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Static microsimulation research on Citizen's Basic Income for the UK: a personal summary and further reflections

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Abstract

A Citizen's Basic Income, sometimes called a Basic Income, a Universal Basic Income, or a Citizen's Income, is an unconditional and nonwithdrawable income paid to every individual. The purpose of this paper is to summarise the results of microsimulation research on Citizen's Basic Income schemes undertaken by this author during the past fifteen years; to update recent research; and to reflect on the journey taken by that research. The paper explores the ways in which the contemporary policy context and constructive criticism of previous research projects have resulted in changes to the methods employed, discusses ways in which the research has influenced the policy process, and draws comparisons with the work of other microsimulation researchers. The increasingly lively debate on Citizen's Basic Income has generated a wide variety of questions relating to Citizen's Basic Income's feasibility, and the penultimate section of this paper addresses some of the most pressing of those questions. A final section draws lessons from the research journey recounted in this paper, and suggests avenues for future research activity.

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1. Introduction

A Citizen's Basic Income, sometimes called a Basic Income, a Universal Basic Income, or a Citizen's Income, is an unconditional and nonwithdrawable income paid to every individual. The payments would be regular, that is, no less frequently than monthly; they would be of equal amounts, except that annual uprating would be expected; and the amount would not depend on employment status, household status, other income, wealth, or anything else. The only conditionality permitted would be the recipient's age. A standard amount might be paid to working age adults; less to younger adults; less again to children; and more to people over retirement age.

The debate about Citizen's Basic Income is now global, and it has increased significantly in extent and depth during the past five years. Whether my books and papers have been one of the causes of the increasing extent and depth of the debate in the UK and further afield is for others to judge, but they have certainly been symptoms of it. *Money for Everyone: Why we need a Citizen's Income* (Torry, 2013) was the first general introduction to the subject for about twenty years, and might be described as answering the question 'Is Citizen's Basic Income a good idea?' The following shorter book, *101 Reasons for a Citizen's Income: Arguments for giving everyone some money* (Torry, 2015b), was on the same theme: for instance, arguing for desirability on the basis of administrative efficiency, employment incentives, financial security, lack of stigma, and so on. But the character of the debate was already changing, and the question of feasibility was becoming more urgent. So in 2016 I published *The Feasibility of Citizen's Income* (Torry, 2016c), and when three years ago I was asked to update *Money for Everyone* for a second edition we realised that the debate had changed to such an extent that the book had to be entirely rewritten, with far more of an emphasis on feasibility and implementation (Torry, 2018a). But for this author, the question of feasibility has always been important: hence my journey in microsimulation. The purpose of this paper is to summarise the results of microsimulation research on Citizen's Basic Income schemes undertaken by this author during the past fifteen years; and to update recent research; to reflect on the journey taken by that research. The paper explores the ways in which the contemporary policy context and constructive criticism of previous research projects have resulted in changes to the methods employed, and discusses ways in which the research has influenced the policy process. The increasingly lively debate on Citizen's Basic Income has generated a wide variety of questions relating to Citizen's Basic Income's feasibility, and the penultimate section of this paper addresses some of the most pressing of those questions. A final section draws lessons from the research journey recounted in this paper, and suggests avenues for future research activity.

There is now a substantial body of microsimulation research available related to Citizen's Basic Income (Lansley and Reed, 2019; Martinelli, 2017a; 2017b; 2017c; OECD, 2017; Reed and Lansley, 2016) and to such similar mechanisms as a Participation Income (Atkinson et al, 2017). This paper draws comparisons with other microsimulation research on Citizen's Basic Income, but does not discuss it in the depth that would be required for a thorough assessment of the field. This is first of all because that would constitute a separate study on its own, and secondly because an important purpose of this paper is to explore how the policy context might affect and be affected by research methods, and this is better done by concentrating on a single author's research journey.

The debate about Citizen's Basic Income is now global, but the focus of this paper is entirely on the United Kingdom. While my interests are global (I am currently General Manager of

the Basic Income Earth Network – BIEN: a global educational charity), all of my microsimulation research has related to the UK, mainly because for most of the past thirty years I have been Director of the Citizen's Basic Income Trust, which is entirely focused on the Citizen's Basic Income debate in the UK. It is also because since I worked for the Department for Social Security for two years forty years ago, administering means-tested benefits, it is the complexity of the UK's tax and benefits system of which I have some understanding, and for which I can confidently construct Citizen's Basic Income schemes.

A question with which the reader might come to this paper might understandably be: Why so many calculations that all look much the same? The answer is, that the research process has been an evolutionary one. As new critiques have arrived, new questions have been asked, and new issues have emerged, changes have had to be made to the Citizen's Basic Income schemes evaluated, and to the methods used for evaluating them. Sometimes the distinctions are smaller ones (such as whether to order household incomes by original income or by disposable ones), and sometimes they have been rather more significant (for instance, whether to abolish existing means-tested benefits, or to leave them in place and recalculate them). It is always the context that has determined the next evolutionary step.

The research process outlined in the next section has been a journey, so it is that journey that we shall follow.

2. A review of earlier empirical work

The 2006 project

In 2003 Holly Sutherland introduced me to POLIMOD, EUROMOD's predecessor, and in 2006 I used it to find the Income Tax rate that would be required to fund a Citizen's Basic Income of £25 per week for working age adults (with £20 per week for 16 and 17 year olds, £35 for adults between 65 and 75, £35 per week for adults over 75 years old, and an increase in Child Benefit) if the Income Tax Personal Allowance was reduced to zero. The exercise found that a Basic Rate of Income Tax of 26% would be required. Table 1 shows resulting changes in mean disposable incomes for the different income deciles and the redistribution pattern that emerged: a version of a pattern that was to become somewhat familiar (Torry, 2006):

Table 1: Percentage changes in mean disposable income by income decile

Disposable income decile	1	2	3	4	5	6	7	8	9	10
% increase in mean disposable income	26.17	14.78	9.51	5.70	1.34	-1.00	-2.63	-3.65	-4.40	-4.20

Source: Torry (2006).

At the time, that was felt to answer the question as to whether it was possible to construct a revenue neutral Citizen's Basic Income – that is, one that could be paid for by adjusting Income Tax rates and thresholds – for which gains and losses would be in the right direction: but of course it did not. This became particularly clear when the Citizen's Income Trust's trustees submitted evidence on a revenue neutral scheme to a parliamentary committee in

2006. One of the advantages often claimed for Citizen's Basic Income is that it would release people from means-testing: so the scheme submitted in evidence abolished means-tested benefits, and the Income Tax rate required was calculated by combining figures from the national accounts with census data, rather than by using microsimulation (House of Commons Work and Pensions Committee, 2007). (This 'national accounts' method for calculating the financial effects of a Citizen's Basic Income scheme is still in use (Painter and Thoung, 2015; Citizen's Income Trust, 2016a; Miller, 2017)). Unfortunately, the logic of the situation suggested that a revenue neutral scheme that abolished means-tested benefits would be likely to impose sizeable losses on low income households at the point of implementation, because although the Citizen's Basic Incomes coming into a household would compensate for a loss of out-of-work benefits, particularly if Housing Benefit were to be left in payment, they would not be able to compensate for a reduction in the Income Tax Personal Allowance, an increase in tax rates, and the in-work means-tested benefits that households would no longer be receiving. Households previously receiving in-work benefits would find themselves much worse off. The 'national accounts' method was unable to provide evidence on the losses that households would suffer, so it was not able to prove that such losses would not occur, nor that they would be negligible if they did.

The 2012 project

It had clearly become essential to test Citizen's Basic Income schemes that abolished means-tested benefits: so Torry (2012) tested an illustrative Citizen's Basic Income scheme very similar to the one submitted to the select committee in 2006. The results for household losses can be found in table 2:

Table 2: Gains and losses for an illustrative Citizen's Basic Income scheme [1]

	Results for individuals		**Results for households**	
Losses and gains	**No.**	**%**	**No.**	**%**
Loss > 15%	2,392	4.18%	1,882	7.50%
15% > loss > 10%	2,302	4.02%	679	2.71%
10% > loss > 5%	6,160	10.75%	1,914	7.63%
5% > loss > 0	5,532	9.66%	4,346	17.32%
No loss or gain	19,747	34.48%	1,067	4.25%
0 > gain > 5%	7,350	12.83%	6,736	26.85%
5% > gain > 10%	3,647	6.37%	3,582	14.28%
10% > gain > 15%	2,358	4.11%	1,935	7.71%
Gain > 15%	7,788	13.60%	2,947	11.75%
	57,276	100%	25,088	100%

Source: Torry (2012).

[1] This exercise and the calculations made in 2006 was carried out without applying the weights in the FRS survey data. See note 2 on how the weights were used from 2014 onwards. The results obtained would therefore be accurate for the FRS sample (approximately 0.1% of the UK population) but less so for the population as a whole.

This revealed that a scheme that abolished means-tested benefits could generate large numbers of household net income losses at the point of implementation. However, just one scheme had been tested, and it could easily be objected that no more general conclusions could be drawn from that. So during the summer of 2013 a student volunteer, Chris Stapenhurst, tested a wide variety of Citizen's Basic Income schemes that abolished means-tested benefits, altering in turn numerous variables of the schemes. He found that no scheme that he studied got anywhere near to abolishing the losses (Stapenhurst, 2014).

It is of course true that it is impossible to prove a negative, because a previously untested example might be able to deliver a positive result. However, the logic of the situation facing in-work households with low disposable incomes suggests that such households would inevitably lose from any revenue neutral Citizen's Basic Income scheme that abolished means-tested benefits: so the search for a scheme that abolished means-tested benefits and for which the losses would be non-existent or negligible for low income households ceased, at least for this author.

The 2014 project

Torry (2014) employed EUROMOD to research three different revenue neutral Citizen's Basic Income schemes. For all three schemes, National Insurance Contributions of 12% were charged on all earned income, and the Income Tax Personal Allowance was abolished (but not Old Age Personal Tax Allowance), and income thresholds were adjusted accordingly. [2]

[2] The method for this and all testing of Citizen's Basic Income schemes is as follows: A new set of benefits is created in the UK country system in EUROMOD: a Citizen's Pension (CP) for over 65 year olds, a Citizen's Basic Income (CI) for adults aged between 25 and 64, and a Young adult's Citizen's Basic Income (CIY) for adults aged between 20 and 24, and an Education age Citizen's Basic Income (CIE) for anyone between 16 and 19 not in full-time education (- they are named separately, but all of them are calculated in the same policy in EUROMOD (BCI)). In the definitions of constants, levels are set for these Citizen's Basic Incomes, and all Personal Tax Allowances are set at zero. So that the additional taxable income is taxed at the basic rate, and not at the higher rate, the first tax threshold is altered (and in 2019 was set at £46,350). The National Insurance Contribution (NIC) Primary Earnings Threshold is set to zero, and in the NIC calculation the NIC rate above the Upper Earnings Limit is set to 12% (to match the rate below the limit). Child Benefit rates are increased by £20 per week. As a transitional measure, and in the cause of an easy transition, the Education age Citizen's Basic Income is not paid to a young person still in full-time education, in recognition of the fact that their main carer is receiving Child Benefit on their behalf. The Citizen's Basic Income total is added to the benefits total and also to the means applied to each of the means-tested benefits. Simulations of the 2018 tax and benefits system and of the Citizen's Basic Income scheme generate two lists of household disposable incomes for the entire Family Resource Survey sample. These then generate a list of household gains (negative gains are losses), the gains are multiplied by the weighting figures supplied with the FRS survey results in order to scale up the survey sample to the entire population, and the total of the grossed up gains then gives the net cost of the scheme. To convert EUROMOD's monthly figures to annual figures the total is multiplied by 12. A process of trial and error adjusts the different Citizen's Basic Income rates and the Income Tax rates until the net cost falls to no more than £2bn per annum. (For information on the household weights contained in the FRS data, see De Agostini, 2018: 53.) Household original incomes are then ordered, the bottom 20% are selected, the gains are calculated, and then the percentage gains. (It is the bottom 20% of the population of households, not the bottom 20% of the sample.) The percentage gains are then ordered and the households suffering losses of over 15%, over 10% and over 5% are selected. The weights attached to each of the relevant selected households are then added together to

The first scheme was an updated version of the scheme submitted as evidence to the parliamentary committee in 2006. The updated version allocated Citizen's Basic Incomes of £142.70 to individuals over 65, £71 to individuals over 25 and under 65, and £56.25 to every other individual (to match 2013 Income Support and Pension Credit rates), including children. Means-tested benefits (including Tax Credits, but not Housing Benefit or Council Tax Benefit) were abolished, as were the State Retirement Pension, Child Benefit, Incapacity Benefit, and contributory Unemployment Benefit. A funding gap of £20bn p.a. remained, which it was thought could be filled by restricting pension contribution tax relief to the basic rate of Income Tax and through administrative savings. Two further schemes were tested:

Alternative 1 retained the Basic State Pension, and paid a Citizen's Basic Income for those over the state retirement age of £30 per week. Child Benefit was retained and a Child Citizen's Basic Income was paid at £20 per week. The adult Citizen's Basic Income rate remained at £71: the 2013 Income Support rate. All existing benefits were left in place, and the Citizen's Basic Incomes were added to the means taken into account when means-tested benefits were calculated. Although the scheme generated usefully low household net disposable income losses at the point of implementation for both low income households and for all households, even with Income Tax rates increased by 10 percentage points, a funding gap of £24bn remained to be filled by restricting pension contribution tax relief to the basic rate of Income Tax and through administrative savings.

Alternative 2 was identical to alternative 1, except that the Citizen's Basic Incomes for working age and young adults were reduced in value. It was found that if Income Tax rates were increased by 5 percentage points then the same funding gap remained to be filled as in alternative 1. The losses that would be experienced by all households were lower than for alternative 1 because Income Tax rates were lower.

The results are summarised in table 3.

This project reinforced the view that abolishing means-tested benefits in the context of a Citizen's Basic Income scheme that still left a funding gap to be filled was going to impose politically impossible net disposable income losses on low income households: so from that point on I researched no further Citizen's Basic Income schemes that abolished means-tested benefits, but only schemes that left in place the entire means-tested system, and that added each household's Citizen's Basic Incomes to the means employed to calculate their means-tested benefits claims. The important question was now not whether it was possible to abolish means-tested benefits on the implementation of a Citizen's Basic Income, but how many households could be taken off means-tested benefits by their Citizen's Basic Incomes, and how many could be brought close to coming off them. For this task microsimulation was not only the perfect method: it was also the only method.

obtain the number of households in the whole population affected by such losses. The process is then repeated for all households.

Table 3: A summary of illustrative schemes in Torry (2014)

For all three schemes, National Insurance Contributions are collected at 12% on all earned income.	**Citizen's Income Trust 2013 illustrative scheme** (The 2006 scheme updated to 2013 values)	**Alternative 1**	**Alternative 2**
Relationship of Citizen's Basic Income to means-tested benefits	Means-tested benefits are abolished except for Housing Benefit and Council Tax Benefit	Means-tested benefits are left in place and the Citizen's Basic Income is taken into account when means-tested benefits are calculated	Means-tested benefits are left in place and the Citizen's Basic Income is taken into account when means-tested benefits are calculated
Working age adult CI amount (ages 25 to 64)	£71	£71	£50
Young adult CI amount	£71	£71	£40
Income Tax, basic rate	20%	30%	25%
Income Tax, higher rate	40%	50%	45%
Income Tax, top rate	45%	50%	50%
Proportion of households in the lowest disposable income decile experiencing losses of over 10% at the point of implementation	21.12%	0.04%	0.08%
Proportion of all households experiencing losses of over 10% at the point of implementation	9.28%	5.38%	1.09%
Net cost of scheme *	£20bn	£24bn	£24bn
* Much of the additional cost would be met by restricting tax relief on pension contributions to the basic rate, and through administrative savings generated by the abolition of means-tested benefits (in the case of the 2013 illustrative scheme) or by many households leaving means-tested benefits as their Citizen's Incomes and additional earnings increased the means taken into account when their means-tested benefits were calculated (in the case of the two alternative schemes).			

Source: Torry (2014: 7).

The other possible response to the problem that it appeared to be inevitable that a revenue-neutral Citizen's Basic Income scheme that abolished means-tested benefits would impose losses on low income households was to suggest that the revenue neutrality condition should be abandoned, and that additional funding from outside the Income Tax system should be sought. There are of course numerous ways in which additional funding could be obtained: taxing appropriation of the commons, and in particular fossil fuels and land; a financial transaction tax; a tax on data; a tax on robots; consumption taxes; money creation (Torry, 2018a: 159–66); redirected subsidy funding; and the dividends on a permanent fund into which are paid royalties on resource extraction (Torry, 2016c: 43–49). All of these are possibilities. Whether any one of them on their own would reap sufficient additional revenue to fund a Citizen's Basic Income of a useful amount must be open to question; whether they would be able to do so on a permanent basis would also be open to doubt; and whether they would impose net disposable income losses on low income households would be an important factor to keep in mind (– for instance, to fund Citizen's Basic Incomes through consumption taxes could easily be detrimental to poorer households). The advantage of funding a Citizen's Basic Income from within the current benefits and Income Tax system is

that the money gained from reducing tax allowances, increasing tax rates, and reducing means-tested benefits, would have to be used to fund Citizen's Basic Incomes, because if the money were to be used for some other purpose then it would be experienced as a cut in living standards: so only this funding method exhibits a degree of certainty that the revenue would be used to fund Citizen's Basic Incomes. All of the other methods proposed for funding a Citizen's Basic Income could result in the money being redirected to other government purposes and not ending up as Citizen's Basic Incomes.

During the 2014 project a number of questions had to be both asked and answered, particularly in relation to the need to discover which households were 'low income' and which were not:

- In 2014, disposable incomes were ordered, rather than original incomes (that is, incomes before tax had been deducted and benefits added). For later studies, original incomes were chosen. This was because if disposable incomes are employed then in the two different situations of the current tax and benefits system and the Citizen's Basic Income scheme, different participants will find themselves in the bottom decile or quintile, whereas if original incomes are used then the same participants will be in the bottom decile or quintile in both situations, meaning that the changed circumstances of the same participants are being evaluated.
- Whenever household net disposable incomes were used to order households so that households could be categorised into income deciles – that is, into the first tenth of households, the second tenth, and so on – a good range of income levels were found to be present in the lowest decile. However, if original incomes are used, then the range of incomes in the bottom decile becomes very narrow, because so many households have no original income and rely entirely on benefits of various kinds, and particularly on pensions. This means that when the switch was made to using original incomes to order households, it became essential to regard the bottom quintile, or twenty per cent, of households as those with low incomes.
- From 2014 onwards, for the purpose of reporting gains and losses, total household disposable incomes have been ordered. This is problematic. A household of two parents and three children with twice the disposable income of a household containing just one adult will not be as well off as that individual adult. More detailed research, employing equivalised household incomes, which are adjusted to take account of household composition, would be required to ensure that households of different sizes could be more relevantly compared. How useful that would be is open to question. As we shall see later in this paper, when EUROMOD employs equivalised incomes to order households into income deciles in order to generate a series of statistics, the results are remarkably similar for both the equivalised and the unequivalised household incomes.
- From 2014 onwards, household disposable incomes rather than individuals' disposable incomes have been compared. There are good arguments for both approaches. It is individuals who receive income, so gain or loss is an individual experience; and within a household income is not necessarily equitably shared, so the amounts that individuals receive might be more relevant than the amount that the household receives. However, we can assume that in most cases income is pooled within households, at least to some extent, so if one member gains and another loses

then the household might be better off, and that might be a more significant factor than that one member of the household has suffered a loss in disposable income. Because households are of different sizes, an absolute gain or loss is not particularly relevant. However, percentage gains and losses are relevant, so this is the measure used.

The 2012 and 2014 projects can be seen to have established a number of aspects of a useful basis for further projects, and in particular the requirement for means-tested benefits to be left in place when illustrative Citizen's Basic Income schemes were constructed, and also the advisability of revenue neutrality.

The 2015 project

This project returned to the suggestion that the funding gaps discovered in the three schemes tested in 2014 should be filled by restriction of tax relief on pension contributions to the basic rate (Torry, 2014: 7; Torry, 2015a). This would be problematic in two ways: first of all, an estimate has to be made as to how much revenue would be generated by restricting tax relief on pension contributions in this way (House of Commons Work and Pensions Committee, 2007: Ev 90; Citizen's Income Trust, 2013: 10); and secondly, and rather more importantly, there would be no guarantee that the additional revenue would be used to fund Citizen's Basic Incomes. The net disposable incomes of some higher income households would be affected by the change, but no low income households would be affected, and few households in the earnings mid-range: so the proceeds could easily be employed for any government purpose, and not necessarily for paying for Citizen's Basic Incomes. It is for this reason that, following the publication of a paper by Donald Hirsch (Hirsch, 2015) and subsequent correspondence, from the 2015 project onwards I have made a distinction between 'revenue neutrality' and 'strictly revenue neutrality', and have required that illustrative Citizen's Basic Income schemes should be strictly revenue neutral. 'Revenue neutral' means that no additional funding is required to pay for the Citizen's Basic Incomes from beyond the benefits and Income Tax systems (which for this purpose includes National Insurance Contributions), whereas 'strictly revenue neutral' means that all funding for Citizen's Basic Incomes should come from changes to the Income Tax Personal Allowance, changes to Income Tax thresholds and rates, changes to National Insurance Contribution thresholds and rates, and changes to means-tested benefits: and not from restricting tax relief on pensions contributions, or the restriction of any other allowance for which the proceeds could be used for other government purposes. All of the changes consistent with strict revenue neutrality would reduce household net disposable incomes for households across the income range, and those losses would have to be compensated by using the proceeds to pay for Citizen's Basic Incomes. The revenue could not be directed to other purposes without making households worse off right across the income range.

Donald Hirsch's paper (2015) and further discussion resulted in a second requirement for financial feasibility: a severe restriction on permissible Income Tax rate rises. It might be argued that raising Income Tax rates substantially in order to pay for Citizen's Basic Incomes would not be a problem if the net result would not be a loss in disposable income. However, this is not necessarily the case. Income Tax rate rises are a psychological matter and not simply a financial one. For the sake of political feasibility, it might therefore be wise to restrict Income Tax rate rises, and this is what I have done from the 2015 project onwards.

As well as strict revenue neutrality, and the restriction on Income Tax rate rises, the 2015 project was generally more specific in relation to what 'financially feasible' might mean in relation to a Citizen's Basic Income illustrative scheme. The following set of criteria was established:

- Strict revenue neutrality (assumed to be within £2bn per annum of zero net cost).
- Income Tax rates not to rise more than 3% (adjustments to National Insurance Contributions earnings limits, and of National Insurance Contributions up to 12% of earnings, are permitted).
- No more than 2% of low income households should suffer losses of over 5% of disposable income at the point of implementation.
- Any redistribution should be modest and should be from rich to poor.

The 2015 project introduced another innovation. As well as researching the possibility of a feasible strictly revenue neutral Citizen's Basic Income scheme, and finding that there was one, it also researched two possible implementation methods: all at once for the entire scheme, or starting with changing Child Benefit into a Child Citizen's Basic Income, and then establishing a Citizen's Basic Income for young adults and allowing them to keep it, with each new cohort of young adults being given a Citizen's Basic Income and keeping it, and so on, enabling a complete scheme for the entire population to be rolled out gradually.

Torry (2015a) tested three illustrative schemes. All of them were strictly revenue neutral, all of them reduced the Income Tax Personal Allowance to zero, and all of them charged National Insurance Contributions at 12% on all earned income. The first and second schemes were similar to those tested in 2014: one abolished means-tested benefits, and the other retained and recalculated them. A third scheme, which I was requested to test, based Citizen's Basic Income rates on the Minimum Income Standards published by the Joseph Rowntree Foundation. Results were as shown in table 4:

Table 4: Three illustrative Citizen's Basic Income schemes tested in 2015

	Scheme A	**Scheme B**	**Scheme C**
Relationship of Citizen's Basic Income to means-tested benefits (All Citizen's Basic Income amounts are per week)	Citizen's Basic Incomes replace means-tested benefits except for Housing Benefit and Council Tax Benefit. Child Benefit and Basic State Pension are no longer paid.	Means-tested benefits are left in place and Citizen's Basic Incomes are taken into account when means-tested benefits are calculated. Basic State Pension and Child Benefit are still paid.	Citizen's Basic Incomes replace means-tested benefits except for Housing Benefit and Council Tax Benefit. Child Benefit and Basic State Pension are no longer paid.
Citizen's Pension	£145.40	£30	£120
Working age adult Citizen's Basic Income	£71.70	£50	£160
Young adult Citizen's Basic Income	£56.80	£40	£120
Child Citizen's Basic Income	£56.80	£20	£80
Income Tax rate increase required for strict revenue neutrality	5%	3%	28%
Income Tax, basic rate (on £0 – 42,010)	25%	23%	48%
Income Tax, higher rate (on £42,010 – 150,000)	45%	43%	68%
Income Tax, top rate (on £150,000 –)	50%	48%	73%
Proportion of households in the lowest disposable income decile experiencing losses of over 10% at the point of implementation	28.03%	1.5% (and 4.37% with losses over 5%)	29.0%
Proportion of all households experiencing losses of over 10% at the point of implementation	15.2%	1.24% (and 15.2% with losses over 5%)	30.2%
Administrative saving assumed	£4bn per annum	£1bn per annum	£4bn per annum
Net cost of scheme	£1.8bn per annum	-£1.9bn per annum: i.e. a saving of £1.9bn	-£0.47 per annum: i.e. a saving of £0.47bn

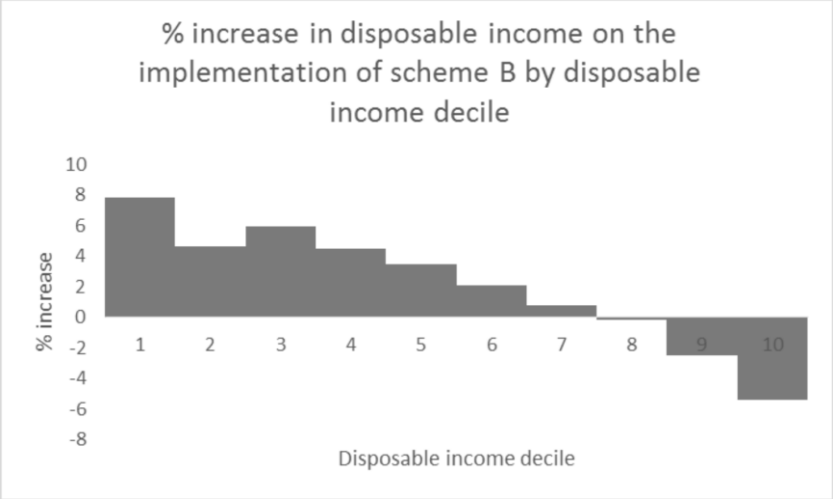
Source: Torry (2015a).

There was clearly no way that schemes A or C were going to conform to the conditions set for financial feasibility: but there was a possibility that a scheme for lower Citizen's Basic Incomes and that kept in place means-tested benefits might be able to do so. This required a new method. Before 2015, I had chosen the illustrative scheme and then discovered its effects: for instance, the funding gap, or the Income Tax rates required to fund it. Now that both strict revenue neutrality and a restriction on Income Tax rates had been imposed, it was going to be essential to test a wide variety of different illustrative schemes to see if one could be found that would fit the criteria. So such variables as the different Citizen's Basic Income amounts for different age groups, and different Income Tax rates for different income bands, had to be varied in turn, each resulting scheme had to be coded into EUROMOD, the programme had to be run and the results had to be tabulated, to see if the tests for feasibility had been passed. Three very clear conclusions could be drawn from this project.

- First of all, and most importantly, a feasible scheme B was discovered. This meant that Citizen's Basic Income would have been financially feasible in the UK in 2015. It only takes a single feasible illustrative scheme to prove that. (Strictly speaking, the scheme published as scheme B did not fulfil the requirement that no more than 2% of low income households should experience household net disposable income losses of more than 5%. 4.37% was as close as I could get it. Only 1.5% suffered losses of over 10%.)

  The scheme reduced all poverty indices, reduced the number of children in poverty by a quarter, reduced inequality, and because it made relatively few changes to the existing system, it could have been introduced quickly. What had become a familiar redistribution pattern, seen here in figure 1, would have been the result:

  Figure 1



  Source: Torry (2015a: 7)

- A second result, based on the high number of net household disposable income losses for scheme A, particularly for low income households, confirmed conclusions drawn from Torry (2012) and Torry (2014): that a revenue-neutral Citizen's Basic Income scheme that abolishes means-tested benefits would generate high numbers of substantial losses for low income households.
- A third result was not surprising, but the extent of the failure was interesting. The scheme based on published Minimum Income Standards for the levels of Citizen's

> Basic Incomes, scheme C, required excessive Income Tax rates at the same time as generating very high numbers of significant losses for low income households.

This third result had a significant afterlife. Torry (2015a) was perfectly clear that the scheme would be impossible to implement, and that the only feasible scheme was scheme B: but in a Westminster Hall parliamentary debate on Citizen's Basic Income in 2016, a Member of Parliament suggested that the Citizen's Income Trust had said that an Income Tax rate of 48% would be required for a Citizen's Basic Income. The Minister for Employment then questioned whether a scheme could be introduced that would avoid losses for low income households, and whether the scheme would provide for people with disabilities. Scheme B was a clear answer to those questions. Ronnie Cowan MP, who had introduced the debate, did not have the information to hand that would have enabled him to respond that the paper from which the Member of Parliament had quoted figures had been clear that the scheme that required an Income Tax rate of 48% was infeasible, and that the paper included an entirely feasible scheme that was strictly revenue neutral, that required Income Tax rates to rise by only three percentage points, that would generate almost no losses for low income households, and few losses for any households, and that would leave in place the means-tested benefits on which people with disabilities relied. The debate represented a low point for the integrity of the UK's parliamentary democracy (Citizen's Income Trust, 2016c).

The behaviour of the two Members of Parliament, one of whom was a minister, led the trustees of the Citizen's Basic Income Trust to debate how to prevent such abuse and avoidance of research results. They decided that as politicians could clearly not be trusted to treat research results with integrity, infeasible schemes would no longer be published. This is unfortunate, because the ethics of scientific research require negative results to be published as well as positive results: but it is difficult to see what other decision would have been possible.

As well as offering an 'all in one go' scheme, the paper also offered a staged approach. It calculated that if Income Tax Personal Allowances were not changed, and National Insurance Contributions above the Upper Earnings Limit were paid at 6% rather than 2%, then increasing Child Benefit to £56.35 per week for every child would have required an increase in Income Tax rates of 4.5 percentage points, and to increase it to £40 per week for every child would have increased Income Tax rates by 2.5 percentage points. Losses for low income households would have been negligible, and losses for all households sufficiently low.

The research went on to show that paying young adult Citizen's Basic Incomes of amounts matching those for Child Benefit to everyone between their sixteenth and nineteenth birthdays would have required no increases in Income Tax rates and would have imposed negligible household disposable income losses if National Insurance Contributions above the Upper Earnings Limit had been increased by another 6 percentage points.

The 2016 project

Torry (2016a) updated the figures for scheme B in Torry (2015a), offered a variety of additional evaluations, and studied the possibility of paying a Citizen's Basic Income to a single year cohort as a first step in rolling out such a Citizen's Basic Income scheme to the entire working age population.

A significant disappearance at this point was the idea that administrative savings on the implementation of Citizen's Basic Income could increase the amount of money available for the payment of Citizen's Basic Incomes. Until 2015, estimates had been made of the savings that would accrue. An assumption was made that administration of Citizen's Basic Income would cost 1% of the total paid out – the same proportion as for Child Benefit and the Basic State Pension – which would amount to somewhere between £2bn and £3bn. As the Department for Work and Pensions' running costs are stated in the national accounts as £8bn, a saving of £4bn to £5bn was therefore assumed (Citizen's Income Trust, 2013: 8). From 2016 onwards, consistently with other poorly evidenced approximations, the suggestion that there would be administrative savings if a Citizen's Basic Income were to be implemented disappeared. As only feasible Citizen's Basic Income schemes that left means-tested benefits in place and took a lot of people off them or close to coming off them were being published, few administrative savings could be envisaged anyway.

A further change was that whereas previously Child Benefit, which paid more for the first child in a family than for subsequent children, was to have been replaced by a Child Citizen's Basic Income paying the same amount for every child, Torry (2016a) retained and increased Child Benefit, thus preserving the difference in payment levels between the first child and second and subsequent children. In the report that it published in 2015, the Royal Society of Arts similarly allocated a larger Child Citizen's Basic Income for the first child of a family than for the second and subsequent children (Painter and Thoung, 2015: 22; Citizen's Income Trust, 2016a), which had the same effect as increasing each of the two Child Benefit rates by the same amount and removing the Child Benefit extension for over 16s still in full-time education. It might have been objected that this breaks the rule that every individual of the same age should receive the same Citizen's Basic Income.

We might respond to the objection as follows: Every Citizen's Basic Income scheme envisages that Child Citizen's Basic Incomes would be paid to the child's main carer. This means that children would not in fact receive their own Citizen's Basic Incomes, and a main carer of children would be receiving a larger Citizen's Basic Income than someone who was not the main carer of children because they would be receiving their own Citizen's Basic Income and the Child Citizen's Basic Incomes or Child Benefit allocated for their children. In this sense, the requirement that everyone of the same age should receive the same Citizen's Basic Income has already been breached: and to pay more for the first child of a family than for the second and subsequent children does not cause more of a breach than already exists, because all it does is adjust the already diverse amounts of Citizen's Basic Income and/or Child Benefit received by the main carer of one or more children (Torry, 2016a: 3).

A further addition in 2016 was systematic calculation and reporting of the numbers of households taken off means-tested benefits, and also of the numbers brought to within £100 per month of coming off them in the case of most benefits, or within £50 per month of coming off them in the case of Pension Credit and Council Tax Benefit. The aim was to show that even if means-tested benefits were retained, a lot of households would no longer be receiving them, and a lot of households would be able to come off them if they found employment or additional employment of just two or three hours per week. These figures became a fixture in subsequent evaluations of illustrative Citizen's Basic Income schemes alongside tables showing changes in poverty and inequality indices and graphs showing the redistribution pattern.

In relation to a gradual roll-out: Rather than calculating the cost and effects of an initial Citizen's Basic Income for a three year cohort, as the 2015 project had done, the 2016 project calculated the cost and effects of a Citizen's Basic Income for a single year cohort of sixteen

year olds. Because this one year cohort would not already have an Income Tax Personal Allowance that would need to be changed into a weekly or monthly cash payment, it could simply receive those payments rather than an Income Tax Personal Allowance by the simple mechanism of paying the Citizen's Basic Income and then charging Income Tax on all earned income (Torry, 2016a).

Torry (2016a) had resulted in a Citizen's Basic Income scheme that fulfilled all of the criteria, and it reduced inequality and most of the poverty indices: but unfortunately it increased poverty among elderly people. What had happened was that even though a Citizen's Pension had been paid on top of the Basic State Pension, and Pension Credit had been left in place, the removal of the Income Tax Personal Allowance had meant that some individuals who were over retirement age and were still employed or self-employed were finding themselves worse off. The problem was solved by reintroducing an Income Tax Personal Allowance of £5,000 per annum for individuals over retirement age. This pushed the net cost of the scheme slightly over the £2bn per annum normally permitted to £2.79bn, but it did solve the problem, and it meant that 10.9% of elderly households were receiving the means-tested Pension Credit rather than 12.3%, and that the total cost of Pension Credit fell by 33% in relation to the existing scheme rather than by 22% for the unamended scheme.

Torry (2016b) also updated the research results for a Citizen's Basic Income for 16 to 18 year olds conducted in 2015, and found that out of various options for implementing and paying for such a Young Adult Citizen's Basic Income, the most feasible would be to cease paying Child Benefit for anyone over the age of sixteen, to pay Citizen's Basic Incomes to the three year cohort, and to apply a BR (Basic Rate) tax code, which has the effect of reducing the Income Tax Personal Allowance to zero. It was found that more complex methods, for instance, involving changes to National Insurance Contributions for the three year cohort, would save very little money, and would considerably complicate the administration. Suggestions were made as to how the net cost of £3.33bn per annum might be funded.

For the first time, the analysis contained a discussion of the difficulty of holding a genuine Citizen's Basic Income pilot project in a more developed country. In a less developed country there is likely to be only a rudimentary existing benefits system, if any, and a rudimentary income tax system, if any. Establishing a Citizen's Basic Income pilot project in such a context requires that the unconditional payments should be made to everyone in the chosen community or communities for the prescribed time period, and that the effects should then be evaluated, preferably in relation to control communities that have not received the Citizen's Basic Incomes. In a more developed country, existing benefits and tax systems would need to be adjusted for the pilot community, because that is what would have to happen if a nationwide scheme were to be implemented. If that is not done, then the experiment will not be a genuine pilot project. The problem is that it is exceedingly difficult to alter complex tax and benefits systems just for pilot communities.

First of all, Torry (2016b) suggested that the 16 to 18 project would itself be a pilot project. It also suggested that a pilot project of this pilot project would be possible, because it would be relatively easy to pilot it in a single community or in several communities. This could be done by paying to every 16 to 18 year old in the community the Citizen's Basic Income, and allocating to each of them a BR tax code. The only complexity would relate to the decision as to whether Citizen's Basic Incomes should be paid to individuals for whom Child Benefit was still being received, and their Child Benefit stopped, or whether Child Benefit should be retained for over 16s still in education, and the individuals concerned excluded from the pilot project.

If Torry (2016b) were being written today, then the suggestion would be made that if the number of young adults still in full-time education over the age of 16 continues to rise, then a pilot project for a 16 to 21 cohort might be more useful to evaluate than a 16 to 18 pilot project. The cost of a 16 to 18 pilot project in a single London borough with a population of 250,000 was calculated to be £13.8m per annum.

A further discussion of the possibility of holding something like a Citizen's Basic Income pilot project appears later on in the current paper in response to a question that has been asked.

The 2017 project

The 2017 project was inspired by a consultation on the implementation of Citizen's Basic Income held in 2016 by the Institute for Chartered Accountants of England and Wales. A report on the consultation (Torry, 2016d) described and evaluated four different implementation methods, and a consultation was then held (Citizen's Income Trust, 2016b). The four implementation methods were as follows:

1. A Citizen's Basic Income for every UK citizen, large enough to take every household off means-tested benefits (including Working Tax Credits, Child Tax Credits, and Universal Credit), and to ensure that no household with low earned income would suffer a financial loss at the point of implementation. The scheme would be implemented all in one go.
2. A Citizen's Basic Income for every UK citizen, funded from within the current tax and benefits system. Current means-tested benefits would be left in place, and each household's means-tested benefits would be recalculated to take into account household members' Citizen's Basic Incomes in the same way as earned income is taken into account. Again, implementation would be all in one go.
3. This scheme would start with an increase in Child Benefit. A Citizen's Basic Income would then be paid to all 16 year olds, and they would be allowed to keep it as they grew older, with each new cohort of 16 year olds receiving the same Citizen's Basic Income and being allowed to keep it.
4. Inviting volunteers among the pre-retired, between the age of 60 and the state pension age. (Torry, 2016d: 6)

Torry (2014, 2015a) had already found the first method to be unlikely to be feasible without additional funding being available, and even then low income households might find themselves worse off, so Torry (2017) did no work on this implementation method. The fourth method could not be evaluated because it would be impossible to know how many volunteers there would be. So the paper evaluated the second and third options: the second being essentially the scheme evaluated in 2016, and the third a one-year version of the 2016 three-year proposal. The usual range of requirements was imposed on the schemes, the usual range of tests were applied, and, in response to an increasing number of questions being asked about the likely effects of Citizen's Basic Income on employment market behaviour, for the first time marginal deduction rates were calculated:

> Would individuals be more or less likely to seek paid employment, or to seek additional earned income, if they were paid a Citizen's Basic Income? Factors often discussed in this context are the marginal effective tax rate (METR: also called the marginal tax rate, the marginal withdrawal rate, or the marginal deduction rate): a measure of the extent to which an employed individual's additional earned income fails to result in additional disposable income; and the participation tax rate (PTR): a measure of the extent to which an unemployed individual's new earned income fails to result in additional disposable income. While a wide variety of factors will determine whether an individual seeks paid employment, or seeks additional earned income, if a substantial rise in earned income results in only a small rise in disposable income then further employment market engagement is less likely to be forthcoming. Because the marginal effective tax rate and the participation tax rate are factors that can be measured, and other factors cannot be, these particular indicators might sometimes be given more prominence than they deserve: but because they can be measured, and because they are likely to be at least of some significance [(Collado, 2018)], this paper defines and calculates a variety of different marginal effective tax rates and participation tax rates. (Torry, 2017: 3)

The results relating to Income Tax rates, the levels of Citizen's Basic Incomes, poverty and inequality indices, the numbers taken of various means-tested benefits, and so on, for option 2, an updated version of the 2016 scheme, were much the same as before. A new additional set of results in Torry (2017) gave the numbers of households on various benefits and within prescribed distances of coming off them for both the existing tax and benefits system and the Citizen's Basic Income scheme, and the poverty and inequality indices for the existing system and the Citizen's Basic Income scheme were also reported.

The main innovation in Torry (2017) was the calculation of two different sets of marginal deduction rates, as follows:

> *Marginal effective tax rates, method 1*
>
> EUROMOD's 'MTR' add-on calculates marginal effective tax rates (METRs) for all individuals who are earning an income. The add-on increases by 3% the earned income of each working age adult in the household in turn and calculates the increase in the household disposable income that this generates. If y is an individual's original earned income, d the original household disposable income, and d' the final household disposable income, then the METR is given by (1 - ((d' - d)/0.03y)) x 100. I follow Makovec and Tammik (2017: 21–2) in removing from the list of METRs generated for the FRS sample any METRs with values over 150% and any with negative values. The exercise is then repeated with earned income increased by 20%, where the METR is given by (1 - ((d' - d)/0.2y)) x 100.
>
> This method assumes that in every household every individual adult has complete knowledge of the household's financial resources, that all household members possess equal power in relation to household resources, and that each individual's employment motivation is a function of household disposable income.
>
> *Marginal effective tax rates and participation tax rates, method 2* [3]
>
> A second method increases the earned income of every individual 16 years old and above by £200 per month, and calculates the change in that individual's disposable

[3] Method 2 is as follows: An additional calculation is added to the National Minimum Wage function (yem) in EUROMOD that adds £200 per month to the earned income of every individual over sixteen

> income. This method therefore generates results for individuals already in employment, and also for individuals not in employment. For someone not in employment who enters employment, the ratio between the change in disposable income and the new earned income is the Participation Tax Rate (PTR); and for someone already in employment, the ratio between the change in disposable income and the change in earned income is the Marginal Effective Tax Rate (METR). A high PTR represents an 'unemployment trap', and a high METR a 'poverty trap'. In relation both to individuals initially in employment and to those not, a household's benefits income is assumed to be received by the individual to which the payment is made rather than by the household as a whole; and the earnings of all adults in the household are increased at the same time (as opposed to method 1, which increases each earned income in turn). The calculation is the same for both the PTR and the METR: If d is the individual's original disposable income and d' is their final disposable income, then the PTR/METR is given by (1 - ((d' - d)/200)) x 100. £200 per month represents something between half a day a week and a day a week of additional employed hours at the National Living Wage, and so represents the kind of real world employment market decision with which many individuals might be faced.
>
> This method does not assume equal knowledge or sharing of a household's financial resources within the household, but it does assume that each individual's motivation is a function of the payments that they receive. So if one member of a couple receives Working Tax Credits payments on behalf of the household, then they and not their partner will be assumed to be influenced by any decrease in that payment; and if the other member receives Child Benefit, then they and not their partner will be influenced by that.
>
> The reality in relation to household members' knowledge and sharing of household resources will generally lie somewhere between the two methods' assumptions for each household, with I suspect very few households at either end of the spectrum. (Torry, 2017: 11)

A mistake was then made in the marginal deduction rate calculations for one stage of this pilot project. This was corrected in Torry (2018b).

The 2018 project

Torry (2018b) first of all updated what had become the standard feasible Citizen's Basic Income scheme, which from 2015 had been adjusted and retested to ensure that it fulfilled the now well-developed set of requirements for financial feasibility (although it still proved impossible to obtain less than 2% of household net disposable income losses of over 5% for low income households, 2.67% was the figure for this iteration of the scheme). Secondly, it

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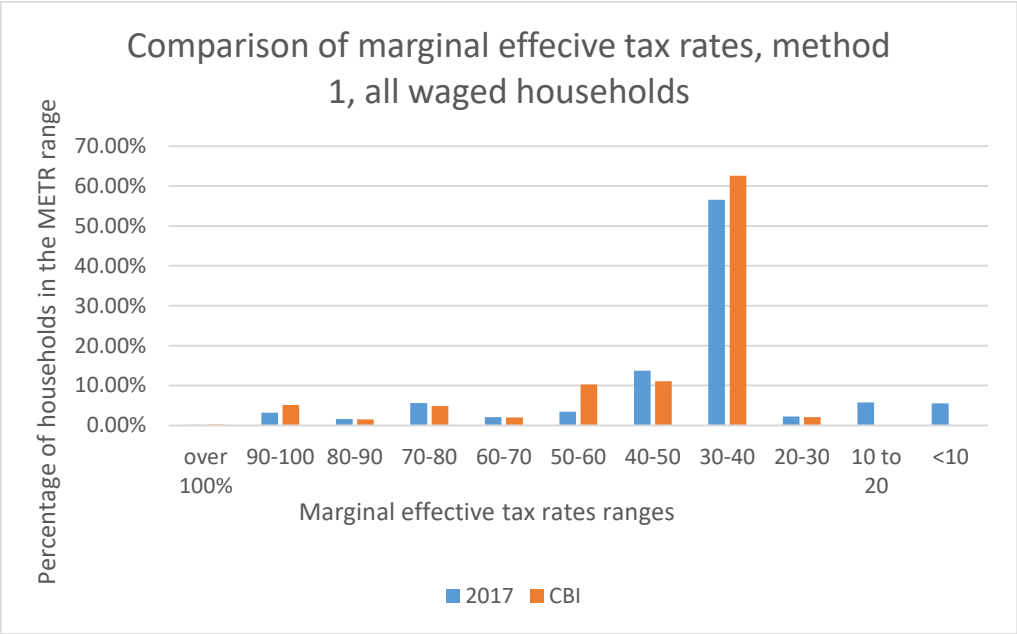
years of age. (The NMW parts of the policy are switched off.) The effect is to add £200 to the original income of every individual over the age of sixteen. EUROMOD is run to generate disposable income lists both before and after the change in earned income, for both the current tax and benefits system and for the illustrative Citizen's Basic Income scheme. METRs/PTRs are then calculated, and for all of the individuals experiencing METRs/PTRs within the required range the weights provided in the FRS data are added together to give the total number of over 16s experiencing that range of METRs. These figures are then compared with the total number of over 16s in the population as represented by the total of the weights for every over 16 in the FRS data.

corrected the mistake that had been discovered in the marginal deduction rate calculations for the pilot project researched in Torry (2017). And thirdly, it responded to a question that had been asked about the effect of a Citizen's Basic Income scheme on people with disabilities.

In relation to the updated results for the standard scheme, more detail was given in relation to marginal deduction rates, now corrected (Torry, 2018b: 12–16).

Figure 2 shows that household marginal effective tax rates, measured by method 1, change little on the implementation of the Citizen's Basic Income scheme.

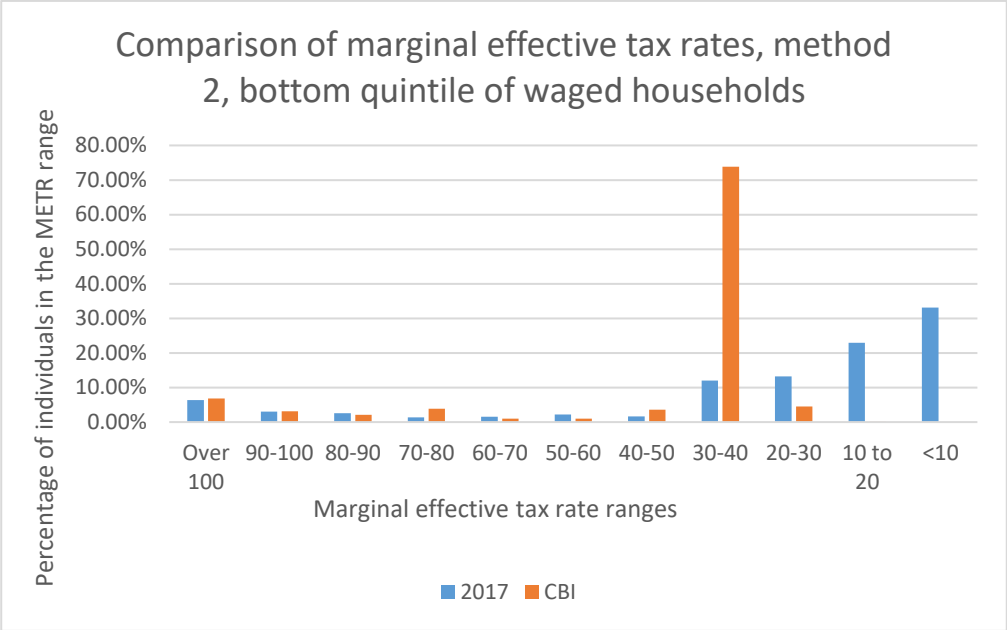
Figure 2



Source: Torry (2018b: 12)

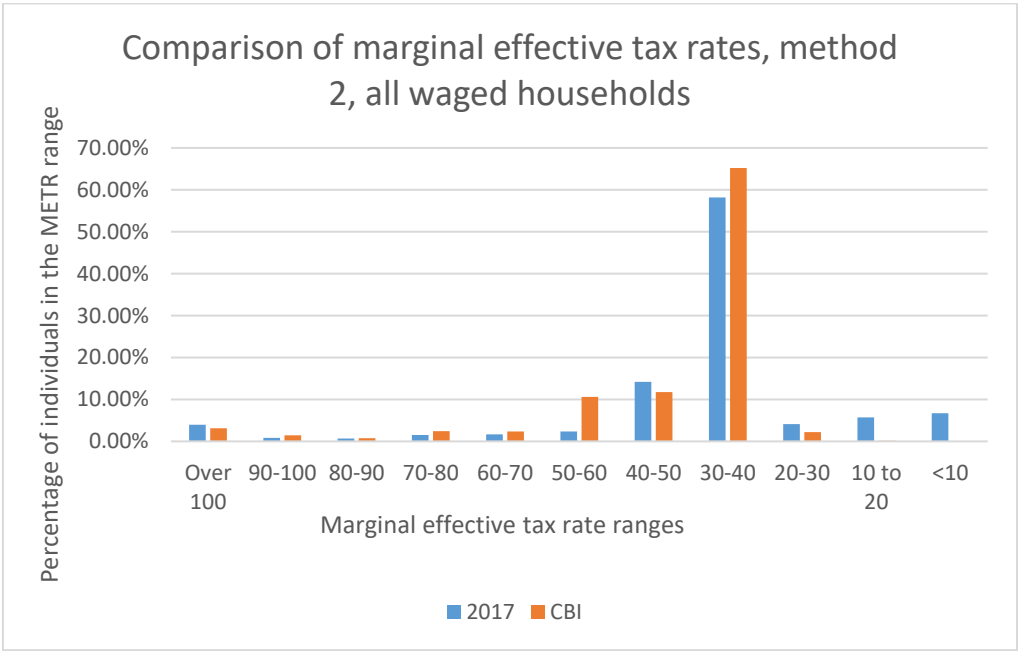
Method 2 is able to distinguish between waged and unwaged households. Figure 3 shows that waged households with the lowest incomes are now paying Income Tax and National Insurance Contributions on all earned income, so quite a lot of the individuals in them are finding themselves with marginal effective tax rate patterns similar to those for the households with higher incomes found in figure 4.

Figure 3



Source: Torry (2018b: 14)

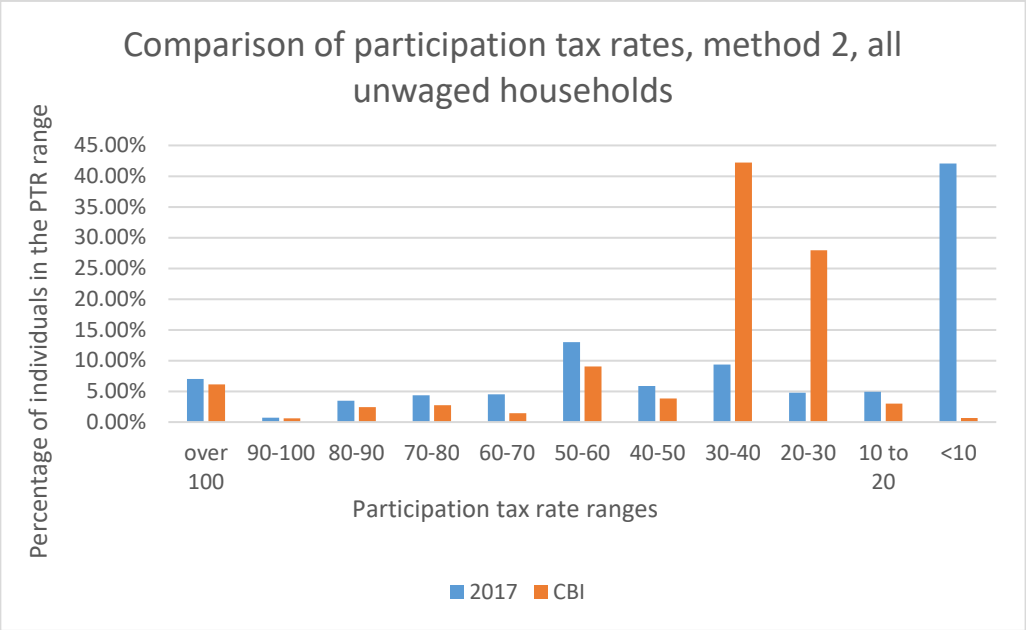
Figure 4



Source: Torry (2018b: 13)

Figure 5 shows the effect of the Citizen's Basic Income scheme on the participation tax rates experienced by individuals in currently unwaged households if they find employment. The number of very high marginal deduction rates is reduced, and because Income Tax and National Insurance Contributions are now being paid on all earned income, marginal deduction rates for this group of individuals gravitate towards the 20% to 40% band.

Figure 5



Source: Torry (2018b: 15)

In relation to the question as to how individuals with disabilities would fare in relation to the Citizen's Basic Income scheme, a somewhat confused picture emerged (Torry, 2018b: 16). Table 5 provides the results:

Table 5: Gains and losses for individuals with disabilities

Proportion of individuals with disabilities experiencing losses of over 10% at the point of implementation	8.20 %
Proportion of individuals with disabilities experiencing losses of over 5% at the point of implementation	9.60 %
Average gain for individuals with disabilities	£854 p.a.

Source: Torry (2018b: 16)

On average, individuals with disabilities gain £845 p.a., but the complexity of the current benefits system for people with disabilities, compounded by the complex way in which the current benefits system relates to households containing members with disabilities, means that some individuals with disabilities would lose money. This does not necessarily mean that their households would do so.

A now familiar conclusion was drawn in relation to the updated Citizen's Basic Income scheme:

> This simple scheme would substantially reduce poverty and inequality; it would remove large numbers of households from a variety of means-tested benefits; it would reduce means-tested benefit claim values, and the total costs of means-tested benefits; to the extent that marginal deduction rates affect employment market behaviour, it would provide additional employment market incentives, particularly for the large number of households no longer on means-tested benefits; it would avoid imposing significant numbers of losses at the point of implementation; and it would require almost no additional public expenditure. (Torry, 2018b: 16–17)

3. A New Assessment

The rest of this paper reports on new research: first of all, on an updating of the now familiar Citizen's Basic Income scheme; and secondly, in relation to a number of questions that have been asked. Both of these elements of the new research respond to questions that I have been asked. I am sometimes asked whether Citizen's Basic Income schemes that had previously been shown to be financially feasible in various ways would still be feasible – the usual answer being 'Yes, with minor adaptations'; and I am sometimes asked new questions in relation to the current state of the Citizen's Basic Income debate.

The 2019 Citizen's Basic Income scheme

The new version of EUROMOD, I1.0+, along with updated Family Resources Survey (FRS) data, has enabled what has become the standard Citizen's Basic Income scheme to be brought thoroughly up to date and retested. Only minor changes have been required to ensure that the scheme continues to fit what has become the normal list of criteria. The only caveats in relation to results being 'up to date' are that the FRS data is collected via a rolling programme of interviews, so it is always to some extent out of date; that neither the UK country system nor the FRS data enable us to take account of the roll-out of Universal Credit, the UK Government's new means-tested benefit; and that because Council Tax Support is now localised, and each local authority can set its own regulations and taper rates, calculations relating to Council Tax Benefit might provide less of a useful picture than calculations relating to other means-tested benefits.

The scheme tested here is funded from within the current tax and benefits system by reducing to zero the Income Tax Personal Allowance and the National Insurance Contributions Primary Earnings Threshold, charging National Insurance Contributions at 12% on all earned income, and increasing Income Tax rates slightly. Current means-tested benefits would be left in place, and each household's means-tested benefits would be recalculated to take into account household members' Citizen's Basic Incomes in the same way as earned income is taken into account. The list of requirements for financial feasibility is as follows:

- as few changes as possible are to be made to the current tax and benefits system, consistent with the other aims in view;
- revenue neutrality (Hirsch, 2015), which I shall take to be a net cost or saving of no more than £2bn;
- the avoidance of significant household net disposable income losses, particularly for low income households (with at least an aim of ensuring that no more 2% of low income households should experience household net disposable income losses of more than 5%);
- Income Tax rates to rise by no more than 3 percentage points (Hirsch, 2015);
- reductions in inequality (measured by the Gini coefficient) and in all poverty indices.

The illustrative Citizen's Basic Income scheme that emerges is found to be as follows:

- Child Benefit is increased by £20 per week for each child.

- Citizen's Basic Income levels are set as follows: An Education Age Citizen's Basic Income (ECBI), for 16 to 19 year olds no longer in full-time education, is set at £40 per week; a Young Adult's Citizen's Basic Income (YCBI), for people aged 20 to 24, is set at £50 per week; a Working Age Adult Citizen's Basic Income (WACBI, or simply CBI), for people aged 25 to 64, is set at £65 per week; and a Citizen's Pension, for everyone aged over 65, is set at £40 per week. The existing National Insurance Basic State Pension is left in place. (In this particular scheme the ECBI is not paid to someone still in full-time education, in recognition of the fact that their main carer is receiving Child Benefit on their behalf.). Table 6 gives the detail of the scheme and the household net disposable income losses generated for all households and for the lowest original income quintile.

Table 7 shows the changes in the numbers of households receiving a variety of means-tested benefits, and also the numbers of households brought within striking distance of coming off them.

Table 6: The standard Citizen's Basic Income scheme and losses generated

CBI levels, tax rates, numbers of losses over various limits for all households and lower quintile, and total net cost of scheme	
Citizen's Pension per week (existing state pensions remain in payment)	£40
Working age adult Citizen's Basic Income per week [4]	£65
Young adult Citizen's Basic Income per week	£50
Education age Citizen's Basic Income per week	£40
(Child Benefit is increased by £20 per week)	[£20]
Income Tax rate increase required for strict revenue neutrality	3%
Income Tax, basic rate (on £0 – 46,350)	23%
Income Tax, higher rate (on £46,350 – 150,000)	43%
Income Tax, top rate (on £150,000 –)	48%
Proportion of households in the lowest original income quintile experiencing losses of over 15% at the point of implementation	1.23%
Proportion of households in the lowest original income quintile experiencing losses of over 10% at the point of implementation	1.77%
Proportion of households in the lowest original income quintile experiencing losses of over 5% at the point of implementation	3.71%
Proportion of all households experiencing losses of over 15% at the point of implementation	0.41%
Proportion of all households experiencing losses of over 10% at the point of implementation	1.74%
Proportion of all households experiencing losses of over 5% at the point of implementation (losses over 6%: 7.11%)	12.54%
Net cost of scheme	£1.41bn p.a.

Source: own calculations with EUROMOD version I.10+.

[4] The calculation is as follows: Income Tax Personal Tax Allowance in 2018-2019 is £11,850. Removing the allowance would mean additional Income Tax of 11,850 x 0.2 = £2,370 being paid. The Primary Earnings Threshold for National Insurance Contributions is £162 per week. Reducing the threshold to zero would mean additional National Insurance Contributions of 162 x 52 x 0.12 = £1,010.88. The total additional payment would be 2,370 + 1,010.88 = 3,380.88, which translates as £65.02 per week: so a Citizen's Basic Income of £65 per week would compensate for the loss of the Income Tax Personal Allowance and the reduction of the Primary Earnings Threshold to zero. This calculation assumes that the Basic Rate of Income Tax will remain at 20%, which of course it does not. This means that there will be losses for every household earning an income, because as the Income Tax rate rises – in this scheme it rises by 3 percentage points – the value additional Income Tax and National Insurance Contributions will be greater than the amount received as a Citizen's Basic Income. For families with children, this loss is more than compensated for by the increased Child Benefit that the scheme envisages. For households without children, the loss of £7 per week remains. Another scheme tested in this paper repairs most of this loss, but at the cost of a substantial drop in the increase in Child Benefit.

Table 7: Reductions in numbers claiming means-tested benefits or within striking distance of coming off them, and the reductions in the totals costs of the benefits and the average value of claims

Reductions in numbers claiming means-tested benefits or within striking distance of coming off them	**The existing scheme in 2018**	**The Citizens Basic Income scheme**	**% reduction**
Percentage of households claiming out-of-work benefits (Income Support, Income-related Jobseeker's Allowance, Income-related Employment Support Allowance)	13.28%	11.12%	16.23%
Percentage of households claiming more than £100 per month in out-of-work benefits (defined as above)	13.06%	5.50%	57.86%
Percentage of households claiming in-work benefits (Working Tax Credits and Child Tax Credits)	13.28%	10.77%	18.86%
Percentage of households claiming more than £100 per month in in-work benefits (defined as above)	12.08%	9.86%	18.45%
Percentage of households claiming Pension Credit	5.81%	5.39%	7.25%
Percentage of households claiming more than £50 per month in Pension Credit	4.95%	4.39%	11.36%
Percentage of households claiming Housing Benefit	15.76%	15.71%	0.33%
Percentage of households claiming more than £100 per month in Housing Benefit	14.68%	14.63%	0.32%
Percentage of households claiming Council Tax Benefit	21.19%	20.61%	2.76%
Percentage of households claiming more than £50 per month in Council Tax Benefit	16.38%	15.35%	6.31%
Percentage of households claiming any means-tested benefits	32.86%	30.45%	7.35%
Percentage of households claiming more than £100 per month in means-tested benefits	28.98%	24.31%	16.11%
Percentage of households claiming more than £200 per month in means-tested benefits	26.23%	20.67%	21.20%
Reductions in total costs and average values of claims for means-tested benefits	**Reduction in total cost**	**Reduction in average value of claim**	
Out-of-work benefits (Income Support, Income-related Jobseeker's Allowance, Income-related Employment Support Allowance)	70.95%	59.62%	
In-work benefits (Working Tax Credits and Child Tax Credits)	23.24%	3.75%	
Pension Credit	28.64%	22.87%	
Housing Benefit	2.40%	1.15%	
Council Tax Benefit	8.72%	2.41%	
All means-tested benefits	30.60%	22.00%	

Source: own calculations with EUROMOD version I.10+.
Note: EUROMOD microsimulation of both the 2018 tax and benefits system and the Citizen's Basic Income scheme generates information on the number of claims for each social security benefit for the two options, and also information on the total cost of those benefits and on the average values of benefits claims. To obtain the numbers claiming benefits the weights attached to the households in the survey that are claiming the relevant benefits are added together.

Table 8 shows reductions in inequality and in poverty rates.

Table 8: Inequality and poverty indices

Inequality and poverty indices	**The current tax and benefits scheme in 2018**	**The Citizen's Basic Income scheme**	**Percentage change in the indices**
Inequality			
Disposable income Gini coefficient	0.3087	0.2756	10.73%
Poverty headcount rates			
Total population in poverty	0.16	0.11	29.57%
Children in poverty	0.18	0.11	42.08%
Working age adults in poverty	0.15	0.11	28.17%
Economically active working age adults in poverty	0.06	0.04	37.48%
Elderly people in poverty	0.14	0.12	14.80%

Source: own calculations with EUROMOD version I.10+.

Table 9 shows the changes in mean household disposable income by decile groups, and also mean equivalised household disposable income by decile group, the latter taking account of the composition of the household.

Table 9: Mean (equivalised) income by decile groups

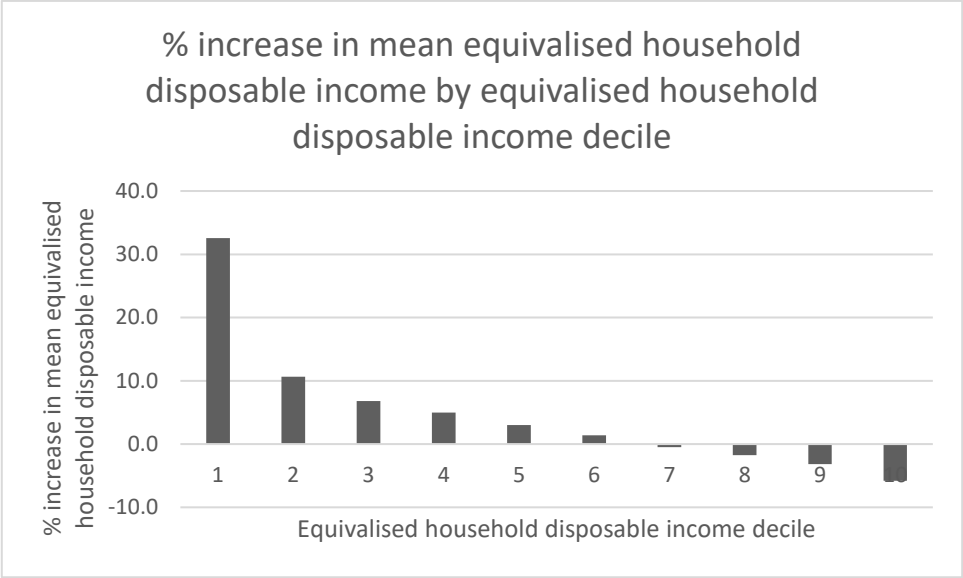
Decile group	**% change in mean household disposable income**	**% change in mean equivalised household disposable income**
1	31.21	32.54
2	9.7	10.66
3	5.98	6.81
4	4.21	4.96
5	2.38	3
6	0.95	1.4
7	-0.7	-0.47
8	-1.89	-1.76
9	-3.17	-3.18
10	-5.71	-5.82

Source: own calculations with EUROMOD version I.10+.

(It might be of interest that the figures look very similar whether or not equivalised household incomes are employed. This suggests that all of the deciles contain similar spreads of household sizes.)

Figure 6 is a graphical representation of the redistribution pattern.

Figure 6



Source: own calculations with EUROMOD version I.10+.

To reiterate the conclusions drawn in previous analyses that have contained research results on schemes similar to this one: We can conclude that this updated version of what has become a standard feasible Citizen's Basic Income scheme would be revenue neutral (that is, it could be funded from within the current income tax and benefits system); and that the increase in Income Tax rates required would be feasible. The scheme would substantially reduce poverty and inequality; it would remove large numbers of households from a variety of means-tested benefits; it would reduce means-tested benefit claim values, and the total costs of means-tested benefits; it would provide additional employment market incentives for the large number of households no longer on means-tested benefits to the extent that marginal deduction rates affect employment market behaviour; and it would avoid imposing significant numbers of losses at the point of implementation.

As the scheme is so close in character to the scheme researched in Torry (2018b), we can assume that the pattern of marginal deduction rates would be very similar.

Because the only changes required in order to implement this illustrative Citizen's Basic Income scheme would be

- payment of the Citizen's Basic Incomes for every individual above the age of 16 (apart from those between 16 and 19 still in full-time education), calculated purely in relation to the age of each individual,
- increases in the rates of Child Benefit,
- changes to Income Tax and National Insurance Contribution rates and thresholds, [5] and
- easy to achieve recalculations in existing means-tested benefits claims,

the entire scheme could be implemented very quickly.

[5] A recent complexity is the fact that Scotland can now vary its Income Tax rates slightly, and it can also vary and add Income Tax thresholds – and it does. For the purposes of this exercise, and for the sake of simplicity, Income Tax rates have been harmonised across the UK at 23%, 43%, and 48%, and the thresholds have been harmonised, even though for narrow bands of earnings this requires a change of 4% rather than 3%. It should not be assumed that this is what would happen if a Citizen's Basic Income scheme were to be implemented.

This simple illustrative scheme could be both feasible and useful.

4. Further reflections

During the past year I have collected up the following questions, which I shall tackle in turn:

a) Would it be possible to raise the working age Citizen's Basic Income from £63 per week (the 2018 level for working age adults) to £70 per week?

b) How much would it cost to run a pilot project for a whole community for a genuine Citizen's Basic Income of £70 per week for working age adults?

c) Would it be possible to construct a financially feasible Citizen's Basic Income scheme that retained a small Income Tax Personal Allowance rather than reducing it to zero?

d) Would it be possible to reduce the Income Tax rates required to fund a Citizen's Basic Income scheme if the top rate of tax was raised to 70%?

e) What's causing the losses for low income households, and is it possible to reduce them?

a. Would it be possible to raise the working age Citizen's Basic Income from £63 per week (the level for working age adults for the 2018 project) to £70 per week?

For this exercise, the usual set of requirements for financial feasibility was employed, and the normal trial and error method then used. A financially feasible Citizen's Basic Income scheme was discovered as follows:

Table 10: The £70 per week Citizen's Basic Income scheme and losses generated

Citizen's Pension per week (existing state pensions remain in payment)	£40
Working age adult Citizen's Basic Income per week	£70
Young adult Citizen's Basic Income per week	£60
Education age Citizen's Basic Income per week	£25
(Child Benefit is increased by £5 per week)	[£5]
Income Tax rate increase required for strict revenue neutrality	3%
Income Tax, basic rate (on £0 – 46,350)	23%
Income Tax, higher rate (on £46,350 – 150,000)	43%
Income Tax, top rate (on £150,000 –)	48%
Proportion of households in the lowest original income quintile experiencing losses of over 15% at the point of implementation	1.59%
Proportion of households in the lowest original income quintile experiencing losses of over 10% at the point of implementation	2.29%
Proportion of households in the lowest original income quintile experiencing losses of over 5% at the point of implementation	4.19%
Proportion of all households experiencing losses of over 15% at the point of implementation	0.48%
Proportion of all households experiencing losses of over 10% at the point of implementation	1.52%
Proportion of all households experiencing losses of over 5% at the point of implementation (losses over 6%: 6.22%)	11.59%
Net cost of scheme	£1.14bn p.a.

Source: own calculations with EUROMOD version I.10+.

Table 11 shows the changes in the numbers of households receiving a variety of means-tested benefits, and also the numbers of households brought within striking distance of coming off them.

Table 11: Reductions in numbers claiming means-tested benefits or within striking distance of coming off them, and the reductions in the totals costs of the benefits and the average value of claims

Reductions in numbers claiming means-tested benefits or within striking distance of coming off them	**The existing scheme in 2018**	**The Citizens Basic Income**	**% reduction**
Percentage of households claiming out-of-work benefits (Income Support, Income-related Jobseeker's Allowance, Income-related Employment Support Allowance)	13.28%	9.56%	28.05%
Percentage of households claiming more than £100 per month in out-of-work benefits (defined as above)	13.06%	5.46%	58.18%
Percentage of households claiming in-work benefits (Working Tax Credits and Child Tax Credits)	13.28%	10.59%	20.25%
Percentage of households claiming more than £100 per month in in-work benefits (defined as above)	13.06%	9.71%	19.66%
Percentage of households claiming Pension Credit	5.81%	5.38%	7.48%
Percentage of households claiming more than £50 per month in Pension Credit	4.95%	4.38%	11.55%
Percentage of households claiming Housing Benefit	15.76%	15.56%	1.27%
Percentage of households claiming more than £100 per month in Housing Benefit	14.68%	14.47%	1.42%
Percentage of households claiming Council Tax Benefit	21.19%	20.25%	4.42%
Percentage of households claiming more than £50 per month in Council Tax Benefit	16.38%	15.05%	8.12%
Percentage of households claiming any means-tested benefits	32.86%	29.24%	11.02%
Percentage of households claiming more than £100 per month in means-tested benefits	28.98%	24.38%	15.86%
Percentage of households claiming more than £200 per month in means-tested benefits	26.23%	20.39%	22.26%
Reductions in total costs and average values of claims for means-tested benefits	**Reduction in total cost**	**Reduction in average value of claim**	
Out-of-work benefits (Income Support, Income-related Jobseeker's Allowance, Income-related Employment Support Allowance)	75.07%	65.35%	
In-work benefits (Working Tax Credits and Child Tax Credits)	24.83%	5.75%	
Pension Credit	29.10%	23.37%	
Housing Benefit	3.61%	2.37%	
Council Tax Benefit	8.47%	4.24%	
All means-tested benefits	32.10%	23.69%	

Source: own calculations with EUROMOD version I.10+.

Table 12 shows reductions in inequality and in poverty rates.

Table 12: Inequality and poverty indices

Inequality and poverty indices	**The current tax and benefits scheme in 2018**	**The Citizen's Basic Income scheme**	**Percentage change in the indices**
Inequality			
Disposable income Gini coefficient	0.3087	0.2811	8.95%
Poverty headcount rates			
Total population in poverty	0.16	0.12	23.46%
Children in poverty	0.18	0.14	25.26%
Working age adults in poverty	0.15	0.12	24.78%
Economically active working age adults in poverty	0.06	0.04	32.01%
Elderly people in poverty	0.14	0.12	15.75%

Source: own calculations with EUROMOD version I.10+.

Table 13 shows the changes in mean household disposable income by decile groups, and also mean equivalised household disposable income by decile group, the latter taking account of the composition of the household.

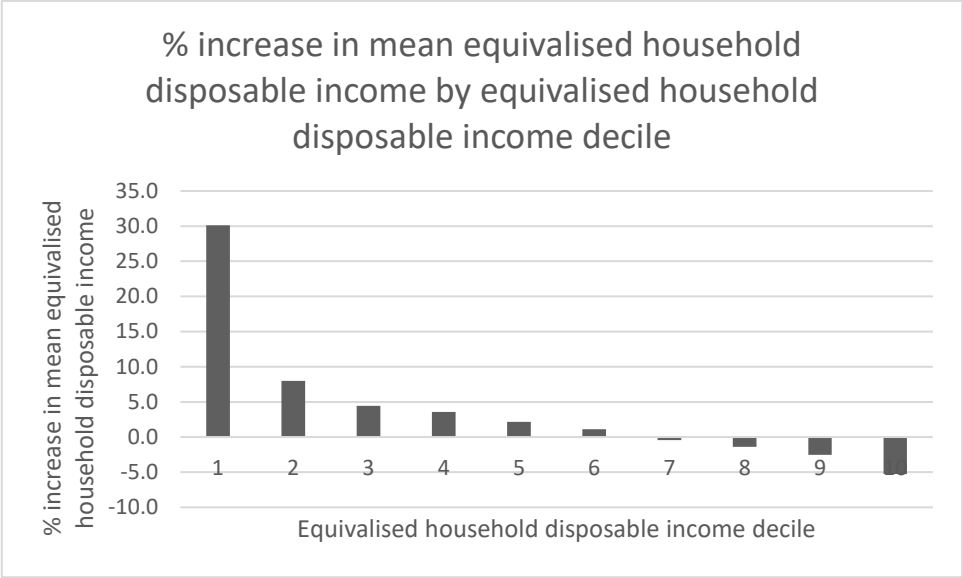
Table 13: Mean (equivalised) income by decile groups

Decile group	**% change in mean household disposable income**	**% change in mean equivalised household disposable income**
1	29.95	30.11
2	7.69	7.97
3	4.2	4.45
4	3.25	3.58
5	1.87	2.14
6	0.91	1.13
7	-0.48	-0.42
8	-1.43	-1.4
9	-2.51	-2.55
10	-5.14	-5.25

Source: own calculations with EUROMOD version I.10+.

Figure 7 is a graphical representation of the redistribution pattern for equivalised household disposable incomes.

Figure 7



Source: own calculations with EUROMOD version I.10+.

We can see from table 10 that financial feasibility can be achieved, although at the cost of a far smaller increase in Child Benefit than for previous schemes: £5 rather than £20. Predictably, this means that the reduction in child poverty achieved by the £70 per week scheme is lower than for the £65 per week scheme. Other indicators look fairly similar, except that there are generally higher numbers of household net disposable income losses in most of the loss categories.

We can conclude that if for whatever reason a £70 per week Citizen's Basic Income for working age adults was to be required, then a financially feasible scheme could be implemented.

b. How much would it cost to run a pilot project for a whole community for a genuine Citizen's Basic Income of £70 per week for working age adults?

I have discussed above the difficulties involved in constructing a genuine Citizen's Basic Income pilot project in a developed country. The solutions offered during the previous research projects reported in this paper were roll-outs to young adults entering the employment market at age 16 or thereabouts: in practice, providing Citizen's Basic Incomes to a one-year or a three-year age cohort (or possibly to a six-year cohort). Also suggested was a pilot project for such a pilot project, because it would not be too difficult to establish a Citizen's Basic Income for a one- or three-year age cohort of young adults in a single community, mainly because major changes to the existing tax and benefits systems could be avoided.

But having been asked whether it would be possible to run a pilot project for a genuine nationwide Citizen's Basic Income scheme like the illustrative schemes researched in this paper, the question has to be answered. In an important sense, the answer has to be 'no', because to established either the £65 per week or £70 per week illustrative schemes reported above would require major changes to the existing tax and benefits systems. This would not be feasible in a single community. However, something similar to a pilot project would be possible if it was conducted along similar lines to the pilot project for the single year age

cohort project by operationalising those changes that it would be possible to operationalise and not those that would not be.

The plan would therefore be to provide Citizen's Basic Incomes for all adults over the age of 16 at the same levels as in the £70 per week project reported above. Everyone in employment would then be allocated a BR (Basic Rate) tax code. [6] Child Benefit would not be altered, Income Tax rates would not be altered, and the thresholds and rates for National Insurance Contributions would not be amended, as all of those changes would be too difficult to achieve for a single community. Every household on means-tested benefits would have their Citizen's Basic Incomes added to the means employed in calculating benefit claims, so everyone's means-tested benefit claims would be reduced in value.

Microsimulation of the scheme generates the results found in table 14:

Table 14: The £70 per week Citizen's Basic Income pilot project

CBI levels, tax rates, numbers of losses over various limits for all households and lower quintile, and total net cost of scheme	
Citizen's Pension per week (existing state pensions remain in payment)	£40
Working age adult Citizen's Basic Income per week	£70
Young adult Citizen's Basic Income per week	£60
Education age Citizen's Basic Income per week	£25
(Child Benefit is not increased)	[£0]
Income Tax rate increase required for strict revenue neutrality	0%
Income Tax, basic rate (on £0 – 46,350)	20%
Income Tax, higher rate (on £46,350 – 150,000)	40%
Income Tax, top rate (on £150,000 –)	45%
Proportion of households in the lowest original income quintile experiencing losses of over 15% at the point of implementation	0.90%
Proportion of households in the lowest original income quintile experiencing losses of over 10% at the point of implementation	1.16%
Proportion of households in the lowest original income quintile experiencing losses of over 5% at the point of implementation	1.56%
Proportion of all households experiencing losses of over 15% at the point of implementation	0.43%
Proportion of all households experiencing losses of over 10% at the point of implementation	0.54%
Proportion of all households experiencing losses of over 5% at the point of implementation (losses over 6%: 0.70%)	0.74%
Net cost of scheme	£56.56bn p.a.

Source: own calculations with EUROMOD version I.10+.

[6] A variety of possible consequences of doing this would need to be studied. For instance, in the normal course of events, if a BR tax code is applied throughout a tax year, then the Income Tax system will still assume that an Income Tax Personal Allowance should have been in place, and a tax refund will be issued. This would have to be prevented for the tax years relating to the pilot project. Similarly, how to handle earnings above the higher rate threshold and the top rate threshold would have to be discussed.

Table 15 shows the changes in the numbers of households receiving a variety of means-tested benefits, and also the numbers of households brought within striking distance of coming off them.

Table 15: Reductions in numbers claiming means-tested benefits or within striking distance of coming off them, and the reductions in the totals costs of the benefits and the average value of claims

Reductions in numbers claiming means-tested benefits or within striking distance of coming off them	**The existing scheme in 2018**	**The Citizens Basic Income scheme**	**% reduction**
Percentage of households claiming out-of-work benefits (Income Support, Income-related Jobseeker's Allowance, Income-related Employment Support Allowance)	13.06%	5.30%	59.45%
Percentage of households claiming more than £100 per month in out-of-work benefits (defined as above)	13.28%	10.59%	20.25%
Percentage of households claiming in-work benefits (Working Tax Credits and Child Tax Credits)	13.06%	9.71%	19.66%
Percentage of households claiming more than £100 per month in in-work benefits (defined as above)	5.81%	5.09%	12.41%
Percentage of households claiming Pension Credit	4.95%	3.95%	20.11%
Percentage of households claiming more than £50 per month in Pension Credit	15.76%	15.00%	5.05%
Percentage of households claiming Housing Benefit	14.68%	13.82%	5.85%
Percentage of households claiming more than £100 per month in Housing Benefit	21.19%	18.97%	10.48%
Percentage of households claiming Council Tax Benefit	16.38%	14.41%	11.84%
Percentage of households claiming more than £50 per month in Council Tax Benefit	32.86%	28.52%	13.22%
Percentage of households claiming any means-tested benefits	28.98%	23.77%	17.96%
Percentage of households claiming more than £100 per month in means-tested benefits	26.23%	19.97%	23.87%
Percentage of households claiming more than £200 per month in means-tested benefits	13.06%	5.30%	59.45%
Reductions in total costs and average values of claims for means-tested benefits	**Reduction in total cost**	**Reduction in average value of claim**	
Out-of-work benefits (Income Support, Income-related Jobseeker's Allowance, Income-related Employment Support Allowance)	75.32%	65.35%	
In-work benefits (Working Tax Credits and Child Tax Credits)	24.80%	5.71%	
Pension Credit	34.12%	28.80%	
Housing Benefit	7.46%	6.27%	
Council Tax Benefit	13.31%	9.30%	
All means-tested benefits	33.74%	25.53%	

Source: own calculations with EUROMOD version I.10+.

Table 16 shows reductions in inequality and in poverty rates.

Table 16: Inequality and poverty indices

Inequality and poverty indices	**The current tax and benefits scheme in 2018**	**The Citizen's Basic Income scheme**	**Percentage change in the indices**
Inequality			
Disposable income Gini coefficient	0.3087	0.2942	4.70%
Poverty headcount rates			
Total population in poverty	0.16	0.11	27.77%
Children in poverty	0.18	0.13	25.85%
Working age adults in poverty	0.15	0.11	29.66%
Economically active working age adults in poverty	0.06	0.03	46.16%
Elderly people in poverty	0.14	0.11	23.86%

Source: own calculations with EUROMOD version I.10+.

Table 17 shows the changes in mean household disposable income by decile groups, and also mean equivalised household disposable income by decile group, the latter taking account of the composition of the household.

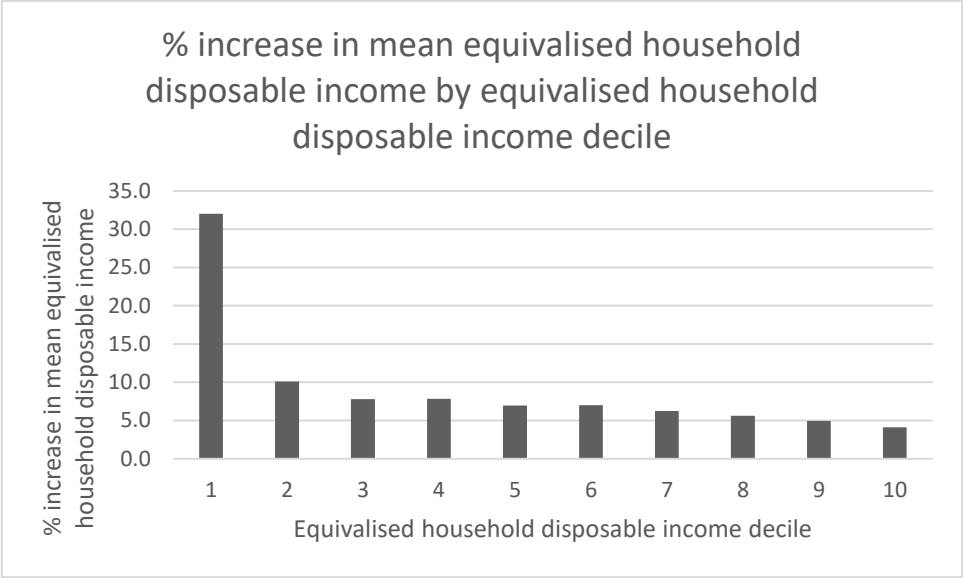
Table 17: Mean (equivalised) income by decile groups

Decile group	**% change in mean household disposable income**	**% change in mean equivalised household disposable income**
1	32.17	32.02
2	10.01	10.1
3	7.71	7.79
4	7.48	7.84
5	6.68	6.96
6	6.7	7.01
7	6.02	6.23
8	5.46	5.62
9	4.83	4.94
10	4.04	4.13

Source: own calculations with EUROMOD version I.10+.

Figure 8 is a graphical representation of the redistribution pattern for equivalised household disposable incomes.

Figure 8



Source: own calculations with EUROMOD version I.10+.

From table 14 we can see that if this scheme were to be rolled out across the whole of the UK then the net cost would £56.56bn per annum. If the pilot project community population were to be 100,000, then the net cost would be £88m; and if the pilot community population were to be 10,000, then the net cost would be £8.8m. (The significant assumption made in this calculation is that the financial profile of the pilot community matches in all respects the financial profile of the country as a whole.)

The reason for the entire graph in figure 8 being above the horizontal, and there being a negligible number of household net disposable income losses reported in table 14, is because no household would be worse off with this scheme, because no National Insurance Contribution rates or Income Tax rates have been increased. Hence the huge net cost if the scheme were to be rolled out nationwide. In that sense, the scheme is not financially feasible, so any pilot project of this nature would need to be evaluated in the knowledge that if the scheme were to be rolled out nationwide Income Tax and National Insurance Contribution rates would have to change, imposing losses on some households.

All one can say about this project is that it is probably as close as it possible to get to a genuine Citizen's Basic Income pilot project in the UK, and that although rolling out the scheme nationwide would not be financially feasible, the pilot project would be.

c. Would it be possible to construct a financially feasible Citizen's Basic Income scheme that retained a small Income Tax Personal Allowance rather than reducing it to zero?

Rather than beginning with an arbitrary continuing Income Tax Personal Allowance, it seemed sensible to begin this exercise with a level of Citizen's Basic Income in mind for working age adults. A reasonable assumption might be that a Citizen's Basic Income of below £50 per week for working age adults might not be worth paying, might be difficult to argue for, and might not generate sufficiently robust effects if it were to be paid.

This leaves the question as to whether the National Insurance Contribution Primary Earnings Threshold should be positive, or reduced to zero as in other projects reported in this paper. There would be an argument for aligning it with the new positive Income Tax Personal Allowance, so that neither Income Tax nor National Insurance Contributions would be

collected on earnings below a specified level. There would also be an argument for reducing the threshold to zero so that everyone earning an income was paying National Insurance Contributions, even if they were not paying Income Tax. The argument would be that it would be useful to give to everyone earning an income a sense of ownership of the National Insurance system, and that it would be useful to enable them to build a genuine contributions record rather than have contributions credited. It is therefore the latter option – to reduce the Primary Earnings Threshold to zero – that this project chooses.

With the National Insurance Contributions Primary Earnings Threshold reduced to zero, a Citizen's Basic Income of £50 per week for working age adults suggests a continuing Income Tax Personal Allowance of £4,000 per annum. [7]

For this exercise, the usual set of requirements for financial feasibility was employed. A financially feasible Citizen's Basic Income scheme was discovered as described in table 18:

[7] The calculation is as follows: Reducing the NIC Primary Earnings Threshold (PET) to zero pays for a Citizen's Basic Income of £162 (the PET) x 0.12 (the NIC rate) = £19.44 per week. A reduction in the Income Tax Personal Allowance (ITPA) therefore needs to pay for a Citizen's Basic Income of £30.56 per week. Therefore the ITPA reduction x 0.2 (the Basic Rate of Income Tax) = 30.56 x 52 = 1589.12. Rearranging: the ITPA reduction = 5 x 30.56 x 52 = 7945.60. The continuing ITPA therefore needs to be 11,850 – 7,945.60 = 3904.40. For the sake of simplicity, the continuing Income Tax Personal Allowance is set at £4,000 per annum.

Table 18: A £65 per week Citizen's Basic Income scheme with a continuing Income Tax Personal Allowance of £4,000 per annum.

CBI levels, tax rates, numbers of losses over various limits for all households and lower quintile, and total net cost of scheme	
Citizen's Pension per week (existing state pensions remain in payment)	£35
Working age adult Citizen's Basic Income per week	£50
Young adult Citizen's Basic Income per week	£40
Education age Citizen's Basic Income per week	£30
(Child Benefit is increased by £10 per week)	[£10]
Income Tax rate increase required for strict revenue neutrality	3%
Income Tax, basic rate (on £4,000 – 46,350)	23%
Income Tax, higher rate (on £46,350 – 150,000)	43%
Income Tax, top rate (on £150,000 –)	48%
Proportion of households in the lowest original income quintile experiencing losses of over 15% at the point of implementation	0.38%
Proportion of households in the lowest original income quintile experiencing losses of over 10% at the point of implementation	0.60%
Proportion of households in the lowest original income quintile experiencing losses of over 5% at the point of implementation	0.73%
Proportion of all households experiencing losses of over 15% at the point of implementation	0.35%
Proportion of all households experiencing losses of over 10% at the point of implementation	2.27%
Proportion of all households experiencing losses of over 5% at the point of implementation (losses over 6%: 6.58%)	8.38%
Net cost of scheme	£0.21bn p.a.

Source: own calculations with EUROMOD version I.10+.

Table 19 shows the changes in the numbers of households receiving a variety of means-tested benefits, and also the numbers of households brought within striking distance of coming off them.

Table 19: Reductions in numbers claiming means-tested benefits or within striking distance of coming off them, and the reductions in the totals costs of the benefits and the average value of claims

Reductions in numbers claiming means-tested benefits or within striking distance of coming off them	**The existing scheme in 2018**	**The Citizens Basic Income**	**% reduction**
Percentage of households claiming out-of-work benefits (Income Support, Income-related Jobseeker's Allowance, Income-related Employment Support Allowance)	13.06%	10.19%	21.95%
Percentage of households claiming more than £100 per month in out-of-work benefits (defined as above)	13.28%	11.34%	14.56%
Percentage of households claiming in-work benefits (Working Tax Credits and Child Tax Credits)	12.08%	10.51%	13.09%
Percentage of households claiming more than £100 per month in in-work benefits (defined as above)	5.81%	4.72%	18.82%
Percentage of households claiming Pension Credit	4.95%	3.55%	28.25%
Percentage of households claiming more than £50 per month in Pension Credit	15.76%	15.57%	1.26%
Percentage of households claiming Housing Benefit	14.68%	14.36%	2.18%
Percentage of households claiming more than £100 per month in Housing Benefit	21.19%	19.90%	6.11%
Percentage of households claiming Council Tax Benefit	16.38%	14.76%	9.87%
Percentage of households claiming more than £50 per month in Council Tax Benefit	32.86%	30.32%	7.73%
Percentage of households claiming any means-tested benefits	28.98%	25.56%	11.79%
Percentage of households claiming more than £100 per month in means-tested benefits	26.23%	21.21%	19.15%
Percentage of households claiming more than £200 per month in means-tested benefits	13.06%	10.19%	21.95%
Reductions in total costs and average values of claims for means-tested benefits	**Reduction in total cost**	**Reduction in average value of claim**	
Out-of-work benefits (Income Support, Income-related Jobseeker's Allowance, Income-related Employment Support Allowance)	56.84%	40.01%	
In-work benefits (Working Tax Credits and Child Tax Credits)	17.60%	3.32%	
Pension Credit	41.20%	36.45%	
Housing Benefit	3.97%	2.73%	
Council Tax Benefit	10.00%	5.83%	
All means-tested benefits	26.00%	16.84%	

Source: own calculations with EUROMOD version I.10+.

Table 20 shows reductions in inequality and in poverty rates.

Table 20: Inequality and poverty indices

Inequality and poverty indices	**The current tax and benefits scheme in 2018**	**The Citizen's Basic Income scheme**	**Percentage change in the indices**
Inequality			
Disposable income Gini coefficient	0.3087	0.2776	10.09%
Poverty headcount rates			
Total population in poverty	0.16	0.12	26.17%
Children in poverty	0.18	0.13	28.36%
Working age adults in poverty	0.15	0.12	22.72%
Economically active working age adults in poverty	0.06	0.04	31.75%
Elderly people in poverty	0.14	0.09	35.30%

Source: own calculations with EUROMOD version I.10+.

Table 21 shows the changes in mean household disposable income by decile groups, and also mean equivalised household disposable income by decile group, the latter taking account of the composition of the household.

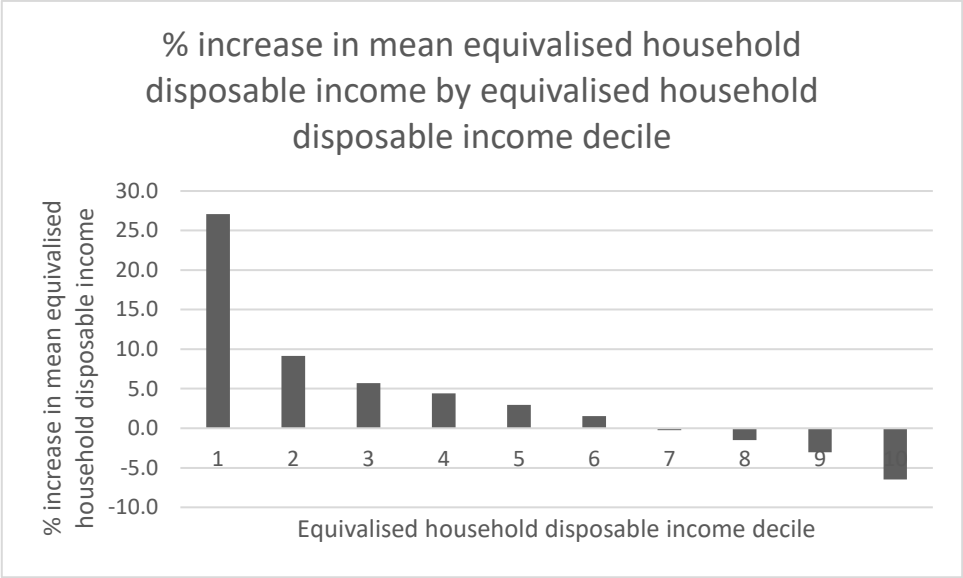
Table 21: Mean (equivalised) income by decile groups

Decile group	**% change in mean household disposable income**	**% change in mean equivalised household disposable income**
1	26.84	27.1
2	8.87	9.13
3	5.52	5.73
4	4.17	4.42
5	2.74	2.96
6	1.42	1.56
7	-0.27	-0.26
8	-1.46	-1.5
9	-2.90	-3.02
10	-6.33	-6.46

Source: own calculations with EUROMOD version I.10+.

Figure 9 is a graphical representation of the redistribution pattern for equivalised household disposable incomes.

Figure 9



Source: own calculations with EUROMOD version I.10+.

We can see from the tables and graphs that an entirely feasible scheme has emerged that brings household net income losses below the levels found for other schemes researched here. If a £50 per week Citizen's Basic Income for working age adults was felt to be a worthwhile starting point, then this feasible could be rolled out fairly easily and would have useful effects.

d. Would it be possible to reduce the Income Tax rates required to fund a Citizen's Basic Income scheme if the top rate of tax was raised to 70%?

The highest rate of Income Tax in the UK is currently 45% above a £150,000 per annum threshold. At that point in the earnings range, National Insurance Contributions on additional earned income are paid at a rate of 2%, making a total tax rate of 47%. The Citizen's Basic Income schemes researched for this paper assume that National Insurance Contribution rates will be at 12% across the entire earned income range: so in order for the total tax rate to reach 70%, Income Tax would have to be charged at 58% rather than 45%. If the other Income Tax rates were to be increased by 3 percentage points, as in the schemes researched for this paper, then instead of the net cost being £1.14bn per annum, there would be a net gain to the Treasury of £0.78bn per annum. This still coheres with our definition of strict revenue neutrality. If the other Income Tax rates were to be increased by 2 percentage points rather than by 3 percentage points, then there would be a net cost £8.3bn, which would be well outside the definition of strict revenue neutrality, and the scheme would no longer be financially feasible. We therefore have to conclude that raising the total tax rate for the highest earners to 70% would not enable the other Income Tax rates to be reduced, and so would not change the general patterns of results for the schemes researched for this paper. Raising the top total tax rate to 70% would unfortunately make almost no difference to the kind of Citizen's Basic Income scheme that could be implemented.

e. What is causing the losses for low income households, and is it possible to reduce them?

We can hypothesise that one cause might be the fact that a household's Citizen's Basic Incomes have added to the means used to assess means-tested benefits claims, and if the household is on a number of different means-tested benefits, then several benefits might be being withdrawn at the same time, which means that the value of the Citizen's Basic Income might be being withdrawn more than once at the same time. To test whether this might be at least part of the problem, a project that added only half of a household's Citizen's Basic Incomes to the means used to calculate Housing Benefit is reported on here.

Again, the usual set of requirements for financial feasibility was employed, and the normal trial and error method then used. A financially feasible Citizen's Basic Income scheme was discovered as follows:

Table 22: The £70 per week Citizen's Basic Income scheme and losses generated

CBI levels, tax rates, numbers of losses over various limits for all households and lower quintile, and total net cost of scheme	**0.5 of Housing Benefit added to means**	**Housing Benefit added to means**
Citizen's Pension per week (existing state pensions remain in payment)	£40	£40
Working age adult Citizen's Basic Income per week	£65	£65
Young adult Citizen's Basic Income per week	£50	£50
Education age Citizen's Basic Income per week	£40	£40
(Child Benefit is increased by £20 per week)	[£20]	[£20]
Income Tax rate increase required for strict revenue neutrality	3%	3%
Income Tax, basic rate (on £0 – 46,350)	23%	23%
Income Tax, higher rate (on £46,350 – 150,000)	43%	43%
Income Tax, top rate (on £150,000 –)	48%	48%
Proportion of households in the lowest original income quintile experiencing losses of over 15% at the point of implementation	1.02%	1.23%
Proportion of households in the lowest original income quintile experiencing losses of over 10% at the point of implementation	1.57%	1.77%
Proportion of households in the lowest original income quintile experiencing losses of over 5% at the point of implementation	3.49%	3.71%
Proportion of all households experiencing losses of over 15% at the point of implementation	0.36%	0.41%
Proportion of all households experiencing losses of over 10% at the point of implementation	1.66%	1.74%
Proportion of all households experiencing losses of over 5% at the point of implementation (losses over 6%: 7.01% rather than 7.11%)	12.20%	12.54%
Net cost of scheme	£4.32bn p.a.	£1.41bn p.a.

Source: own calculations with EUROMOD version I.10+.

As we can see, the household net disposable income losses are lower. However, as we would also expect, the total net cost of the scheme is higher, and the scheme is no longer strictly revenue neutral.

Whatever the problems that the UK Government's new Universal Credit has encountered, one of its aims was laudable: to bring means-tested benefits together into a single benefit so that individuals would suffer a single taper rate rather than risk facing more than one at the same time. It is unfortunate that the localisation of Council Tax Support has meant that households can suffer the withdrawal of Council Tax Support at the same time as Universal Credit is withdrawn, but it is still likely that for many households a single taper rate might apply, which would make it easier to avoid household net income losses on the implementation of a Citizen's Basic Income.

Other results for this scheme – such as the numbers leaving means-tested benefits – are not very different from those for the standard scheme tested for the 2019 project, and so are not reported here.

5. Conclusions

An interesting consensus has emerged from recent reports on Citizen's Basic Income in relation to the kind of Citizen's Basic Income scheme that might be feasible.

The think tank Compass has published a new report, *Basic Income for All: From desirability to feasibility*, by Stewart Lansley and Howard Reed (Lansley and Reed, 2019):

> This paper examines some options for the introduction of a basic income scheme in the UK. It seeks to answer the central practical criticism that the payment levels are either too small to make a difference or too generous to be affordable.

A number of conditions are set that the scheme has to meet: the reduction of poverty and inequality; an increase in the universality of benefits; a decrease in means-testing; a reduction in the risk of destitution; affordability; few losses for low income households; and the avoidance of major changes to the existing tax and benefits system. The report then proposes a working age adult Citizen's Basic Income of £60 per week funded by making changes to the current tax and benefits system.

There are minor differences between the Compass scheme and what I have called here the 'standard' scheme developed over a number of papers. The former replaces Child Benefit and the Basic Income Pension with new unconditional payments, whereas the latter has settled on retaining and increasing Child Benefit, and on retaining the Basic State Pension while adding a small unconditional income on top. And although both schemes abolish the Income Tax Personal Allowance, and both make the same changes to National Insurance Contributions, there are minor differences between the two schemes' treatments of Income Tax rates. But all of the differences are small. The two schemes are remarkably similar, and they satisfy similar sets of constraints.

Superficially different is a scheme recently published by the New Economics Foundation (Stirling and Arnold, 2019). The proposal is for a 'Weekly National Allowance' – an unconditional income of £48.08 per week for every adult over the age of 18 apart from those earning over £125,000. This looks remarkably like a Citizen's Basic Income, and it would be one if it was paid to everyone. Also, it is funded by abolishing the Income Tax Personal Allowance, which is the same basic method as the Compass scheme and the schemes

discussed in this paper. It would only require the Weekly National Allowance to be paid to everyone over the age of 18 for the incomes to become a genuine Citizen's Basic Income. (High earners could be charged additional Income Tax to cover the additional cost and to prevent them from benefiting financially from the scheme.)

It is a pleasure to see a new report from Compass, and a particular pleasure to see the New Economics Foundation engaging with the Citizen's Basic Income debate. And it is also a pleasure to see the two reports helping to build a consensus around a feasible Citizen's Basic Income scheme.

A number of lessons have been learnt during the process of discovering feasible Citizen's Basic Income schemes by using POLIMOD and EUROMOD during the past fifteen or so years:

1. To be able to show financial feasibility, very strict requirements must be listed before research begins. Other researchers either set somewhat vague conditions (for instance, 'affordable', allowing schemes with sizeable funding gaps to be regarded as feasible (Reed and Lansley, 2016; Lansley and Reed, 2019), or they do not set initial conditions but rather evaluate a wide range of schemes and then debate their effects and feasibilities (Martinelli, 2017a; 2017b; 2017c; OECD, 2017). The scientific approach is to set a clear hypothesis – for instance: that there is an illustrative Citizen's Basic Income scheme that fits this long list of rigorous criteria – and then to look for such a scheme. If such a scheme is found, then the hypothesis has been proved correct.
2. Lessons have been learnt in relation to the set of requirements:
    - Strict revenue neutrality – that is, funding the Citizen's Basic Income by adjusting the Income Tax Personal Allowance, Income Tax rates, means-tested benefits, and National Insurance Contribution rates and allowances – is essential for the financial feasibility of a scheme. Any other assumption – for instance, that a funding gap could be filled by restricting tax relief on pension contributions, by consumption taxes, and so on – leaves an illustrative scheme open to the charge that it would not be financially feasible, simply because any revenue collected from reducing tax relief on pension contributions, by charging consumption taxes, or by any other mechanism, could be directed elsewhere. Only funding methods that leave gaps in household disposable incomes that have to filled by Citizen's Basic Incomes can be permitted.
    - It is essential to ensure that as few changes as possible are made to the current tax and benefits structure. Making the small number of changes envisaged in this paper makes life difficult enough. The levels of Citizen's Basic Incomes already constitute a list of variables that can be varied. Every change made to the structure of the tax and benefits system adds another variable that can be varied as all of the variables are altered in turn. If evaluating a scheme using a microsimulation programme is beginning to prove too complicated to manage, then it is likely that administration of such a scheme would also be difficult to manage.
    - It is essential that household net income losses should be kept to a minimum, especially for low income households. I am aware that a significant gap in the argument of this paper is a discussion of precisely how low the number of losses over 5%, 10% and 15% need to be, for households in general, and for low income

households in particular. Out of the three schemes tested in Torry (2015a) it was clear that two of them produced unsustainable losses and the other one sustainable losses: but neither 'unsustainable' nor 'sustainable' were closely defined. In 2015, a condition was set that 'No more than 2% of low income households should suffer losses of over 5% of disposable income at the point of implementation': but this condition has not been rigorously applied since then; for most illustrative schemes the figure has been around 4%; and the only scheme that has fulfilled the condition has been the one that retains a small Income Tax Personal Allowance and pays a Citizen's Basic Income of £50 per week to working age adults. There is clearly a debate to be had about the acceptable number of household net disposable income losses on the implementation of a Citizen's Basic Income scheme.

- Absolutely essential conditions for feasibility must be a reduction in inequality, measured by the Gini coefficient (and potentially by other measures as well), and a reduction in every poverty index. When in Torry (2016a) an illustrative scheme was found to increase elderly poverty, it was essential to put that right.
- It is also essential that Income Tax rate rises should be kept to 3 percentage points. Anything above that is likely to be psychologically and therefore politically infeasible.

3. There are financially feasible Citizen's Basic Income schemes available. This is perhaps the most important outcome of the research behind the various papers.
4. There are at least two viable ways to implement a Citizen's Basic Income scheme: all at once; or starting with an age cohort.
5. There are at least two viable ways to hold a pilot project: in a single community for its entire population; and in a single community for a particular age cohort.
6. A significant gap in the research relates to employment market behaviour. Three of the papers, including this one, report on research relating to marginal deduction rates. Such research results have their interest, but it is not clear precisely how relevant marginal deduction rates are to changing employment market behaviour. What is required is extending a static microsimulation model with explicit modelling of employment market behaviour.
7. Related to that requirement: Static microsimulation offers useful but only the `morning-after' type of evaluation of Citizen's Basic Income schemes. In real life, receiving a Citizen's Basic Income, and experiencing related changes to employment patterns, would together change individual and household disposable incomes, Income Tax and National Insurance Contribution payments, and means-tested benefits, in turn generating more employment market behaviour change, and so on. A dynamic approach is required to model the complex dynamic process constituted by employment market behaviour change and changing disposable incomes, means-tested benefits, and taxes, with and without a Citizen's Basic Income. How 'feasible' might then be defined in relation to a Citizen's Basic Income scheme would become a question somewhat different from the way in which 'feasible' has been defined in this paper.
8. Equally useful from the point of view of this particular researcher – and even more useful in the longer term – would be a computer algorithm that could automate the process of testing Citizen's Basic Income schemes. As things stand, conditions are

> set, an initial scheme is established, variables are set, the EUROMOD programme is run, columns are extracted from output files and placed on different sheets of a spreadsheet workbook, calculations are done, and the results are tabulated to see if the scheme fits the requirements. If it does not, then a variable is altered, EUROMOD is run, and so on. It is a tedious process. While it is possible for users to construct their own algorithms to automate this process in relation to their specific research questions, I look forward to the day when a generic tool can be constructed within EUROMOD that will enable the researcher to vary a wide variety of parameters at the same time and automatically find not simply a single illustrative scheme that fits the requirements, but one that *best* fits the requirements.

This paper records what has been a fascinating journey in microsimulation. Some might think that a contradiction in terms. I do not. This is partly because the pursuit of illustrative schemes that are feasible in relation to a rigorous set of criteria is satisfying when a feasible scheme is found (although deeply frustrating when it is not). Seeking and discovering illustrative Citizen's Basic Incomes that are 'affordable' (carefully defined), that are 'adequate' (that is, they provide a useful solid financial floor on which households can build), and that 'secure the advantages on which [Citizen's] Basic Income is sold' is not so much a 'trilemma' (Martinelli, 2018), but a challenge. Some of us find the challenge an invigorating one.

But far more importantly, the journey in microsimulation recorded here has a fascination because this is research that might matter. There are plenty of reasons for wanting to see a Citizen's Basic Income implemented (Torry, 2013; 2015b; 2018a), and because only a feasible scheme could be implemented, the pursuit of feasibility across a broad front is an essential research process (Torry, 2016c). Microsimulation is the only tool adequate to the task of proving financial feasibility. Its use and its development are therefore essential to the now global Citizen's Basic Income debate. The UK has been a world leader in this field. Now every other country needs microsimulation researchers committed to the task of exploring the feasibility of Citizen's Basic Income schemes, simply because this is an idea whose time might have come, and whenever the policy process factors align to enable the idea to be considered as a serious policy option, good quality research on feasible Citizen's Basic Income schemes needs to be available.

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