a net cost of £23bn to the exchequer, around 11% of existing benefit expenditure. It would be interesting to consider how such a UBI could reduce spending on educational grants and allowances, but this was not possible in the model employed in the present study.

Third Age Income

The final partial coverage scheme modelled here is also discussed in Torry (2013): the 'third age' income, corresponding to individuals over 50 but under state retirement age. As Torry notes, this demographic is increasingly involved in caring for infant and elderly family members, as well as being vulnerable to ill-health and skills redundancy which lead to labour market exclusion. Model 10 simulates a payment of £3,811.65 per year (£73.10 per week) combined with the withdrawal of working age benefits for this demographic. This has a greater net cost than Model 9, covering a larger demographic, and would cost an additional £37bn per year, equivalent to around 18% of the current welfare bill.

A transitional scheme with gradual expansion of coverage

It is possible to examine explicitly the possibility of expanding coverage gradually, by 'layering' the partial schemes described above until comprehensive coverage is achieved – as shown in Figure 1, below. As discussed above, one of the most feasible starting points for a stand-alone UBI aimed at a specific demographic is the Citizen's Pension. Taking this as a starting point, we then expand coverage to children (Child Benefit Plus), replace the personal income tax allowance with a UBI of equivalent value for working age adults, and expand more generous payments to young and then finally to 'third age' adults. The final step towards comprehensive coverage such as illustrated in Model 2.4 would be to provide more generous amounts to all working-age adults. Such a sequenced expansion of coverage enables the fiscal burden of a full scheme to be distributed over a longer period of time.

It should be noted that there is no presumption here that expansion of

coverage will proceed automatically or unproblematically, just that gradual expansion provides one feasible mode of transition towards full UBI.

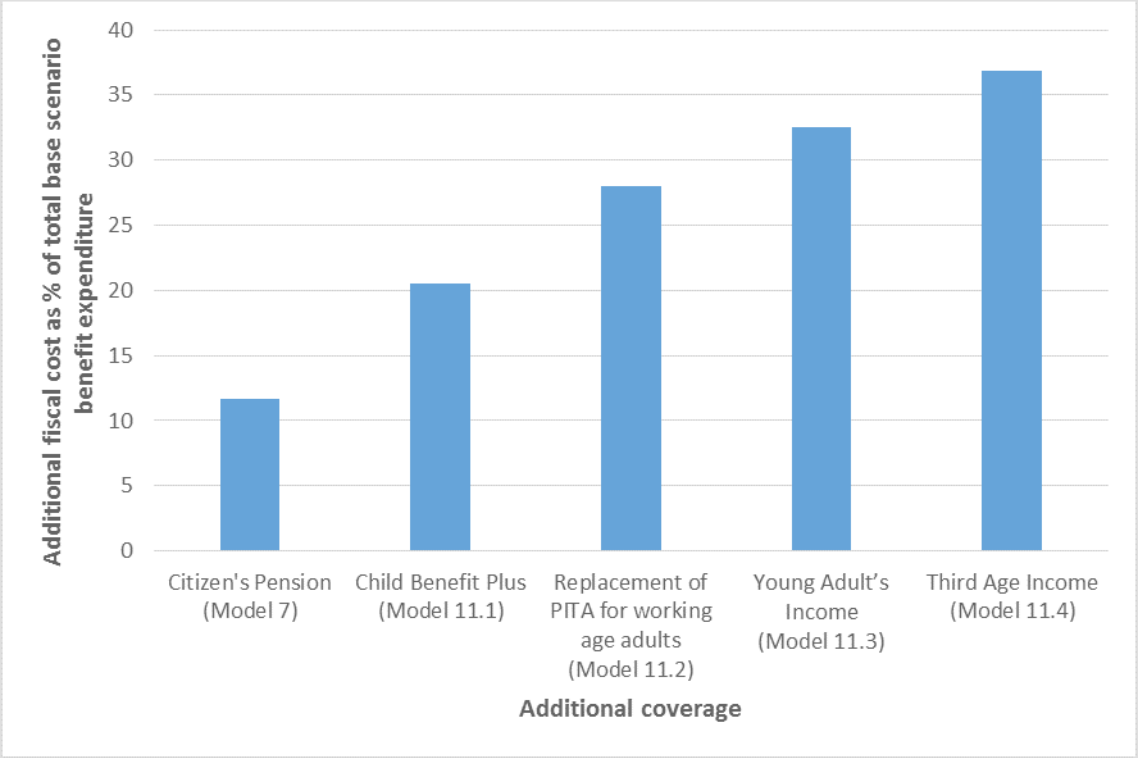

Figure 1: Fiscal Implications of a Sequenced Expansion of Coverage

Implications for the Incidence of Poverty and Inequality

Working age/adult UBI

As shown in Table 4 below, Model 5.1 has positive distributional consequences, particularly in relation to child poverty – a slightly surprising finding, since this UBI is restricted to working age adults. As it stands, the PITA only accrues fully to those who earn income above the threshold, whereas a UBI is paid to everyone regardless of income; the latter is thus more effective at alleviating poverty.

Models 5.2 and 6, which replace the mainstay of existing benefits with a UBI of similar value, have unambiguously negative distributional implications. There are likely to be large numbers of households which lose out in real terms, as a uniform UBI will often fail to adequately compensate for the loss of premiums and supplements in the existing system. Because these households are reliant on benefits, and thus among the most disadvantaged, these losses will directly increase levels of poverty and inequality.

Table 4: Implications for Incidence of Poverty and Inequality

Model	H'holds below 60% median AHC	% change from base scenario	Children below 60% median AHC	% change from base scenario	Gini coeffic't	% change from base scenario
Partial coverage scenarios						
Model 5.1 – UBI at the value of PITA, with elimination of PITA, for working age adults	21.5	-1.3	22.6	-25.6	0.29	-3.0
Model 5.2 – UBI at rate of existing benefits, with elimination of PITA, CA, ESA, IS, JSA and WTC, for working age adults	25.6	17.4	31.3	3.2	0.32	7.7
Model 6 – UBI at rate of existing benefits / pensions, with elimination of PITA, BSP, CA, ESA, IS, JSA, PC and WTC, for all working and pension age adults	24.3	11.6	31.4	3.3	0.32	8.8
Model 7 – Citizen's Pension – UBI at rate of minimum guarantee for single pensioners, with elimination of BSP and PC	21.1	-3.2	30.4	0.1	0.30	1.6
Model 8 – Child Benefit Plus – UBI at rate of payment of CB and CTC for second and subsequent children at highest means-tested levels , with elimination of CB and CTC	21.2	-3.0	27.3	-10.0	0.30	0.9
Model 9 – Young Adult's Income – UBI at rate of existing benefits for 18-25 year olds, with elimination of ESA, IS and JSA for that age group	20.0	-8.3	27.0	-11.2	0.29	-3.1
Model 10 – Third Age Income – UBI at rate of existing benefits for individuals between 50 and state pension age, with elimination of ESA, IS and JSA for that age group	20.0	-8.2	29.4	-3.2	0.30	0.0

Table 4 continued

A transitional scheme with gradual expansion of coverage						
Model 11.1 – Citizen's Pension and Child Benefit Plus	20.4	-6.4	27.3	-10.0	0.30	2.2
Model 11.2 – Citizen's Pension, Child Benefit Plus, and UBI at the value of PITA combined with the elimination of PITA	17.4	-20.3	21.4	-29.6	0.29	-4.0
Model 11.3 – Citizen's Pension, Child Benefit Plus, UBI at the value of PITA combined with the elimination of PITA, and Young Adult's Income	16.8	-23.1	20.1	-33.8	0.28	-5.2
Model 11.4 – Citizen's Pension, Child Benefit Plus, UBI at the value of PITA combined with the elimination of PITA, Young Adult's Income, and Third Age Income	17.0	-22.1	22.1	-27.3	0.29	-3.7

Citizen's Pension

Replacing existing state pension arrangements[1] with a Citizen's Pension would have fairly moderate effects on poverty and inequality levels. Household poverty would fall by 3.2%, child poverty would remain roughly unchanged, and inequality would increase slightly. This latter effect is probably an artefact of replacing means-tested/targeted support in the form of Pension Credit with universal payments.

Child Benefit Plus

Replacing the Child Benefit and Child Tax Credit systems with a system of uniform payments for all dependent children has a positive effect on household and child poverty levels – particularly the latter, which falls by 10% compared to the base scenario. Inequality rises slightly, which appears to be a consequence of the replacement of the means-tested CTC with universal payments that accrue to wealthier households as well.

Young Adults' Income

A payment to all 18-25 year olds would have large and positive effects on

1. Across all the models examined in this paper, we leave SERPs/S2P in payment. These pensions are designed to function as occupational schemes for low earners, so eliminating them would be unfair to those who have elected to make additional contributions.

poverty and inequality levels. This demographic is at high risk of worklessness and insecure and low-paid work, so households in which young adults reside – which will often include dependent children as well – benefit significantly from the proposal to grant them a secure form of income.

Third Age Income

A third age income would have similarly sized effects at the household level, but would have a much less pronounced impact on child poverty – unsurprising given that dependent children may be leaving home as their parents enter this demographic.

5

Detailed Distributional Analysis of Four Revenue-Neutral Schemes

Although the elimination of benefits and income tax allowances in the scenarios above has gone some way towards reducing the net cost to the exchequer, the main intention thus far has been to analyse trade-offs between the cost and distributional implications of the various schemes. Here, we assume that in order to be politically practicable, UBI must be accompanied by further tax rises in order to achieve, approximately, fiscal neutrality. We expand the analysis of the previous sections by providing a more fine-grained disaggregated picture of the gains and losses experienced by different groups under each of the schemes.

We have selected two schemes to examine in this regard: Models 2.4 and 3.4. Model 2.4 is set at the rate of existing benefits for different age groups, and Model 3.4 includes an additional payment designed to approximate the additional rates or 'supplements' of wage replacement benefits applicable on grounds of disability. The changes required to make these UBI schemes revenue neutral are discussed next.

Revenue Implications

Retaining the features of Models 2.4 and 3.4 as described above, for each payment level we model two types of revenue-neutral scheme: one retaining the existing structure of progressive tax bands, and another abolishing income tax bands in favour of a flat-rate schedule. In these models the personal income tax allowance was already eliminated, and we additionally abolish the lower and upper thresholds for National Insurance Contributions (NICs), meaning that employees pay a rate of 12% on all earned income. In the existing system, NICs are not paid below the primary threshold limit of £155 per week and are paid at a greatly reduced rate of 2% for those earning more than £827 per week.

Following the iterative process described above, we tweak tax rates by one percentage point until we achieve revenue neutrality compared to net benefit spending in the base scenario. As shown in Table 5, below, the UBI paid at the level of existing benefits would require either the standard, higher and additional income tax rates each to increase by 4% to 24%, 44% and 49% respectively (Model 2.5), or alternatively a flat rate tax of 29% (Model 2.6), to achieve fiscal neutrality compared to the current system. The more generous UBI system with disability premiums would require an additional 4% to cover the extra £38bn of cost: rates of 28%, 48% and 53% in the existing band structure (Model 3.5) or a flat rate of 33% (Model 3.6).

The upshot is that these changes, especially for the latter two models, represent quite a steep increase in tax rates for the majority of people. Individuals with low incomes would pay income tax and NICs on all income at combined rates exceeding 35%, where previously their income may have been entirely exempt, while individuals with high incomes would face an increase in their combined rate of income tax and National Insurance exceeding 10%. Of course, the distributional effects of higher rates on disposable income would be offset by the UBI, to a greater or lesser degree. The net effect will vary for

individuals and households in different circumstances; these distributional implications are discussed in detail in Section 5.3.

Table 5: Features of Revenue-Neutral Schemes

UBI payment	Level of existing benefits		Level of existing benefit, with disability premiums	
Tax structure	Progressive	Flat	Progressive	Flat
Model	2.5	2.6	3.5	3.6
Changes to tax system required to achieve revenue neutrality	Flat rate NICs set at 12% and existing tax bands set at 24%, 44% and 49%	Flat rate NICs set at 12% and flat rate of income tax set at 29%	Flat rate NICs set at 12% and existing tax bands set at 28%, 48% and 53%	Flat rate NICs set at 12% and flat rate of income tax set at 33%
Spending on UBI, £ billion	288	288	326	326
Saving from reduced (non-UBI) benefit payments	145	145	147	146
Increased tax/NI revenue, £ billion	143	146	184	187
Additional fiscal cost (compared to base scenario), £ billion	0	-2	-4	-6

Implications for the Incidence of Poverty and Inequality

Comparing implications of these schemes with the non-revenue-neutral options, poverty and inequality levels are higher in the former – which is unsurprising, given that we have reduced households' disposable incomes via the tax system. Data on the incidence of poverty and inequality under these schemes are provided in Table 6, below.

Table 6: Implications for Incidence of Poverty and Inequality

Model	H'holds below 60% median AHC	% change from base scenario	Children below 60% median AHC	% change from base scenario	Gini coeffic't	% change from base scenario
Model 2.5	24.2	10.9	27.5	-9.4	31.0	4.0
Model 2.6	25.0	14.7	28.5	-6.0	32.3	8.2
Model 3.5	20.3	-7.0	25.0	-17.5	28.2	-5.5
Model 3.6	21.0	-3.7	25.7	-15.3	29.2	-1.9

Models 2.5 and 2.6 give rise to increased numbers of households living below the poverty line (approximately 11% and 15% respectively) and higher

levels of inequality; as expected, the progressive tax system performs better than the flat rate system since low-earning individuals, who are more likely to live in poor households, pay an income tax rate of 23% as opposed to 28% under the flat rate system. It is interesting that child poverty rates still fall in both of these models, a finding attributable to the relatively high UBI payments for children.

"The key question is whether, given the huge costs and associated tax hikes, UBI is really the most effective way to reduce poverty"

Models 3.5 and 3.6 have positive implications with respect to both measures of poverty as well as to inequality. Again, this finding should not come as a surprise – we know that disabled people are among the most vulnerable to poverty associated with worklessness, low pay, and higher costs of living, so compensating individuals for the loss of disability premiums implied by a uniform-rate UBI should be an effective way to alleviate poverty.

The key question is whether, given the huge costs and associated tax hikes, UBI is really the most effective way to reduce poverty – or whether it is, so to speak, a case of a large income tax 'horse' pulling a tiny poverty-alleviation 'cart'. In this regard, it is perhaps worthwhile to reiterate that static microsimulation models cannot tell the whole story. Part of the rationale for UBI is that its unconditional nature reduces poverty and unemployment traps and thus helps people to work their own way out of poverty. Without the benefit of behavioural models or robust empirical evidence, we cannot quantify this effect, which may well be significant. Forthcoming research by the IPR will examine the static work incentive effects of different UBI schemes in more detail.

Household Distributional Effects

Even if the implications of a reform for poverty and inequality levels are acceptable, these aggregate measures only tell part of the story. It is equally important to identify the profile of winners and losers in terms of the income levels and other characteristics of households. In the present section, we examine the household distributional effects of Models 2.5, 2.6, 3.5 and 3.6 by income quintile, family type, number of children, and labour market status. Forthcoming research by the IPR will complement this analysis with further breakdowns by characteristics including gender and disability status, as well as calculating the proportion of households in different demographics enduring losses or experiencing gains of particular magnitudes.

Effects by income quintile

Table 7 and Figure 2 show household gains and losses by (base scenario) income quintile. There are several important findings. Firstly, all the schemes are progressive in the sense that the poorest quintile gains in each one, and gains by the largest proportional amount. In the models which retain the existing band tax structure (Models 2.5 and 3.5) the only group which loses significantly is the richest quintile (in Model 2.5, the 3rd quintile also loses but by a very marginal amount). These models are strongly redistributive. In contrast, the flat rate Model 2.6 benefits the poorest and richest quintiles at

the expense of middle-income households. This appears consistent with the fact that workless households represented in the 1st quintile would not pay tax anyway, while high-earners in the 5th quintile would face lower rates than they currently pay. In flat rate Model 3.6, the more generous UBI and higher rates of income tax payments redistribute income more effectively to the lower three quintiles, which all gain at the expense of the 4th and 5th quintiles.

Table 7: Household Gains and Losses by Income Quintile

Model	Indicator	1st	2nd	3rd	4th	5th (richest)
Base scenario	Average income in group	154.05	335.1	419.57	582.79	1,202.76
Model 2.5	Average change (£)	19.41	7.70	4.77	10.32	-43.26
	Percentage change in average	12.6	2.3	1.1	1.8	-3.6
Model 2.6	Average change (£)	16.76	-1.87	-10.59	-15.74	4.83
	Percentage change in average	10.9	-0.6	-2.5	-2.7	0.4
Model 3.5	Average change (£)	30.04	26.2	23.36	7.84	-99.4
	Percentage change in average	19.5	7.8	5.6	1.3	-8.3
Model 3.6	Average change (£)	27.41	16.76	8.1	-18.14	-51.31
	Percentage change in average	17.8	5.0	1.9	-3.1	-4.3

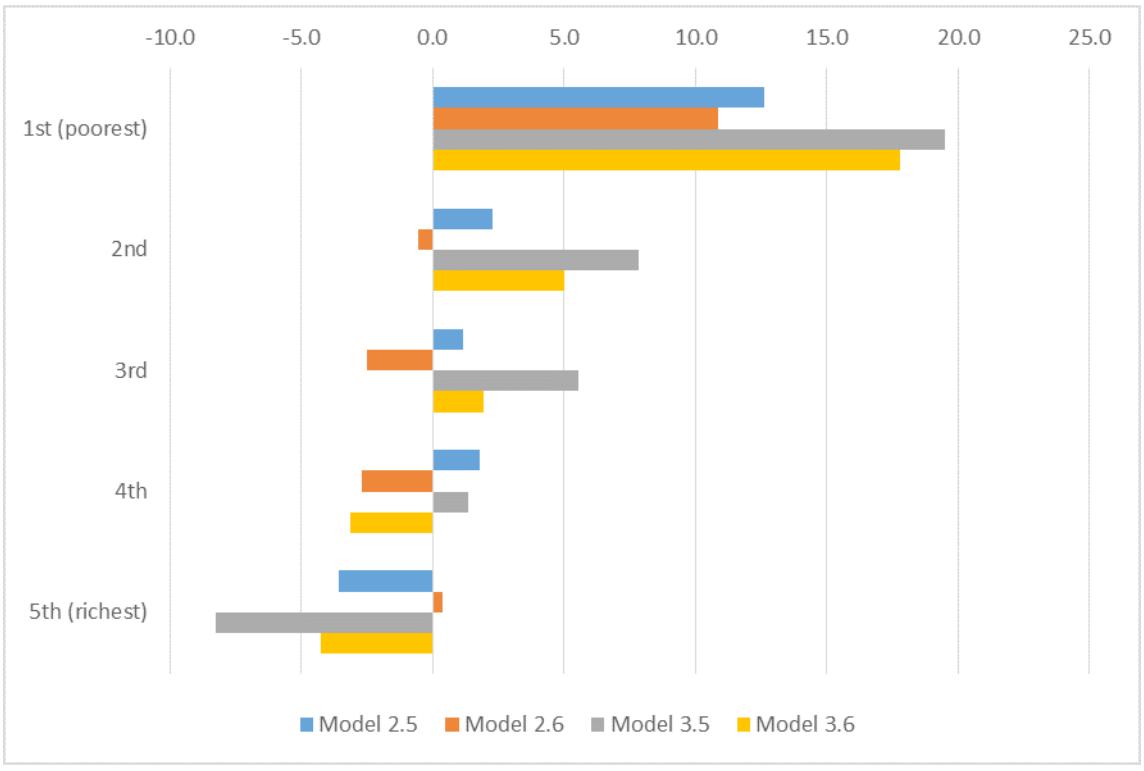

Figure 2: Household Gains and Losses (% change) by Income Quintile

Effects by household type and number of children

Turning to household gains and losses by family type, shown in Table 8 and Figure 3 below, single adults without children lose in every scheme, as do single-parent families and couples without children. Obviously, for these groups, the reforms either result in lower levels of benefits than in the existing system, higher overall tax rates for working people, or a combination of the two. Single people and couples without children are relatively likely to be in work and thus ineligible for benefits, while single parents are relatively likely to be workless or working part-time, and thus relying on means-tested benefits to achieve an acceptable income level. These latter families may lose means-tested top ups and pay higher tax rates on income that would previously have been exempt. Couples with children gain in every scheme; they are likely to have relatively large numbers of children who, as previously discussed, are treated generously in the schemes modelled here.

An interesting feature of these schemes is that single pensioners lose out, while pensioner couples gain. This may be attributed to the fact that pensioner households may lose out from the elimination of the PITA, despite the relatively generous payment level for pensioners (at the level of the means-tested Pension Credit). On the other hand, payments for couples under the individualised UBI system are considerably more generous than in the present system: pensioner couples may previously have shared pension arrangements or have been subject to means-testing at the couple level – such households would now receive a separate UBI payment for each individual.

Predictably, given previous comments about the relative generosity of these schemes for families with children, working age households with no children lose out on average in each scheme – while larger families gain relatively more than smaller ones, as shown in Table 9 and Figure 4, below.

Table 8: Household Gains and Losses by Household Type

Model	Indicator	single no children	single with children	couple no children	couple with children	single	couple pensioner
Base scenario	Average income in group	298.33	447.42	841.89	863.6	323.57	613.05
Model 2.5	Average change (£)	-10.72	-34.80	-24.15	40.77	-21.33	36.92
	Percentage change in average	-3.6	-7.8	-2.9	4.7	-6.6	6.0
Model 2.6	Average change (£)	-15.05	-33.08	-21.27	47.36	-26.76	32.37
	Percentage change in average	-5.0	-7.4	-2.5	5.5	-8.3	5.3
Model 3.5	Average change (£)	-11.61	-23.86	-52.08	16.26	3.35	57.28
	Percentage change in average	-3.9	-5.3	-6.2	1.9	1.0	9.3
Model 3.6	Average change (£)	-15.92	-22.07	-49.19	22.98	-1.98	52.87
	Percentage change in average	-5.3	-4.9	-5.8	2.7	-0.6	8.6

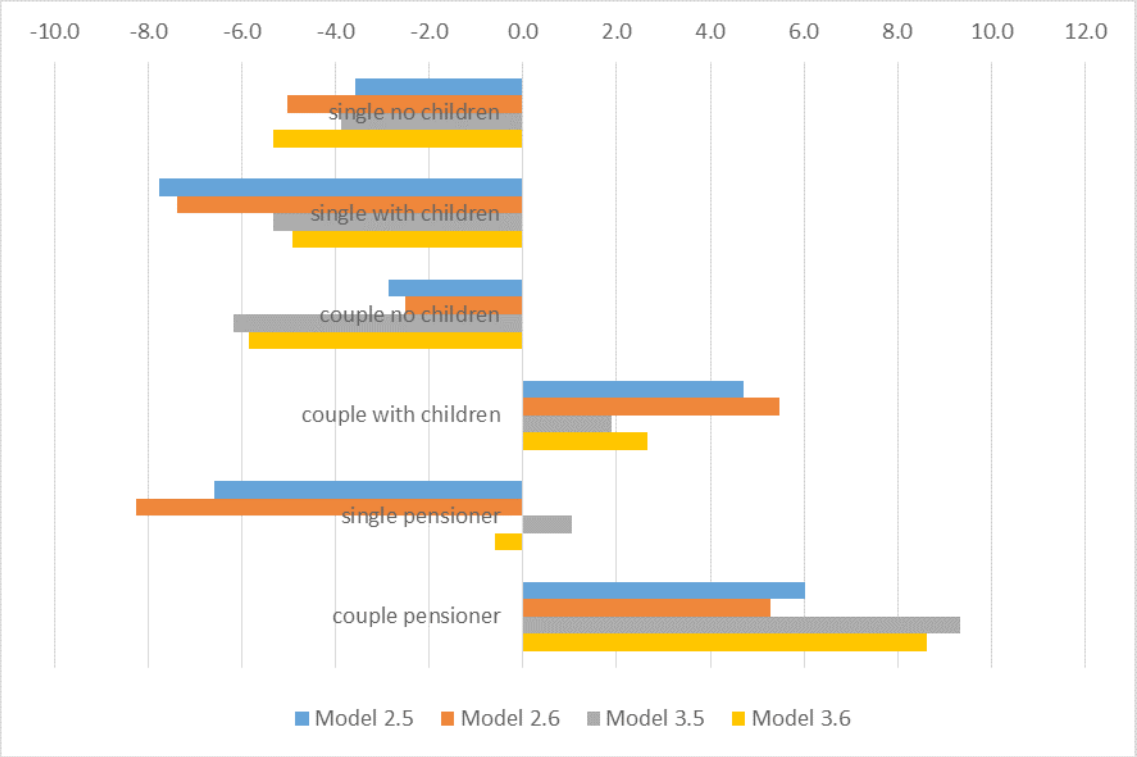

Figure 3: Household Gains and Losses (% change) by Household Type

Table 9: Household Gains and Losses by Number of Children

Model	Indicator	none	1	2	3	4 or more
Base scenario	Average income in group	471.6	708.53	821.76	785.32	704.53
Model 2.5	Average change (£)	-7.04	0.23	38.85	54.19	52.33
	Percentage change in average	-1.5	0.0	4.7	6.9	7.4
Model 2.6	Average change (£)	-10.10	1.70	47.31	70.56	42.57
	Percentage change in average	-2.1	0.2	5.8	9.0	6.0
Model 3.5	Average change (£)	-5.19	-16.04	19.01	47.9	71.17
	Percentage change in average	-1.1	-2.3	2.3	6.1	10.1
Model 3.6	Average change (£)	-8.19	-14.43	27.58	64.37	61.47
	Percentage change in average	-1.7	-2.0	3.4	8.2	8.7

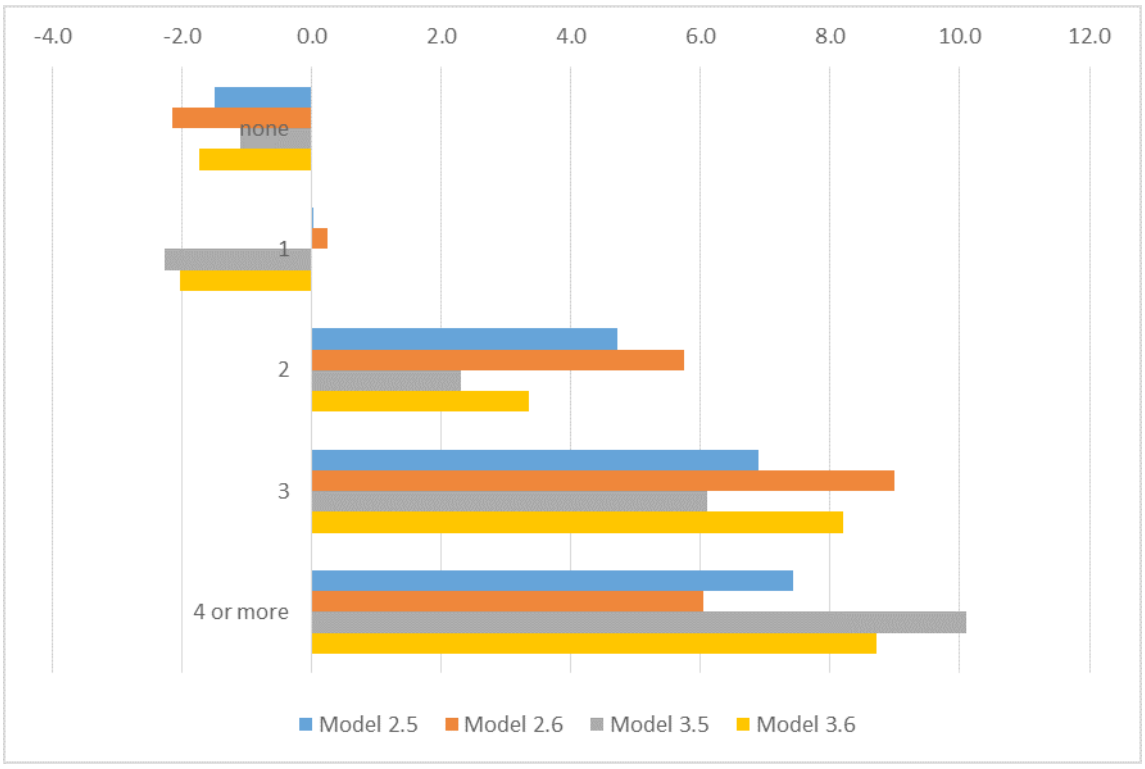

Figure 4: Household Gains and Losses (% Change) by Number of Children Effects by labour market status

Turning now to household gains and losses by labour market status, as shown in Table 10, we find an interesting contrast between the two payment levels. Schemes with payments at the level of existing benefits (Models 2.5 and 2.6) profit working households at the expense of non-working households, whereas for the disability premium schemes (Models 3.5 and 3.6) this finding is reversed: workless households are better off. Clearly, the additional payments disproportionately benefit workless households in which disabled people are relatively likely to live.

Table 10: Household Gains and Losses by Labour Market Status

Model	Indicator	not working	working
Base scenario	Average income in group	315.3	668.52
Model 2.5	Average change (£)	-4.42	2.23
	Percentage change in average	-1.4	0.3
Model 2.6	Average change (£)	-9.71	3.54
	Percentage change in average	-3.1	0.5
Model 3.5	Average change (£)	27.02	-19.45
	Percentage change in average	8.6	-2.9
Model 3.6	Average change (£)	21.83	-18.09
	Percentage change in average	6.9	-2.7

6

Summary and Conclusions

In the preceding pages we have carried out microsimulation on a number of alternative UBI schemes. We distinguished schemes with full coverage, partial schemes, and revenue neutral schemes.
The features of our analytical strategy have been:

To set UBI payments close to levels of existing benefits and tax allowances. This approximates the adequate levels of subsistence income as defined by the welfare authorities and simplifies the process of making compensatory changes to reduce the net cost of reform.

To set relatively generous payments to children. Child poverty has been a clear priority for UK poverty strategies and full schemes modelled elsewhere highlight rising child poverty as a key shortcoming.

We have also focused on modelling schemes which replace a large number of existing benefits, rather than going for the most 'feasible' option and retaining means-tested benefits in payment. There are several reasons for this; perhaps most importantly, such schemes have been adequately covered elsewhere. In addition, and at a more conceptual level, the administrative desirability of combining unconditional, individualised benefits with conditional benefits means-tested at the family level is highly questionable, and the positive work incentive effects would be far less pronounced with the retention of means-tested benefit.

"The analysis shows that UBI is an expensive policy option, in comparison to other more targeted schemes"

The analysis shows that UBI is an expensive policy option, in comparison to other more targeted schemes; this is hardly surprising. The more important questions concern whether UBI is worth the cost. It is important to note, here, some of the shortcomings of the microsimulation approach, especially in relation to the goals of UBI. Microsimulation is based on a static 'snapshot' of incomes at the time of the survey. While this may provide an accurate picture of material deprivation at a given point in time, it does not do justice to the conditions of precarity under which people may be living. This is one of the core strengths of UBI proposals in relation to 'traditional' social security measures: UBI deals far more efficiently with frequent and complex changes of circumstances that would usually affect eligibility for benefit. Furthermore, being a household survey, the FRS omits individuals such as the homeless – who may be especially vulnerable but who might find it difficult to claim benefit. Yet, one of the strengths of UBI is that – to the extent that it is substantively and not just nominally universal – it extends to these most vulnerable populations. In both of these ways, a static microsimulation approach underestimates the ways in which UBI alleviates poverty and income insecurity.

Another limitation of our analysis is in relation to behavioural change. As noted previously, the labour market effects of UBI pull in different directions and are difficult to predict. It is a great strength of UBI that it should reduce the marginal effective tax rates of poor households, who as a result of means-testing are subject to poverty and unemployment traps. This is likely to increase labour market participation. On the other hand, many individuals will face higher marginal tax rates as a result of the reforms modelled here. If there is a significant contraction in labour market participation as a result of the implementation of UBI, then our findings lose validity.

Trade-offs in design features

One of our main interests in conducting this analysis has been to explore

the nature and extent of trade-offs with respect to the various goals of social security reform. As shown in Figures 5 and 6 below, there is a clear relationship between the fiscal cost of full UBI schemes and their effectiveness at combating poverty and inequality. It is highly questionable whether any schemes offer good value for money if the primary aim is to reduce poverty; but of course, UBI also fulfils a number of other desirable functions.

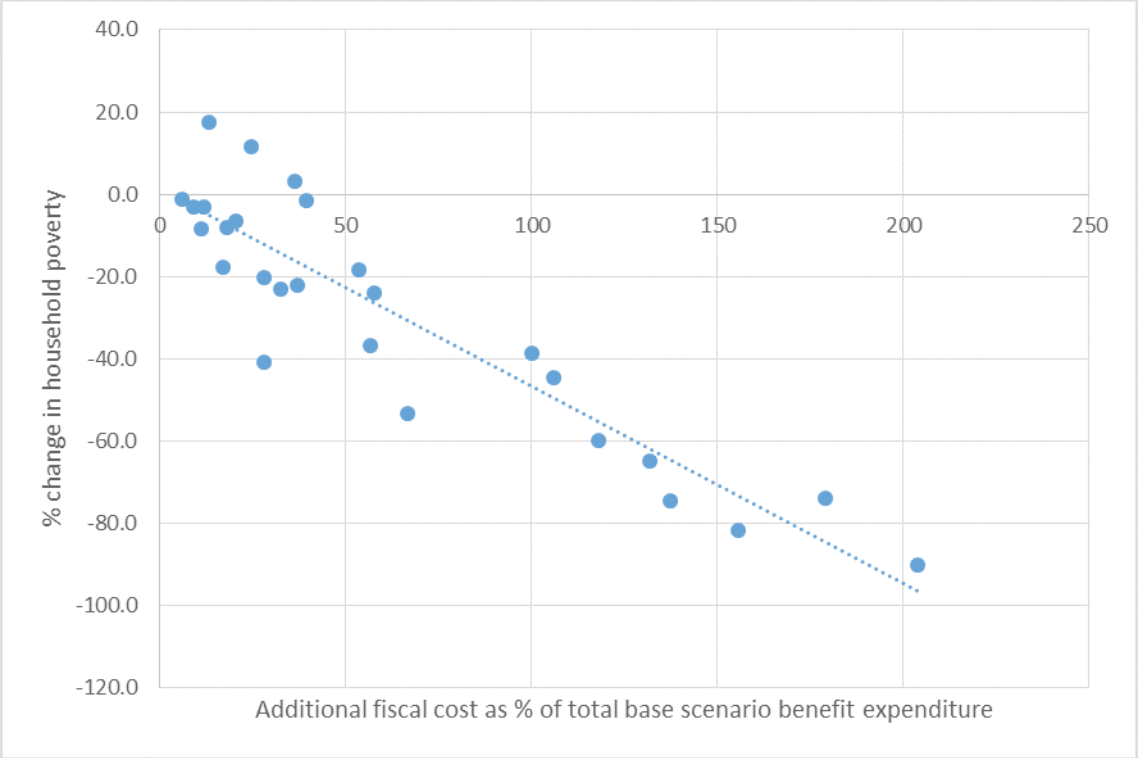

Figure 5: Changes in Fiscal Cost and Poverty Rates, Models 1.1 – 4.4

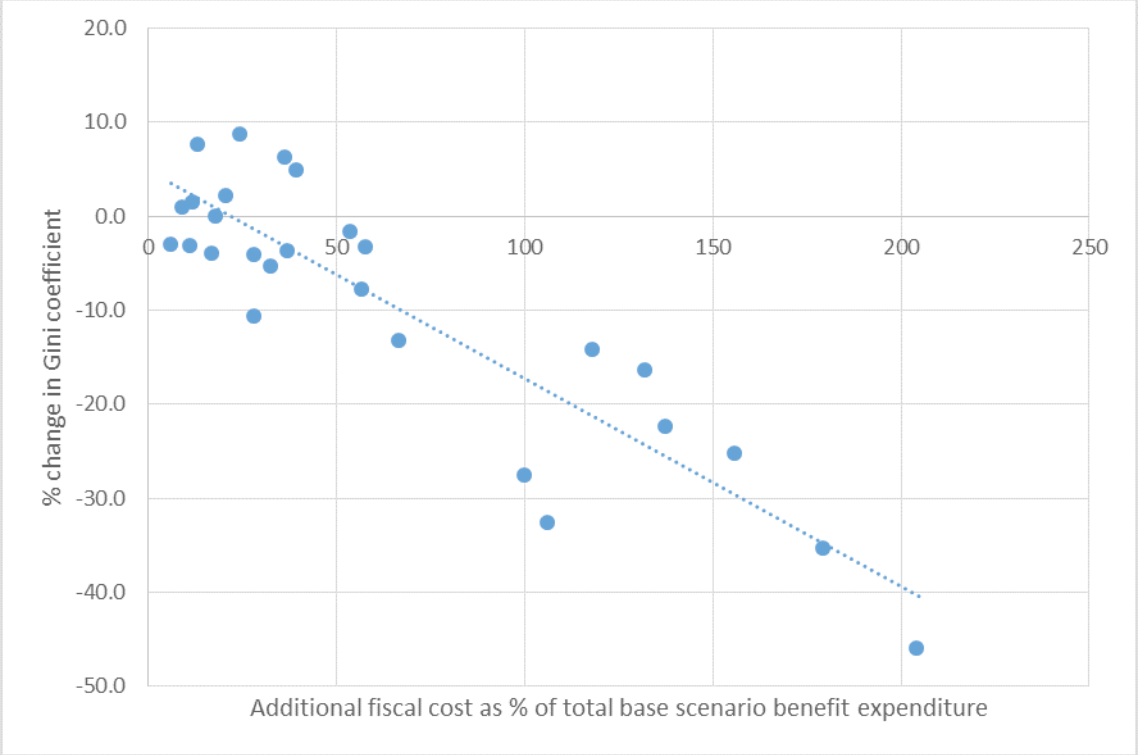

Figure 6: Changes in Fiscal Cost and Gini Coefficients, Models 1.1 – 4.4

It is important to note that within this general trend, individual schemes fall above and below the line of best fit – meaning that specific design features, such as whether and how other benefits interact with the new UBI, affect the nature of this trade-off. Thinking carefully about policy design should enable policy makers to maximise positive distributional effects for a given level of expenditure.

Although we do not explicitly compare the distributional effects of schemes in which means-tested benefits are retained and eliminated respectively for basic income payments of the same level of generosity, comparing our findings with those of Reed and Lansley (2016) and Torry (2016) it is clear that although retaining means-tested benefits alongside a basic income is more expensive than eliminating the former entirely, means-tested benefits are clearly 'good value': the revenue neutral schemes modelled in those papers imply significant drops in overall poverty levels and household level losses within acceptable boundaries. In contrast, the schemes modelled in this paper are based on more generous UBI payments and so require slightly larger tax rises, but still imply increases in poverty rates or only modest increases in overall poverty rates at considerable fiscal cost.

This analysis thus confirms that the design of UBI schemes is indeed subject to a three-way trade-off, as illustrated in table 11.

Table 11: Trade-Offs in UBI Goals and Policy Design

	Modest payment alongside retention of existing benefit structure	Modest payment alongside elimination of large proportion of existing benefits	High payment alongside elimination of large proportion of existing benefits
Controlling cost	Yes	Yes	No
Meeting need	Yes	No	Yes
Retaining simplicity / work incentives	No	Yes	Yes

7

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Appendix I: Schemes Modelled in this Paper

Full coverage scenarios

1. UBI set at the level of the tax saving implied by personal income tax allowance (PITA)

1.1. UBI paid in addition to the existing tax and benefit system, with no other changes

1.2. UBI paid in addition to existing benefits, but is taken into account in the calculation of other means-tested benefits

1.3. UBI combined with the withdrawal of PITA and CB, with no other changes

1.4. Combined with the withdrawal of PITA and CB, and taken into account in the calculation of other means-tested benefits

2. UBI set at the level of existing benefits

2.1. UBI paid in addition to the existing tax and benefit system, with no other changes

2.2. UBI paid in addition to existing benefits, but is taken into account in the calculation of other means-tested benefits

2.3. UBI combined with the withdrawal of PITA, Basic State Pension (BSP), Carers' Allowance (CA), Child Benefit (CB), Child Tax Credit (CTC), Employment and Support Allowance (ESA), Income Support (IS), Jobseekers Allowance (JSA), Pension Credit (PC), and Working Tax Credits (WTC)

2.4. UBI combined with the withdrawal of PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC; and taken into account in the calculation of other means-tested benefits

2.5. As 2.4 above, but with income tax rates and National Insurance Contributions (NICs) set to approximate fiscal neutrality within the existing tax band structure

2.6. As 2.4 above, but with income tax rates and NICs set to approximate fiscal neutrality within a flat rate income tax structure

3. UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled

3.1. UBI paid in addition to the existing tax and benefit system, with no other changes

3.2. UBI paid in addition to existing benefits, but is taken into account in the calculation of other means-tested benefits

3.3. UBI combined with the withdrawal of PITA, Basic State Pension (BSP), Carers' Allowance (CA), Child Benefit (CB), Child Tax Credit (CTC), Employment and Support Allowance (ESA), Income Support (IS), Jobseekers Allowance (JSA), Pension Credit (PC), and Working Tax Credits (WTC)

3.4. UBI combined with the withdrawal of PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC, WTC and taken into account in the calculation of other means-tested benefits

3.5. As 3.4 above, but with income tax rates and National Insurance Contributions (NICs) set to approximate fiscal neutrality within the existing tax band structure

3.6. As 3.4 above, but with income tax rates and NICs set to approximate fiscal neutrality within a flat rate income tax structure

4. UBI set at the level of existing benefits plus tax saving implied by PITA

4.1. UBI paid in addition to the existing tax and benefit system, with no other changes

4.2. UBI paid in addition to existing benefits, but is taken into account in the calculation of other means-tested benefits

4.3. UBI combined with the withdrawal of PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC, and WTC

4.4. UBI combined with the withdrawal of PITA, BSP, CA, CB, CTC, ESA, IS, JSA, PC and WTC; and taken into account in the calculation of other means-tested benefits

Partial coverage scenarios

5. Working age UBI

5.1. UBI set at the level of the tax saving implied by PITA (as 1.1 above, but restricted to working age adults)

5.2. UBI set at the level of existing means-tested benefits

6. Adult UBI

7. Citizen's Pension

UBI of £8113.45 p.a. (£155.60 p.w.) paid to all individuals of pension age, combined with the elimination of BSP and PC.

8. Child Benefit Plus

UBI of £3494.36 p.a. (£67.01 p.w.) paid to all children, combined with the elimination of CB and CTC.

9. Young Adults' UBI

UBI paid at the rate of existing wage replacement benefits, to non-dependent adults aged between 18 and 25; payment taken into consideration in the calculation of other means-tested benefits, with no compensating elimination of benefits.

10. Third Age UBI

UBI paid at the rate of existing wage replacement benefits, to adults between 50 and pension age; payments taken into consideration in the calculation of other means-tested benefits, with no compensating elimination of benefits.

11. A transitional scheme with gradual expansion of coverage

The aim of the following schemes is to sequence the expansion of coverage and generosity in such a way as to minimise the fiscal impact of each individual change. This transition can build upon either of schemes 8 or 9 above.

11.1. Citizen's Pension and Child Benefit Plus combined with elimination of BSP, PC, CB and CTC

11.2. Citizen's Pension, Child Benefit Plus, elimination of BSP, PC, CB and

CTC, elimination of PITA, and payment of £2200 p.a. to all working age adults

11.3.Citizen's Pension, Child Benefit Plus, Young Person's Income, elimination of BSP, PC, CB and CTC, ESA, IS and JSA is withdrawn for those under the age of 25, elimination of personal tax allowance, and payment of £2200 p.a. to all working age adults aged 25 +

11.4. Citizen's Pension, Child Benefit Plus, Young Person's Income, Third Age Income, elimination of BSP, PC, CB and CTC, ESA, IS and JSA is withdrawn for those under the age of 25, means testing of ESA, IS and JSA for those aged over 25, elimination of personal tax allowance, and payment of £2200 p.a. to all working age adults aged 25 – 49

Appendix II: Fiscal/Cost Implications of All Simulated Schemes

Model	Total means-tested benefits and Tax Credits	Total non-means-tested benefits (not including UBI)	Total benefits (not including UBI)	Saving from reduced benefit	UBI	Total benefits including UBI	Total tax and NI	Saving from increased tax / NI revenue	Net fiscal position (revenue minus cost)	Additional fiscal cost (compared to base scenario)	Additional fiscal cost compared to base scenario as % of total base scenario benefit expenditure
Base scenario	95	114	210		0	210	319		109		
Universal Credit	90	114	204	6	0	204	319	0	115	-6	-3
Full coverage scenarios											
UBI set at the level of the tax saving implied by personal income tax allowance											
Model 1.1	95	114	210	0	140	349	319	0	-30	140	67
Model 1.2	75	114	189	21	140	328	319	0	-10	119	57
Model 1.3	106	104	209	0	140	349	399	80	50	59	28
Model 1.4	82	104	186	24	140	326	399	80	74	36	17
UBI set at the level of existing benefits											
Model 2.1	95	114	210	0	288	497	319	0	-179	288	137
Model 2.2	55	114	169	41	288	457	319	0	-138	247	118
Model 2.3	41	29	70	140	288	358	384	65	26	83	40
Model 2.4	34	29	63	147	288	351	384	65	33	76	36
Model 2.5	35	29	64	145	288	352	461	143	109	0	0
Model 2.6	36	29	65	145	288	353	464	146	111	-2	-1
UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled											
Model 3.1	95	114	210	0	326	536	319	0	-217	326	156
Model 3.2	46	114	160	50	326	486	319	0	-167	276	132
Model 3.3	41	29	70	140	326	396	384	65	-12	121	58
Model 3.4	32	29	61	149	326	387	384	65	-3	112	53
Model 3.5	34	29	63	147	326	389	502	184	113	-4	-2
Model 3.6	35	29	64	146	326	390	505	187	115	-6	-3

Appendix II continued

UBI set at the level of existing benefits plus tax saving implied by PITA											
Model 4.1	95	114	210	0	427	637	319	0	-318	427	204
Model 4.2	44	114	158	52	427	585	319	0	-266	375	179
Model 4.3	41	29	70	140	427	497	384	65	-113	222	106
Model 4.4	28	29	57	153	427	484	384	65	-101	210	100
Partial coverage scenarios											
Model 5.1	104	114	218	-9	84	303	399	80	97	13	6
Model 5.2	62	109	171	39	146	317	398	79	81	28	13
Model 6	46	39	85	124	241	326	384	65	58	51	24
Model 7	88	45	133	77	95	228	313	-6	85	24	12
Model 8	79	104	182	27	46	228	319	0	90	19	9
Model 9	93	114	207	2	26	233	319	0	86	23	11
Model 10	92	113	205	5	42	247	319	0	72	37	18
A transitional scheme with gradual expansion of coverage											
Model 11.1	72	34	106	104	141	247	313	-6	66	43	21
Model 11.2	75	34	110	100	225	334	385	66	50	59	28
Model 11.3	73	34	107	102	237	344	385	66	41	68	33
Model 11.4	65	33	98	111	254	353	385	66	32	77	37

Appendix III: Implications for the Incidence of Household Poverty, Using Base Scenario Poverty Line

	Below 60% median BHC	% change from base scenario	Below 60% median AHC	% change from base scenario	Below 50% median BHC	% change from base scenario
Base scenario	17.6		21.8		10.9	
Universal Credit	18.5	5.3	22.5	3.2	12.0	9.7
Full coverage scenarios						
UBI set at the level of the tax saving implied by personal income tax allowance						
Model 1.1	7.7	-56.3	10.2	-53.2	4.2	-61.8
Model 1.2	10.6	-39.5	13.8	-36.8	6.5	-40.3
Model 1.3	10.0	-43.1	13.0	-40.7	5.2	-52.2
Model 1.4	14.3	-18.9	18.0	-17.6	8.4	-23.0
UBI set at the level of existing benefits						
Model 2.1	3.1	-82.2	5.5	-74.6	2.0	-81.2
Model 2.2	6.2	-64.9	8.8	-59.7	3.9	-63.9
Model 2.3	18.8	6.9	21.5	-1.5	12.8	17.8
Model 2.4	19.5	10.7	22.5	3.2	13.2	21.5
Model 2.5	20.7	17.7	24.2	10.9	14.0	28.6
Model 2.6	21.3	21.4	25.0	14.7	14.3	31.4
UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled						
Model 3.1	2.5	-85.8	4.0	-81.7	1.6	-85.3
Model 3.2	5.4	-69.2	7.7	-64.8	3.4	-68.6
Model 3.3	14.0	-20.6	16.6	-24.1	8.8	-19.2
Model 3.4	14.7	-16.5	17.8	-18.5	9.3	-15.1
Model 3.5	16.5	-6.0	20.3	-7.0	10.5	-3.8
Model 3.6	17.0	-3.5	21.0	-3.7	10.5	-3.4
UBI set at the level of existing benefits plus tax saving implied by PITA						
Model 4.1	1.6	-90.9	2.2	-90.0	1.0	-91.3
Model 4.2	4.1	-76.6	5.7	-74.0	2.6	-76.2
Model 4.3	10.2	-42.2	12.1	-44.4	6.4	-41.4
Model 4.4	11.3	-35.7	13.4	-38.7	7.1	-34.7

Appendix III continued

Partial coverage scenarios						
Model 5.1	17.5	-0.4	21.5	-1.3	10.5	-3.8
Model 5.2	22.2	26.6	25.6	17.4	14.8	36.2
Model 6	20.7	17.7	24.3	11.6	14.2	30.3
Model 7	16.8	-4.6	21.1	-3.2	10.5	-4.1
Model 8	17.5	-0.6	21.2	-3.0	11.1	2.2
Model 9	16.3	-7.4	20.0	-8.3	10.0	-8.0
Model 10	16.0	-8.8	20.0	-8.2	9.7	-10.7
A transitional scheme with gradual expansion of coverage						
Model 11.1	16.7	-5.0	20.4	-6.4	10.7	-2.0
Model 11.2	13.7	-22.0	17.4	-20.3	7.8	-28.9
Model 11.3	13.3	-24.4	16.8	-23.1	7.6	-30.3
Model 11.4	13.9	-20.8	17.0	-22.1	8.3	-23.9

Appendix IV: Implications for the Incidence of Child Poverty, Using Base Scenario Poverty Line

	Below 60% median BHC	% change from base scenario	Below 60% median AHC	% change from base scenario	Below 50% median BHC	% change from base scenario
Base scenario	19.8		30.4		10.3	
Universal Credit	21.3	7.4	30.7	1.3	12.4	20.4
Full coverage scenarios						
UBI set at the level of the tax saving implied by personal income tax allowance						
Model 1.1	4.7	-76.4	8.0	-73.6	2.3	-77.6
Model 1.2	6.6	-66.4	12.2	-59.9	3.6	-65.1
Model 1.3	7.1	-63.9	12.4	-59.1	3.7	-64.5
Model 1.4	11.1	-44.0	18.7	-38.4	5.4	-47.3
UBI set at the level of existing benefits						
Model 2.1	1.4	-92.8	3.3	-89.2	0.8	-92.3
Model 2.2	3.4	-82.7	6.7	-78.1	1.7	-83.9
Model 2.3	17.6	-10.9	23.9	-21.2	10.2	-1.4
Model 2.4	18.3	-7.6	25.4	-16.4	10.5	2.0
Model 2.5	20.0	1.0	27.5	-9.4	11.6	12.6
Model 2.6	20.6	4.1	28.5	-6.0	12.0	15.9
UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled						
Model 3.1	1.2	-93.7	2.7	-91.3	0.6	-93.9
Model 3.2	3.2	-83.7	6.1	-79.8	1.5	-85.5
Model 3.3	14.0	-29.3	20.4	-32.9	7.8	-24.9
Model 3.4	14.6	-26.1	21.9	-27.9	8.1	-21.7
Model 3.5	16.8	-14.9	25.0	-17.5	9.5	-8.0
Model 3.6	17.4	-12.0	25.7	-15.3	9.6	-7.5
UBI set at the level of existing benefits plus tax saving implied by PITA						
Model 4.1	0.2	-99.0	0.7	-97.8	0.0	-99.6
Model 4.2	1.1	-94.5	2.7	-91.1	0.5	-94.8
Model 4.3	5.3	-73.4	8.7	-71.4	2.9	-71.6
Model 4.4	5.6	-71.6	9.5	-68.7	3.1	-69.9
Partial coverage scenarios						
Model 5.1	13.6	-31.4	22.6	-25.6	7.0	-32.4
Model 5.2	21.2	6.9	31.3	3.2	11.8	14.0
Model 6	21.1	6.8	31.4	3.3	11.9	15.5
Model 7	19.7	-0.2	30.4	0.1	10.3	-0.1
Model 8	19.4	-2.0	27.3	-10.0	11.3	9.3
Model 9	17.5	-11.5	27.0	-11.2	9.3	-9.8
Model 10	18.9	-4.4	29.4	-3.2	9.8	-5.6

Appendix IV continued

A transitional scheme with gradual expansion of coverage						
Model 11.1	19.4	-1.8	27.3	-10.0	11.3	8.9
Model 11.2	13.9	-30.0	21.4	-29.6	6.9	-33.5
Model 11.3	12.8	-35.2	20.1	-33.8	6.5	-36.9
Model 11.4	15.1	-23.4	22.1	-27.3	7.9	-23.5

Appendix V: Implications for the Incidence of Poverty Among Adults, Using Base Scenario Poverty Line

	Below 60% median BHC	% change from base scenario	Below 60% median AHC	% change from base scenario	Below 50% median BHC	% change from base scenario
Base scenario	15.4		19.5		9.4	
Universal Credit	16.1	4.3	20.2	3.6	10.3	9.4
Full coverage scenarios						
UBI set at the level of the tax saving implied by personal income tax allowance						
Model 1.1	6.3	-59.1	8.7	-55.5	3.3	-65.2
Model 1.2	8.9	-42.4	11.9	-39.0	5.3	-43.5
Model 1.3	8.4	-45.6	11.3	-42.1	4.2	-55.3
Model 1.4	12.1	-21.4	15.8	-19.1	7.0	-26.1
UBI set at the level of existing benefits						
Model 2.1	2.4	-84.2	4.5	-77.0	1.5	-83.8
Model 2.2	5.0	-67.3	7.5	-61.8	3.1	-67.4
Model 2.3	14.7	-4.7	17.5	-10.3	9.8	3.7
Model 2.4	15.3	-1.0	18.5	-5.5	10.1	7.5
Model 2.5	16.5	7.2	20.0	2.6	10.9	15.4
Model 2.6	17.1	11.2	20.8	6.7	11.1	17.9
UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled						
Model 3.1	1.9	-87.6	3.3	-83.2	1.2	-87.6
Model 3.2	4.4	-71.6	6.5	-66.7	2.6	-71.9
Model 3.3	10.8	-30.2	13.3	-31.6	6.6	-29.5
Model 3.4	11.4	-26.1	14.4	-26.0	7.0	-25.3
Model 3.5	13.2	-14.4	16.9	-13.4	8.2	-12.8
Model 3.6	13.6	-11.8	17.5	-10.3	8.2	-12.8
UBI set at the level of existing benefits plus tax saving implied by PITA						
Model 4.1	1.1	-92.6	1.6	-91.6	0.6	-93.2
Model 4.2	3.0	-80.2	4.3	-77.8	1.9	-80.0
Model 4.3	7.5	-51.4	9.4	-51.9	4.6	-50.6
Model 4.4	8.3	-46.1	10.4	-46.9	5.1	-45.4

Appendix V continued

Partial coverage scenarios						
Model 5.1	14.9	-3.2	18.8	-3.7	8.6	-8.3
Model 5.2	18.9	22.9	22.2	13.8	12.2	29.7
Model 6	17.2	11.8	21.0	7.7	11.6	22.8
Model 7	14.3	-7.1	18.6	-4.9	8.8	-6.3
Model 8	15.1	-1.8	18.8	-3.8	9.5	1.5
Model 9	14.0	-9.3	17.5	-10.4	8.4	-10.6
Model 10	13.5	-12.3	17.5	-10.3	8.0	-14.8
A transitional scheme with gradual expansion of coverage						
Model 11.1	14.1	-8.3	17.8	-8.8	8.9	-5.1
Model 11.2	11.1	-28.0	14.5	-25.9	6.0	-36.0
Model 11.3	10.6	-30.9	13.9	-28.9	5.9	-37.3
Model 11.4	11.1	-28.1	14.1	-27.7	6.4	-31.7

Appendix VI: Implications for the Incidence of Household Poverty, Poverty Line Recalculated on Post-Reform Income

	Below 60% median BHC	% change from base scenario	Below 60% median AHC	% change from base scenario	Below 50% median BHC	% change from base scenario
Base scenario	17.6		21.8		10.9	
Universal Credit	18.4	4.6	22.0	0.9	11.9	8.7
Full coverage scenarios						
UBI set at the level of the tax saving implied by personal income tax allowance						
Model 1.1	13.5	-23.1	16.7	-23.4	7.3	-33.1
Model 1.2	16.0	-8.9	20.6	-5.6	9.6	-11.8
Model 1.3	13.3	-24.2	15.9	-27.1	6.7	-38.3
Model 1.4	16.1	-8.3	20.1	-7.8	9.7	-11.3
UBI set at the level of existing benefits						
Model 2.1	10.0	-43.0	13.6	-37.5	5.4	-50.7
Model 2.2	14.0	-20.2	18.4	-15.5	8.3	-24.1
Model 2.3	23.0	31.0	26.0	19.3	16.1	47.3
Model 2.4	23.4	33.1	26.9	23.3	16.2	48.6
Model 2.5	22.7	29.2	26.1	19.6	15.5	41.9
Model 2.6	21.5	22.5	24.9	14.0	14.5	33.0
UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled						
Model 3.1	9.0	-48.6	12.1	-44.6	4.6	-58.2
Model 3.2	13.4	-23.6	17.6	-19.5	7.6	-30.0
Model 3.3	20.1	14.3	22.9	4.9	12.9	18.6
Model 3.4	20.4	16.1	24.0	10.0	13.2	21.2
Model 3.5	19.0	8.3	22.8	4.5	12.3	12.7
Model 3.6	17.9	1.9	21.5	-1.4	11.2	2.5
UBI set at the level of existing benefits plus tax saving implied by PITA						
Model 4.1	8.2	-53.1	10.8	-50.4	3.9	-63.9
Model 4.2	13.1	-25.3	16.5	-24.6	7.4	-32.0
Model 4.3	19.7	12.2	22.0	1.0	12.7	16.2
Model 4.4	20.3	15.3	23.4	7.3	13.1	20.6

Appendix VI continued

Partial coverage scenarios						
Model 5.1	16.8	-4.7	20.0	-8.3	9.9	-9.0
Model 5.2	21.8	23.8	25.1	14.9	14.5	33.2
Model 6	21.7	23.6	25.4	16.5	14.9	37.1
Model 7	18.2	3.4	22.6	3.4	11.3	4.1
Model 8	19.2	9.3	23.1	6.0	12.2	11.8
Model 9	17.5	-0.6	21.5	-1.6	10.7	-1.6
Model 10	18.1	3.1	22.2	1.8	10.9	-0.3
A transitional scheme with gradual expansion of coverage						
Model 11.1	19.6	11.4	23.7	8.5	13.0	19.1
Model 11.2	17.3	-1.5	21.2	-2.7	9.9	-9.2
Model 11.3	17.2	-2.1	20.9	-4.3	10.0	-8.6
Model 11.4	18.1	3.1	21.2	-2.7	11.2	3.1

Appendix VII: Implications for the Incidence of Child Poverty, Poverty Line Recalculated on Post-Reform Income

	Below 60% median BHC	% change from base scenario	Below 60% median AHC	% change from base scenario	Below 50% median BHC	% change from base scenario
Base scenario	19.8		30.4		10.3	
Universal Credit	21.1	6.4	29.9	-1.4	12.3	19.0
Full coverage scenarios						
UBI set at the level of the tax saving implied by personal income tax allowance						
Model 1.1	9.4	-52.5	16.5	-45.5	4.4	-57.6
Model 1.2	12.8	-35.2	20.9	-31.1	5.9	-43.1
Model 1.3	10.0	-49.5	16.2	-46.7	4.8	-54.0
Model 1.4	13.2	-33.5	21.0	-30.9	6.5	-37.6
UBI set at the level of existing benefits						
Model 2.1	8.2	-58.7	14.7	-51.7	3.3	-68.2
Model 2.2	12.7	-35.6	20.8	-31.6	5.7	-45.2
Model 2.3	22.6	14.4	28.6	-5.8	14.3	38.3
Model 2.4	22.8	15.4	30.2	-0.4	14.0	35.9
Model 2.5	22.6	14.2	29.7	-2.2	13.3	28.4
Model 2.6	20.9	5.5	28.2	-7.2	12.1	17.2
UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled						
Model 3.1	8.2	-58.7	13.9	-54.2	3.1	-70.1
Model 3.2	13.3	-33.0	20.8	-31.3	5.6	-45.8
Model 3.3	21.4	8.3	27.9	-8.1	12.7	22.5
Model 3.4	21.7	9.8	29.5	-2.9	12.7	22.6
Model 3.5	20.3	2.4	28.2	-7.1	11.6	12.0
Model 3.6	18.7	-5.4	26.4	-13.2	10.3	-0.5
UBI set at the level of existing benefits plus tax saving implied by PITA						
Model 4.1	4.3	-78.3	7.9	-74.0	1.4	-86.8
Model 4.2	8.9	-54.9	14.7	-51.6	3.5	-66.6
Model 4.3	13.7	-30.7	19.7	-35.0	7.2	-30.5
Model 4.4	13.5	-31.8	20.9	-31.1	7.2	-30.2

Appendix VII continued

Partial coverage scenarios						
Model 5.1	12.8	-35.4	20.5	-32.5	6.6	-36.5
Model 5.2	20.4	3.2	30.3	-0.2	11.5	10.9
Model 6	23.1	16.6	32.8	7.9	12.9	24.7
Model 7	22.4	13.4	32.6	7.5	11.6	12.6
Model 8	21.7	9.7	29.7	-2.1	12.7	22.9
Model 9	19.1	-3.5	28.6	-5.7	10.2	-0.9
Model 10	22.3	12.7	32.3	6.3	11.4	10.5
A transitional scheme with gradual expansion of coverage						
Model 11.1	23.6	19.2	31.5	3.7	14.6	41.4
Model 11.2	18.5	-6.4	26.1	-13.9	9.4	-8.8
Model 11.3	17.8	-10.2	25.3	-16.8	9.3	-10.0
Model 11.4	20.7	4.5	26.9	-11.5	12.0	15.9

Appendix VIII: Implications for the Incidence of Adult Poverty, Poverty Line Recalculated on Post-Reform Income

	Below 60% median BHC	% change from base scenario	Below 60% median AHC	% change from base scenario	Below 50% median BHC	% change from base scenario
Base scenario	15.4		19.5		9.4	
Universal Credit	16.0	3.6	19.7	1.0	10.2	8.4
Full coverage scenarios						
UBI set at the level of the tax saving implied by personal income tax allowance						
Model 1.1	11.4	-25.8	14.7	-24.7	5.9	-36.8
Model 1.2	13.7	-10.9	17.9	-8.2	8.0	-15.5
Model 1.3	11.3	-26.9	14.0	-28.3	5.5	-41.3
Model 1.4	13.8	-10.2	17.6	-9.7	8.0	-14.8
UBI set at the level of existing benefits						
Model 2.1	8.7	-43.7	12.2	-37.7	4.4	-52.9
Model 2.2	12.0	-22.0	16.2	-17.2	6.9	-26.9
Model 2.3	18.6	20.5	21.4	9.7	12.4	31.7
Model 2.4	18.9	22.7	22.4	14.9	12.5	32.5
Model 2.5	18.4	19.5	21.8	11.8	12.0	27.6
Model 2.6	17.3	12.4	20.8	6.7	11.2	19.4
UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled						
Model 3.1	8.0	-48.2	10.9	-44.1	3.8	-59.2
Model 3.2	11.5	-25.1	15.5	-20.8	6.4	-32.4
Model 3.3	16.2	4.9	19.0	-2.8	9.9	5.2
Model 3.4	16.4	6.7	20.0	2.5	10.2	8.0
Model 3.5	15.4	0.0	19.1	-2.3	9.7	2.6
Model 3.6	14.4	-6.3	17.9	-8.2	8.8	-6.9
UBI set at the level of existing benefits plus tax saving implied by PITA						
Model 4.1	6.9	-55.3	9.4	-51.8	3.0	-67.9
Model 4.2	10.8	-29.7	14.1	-27.8	5.9	-37.1
Model 4.3	15.3	-0.8	17.7	-9.3	9.4	0.2
Model 4.4	15.7	1.6	18.9	-3.1	9.8	4.0

Appendix VIII continued

Partial coverage scenarios						
Model 5.1	14.2	-7.7	17.5	-10.5	8.2	-13.2
Model 5.2	18.4	19.7	21.8	11.8	11.9	26.6
Model 6	18.2	17.8	21.8	11.8	12.2	29.9
Model 7	15.6	1.5	19.9	1.8	9.6	1.8
Model 8	16.7	8.5	20.6	5.6	10.4	10.9
Model 9	15.0	-2.5	18.8	-3.8	9.0	-4.1
Model 10	15.5	0.6	19.5	-0.3	8.9	-5.0
A transitional scheme with gradual expansion of coverage						
Model 11.1	16.7	8.2	20.8	6.7	10.9	16.0
Model 11.2	14.2	-7.6	17.8	-8.8	7.8	-16.6
Model 11.3	14.0	-9.0	17.3	-11.2	7.9	-16.6
Model 11.4	14.8	-3.8	17.7	-9.2	8.9	-5.7

Appendix IX: Implications for the Incidence of Inequality

	Gini coefficient	% change from base scenario	90:10 ratio	% change from base scenario	75:25 ratio	% change from base scenario
Base scenario	0.3	0.0	4.1	0.0	2.1	
Universal Credit	0.3	1.9	4.3	3.6	2.1	1.8
Full coverage scenarios						
UBI set at the level of the tax saving implied by personal income tax allowance						
Model 1.1	0.3	-13.3	3.4	-18.2	1.9	-10.2
Model 1.2	0.3	-7.8	3.7	-10.2	2.0	-4.9
Model 1.3	0.27	-10.6	3.41	-17.8	1.87	-9.9
Model 1.4	0.29	-3.9	3.86	-7.0	1.99	-3.9
UBI set at the level of existing benefits						
Model 2.1	0.23	-22.3	2.85	-31.4	1.69	-18.7
Model 2.2	0.26	-14.1	3.29	-20.6	1.84	-11.5
Model 2.3	0.31	5.0	4.88	17.7	2.24	7.7
Model 2.4	0.32	6.3	4.98	19.9	2.28	9.7
Model 2.5	0.31	4.0	4.71	13.5	2.20	6.1
Model 2.6	0.32	8.2	4.68	12.8	2.15	3.4
UBI set at the level of existing benefits, with premiums for individuals determined as disabled or severely disabled						
Model 3.1	0.22	-25.1	2.69	-35.1	1.64	-20.8
Model 3.2	0.25	-16.3	3.17	-23.5	1.79	-13.8
Model 3.3	0.29	-3.2	4.15	0.1	2.05	-1.1
Model 3.4	0.29	-1.6	4.24	2.1	2.10	1.2
Model 3.5	0.28	-5.5	3.91	-5.7	1.99	-4.2
Model 3.6	0.29	-1.9	3.86	-7.1	1.95	-6.3
UBI set at the level of existing benefits plus tax saving implied by PITA						
Model 4.1	0.21	-29.6	2.57	-38.1	1.59	-23.3
Model 4.2	0.24	-20.1	3.04	-26.8	1.75	-15.7
Model 4.3	0.27	-7.8	3.92	-5.5	2.01	-3.2
Model 4.4	0.28	-5.4	4.09	-1.5	2.07	-0.1
Partial coverage scenarios						
Model 5.1	0.29	-3.0	4.01	-3.4	2.04	-1.9
Model 5.2	0.32	7.7	4.90	18.0	2.28	9.9
Model 6	0.32	8.8	5.01	20.8	2.25	8.3
Model 7	0.30	1.6	4.19	1.0	2.09	0.7
Model 8	0.30	0.9	4.23	1.9	2.09	0.9
Model 9	0.29	-3.1	4.08	-1.6	2.08	0.1
Model 10	0.30	0.0	4.16	0.2	2.11	1.5

Appendix IX continued

A transitional scheme with gradual expansion of coverage						
Model 11.1	0.30	2.2	4.29	3.4	2.10	1.0
Model 11.2	0.29	-4.0	3.83	-7.6	2.00	-3.8
Model 11.3	0.28	-5.2	3.81	-8.1	1.99	-4.2
Model 11.4	0.29	-3.7	3.97	-4.2	2.01	-3.0

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Contact

This working paper is part of the IPR project *Examining the Case for a Basic Income*, led by IPR Director Professor Nick Pearce. To find out more, contact IPR Research Associate Dr Luke Martinelli by:

Phone: 01225 383836

Email: l.a.martinelli@bath.ac.uk

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