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# The Tax-benefit Interface

# **Abstract**

This article discusses the interaction of the tax and benefit systems (the tax—benefit interface). It shows profiles of combined taxation and benefit abatement (effective marginal tax rate profiles) for two families, before discussing lessons that could be drawn from these profiles for policy. One theme that emerges is the need for simplification. Yet rather than pursuing simplification through *grands projets*, such as a universal basic income, what is needed is a focus on detailed design issues, such as how tightly programmes respond to fluctuations in hours of work and incomes.

**Keywords** tax-benefit interface, abatement rates, effective marginal tax rates, work incentives, income taxes, family assistance

# The challenge of reform: plus ça change?

Tax-benefit reform has always required hard choices. Take the Beveridge report (published in Britain in 1942), which shaped the development of family allowances in liberal welfare states just after the Second World War. In his report Beveridge faced a challenge in ensuring income adequacy for families with children within a competitive labour market where wages are paid to individuals. This meant that:

when wages were low and family sizes large the income from work could fail

to provide an adequate family income and be less than the income from government transfers when not working. The design of family allowances therefore needed to balance the goals of ensuring adequate family incomes and encouraging labour supply. This balance had to be found within the constraint of limited government funds. (Nolan, P., 2006)

Partly reflecting the challenge above – along with ideas of fairness of reward and socially acceptable incomes – governments have not simply relied on competitive

labour markets to set wages. Indeed, New Zealand has a long history with national minimum wages (since the Industrial Conciliation and Arbitration Act 1894), and in recent years there has been interest in concepts like living wages, predistribution (e.g., reducing inequality in the distribution of gross incomes), and the share of national income going to labour (the labour income share (Conway, Meehan and Parham, 2015; Rosenberg, 2017; Fraser, 2018)).

But even with the help of wage policies governments cannot avoid hard choices when undertaking tax-benefit reform. Not only are wage policies themselves subject to trade-offs (e.g., potentially having an impact on employment), but the interaction between wage changes and tax-benefit policies is a constraint on outcomes. Take the example of an increase in the minimum wage. As Table 1 shows, increases in the minimum wage may raise a worker's gross wage income (assuming no change in their employment or hours of work), but the change in their take-home pay (net income) is less clear, due to taxation and the abatement of transfers. Indeed, in some cases (e.g., where workers face the dollarfor-dollar abatement of the minimum family tax credit and ACC levy), income in the hand may fall. However, this should not be read as suggesting that there is no point to increasing wages; it simply highlights that it is not possible to say that an increase in a

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Table 1: Changes in weekly income in the hand when gross hourly wages change (sole parent with two young children)

	20 hours of work		30 hours of work		40 hours of work	
	Change in gross income	Change in net income	Change in gross income	Change in net income	Change in gross income	Change in net income
Wage increase from \$16.50 to \$17.50	\$20.00	-\$0.28	\$30.00	-\$0.42	\$40.00	\$32.44
Wage increase from \$16.50 to \$20.00	\$70.00	-\$0.98	\$105.00	\$9.39	\$140.00	\$113.55

Source: Author's calculations

Note: Further detail on the assumptions employed in this table can be found in the discussion of the sole-parent scenario (scenario one) below. These calculations do not account for the effect of a number of key programmes (including accommodation assistance, childcare subsidies, child support, student support/loans and paid parental leave).

minimum wage (or introduction of a living wage) will always translate into proportionately higher incomes in the hand.

In some ways the challenge of reform is getting harder. Like many countries over the last half-century, New Zealand has seen a shift from the breadwinner model of social arrangements, with more sole-parent and dual-income families (reflecting increasing participation rates of female workers) and increasing participation rates of older workers (Nolan, P., 2006). Further, while the income tax and benefit systems were largely devised as separate systems, large proportions of the population are now affected by both simultaneously

(Stephens, 1997), given the taxation of main benefits and the provision of supplementary assistance, like Working for Families, to non-benefit families. These changes have increased the complexity of designing and implementing reform to tax-benefit programmes.

# What effective marginal tax rates tell us about the tax-benefit interface

One way to illustrate the interaction of tax and benefit programmes is to model effective marginal tax rates (EMTRs). EMTRs show how gross wages interact with the personal income tax scale, main welfare benefits and supplementary assistance (e.g.,

tax credits). They show the combination of taxation and abatement of benefits and are usually measured over the next dollar of income. They require detailed modelling of both the interaction of a number of tax-benefit programmes and the income distribution. This can be a difficult exercise and can be subject to controversy. Nolan (2018), for example, required five pages and close to 50 variables to provide a basic algebraic description of how to calculate EMTRs in New Zealand, even with a number of important programmes (including accommodation assistance, childcare subsidies, child support, student support/loans, paid parental leave, etc.) excluded from the calculations.

EMTR profiles and budget constraints are produced for this article with a spreadsheet model based on the approach in Nolan (2018). This model shows the interaction of key tax-benefit programmes only (e.g., it does not model the interaction of these programmes with the income distribution). The analysis is static and several important tax–benefit programmes are not included. However, limiting coverage to main benefits, income and social security taxes (e.g., the ACC earners' levy) and tax credits can provide a more general picture. Including accommodation assistance would, for example, mean that results would vary depending on where families live and whether they own or rent their accommodation. In contrast, the approach taken in this article allows a wide range of scenarios to be easily compared. The only parameters needed are the family's civil status, wage rate (or rates if a dual-income couple) and number and ages of children, and key policy features. Future work could build on this general picture by considering the interaction of a fuller set of tax-benefit programmes. Identifying the appropriate scenarios for this fuller assessment would require a detailed assessment of factors such as the distributions of wage rates and hours of work (see the discussion on EMTRs in their labour market context below).

For illustrative purposes, the modelling in this article is undertaken for two scenario families:

 the first family is a sole parent earning an hourly gross wage rate of \$16.50 (minimum wage as at 1 April 2018) and with two children aged two and five;

# Box 1 The government's Families Package

- The government's Families Package largely took effect from the 1 April 2018 tax year. This package contained changes to the Working for Families tax credits, the introduction of a Best Start Tax Credit, changes to the Accommodation Supplement, and the introduction of a Winter Energy Payment. From 1 April 2018 the adult minimum wage also increased to \$16.50 from \$15.75.
- The changes to Working for Families included no longer varying the family tax credit rates by age of child (different rates for the eldest and additional children remain), increasing the Minimum Family Tax Credit, and increasing the Working for Families abatement threshold and abatement rate.
- The Best Start Tax Credit was introduced to replace the parental tax credit.
   For children up to the age of one this provides a universal transfer and for children older than one and younger than three this provides a targeted transfer. Payments will only be made for children born after 1 July 2018, but in the modelling in this article it is assumed this programme is now fully in place.
- The Independent Earner Tax Credit was retained in the Families Package (the previous government had planned to remove this programme).
- Changes to the Accommodation Supplement and the introduction of the Winter Energy Payment are not included in the modelling in this article.

 the second family is a partnered person earning an hourly gross wage rate of \$25.00 and with a working spouse and two children aged two and five. The working spouse is assumed to earn a fixed income of \$1,000 gross per week (at a wage rate of \$25.00 per hour and 40 hours of work per week).

Families are assumed to have two children as this is a relatively common structure for partnered families and, although sole parents tend to be in single-child families, the incidence of poverty and significance of poverty traps can be expected to increase with the number of children in the family. Assistance is modelled over a range of hours of work for a family type at a fixed wage rate. These wage rates were chosen as they illustrate the current minimum wage and the median hourly earnings for men. It is assumed that wage rates, hours of work and family structures do not vary during the year.

### **Scenarios**

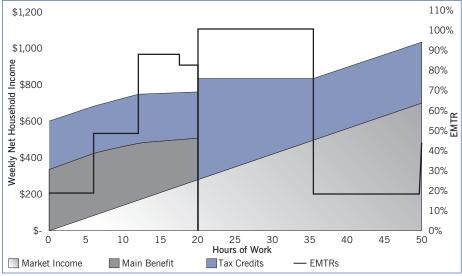
## Sole parent on minimum wage

The first scenario is a sole parent on minimum wage. The programmes modelled include aspects of the government's recent Families Package (see Box 1), and to simplify the presentation of the results it is assumed the Best Start programme is fully in operation.<sup>1</sup>

Figure 1 shows the sources of income received by the sole parent. Based on current benefit rates at zero hours of work this person is estimated to receive (after tax) an unabated main benefit of \$334.05 and family tax credit and Best Start payments of \$264.29. The result is an income in the hand of \$598.34 a week. Note that this net income does not include accommodation support and several other transfers and it is assumed that the Best Start programme is fully in operation.

There is an earnings disregard of \$100 per week and so for the first few hours of work this person's gross earnings are reduced by the second rate of income tax (17.5%) and the ACC earner levy (1.39%) only.<sup>2</sup> The person faces the second rate of income tax (and not the lower rate) as the main benefit is included in taxable income. This leads to an EMTR of 18.9% (note: all EMTRs are rounded to one decimal place in this article). At just over six hours of work

Figure 1: EMTR profile and budget constraint for a minimum wage sole parent with two children



Source: Author's calculations

the main benefit starts abating at a rate of 30%. As noted above, the net main benefit abates against increases in gross income. The result is an increase in the EMTR to 48.9%.<sup>3</sup>

Once gross non-benefit earnings increase to \$200 per week the main benefit starts to abate at a rate of 70%. This takes place at just over 12 hours of work and leads to an EMTR of 88.9%. At this point the sole parent's net income is around \$730.60. Note that at just over 17 hours of work the value of the abated main benefit has fallen to a level that means that the income tax rate applying to this benefit is now the lower rate (of 10.5%), not the second rate, and so the EMTR falls to 83.4%. At this point the net income is around \$740.80.

At 20 hours of work the sole parent becomes eligible for the work-based components of Working for Families, particularly the minimum family tax credit and the in-work tax credit. It is not possible to receive these work-based components and the main benefit simultaneously. This leads to a boost in net income of \$87.51 (from \$747.19 to \$834.69). There is thus a relatively strong incentive to satisfy the statutory hours-based work threshold. The minimum family tax credit provides a guaranteed minimum family income and so abates at a rate of 100% against any increases in earnings until it is fully exhausted. The combination of this abatement and the ACC levy results in an EMTR of 101.4%. Net income thus

decreases very slightly against increases in earnings until around 36 hours of work.

Once the sole parent has exited the minimum family tax credit the EMTR falls to 18.9%, and it remains at this level until their earned income is sufficient for them to face abatement of their Working for Families tax credits and (later) put them into higher income tax brackets. Abatement of the Best Start programme begins at \$79,000, but with a \$16.50 gross wage it is highly unlikely that the family would face this abatement (note that if the youngest child was under one then no abatement of this programme takes place). In this scenario the abatement of Working for Families begins at around 50 hours of work a week.

An additional perspective on the tax– benefit interface can be provided by comparing the net income at zero hours of work with the net income when in work (the net replacement rate). Replacement rates can be calculated based on the same information as above, although it is important to note that they will vary depending on the number of hours at which it is assumed that the person is in work. They are thus calculated for a range of hours of work: with a net income at zero hours of work of \$598.34, the income when out of work is equivalent to (replaces) 84% of the income at 10 hours of work, 80% at 20 hours of work, 72% at 30 hours, and 67% at 40 hours. Note that these calculations do not account for the effect of a number of key programmes and

110% \$1,200 100% \$1,800 \$1,600 \$1,400 \$1,200 \$1,000 90% 80% 70% 60% ج 50% EM \$800 40% \$600 30% \$400 20% \$200 10% 0% \$. h 5 10 15 20 25 30 ่วร 50 40 45 Hours of Work — EMTRs Market Income Tax Credits

Figure 2: EMTR profile and budget constraint for a median earner with working spouse and two children

various in-work costs (such as childcare

Source: Author's calculations

and transport costs).

# Median earner with working spouse and children

The second scenario is the case of a partnered parent earning around median hourly earnings (\$25 per hour) and a working spouse (assumed to work 40 hours at \$25 per hour). As with the earlier scenario, the family has two young children. Again, the programmes modelled include key features of the government's Families Package and it is assumed the Best Start programme is fully in operation.

As the parent in Figure 2 is assumed to have a spouse who is already in work, the EMTR they face immediately upon entering the workforce is 36.9%. This EMTR is a combination of the lowest (10.5%) personal tax rate and (1.39%) ACC levy (both based on individual income) and (25%) Working for Families abatement (based on family income). At around 11 hours of work the person moves onto a higher income tax rate of 17.5% and so the EMTR increases to 43.9%.

At 20 hours of work the abatement of the Best Start programme begins, leading to a more significant increase in EMTRs (from 43.9% to 64.9%). EMTRs remain at this level until the Best Start payment is fully abated (at around 32 hours of work). As the generosity of the Working for Families tax credits has increased

under the Families Package, the abatement of these programmes takes place over a longer range of hours of work. Thus, abatement continues until around 37 hours of work.

The changes to Working for Families mean that this programme now interacts with the \$48,000 personal income tax threshold. At this income for this family the Working for Families tax credits are almost already fully exhausted (providing less than \$1) and so a higher EMTR is faced over only a very small range of earnings. This explains the spike in the EMTR profile at around 37 hours of work.

As with the earlier scenario, an additional perspective on the tax-benefit interface can be provided by comparing the income from zero hours of work with the income when in work (the net replacement rate). As one parent in this family is assumed to always be in work (earning \$1,000 gross per week), these replacement rates are calculated for the other (second) earner. Thus, with a net family income when the second earner is out of work of \$1,111.91, the family income with one worker is equivalent to (replaces) 88% of the family income when the second earner also works 10 hours, 79% at 20 hours of second-earner work, 74% at 30 hours, and 68% at 40 hours. Note that these calculations do not account for the effect of a number of key programmes and in-work costs (such as childcare and transport costs).

### What can we learn from these profiles?

Although EMTRs are only a partial measure of the effect of the tax–benefit interface,<sup>4</sup> scenarios like those above still illustrate several points (Nolan, P., 2018). For instance:

- Putting differences in wage rates between family types to the side, beneficiaries without children working for small numbers of hours face higher EMTRs than beneficiary parents. This reflects the higher earnings disregards (income that can be earned before abatement begins) facing beneficiary parents.
- However, as these disregards have changed little over the last decade and a half (Nolan, M., 2018a), their real value (and thus the difference between family types) has fallen.
- Nonetheless, for all beneficiaries, once full abatement of the main benefit begins there are few incentives to work until income is sufficient to exit the benefit.
- The disincentives for parents take place over a wider range of hours of work, reflecting the lower abatement at lower hours of work (for sole parents), higher levels of assistance, and abatement of the Working for Families tax credits.

Thus, not only are there trade-offs between different objectives of the taxbenefit interface but there are trade-offs within objectives too. Efforts to improve the incentives to work at one point can worsen the incentives elsewhere. An analogy can be drawn with a balloon. It is possible to squeeze a balloon downwards, but - unless the overall volume of air in the balloon reduces - this will lead to it expanding out sideways. To give a practical example, an increase in an earnings disregard may improve the financial returns from a very small number of hours of work but is likely to come at an economic cost of worsening incentives for longer hours of work or work at higher wage rates.

The only way this could be avoided (aside from moving away from targeting by income) is to provide less assistance overall, which may, of course, conflict with other objectives. This means that when evaluating EMTRs it is difficult to avoid becoming an archetypal 'two-handed economist'. As former US president Harry

Truman once said: 'Give me a one-handed economist. All my economists say "on one hand", then "but on the other". To avoid this trap of simply highlighting trade-offs it can be useful to consider the specific location of 'notches' (areas of high EMTRs) and how these interact with wage rates and the distribution of hours of work.

### EMTRs in their labour market context

This article does not include primary analysis of the distribution of hours of work by wage rate and family type. While there has been some work undertaken on this topic in New Zealand at the Treasury and Victoria University of Wellington (see, for example, Mercante and Mok, 2014a, 2014b; Nolan, M., 2018b), this is an area where further research would be valuable. Nonetheless, as Mercante and Mok found:

- employment rates tend to be highest for partnered men and lowest for partnered women and single parents (who are mostly women);
- average working hours of workers are highest for partnered men and lowest for partnered women and single parents. This is primarily due to the higher prevalence of part-time working hours for the latter two groups, while partnered men work predominantly full-time at 40 hours or more; and
- single men tend to have lower employment rates than partnered men, and, of those who work, single men are more likely to work full-time than partnered women or single parents. (Mercante and Mok, 2014a, p.11)

The practical significance of these different distributions of hours of work can be illustrated with a finding in Creedy, Mercante and Mok (2018). They show that the requirement for couples to work at least 30 hours to qualify for in-work assistance is unlikely to have had much of an effect on labour supply given the fact that most married men are already working for at least 40 hours.

The messages emerging on these distributions of hours of work appear broadly consistent with the findings from international work. For example, Blundell (2012, pp.47–8) noted that over the last three decades in the UK, France and the United States:

- hours of work are often found to respond less than employment decisions;
- for men, variations in the extensive margin (e.g., whether to work) occur mainly at the beginning and end of their working lives (schooling–work and early retirement margins);
- hours differences, conditional on employment, also matter for men and they matter across the working life;
- for women, both employment itself and hours vary across working lives;
- the extensive margin is also relatively important for women in the early and later periods of working life; and

down from 23% in 2006 and 25% in 2001. Earlier research (Fursman, 2008, 2009) showed that the type of households that long-hours workers lived in were similar to those of the total workforce, and while workers with high incomes were most likely to work long hours, the majority of long-hours workers were in lower income brackets. It is likely that some families need to work longer hours because their wage rates are low. This can reflect the presence of poverty traps (periods of high EMTRs), as with lower wage rates more hours of work are needed to leap over areas of high EMTRs

# ...maintaining a margin between the income from welfare and income from work is important to ensure work provides a route out of poverty.

 hours of work for women show more variation over the life cycle, especially around childbearing age. As they noted, for 'women with younger children it is not usually just an employment decision that is important, it is also whether to work part-time or full-time' (p.48).

One outstanding question in New Zealand is how EMTR profiles and the distribution of hours of work interact, and particularly whether these incentives encourage a 'bimodal' distribution of hours of work where low-wage families cluster at either low hours (and weak attachment to the labour market) or high hours of work.

There does not appear to be a simple relationship between low wages and hours of work. Recent work by the New Zealand Work Research Institute (Cochrane et al., n.d.) on low pay showed that workers with relatively low wage rates tended to have a weak attachment to the labour market and relatively short employment spells. Yet we also know that New Zealand has relatively high working hours by international standards. The 2013 Census showed that around one in five people worked for 50 hours or more a week, although this was

# What does this mean for policy?

The discussion above raises a number of questions for policymakers, but given space limitations just one issue - the degree to which assistance is targeted according to work effort - is discussed below. In New Zealand the decision to target work effort has been the subject of debate. Some commentators have argued that the Working for Families tax credits should not be targeted on these grounds. Yet maintaining a margin between the income from welfare and income from work is important to ensure work provides a route out of poverty. Some have argued that the EMTRs created by the abatement of assistance weaken the effectiveness of this strategy, yet if this is of concern the logical reform would address any disincentives facing the working poor, not provide additional assistance to people out of work. To cite the working poor as a reason for extending in-work assistance to non-working households is a non sequitur.

Indeed, providing assistance targeted to the working poor is consistent with a view that families in work require additional assistance given the particular costs that working families face and that families out of work do not (such as transport and childcare costs). It could be argued that it is, alternatively, possible to provide support to both people out of work and the working poor. However, given fiscal constraints, reducing the degree of targeting of particular programmes would increase expenditure (including to people not in poverty) and so require some combination of reductions in spending on other tax—benefit programmes, reductions in spending elsewhere, and/or an increase in tax burdens (Nolan, P., 2018). And there are trade-offs in the design of financial incentives within an EMTR schedule.

In a review of how Anglo-American countries have designed tax credits to support the working poor, Nolan (Nolan, P., 2006, 2018) showed that no one approach has been universally favoured. Countries have varied in the emphasis placed on work-related criteria relative to demographic criteria, particularly as workrelated criteria are likely to be relatively responsive to the design of programmes themselves.5 Further, while New Zealand is not especially unusual in targeting work effort, the approach taken (e.g., with tax credits requiring both non-receipt of a main benefit and satisfying hours-based tests) appears relatively sensitive to fluctuations in families' incomes throughout the year.

There is thus scope for New Zealand to target work effort in a simpler way. Options include removing the hours-based work test for tax credits, which would in turn require re-evaluating the design and level of the minimum family tax credit and inwork tax credit. There are also administrative changes that could be considered, such as evaluating whether fluctuations in income throughout the year could be disregarded for abatement purposes (Inland Revenue, 2017). Proposals like these may appear 'incremental', particularly compared to grands projets such as a universal basic income (UBI) (see Stephens (forthcoming) for a fuller evaluation of UBI proposals),<sup>6</sup> but they are the type of reform that would in practice make a real improvement to the outcomes of the tax-benefit interface and deserve consideration.

- 1 The Best Start programme can only be received for children born after 1 July 2018. Given the assumed ages of the children in these scenarios, the families would in practice be ineligible for this transfer. For illustrative purposes, however, the Best Start programme is assumed to be fully operational in this article.
- 2 It is also possible to receive an additional \$20 per week disregard for childcare costs. However, this additional disregard is not modelled in this article.
- 3 This figure can be derived in the following way. Assume the person's gross earnings increase by \$1.00 from \$100.00 per week to \$101.00. Their net benefit will abate against this increase in gross income, so will reduce by 30 cents (30% of \$1.00). Grossing this up means the gross benefit will reduce by 36.4 cents (30 cents divided by 82.5% (100% minus 17.5%)). The result will be that the gross

- assessable income will increase by 63.6 cents (\$1.00 minus 36.4 cents), and the tax on this income is 11.1 cents (17.5% of 63.6 cents) and ACC levy is 1.39 cents. Net income thus increases by 51.1 cents, giving an EMTR of 48.9%.
- 4 Limitations of EMTRs include that they generally only measure change over the next dollar of income and do not account for factors like take-up rates, institutional features of welfare benefits, such as work tests and stand-down periods, characteristics of the labour market (such as labour market segmentation), and access to childcare (Nolan, P., 2018).
- 5 Note that some demographic criteria are more responsive to tax-benefit programmes than others. For instance, in contrast to age of children, criteria like civil status are more likely to respond to the incentives contained in the tax-benefit interface (Nolan, P., 2008).
- 6 While fiscal cost is often cited as the major barrier to introducing a universal basic income (UBI) the failure of this policy to adequately recognise population heterogeneity is potentially a much more serious problem. Current proposals for a UBI in New Zealand would, for example, represent a significant shift in the balance in the tax-benefit interface to particularly favour couples without children at the expense of sole-parent families. Sole-parent families with larger numbers of children would be especially disadvantaged.

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