

## **A Profile of Financial Incentives to Work in Ireland**

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**Abstract:** Tax and benefit systems have to strike a balance between the goals of providing an adequate safety-net income to those who need it and maintaining adequate incentives to take up employment and to increase earnings. Ireland has seen substantial changes to direct taxes, and in welfare payments, during recent years. The implications for income distribution are examined in a separate paper. In this paper we take stock of the implications for the structure of financial incentives to work in Ireland, using SWITCH, the ESRI tax-benefit model. We look at two key aspects of labour supply: financial incentives to take up or remain in employment – commonly measured by replacement rates – and financial incentives to move from part-time to full-time employment – measured by marginal effective tax rates, which take account of the withdrawal of benefits as well as explicit direct taxes. We analyse the characteristics of the individuals or households most likely to face strong financial disincentives to work.

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### **1. INTRODUCTION**

Tax and benefit systems have to strike a balance between the goals of providing an adequate safety net income to those who need it<sup>2</sup> and maintaining suitable incentives to take up employment and to increase earnings. Okun (1975) in an often referenced paper termed this “the big tradeoff” between equity and efficiency. The strength of this trade-off has been questioned in recent cross-country work at the IMF, by Berg and Ostry (2011) and Ostry et al. (2014). What is clear, however, is that there is a trade-off in the design of tax-transfer systems between the level of income support provided, the rate at which this is withdrawn, and the level of taxation required to finance it.<sup>3</sup> The consequences of differing levels of financial work incentives depend on a number of factors, including:

- Dynamic considerations, as wages depend *inter alia* on accumulated experience and skills acquired on the job. Thus individuals may choose to remain in employment because this has longer-term gains, even if the short-term financial incentive to work is low
- Variations across individuals and across employments in the non-monetary rewards from employment, as discussed in Callan et al. (2013)

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<sup>2</sup> Progressively structured tax and benefit systems have repeatedly been shown to provide vital financial support to low income individuals and families Larrimore et al. (2013), Perri and Steinberg (2012), Jenkins et al. (2013) and Callan et al. (2013) are recent examples showing the redistributive impact of taxes and benefits during the Great Recession in a range of countries

<sup>3</sup> Adam and Browne (2010) also stress that in redistributing money from the rich to the poor, governments face the risk of reducing the incentive for individuals to increase their incomes through employment.

In this paper we focus exclusively on static or “snapshot” measures of the financial incentive to work, and how these are affected by the tax and welfare systems. Identifying these effects is a major task in itself, but we recognise that other factors, such as dynamic considerations and non-financial incentives, come into play when assessing the impact of current policies and potential changes.

Ireland has seen substantial changes to direct taxes, and in welfare payments, during recent years. In this paper we take stock of the implications for the structure of financial incentives to work in Ireland, using SWITCH, the ESRI tax-benefit model.<sup>4</sup> This information on the level and structure of financial incentives to work implicit in the current system is an essential ingredient for an informed debate about reforms to the system.

We look at two key aspects of labour supply: financial incentives to take up or remain in employment – commonly measured by replacement rates and/or participation tax rates<sup>5</sup> - and financial incentives to move from part-time to full-time employment – measured by marginal effective tax rates, which take account of the withdrawal of benefits as well as explicit direct taxes.<sup>6</sup> We show that financial incentives to work are strong for most individuals, and help to identify the characteristics of individuals and of the tax/transfer system that contribute to weaker financial work incentives. The analysis here provides evidence on the financial incentives implicit in the current tax and welfare system across a number of critical transitions, including:

- Transitions from unemployment to full-time employment
- Transitions from unemployment to part-time employment
- Transitions from a combination of part-time employment and an unemployment payment to full-time employment

The use of SWITCH, which is based on the nationally representative Survey of Income and Living Conditions (SILC), allows us to assess the strength of the financial work incentives faced by a nationally representative sample. We can also identify the frequency with which strong disincentives to work occur, and the characteristics of the individuals or households most likely to face these disincentives. We also assess the balance of financial incentives as between taking up part-time employment and moving from part-time to full-time employment.

The paper is laid out as follows. In Section 2, we discuss the measures used to assess the financial incentive to work at all (section 2.1) and the financial incentive to progress in employment (section 2.2). One of the key components of measuring the financial incentive to work is predicting the wages that unemployed individuals would receive if they took up employment. Sections 2.3 and 2.4 examine existing evidence on estimating wages for the unemployed, and present the methods and results used in this paper for doing so. The results on the financial incentives to participate are presented and discussed in Section 3, while Section 4 examines the results on the financial incentive to progress in employment. Finally, Section 5 draws together the results from previous sections and draws conclusions.

## **2. MEASURING FINANCIAL INCENTIVES TO WORK**

In this section we consider how best to measure work incentives facing a population which is diverse in terms of a wider range of characteristics relevant to earnings, tax and welfare – for example, family composition, housing tenure, potential earnings and potential welfare entitlements. This diversity necessarily makes for some degree of complexity in the analysis and presentation of results. We consider a number of measures which summarise the financial incentive to make a transition:-

- from unemployment or non-employment into full-time employment (Section 2.3)
- from unemployment into part-time employment (Section 2.4) and
- from part-time employment into full-time employment. (Section 2.4)

### *2.1 Financial Incentives to Participate in Employment*

The approach taken by tax benefit models (such as the Institute for Fiscal Studies TAXBEN, and the US Tax Policy Center’s model) is to start from a large scale nationally representative sample of households. The rules of the existing tax and welfare systems (and possible reforms) are then modelled, based on detailed information on income, family circumstances, labour market situation and housing tenure. This approach ensures that the

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<sup>4</sup> The implications for income distribution are examined in Savage et al. (2015).

<sup>5</sup> Definitions of the measures are given in Section 2.

<sup>6</sup> Labour supply distinguishes between decisions as to whether or not to work (termed the extensive margin) and how much to work (the intensive margin). Blundell et al. (2011) find that in an analysis of the US, the UK and France, both of these margins matter for aggregate labour supply, with the balance between the two varying across age and gender.

picture provided of incentives and policy impacts incorporates the wide variation in family and household circumstances, with commonly occurring combinations occurring more frequently in the sample as in the population.

When considering a single or small number of family types, it is feasible to construct budget constraints showing disposable income at each point along the hours of work continuum (between unemployment and full-time work) to identify the points at which financial disincentives to work occur. Indeed, the OECD took such an approach when examining marginal effective tax rates for various example family types in a range of countries in 2001<sup>7</sup>. However, to find results that are representative of a population of interest it is necessary to work with a sample of representative households, such as those contained in SILC, rather than working with a set of selected example family types. While it is technically possible to generate graphs of budget constraints for each adult in the sample, the resulting information would be difficult to process efficiently. Instead, most analysts focus on some key measures of incentives, based on aspects of the budget constraint. This allows a summary of these key aspects to be produced in a manner which is more communicable than a large number of graphs.

One key feature of work incentives is the balance between disposable income when working zero hours, and when working full-time (40 hours). This balance between income in employment and income when unemployed is most commonly measured by the ratio between income at zero hours and disposable income at 40 hours. This is commonly termed the “replacement rate” – measuring the degree to which in-work income is replaced by transfers.

Our analysis builds on earlier work (Callan et al., 2011; Callan et al., 2012; Savage et al. 2014), examining the financial work incentives facing both single persons and couples, taking account of the ways in which tax and welfare entitlements are affected by the number and ages of dependent children. For a single person who is unemployed or not at work, we simulate the welfare payments they get when not in work, and the resulting net income. This is compared with an estimate of the net income they would be likely to obtain if they were employed. This depends, of course, on the wage at which they are likely to be able to obtain a job. Potential wages are influenced by such factors as educational qualifications and age or experience.<sup>8</sup> For example, other things being equal, someone with a university degree is likely to obtain a higher wage than someone whose highest qualification is a Junior Certificate. Measures of replacement rates which (like the OECD statistics<sup>9</sup>) assume the same wage for all individuals miss this important feature of the labour market.

We examine the incentives facing both partners in a couple, taking each person in turn. When examining incentives facing one spouse, we hold the labour market participation of the partner constant. In so doing, we take into account the overall impact of the change on family income. Adult children are regarded as separate decision making units, but the impact of the household means test (“benefit and privilege”) applying to young adults living with their parents is taken into account, as are the recently introduced lower rates of payment for Jobseeker’s Allowance for those aged under 25.

The financial incentive for an individual to move from unemployment into employment depends on the family’s disposable income<sup>10</sup> when the individual is unemployed and the family’s disposable income when the individual is employed. A narrow focus on the individual’s own net income would fail to take account of the possible impact of an individual’s taking up employment on the social welfare entitlements and/or income tax liabilities of his or her spouse or partner.

The replacement rate summarises this information by taking out-of-work income as a proportion of in-work income at the level of the family unit:

$$RR = \frac{\textit{Out of work family disposable income}}{\textit{In work family disposable income}}$$

For example, an individual might find that his or her family income when unemployed is €180 per week, but that on taking up a job that disposable income would rise to €300 per week. The replacement rate in this situation would be 60 per cent.

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<sup>7</sup> See Carone et al. (2004).

<sup>8</sup> Details of the methods used to predict wages for those not currently employed are set out in the Section 2.5.

<sup>9</sup> See OECD, 2012. Benefits and Wages: OECD Indicators [www.oecd.org/els/social/workincentives](http://www.oecd.org/els/social/workincentives)

<sup>10</sup> Disposable income is cash income from all sources – including wages and salaries, profits, pensions, interest, dividends and welfare payments – net of taxes, levies and social insurance contributions.

Both nationally and internationally, disposable income is by far the most common metric used to assess financial incentives to work. For example, the OECD statistics on replacement rates and those produced by the Institute for Fiscal Studies<sup>11</sup> focus on disposable income arising from pay net of tax and social insurance contributions, combined with cash benefits (which may include housing-related benefits as well as personal and child-related welfare benefits). It is widely recognised that other factors – notably childcare costs and travel to work costs – may also affect the net reward from employment. Callan et al. (2013) examined this issue in some detail, using data on the pattern of childcare costs from SILC to assess the likely impact of this additional factor on the distribution of replacement rates. Based on the estimates of the fixed costs of work from Callan et al., we examine the sensitivity of the results to the inclusion of these costs in the appendix.

Replacement rates have been in widespread use in policy debate (see, for example, NESR, 2011). In an international context, they are extensively used by the OECD. For the present analysis, we continue to use replacement rates, but we also provide an alternative measure of the financial incentive to participate in employment. There are two main reasons for this:-

- First, high replacement rates can be due to factors which are unrelated to the tax and welfare system. For example, an individual with a large income from capital, or with a very high earning partner, will tend to have a high replacement rate even if taxes and benefits are low. In such cases, high replacement rates are not arising from any feature of the tax or welfare system. It can be helpful, therefore, to have a measure of high tax-cum-benefit withdrawal rates – features which arise from the tax and benefit system - rather than a ratio of out-of-work to in-work incomes, which may be very high because of high partner income rather than features of the tax and welfare system.
- Second, measures of marginal tax rates facing those in employment are not commensurate with replacement rates. Marginal tax rates measure how much of an increase in income is taken in taxes – or tax and benefit withdrawal. The corresponding concept for a tax rate as it affects participation decisions is called the participation tax rate, to which we now turn.

The *participation tax rate* (PTR) measures the proportion of an individual’s gross earnings which is taken in tax and/or reduction of benefits from the individual and his or her spouse or partner. Thus, it can be written as

$$PTR = 1 - \frac{(In\ Work\ Family\ Disposable\ Income - Out\ of\ Work\ Family\ Disposable\ Income)}{Family\ Gross\ Income}$$

For example, take a young single person with a Jobseekers’ Assistance payment of €100. If they were to take up a job at €250 per week, from which the only deduction would be USC, the net income from employment would be approximately €244. The participation tax rate would be defined as  $(1 - (244 - 100) / 250)$  or 42 per cent. The higher this number, the more the tax and benefit system reduces the financial gain from employment.

## 2.2 Financial Incentives to Progress in Employment

The term “marginal tax rate” is most commonly used to refer to the income tax rate applying to extra earnings or other income. Rates of social insurance contribution are often taken into account as well. But in terms of the overall financial reward for additional earnings, welfare recipients and their spouses or partners often face an additional factor. Some or all of a benefit paid to one partner may be withdrawn (either smoothly or in a “stepped” fashion) as the earnings of the other partner increase. For a more comprehensive measure of financial incentives to work, therefore, it is necessary to go beyond measures based purely on direct taxes and to take into account rules governing the withdrawal of benefits. The “marginal effective tax rate” (METR) is designed to provide such a comprehensive measure. The exact size of the margin – the increase in gross earnings – could be chosen in various ways. For a particular margin, the METR tells us how much of an increase in earnings is absorbed by increased tax payments, PRSI deductions and/or withdrawal of social welfare benefits (including those of a spouse or cohabiting partner). This provides a measure of the incentive for individuals to increase their earnings – whether by increasing the extent of working time (e.g., increased hours, a second job) or the intensity of work effort (e.g., seeking promotion, piece-work bonuses). Marginal effective tax rates can be calculated as follows:

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<sup>11</sup> Adam et al. (2006) briefly examine the potential impact of childcare costs on replacement rates; but their main results are for disposable income. Both earlier and later papers by IFS authors (e.g., Hood, Joyce and Phillips, 2014; Adam and Browne, 2010) focus on disposable income in their empirical implementation.

$$METR = 1 - \frac{\text{Change in Family Disposable Income}}{\text{Change in Family Gross Income}}$$

For instance, suppose an individual taxpayer receives an additional €100 per week in gross earnings, leading to an additional €70 in disposable income. His/her METR is then calculated as  $1 - (70/100) = 30$  per cent. An METR of 100 per cent implies that all of the additional earnings are lost in tax or other deductions, whereas an METR of zero means a taxpayer keeps all additional earnings. Accordingly the higher the marginal effective tax rate, the weaker the financial incentive to progress.

In practice, there can be a trade-off between the incidence of high replacement rates and the incidence of high effective marginal tax rates. If policy focuses on reduction or elimination of the “unemployment trap” posed by very high replacement rates, then this may require considerable support for those with low earnings potential. But in order to reduce the cost of such support, a high benefit withdrawal rate may be imposed (for example, the Family Income Supplement reduces by €6 for every €10 increase in income). Thus, high effective marginal tax rates on those at low incomes may, because of cost considerations, be linked with income supports providing strong financial incentives to take up paid employment.

METRs can be defined over different margins. A small margin, €1 per week (approximating what Adam et al. (2006) term a “point” marginal tax rate) can be useful in making comparisons with some other work. However in practice, labour force participants are unlikely to see such a small increase in earnings as a result of additional effort. Immervoll (1994) applies a fixed percentage increase in earnings. This may be useful when comparing those in full-time employment, but it is less so when examining part-time workers. For part-time workers the most relevant margin may be moving from part-time to full-time work: in this case they might see an increase in gross earnings of close to 100 per cent rather than the 3 to 5 per cent used by Immervoll. In this paper, we are most interested in the incentive to move from part-time to full-time work. We therefore calculate the METR for a move from 20 hours of work to 40 hours of work. This METR can be compared to the Participation Tax Rate when moving from zero hours to 20 hours of employment to see whether the incentives to work are stronger when moving from non-employment to part-time employment, or from part-time employment to full-time employment.

### 2.3 Estimating Potential Wages for the Unemployed<sup>12</sup>

For people who are not currently in paid work, a key issue is how much they could expect to earn if they were employed. The broad approach used here is in line with empirical studies of labour supply, which use a predicted wage taking into account wage-relevant individual characteristics. For example, this is the approach used in Adam et al. (2010) and in the Mirrlees Review (Mirrlees et al., 2011) – now a major landmark in tax policy analysis. This is the concept used in our microsimulation approach (following earlier work by Callan et al., 1996) and in Adam et al. (2006) and Adam and Browne (2010). The key point is that jobseekers vary in the wage that they can reasonably expect to attain in the labour market, and that a method which allows for this is more realistic than a “one wage fits all” approach. In earlier work (Callan et al., 2012) used a particular technique – a selection corrected regression or Heckman correction – to take account of the fact that there might be differences in unmeasured characteristics of unemployed and employed populations (over and above age, education etc.) which would affect the wages which could be commanded. Here, we use an alternative approach which seems better able to capture the key features.

Wage equations are estimated separately for four categories: single women, single men, married women and married men. This approach allows not only for gender differences in pay, but also for the very widespread finding that there is a “wage premium” attached to marriage for men, and, commonly though not universally, a “wage penalty” attached to marriage for women. (The sources and interpretation of such premia are discussed in Pollmann-Schult, 2011). An alternative would be to limit such wage premia/penalties to an impact on the constant term in the wage equation. However, a statistical test<sup>13</sup> indicates that the interaction variables contribute significantly to explaining the variation in wages across individuals. Thus, their inclusion in the wage prediction procedure is warranted on statistical grounds. The key variables used to predict hourly wages are age (and its square, to allow for a positive but decreasing impact) and five levels of educational qualification (none beyond primary is the base case, followed by Junior Certificate or equivalent, Leaving Certificate, non-degree third level, and third-level degree or higher). The minimum wage for those under 18 years of age, which at €6.06 is

<sup>12</sup> Sections 2.3 and 2.4 draw extensively from Savage et al. (2014)

<sup>13</sup> Technically, the test is of the hypothesis that the additional variables do not contribute to explanatory power, and an F-test value of 1.77 (degrees of freedom (21,2817) is significant at the 5 per cent level

30 per cent below the general minimum wage, is used as a floor for predicted wages<sup>14</sup>. Weekly earnings are generated on the basis of a job with a 40 hour week – this is the modal value reported by full-time workers in SILC 2010.

#### 2.4 Unemployment and Wage Scarring

There is substantial evidence that spells of unemployment, or spells out of the labour market, have, on average, a negative impact on the wages which can be commanded in the labour market. Here we review some of that evidence, and develop an approach to take account of it in predicting wages for those not in employment, based on data available in SILC.

Early investigations of the scarring impact of unemployment and wages were conducted by Arulampalam (2001) and Gregory and Jukes (2001). Arulampalam analysed the British Household Panel Study, and found evidence of a wage penalty which varied over time. She estimated that the average initial impact was a reduction of 6 per cent in wages, rising to 14 per cent about 3 years after returning to work, and then declining to about 11 per cent. Gregory and Jukes identified two effects using linked administrative data: an impact from having a spell of any length, and an impact from the duration of the spell. A short spell could have a 10 per cent impact in the short run, but a long-run penalty of 2 per cent. Spells of six months to a year could have long-run impacts of 5 to 10 per cent. Gregg and Tominey (2005) analysed the National Cohort Development Study, which surveyed the same individuals at ages 16, 23, 33 and 42. They found that the “scar” from early unemployment could be of the order of 13 to 21 per cent by age 42. But this wage penalty would be lower – close to 10 per cent – if the individual managed to avoid repeat exposure to unemployment.

Another approach to estimating the impact of spells out of the labour market (whether unemployed or out of the labour force) is to use information on individual work histories – which cover the entire period since first leaving education. A standard approach in the literature is to include variables for years worked and years not worked – along with the square of each of these variables to allow for the fact that the influence may not be linear. Typically international and Irish results find that there is a positive influence from years worked (negative for its square) and a negative coefficient attached to time out of the labour market (positive for its square). The most recent Irish data which supports this approach came from the Living in Ireland Surveys of 1994-2001. McGuinness et al. (2009) used the work history information in the Living in Ireland Surveys to find that an additional year out of the labour market or unemployed would, on average, reduce wages by between 3 and 4 per cent for women in all years examined (1994, 1997 and 2001) and for men in the years 1994 and 1997; however, a higher impact was found for men, of close to 6 per cent, in 2001.

Our approach in this paper is to estimate the relationship between wages and characteristics (age, education level, marital status, gender) for those who are in employment. We use Ordinary Least Squares (OLS) for this step. We then allow for a 10 per cent reduction in wages associated with a spell of unemployment or a spell out of the labour market. We examine the results of this procedure in **Error! Reference source not found.**, focusing in particular on how well wages predicted on this basis represent the actual wage of those who have been unemployed during the past year but have returned to work<sup>15</sup>.

Column (1) of **Error! Reference source not found.** shows the distribution of wages actually obtained by those who had a spell of unemployment during the 12 months preceding the survey interview, but who had obtained a job by the time of that interview. It is clear that there is a wide spread of hourly wages. Predicted wages for the same individuals, using the OLS estimates, reduced by 10 per cent to take account of wage scarring, are also shown (Column (2)). These predicted wages substantially overestimate the proportion of individuals facing wages below €10 – i.e., overstate the incidence of very low pay – but come close to the correct proportion facing wages of under €12.50. At the other end of the wage distribution, about 1 in 5 of the relevant group (those with unemployment experience who have returned to employment) have a predicted wage (OLS minus 10 per cent) of more than €20 per hour – in line with what is observed<sup>16</sup>.

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<sup>14</sup> We allow for the fact that wages cannot be perfectly predicted – an error term, drawn from the normal distribution, is added to the predictions to ensure that the “spread” of predicted wages is in line with what is indicated by the estimated wage equation.

<sup>15</sup> We examine the impact of alternative reductions (5 per cent or 15 per cent) on the distribution of replacement rates in the Appendix.

<sup>16</sup> The predicted wage underestimates the proportion in the €12.50 to €15 and overstates the proportion in the €15 to €20 hourly wage band. Predicted wages have about one-third of the group in the €12.50 to €20 band, as against 29 per cent for the observed wages

**Table 1: Estimating potential wages for the unemployed**

Hourly wage band	Actual Wage	Predicted Wage (OLS Minus 10 Per Cent)	Actual Wage	Predicted Wage (OLS )
	Employees with period of Unemployment		Employees without period of unemployment	
	(1)	(2)	(3)	(4)
	%	%	%	%
Under €10	18	29	12	16
€10 to €12.50	33	17	15	14
€12.50 to €15	17	13	17	12
€15 to €20	12	20	22	22
Over €20	19	21	34	36
Total	100	100	100	100

Source: Savage et al. (2014)

Corresponding patterns for the Heckman predictions are much further from the observed data for those who have returned to work from unemployment. These patterns suggest that a predicted wage based on OLS, minus 10 per cent to take account of wage scarring, come closer to representing the wages facing unemployed people than the Heckman approach previously used. Thus, it is the OLS wage, minus 10 per cent, which will be used in the rest of this paper.

For employees without any period of unemployment, actual wages and predicted wages – in this case OLS without any reduction, as there has been no unemployment – are reported in Columns (3) and (4). These confirm that the wage equation estimates broadly capture the key features of the distribution of wages, using a rather small number of predictor variables.

### 3. DISTRIBUTION OF REPLACEMENT RATES

#### 3.1. Profiling Replacement Rates

We look first at the overall distribution of high replacement rates for those who are unemployed on JA/JB, employees, and those engaged in “home duties”. Table 2 and several others which follow, may be read as follows: 20.7 per cent of the unemployed have a replacement rate of more than 70 per cent, while 13.8 per cent have a replacement rate of more than 80 per cent. Each figure represents the proportion of the population with a replacement rate above a particular value; as they are cumulative totals, the figures are not additive and must be equal to or less than the proportion in the cell directly above.

**Table 2: Distribution of Replacement Rates, Ireland 2015**

Rep Rate Category	Une on JA/JB	Employees	Home Duties	Lone Parents
	%	%	%	%
>70	20.7	16.8	38.4	17.7
>80	13.8	10	20.2	12
>90	8.4	5.4	6.9	3.4
>100	5.3	3.3	1.9	0
Estimated Sub- population	161,000	1,577,000	484,000	42,837

Note: Non-employed lone parents are predominantly a subset of the home duties group

Almost 80 per cent of unemployed individuals have a replacement rate of less than 70 per cent. These individuals would see their incomes rise by at least 43 per cent if they were to obtain a job, at a wage corresponding to their qualifications. The “risk” of facing a high replacement rate (over 70 per cent) is greatest

for those in home duties, next highest for the unemployed, and lowest for employees. The risk of facing very high replacement rates (over 90 per cent or 100 per cent) is highest for the unemployed. Given the relative sizes of these groups, however (1,577,000 employees as against 161,000 unemployed) most of those who are facing high or very high replacement rates are in fact in employment. For example, of those facing very high replacement rates (90 per cent or more) about 85,000 are employees while about 14,000 are unemployed.

A somewhat lower proportion of lone parents compared to unemployed jobseekers face replacement rates greater than 70 per cent. The difference between the two groups is largest in the highest replacement rate categories, where no non-employed lone parents face replacement rates greater than 100 per cent. A key feature here is that the means test in the One-Parent Family Payment has been more favourable to the combination of work and welfare income than the means test under the Jobseeker's Assistance scheme.

We can split these groups further to identify where the highest replacement rates occur. Table 3 illustrates the sharp differences between replacement rates facing full-time and part-time employees. Replacement rates for part-time workers are calculated on the basis of their actual hours of work, with part-time workers defined as those working less than 30 hours a week. Part-time workers who are also in receipt of benefit are excluded from these calculations: the key issue for them is the marginal effective tax rate on additional earnings, which is the subject of analysis in later sections. For those in employment, we calculate the replacement rate based on entitlement to Jobseeker's Allowance (JA) rather than Jobseeker's Benefit, meaning the replacement rates here represent longer-term replacement rates. In the short-term, some employees may be entitled to Jobseeker's Benefit for the first 6 to 9 months of unemployment. In many instances, the payments received on JA and JB would be the same; but where differences occur, the rate on JB would be higher, meaning that some of those who are employed would have a higher replacement rate for up to 9 months, if the calculation were done in terms of an entitlement to JB. Two considerations point towards the use of the JA rate. First, if the in-work/out-of-work decision is thought of as a long-term one, then the JA rate would be the more relevant one. Second, much of the focus in recent debate (IMF, 2012; OECD, 2011) has been on long-term replacement rates. For these reasons, we focus here on calculations which are based on the JA rate (see Savage et al. 2014 for further discussion). Part-time workers, with lower incomes because of their lower hours<sup>17</sup>, are about 5 times more likely to face a high replacement rate (70 per cent plus). A significantly higher proportion of part-time employees also face the highest replacement rates, with 14 per cent part-time employees facing a replacement rate of 90 per cent or greater, compared to just 1.4 per cent of full-time employees.

**Table 3: Distribution of Replacement Rates for Full-time and Part-time Workers, Ireland 2015**

Replacement Rate Category	All Employees	Full-time Employees	Part-time Employees
	%	%	%
>70	16.8	7.3	37.1
>80	10.0	4.5	21.7
>90	5.4	1.4	14
>100	3.3	1.1	7.9
Estimated Sub-population	1,577,000	1,077,000	501,000

Next we consider to what extent high replacement rates are linked to wage levels. Table 4 shows results for unemployed people grouped into four equal groups, based on a ranking of their potential wages from the lowest wage levels (Quartile 1 – close to the minimum wage) to the highest (Quartile 4). The risk of facing a high (over 70 per cent) or very high replacement rate (over 90 per cent) is highest for the low wage group, and lowest for the high wage group. No unemployed individual with potential earnings of €18 per hour or more faces a replacement rate of 90 per cent or greater.

<sup>17</sup> There may also be an association with lower hourly wage rates, adjusting for characteristics – this has been found in the UK, but evidence for Ireland is more mixed.



**Table 4: Distribution of Replacement Rates for Unemployed Jobseekers by Expected Hourly Earnings, Ireland 2015**

Replacement Rate Category	Lowest Quartile (<€8.70)	Quartile 2 (<€13.16)	Quartile 3 (<€18)	Top Quartile (>€18)
	%	%	%	%
>70	33.0	29.2	18.1	2.7
>80	22.7	20.8	11.5	0.2
>90	19.5	13.5	0.6	0.0
>100	14.0	7.3	0.0	0.0

Unemployed individuals with children are more likely to face high replacement rates than those who don't have children. **Error! Reference source not found.** presents results on the distribution of replacement rates for unemployed persons with and without children. There is a very sharp distinction between these groups, with a low risk for those without children (more than 105,000 individuals) and a relatively high risk for those who do have children (some 56,000 cases). About 44 per cent of the unemployed group who have children have a replacement rate above 70 per cent. Close to 10 per cent of the "with children" group of unemployed face replacement rates of more than 100 per cent, compared to just over 3 per cent of the unemployed without children.

**Table 5: Distribution of Replacement Rates for Unemployed Jobseekers – With/Without Children, Ireland 2015**

Replacement Rate Category	With Children	Without Children
	%	%
>70	43.4	8.5
>80	28.9	5.7
>90	16.0	4.3
>100	9.2	3.2
Number in Sub-population	56,000	105,000

Table 6 shows a strong contrast between unemployed individuals in jobless households and in non-jobless households. Watson et al. (2012) use the term "jobless households" to refer to households where less than one-fifth of the available time of working age adults was spent in employment or self-employment during the previous year – this is what the EU term "very low work intensity" (VLWI). As the VLWI measure relates to amounts of work carried out in the previous year, this implies that the individual is in long-term unemployment or non-employment; however the converse is not true as individuals may be long-term unemployed without being in a workless household.

Unemployed individuals in jobless households are more than 3 times more likely to face a high replacement rate (over 70 per cent) and 4½ times more likely to face a very high replacement rate (over 90 per cent). Savage et al. (2014) suggested that the structure of means and income tests in social welfare payments was a contributory factor to why unemployed individuals in jobless households are more likely to face higher replacement rates than those in non-jobless households. The system is designed to focus greater payments on those who have lowest incomes. For example, an individual who is married to another unemployed person, or to someone engaged in home duties, may receive the maximum rate of Jobseeker's Benefit or Assistance, along with increases in respect of a qualified adult and qualified children. An individual married to an employed individual, on the other hand, will typically receive a lower payment which does not include additions in respect of an adult partner or children – and for Jobseeker's Assistance, the amount of the personal payment may also be reduced.

**Table 6: Distribution of Replacement Rates for Unemployed Jobseekers in Jobless households, Ireland 2015**

Replacement Rate Category	In Jobless Households	Not in Jobless Households
	%	%
>70	31.2	10.5
>80	22.2	5.7
>90	13.8	3.0
>100	9.6	1.2
Number in Sub-population	78,060	81,694

Table 7 shows the distributions of replacement rates for short-term and long-term unemployed. Precise data on duration of the unemployment spell are not available in SILC, but survey respondents were asked when they were last in work. It is this data which is used to estimate the length of the duration spell. Information on the number of weeks for which various benefits were received is not suitable for determining spell length: the number of weeks in payment may refer to more than one spell.

While these data on spell length are not precise, they do reveal some differences between the incentives facing short-term and long-term unemployed. About 16 per cent of the short-term unemployed face a replacement rate of more than 70 per cent. The corresponding figure for the long-term unemployed is about 24 per cent. The higher replacement rates faced by the long-term unemployed are mainly in the range of 70 to 100 per cent. The proportions facing replacement rates of over 100 per cent are quite similar.

It should be noted that the replacement rate calculations are based on a wage equation which predicts potential wages from characteristics such as age and education level. This may capture some aspects of the difference between those who are short-term unemployed and long-term unemployed: for example, long-term unemployment is linked with lower educational qualifications. However, no account is taken in this predicted wage of the fact that a long unemployment spell could be expected to lead to a reduction in the wage that can be commanded in the labour market. If such reductions were taken into account, the contrast between replacement rates facing short- and long-term unemployed would be greater.

**Table 7: Distribution of Replacement Rates for Unemployed Jobseekers by Duration of Unemployment, 2015.**

Replacement Rate Category	Short-Term Unemployed	Long-Term Unemployed
	(<=12 months)	(13 mths or more)
>70	15.9	23.3
>80	11.4	15.1
>90	6.5	9.4
>100	4.6	5.6

#### 4. INCENTIVES TO PROGRESS

Here we shift the focus to consider transitions between non-employment or unemployment, part-time employment combined with a partial unemployment payment, and full-time employment. We use this framework to examine whether tax and welfare structures create barriers to the transition from part-time work to full-time work.

##### 4.1 Participation Tax Rates and Marginal Effective Tax Rates

As noted in Section 2, the marginal effective tax rate is the most appropriate measure when considering the transition from part-time to full-time work. This measure asks what percentage of an income increase is taken in increased taxes and or withdrawal of benefits. The participation tax rate is the corresponding measure relating to participation decisions (a move from zero hours – whether unemployed or in home duties – to a part-time job or

a full-time job). Thus, in the tables which follow, we report the participation tax rate for a move from non-employment or unemployment into part-time employment, combined with a partial welfare payment; and finally a marginal effective tax rate for a move from this part-time situation (combining work and welfare payments) to a full-time job (usually without any adult-based welfare payment). We then show a participation tax rate for a move from non-employment or unemployment into full time employment. Again our focus, unless otherwise stated, is on the same sub-population as was examined most extensively in Section 3 i.e., those who are unemployed, in receipt of Jobseeker's Assistance or Jobseeker's Benefit, and who are not currently engaged in paid work. We examine the disposable income they obtain when not working, and when working for various numbers of hours (e.g., 20 and 40) at the wage rate predicted on the basis of their age, education, gender and marital status (as described in Section 2).

**Table 8: Distribution of PTRs/METRs for Unemployed Persons in Receipt of Jobseeker's Benefit or Allowance, 2015**

PTR/METR Category	PTR (0 to 20hrs)	METR (20hrs to 40hrs)	PTR (0 to 40hrs)
>50	60.8	36.5	51.2
>60	36.9	28.7	35.5
>70	23.3	21.9	18.9
>80	11.7	17.0	13.3
>90	7.1	12.6	8.3
>100	5.5	9.9	5.3

Table 8 shows these three measures of tax rates on participation and progression for unemployed people who are in receipt of Jobseeker's Benefit or Jobseeker's Allowance. The measures of the participation tax rate for a move to full time employment are similar to the replacement rates reported in Table 2, at least with respect to PTRs and RRs above 70 per cent. What this analysis allows us to do is to break down these high participation tax rates into two components, one for the move from zero hours to a combination of a part-time job and partial welfare payment (under the 3 day rule), and one for progression from the part-time job to a full-time job. This helps to identify whether the main disincentive arises in the move from zero hours to 20 hours, or from 20 hours to 40 hours.

The results suggest that a higher proportion of unemployed individuals face stronger disincentives (PTR or METR > 50 per cent) to move from non-employment to part-time work than from part-time to full-time work. 3 in 5 unemployed jobseekers would lose at least 50 per cent of their gross earnings in part-time employment through a combination of benefit withdrawal, direct taxation and social insurance contributions, when moving from unemployment into part-time employment. Just over one-third would face as high an effective tax rate when moving from part-time to full-time work. However, the highest disincentives (PTR or METR >80 per cent) are found when moving from part-time work to full-time work. Just above 5 per cent of unemployed individuals face a PTR of greater than 100 per cent (implying their disposable income would decrease upon moving from unemployment to part-time employment), while 10 per cent of the group face an METR of greater than 100 per cent when moving from part-time to full-time employment (implying their disposable income would be larger in part-time employment than full-time employment).

How are incentives to progress affected by the presence or absence of children?

Table 9 shows that like the replacement rates in Section 3, the participation tax rates for 0 to 20 and 0 to 40 hours are substantially higher for those with children. Similarly the marginal effective tax rate from 20 to 40 hours is higher for those with children than for those without children. For both groups, a higher proportion face weaker incentives (PTR or METR greater than 50 per cent) to move from unemployment to part-time employment than from part-time employment to full-time employment. However, for those with children, the highest disincentives to progress (PTR or METR greater than 80 per cent) occur more commonly in the move from part-time to full-time employment than from unemployment to part-time employment. 1 in 5 unemployed individuals with children face an METR (part-time to full-time employment) of greater than 100 per cent, compared to 1 in 10 that face a PTR (unemployment to part-time work) of greater than 100 per cent.

**Table 9: Distribution of PTRs/METRs for Unemployed Persons in Receipt of Jobseeker's Benefit or Allowance with and without Children, 2015**

Without children (estimated sub-population 105,000)			
PTR/METR Category	PTR (0 to 20hrs)	METR (20hrs to 40hrs)	PTR (0 to 40hrs)
>50	48	23	33
>60	21	15	18
>70	14	11	9
>80	7	8	6
>90	4	5	4
>100	3	4	3
With children (estimated sub-population: 56,000)			
PTR/METR Category	PTR (0 to 20hrs)	METR (20hrs to 40hrs)	PTR (0 to 40hrs)
>50	84	61	85
>60	66	54	68
>70	41	43	38
>80	20	34	27
>90	14	26	15
>100	10	20	9

The incentives to progress facing non-employed lone parents are quite different from the unemployed individuals on jobseeker's payments. Due to a higher earnings disregard and a lower taper rate in the One-Parent Family Payment means test than the Jobseeker's Assistance means test, a lower proportion of lone parents face high or very high PTRs compared to unemployed recipients of Jobseeker's Allowance or Benefit. However, 4 in 5 non-employed lone parents face an METR of at least 50 per cent, while almost 1 in 5 face an METR of greater than 90 per cent. METRs of greater than 100 per cent are relatively uncommon for this group, with just 6 per cent facing such a high effective tax rate when moving from part-time to full-time employment.

**Table 10: Distribution of PTRs/METRs for Non-Employed Lone Parents (excluding retired), 2015**

PTR/METR Category	PTR (0 to 20hrs)	METR (20hrs to 40hrs)	PTR (0 to 40hrs)
>50	23.7	80.1	46.9
>60	20.2	59.9	23.9
>70	15.0	36.2	13.5
>80	6.0	27.8	9.7
>90	5.1	17.7	0.7
>100	4.3	6.1	0.0

#### 4.2 Policy Impact – Family Income Supplement

Comparison of the number of recipients of Family Income Supplement (FIS) reported by the Department of Social Protection with the number of recipients deemed eligible based on the information provided in the SILC survey suggests that take-up of FIS is approximately 33 per cent. Given that FIS is designed to provide income support to low income working families, in this section we examine the effect on incentives to progress in work if take-up of FIS was increased to 100 per cent. FIS is only paid to families who work a combined total of 19 hours per week or more. We therefore examine the impact on work incentives for a number of definitions of part-time work, ranging from 15 hours to 24 hours per week.

For each hours-of-work cut-off, increasing the take-up of FIS would improve incentives to move from unemployment to part-time work for unemployed individuals with children<sup>18</sup>. However, the changes caused by increasing FIS take-up are reasonably small. The biggest impact is in the greater than 100 per cent category of PTRs, where 1 in 10 unemployed individuals with children were located with FIS take-up at 33 per cent, compared to about 1 in 20 when FIS take-up is at 100 per cent. As a result of the increase in income at part-time work, the incentive to progress from part-time to full-time work is slightly weaker with 100 per cent FIS take-up.

**Table 11: Impact of FIS take-up on distribution of replacement rates of unemployed JSA/JSB recipients with Children, 2015**

FIS Take-up at 33%				
PTR/METR Category	PTR (0 to 15hrs)	PTR (0 to 20hrs)	PTR (0 to 24hrs)	METR (20 to 40hrs)
>50	94	84	79	61
>60	81	66	67	54
>70	44	41	41	43
>80	29	20	20	34
>90	17	14	12	26
>100	12	10	10	20
FIS Take-up at 100%				
PTR/METR Category	PTR (0 to 15hrs)	PTR (0 to 20hrs)	PTR (0 to 24hrs)	METR (20 to 40hrs)
>50	78	69	69	68
>60	63	60	58	59
>70	33	39	39	47
>80	25	18	18	37
>90	18	11	11	31
>100	6	6	3	24

## 5. CONCLUSIONS AND FURTHER RESEARCH

Replacement rates, participation tax rates, and marginal effective tax rates provide valuable evidence on the financial incentives to work implicit in a tax and benefit system. Replacement rates and participation tax rates measure the incentive to take up or remain in employment. In this paper, we found evidence that strong disincentives to take up employment were infrequent, for those who are currently unemployed. In part, this reflects the fact that most of the unemployed are young and single, without dependants. Lone parents were shown to be group the least likely to face very high replacement rates. We identified some factors which are associated with a greater likelihood of a strong financial disincentive to work.

- Unemployed individuals with children were shown to be at a relatively high risk of facing large replacement rates; although fewer than 1 in 10 of this group would be financially better off not working than in full-time employment.
- Unemployed persons with low potential wages – up to and including the minimum wage - were also at particular risk of facing high replacement rates.
- Finally, unemployed persons in ‘jobless households’ also faced higher replacement rates than those not in jobless households. To some extent this result is inherent in the nature of the social welfare system: jobless households are likely to be in receipt of full social welfare add-on payments in respect of a spouse/partner and/or children. Households where there is significant employment income and are therefore not jobless are likely not to receive such add-on payments.

<sup>18</sup> FIS has an impact on PTRs even at 15 hours of work, as moving one partner in a couple from zero hours to 15 hours may increase the combined hours of work of the couple above the 19 hours FIS eligibility threshold.

At the intensive margin, the results showed that a higher proportion of unemployed individuals face stronger disincentives (PTR or METR greater than 50 per cent) to move from non-employment to part-time work than from part-time to full-time work. However, the highest disincentives (PTR or METR >80 per cent) are found when moving from part-time work to full-time work. Just above 5 per cent of unemployed individuals face a PTR of greater than 100 per cent, while 10 per cent of the group face an METR of greater than 100 per cent when moving from part-time to full-time employment. Again, unemployed individuals with children faced significantly stronger disincentives to progress than those without children. Savage et al. (2014) showed that receiving increases in social welfare payments for qualified adults and children substantially reduced the financial incentive to work. An increased take-up of FIS was shown to slightly improve financial incentives to progress in employment for unemployed individuals with children, although the improvements were not dramatic.

Of course, while the financial implications of work are one influence in the decision to work or not, there are other influences. Indeed, the evidence presented here shows that 9 out of 10 of those in the labour market (either employees or the unemployed) with a replacement rate greater than 100 per cent are in work – a very similar proportion in employment to that observed for those with lower replacement rates. Dynamic considerations, including the gains from continuity in employment, also play an important role (see, for example, Brewer et al. 2013)

Future research on the impact of a number of recent and planned reforms to the Irish tax and benefit system will provide further evidence on the financial incentive to work in Ireland. Topics currently under investigation include:

- the impact from medical cards
- the impact of the introduction of the Back to Work Family Dividend
- the impact from move from Rent Supplement to the Housing Assistance Payment

Comparisons of the incentives implicit in the Irish and UK tax/transfer systems are also planned.

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**APPENDIX – SENSITIVITY TESTS**

**Table A.1: Distribution of Replacement Rates at Alternative Wage Predictions for Unemployed JA/JB Recipients, Ireland 2015**

Replacement Rate Category	OLS	OLS Minus 5%	OLS minus 10%	OLS minus 15%
	%	%	%	%
>70	19.2	20.1	20.7	21.5
>80	11.0	12.5	13.8	15.1
>90	6.7	8.0	8.4	9.0
>100	4.7	4.8	5.3	6.0

**Table A.2: Distribution of Replacement Rates including In-Work Costs, Ireland 2015**

Replacement Rate Category	Unemployed on JA/JB		Employees	
	(%)	In-work Costs (%)	(%)	In-work Costs (%)
>70	20.7	24.0	16.8	22.3
>80	13.8	18.4	10.0	11.9
>90	8.4	10.0	5.4	7.7
>100	5.3	7.2	3.3	4.8

**Table A.3: Participation tax rates and marginal effective tax rates at various hours cut-offs: Unemployed, in receipt of JA/JB, not in paid work, 2015**

PTR/METR Category	PTR (0 to 15hrs)	PTR (0 to 20hrs)	PTR (0 to 24hrs)	METR (15hrs to 40hrs)	METR (20hrs to 40hrs)
>50	62	61	57	37	36
>60	44	37	34	24	29
>70	25	23	21	17	22
>80	18	12	11	12	17
>90	11	7	6	10	13
>100	7	6	5	8	10



## DISCUSSION

**Gregg Patrick:** I am pleased to see that the value of a medical card and rent allowance would be included in future research. I would enquire if the opportunity costs of working were included in the SWITCH model. For example, was the cost of travel to work included? Was the cost of childcare included if both parents returned to work?

**Richie McMahon:** I would request information on the wage scarring data for Ireland contained in Michael's presentation and the rationale for using 10% figure in the paper.

**Patrick Foley:** Is the analysis based on equivalised or unadjusted income? To what extent do you think the modelling and the results are influenced by the reference year of the raw data, i.e. the analysis presented data from EU-SILC 2010 which coincided with a rapid growth in unemployment? The composition of those in unemployment, e.g. male construction workers, may be unrepresentative of other years. How does the profile of those affected by financial disincentives to find work in Ireland compare with other countries?

**John Fitzgerald:** The paper makes a very useful contribution to our understanding of this important issue. Firstly, it illustrates the huge contribution made to policy relevant economic research by the work of the CSO in making micro data available. Secondly, it will be interesting to use the SWITCH model to look at the financial incentives for loan parents as there are changes in the welfare regime. These changes should then be related to labour force participation to see what the effects are on the labour market. The changes in the welfare regime should be considered as something in the nature of a natural experiment. The financial incentives for part time work are affected by the nature of the part-time work on offer. I think that irregular part-time work involves higher welfare loss than regular work.

Thirdly, this paper looks at financial incentives for loan parents or people who are unemployed. The SWITCH model should also be used to look at the incentives for spouses to work where the combined income is in the higher marginal tax range. The lower earning spouse effectively faces a high marginal tax rate on all of their income. The after tax income of the spouse should be compared to the cost of commercial child care. In how many cases would one of a couple be better off not working if they had to pay for child-care. In the case of couples where one partner is not working, given the imputed income of the non-working partner would they be better off working if they had to pay child-care costs. While this does not cover a huge number of people it could be important in any change in the tax system. Also, the costs in terms of lost output from spouses dropping out of the labour force could be high. (See Honohan and Irvine in the *Economic and Social Review*, 1987.)

**Brian Cahill:** Would it be possible to carry out a similar analysis utilising administrative data, such as Revenue P35 file and DSP data?"

**Kevin Phelan:** Picking up what John Fitzgerald had said regarding the National Employment Survey, CSO are hosting next week an administrative data seminar. At this seminar, a paper will be presented by CSO in respect of administrative data being used to replace the National Employment Survey. Using CSO data sources it is possible to establish the level of Education.