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Work incentives adjusting for childcare subsidies and healthcare benefits

Claire Keane and Maxime Bercholz

Abstract:This paper examines the role of two non-cash transfers in the financial incentives to work in Ireland: subsidised childcare provided under the Affordable Childcare Scheme and Medical and GP-Visit Cards. Financial work incentives do not usually take account of childcare costs or non-cash benefits that may be withdrawn as a person earns more. In this paper we use SWITCH, the ESRI's tax-benefit microsimulation model, to examine financial work incentives on both the extensive margin by means of replacement rates and participation tax rates, and the intensive margin through effective marginal tax rates. As the amount of time parents of young children spend at work results in the need to pay for childcare, the inclusion of childcare costs is shown to weaken financial work incentives. However, including childcare subsidies results in an improvement in the financial incentive to take up a job or work more. Medical and GP visit cards, on the other hand, diminish those incentives, which is due to their means-tested nature. These results illustrate the need to go beyond cash transfers in assessing financial work incentives and the importance of taking childcare costs into account.

**Corresponding Author: maxime.bercholz@esri.ie*

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1 Introduction[1]

While providing income support to those in need is an important feature of the welfare system a balance needs to be struck in order to maintain financial incentives to work. The state provides cash transfers such as state pensions and jobseekers payments to ensure the wellbeing of its citizens but also provides support for individuals through the provision of non-cash supports. Standard analysis of financial incentives to work tends to ignore non-cash transfers and focusses instead on cash supports provided by the state. This means that supports provided to individuals that do not result in a direct cash transfer to them will not be captured in standard analyses looking at the distributional or work incentive impact of government transfers. Such non-cash benefits, however, are likely to improve the welfare of recipients by providing for the needs of an individual without requiring payment for such goods or services.

In this report we measure the financial incentive to work for individuals and families in Ireland and how it is affected by two such non-cash supports - the health card system, consisting of Medical and GP-visit Cards and the Affordable Childcare Scheme (ACS) subsidies. We focus both on the financial incentive to be in paid employment, measured by replacement rates (RR) and participation tax rates (PTR) and the financial incentive to progress, measured by effective marginal tax rates (EMTR).

Section 2 discusses the measurement of financial incentives to work. Section 3 looks at issues in placing a value on non-cash benefits and describes how we have done this for the health cards and ACS subsidies. Section 4 examines how the inclusion of these two non-cash benefits affects financial incentives to work and Section 5 concludes.

2 Measuring Financial Incentives to Work

In general, an examination of financial incentives to work focusses on two margins – the financial incentive to be in paid work in the first place and the financial incentive to progress, i.e. to earn more either by working more hours or receiving a pay rise/promotion.

[1] This work was undertaken as part of the Tax, Welfare and Pensions programme at the ESRI funded by the Departments of Employment Affairs and Social Protection; Health; Children and Youth Affairs; and Finance.

2.1 The Financial Incentive to be in Paid Work

There are two commonly used ways to measure the incentive to be in paid work. The first is to calculate the replacement rate (RR), which shows an individual's out-of-work income as a percentage of their in-work income.

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

For example, an individual whose net income out-of-work was €200, and whose net income in work was €400 would have a replacement rate of 50 per cent.

The second commonly used measure to capture financial incentives to be in paid work is the participation tax rate (PTR). The PTR shows the proportion of earnings that are not taken away via taxes (including social insurance) or lower benefit entitlements when an individual enters employment.

$$PTR = 1 - \frac{\text{disposable income in work} - \text{disposable income out of work}}{\text{gross earnings}}$$

The PTR has an advantage over the RR measure in that it is driven largely by how the tax and benefit system affects the incentive to work, as opposed to potential earnings. While the RR combines 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.

The RR measure can therefore be viewed as the *absolute strength* of financial incentives to work whereas the PTR measure tells us the *effect of the tax and benefit system* on financial work incentives. Both are of interest, and because of this we will present both in this report. For both these measures a lower value means a higher financial incentive to work.

Using a tax-benefit microsimulation model RRs and PTRs can be calculated for those currently in and out of work. For both these measures we need to know how much an employed person would receive in benefits if they were unemployed. To do these we use SWITCH, the ESRI tax-benefit model to estimate how much an individual would receive in Jobseekers Assistance payments were they to be unemployed and calculate disposable income based on this.[2] Likewise, for those currently unemployed we estimate their hourly wage and their likely work hours (see Box 2.1 for more information on this). We then use SWITCH to calculate the individual's disposable income based on

[2] These can be viewed as longer-term work incentives once any entitlement to Jobseekers Benefit has been exhausted.

these estimated weekly earnings. For both groups, workers[3] and non-workers[4], who are part of a couple we calculate their counterfactual disposable income (i.e. their disposable income should their employment status change) holding the employment status of their partner constant.[5] Given our interest in the impact of childcare costs and subsidies on financial work incentives we must also estimate childcare costs for those out of work should they be in employment. This estimation is also described in Box 2.1.

Box 2.1 Deciding on Wages, Hours of Work and Childcare Costs for Non-Workers

In order to calculate RRs and PTRs for non-workers, including childcare costs and subsidies, we must first calculate for non-workers estimated hourly wages, anticipated work hours and anticipated childcare costs upon entering employment.

Hourly Wage Estimates

While it is straightforward to calculate how much an employed person would receive in benefits if they became unemployed as jobseekers payments are flat-rate, it is more difficult to estimate how much those out of work would earn in employment as their anticipated wage will depend on their characteristics, for example, their education level. To estimate the hourly wage an individual can command, we run an OLS regression model based on characteristics such as age and educational qualifications and adjust for likely wage scarring those out of employment tend to experience. More detail on the approach can be found in Savage et al. (2014). We exclude retirees and those who are ill/disabled but not seeking employment from our analysis given that estimating wages for these groups may be difficult and assuming that they are available for employment may be unrealistic.

Work Hour Assumptions

While we could simply assume an individual will work a full 39 or 40-hour week this may produce misleading results. Certain characteristics of individuals may make them substantially less likely to work full-time, for example, females with a child/children of preschool age are more likely to work part-time relative to others, for example, males. We, therefore, place the employed in our data into four work hour bands (0-15; 16-24; 25-35; 35+) and using this information run a multinomial probit model on the employed to estimate the probability of each unemployed person in our sample working each of these four bands.[6] We then compute the RR and PTR for each of these individuals at the midpoint of these hour bands and calculate a single weighted RR/PTR using the estimated work hour band probabilities as weights. This will mean, for example that if an individual has a 70% estimated probability of working full-time (i.e. 35 hours plus) then the most weight is given to the

[3] Both the employed and self-employed.
[4] We include those who are unemployed (i.e. out of but seeking work) along with those reporting home duties.
[5] We also hold the work status of parents constant when calculating Medical/GP-Visit Card entitlement for adult children living at home who are classified as dependent.
[6] We follow here the method used in Adams and Browne (2010).

RR/PTR calculated for this person at full-time work hours. This method helps ensure that we are estimating 'realistic' and representative RRs and PTRs for individuals.

Childcare Usage and Costs

Given that this report focusses on examining the impact of childcare costs on work incentives, we have to make some assumptions regarding childcare usage for those currently out of work should they enter employment. The hours of care assumed for non-workers is based on the assumed work hours (discussed above) and partner work hours if the individual is part of a couple – for example, for a lone parent childcare hours are set as equal to work hours. For a couple no childcare is assumed if one member of the couple is not in work or education. If both are in employment then childcare hours are assumed to equal the work hours of the partner with the lowest hours. Assumed childcare hours are adjusted downwards by school hours if the children are of school going age. We assume that childcare used for those moving into employment will be formal. This assumption will tend to overestimate the favourable impact of the ACS scheme on work incentives as ACS is only payable towards formal care and not all parents will opt for that. However, it is reasonable to assume that those not in employment are less likely to have free (e.g. grandparent) childcare available to them as those with this option are likely to avail of it where possible. Secondly, some parents may opt for informal care such as paid childminders. However, the hourly cost of such care is not substantially below that of formal care (for example €4.50/€5.70 per hour of informal care compared to €4.70/€5.90 per hour for formal care for pre-school/primary school children as shown in QNHS 2016). Therefore, we are not significantly overestimating the total cost of childcare for those that may opt for childminders. In addition, given that the ACS subsidies are currently only payable for those Tusla registered (and with less than 1% of childminders registered), it is likely that ACS will have an impact on the choice between formal (and therefore potentially subsidised) and informal (and therefore not subsidised) care - so that those eligible for ACS would be expected to be more likely to opt for formal care.

Now that we have anticipated childcare hours we use hourly childcare costs for pre-school and primary school children taken from the QNHS 2016 Special Module on childcare costs and adjust to current price levels[7] to arrive at total, weekly childcare costs. We then use the estimates of childcare hours used to calculate the ACS subsidy[8] that would be payable.

[7] Using changes in the childcare sub-index of the CPI up to October 2018 and the ESRI's latest forecast for overall CPI growth in 2019.

[8] We do not take account of the ECCE scheme in our analysis given that eligibility is based purely on child age and the scheme is not means tested. Entitlement to the scheme will, therefore, be available both in and out of work and should not play a role in financial work incentives.

2.2 The Financial Incentive to Progress

In order to measure the financial incentive to progress we use the Effective Marginal Tax Rate (EMTR). The EMTR measures what part of any additional earnings are "taxed away" through the combined effect of increasing taxes and decreasing benefits.

$$EMTR = 100 * (1 - \frac{\text{Change in disposable Income}}{\text{Increase in gross earnings}})$$

For example, if an individual gets a €50 increase in their gross weekly pay (either by working more hours or by getting a pay rise) but loses €25 of this through increased tax, USC, PRSI or withdrawal of benefits (for example through withdrawal of the Working Family Payment) then this individual has a EMTR of 50%.

EMTRs are calculated for each individual using SWITCH. This is done by awarding each worker[9] a small additional amount of income (e.g. an additional percentage of current earnings) and using the model to calculate the individual's new disposable income once additional income tax, USC, PRSI or benefit withdrawal has been taken into account.

2.3 Income Definitions and Time Horizons

Financial incentives to work tend to focus on disposable income (i.e. post-transfer, post-tax/USC/PRSI income) and do not usually take account of non-cash transfers or costs of work. While costs of work are widely recognised as having an impact on labour supply decisions, such costs are usually not incorporated into the standard measures of financial work incentives. Some work has been done in this area in Ireland, for example, Callan et al. (2012) examined the impact of childcare and travel to work costs on financial work incentives. Comparing Ireland internationally shows that Ireland has some of the highest childcare costs as a proportion of income across the OECD (see OECD 2016) and recent work by Russell et al. (2018) found that higher childcare costs were associated with lower maternal labour supply. The inclusion of such costs in examining financial incentives to work, therefore, seems highly important. Developments of childcare subsidies in recent years – such as the ECCE and ACS schemes – aim to offset some of these costs and help increase the incentive to be in employment. Regan and Keane (2018) also examined the impact the inclusion of childcare costs and these childcare subsidies had on the financial work incentives of lone parents. Taking childcare costs into account caused a sharp rise in the proportion of lone parents who were financially better off not being in employment (2.5% up to 15.7%). This was reduced once childcare subsidies were taken into

[9] Employees and self-employed.

account with a particularly notable fall in the proportion of lone parents with very high (120% plus) replacement rates from 11.4% to 6.5%.

Other entitlements to non-cash benefits, such as the medical card, and their potential loss, may also be an important consideration for individuals considering returning to employment or working more. The medical card has been shown to act as a disincentive to employment (see Russell and Corcoran (2001), for the case of lone parents) but again such considerations will not be taken into account in standard financial incentives to work given the focus on cash incomes.

It is worth noting that financial incentives to work may differ over the short and long term. Firstly, short-term incentives to not work may be larger for those eligible for Jobseekers Benefit (JSB) given its non means-tested nature while longer-term incentives to not work may be weaker if an individual has a partner with income that may reduce or eliminate their entitlement to the means-tested Jobseekers Assistance (JSA) payment.[10] Other considerations may also come into play – Callan et al. (2012) found that of those financially better off not working (i.e. with RRs in excess of 100 per cent), once work costs such as travel and childcare were taken into account, nearly three-quarters were actually in employment. Individuals may derive personal satisfaction from being in employment, or may want to remain in the workforce to protect their future earnings, which could be damaged by a spell of unemployment. This may particularly be the case for those with children – there may be a time period during which childcare costs may be high (for example, while their children are of preschool age) and financial incentives to work low, but a parent may choose to stay in employment over these years to protect their career and future earnings.

Supporting this idea, Brewer et al. (2018) use a structural, dynamic model of education and labour supply to derive two new, and longer term, measures of the financial incentive to be in paid work – the forward-looking replacement rate (FLRR) and the forward-looking participation tax rate (FLPTR). They found that the dynamic gain from returning to work was substantially higher than the standard static measures, driven by returns to experience. [11]

[10] Given that longer-term considerations are more likely to influence an individual's decision to take up employment we therefore estimate the amount an individual would receive in JSA rather than JSB. This can be seen as the longer term financial incentive to work.

[11] Given that we focus on longer-term financial incentives to be in paid work we do not factor in that some individuals (e.g. those unemployed for more than 12 months) may retain their medical card for three years after returning to employment.

3 Valuing Non Cash Benefits

As discussed, focussing purely on cash incomes and transfers and failing to take account of non-cash benefits will tend to underestimate the economic welfare of the population. Issues arise, however, in deciding how exactly a value should be placed on such non-cash benefits and it is for this reason that their inclusion in the calculation of financial incentives to work is usually omitted. Should the value of such benefits be the cost of provision? Smeeding *et al.* (1993) points out that an individual may be in receipt of a non-cash benefit but would rather spend the cost of the benefit on an alternative item if they were to receive it in cash. In this case valuing the benefit on a cost basis will overestimate the welfare of its recipient. On the other hand, governments, as a 'bulk buyer' of goods and services, may be able to provide the good or service at a discounted rate. If so, valuing the benefit on a cost to the state basis may undervalue it. One alternative would be to value the non-cash benefit at the cost an individual, without such a discounted rate, would face in the market. While this may be possible for some goods and services, for others no private market may exist.

In this section we discuss the issues surrounding valuation of non-cash benefits with a focus on the two cash benefits of interest in this report – Medical/GP-Visit Cards and ACS subsidies.

3.1 Valuation of Medical and GP-Visit Cards

Researchers have attempted to place values on health benefits in a variety of ways. The first method commonly used is the **cost per capita approach** which assumes the value of the benefit to the beneficiary is equal to the cost of providing it. To arrive at this valuation we would simply divide the total cost of the Medical/GP-Visit card system by the total number of beneficiaries. A more nuanced approach than average cost per capita is the **risk-related approach**. This is similar to the cost-per-capita approach but it uses expenditure based on an individual's gender and age group, rather than total expenditure for all, irrespective of what use was actually made of public health services. A third valuation approach exists, known as the **market value approach,** in which the valuation is based on what the individual would have to pay if they were to consume the same bundle of goods and services, i.e. the equivalent health insurance premium that would have to be paid to receive the same benefits. The market value approach can be difficult to calculate, particularly when benefits differ between medical card and private insurer schemes. The medical card provides different benefits to a family (for example, many health insurance policies do not cover the (full) cost of GP visits, consultant visits, medication etc.) while private health insurance may cover access to private hospitals not covered by the medical card. In addition, the medical card acts as a 'passport' to other services such as free school transport etc. While a wide array of insurance options exist it is difficult to think of a policy in the private health insurance market that would accurately mirror the benefits of the medical card. The

usage approach attributes a value to health services based on usage (e.g. number of doctors' visits, number of nights spent in hospital etc.). Finally, the **recipient** or **cash equivalent approach** asks those in receipt of a non cash benefit what amount of cash that would make them feel just as well off. This approach can be burdensome in that it would require conducting a survey of cardholders for such a purpose. In addition, it can also be difficult for holders to place a monetary value on the cards as its perceived value can be difficult to put a price on. For example, Russell and Corcoran (2001) in a study of those in receipt of the One Parent Family Payment found that the value placed on a medical card went beyond that of the services provided to cardholders as the card provided security and peace of mind to cardholders.

No one approach is the 'best' one to use, rather each approach has its merits and must be considered in context. If our aim is to examine where the government spends its resources, then the cost per capita approach is a sensible one to use as it allows us to examine where across the income distribution or different family types government expenditure on health benefits goes. A valid criticism of the usage approach exists in that it makes those in poor health appear better off simply due to their higher consumption of, and need for, healthcare. This method, however, along with the cash equivalent approach, is perhaps an appropriate method to use in the analysis of work incentives. For example, if an unemployed individual holding a medical card moves into employment and loses their medical card, those in poor health who make extensive use of health services, and now face large out-of-pocket health payments, are likely to face significantly larger work disincentives than those with lower health needs. Including a value of a medical card in work incentive analysis on a cost-per-capita basis would fail to capture this issue.

We therefore feel the most appropriate and practical valuation method to use in analysing work incentives is the usage approach.[12] In deciding to work, or work more, people are likely to be cognisant, not how much the government pays for their card, but rather what costs they might face in its absence. For example, 2 individuals of the same gender and age will cost the same in capitation fees paid to a GP but if one is in poor health and attends the GP much more frequently than the other the loss of the card is likely to have more serious financial implications for the individual in poor health.

It is important to bear in mind that even the usage approach is likely to be an underestimate of the true 'value' of a medical card. Given data limitations, (see Appendix One) this valuation approach covers only GP, medicine and hospital usage. Those entitled to a medical card experience an array of other benefits. These include health related benefits such as dental treatments, medical aids and

[12] For more information on how we assign a usage valuation in SWITCH see Appendix One.

appliances and non-health related benefits such as reduced USC rates, free school transport to school, fee waivers for state exams etc. In addition, the presence of the card may simply give peace of mind or 'insurance' and it is extremely difficult to place a value on this.

3.2 Valuation of ACS Subsidies

Valuation of the ACS subsidies is more straightforward given that the government makes a cash transfer for those eligible directly to the childcare provider, thus reducing their childcare costs by this amount. We assume, therefore, that the value of the subsidy is simply the amount of this cash transfer.

4 Results[13]

We now present the results of our analysis of work incentives beginning with the 'standard' cash work incentives, moving on to include childcare costs before adding in firstly ACS subsidies and finally Medical and GP-Visit Card valuations. We begin by examining the incentive to be in paid work as measured by RRs and PTRs before examining the impact of ACS subsidises and Medical/GP-Visit Card entitlements on the incentive to progress, the EMTR.

4.1 Incentive to Be In Paid Work

For RRs and PTRs we present four distributions for the four income concepts:

- The benchmark based on the standard cash incomes (labelled 'Benchmark' in the graphs below).
- The benchmark deducting childcare costs from income (labelled 'Plus full childcare costs' below).
- The benchmark, deducting childcare costs and adding in ACS subsidies to income (labelled 'Plus net childcare costs' below).
- The benchmark, deducting childcare costs and adding in ACS subsidies and Medical/GP-Visit Cards to income (labelled 'Plus net childcare costs and cards' below).

[13] The SWITCH model is underpinned with data from 2013/14/15 SILC adjusted to 2019 levels. Results are based on analysis of strictly controlled Research Microdata Files provided by the Central Statistics Office (CSO). The CSO does not take any responsibility for the views expressed or the outputs generated from this research. We thank the CSO for access to this data.

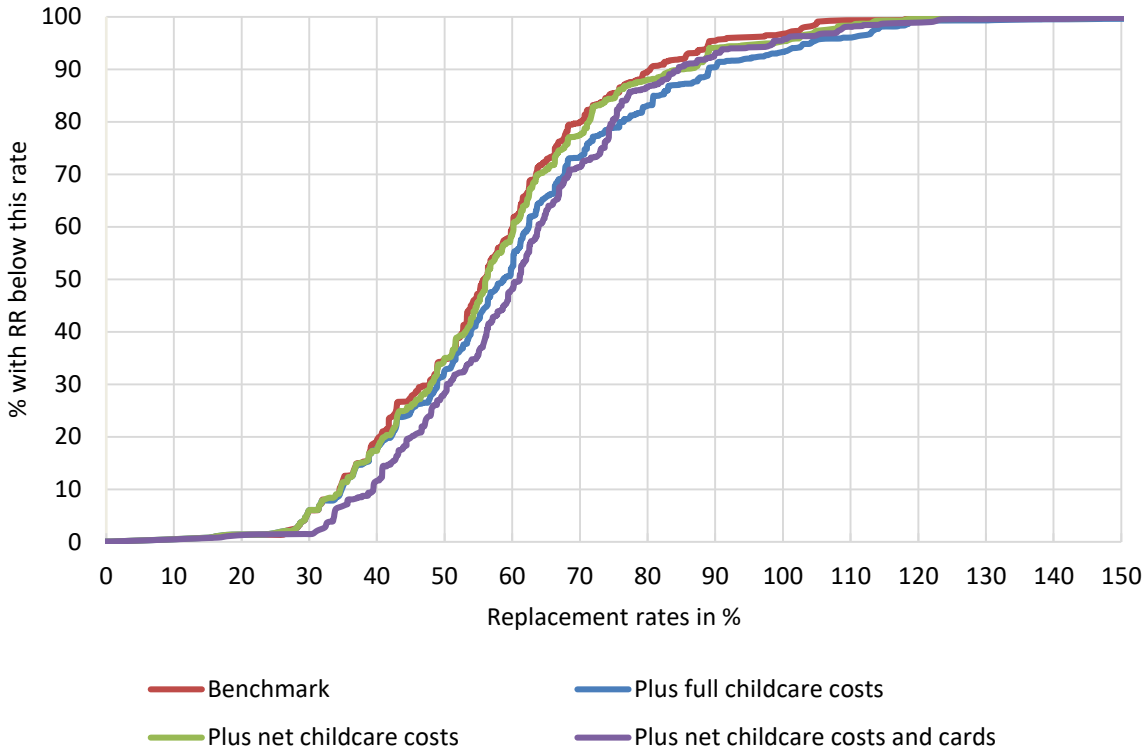
Figures 1 and 2 show the cumulative distribution functions (CDFs) for each of the four distributions. By tracing upwards from the horizontal axis these CDFs show the proportion of individuals with a RR/PTR below this rate. In general, a movement of the CDF to the right indicates a worsening in the incentive to work while a shift to the left indicates an improvement.

Given that we are interested in the impact of childcare costs and subsidies on work incentives, we focus only on those with children,[14] splitting that group into lone parents and couples.

Overall, in Figure 1, we see that the financial incentive to work worsens for lone parents once childcare costs are taken into account (i.e. the CDF shifts to the right). Taking account of childcare subsidies improves the financial incentive to work (CDF shifts to the left) but they worsen again once the value of Medical and GP-visit cards is taken account of (i.e. the CDF shifts again to the right). A relatively large shift is seen at the 60% mark – under the benchmark scenario 40% of lone parents have a RR of 60% or more. This rises to 48% once childcare costs are taken into account but improves back to 42% as the ACS subsidies are taken into account. The inclusion of Medical and GP-Visit card values pushes this figure to 52%, i.e. the financial incentive to work weakens. Focussing on the 70% RR level, under the benchmark scenario 20% of lone parents have a relatively high RR of 70% or more. As expected, this rises to 27% once childcare costs are taken into account as these costs worsen the financial incentive to work. The inclusion of ACS subsidies strengthens the financial incentive to work for lone parents with a drop in the numbers with high RRs (70%+) to 22%. Finally, the inclusion of Medical and GP-Visit card values pushes this figure to 29% as anticipated.

[14] RRs and PTRs are shown in Appendix Two for the entire population (excluding retirees and those out of work due to illness or disability), including those without children.

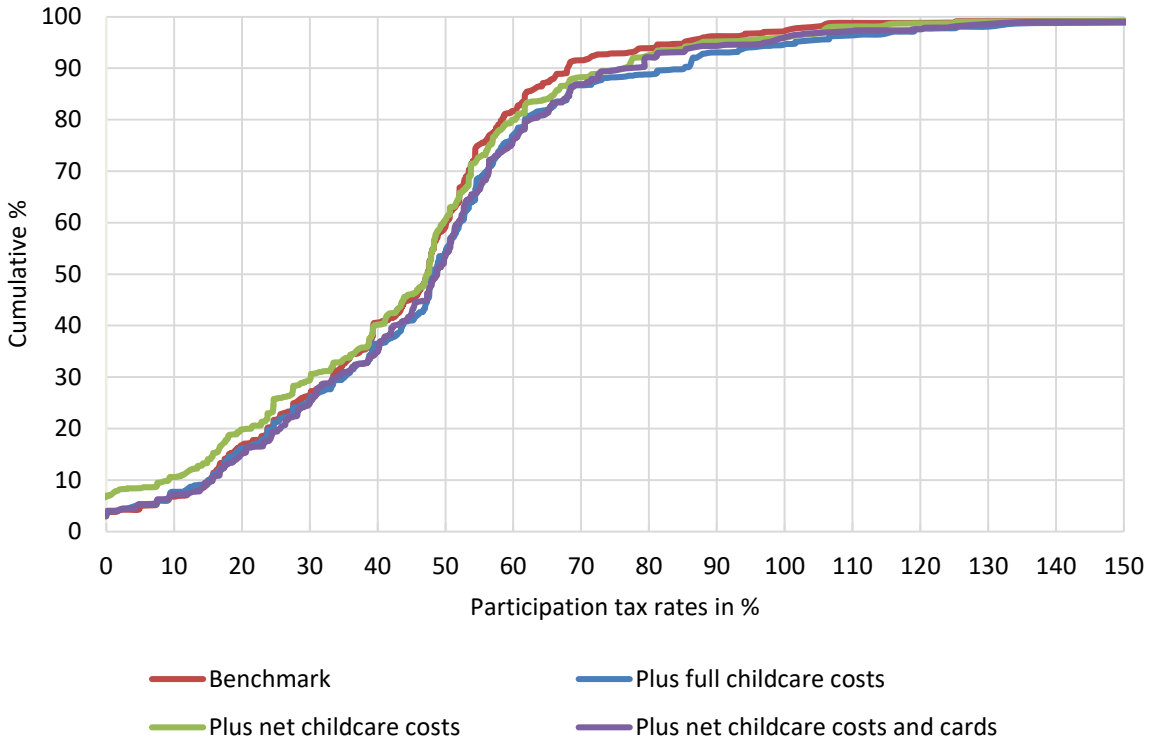
Figure 1: Replacement Rate Distribution; Lone Parents



Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model

Looking at the distribution of lone parent PTRs we see a similar pattern with work incentives worsening once childcare costs and Medical/GP-Visit card values are taken into account. 8% of lone parents have a PTR of 70% or more, rising to 13% upon inclusion of childcare costs. Again, financial incentives are strengthened once ACS subsidies are factored in as the numbers having PTRs in excess of 70% falls to 12%. The inclusion of Medical and GP-Visit card values once again weakens the incentives to work with 13% of lone parents having a PTR of 70% or more once the cards are taken into account. Given that RRs are driven both by the tax-benefit system and earnings while PTRs help isolate the impact of the tax-benefit system alone, this difference in results for lone parents indicates that a weaker earnings potential for this group has a role to play in their financial incentive to work.

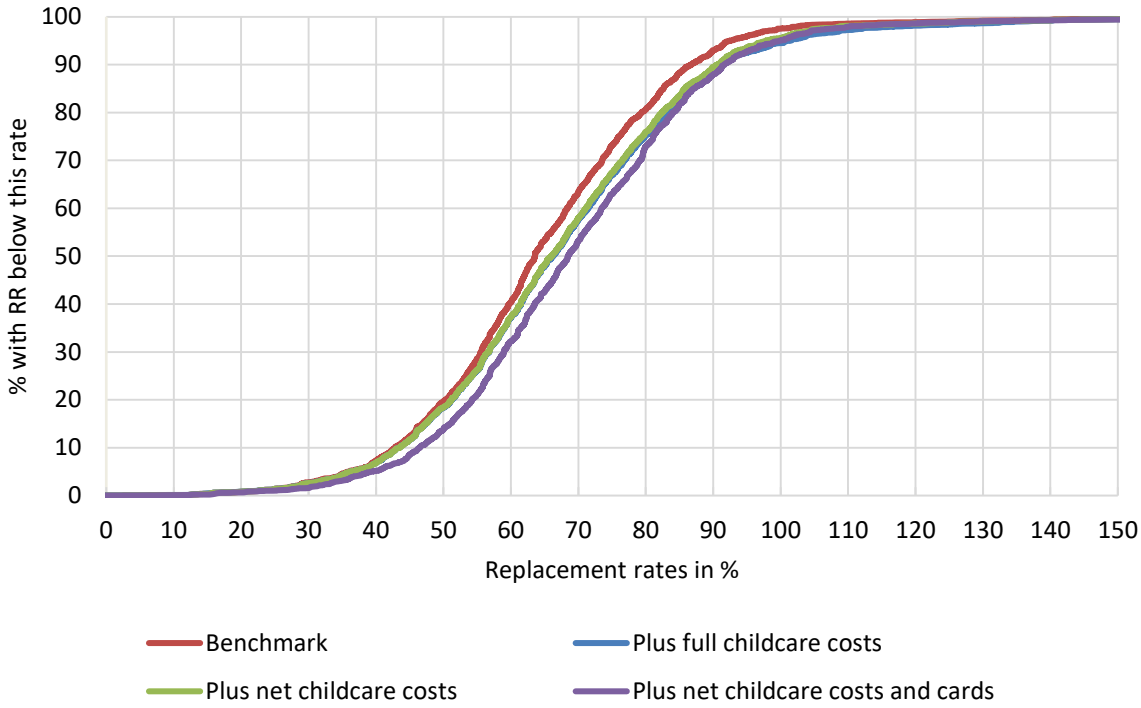
Figure 2: Participation Tax Rate Distribution; Lone Parents



Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model

Looking at couples with children, we see the proportion with high RRs is more extreme. Under the baseline 60% have a RR above the 60% mark, rising to 68% once net childcare costs and medical/GP-Visit cards are taken into account. Meanwhile 37% of couples with children have a RR of 70% or more, rising to 43% once childcare costs are included. This falls back to 42% one ACS subsidies are considered. The lesser impact of ACS for couples is likely due to two factors – there will be less childcare hours used within couples due to the fact that both are available to provide childcare, as opposed to the case of lone parents who will usually be in the sole childcare provision role. In addition, couples are also less likely to benefit from ACS as they potentially have two incomes, which may push them above the income threshold for the subsidies. The addition of Medical and GP-Visit card values results in 47% of couples with children having a RR of 70% or more.

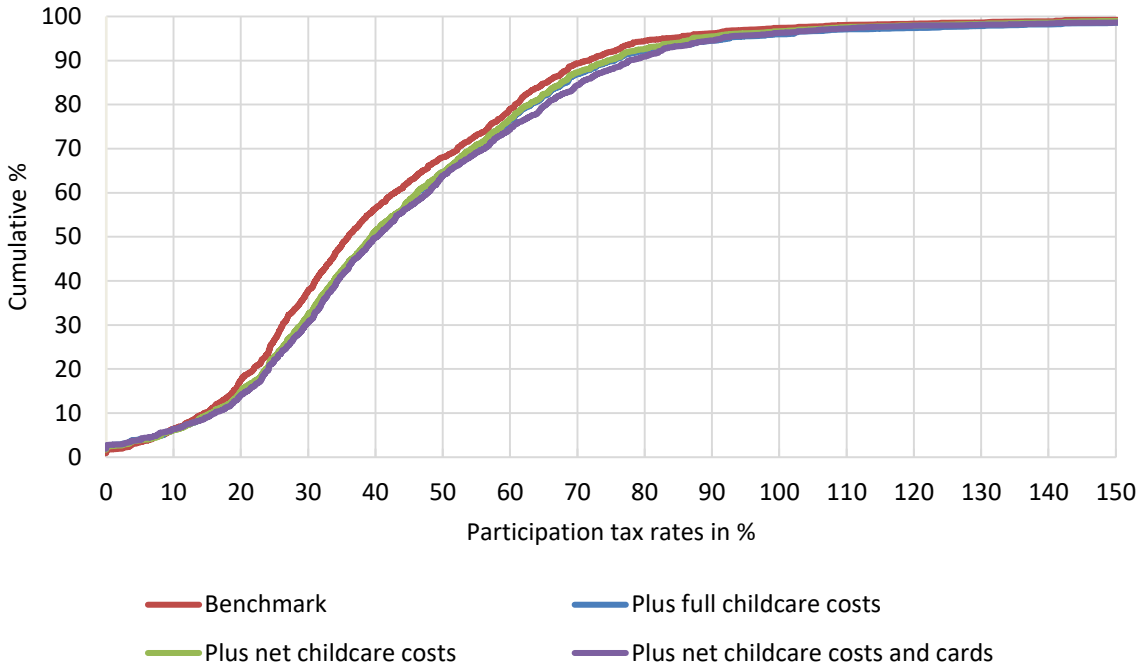
Figure 3: Replacement Rate Distribution; Couples with Children



Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model

Looking at PTRs we again see the same pattern as for lone parents – the proportion of couples with children with high PTRs rises once childcare costs are considered. The inclusion of ACS improves the financial work incentives slightly but they worsen again once Medical and GP-Visit cards are taken account of.

Figure 4: Participation Tax Rate Distribution; Couples with Children



Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model

We repeat the analysis for couples with children breaking down the results to show RRs/PTRs for the primary and secondary earners[15] within these couples (see Appendix Three for the relevant graphs). Not surprisingly, primary earners have lower RRs (i.e. higher financial incentives to be in employment) and they are mostly affected by the inclusion of Medical/GP-Visit card values. Secondary earners have higher RRs and for them cards don't have much effect; however, childcare costs are more salient. Contrary to primary earners, many secondary earners would not be in work and are, therefore, less likely to be paying for childcare. When calculating their disposable income in the counterfactual (i.e. making them employed) they then incur childcare costs - reducing their in-work disposable income and raising their RRs as a result. The same pattern can be seen with PTRs whereby the financial incentive to work is higher for primary earners.

Finally, the estimated choice of work hours also plays a role in the differing results between lone parents and couples with children. Over half of lone parents are predicted to work less than full-time hours (i.e. <35 hours per week) compared to two-fifths of those in a couple with children. This will

[15] Each member of a couple may not be in employment. If not in employment they are assigned primary/secondary earner status based on their predicted wage with the 'primary earner' being the member of the couple with a higher predicted wage and the 'secondary earner' being the member of the couple with the lower predicted wage.

mean that lone parents will be more likely to benefit from larger amounts of in-work benefits, such as the Working Family Payment (WFP), as their lower earnings will increase the amount of WFP they receive relative to couples. A higher likelihood of receiving this payment, along with a higher amount received (both driven by the lower work hours and therefore earnings of lone parents) will result in lower RRs/PTRs, and higher incentives to work, as this payment will serve to boost in-work income for lone parents more so.

4.2 Effective Marginal Tax rates

Finally, while the existence of targeted benefits such as the ACS subsidies may increase the financial incentive to be in employment, as has been shown in the previous section, withdrawing a benefit as income rises may create disincentives to earn more – be that though working more hours, or seeking a rise in hourly pay. In this section we consider how the ACS and health card system influence the EMTRs faced by workers, both employees and the self-employed. EMTRs shown here are calculated on the assumption that workers[16] earn 3% extra, the wage growth forecasted for 2019 by McQuinn et al. (2018). As we are assuming this 3% rise in earned income comes from a rise in pay/profit rather than an increase in work hours no change in childcare hours and costs are assumed. Given the fact that no additional childcare costs are incurred we therefore examine EMTRs under three scenarios:

- The benchmark based on the standard cash incomes (labelled 'Benchmark' in the graph below).
- The benchmark, taking into account ACS subsidies (labelled 'Plus ACS subsidies' below).
- The benchmark, taking into account ACS subsidies and Medical/GP-Visit Cards (labelled 'Plus ACS subsidies and cards' below).

Given the focus on childcare subsidies we again restrict our analysis here to workers with children.[17] Figure 5 shows the proportion of tax units (with children) in each EMTR category ranging from those with low EMTRs on the left hand side to those with high EMTRs on the right. The black bars show the standard benchmark EMTRs based on disposable income taking into account only taxes and cash benefits. The white dotted bar shows how EMTRs are affected when we include the ACS subsidies while the grey bar presents the distribution of EMTRs including both ACS subsidies and the value of a Medical or GP-visit Card. Upon inclusion of the ACS subsidies the proportion of workers with children

[16] Both employees and the self-employed are included.
[17] Results for the total employed population (i.e. those with/without children) are shown in Appendix Two.

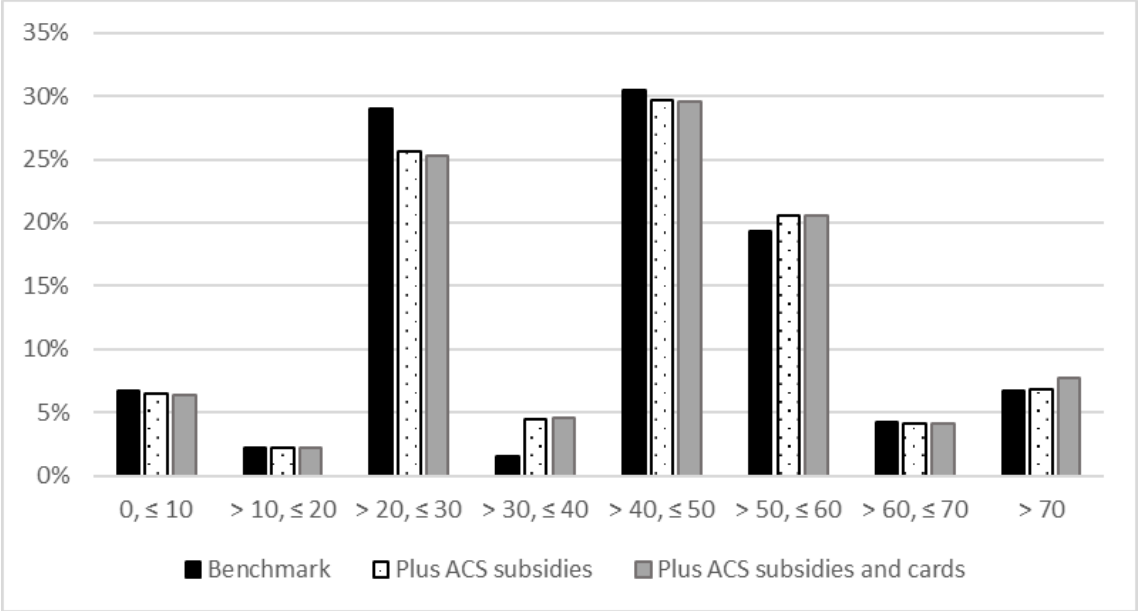
who have an EMTR of 20-30% falls from 29% to 25.6% with a corresponding jump in the 30-40% range (increasing from 1.5% to 4.5%). A less pronounced drop occurs in the 40-50% group (falling from 30.5% to 29.7%) accompanied by a corresponding rise in the proportion in the 50-60% group (up from 19.3% to 20.5%).

The inclusion of Medical and GP-Visit Card valuations has a more muted effect on the distribution of EMTRs. This will be driven by the fact that EMTRs are only relevant for those in employment while Medical Cards, in particular, will be less prevalent amongst those in employment due to their means tested nature.[18] The main change in EMTRs upon inclusion of medical and GP-Visit Card values is a small rise in the proportion with an EMTR of 70% or more, which increases by 1 percentage point (from 6.8% to 7.8%) compared to the baseline scenario excluding these two non-cash benefits. This is likely a reflection of the 'all or nothing' nature of these cards. ACS subsidies are withdrawn gradually with income and this tapering is reflected in the fact that the rise in EMTRs, discussed above, upon the inclusion of ACS subsidies was restricted to the neighbouring EMTR level (i.e. for example the drop in the 20-30% EMTR group was accompanied by a rise in the 30-40% group as opposed to a larger rise). Some of those holding a Medical or GP-Visit card will find that a small increase in earnings will send them over the income limit for the card and result in a loss of eligibility entirely (and therefore a loss of the full value of the card) creating a sharper rise in a person's EMTR.[19]

[18] For example in SILC 2015 of those heads of households who report holding a Medical Card 23% are in work (employment/self-employment). Of those who report holding a GP-Visit Card 41% are in work. This compares to 70% for heads of households who do not report holding a Medical or GP-Visit Card.

[19] Those losing a Medical Card due to a 3% rise in earnings are likely to remain eligible for a GP-Visit Card as the income limits for GP-Visit Cards are 50% higher than those for Medical Cards. Therefore those who go above the Medical Card income limit, but remain below the GP-Visit Card limit will lose the value of a Medical Card but gain the value of a GP-Visit Card. Given that the GP-Visit Card only covers the cost of GP-visits it will be of a lower value than a Medical card if the person incurs prescription medication or hospital costs.

Figure 5: Distribution of Effective Marginal Tax Rate (EMTRs) – Workers with Children



Source: SWITCH, the ESRI Tax-Benefit Model

5 Conclusions

This report has examined the financial work incentives faced by those with children in Ireland. Standard work incentive measures fail to consider childcare costs and also focus on cash incomes, ignoring non-cash transfers the state provides. We discussed the issues that arise in placing values on non-cash benefits, which helps illustrate why standard work incentive measures often omit them, particularly healthcare benefits. We have, however, arrived at a method to value such healthcare benefits and adjusted the standard work incentive measures to take account of childcare costs, ACS subsidies and Medical and GP-Visit Cards.

As anticipated, the inclusion of childcare costs led to a worsening of the incentive to be in employment, with a rise in the numbers of lone parents and couples with children experiencing high RRs and PTRs. Taking account of the recently introduced ACS subsidies work incentives improve, particularly for those with a lower financial incentive to work. The financial incentive to work as measured by the RR was less favourable than the PTR measure indicating that both the tax-benefit system and earnings potential of those not in employment have a role to play. As anticipated, the inclusion of values for Medical and GP-Visit Cards worsened the incentive to be in paid employment.

The EMTR results illustrate the fact that policies put in place to encourage labour supply responses, such as the ACS subsidies, will worsen the incentive to earn more due to their means-tested nature. We examined the impact on EMTRs of experiencing the average 3% wage growth forecast for 2019.

Overall, taking into account the ACS subsidies we see a small rise in EMTRs, tempered by the fact that the subsidies are withdrawn gradually. Medical and GP-Visit cards had a lesser impact on EMTRs overall but did result in a small proportion of workers experiencing a sharp rise in their EMTR as they lose entitlement to a Medical or GP-Visit Card, reflecting the 'all or nothing' nature of the cards compared to childcare subsidies.

These results point to the important role childcare costs and non-cash benefits play in determining people's work incentives and illustrate the need to go beyond cash incomes when assessing incentives to work or earn more. The EMTR results point to the need to monitor the impact of wage growth on benefit entitlements as average increases in wages will reduce or remove an individual's eligibility for ACS subsidies and Medical/GP-Visit Cards if income thresholds are not adjusted each year in line with wage growth, an issue discussed further in Callan *et al.* (2019).

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Appendix One: Usage Approach Valuation in SWITCH[20]

The usage approach method for valuation of medical and GP-Visit cards exploits individual level microdata from SILC to provide more variation in the usage of healthcare services than was previously possible. As noted, the usage approach can have the effect of making sicker people appear relatively better off once the value of the health benefit has been allocated but it has a role to play in work incentive analysis. We place a value on the cards based on visits to the GP, prescription medication consumption and usage of hospital services. An advantage of this method is the ability to distinguish between cost and value.

Data in SILC provides us with three sources of information:

1. Hospital nights for every individual
2. The number of free GP visits in the past four weeks for medical and GP visit card holders
3. The number of free prescriptions availed of for medical card holders

For points 2 and 3 there is a data truncation issue as the GP and prescription medicine usage of those not holding cards is not observed. To overcome this issue we predict the usage of GP services and prescription medicine for all those individuals who do not hold a medical card (or a GP visit card as related to GP usage) in SILC. We do so using an Ordinary Least Squares regression of each outcome, the annual number of GP visits and the number of free prescriptions (excluding the €2.50 charge fee) with separate regressions for adults and children. The set of predictors used to predict GP and prescription drug usage for adults and children is displayed below in Table 1. In SILC, there is a separate set of questions asked of those under 16 and those aged 16 or older. As a result some very useful questions such as self-reported health status, which is available for adults, is not available for children. As a result the specification of the regression equations varied for adults and children in order to use the best available data. The predictive variables used in each regression are displayed below in Table 1. The fit statistics were quite robust with the equations for adults producing an R-squared of 43 per cent for prescription medicine and 39 per cent for GP usage.[21] The R-squared for the child level regression was noticeably lower, meaning the regression had less predictive power, primarily due to the lack of health related variables for children. For children, the models yielded R-squared statistics of 19 per cent for prescriptions and 24 per cent for GP usage.

[20] Much of the description here is adapted from a report on the issue of card valuations sent to the Department of Health but is yet unpublished.

[21] That is 43 (39) per cent in the variation of prescription medicine (GP) usage for adults can be explained by the regression model.

Table 1: Variables used to predict GP and prescription medicine usage

Adults	Children (Under 15s)
Age	Age
Age squared, Age cubed	Age Squared
Physical health condition	Private health insurance
Mental health condition	Month of interview
Emotional health condition	Family type
Number of nights spent in public hospitals	Healthboard region
Chronic Illness	Family type
Private health insurance	Family earned income
Earned Income	Educational attainment of adults in the family
Gender	Health status of adults in the family
Healthboard region	Gender
Educational attainment	Age x Gender
Labour force status	Age x Healthboard
Health status	
Month of interview	
Family Type	
Health status x Gender	
Health status x Age	
Health status x Age Squared	
Gender x Age	
Gender x Age Squared	
Gender x Age Cubed	

For adults we include controls for age and earned income. We estimate health effects by utilising self-reported health status of survey respondents ranging from "Very Good", "Good", "Fair", Poor" to "Very Poor". Health status was also interacted with age and gender to determine if there was a non-linearity in the effect of health status on healthcare usage. For example, it could be the case that women who report poor health may avail of GP services more often than men who report the same health status. Additional health related variables were included, namely indicator variables to highlight if an individual suffered from a mental, physical, emotional and/or chronic condition. As we had data on the number of public hospital nights for all individuals in the sample, it seemed prudent to include this known information on use of primary care as a predictor of GP and prescription medicine use. The role of private health insurance could also be an important factor in understanding the use of GPs and prescription medicines. Individuals reporting a Medical Card and private health insurance could be those who value their health the most or to whom having access to healthcare is most important. We therefore include a dummy variable to indicate whether an individual is covered

under private health insurance to capture the effect of private health insurance on primary care use amongst card holders.

We control for demographic traits such as gender, family type, educational attainment, labour force status and the health board region the family is living in. As the data on GP and prescription medicine is on a 4-week basis, this estimate is then grossed up to reach the annual amount. To account for seasonality which may occur in the data, e.g. those sampled in December may report attending a GP more often than those sampled in the summer months, indicators for the month of interview are included.

As mentioned, for children, a more limited set of predictive information was available. As in the adult specification we include age, age squared, gender, interview month, family type and whether the child is covered under a private health insurance scheme. To control for the effects which parents would have on influencing their child's use of childcare, we include the health status of other adults in the family, the earned income of other adult family members and the educational attainment of other adult family members. The age of the child is also interacted with their regional effect and gender to assess whether they are any higher order effects with age and these factors.

This work then provides us with information on hospital usage, GP attendance and the number of prescription medicines used (for the latter two these are based on actual GP attendance/numbers of prescription for those with medical/GP-Visit cards and predicted GP attendance/numbers of prescriptions for those without the cards). We then apply the €80 per night charge for a hospital night, the average €51 cost per GP visit[22] and the average €46 per prescription[23] in order to arrive at a total 'usage' valuation for a Medical Card. The usage valuation of a GP-Visit card simply multiplies the number of GP visits by the average cost given that this card does not cover medicines or hospital stays. In estimating the value of medicines we impose a ceiling for those holding a Medical Card of €1605 per annum. This accounts for the fact that even without a Medical Card, a family's payments for prescription medicine would be capped under the Drug Payment Scheme. We also impose a limit of

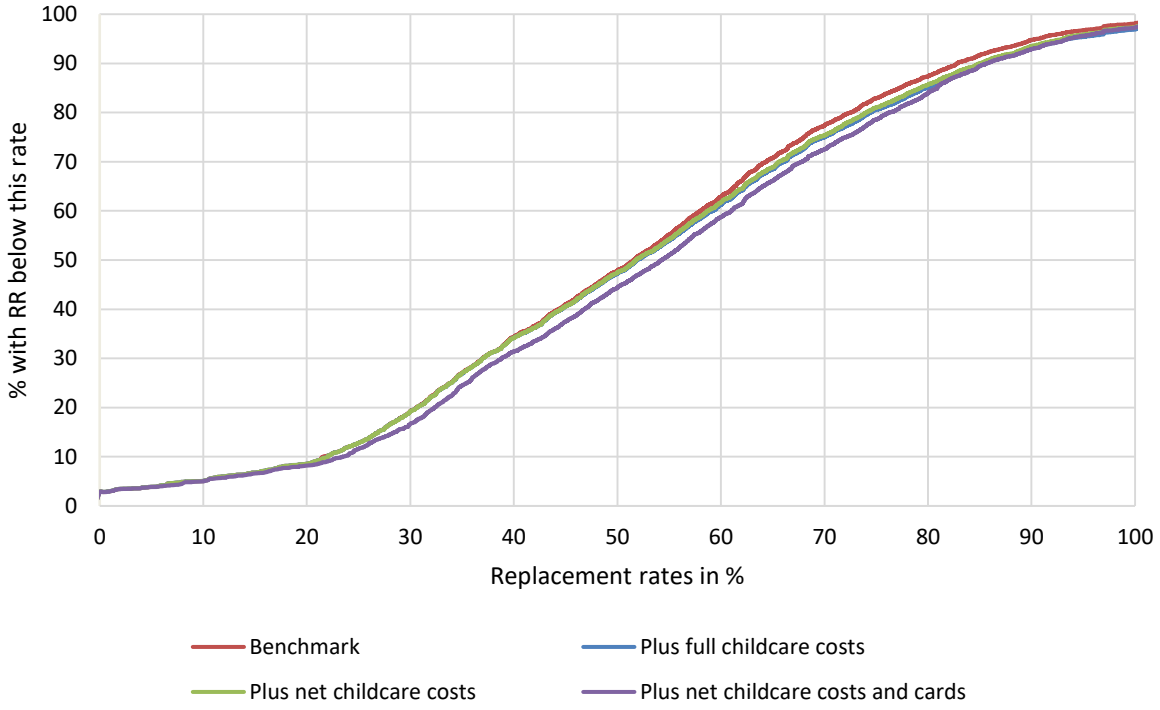
[22] Taken from the National Consumer Agency (2010) Doctor and Dentists Survey. May 2010. Dublin, National Consumer Agency.

[23] Taken from the HSE (2016) Primary Care Reimbursement Service Statistical Analysis of Claims and Payments 2016. Dublin, HSE. The average cost of a prescription for those with a medical card was €53.38 with an average of 3 items per prescription. Deducting the prescription charge of €2.50-3 items gives an average prescription cost of €45.75.

€800 on the value of hospital nights representing the cap on annual hospital fees for non-Medical Card holders.

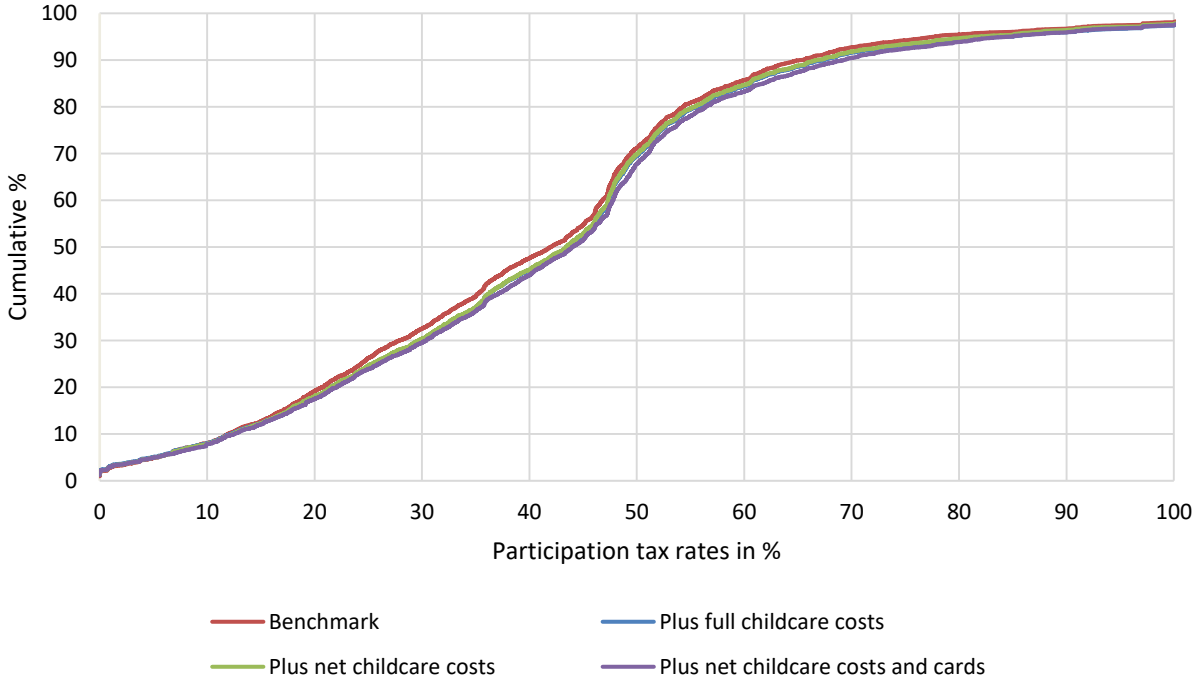
Appendix Two: Work Incentives Including Those without Children

Figure 6: Replacement Rate Distribution; All Persons (with/without children)



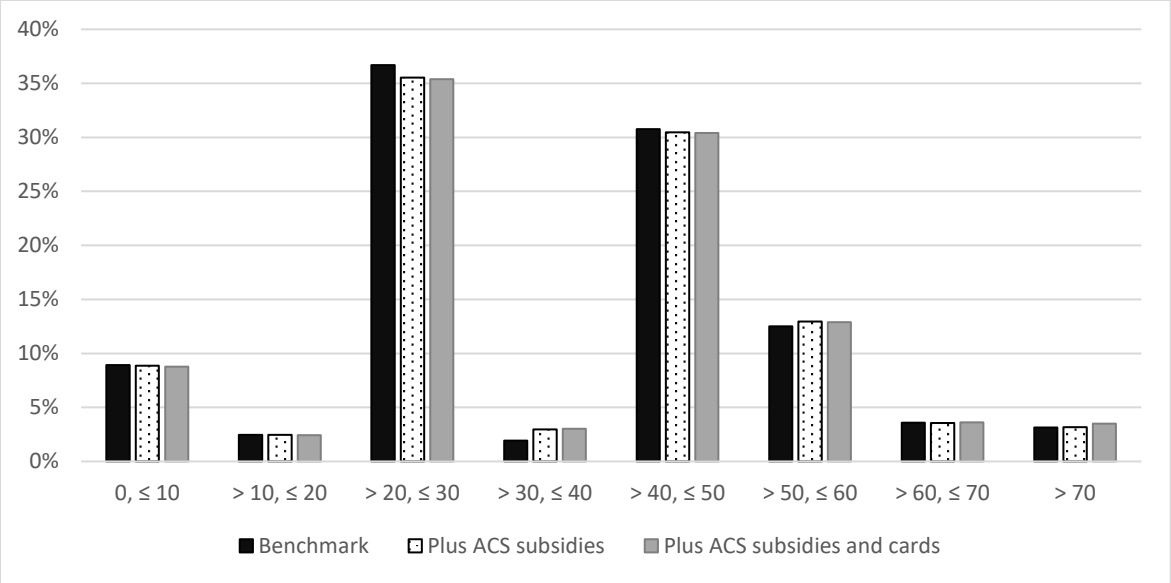
Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model
Note that we exclude retirees and ill/disabled persons from the sample.

Figure 7: Participation Tax Rate Distribution; All Persons (with/without children)



Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model
Note that we exclude retirees and ill/disabled persons from the sample.

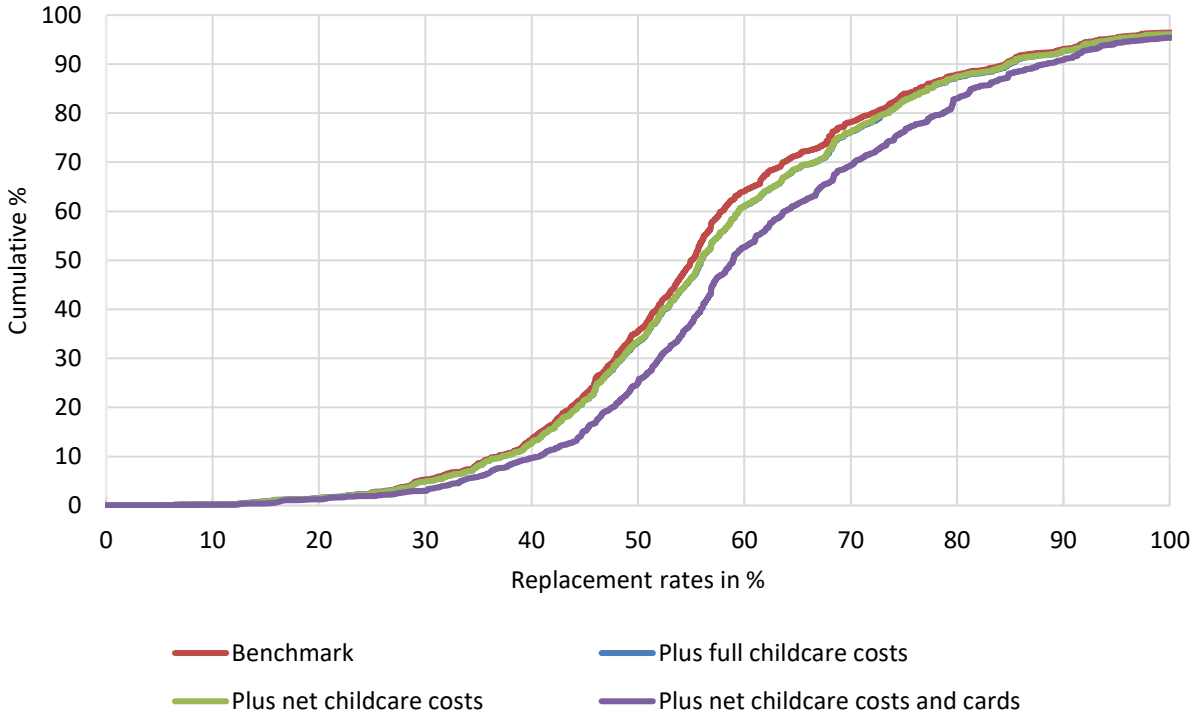
Figure 8: Distribution of Effective Marginal Tax Rate (EMTRs) – All Workers (with/without children)



Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model

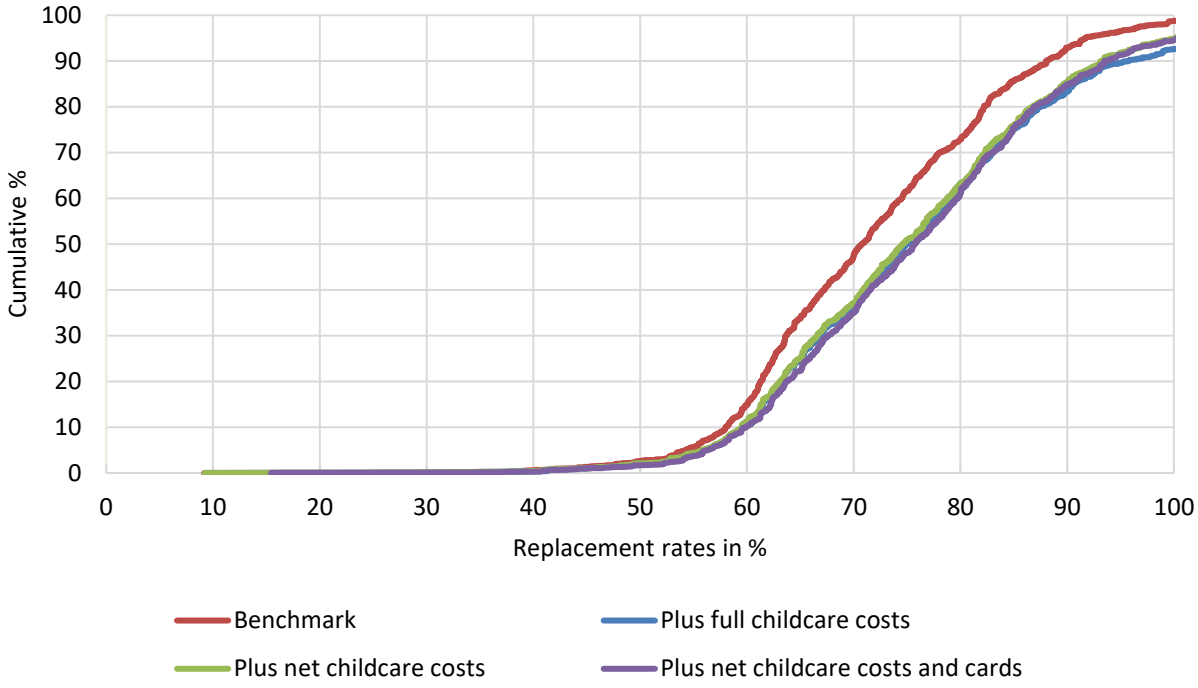
Appendix Three: Work Incentives for Couples by Primary/Secondary Earner Status

Figure 9: Replacement Rate Distribution; Couples with Children – Primary Earners only



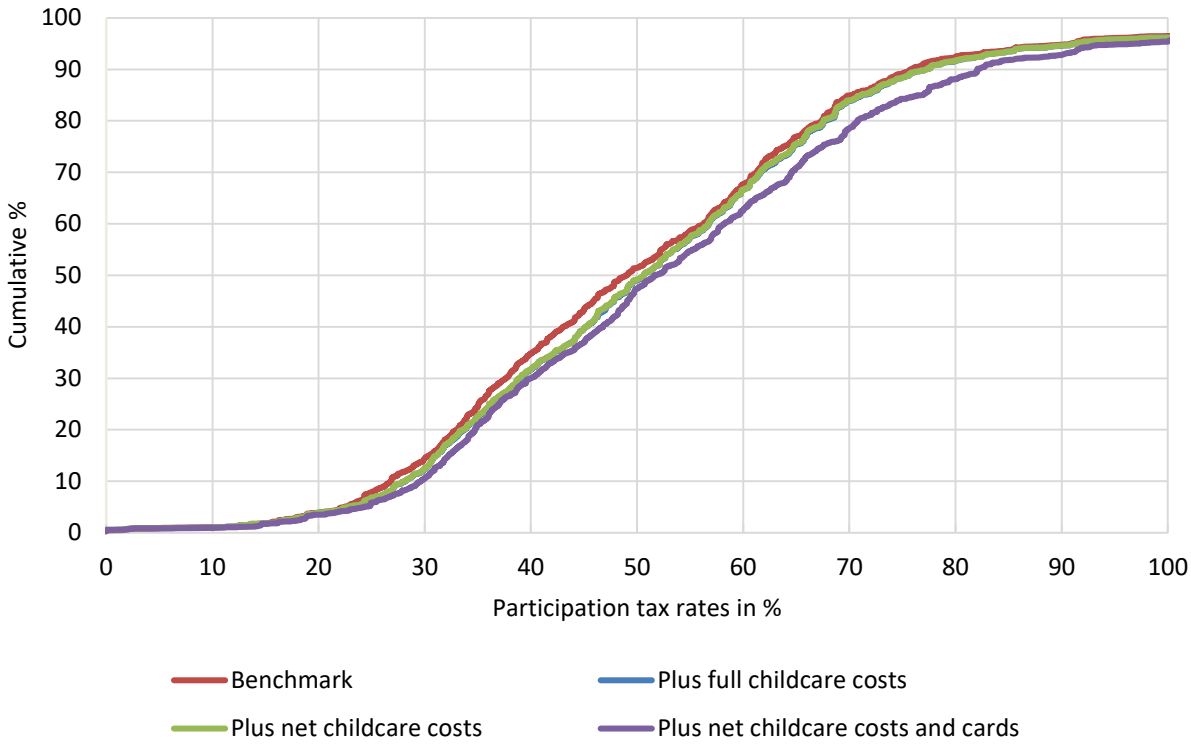
Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model

Figure 10: Replacement Rate Distribution; Couples with Children – Secondary Earners only



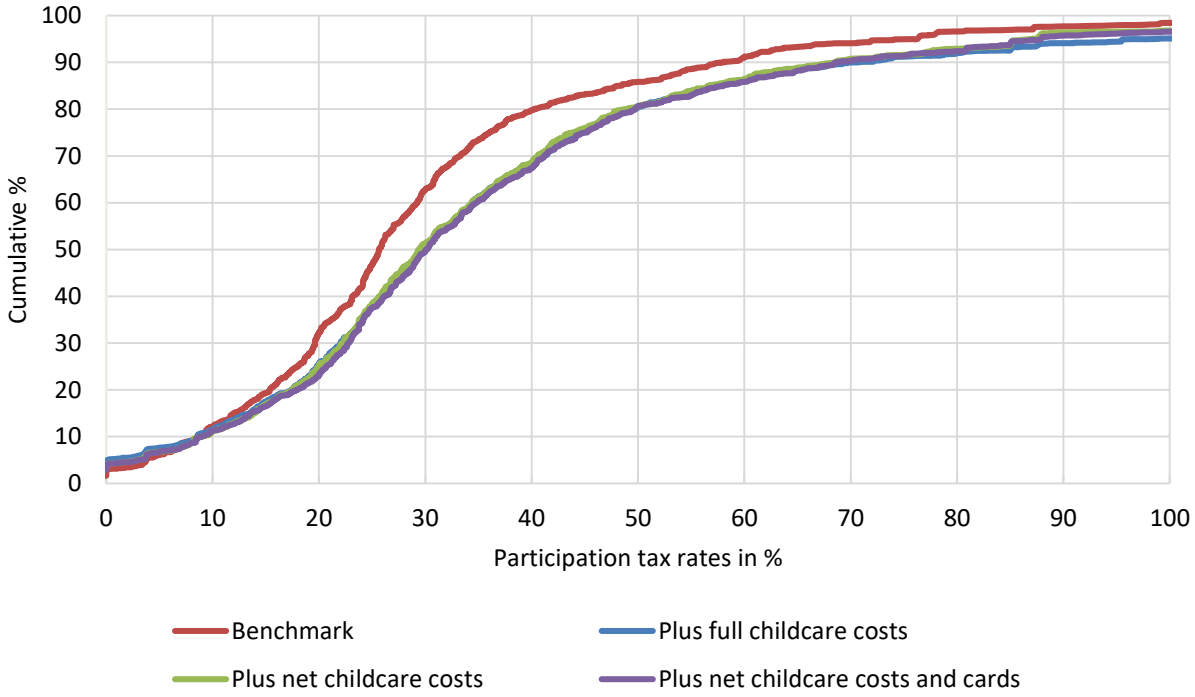
Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model

Figure 11: Participation Tax Rate Distribution; Couples with Children – Primary Earners only



Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model

Figure 12: Participation Tax Rate Distribution; Couples with Children – Secondary Earners only



Source: Own calculations using SWITCH, the ESRI Tax-Benefit Model