

Financial Incentives to Work: Comparing Ireland and the UK

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Financial Incentives to Work: Comparing Ireland and the UK

Abstract

This paper provides a comprehensive comparison of the financial incentive to work in Ireland and the UK. It uses closely harmonised tax and benefit microsimulation models for both countries, based on household survey data, to provide an accurate and representative picture of the financial incentive to be in employment and to progress facing key groups in both countries.

The incentive to be in employment is measured by the replacement rate (the ratio of out-of-work to in-work income) and participation tax rate, the proportion of earnings that are taken away in tax or lower benefit entitlements when an individual takes up a job. On average, replacement rates are quite similar in the two countries, although there is greater dispersion in the UK, with a larger share of both the employed and out-of-work population facing replacement rates above 70 per cent. By contrast, average participation tax rates are somewhat higher in Ireland, particularly for those currently in work and unemployed jobseekers. Importantly, the incidence of the highest participation tax rates (those greater than 70 per cent, which can be the most distortive to labour market decisions) is somewhat higher in the UK.

There is cross-country variation in these incentives for different family types. On average, potential first earners in couples with children face weaker incentives to be in full-time work in the UK than in Ireland, while the opposite is true for potential first earners in couples without children. This is in part due to differences in the design of each country's benefit system: the UK provides more generous out-of-work benefits to couples with children than does Ireland, while the opposite is true for out-of-work couples without children.

The paper also examines the incentive to progress (i.e. earn more whether through increased hours, effort or skill), as measured by the marginal effective tax rate (this includes benefit withdrawal as well as explicit taxes on income and social insurance contributions). While more than two-fifths of workers in Ireland face a marginal effective tax rate greater than 50 per cent compared to less than a fifth in the UK (because the threshold at which the higher rate of income tax begins to apply is much lower in Ireland), much fewer face marginal effective tax rates in excess of 70 per cent, created by the withdrawal of multiple means-tested benefits in the UK.

1 INTRODUCTION

The role of the tax and welfare systems in shaping financial incentives to work has been extensively analysed and debated in Ireland and in many other countries. At an international level, the OECD has maintained a focus on policies which ‘make work pay’ – or more precisely, make work pay *more*. This has also been a recurring theme in national debate both in Ireland and in the UK. In Irish debate, comparisons are sometimes drawn with the UK based on headline numbers such as the basic rates of welfare payment and income tax rates. Such simple comparisons ignore key differences between the tax and welfare systems in the two jurisdictions and the important effect on incentives that interactions between components of these systems can have.

This paper provides a more comprehensive view of the financial incentives to work which are shaped by the Irish and UK tax and benefit systems. For the first time,¹ we use closely harmonised tax-benefit models for Ireland and the UK to document the incentives actually faced by nationally representative samples. Accurately documenting the actual incentives faced by diverse households in both countries is a challenging task, and is the primary goal of this paper. The paper also provides some initial evidence on what generates the different incentives; future work could further investigate the role played by different factors, including the distribution of wages, particular features of the tax and transfer system, and the composition of the two populations. The choices made by policymakers regarding the structure of taxes and transfers will, of

¹ Broad comparisons based on available microsimulation results were made in Callan et al. (2012; 2013); the new results presented here provide much greater detail, and are based on a closer harmonisation of modelling assumptions and concepts.

course, reflect national differences in trade-offs between equity and efficiency, economic and budgetary conditions, historical factors, and perhaps the (perceived) extent to which the behaviour of people in different countries responds to financial incentives. While analysis of these policy decisions is outside the scope of the current paper, documenting the incentives accurately for the two countries is an important building block and provides useful context in which policy debate and policy choices can be conducted.

The work undertaken here is made possible by our use of tax and benefit microsimulation models for both countries.² These models – respectively SWITCH at the ESRI and TAXBEN at the Institute for Fiscal Studies – allow us to calculate the financial work incentives faced by any individual or family in a particular dataset, taking account of their precise circumstances and how they are treated by the tax and benefit system as a whole. For both Ireland and the UK our results are based on the analysis of data for representative samples of the respective populations and tax-benefit systems in place in April 2015. Our use of representative samples of the populations avoids the pitfalls which would arise from the use of a limited number of ‘example families’ to describe the effect of the tax and benefit system on work incentives. While example families are useful in understanding some of the mechanisms at work, they cannot take account of the wide variety of circumstances relevant to tax and welfare which affect real families e.g., differences in earning capacity, household composition, and housing tenure: all factors that determine entitlements to benefits and liabilities to taxation.

The paper proceeds as follows: Section 2 gives an overview of the structure of the personal tax and benefit systems in each of Ireland and the UK. Section 3 outlines how financial work incentives are measured and details the data that we use. As discussed in Savage et al. (2014), a number of factors, such as dynamic gains over the longer term in employment, and non-financial rewards from working, affect participation in employment. The results in this analysis are based on static measures of the financial incentive to work, and should therefore be interpreted in this context. Section 4 presents results for the UK and Ireland on the incentive to be in paid employment. In measuring this

² For further information on how the models are constructed and used to analyse work incentives see, for Ireland, Callan et al. (2012 and 2013), Savage et al. (2014 and 2015) and for the UK (Adam and Browne, 2010; 2013; Adam et al., 2015).

incentive we focus on three key groups, which have also been examined in earlier papers to the Budget Perspectives conference:

- those who are currently unemployed (for whom we measure the financial incentive to take up employment)
- those who are currently classified as ‘economically inactive’ or in ‘home duties’, and
- those who are currently employed (for whom we measure the incentive to remain in employment).

Section 5 presents results, for those who are currently employed, on incentives to work more hours or to earn increased wages (‘the incentive to progress’). In measuring these incentives we take account not just of tax rates and social insurance contributions, but also the withdrawal of benefits from the individual concerned and/or his or her spouse or partner.

2 HOW TAXES AND BENEFITS SHAPE FINANCIAL WORK INCENTIVES

Financial work incentives for a given individual can be described by the net income attainable at various hours of work. They therefore depend on both the gross wage rate an individual can command and the taxes and benefits payable by/to them at different levels of earnings.³ To understand fully the financial work incentives facing any given individual, we can look at their ‘budget constraint’; that is the relationship between disposable after tax and benefit income and hours of work at a given hourly wage.⁴

Figure 1 illustrates this relationship in both the UK and Ireland for a hypothetical single adult earning the (country-specific) median hourly wage if in employment, and the relevant welfare benefits if not in

³ While typically income taxes will depend on income, and not on hours of work, some welfare benefits are affected both by the level of earnings and the hours of work (e.g., working at least a certain minimum number of hours to qualify for Family Income Supplement).

⁴ To compare budget constraints in the two countries, we need to convert UK quantities from Pounds Sterling to Euro. We do this using an exchange rate which is corrected for purchasing power (Purchasing Power Parity, from OECD, 2016). This results, for 2015, in a conversion of €1 equal to approximately £0.825 Sterling. The PPP exchange rate has varied between 82 pence Sterling and 84.5 pence Sterling over the years 2010 to 2015 – variations within this range would have little impact on the broad comparisons highlighted here.

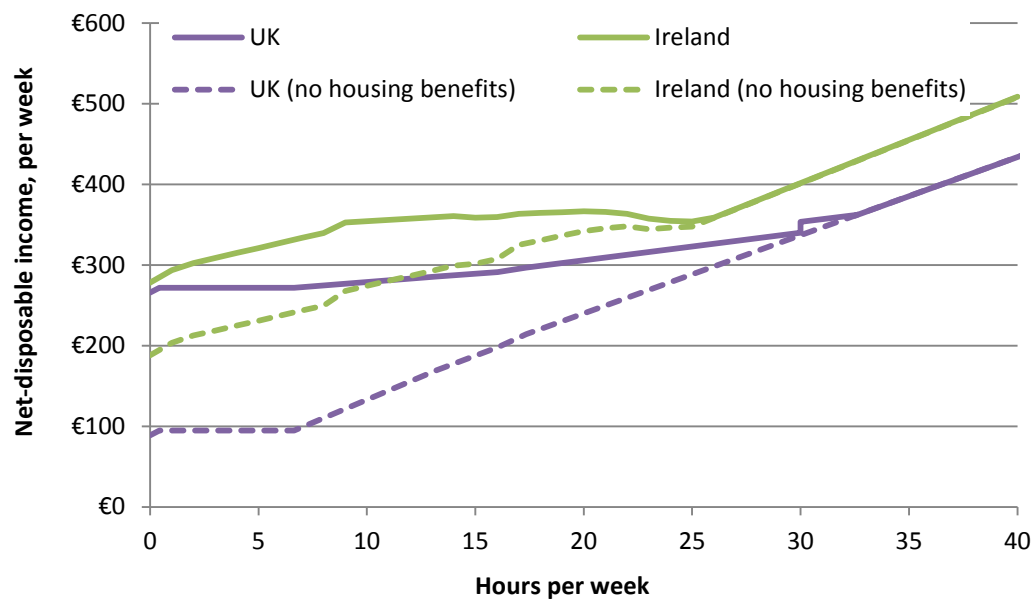
employment.⁵ Assuming that they live in private rented accommodation and receive support for housing costs, the solid lines show that this example individual would have a similar level of disposable income out-of-work in the UK and Ireland: €266 and €278 per week respectively. They would see little financial gain to working fewer than ten hours a week in the UK. In Ireland, on the other hand, net income rises steadily with hours worked over this range. The segment of the budget constraint from ten to 16 hours per week is quite flat in both countries: individuals in both countries keep between 10-15 per cent of gross earnings from working an additional hour over this range. At higher hour levels, the example individual keeps a much larger share of any increase in gross earnings in both countries, resulting in a steeper budget constraint and stronger work incentives.

Support for housing costs is a key factor in determining the shape of the budget constraint in both countries. However, not all individuals are eligible for such support: for example, in Ireland, less than 10 per cent of those receiving Jobseeker payments (Benefit or Allowance) also received Rent Supplement. The dashed lines in Figure 1 show the budget constraint for an example single adult earning the median wage who does not receive support for housing costs.⁶ The level of out-of-work income for this example individual is a lot lower in the UK than Ireland, at around €90 per week compared to €188. There is again a segment (from one to seven hours) where this individual would see little financial gain to working in the UK, but at hour levels above this, net income rises steadily with earnings. In Ireland, there are gains from entering employment even at low hours, while retaining a partial Jobseeker's Allowance payment. The withdrawal of that payment (assuming that 24 hours equates to a three-day week) leads to a small range of hours (21-24) over which the budget constraint is flat or declines slightly, before resuming an upward slope.

⁵ Although the median wage in Ireland is higher than in the UK, the patterns described here are not sensitive to this.

⁶ For example, an adult child living in the parental home, or someone owning their home outright.

FIGURE 1 Example Budget Constraint for a Single Adult at the Irish and UK Median Wages, April 2015



Source: Authors' calculations using TAXBEN for the UK and SWITCH for Ireland.

Notes: Examples shown are for single adult with no children, earning the median wage in Ireland (€15.53 per hour) or the UK (€14.25 per hour), with no other private income, no childcare costs, and no disabled family members. The solid lines assume the individual pays the median rent and average band D council tax in London or the live-in private accommodation paying rent equal to the maximum rent limit for a single adult under Rent Supplement rules in Dublin.

What features of each country's tax and benefit systems lead to these patterns? In Ireland, the shape of the budget constraints shown here is strongly influenced by the fact that jobseekers can combine a part-time job, working up to three days per week, with a partial Jobseeker's Allowance payment (JA), which is subject to a means-test. Any remaining JA payment is completely withdrawn from those working more than three days per week, resulting in the drop in net income at 24 hours per week in Figure 1. A second key feature is the structure of Rent Supplement payment, which is means-tested, and is not available when working more than 30 hours per week. The new Housing Assistance Payment (HAP) currently being rolled out has a different structure, which does not exclude full-time workers from potentially receiving support: analysis of this scheme is currently being undertaken by ESRI researchers.

Incomes are also subject to income tax at standard and higher rates of 20 per cent and 40 per cent, and to the Universal Social Charge (USC) at rates of 1.5 per cent, 3.5 per cent, 7 per cent and 8 per cent on successive tranches of income. Employee and employer pay-related social insurance (PRSI) contributions are usually 4 per cent and 10.75 per cent.

In the UK, the budget constraint is completely flat at low levels of hours worked because means-tested out-of-work benefits, which provide a minimum income, are reduced pound-for-pound as private income rises until that minimum level is reached.⁷ After these have been fully withdrawn (at seven hours per week in Figure 1), the UK budget constraint can remain flat due to the simultaneous withdrawal of housing benefit (which provides support towards rental costs) and council tax support (which gives low-income families assistance with their local tax liabilities).⁸ The jump in net income at 30 hours per week is a result of entitlement to working tax credit (WTC), which provides support for those with low incomes who also fulfil a minimum hours rule, and is withdrawn from those with incomes above a certain level. Low-income households with children may also be entitled to child tax credit (CTC), subject to the same means test as WTC, meaning entitlements (and the benefit taper) can extend quite far up the income distribution.⁹ A consequence of this piecemeal system of support is that families in receipt of multiple benefits can face extremely high withdrawal rates.

As well as facing the withdrawal of benefits, those with sufficiently high incomes are subject to income tax and National Insurance Contributions (NICs). Each individual has a personal allowance (£10,600 for most taxpayers in 2015-2016), which is deducted from total income before tax to give *taxable* income, on which income tax is levied at a basic (20 per cent), higher (40 per cent) and additional (45 per cent) rate. NICs are paid on earnings above a floor at a rate of 13.8 per cent by employers, and rates of 12 per cent (up to a ceiling) and 2 per cent (above this ceiling) by employees under the state pension age. Reduced rates of NICs are paid some individuals including the self-employed and by employers on the earnings of employees under the age of 21.¹⁰

Examining budget constraints created by the tax and benefit system for particular families can be informative and point to potential disincentives

⁷ These means-tested benefits include income support (IS), income-based jobseeker's allowance (JSA) or employment and support allowance (ESA), which top up claimants' income to a minimum level. Note that the UK government are currently in the process of replacing many of the benefits described here into a single programme, to be known as Universal Credit. See Appendix 3 for more details.

⁸ Council tax support is localised in England, with each council responsible for the design of their own scheme. In Figure 1, the example individual is assumed to live in an area which did not make any changes from the national council tax benefit in operation before April 2013 (e.g. Westminster).

⁹ For a more detailed description of the UK benefit system see Hood and Oakley (2014).

¹⁰ For a more detailed description of the UK tax system, see Pope et al. (2015).

to work the system creates. But families' circumstances vary widely and there is a limit to what examination of illustrative budget constraints can tell us about the patterns of work incentives faced by the population as a whole. For example, while Figure 1 examined budget constraints for single adults at the median wage in both countries, the budget constraint for a particular individual will depend on whether the individual is entitled to housing support payments (as shown in the Figure), whether they have a partner and/or dependent children, their own and their partner's wage, and many other individual and household characteristics. To make such analysis tractable, our focus is on summary measures of financial work incentives that are obtained using tax and benefit micro-simulation models. The next section describes this approach.

3 MEASURING FINANCIAL WORK INCENTIVES

In this section, we define summary measures of financial work incentives used in this paper. We distinguish between the incentive an individual faces to be in paid work or not and the incentive for someone in work to increase their earnings slightly – whether by working more hours, seeking promotion,¹¹ or moving to a better-paid job. In Section 3.1 we consider the incentive an individual faces to be in paid work (as opposed to not being in paid work). Section 3.2 then looks at measuring the incentive for someone in work to increase their earnings slightly.

These measures are all calculated for the tax and benefit systems in place in April 2015 using the microsimulation models developed by the ESRI (SWITCH) and the IFS (TAXBEN), run on data from the 2010 Survey of Living Conditions (SILC) and 2013-2014 Family Resources Survey (FRS) for Ireland and the UK respectively. These data are provided by the Irish Central Statistics Office and the UK Office for National Statistics, and are uprated so as to be representative of the 2015 population and incomes in both countries.

3.1 The Incentive to be in Paid Work¹²

There are two main approaches to the measurement of the incentive to be in paid work. The replacement rate (RR) gives an individual's out-of-work income as a percentage of their in work income. This is the measure

¹¹ For example, by investing in training.

¹² This section draws heavily on Adam and Browne (2010).

that has been most commonly used in analysis of the incentive to be in paid work in Ireland, and is defined as:

$$RR = \frac{\text{net income out of work}}{\text{net income in work}}$$

For example, an individual whose net income out-of-work was €200, and whose net income in employment was €300 would have a replacement rate of just under 67 per cent.

The Participation Tax Rate (PTR) gives the proportion of earnings that are taken away in tax or lower benefit entitlements when an individual starts work. Therefore,

$$PTR = \left(1 - \frac{\text{net income in work} - \text{net income out of work}}{\text{gross earnings} + \text{employer social security contributions}} \right)$$

Employer social security contributions do not play a role in the replacement rate calculation, which relates to the net income faced by the individual in and out-of-work. But employer social insurance contributions are relevant when considering how much of the total labour cost paid by an employer is taken in overall taxation, via employer and employee social insurance contributions and income taxes. Consider again, the example of an individual with in-work income of €300 and out-of-work income of €200. If, for example, at these earnings, employer social security contributions amounted to €50 then the total ‘employer cost’ would be €350 per week and the participation tax rate would be 71 per cent.

For both of these measures:

- Net income means income after benefits have been added and taxes and social security contributions are deducted. For individuals in couples, it is possible to calculate these incentive measures based on family income or on individual income. Previous Irish work and most UK work has focused on family income and we follow the same approach here.¹³ In all cases, partners’ behaviour is assumed to be

¹³ Whether family or individual income is more appropriate depends on which is more important for the individual’s decisions. For example, a low-earning person living with a high-earning partner may have no

held constant when calculating an individuals' financial work incentive.

- Low numbers indicate that the financial incentive to work is strong and vice versa.¹⁴

Both these measures attempt to capture the incentive to work or not, but they are conceptually different. In order to understand this better, consider an equal *cash* gain in each of in-work and out-of-work incomes. This should reduce the attractiveness of working compared to not working. On the other hand an increase in the hourly wage should increase the financial incentive to work. The replacement rate measure conforms to these expectations; but the PTR has different implications:

- An increase in income of a constant Euro amount at all hours (including zero) does not change the PTR, but increases the RR. This means that the PTR would suggest no change in incentives, but the RR would suggest that they have got weaker.
- At a given level of hours of work, an increase in the gross hourly wage will strengthen work incentives according to the RR, but will have ambiguous effects according to the PTR.

The PTR does, however, have one significant advantage over the RR measure: the PTR is driven largely by how the tax and benefit system (rather than potential wages) affects the incentive to work. While the RR conflates the incentives caused by taxes and earnings power, the PTR distinguishes, to a greater extent, between whether a reduced reward to work is caused by higher taxes or lower wages.¹⁵

independent income if he or she does not work, and therefore would have a very low RR – a strong financial incentive to work – when calculated using individual income. However, the same individual would have a very high RR when calculated using family income, because whether he or she works makes little difference proportionally to the family's income. By contrast, the PTR for this individual is likely to be very low (if the individual is only paying income tax and employee social security contributions on a small portion of their earnings, and is in a family which has an income too great to be entitled to tax credits) regardless of whether individual or family income is used for the calculation.

¹⁴ A PTR of 0% would indicate that an individual did not have to pay any tax on their earnings and did not lose any benefit entitlement when they started work, whereas a RR of 0% would indicate that an individual would not receive any income if they did not work. A PTR or RR of 100% would indicate that all of an individual's earnings would be taken from them in tax or lower benefit entitlements if they worked, so they would be no better off working than not working.

¹⁵ Comparing PTRs between Ireland and the UK is not a comparison of the pure impact of the tax and benefit systems on the incentive to work in the two countries. This is because the increase in gross earnings, as well as the presence of any partners' earnings, that the PTR is calculated from will differ between the two countries. The comparison of PTRs therefore shows how the tax and benefit system in each country affects the financial incentive to work at the wages that individuals receive, or can expect to receive, in employment.

Broadly speaking, therefore, the RR measures the *absolute strength* of financial incentives to work whereas the PTR measures the *effect of the tax and benefit system* on work incentives. Both are of interest, and because of this difference in what the two measures are describing, much of the empirical analysis that follows will use both measures.

For non-workers, an estimate is required of how much they would earn if they did work. The approach taken here is to estimate the hourly wage which an individual could command, based on characteristics such as age and educational qualifications. We then examine how much they would earn at 20 hours per week and at 40 hours per week, as an indicator of their potential earnings in part-time and full-time work. More detail on the approach can be found in Appendix 1.

3.2 The Incentive to Progress

The incentive for those in work to increase their earnings can be measured by the marginal effective tax rate (METR). The METR measures what proportion of a small change in employer cost (the sum of employee earnings and employer social insurance contributions) is lost to tax payments and forgone state benefit entitlements, and it tells us about the strength of the incentive for individuals to increase their earnings slightly, whether through working more hours, or through promotion, qualifying for bonus payments or getting a better-paid job. In this paper, we use the term ‘incentive to earn more’ to describe this set of possibilities.

As with the incentive to work at all, low numbers mean stronger financial incentives. A METR of zero means that the individual keeps all of any small change in what their employer pays, and a rate of 100 per cent means that the individual keeps none. High METRs amongst workers in low-income families are often referred to as the poverty trap.

4 THE INCENTIVE TO BE IN PAID WORK

In this section, we compare the financial incentive to be in paid work in Ireland and the UK. First we compare the financial incentive to work for individuals who are currently out of work in Ireland and the UK. We then discuss the incentives of individuals who are currently in work in the two countries.

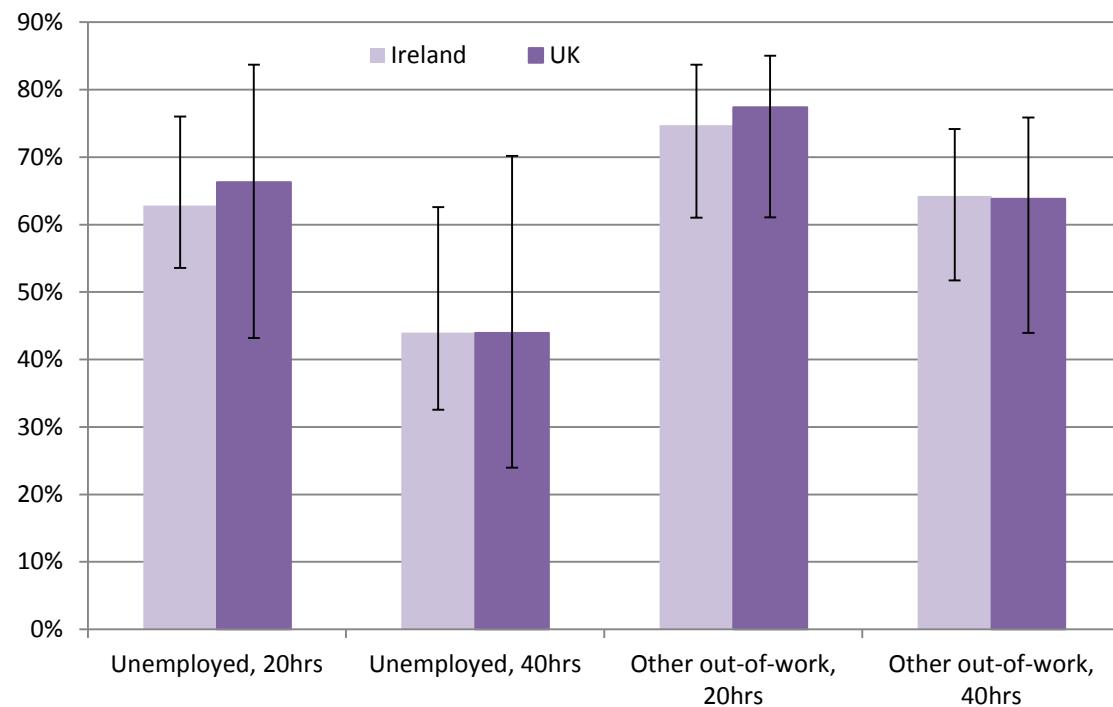
4.1 Out-of-Work Individuals

The financial incentive to work faced by individuals currently out of work is often a key concern for policymakers. In this section, we examine the financial incentive to work for two distinct groups of out-of-work individuals: unemployed jobseekers and individuals whose labour force status is defined as ‘economically inactive’ by the ONS in the UK and as ‘engaged in home duties’ by the CSO in Ireland. Unemployed jobseekers make up approximately one-third of the out-of-work group in both countries and are predominantly single. A majority of the economically inactive/home duties group have a working partner.¹⁶

We begin by considering the distribution of replacement rates for the out-of-work groups at 20 and 40 hours per week. The columns in Figure 2 show median replacement rates (RRs), and are overlaid with capped bars showing the 25th and 75th percentile of RRs for these groups in both countries. The Figure shows that median replacement rates for the unemployed and others out of work are very similar in Ireland and the UK, though slightly higher in the UK at 20 hours of work a week. The capped bars also show that there is a wider dispersion of replacement rates at 40 hours in the UK than in Ireland, with more people facing RRs of either below 40 per cent or above 70 per cent.

¹⁶ A full description of the family type composition of these groups, as well as the employees, can be found in Appendix 2.

FIGURE 2 Distribution of Replacement Rates for Out-of-Work Individuals in the UK and Ireland



Notes: Columns show the median replacement rate for each of the groups on the horizontal axis, while the capped bars show the 25th and 75th percentiles; the values for which 25 percent of the group have a replacement rate below or above respectively.

Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, calibrated to represent the 2015 population, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

Policymakers are often concerned that high replacement rates might discourage those who are out of work from taking up a job. Table 1 shows the proportion of the two out-of-work groups facing replacement rates above 70 per cent at 20 and 40 hours per week, given their estimated hourly wage. In both countries, very few individuals are financially better off out of work than they would be in part- or full-time work; that is, very few have a replacement rate in excess of 100 per cent. The majority of both groups would see a significant increase in their disposable income by taking up full-time employment, particularly in Ireland. More than eight out of ten unemployed jobseekers in Ireland and about three out of four of those in the UK have a replacement rate of less than 70 per cent – that is they would increase their income by at least 43 per cent by taking up full-time employment.

TABLE 1 Estimated Replacement Rates in Ireland and the UK

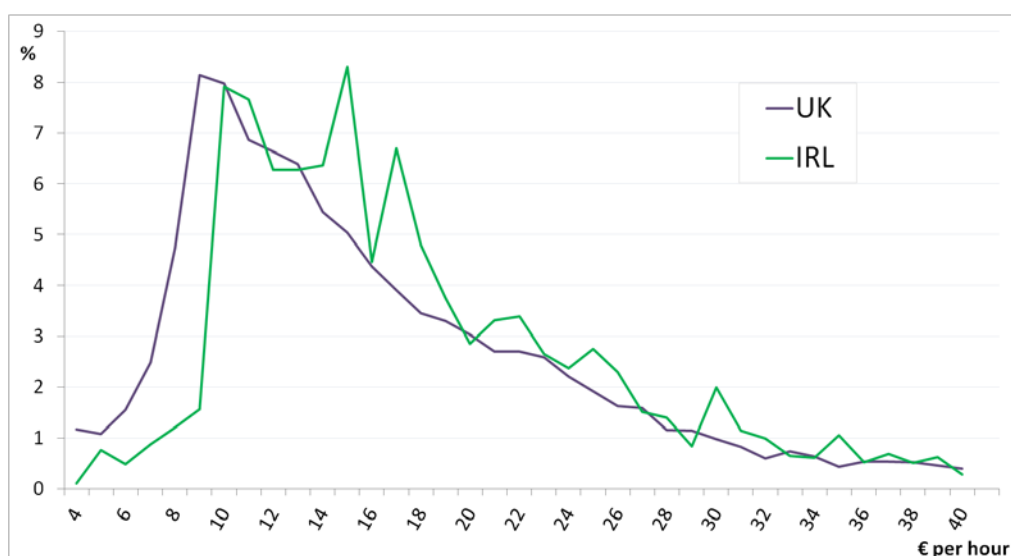
RR Category	Ireland	UK	Ireland	UK
Unemployed jobseekers	20 hours		40 hours	
	% of group with RR above cut-off value			
>70	37.5	46.1	18.0	25.2
>80	18.2	32.5	6.3	11.9
>90	5.4	12.5	1.5	0.9
>100	1.3	2.0	0.7	0.3
Other out-of-work	20 hours		40 hours	
>70	58.2	64.1	33.4	38.3
>80	37.1	40.7	9.9	16.1
>90	10.8	14.0	2.4	2.8
>100	1.6	2.3	0.7	0.4

Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

Replacement rates facing those considering a part-time job at 20 hours per week offer weaker incentives to work in both countries. The financial incentive to work is weakest in both countries for those who are economically inactive in the UK or engaged in 'home duties' in Ireland: 64 per cent of these in the UK have a replacement rate in excess of 70 per cent, compared to 58 per cent in Ireland. For unemployed jobseekers, the proportions facing replacement rates in excess of 70 per cent at 20 hours work per week are 46.1 per cent in the UK compared to 37.5 per cent in Ireland.

It is clear that for both groups, the proportion facing RRs in excess of 70 per cent is higher in the UK than Ireland. As discussed in Section 3, the financial gain from working depends on both the gross wage an individual can expect to earn upon taking up employment, and the design of the tax and benefit system in determining in-work and out-of-work income. Gross wages are compared in Figure 3 which shows the distribution of hourly wages of employees in the UK and Ireland, again using an exchange rate adjusted for purchasing power (OECD, 2016), and shows that a greater proportion of employees in the UK are employed at or below €10 per hour.

FIGURE 3 Distribution of Hourly Earnings in Ireland and UK, 2015



Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.

Using the approach described in Appendix 1, wages that out-of-work individuals could expect to earn upon entering employment are estimated using the observed relationship between employee wages and the characteristics of those employees. Table 2 compares the estimated wages for unemployed jobseekers or those on 'home duties' in Ireland with those in the UK, along with the actual wages of employees. As with the observed wages of employees, estimated wages in the UK are lower than those in Ireland. In particular, individuals in the UK – whether current employees, unemployed jobseekers, or economically inactive – are more likely than their Irish counterparts to face wages below €10 per hour. Other things being equal, individuals in each labour force status examined here are therefore more likely to earn a higher wage in Ireland compared with the UK, and as a result, are more likely to have a higher in-work income and so a lower replacement rate.¹⁷

¹⁷ Differences in work incentives arise for many other reasons (e.g., tax and benefit differences). We highlight the role of wages here because it is sometimes neglected in discourse on this subject, and the comparison of the wage distributions shows that it can be significant.

TABLE 2 Actual and Estimated Wages in Ireland and the UK – Percentage in Each Category

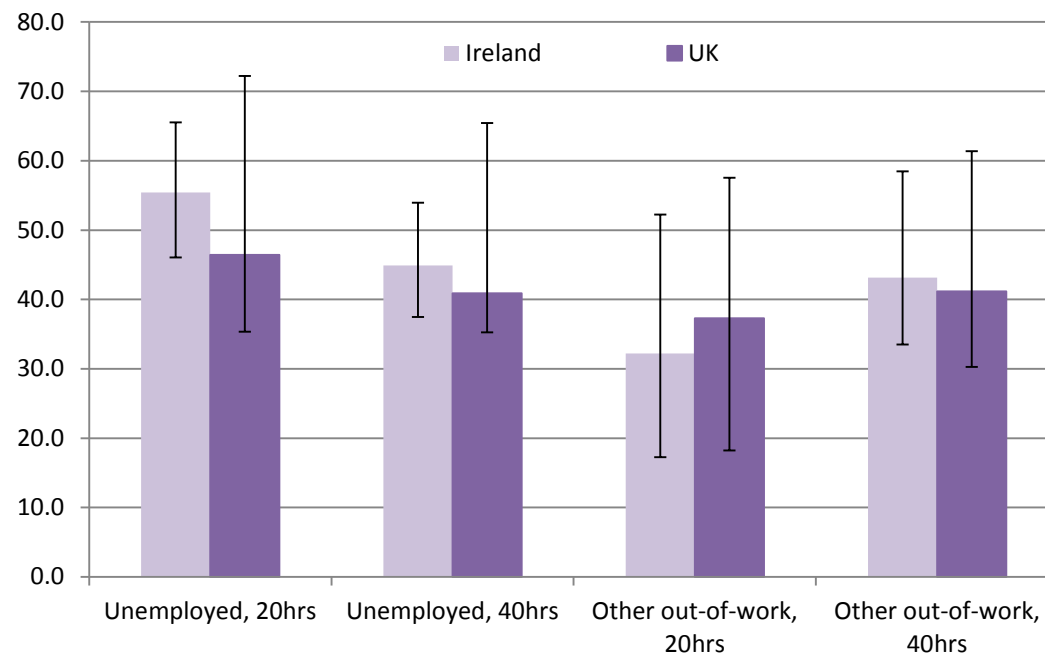
Wages (€ per hour)	Employees (actual wages)		Unemployed Jobseekers (predicted wages)		Other out-of-work (estimated wages)	
	Ireland	UK	Ireland	UK	Ireland	UK
<€10	15	30	26	45	27	38
€10-€12.50	17	16	14	16	17	14
€12.50-€15	16	12	12	10	11	13
€15-€20	21	16	21	15	19	15
€20+	31	26	27	15	26	20
Total (%)	100	100	100	100	100	100

Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, calibrated to represent the 2015 population, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

There is one important caveat to the comparison of these groups between countries. The UK unemployment rate is currently about half the Irish unemployment rate. The composition of the two groups (in particular their earnings ability) will likely differ markedly. Differences in work incentives between the groups in both countries will differ not just because of differences in the tax and benefit systems, but also because in comparing the groups in both countries we will be comparing two quite different groups. This factor contributes to the differences in estimated wages observed in Table 2.

While the replacement rate captures the absolute strength of the financial incentive to take up employment, the participation tax rate (PTR) comes closer to measuring how the tax and benefit system specifically affects the incentive to work. Figure 4 shows the median, 25th and 75th percentile of PTRs for both groups of out-of-work individuals in the UK and Ireland. At both 20 and 40 hours, median PTRs are lower for unemployed jobseekers in the UK than Ireland. PTRs are also more dispersed for this group in the UK, with more facing PTRs both above 70 per cent and below 40 per cent than in Ireland. For the other out-of-work individuals (those engaged in home duties in Ireland and economically inactive in the UK), median PTRs are lower in Ireland at 20 hours but slightly higher at 40 hours.

FIGURE 4 Distribution of Participation Tax Rates for Out-of-Work Individuals in the UK and Ireland



Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, calibrated to represent the 2015 population, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

Notes: Columns show the median participation tax rate for each of the groups on the horizontal axis, while the capped bars show the 25th and 75th percentiles; the values for which 25 percent of the group have a participation tax rate below or above respectively.

Again, policymakers may be especially concerned about the effects of high PTRs on the incentives out-of-work individuals face to take up employment. Table 4 shows the proportion of the two groups facing PTRs above 60 per cent at 20 and 40 hours per week, given their estimated hourly wage.¹⁸ Although PTRs are on average higher in Ireland, PTRs in excess of 70 per cent are somewhat more common in the UK than in Ireland, especially at 20 hours per week for unemployed jobseekers.

¹⁸ In focusing on those with a 'high' participation tax rate, we choose a lower threshold (60 per cent) than in our discussion of those with a 'high' replacement rate. A comparison of Figures 2 and 4 shows that these quantities have different scales – in particular PTRs tend to be lower than replacement rate.

TABLE 3 Estimated Participation Tax Rates in Ireland and the UK

PTR Category	Ireland	UK	Ireland	UK
Unemployed jobseekers	20 hours		40 hours	
	% of cases above cut-off value			
>60	38.8	32.3	32.2	30.6
>70	17.4	26.5	14.8	17.2
>80	4.8	17.7	4.4	3.9
>90	2.9	4.4	1.3	0.5
>100	1.5	2.0	0.7	0.3
Other out-of-work	20 hours		40 hours	
>60	21.4	23.3	22.7	26.3
>70	14.0	17.0	10.7	14.3
>80	7.1	9.8	4.3	5.3
>90	3.0	3.6	2.1	0.6
>100	1.6	2.3	0.7	0.4

Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

Household composition plays a significant role in explaining the pattern of estimated replacement and participation tax rates for these groups. For example, more than half of unemployed jobseekers in both countries are single, whereas the majority of those engaged in home duties in Ireland or economically inactive in the UK have a partner in work. The family income of these groups is therefore likely to be higher than for unemployed jobseekers, leaving many of them facing a high replacement rate, especially at 20 hours per week.

Table 4 shows how average estimated replacement rates and participation tax rates vary by family types in both countries (at 40 hours of work per week). In both countries, single adults face the lowest RRs and PTRs on average, reflecting the fact that they tend to have low out-of-work family income: both because they do not have partners and – as the majority are childless – many have lower levels of benefit income to lose on moving into full-time work.¹⁹ Potential first earners in couples, especially those with children, face the highest average RRs and PTRs for the opposite reason: they tend to be entitled to higher benefit income out of work and face the withdrawal of this on moving into full-time work.

¹⁹ This family grouping includes both lone parents and single adults without children, who face very different treatment by the tax and benefit system. Work is ongoing at the ESRI to raise the effective sample size and so allow for separate examination of lone parents.

There are also some interesting cross-country differences by family type. Potential first earners in couples with children face weaker incentives to be in full-time work in the UK than in Ireland: for example, average replacement rates are 8 percentage points higher in the UK for unemployed jobseekers of this family type (73 per cent compared to 65 per cent). This reflects the fact that such families tend to be entitled to Child Tax Credit (CTC) when out of work – a tax credit which is withdrawn against earnings at a rate of 41 per cent on top of income tax and NICs, resulting in some high RRs and PTRs.

TABLE 4 Average Predicted Replacement and Participation Tax Rates at 40 hours, by Family Type

	Replacement Rates		Participation Tax Rates	
	Ireland	UK	Ireland	UK
Unemployed Jobseekers				
Single	34.6	35.5	49.4	46.8
Couple, partner not working	63.8	68.2	65.8	65.6
No children	59.2	53.8	68.1	58.4
Children	65.2	73.4	65.1	68.3
Couple, partner working	57.9	61.0	54.2	41.2
No children	51.3	53.3	45.1	31.2
Children	60.8	67.1	58.2	49.2
All	47.7	46.7	55.1	48.8
Other Out of Work				
Single	47.9	43.7	53.2	48.1
Couple, partner not working	63.2	64.1	57.3	56.2
No children	59.5	58.3	60.0	48.8
Children	65.8	69.9	55.4	63.8
Couple, partner working	65.0	64.8	42.2	40.0
No children	64.0	56.1	40.2	31.7
Children	64.9	68.1	43.0	43.2
All	61.5	58.6	46.5	45.5

Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

However, the opposite is true for those for couples without children without anyone in work, who face higher RRs and PTRs (weaker work incentives) in Ireland: for example, RRs for jobseekers whose partner doesn't work are on average 5 percentage points higher in Ireland than the UK (59.2 per cent compared to 53.8 per cent). This in part reflects the

higher level of jobseeker payments available to childless families in Ireland (which are withdrawn entirely from those in full-time work), and the fact that the UK, but not Ireland, provides an earnings top-up for low-income childless couples (through the Working Tax Credit).

The differences between the two countries for potential second earners are less clear. While PTRs are significantly higher for unemployed jobseekers with a working partner in Ireland, they are slightly lower for those engaged in home duties. Likewise, while replacement rates are higher in the UK for potential second earners with children, they are lower for potential second earners without children who are classified as economically inactive.

What of the financial incentive to move into part-time work? Table A5.1 in the Appendix, when compared to Table 4, shows that while average RRs are higher at 20 than at 40 hours per week, PTRs are in general lower. Again, there are significant differences in the incentive to be in paid work faced by different family types across the two countries. Potential first earners in couples with children face significantly stronger incentives to be in part-time work in Ireland than the UK, in part reflecting the strong incentives created by the structure of welfare entitlements.²⁰ The opposite is true for those in childless couples with a working partner, who face much lower RRs and somewhat lower PTRs in the UK.

4.2 Employees

We now turn briefly to the incentives to be in paid work faced by those currently employed.

Figure 5 shows the median, 25th and 75th percentile of RRs and PTRs for those who are currently in work. While median RRs are slightly higher in the UK than in Ireland, median PTRs are much lower, at 35.7 per cent compared to 52.1 per cent. The capped bars also show that the distribution of PTRs is much more skewed to high values in Ireland: for

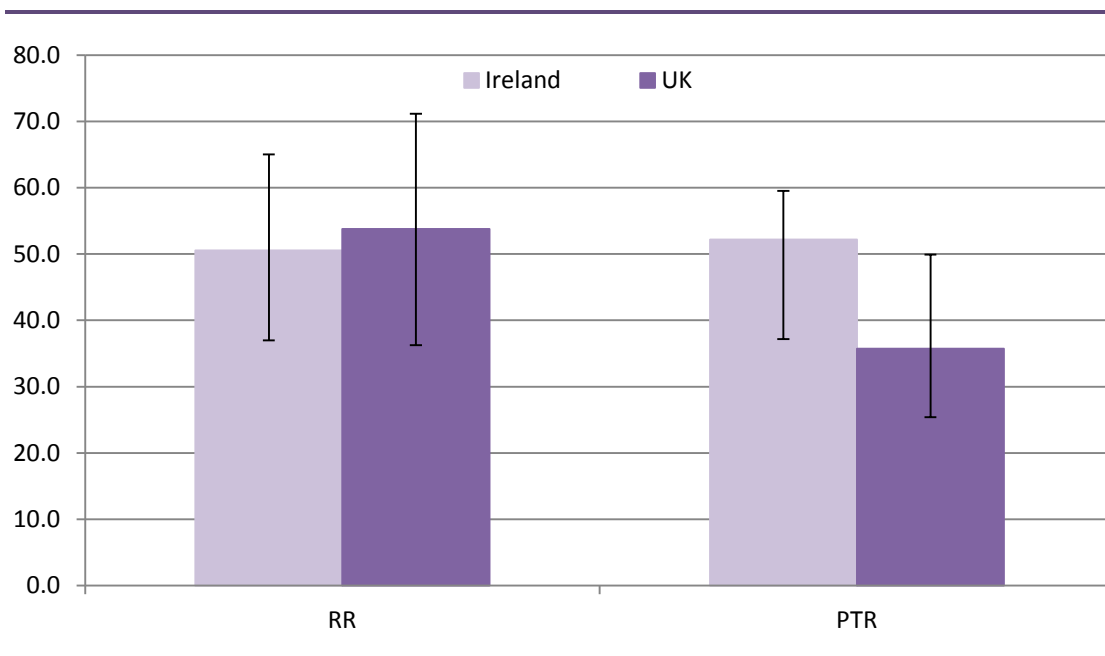
²⁰ This includes potential to retain some Jobseeker Assistance support when only part-time work is available, and strong income support for those working 19 hours or more via the Family Income Supplement. As noted in Appendix 2, this comparative analysis is undertaken on the technical assumption of full take-up of all benefits, including FIS.

example, more than half of Irish employees face a PTR above 50 per cent compared to less than a quarter in the UK.

As before, the opposite is true for replacement rates. The first two columns of Table 5 compare the proportion of employees facing RRs above 70 per cent in both countries. In Ireland, about a fifth of employees have a RR above this level, and so would see their family income fall by less than a third if they were to move out of work. In UK the figure is a little higher at 26 per cent, but as with Ireland, the overwhelming majority of employees are financially better off in work than out of work: only 1.1 per cent of workers face a replacement rate in excess of 100 per cent.

The final two columns of Table 5 show that the occurrence of PTRs above 70 per cent is also very infrequent in the two countries, at about 10 per cent. Most of these have a PTR of between 70-89 per cent with only 3.6 per cent of those in Ireland and 1.9 per cent of those in the UK facing a PTR of 90 per cent or more.

FIGURE 5 Distribution of Replacement and Participation Tax Rates for Employees, Ireland and the UK



Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, calibrated to represent the 2015 population, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

Notes: Columns show the median replacement rate or participation tax rate for each of the groups on the horizontal axis, while the capped bars show the 25th and 75th percentiles; the values for which 25 percent of the group have a replacement rate or participation tax rate below or above respectively.

TABLE 5 Replacement and Participation Tax Rates for Those Currently Employed

RR/PTR Category	Replacement Rates		Participation Tax Rates	
	Ireland	UK	Ireland	UK
>70	19.2	26.3	10.6	10.4
>80	10.1	14.9	5.4	4.6
>90	5.0	5.8	3.6	1.9
>100	1.1	1.1	1.1	1.1

Source: Authors' calculations for employees aged 18-59, using and TAXBEN run on the 2013-2014 Family Resources Survey and. SWITCH run on the 2010 Survey of Living Conditions, both uprated and reweighted to represent 2015.

What is driving these patterns? One factor that helps explain why more people face high RRs in the UK is that, as discussed in Section 4.1 above, a greater share of workers are employed at very low wage rates in the UK than in Ireland. As RRs tend to be higher at lower levels of earnings, more of the UK workforce face high replacement rates.

Part of the explanation also arises from the differing composition of the working population in both countries. In Ireland, half of the population of employees aged 18 to 59 are single individuals, with a further 35 per cent in two-earner couples. In the UK, just 30 per cent of employees are single, with almost six out of ten employees in a two-earner couple.²¹ RRs tend to be lower for singles, as they in general have lower out-of-work family income than do couples, with and without children.

Table A5.2 in the Appendix compares average replacement and participation tax rates of employees by family type. It shows that average replacement rates facing a given family type are broadly similar. Thus, rather than any particular family type facing higher RRs in the UK, the aggregate patterns are being driven by the fact that the family types that tend to face higher RRs are more likely to be employed in the UK than in Ireland. However, PTRs are lower in the UK on average for all but those with children and an out-of-work partner.²² Those in two-earner couples face much lower PTRs in the UK (30.9 per cent compared to 42.8 per cent in Ireland) as well as making up a much larger share of the workforce. The extent to which this relates to the much wider standard rate band in the

²¹ These estimates are derived from the 2013-2014 Family Resources Survey for the UK, and the SWITCH database which calibrates the 2010 Survey on Income and Living Conditions to represent the 2015 situation.

²² Employees with children and an out-of-work partner are likely to be entitled to a the maximum child tax credit award if they do not work, but by working, have it withdrawn and so face high a PTR.

UK, and to the greater degree of individualisation in the UK system, will be of interest for further investigation.

5 THE INCENTIVE TO PROGRESS

In this section we discuss how the incentive for those in work to increase their earnings differs between Ireland and the UK.

As many individuals can be clustered at particular points in the tax schedule, tables showing banded METRs can be sensitive to small differences in tax rates. Instead, in Figure 6 we show the cumulative distribution of METRs; that is, the proportion of the working population (aged 18-59) facing an METR of less than that shown on the horizontal axis.²³ In both countries less than a fifth of workers face a METR below 30 per cent, with METRs highly concentrated in the range 35-60 per cent. This reflects the fact that the vast majority of those in work face either the basic or higher rates of income tax.

For the UK, this results in three large mass points:

- 24 per cent of employees face a METR of 37.14 per cent (the basic rate of income tax plus reduced rates of NICs)²⁴
- 27 per cent of employees face a METR of 40.25 per cent (the basic rate of income tax plus the standard rate of NICs), and
- 9 per cent of employees face a METR of 49.03 per cent (the higher rate of income tax plus the reduced rate of NICs).

For Ireland there are also three substantial mass points:

- 30 per cent of employees face a METR of 37.7 per cent (those facing the basic rate of income tax, PRSI and USC).
- 25 per cent of employees face a METR of 55.8 per cent (those facing the higher rate of income tax, PRSI, and the 7 per cent rate of USC).

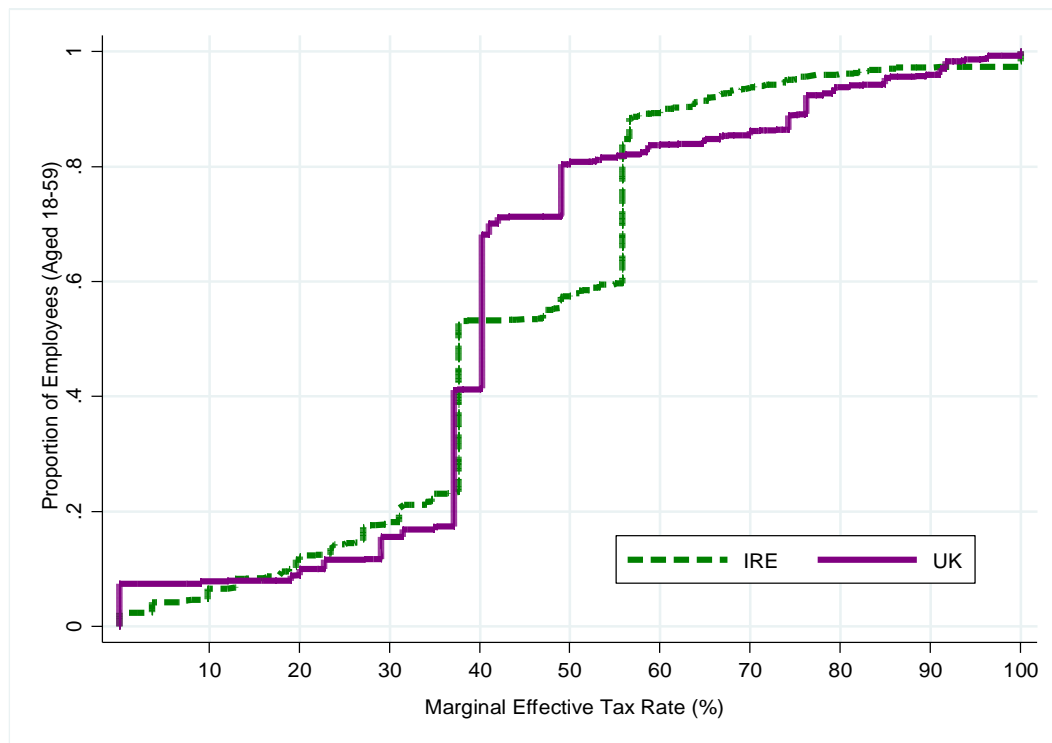
²³ We treat the small number of cases where the METR exceeds 100 per cent as if they were precisely 100 per cent.

²⁴ These reduced rates of NICs are currently paid by those who have contracted out of the state second pension and instead belong to a recognised defined benefit private pension scheme. The percentage levied on earnings between £112 and £770 per week in 2015-2016 is reduced by 1.4 percentage points for employee contributions and by 3.4 percentage points for employer contributions. Note that the option to 'contract out' in this manner was removed in April 2016.

- 4 per cent of employees face a METR of 56.7 per cent (those facing the higher rate of income tax, PRSI, and the 8 per cent rate of USC).

There are two notable differences between the distributions. First, a much larger share of workers in Ireland (41.7 per cent) face a METR greater than 50 per cent than do workers in the UK (19.6 per cent). This is primarily because the higher rate of income tax applies to lower incomes in Ireland; €33,800 per year for single adults with no dependants compared to around €53,000 in the UK, for example. When combined with the USC and PRSI contributions, this results in a marginal effective tax rate of 55.8 or 56.7 per cent, compared to 49.03 per cent for higher-rate payers in the UK.

FIGURE 6 Cumulative Distribution of Marginal Effective Tax Rates (METRs)



Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, and TAXBEN run on the 2013-2014 Family Resources Survey. Working population aged 18-59, excluding disabled, those in education, and those aged less than 18 or over 59.

Second, half as many workers in Ireland face METRs in excess of 70 per cent as is the case in the UK, where the withdrawal of means-tested benefits like income support, tax credits and housing benefit leave some low income households facing very weak incentives to increase their earnings (as shown by the very flat budget constraint at low hours of

work for single adults). By contrast, fewer households in Ireland receive support for housing costs or income top-ups as in the UK, and therefore do not face their withdrawal. This partly reflects inevitable trade-offs policymakers face in balancing objectives of redistribution against maintaining strong work incentives.

The incidence of some very high METRs in the UK also highlights the dangers of layering multiple strands of support on top of each other in an un-coordinated way, which in the UK has resulted in arbitrary overlaps between means tests that drive most of the weakest work incentives. Concerns about the effects these high METRs could have on the work decisions of low-income households were in part responsible for the previous UK government's decision to replace the main means-tested benefits and tax credits for those of working age with a single means-tested payment, known as Universal Credit. This reform is planned to come into effect over the lifetime of the current UK parliament, and is described in further detail in Appendix 4.

As well as these aggregate differences across working populations, there is variation in the distribution of METRs across family types both in and across the two countries. Figures A5.1-A5.5 plot the cumulative distribution of METRs for different family types. For singles and those with working partners (Figures A5.1, A5.2, A5.5), the patterns are broadly similar to those already described at aggregate level: Ireland has more individuals facing METRs of more than 50 per cent, but fewer facing METRs of more than 60 per cent.

The pattern is very different, however, for one-earner couples – both with, and without children (Figures A5.3 and A5.4). More than half of those in one-earner couples with children face an METR in excess of 70 per cent in the UK, compared to less than a quarter in Ireland. Similarly, while very few of those in one-earner couples without children face an METR above 60 per cent in Ireland, more than a fifth do in the UK. This is primarily a result of the UK's more extensive system of in-work benefits, most notably working and child tax credits for low-income households, which are withdrawn at a rate of 41 per cent on top of income tax and NICs. Ireland provides less-extensive support to low-income working families (particularly without children), meaning fewer face their withdrawal and the associated high METRs.

Figure 7 shows how average METRs vary by earnings, measured in terms of the cost to an employer.²⁵ It shows that in the UK, METRs are high at low levels of earnings as means-tested support is withdrawn, then fall at moderate-to-high levels of earnings where people face only basic-rate income tax and NICs, and then rise again as higher rates of income tax take effect alongside the withdrawal of child benefit from high income households.

In Ireland, although the withdrawal of means-tested benefits create some high METRs at lower levels of earnings, it is those further up the earnings distribution (facing the higher-rate of income tax, PRSI, and the 7 or 8 per cent rates of USC) who have the highest METRs on average. The second ‘hump’, where METRs begin to rise at moderate-to-high levels of earnings, also happens earlier in Ireland: as already noted, this is primarily because the higher rate of income tax applies to lower incomes in Ireland.

FIGURE 7 Average METRs by Employer Cost



Source: Authors’ calculations using SWITCH run on the 2010 Survey of Living Conditions, and TAXBEN run on the 2013-2014 Family Resources Survey. Working population aged 18-59, excluding disabled, those in education, and those aged less than 18 or over 59.

Notes: Series show estimates of a ‘locally-weighted regression’ of METRs on employer cost, defined as gross earnings plus employer social security contributions.

²⁵ We plot mean METRs against employer cost rather than earnings in order to include employer social security contributions.

6 CONCLUSION

Comparisons of tax and welfare systems that rely simply on illustrative cases or headline tax rates can be highly misleading. A comprehensive picture of the financial work incentives implied by the tax/transfer system requires a tax-benefit model, based on nationally representative survey data. This is true at a national level, and equally so for cross country comparisons.²⁶ In this paper we conduct a harmonised analysis using the IFS TAXBEN model and the ESRI SWITCH model to compare the incentives faced by key groups of the Irish and UK populations.

We looked first at the incentive to be in employment, as measured by replacement rates and participation tax rates (measures described in Section 3). The replacement rate can be seen as a measure of the absolute strength of the financial incentive to take up employment. As a result, it will include not only the impact of taxes and benefits, but also of wages; and one feature not commonly remarked upon is that Irish wages – converted at a purchasing power adjusted exchange rate of €1=£0.8245 – are significantly higher than in the UK. This tends to strengthen the incentive to work as measured by the replacement rate. The participation tax rate, on the other hand, allows a sharper focus on the incentives created by the tax/transfer system.

We found that on average, RRs look quite similar in the two countries, although there is greater dispersion in the UK, with a larger share of both the employed and out-of-work population facing replacement rates above 70 per cent. By contrast, PTRs are on average higher in Ireland, particularly for those currently in work and unemployed jobseekers. Importantly, the incidence of the highest participation tax rates (those greater than 70 per cent, which can be the most distortive to labour market decisions) is somewhat higher in the UK. Very few individuals would be financially better off out of work, though a significant minority do face high replacement and participation tax rates in both countries.

We also highlight some interesting differences by family type. On average, potential first earners in couples with children face weaker incentives to be in full-time work in the UK than in Ireland, while the opposite is true for potential first earners in couples without children. This is in part due to differences in the design of each country's benefit

²⁶ Indeed, this forms part of the genesis of the EUROMOD project (Sutherland and Figari, 2013).

system: the UK provides more generous out-of-work benefits to couples with children than does Ireland, while the opposite is true for out-of-work couples without children.

The paper also examined the incentive to progress (i.e. earn more whether through increased hours, effort or skill), as measured by the marginal effective tax rate (METR – this includes benefit withdrawal as well as explicit taxes on income and social insurance contributions). Key findings here included the facts that:

- a much larger share of workers in Ireland (more than 40 per cent) face a marginal effective tax rate greater than 50 per cent than do workers in the UK (just under 20 per cent). This is because the threshold at which the higher rate of income tax begins to apply is much lower in Ireland than in the UK;
- fewer workers in Ireland faced marginal effective tax rates in excess of 70 per cent than in the UK, due to the UK's more extensive system of in-work benefits and in particular the greater prevalence of people facing the withdrawal of multiple benefits.

As indicated in our introduction, this paper provides a more detailed picture of financial incentives to work for Ireland and the UK, with considerable attention devoted to ensuring comparability of the analyses. Measurement of work incentives is, however, only part of the overall story. Identifying the responsiveness of labour market behaviour to such incentives is clearly an important further input to policymakers and policy debate, as this has a key influence on how objectives of economic efficiency and distributional concern can best be reconciled. Estimation of such labour supply responses has been an ongoing feature of UK and international research; a renewed focus on this topic would now be opportune in Ireland.

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Appendix 1 – Wage Predictions

In previous work, IFS and ESRI teams have followed broadly similar approaches. Wages for those not currently employed are predicted using a wage equation estimated for those who have a wage, and a prediction for non-participants or those who are unemployed based on their characteristics. The precise set of characteristics used for these predictions depends on the variables available in the relevant dataset, and can also be affected by the number of cases in the sample with certain characteristics. In this paper the wage equations used for Ireland and the UK are as reported below. The approach was harmonised in the sense that it sought to predict hourly wages, so that incentives could be measured at both full-time and part-time hours (with 40 and 20 hours being taken as typical values).²⁷ Age and education play a key role in both specifications, but there are differences with respect to other variables. A sensitivity analysis was undertaken, with estimation of a wage equation for Ireland following the IFS approach for the UK as closely as possible, given the constraints on data. This approach led to very similar results to those reported in the main body of the paper.

²⁷ The approaches were also harmonised in using estimated wages for the unemployed without any adjustment for 'wage scarring' – a negative impact on wages from a spell of unemployment. Savage et al. (2014) found that a wage scarring adjustment of 10 per cent could add about 2 percentage points to the proportion of the unemployed facing high replacement rates.

TABLE A1.1 Wage Equation Results, Ireland

Ireland: Dependent Variable:		Log of Hourly Wage		
Base categories		Single man, no education beyond primary		
Variable		Parameter Estimate	Standard Error	t-value
Intercept		1.20	0.19	6.44
MarriedMan		-0.62	0.36	-1.74
MarriedWoman		-0.34	0.35	-0.97
SingleWoman		0.04	0.25	0.15
SingleMan_EducJuniorCert		0.11	0.10	1.17
SingleMan_EducLeavingCert		0.14	0.09	1.59
SingleMan_EducAdvancedCert		0.27	0.11	2.34
SingleMan_EducUniversityDegree		0.47	0.09	5.34
SingleMan_EducUnknown		0.07	0.15	0.45
MarriedMan_EducJuniorCert		0.14	0.06	2.3
MarriedMan_EducLeavingCert		0.38	0.06	6.48
MarriedMan_EducAdvancedCert		0.19	0.08	2.41
MarriedMan_EducUniversityDegree		0.72	0.06	12.96
MarriedMan_EducUnknown		0.17	0.11	1.6
MarriedWoman_EducJuniorCert		-0.01	0.08	-0.08
MarriedWoman_EducLeavingCert		0.22	0.07	3.31
MarriedWoman_EducAdvancedCert		0.24	0.13	1.82
MarriedWoman_EducUniversityDegree		0.70	0.07	10.48
MarriedWoman_EducUnknown		0.03	0.14	0.24
SingleWoman_EducJuniorCert		0.08	0.09	0.84
SingleWoman_EducLeavingCert		0.18	0.08	2.18
SingleWoman_EducAdvancedCert		0.16	0.14	1.15
SingleWoman_EducUniversityDegree		0.56	0.08	6.88
SingleWoman_EducUnknown		0.03	0.14	0.25
SingleMan_Age		0.06	0.01	6.59
SingleMan_AgeSquared		-0.57	0.11	-5.35
MarriedMan_Age		0.08	0.01	6.14
MarriedMan_AgeSquared		-0.77	0.14	-5.46
MarriedWoman_Age		0.07	0.01	5.26
MarriedWoman_AgeSquared		-0.68	0.14	-4.74
SingleWoman_Age		0.05	0.01	6.21
SingleWoman_AgeSquared		-0.46	0.10	-4.6
N of observations		2,849		
Adjusted R^2		0.3218		

Source: Authors' calculations using the 2010 Survey of Living Conditions.

TABLE A1.2 Wage Equation Results, UK

UK: Log Hourly Wage Regression		
	Coefficient	Standard Error
Women	-0.356	(.2714)
Age ceased education	0.0467 ^{***}	(.001975)
Interacted with sex	-0.00822 ^{**}	(.002753)
Age	0.124 ^{***}	(.01418)
Interacted with sex	0.0425 [*]	(.02091)
Age squared	-0.00214 ^{***}	(.000329)
Interacted with sex	-0.00111 [*]	(.0004864)
Age cubed	0.0000113 ^{***}	(2.42e-06)
Interacted with sex	0.00000832 [*]	(3.59e-06)
Non-white	-0.194 ^{***}	(.02406)
Interacted with sex	0.0845 [*]	(.03385)
Homeowner	0.266 ^{***}	(.01603)
Interacted with sex	-0.0219	(.02245)
Age youngest child 0-2	-0.209 ^{***}	(.02559)
Age youngest child 3-5	-0.0663 [*]	(.02871)
Age youngest child 6-8	-0.0767 [*]	(.02998)
Age youngest child 9-11	-0.132 ^{***}	(.03125)
Age youngest child 12-14	-0.103 ^{***}	(.03031)
Age youngest child 15+	-0.0452	(.02961)
Age youngest child 0-2*women	0.213 ^{***}	(.03533)
Age youngest child 3-5*women	0.127 ^{**}	(.04022)
Age youngest child 6-8*women	0.125 ^{**}	(.04313)
Age youngest child 9-11*women	0.180 ^{***}	(.0461)
Age youngest child 12-14*women	0.0955 [*]	(.04537)
Age youngest child 15+*women	0.0488	(.0444)
Married	0.118 ^{***}	(.02081)
Interacted with sex	-0.114 ^{***}	(.02837)
Cohabiting	0.0640 ^{**}	(.02284)
Interacted with sex	-0.0523	(.03195)
Lone parent	-0.0192	(.07083)
Interacted with sex	-0.0247	(.07703)
Constant	-0.661 ^{***}	(.1861)
<i>N of observations</i>	16972	
Adjusted <i>R</i> ²	0.204	
Region dummies		YES

Source: Authors' calculations using the 2013-2014 Family Resources Survey.

Appendix 2 – Harmonisation of Samples and Methods

This appendix provides information on the population groups whose financial incentive to work is examined, and how methods and assumptions in the Irish and UK analyses were harmonised.

Population

The analysis examines the financial incentive to work for individuals in three different labour force status groups: employees, unemployed jobseekers, and economically inactive individuals. We restrict the analysis to individuals aged between 18 and 59. This restriction excludes older workers where issues like the relationship between stopping work and starting to claim private and state pensions, deferral possibilities, option values, etc. are conceptually complex, demanding of data, and can vary radically between Ireland and the UK. We also exclude individuals in full-time education, and individuals who report having a disability that prohibits them from work from the analysis for similar reasons. The financial work incentives of self-employed individuals are also not examined in the paper.

In the UK, 84 per cent of individuals under analysis are employees, compared to 77 per cent in Ireland, as shown in Table A2.1. Conversely, 16 per cent of individuals in the UK are out-of-work, compared to 23 per cent in Ireland. This 7 percentage point gap is due in about equal measure to lower labour market participation in Ireland²⁸ and to a higher unemployment rate in Ireland).²⁹

Table A2.1 also shows that the composition of the out-of-work individuals in the two countries is quite similar, with individuals who are unemployed and seeking employment making up approximately one-in-three of the group. The remaining two-thirds of the out-of-work individuals report are defined as economically inactive. In SILC, these individuals report themselves as being ‘engaged in home duties’.

²⁸ 2014 is the latest available information on labour force participation rates in the OECD database. See OECD (2016), Labour force participation rate (indicator). doi: 10.1787/8a801325-en [Accessed on 30/5/2016].

²⁹ <https://data.oecd.org/unemp/unemployment-rate.htm> [accessed 30/5/2016].

TABLE A2.1 Numbers and Proportions of Employees and Out-of-Work Individuals

	Ireland		UK	
	N (000s)	%	N (000s)	%
Employees	1,481	77	25,800	84
Out-of-Work, of whom:	454	23	5,014	16
(unemployed jobseekers)	(156)	(8)	(1,487)	(5)
(other out-of-work)	(298)	(15)	(3,527)	(11)
Total	1,935	100	30,815	100

Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.

The family type composition of the different labour force groups are shown in Table A2.2 and Table A2.3. Table A2.2 shows a significantly higher proportion of employees are single in Ireland (50 per cent) than in the UK (29 per cent). Almost 60 per cent of employees have a working partner in the UK, compared to 35 per cent in Ireland. This difference is largely made up of a higher proportion of dual-earner couples with no children in the UK (30 per cent) compared to Ireland (12 per cent).

TABLE A2.2 Family Type Distribution in Ireland and the UK – Employees aged 18-59

	Ireland		UK	
	N (000s)	%	N (000s)	%
Single	738	50	7,563	29
Couple, partner not working	223	15	2,967	12
No children	73	5	1,175	5
Children	150	10	1,792	7
Couple, partner working	520	35	15,200	59
No children	185	12	7,800	30
Children	335	23	7,400	29
All	1,481	100	25,800	100

Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.

More than half of unemployed jobseekers in both countries are single. A higher proportion of unemployed jobseekers have a non-working partner and children in Ireland than the UK. The majority of economically inactive individuals have a working partner in both counties, though a higher proportion of this group are single in the UK than in Ireland.

TABLE A2.3 Unemployed Jobseekers and Home Duties Family Type Distribution

	Unemployed Jobseekers		Economically Inactive/'Engaged in Home Duties'	
	Ireland	UK	Ireland	UK
Single	51	61	18	29
Couple, partner not working	29	17	16	20
No children	7	5	6	10
Children	22	13	9	10
Couple, partner working	21	22	67	52
No children	6	10	19	14
Children	15	12	48	37
Total number of Individuals	156	1,487	298	3,527

Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.

Methodological Assumptions

Where there are time-limited or otherwise duration-dependent benefits, we use long-run incentive measures. For example, contribution-based jobseeker's payments³⁰ are available for only six months in the UK and nine months in Ireland. Further examples of time-limited benefits include support for mortgage interest in the UK, and the Back-to-Work Family Dividend in Ireland. In each case, incomes are calculated on a long-term basis – i.e. when entitlement to time-limited benefits has expired. One exception to this is for unemployed jobseekers who report entitlement to Jobseeker's Benefit (JB) in Ireland. These individuals are modelled to receive JB in the main analysis. If instead, JA rates were used, then some individuals would receive the same amount as a means-tested payment, while others would see the payment reduced by means testing (e.g., because of the earnings of a spouse). In the latter case the replacement rate or PTR estimated using JA would then be lower than that used here.

Although differences between indirect tax systems in the two countries may affect financial incentives to work, indirect taxes are not included in the analysis. Detailed micro-level expenditure is required to model the impact of indirect taxes; such data are not available in SILC. Initial research on imputing expenditure into SILC from an expenditure survey

³⁰ Jobseeker's Allowance in the UK, Jobseeker's Benefit in Ireland.

(the Household Budget Survey) has suggested that this approach may provide reasonable estimates of the distribution of expenditure (see Savage and Callan, 2015). This remains a task for future work, however.

Non-take-up of entitlements is significant for some transfers. For example, HMRC estimate that take-up of the Working Tax Credit by those without children was only 30 per cent of those eligible in 2010-2011 (HMRC, 2012). Similarly, Callan et al. (2015) suggested non-take-up of medical cards and GP visit cards may be an issue in Ireland. Due to difficulties in modelling take-up of benefits (see Adam and Browne, 2013, for discussion), we assume full take-up of all benefit entitlements in this analysis. An advantage of this assumption is that it allows full examination of the impact of tax and benefit design in both countries, abstracting from issues around take-up and salience.

Non-cash benefits and non-cash remuneration are particularly difficult to include in a work incentive analysis such as this. Two main difficulties exist. First, information on receipt or value of non-cash remuneration may not exist in the data (for example, receipt or availability of workplace nurseries and canteens, work-related accommodation, phones and bikes for employee use, etc.). Second, it can be conceptually difficult to estimate an equivalent cash value for the receipt of non-cash benefits or remuneration. Results in the analysis are based largely on cash (or near cash) incomes and benefits. One exception is the inclusion of estimates of the value of a medical card in the results for Ireland, as there is a contrast between the universal nature of the benefit provided by the UK NHS and the means-tested entitlement under the Irish medical card, which can alter the balance between net resources (inclusive of health benefits) in and out-of-work. A detailed description of how the medical card is valued can be found in Savage et al. (2015).

Appendix 3 – Main Working-Age Means Tested Benefits in the UK³¹

Income support (IS).

Introduced in 1988 as the main income-related out-of-work benefit for those deemed unable to work (those with disabilities, pensioners, lone parents and carers), its scope has diminished over time. The minimum income guarantee and subsequently pension credit replaced IS for pensioners from 1999, income-based employment and support allowance replaced IS on the grounds of disability in 2008, and lone parents whose youngest child is aged five or over now have to claim jobseeker's allowance instead. Over the course of 2015-2016, there are expected to be an average of 715,000 claimants in Great Britain and total expenditure is expected to be £2.6 billion.

Income-based jobseeker's allowance (JSA).

This is the income-related out-of-work benefit for those who are not in paid work and are required to take steps to look for work. Introduced in its current form in 1996, it is expected that the number of claimants will average 598,000 across 2015-2016 in Great Britain and the total cost will be £2.0 billion.

Income-based employment and support allowance (ESA).

This is the income-related out-of-work benefit for those assessed as having limited capability for work on health grounds. Introduced in 2008, it is expected that there will be an average of 1.7 million claimants across 2015-2016 in Great Britain, and total expenditure is expected to be £9.8 billion.

Child tax credit (CTC).

This provides support to low-income families with children, both in and out of work. It was introduced in 2003 to replace child additions to other benefits (including those mentioned above). In December 2015, there were 3.8 million families claiming child tax credit, of whom 1.2 million

³¹ Figures for number of claimants and total expenditure are taken from <https://www.gov.uk/government/statistics/benefit-expenditure-and-caseload-tables-2015>, <https://www.gov.uk/government/publications/hmrc-annual-report-and-accounts-2014-to-2015> and https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/485170/cwctc-main-Dec15.pdf.

contained no adult in paid work and 2.6 million contained at least one working adult, and total expenditure in 2014-2015 was £22.8 billion.

Working tax credit (WTC).

This provides support to low-income working families, both with and without children. As well as supporting low-income working families, WTC also strengthens work incentives for those with low incomes who would otherwise see little difference between their earnings in work and the benefits they would be entitled to if they did not work. Similar programmes exist in other developed countries – for example, the earned income tax credit in the US and Family Income Supplement in Ireland. Programmes for providing support to low-income working families with children have existed in the UK since 1971, but they have expanded over time to the extent that they are almost unrecognisable from their original incarnations. They were extended to families without children when working tax credit was introduced in 2003. There were 2.3 million families claiming WTC in December 2015 and total expenditure in 2014-2015 was £6.2 billion.

Housing benefit.

This provides low-income households in rented accommodation with support for their rental costs. A national system of housing benefit has existed since the early 1970s, with the current system introduced in 1988. Over the course of 2015-2016, there are expected to be an average of 4.8 million claimants of housing benefit in Great Britain and total expenditure is expected to be £24.4 billion.

Appendix 4 – Universal Credit in the UK³²

The UK government is currently rolling out the most radical reform to the working-age benefits system for decades. A single means-tested payment, known as universal credit (UC), is being introduced as a replacement for six existing means-tested benefits and tax credits for those of working age: income support, income-based jobseeker's allowance, income-based employment and support allowance, child tax credit, working tax credit and housing benefit.

The 'legacy' system that UC will replace is largely the product of a history of separate decisions to layer new strands of support on top of what came before: for example, the decisions in the 1970s to create a national system of housing benefit and a new form of support for low-income working families. Previous social security reforms, including the Fowler reforms of the late 1980s and the introduction of the current tax credit system in 2003, stopped far short of the ambitious integration of benefits that UC will bring about. The central point of UC, and the reason for many of its potential advantages, is that it replaces the resulting jumble of separate and overlapping means tests with one integrated assessment of families' entitlements. UC should look more like a system that has been designed from scratch as a coherent whole – as indeed it is.

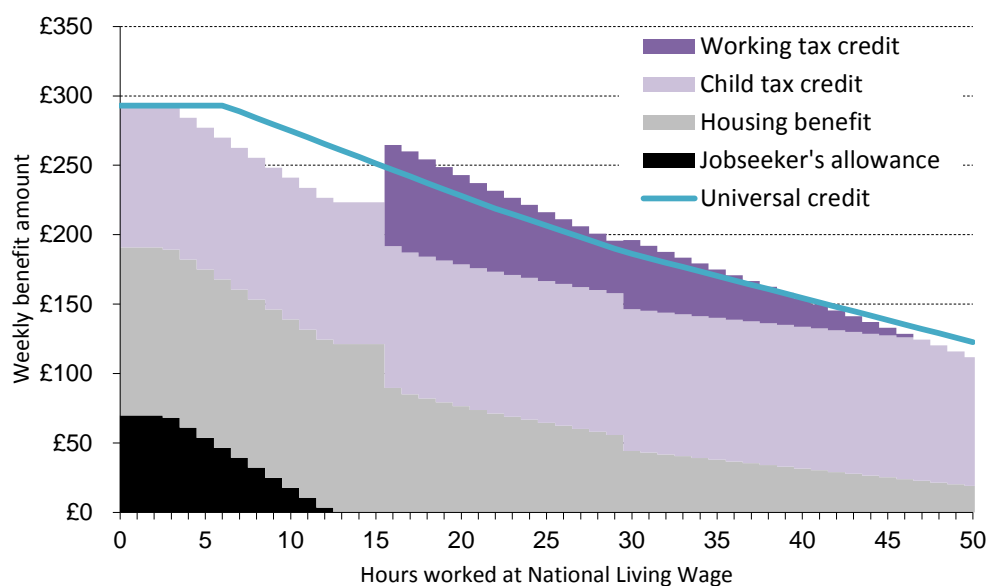
To demonstrate the effect of UC on benefit entitlements at different levels of family income, Figure A4.1 shows the benefit and tax credit entitlements (in current prices) of a lone parent with two children renting in an average-rent area and paid the National Living Wage under the system we currently expect to be in place in 2019-2020. We show this first under the legacy benefits and tax credits system (the blocks) and second under UC (the grey line). We can see that the main features of UC are as follows:

- Its basic structure involves a 'maximum' level of entitlement, which is received by those with the lowest levels of private incomes and financial assets. Entitlement is reduced below this maximum when income exceeds a certain threshold, known as the work allowance.
- The maximum entitlement is set in a similar manner to the maximum entitlements to the different benefits and tax credits under the legacy system.

³² This section draws heavily on Browne et al. (2016).

- This example individual can earn more before benefits start to be withdrawn than they can under the legacy system. Furthermore, when benefits start to be withdrawn, they are withdrawn at a slower rate. Both of these features strengthen the incentive for this individual to work a small number of hours each week.
- Unlike in the legacy system, there is no jump in entitlement at 16 hours of work, the point at which the lone parent becomes entitled to WTC under the legacy system. This means that UC is less generous than the legacy system if this lone parent works more than 16 hours, but more generous than the legacy system if they work less than 16 hours.
- When this example individual is working at least 16 hours per week, UC is withdrawn more slowly as income rises than the combination of tax credits and housing benefit under the legacy system, strengthening the incentive for this lone parent to increase their earnings (whether through additional hours or higher hourly pay).
- The overall effect for this individual is that there is marginally less support when working part-time (between 16 and 40 hours per week) than under the legacy system, but more support at higher levels of earnings and for those working only a few hours per week ('mini jobs').

FIGURE A4.1 Benefit Entitlements by Hours Worked for Lone Parent with Two Children



Source: Authors' calculations using TAXBEN.

Note: Assumes two children aged under 5, no childcare costs, no unearned income, renting at the LHA rate in a median rent area and paid the National Living Wage under the system we currently expect to be in place in 2019-2020. Ignores child benefit and council tax support.

Appendix 5 – Additional Tables and Figures

TABLE A5.1 Average Predicted Replacement and Participation Tax Rates at 20 hours, by Family Type

	Replacement Rates		Participation Tax Rates	
	Ireland	UK	Ireland	UK
Unemployed Jobseekers				
Single	52.9	53.0	54.3	50.1
Couple, partner not working	74.7	83.9	55.9	73.1
No children	70.6	77.9	63.5	71.8
Children	76.0	86.1	53.6	73.6
Couple, partner working	72.2	73.5	52.1	34.5
No children	66.9	66.6	44.6	21.7
Children	74.5	79.1	55.3	44.7
All	63.1	62.8	54.3	50.6
Economically Inactive / 'Home Duties'				
Single	58.6	55.8	32.6	40.6
Couple, partner not working	69.2	78.5	24.7	60.2
No children	72.9	72.8	55.2	48.5
Children	66.7	84.2	3.2	72.1
Couple, partner working	76.1	76.4	35.2	31.9
No children	76.4	68.9	37.3	22.1
Children	75.9	79.3	34.4	35.6
All	71.9	70.9	33.1	39.9

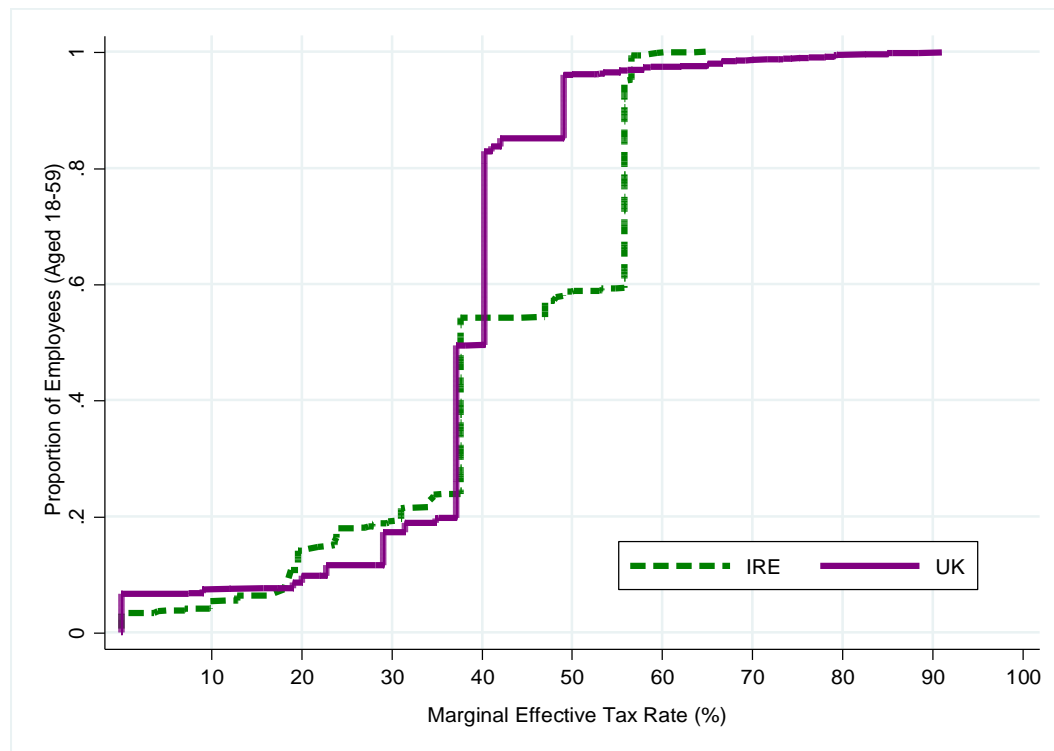
Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

TABLE A5.2 Average Replacement and Participation Tax Rates for Employees, by Family Type

	Replacement Rates		Participation Tax Rates	
	Ireland	UK	Ireland	UK
Employees				
Single	40.8	39.8	50.7	45.4
Couple, partner not working	62.3	62.0	61.5	60.4
No children	57.8	51.8	58.5	49.0
Children	64.4	68.6	63.0	67.9
Couple, partner working	62.8	58.9	42.8	30.9
No children	57.9	54.0	36.3	26.4
Children	65.5	64.1	46.4	35.8
All	51.8	53.6	49.6	38.6

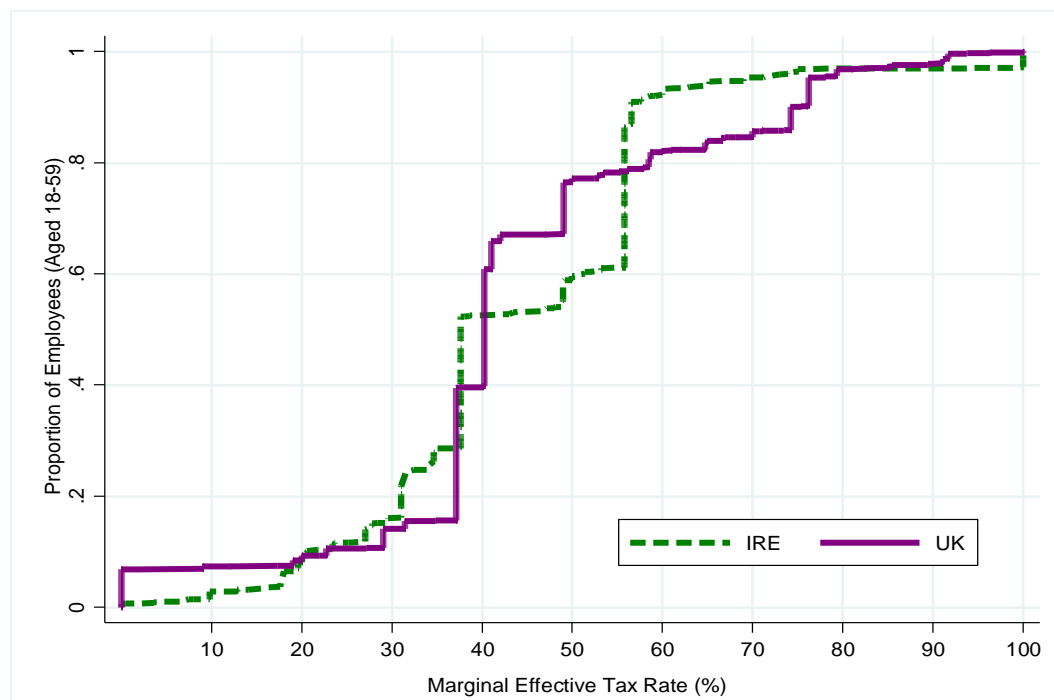
Source: Authors' calculations using SWITCH run on the 2010 Survey of Living Conditions, and TAXBEN run on the 2013-2014 Family Resources Survey. Excludes disabled, those in education, and those aged less than 18 or over 59.

FIGURE A5.1 Cumulative Distribution of METRs: Partner Working, No Children



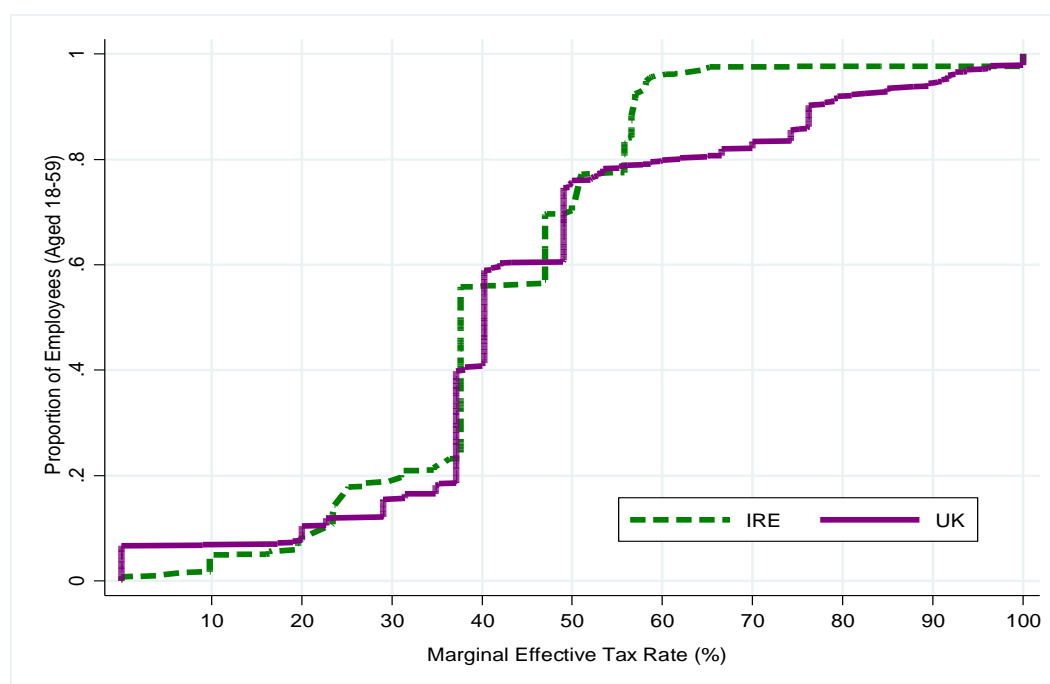
Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.

FIGURE A5.2 Cumulative Distribution of METRs: Partner Working, With Children



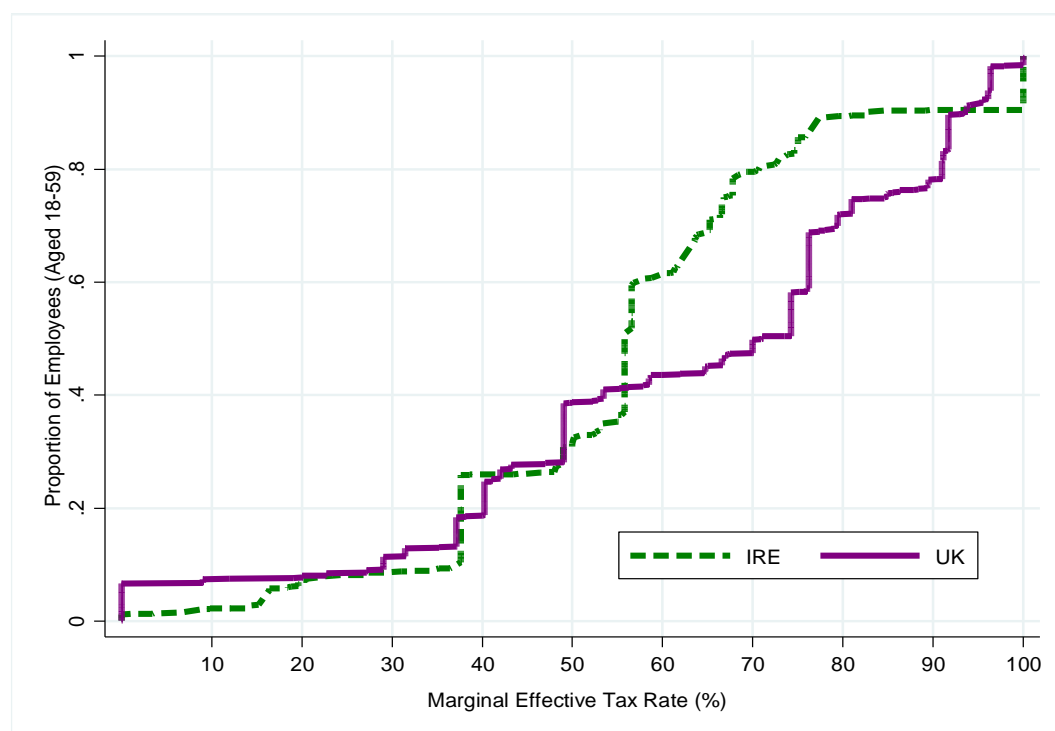
Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.

FIGURE A5.3 Cumulative Distribution of METRs: Partner Not Working, No Children



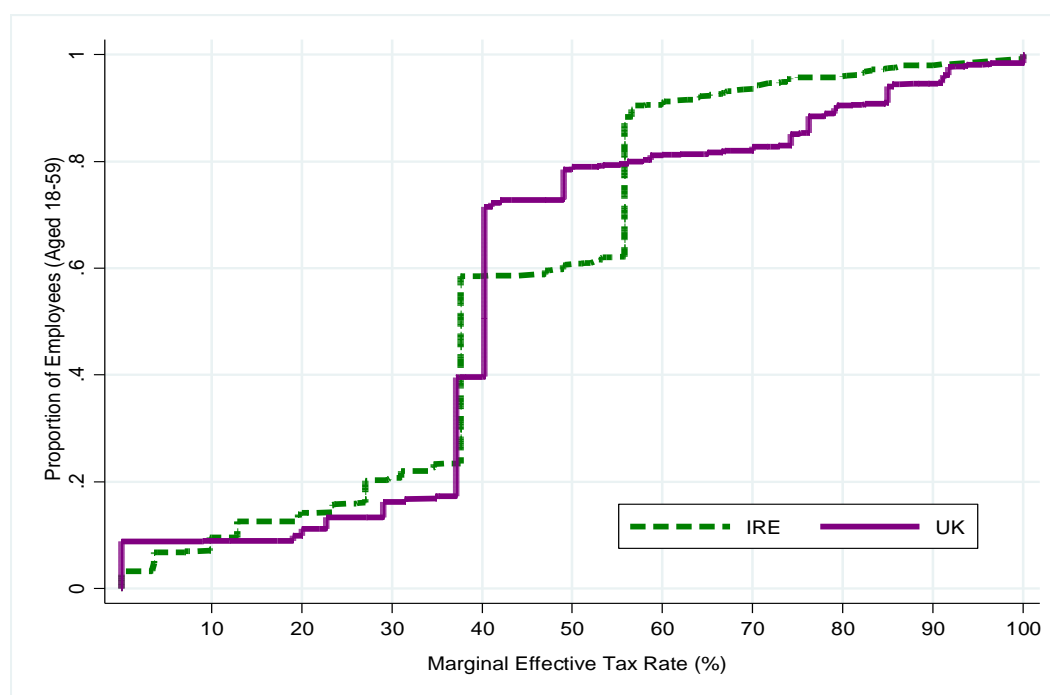
Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.

FIGURE A5.4 Cumulative Distribution of METRs: Partner Not Working, With Children



Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.

FIGURE A5.5 Cumulative Distribution of METRs: Single Adults and Lone Parents



Source: Authors' calculations based on the population aged 18-59 in the 2010 Survey of Living Conditions and the 2013-2014 Family Resources Survey, uprated to April 2015 terms. Excludes disabled and those in full-time education.



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