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New Zealand's Social Assistance System: Financial Incentives to Work

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New Zealand's Social Assistance System: Financial Incentives to Work

Patrick Nolan

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Abstract

This paper is a stock take of the financial incentives to work present in New Zealand's social assistance system. The purpose of this paper is to provide a basis for research on problems facing the social assistance system and dilemmas that would be likely to arise when considering potential initiatives to address such problems.

The current financial incentives to work contained in the social assistance system reflect efforts to tailor different financial incentives to different groups in the population. No single structure of financial incentives is appropriate for all people and at all times. It is therefore necessary from time to time to consider whether existing financial incentives continue to meet government objectives, such as encouraging work among different groups in the population. Improving the structure of financial incentives, however, defies simple solutions and requires trade-offs between competing and conflicting objectives to be made.

In order to set the scene for later discussion, this paper begins with a brief description of the evolution of New Zealand's social assistance system. This paper then moves on to discuss the financial returns from social assistance programmes and the distribution of the financial disincentives to work present in the current social assistance system. A number of further considerations are then discussed, particularly accommodation and childcare costs and the length of time that people tend to spend on social welfare benefits. This paper then considers the need for trade-offs between policy outcomes when developing policy initiatives to improve financial incentives to work before presenting a summary of its main findings. Appendixes to this paper describe the programmes that make up New Zealand's three-tier social assistance system, key features of the personal income tax scale, a method for calculating Effective Marginal Tax Rates (EMTRs), and TaxMod and the Household Economic Survey (HES).

JEL CLASSIFICATION H55 (Social Security and Public Pensions), I38 (Government Programmes; Provision and Effects of Welfare Programmes)

KEYWORDS Social Security, Social Assistance

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New Zealand's Social Assistance System: Financial Incentives to Work

1 Introduction

1.1 Purpose and Structure of the Paper

This paper is a stock take of the financial incentives to work present in New Zealand's social assistance system. The purpose of this paper is to provide a basis for research on problems facing the social assistance system and dilemmas that would be likely to arise when considering potential initiatives to address such problems.

Income support provided through the social assistance system can be categorised as first-tier, second-tier, and third-tier assistance. First tier assistance (main benefits) is intended to provide basic income support. Second-tier assistance (supplementary assistance) is intended to provide additional assistance to cover circumstances in which needs are considered to be higher than those covered by main benefits alone. Third-tier assistance (discretionary assistance) is intended to provide further and discretionary assistance for a limited set of circumstances.

Social assistance programmes are often designed to pursue a broad range of outcomes. Publicly funded income support may, for example, seek to achieve outcomes as diverse as increasing the reward from working for low-income people, controlling the fiscal burden of programmes on taxpayers, ensuring that families have adequate incomes, controlling the costs facing recipients and their employers of complying with programmes, reducing the costs to the government of administering programmes, redistributing income throughout recipients' lifecycles, supporting parenting and strengthening families, and supporting the operation of private charitable organisations. It is seldom possible to develop initiatives that simultaneously improve all desired outcomes, however. Reform to the social assistance system requires trade-offs to be made, trade-offs which should be considered in the light of a broad social and economic agenda, such as developing a more inclusive and growing economy [Treasury, 2001].

One outcome of social assistance programmes – the reward from working for low-income people – is the focus of this paper. This should not be seen as reducing the importance of other desired outcomes, particularly as outcomes are not independent of each other. When people are, for instance, discouraged from participating in and advancing within the labour market their opportunities to participate and belong in society are reduced.

Improving the financial reward from working for low-income people is thus one strategy for reducing social exclusion.¹

The structure of this paper is as follows. In order to set the scene for later discussion, the remainder of section 1 briefly describes the evolution of New Zealand's social assistance system. Section 2 then moves on to discuss the financial return from social assistance programmes and the distribution of the financial disincentives to work present in the current social assistance system. A number of further considerations are then discussed in section 3, particularly accommodation and childcare costs and the length of time that people tend to spend on social welfare benefits. Section 4 considers the need for trade-offs between policy outcomes when developing policy initiatives to improve financial incentives to work. Section 5 summarises the main findings of the paper. Appendixes to the paper describe the programmes that make up New Zealand's three-tier social assistance system, key features of the personal income tax scale, a method for calculating Effective Marginal Tax Rates (EMTRs), and TaxMod and the Household Economic Survey (HES).

1.2 Setting the Scene

Before discussing the current performance of New Zealand's social assistance system this paper first briefly discusses how the social assistance system has evolved over time.

The origins of New Zealand's system of income support were in an economic and social environment of low and generally short-term unemployment and where couples with children and principal male breadwinners were the most common family type. Early income support programmes were developed alongside policies that aimed to attain full-employment and to ensure adequate market incomes for breadwinners in families. In efforts to achieve full-employment governments engaged in public work schemes and policies that aimed to protect and develop manufacturing. In efforts to ensure adequate market wages for breadwinners minimum wages were set at a level deemed adequate for a breadwinner with two children through the industrial conciliation and arbitration system [Castles, 1985, p. 15; Condliffe, 1959, pp. 118-119; Reeves, 1923, pp. 85, 216-242].

The presence of these other policies meant that the role of income support was generally restricted to dealing with residual pockets of hardship due to temporary spells of unemployment or incapacity [Stephens *et al*, 2001, pp. 77-78]. Because of this largely residual role there was an extensive use of means testing for the main forms of income support (excluding pensions) [Boston *et al* (eds.), 1999, p. 8]. Further, supplementary assistance was provided in order to address the variations in needs that were unable to be addressed by the main forms of income support (or that could only be addressed by main forms assistance at high fiscal costs to the government). Payments of this supplementary assistance were means-tested and, at times, subject to administrative discretion [McClure, 1998, p. 134, 140].

Exceptions to this residual role of income support occurred where governments aimed to achieve objectives other than solely reducing hardship. For example, the provision of the universal Family Benefit from 1945 to 1991 was not only influenced by concerns regarding families' financial needs but was also influenced by concerns regarding birth rates and desires to reinforce women's maternal roles in society [Beaglehole, 1993, p. ix].

¹ Through their impact on labour supply (and thus on the income tax base) incentives to work can also have implications for a government's fiscal position.

Overall the origins of New Zealand's system of income support therefore reflected an emphasis upon residual and right-based principles (as opposed to insurance-based and contributory principles) [Boston *et al* (eds.), 1999, p. 8].² Residual principles emphasise self-reliance and individual responsibility. Right-based principles base entitlement on people's status as citizens. Insurance or contributory principles base entitlement on previous financial contributions. New Zealand's system of income support could thus be classified as a social assistance, as opposed to a social insurance, regime [Atkinson *et al*, 1991, pp. 1692-1693].

By the early 1980s New Zealand, which had experienced a period of relative economic decline since the 1950s, faced a combination of declining economic growth, high inflation and interest rates, increasing costs of state intervention, increasing costs of financing large fiscal deficits, and high unemployment [Mascarenhas, 1996, p. 104; Silverstone *et al*, 1996]. Significant changes in society had also become increasingly apparent. The increasing take-up of Domestic Purposes Benefits and Unemployment Benefits led to anxiety that these benefits were encouraging what were seen as negative social changes, particularly a decline in the traditional two-parent basic family unit [McClure, 1988, pp. 179, 185]. Increasing numbers of sole parent households, along with increasing numbers of dual income households, indicated that the traditional 'breadwinner model' of the family unit was becoming less relevant. Changes in New Zealand society also began to reflect the growing awareness of the relative disadvantage facing Maori and other ethnic groups and of the constitutional role of the Treaty of Waitangi [Palmer *et al*, 1997, pp. 278, 287-289].

After 1984 in New Zealand there was a shift towards a more residual and targeted social assistance system, with an increased emphasis on redesigning the system to constrain fiscal costs, reduce scope for moral hazard, and encourage labour supply and human capital acquisition. The nature of employment in New Zealand also underwent dramatic change, with the corporatisation and privatisation of a number of state trading enterprises and a shift towards an industrial relations framework that emphasised increasing wage flexibility [Brosnan *et al*, 1995, p. 17]. Alongside these policy changes were trends in the labour market such as increasing part-time and casual work, variations in weekly hours of work, variations in wage rates, and participation rates of women [Callister, 2000, pp. 6 – 16].

Increases in income inequality during the 1980s and 1990s were particularly dramatic in New Zealand [Hyslop *et al*, 2001, p. 1], where the rate of increasing inequality was among the highest in the world (albeit from a base of a relatively equal income distribution). After the early 1980s there was also an increase in the measured incidence of poverty in New Zealand, particularly among households with children, various ethnic groups, and low-income workers [Stephens *et al*, 2001, pp. 90-99].³ This increasing measured incidence of poverty was, in turn, reflected in increased demand for supplementary and discretionary assistance and the services of private charitable organisations.

Total expenditure on the social assistance system as a proportion of GDP increased from the early 1980s until the early 1990s but then fell due to reductions in the costs of pensions.⁴ After the early 1980s there were notable increases in expenditure on income-

² New Zealand's no-fault accident insurance scheme administered by the Accident Compensation Corporation and partly funded by employees' levies is a notable exception to this.

³ The nature of the increase in poverty in New Zealand has been a matter of controversy, however [Baehler, 2002, pp. 18-19; Chapple, 2000, p. 101].

⁴ Current projections are, however, for significant increases in the costs of pensions due to the impact of demographic changes after 2011 [Creedy *et al*, 2002]. Given this it is likely that governments would need to find ways of either decreasing expenditure on the

tested assistance for the working aged (particularly Unemployment Benefits, Domestic Purposes Benefits, and Sickness and Invalids' Benefits) both as a proportion of GDP and as a proportion of social assistance expenditure.

These changes occurred in a context of an improved economic performance in New Zealand, particularly improved rates of economic growth and rates of employment. Yet some difficulties remained in placing young people and the long-term unemployed in employment. Concern had also been expressed regarding the rates of employment of sole parents in New Zealand, which had been estimated as being one of the lowest in the OECD [Green, 2001, pp. 48, 60], although in recent years sole parents' rates of employment had started to increase.

2 Financial Returns to Work

Social assistance programmes largely influence labour supply through influencing financial incentives to change hours of work and to participate in the labour market.⁵ As well as decisions to supply labour, the financial returns from social assistance programmes also influence other important decisions, such as whether or not to participate in education and training and whether or not to enter into or remain in a relationship in the nature of marriage. In the discussion below the focus is on financial incentives to supply labour.

People's decisions to supply labour are influenced by more than the financial incentives associated with social assistance programmes, however. As well as these financial incentives the changes in people's labour supply reflect the uncertainty that they feel about the level of their likely work or social assistance income, non-financial considerations for entering or remaining in the work force (including self-esteem and fear of damage to future employment prospects), and social assistance programmes' administrative incentives (such as work tests) [Barr, 1999, p. 13; Wilson, 1996, pp 13-15].⁶ Yet, as the analysis in the following section demonstrates, financial incentives from social assistance programmes do, nevertheless, play an important role in influencing the labour supply of different demographic groups.

In section 2.1 this paper discusses ways of thinking about financial incentives and heterogeneity within the population. This section is then followed by discussions on the distribution of individuals by Effective Marginal Tax Rates (EMTRs) and benefit types in section 2.2. Section 2.3 then discusses EMTR profiles, family budget constraints, and the frequency distribution of hours of work for five different family types at two different wage rates.

working aged and dependent children, financing increasing total expenditure on social security (either through increasing tax revenue or reducing expenditure elsewhere), or undertaking some mixture of both of these options.

⁵ Social assistance programmes can also contain administrative incentives to work through measures such as work testing. Financial incentives and administrative incentives should be seen in conjunction. For instance, a weakening of administrative incentives for encouraging labour supply could increase the significance of financial incentives for encouraging labour supply.

⁶ Responses to financial incentives may also reflect the timing of payments or abatement, as people may not be aware of or may discount the impact of such incentives when making decisions that, for instance, effect entitlements paid on an annual rather than a more frequent basis (such as fortnightly) [Barr, 1999, p. 18].

2.1 Financial Incentives and Population Heterogeneity

The financial incentives associated with social assistance programmes influence people's decisions in two ways. By changing relative prices of goods (such as labour and leisure) a social assistance programme may induce the person facing those incentives to substitute consumption of one good for another (the substitution effect). The social assistance programme may also alter the person's real income (and the ability to reach a desired level of consumption) and consequently his or her demand for certain goods (the income effect). Whether these two effects reinforce or offset each other depends on the case at hand and requires empirical analysis [Rosen, 1988, pp. 29-30].

Financial incentives can be difficult to measure. One source of difficulty is that financial incentives not only reflect the design of a particular social assistance programme but also the (often complex) interaction of the programme with other social assistance and taxation programmes. Different programmes may use different definitions of what counts as income, income units (individual, family, and household), income periods (annual, fortnightly, or weekly), and implementation agencies (the Inland Revenue Department and the Ministry of Social Development) and be earned and abated in different ways.

Population heterogeneity is a further source of difficulty in measuring financial incentives. People differ in the circumstances that they face. People's circumstances do not, furthermore, remain fixed over time but change in line with social and economic changes. Often social assistance programmes aim to recognise this heterogeneity by allocating differing levels and types of assistance to people in different family types and with differing levels of attachment to the workforce. Failing to account for the heterogeneity in the population when measuring financial incentives would be likely to lead to a misleading picture of the nature of policy problems and the effectiveness of government responses.

The financial incentives resulting from an income support programme differ among people with different characteristics, depending on factors such as hours of work, wage rates received, marital status, number and ages of children, availability of childcare, accommodation needs, and receipt of other assistance.⁷ People also differ in the degree to which financial incentives lead to changes in their behaviour. Some people are more sensitive to financial incentives than other people. For instance, New Zealand studies have shown that the labour supply of sole parents, part-time workers, secondary-income earners, and teenage men tends to be more responsive to financial incentives than that of primary earners and prime aged males [Brosnan *et al*, 1989, p. 31; Maani, 1989; Maloney, 1997; Prebble *et al* (eds.), 1992]. Since these studies were completed the labour market in New Zealand has undergone notable change with, for example, deregulation of employment relationships and increasing labour market participation rates of secondary earners.

While thresholds in the income tax and social assistance systems are usually defined in terms of income, evaluating changes to people's incentives to supply labour requires looking at relationships between changes in hours of work and changes in net incomes. Effective marginal tax rate (EMTR) profiles and budget constraints can be used to show such relationships.

EMTRs show the proportion by which a dollar increase in gross income is reduced by taxes and the abatement of social assistance benefits. An EMTR is one minus the

⁷ A number of people who may appear to not face particular financial incentives (e.g., people located above or below the income levels at which incentives occur) may still have been affected by these incentives when making decisions (e.g., by being discouraged from locating at income levels associated with high disincentives to work).

change in net income (after tax deductions and abatement of social assistance payments) resulting from earning an additional gross dollar [Prebble *et al* (eds.), 1992, p. 7]. When people are faced with a decision on whether or not to make relatively small changes in income (e.g., from working a few extra hours) EMTRs are likely to illustrate the financial incentives applying to their decisions. However, when people are considering relatively large changes in income (e.g., whether to work part-time or full-time) or when they are constrained in the degree to which they can change their hours of work (e.g., when they have employment contracts containing fixed hours) EMTRs are less likely to illustrate the financial incentives applying to their decisions.

Budget constraints can be used to show the net income (after taxation and the payment of abated assistance) that is received at different hours of paid employment [Prebble *et al* (eds.), 1992, p. 11]. EMTRs are reflected in the slope of the budget constraint. As the EMTRs facing a person increase the budget constraint of that person becomes more flat [Prebble *et al* (eds.), 1992, p. 13].

Estimating EMTR profiles and budget constraints of people in partnered families poses particular challenges. In partnered households the labour supply decisions are joint decisions. In these households when either the primary or secondary earner changes his or her supply of labour the total household income changes. As social welfare benefits and Family Assistance programmes abate against total household income, the individual incentives facing the primary and secondary earners are influenced by the earnings of the other person. However, due to the difficulty of modelling joint decisions, in this paper the changes in household income are modelled as individual decisions, where only one person per family makes a labour supply decision and the rest of the labour supply decisions in the family are held constant [Prebble *et al* (eds.), 1992, pp. 37-38].

Findings based on different family types should be assessed against the degree to which these family types are representative of the general population or of those receiving income support. With this in mind this paper also considers effective marginal tax rate profiles and budget constraints in the light of data on the frequency distribution of hours for various wage rates of various demographic groups. Because there are small numbers of some family types it is likely that there will be few observations of these family types at certain wage rates. Thus in order to provide a useful number of observations it has been necessary to use wage bands (such as below and above median wages for different family types) rather than single wage rates in this paper.

The interaction of financial incentives with the income distribution influences the number of people who face certain financial incentives and which decisions are influenced by these incentives. A person's hourly wage rate influences the number of hours of work for which they face particular financial incentives (or disincentives). If a person's hourly wage rate fell from \$15 to, say, \$10 the number of hours of work over which income support abates would increase. In contrast, if the person's hourly wage rate increased the abatement of income support would occur over a shorter range of hours of work. The hourly wage rate thus impacts on the incentives facing the person. Further, when a programme is targeted by income the proportion of the income distribution over which it

applies also reflects the level of the payment and the rate at which this payment abates. Either increasing the payment or decreasing the rate of abatement would increase the coverage of the programme.⁸

The interaction of financial incentives with the income distribution also influences which decisions are influenced by these incentives. Low-income groups, for example, contain a relatively high proportion of sole parents and secondary income earners facing decisions regarding whether or not to participate in the labour market. (Note that some of these low-income individuals may be in high-income households.)

This paper draws on estimates calculated with TaxMod (which is a micro-simulation model of New Zealand's income tax and social assistance systems) [Prebble *et al* (eds.), 1992, pp. 29-44]. TaxMod calculates income tax liabilities and social assistance entitlement based upon characteristics of the population and rules regarding eligibility and abatement of income tax and social assistance programmes. A population of families is derived from demographic, income, and expenditure data contained in the Household Economic Survey (HES) [Gordon, 1997]. The HES was established to measure the Consumers' Price Index and was conducted annually from 1983-4 to 1997-98. The HES is now conducted every three years with the most recent survey being completed in June 2000-01. (TaxMod and the Household Economic Survey are discussed in greater detail in appendix 4.)

In TaxMod each surveyed household is given a weighting representing the degree to which households of that type occur in the total population. This allows the HES sample to be weighted up to estimate the entire New Zealand population. TaxMod also re-weights the HES sample to allow for changing rates of unemployment and adjusts income data for inflation (with separate inflators for wage, self-employed, and interest income). In order to estimate financial incentives for the 2003-04-income year, TaxMod takes data on observed hours of work from the most recent HES survey (2000-01) and applies this data to the 2003-04 income tax and social assistance systems. However, these hours of work are likely to reflect the income tax and transfer systems that were in existence in the year of the survey. There may thus be some expected variation between the observed hours of work and the hours that actually correspond to the 2003-04 social assistance system.⁹

As the analysis in the following sections demonstrates, the financial incentives from social assistance programmes do, nevertheless, play an important role in influencing the labour supply of different demographic groups. Financial incentives matter.

2.2 Effective Marginal Tax Rates

Table 1 shows the estimated distribution of individuals by Effective Marginal Tax Rates (EMTRs) and benefit receipt for 2003-04. Figure 1 shows the same data in the form of a graph. The estimates in table 1 and figure 1 are based on 2000-01 HES data inflated to 2003-04 by TaxMod.

⁸ Thus, for example, while paying assistance at a flat rate and then abating assistance fully at a particular threshold would lead to high EMTRs at this threshold, the range of incomes over which these EMTRs would occur would be narrow. The relative merits of such a regime would depend on whether it would be better to have high EMTRs over a narrow range of incomes or more moderate EMTRs over a larger range of incomes.

⁹ In contrast a behavioural model would estimate financial incentives using a two-step procedure. First, changes in the hours of work between 2000-01 and 2003-04 would be estimated. Second, the effects of a policy initiative would then be modelled using these new estimated hours.

The calculation of EMTRs can be complex. EMTRs cannot always simply be calculated as the sum of the personal income tax rate, the Low Income Earner Rebate, ACC earners' levy, net benefit abatement rate, and the Family Assistance abatement rate. (Appendixes 1 and 2 describe the key features of these programmes.) This is because net welfare benefits abate against increases in gross income and the personal income tax rate applying to benefit income may differ from the rate applying to non-benefit income (a method for calculating EMTRs is explained in appendix 3). Also complicating the calculation of EMTRs is that while personal income taxes are levied on individual income, social welfare benefits and the Family Assistance Tax Credits abate against family income. The EMTRs in table 1 are calculated for adults in single and partnered families. When calculating the EMTRs of a person in a partnered family, his or her partner's income is assumed to remain constant.

Table 1 shows the numbers of individuals (excluding all those aged under 15 and dependents aged over 15) who face certain EMTRs and who receive main benefits, the Accommodation Supplement, the Family Assistance Tax Credits, New Zealand Superannuation, and none of these forms of assistance. A person can be present in more than one column except when they are in the 'none of the above' column. The EMTRs categories have not been divided into even ranges but have instead been divided into ranges reflecting the frequency with which certain EMTRs occur.

Table 1: Distribution of Individuals by EMTRs and Benefit Receipt (2003-04)

EMTR	Income-Tested Main Benefit ^{II}	Accommodation Supplement	Family Assistance*	New Zealand Superannuation	None of the above
Less than 16	**	**	2,888	**	18,679
16 to 16.9	35,097	5,636	15,271	11,988	155,944
17 to 21.9	12,121	**	**	**	19,861
22 to 22.9	214,288	18,780	66,148	291,101	460,802
23 to 33.9	24,488	8,164	7,290	**	11,712
34 to 34.9	3,250	8,764	5,183	10,323	260,393
35 to 38.9	5,446	**	**	**	22,712
39 to 39.9	**	**	**	**	46,737
40 to 40.9	7,266	4,173	13,406	7,263	116,505
41 to 45.9	13,576	13,014	5,972	**	3,934
46 to 46.9	3,611	**	13,470	**	**
47 to 47.9	54,874	74,846	22,509	18,363	**
48 to 51.9	**	**	**	**	**
52 to 52.9	9,578	3,477	24,475	**	**
53 to 79.9	25,541	11,735	24,401	9,559	**
80+	20,126	4,084	12,003	**	**
All	431,717	161,112	215,894	357,905	1,121,628

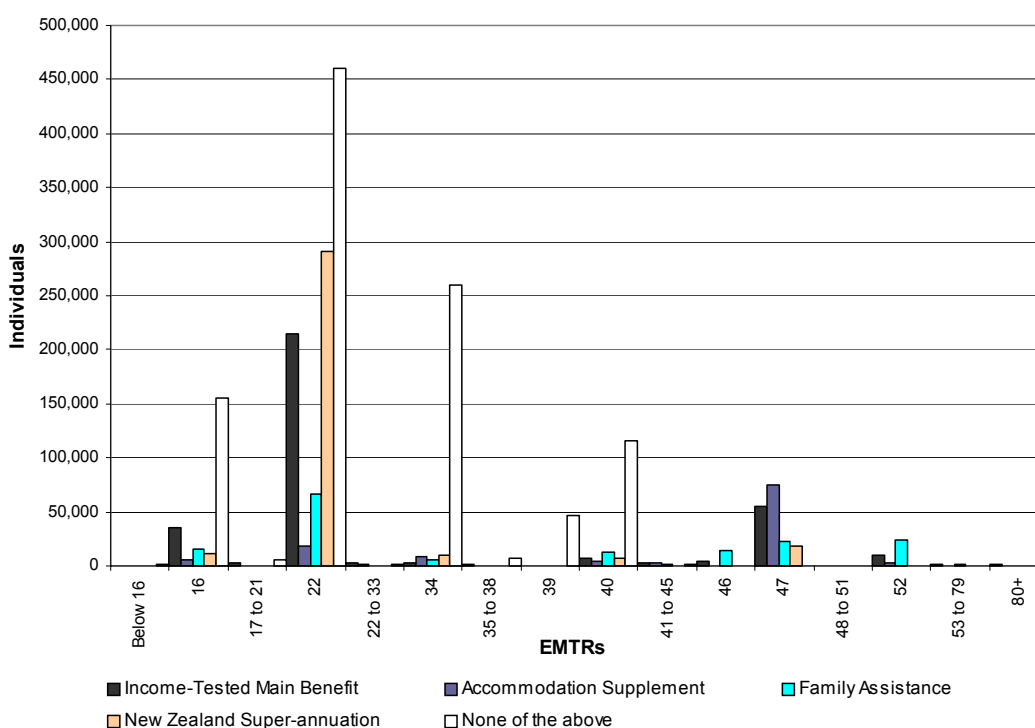
^{II} Unemployment Benefit, Domestic Purposes Benefit, Invalids' Benefit, Sickness Benefit, and Widows' Benefit

* Family Support Tax Credit, Child Tax Credit, and Family Tax Credit. Excludes Parental Tax Credit

** Too few observations to disclose

Source: 2000-01 HES data inflated to 2003-04 by TaxMod

Figure 1: Distribution of Individuals by EMTRs and Benefit Receipt (2003-04)



Source: 2000-01 HES data inflated to 2003-04 by TaxMod

Figure 1 is based on the data contained in table 1. As the EMTRs in table 1 have not been divided into even ranges, the horizontal axis in figure 1 is not drawn to scale. The numbers of people in each column have, however, been scaled in order to account for variations in the ranges of the columns.

The estimates in table 1 and figure 1 are only based on the abatement of major benefits, thus some EMTRs may be underestimated (e.g., where recipients receive Disability Allowances or Special Benefits).

High EMTRs occur when people pay both personal income taxes and face abatement of social assistance programmes. People who do not receive social assistance thus generally have lower EMTRs than families who do receive such assistance. It is estimated that over 99% of people who receive no social assistance have EMTRs below 41%. These EMTRs are given by the interaction of the personal income tax scale, the Low Income Earner Rebate, and the ACC earners' levy. Further, recipients of New Zealand Superannuation (provided irrespective of income or means to all qualifying residents) also have generally low EMTRs.¹⁰ An estimated 87% of New Zealand Superannuation recipients face EMTRs below 23%. These EMTRs are given by the interaction of the statutory personal income tax scale, the Low Income Earner Rebate (which applies to all income (both employment and passive income) of superannuitants), and, where applicable, the ACC earners' levy.

The Family Assistance Tax Credits are the most widely received government income tested transfer payment. Many working families receive these credits without any other form of assistance so their EMTRs are a combination of the personal income tax scale, the Low Income Earner Rebate, ACC earners' levy, and the abatement of the Family Assistance programmes. The distribution of EMTRs among Family Support Recipients is bimodal. It is estimated that approximately 39% of Family Support recipients face EMTRs below 23%, which indicates that these families do not face Family Assistance abatement, while approximately 28% of Family Assistance recipients face EMTRs in the range of 52% and above. The Family Tax Credit automatically results in very high EMTRs of over 100% but very few families actually qualify for this programme.

For the population who receive other forms of government income tested transfers the pattern of EMTRs is more complex due to the range of benefits and supplementary assistance measures, the range of administrative rules and abatement regimes, and variations in family circumstances.

The majority (an estimated 61%) of recipients of income-tested main benefits face EMTRs of below 23%. These EMTRs are given by the interaction of the personal income tax scale, the Low Income Earner Rebate, the ACC earners' levy, and the abatement-free zone for non-benefit earnings. People who face these EMTRs include both beneficiaries with declared non-benefit income (and whose non-benefit incomes are below the threshold at which the benefit starts abating) and beneficiaries without declared non-benefit incomes. The remaining recipients of income-tested main benefits are distributed reasonably evenly among the range of EMTRs, with an estimated 9% of recipients facing EMTRs from 23% to 40.9%, 17% facing EMTRs from 41% to 51.9%, and 13% facing EMTRs of 52% and above.

¹⁰ New Zealand Superannuation is no longer income tested and so has no effect on EMTRs.

The majority (an estimated 55%) of Accommodation Supplement recipients face EMTRs in the range of 41% to 51.9%. The remaining recipients of the Accommodation Supplement are distributed reasonably evenly among the EMTR range.

Thus for the vast majority of the population the EMTRs created by the interaction of the personal income tax and social assistance systems are less than 48%. There are, however, a small number of demographic groups at certain income levels who face EMTRs in excess of 48%. These groups include a number of recipients of income-tested main benefits, the Accommodation Supplement, and the Family Assistance programmes. To identify those people who face high financial disincentives to work in greater detail, the following section of this paper shows the EMTR profiles and budget constraints that face five different family types at two wage rates.

2.3 Effective Marginal Tax Rate Profiles and Family Budget Constraints

EMTR profiles and budget constraints of five different family types for two different wage rates are discussed below. These different family types are based on the cases of:

- a single person without children (at wage rates of \$10 and \$15 per hour);
- a sole parent with one child (at wage rates of \$10 and \$15 per hour);
- a person with a working partner and without children (at wage rates of \$10 and \$15 per hour);
- a person with a non-working partner and two children (at wage rates of \$10 and \$15 per hour); and
- a person with a working partner and two children (at wage rates of \$10 and \$15 per hour).

These profiles are based on the 2003-04 social assistance system.

EMTR profiles and budget constraints, along with the behavioural responses that result from them, differ among people with different characteristics, depending on factors such as hours of work, wage rates received, marital status, number and ages of children, availability of childcare, accommodation needs, and receipt of other assistance. Findings based on these five family types should thus also be assessed against the degree to which these family types are representative of the general population or of those receiving income support. With this in mind this section also considers effective marginal tax rate profiles and budget constraints in the light of data on the frequency distribution of hours for various wage rates of various demographic groups.

2.3.1 Case One: A Single Person Without Children

Figures 2 and 3 show EMTR profiles and budget constraints of a single person without children based upon the person's income and the different sources of this income (market income and welfare payments). Figure 2 is based on an assumed wage rate of \$10 per hour and figure 3 is based on an assumed wage rate of \$15 per hour. Net incomes are shown on the vertical axes at the left of the figures. EMTRs are shown on the vertical axes at the right of the figures. Hours of work are shown on the horizontal axes of the figures. The extent that personal income taxes reduce gross income is also shown in the figures. Vertical lines in the figures indicate the hour levels corresponding to personal income tax thresholds applying to market income.

Figures 4 and 5 show the frequency distributions of the hours of work of single people without children.¹¹ These figures exclude those people with zero hours of work. Given that there are likely to be few observations of particular family types at certain wage rates, wage bands (of below and above median wages for particular demographic groups) have been used to calculate the frequency distributions of hours of work. Figure 4 shows the distribution of hours of work for those people receiving wage rates up to and including the median wage rate for this demographic group. Figure 5 shows the distribution of hours of work for people receiving wage rates above the median wage rate for this demographic group. The median wage for this demographic group is \$14.04 per hour. As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the measured distribution of hours of work and the measured distribution of incentives would be expected.

The net Unemployment Benefit abates at a rate of 70% against increases in gross non-benefit family income above \$80 per week (\$4,160 per annum). In the \$80 abatement-free zone the EMTR is 22.2%, which is a combination of the personal tax scale, the Low Income Earner Rebate, and the ACC earners' levy.

Once the \$80 threshold is reached the net Unemployment Benefit abates at a rate of 70% against increases in gross non-benefit earnings. The gross benefit is above \$9,500 so the marginal tax rate on benefit income is 21%. The gross benefit abatement is 0.886 (given by $0.7 / (1 - 0.21)$), the change in gross income is 0.114 (given by $1 - 0.886$), the change in disposable income is 0.078 (given by $0.114 (1 - 0.21) - 0.012$), and the EMTR is thus 92.2%. (The method for calculating EMTRs is explained in appendix 3.)

When the tax on the benefit falls, the gross benefit abatement is 0.824 (given by $0.7 / (1 - 0.15)$), the change in gross income is 0.176 (given by $1 - 0.824$), the change in disposable income is 0.127 (given by $0.176 (1 - 0.21) - 0.012$), and the EMTR is thus 87.3%.

A single Unemployment Benefit recipient without children has relatively little incentive to work for less than 30 hours per week at \$10 per hour (or 20 hours per week at \$15 per week). However, once the benefit is fully abated these disincentives to supply labour no longer apply. The higher the hourly wage the smaller the range of hours of work over which labour supply is discouraged.

As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the measured distribution of hours of work and the measured distribution of incentives would be expected. In spite of this, however, the financial incentives from social assistance programmes do appear to play an important role in influencing the frequency distribution of hours of work of different demographic groups.

A relatively small proportion of single people without children with hourly wages equal to or below the median for this demographic group (\$14.04) locate in the abatement-free zone. The earlier data on the distribution of EMTRs among beneficiaries, however, suggests that there could be a significant proportion of beneficiaries with zero hours of work. The small mode at around 15 hours is around the point at which the Unemployment Benefit abates at 70% and reflects the relatively flat segment of the budget constraint that results from this abatement. Large proportions of people in this demographic group work 30 hours per week and above (there is a large mode at around 45 hours) and thus do not

¹¹ The categories for the hours distributions of wages range from five below the midpoint to four above the midpoint. Thus the category with a hours midpoint of five ranges from one to nine (as zeroes are not included) and, for example, the category with a hours midpoint of 35 ranges from 30 to 39. The hours are always calculated as integers.

face the relatively high EMTRs that arise from the abatement of the Unemployment Benefit below this point. Incentives that arise from the personal income tax scale and Low Income Earner Rebate are thus relatively significant for people who work these hours.

As with those single people without children with hourly wages equal or below the median, a relatively small proportion of single people without children with hourly wages above the median locate in the abatement-free zone. The small mode at around 15 hours is around the point at which the Unemployment Benefit abates at 70% and reflects the relatively flat segment of the budget constraint that results from this abatement. Most people in this demographic group work around 20 hours per week and above (there is a large mode at around 45 hours) and thus do not face the relatively high EMTRs that arise below this point, as the Unemployment Benefit is fully abated at around 20 hours of work per week. Incentives that arise from the personal income tax scale and Low Income Earner Rebate are thus relatively significant for people who work these hours.

Overall, few people seem to locate in the abatement-free zone for social welfare benefits, but there may be a large number of people at zero hours of work who could nevertheless be influenced by any change to this zone. Further, small modes at around 15 hours per week reflect the relatively flat segments of the budget constraints due to the 70% abatement of the Unemployment Benefit. This mode is more significant for those people earning hourly wages below or equal to the median than it is for those earning hourly wages above the median. The lower the hourly wage the greater the significance of the abatement of the benefit and the abatement-free zone for financial incentives. For both distributions, the majority of the population were above the abatement of the benefit with large modes occurring at around 45 hours, thus making the incentives from the personal income tax scale and the Low Income Earner Rebate relatively significant for these people.

In comparison to other family types, the numbers of people in both distributions of single people by hours of work are relatively large. Significant numbers of single people without children who work do so for 30 hours or more per week.

Figure 2: EMTR Schedule and Budget Constraint of a Single Person without Children and with a Wage Rate of \$10 Per Hour

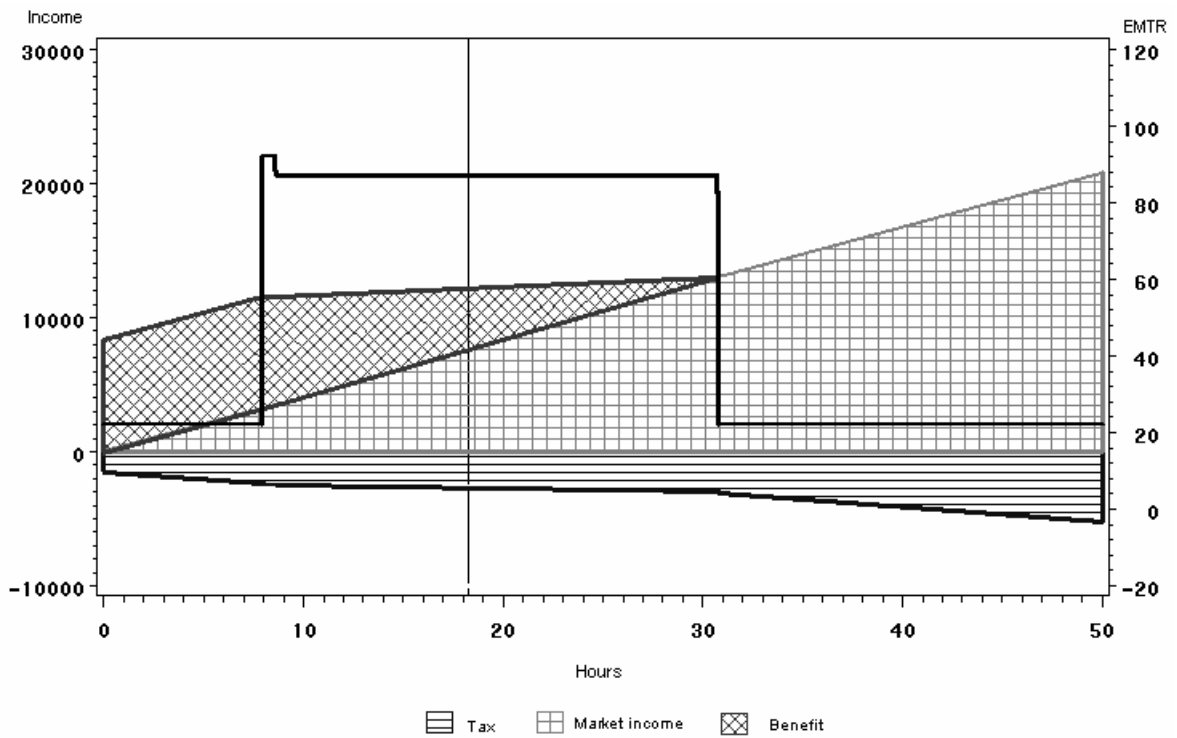


Figure 3: EMTR Schedule and Budget Constraint of a Single Person without Children and with a Wage Rate of \$15 Per Hour

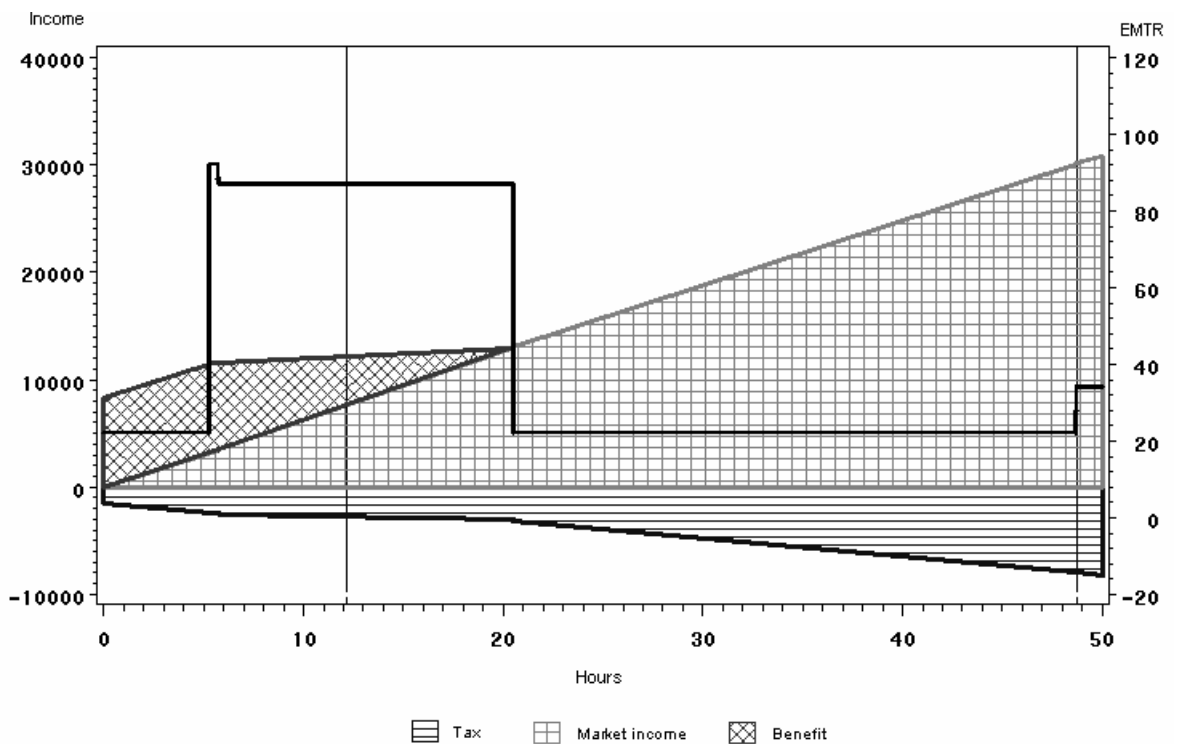


Figure 4: Frequency Distribution of Hours of Work of Single People without Children (Wages up to and including Median (\$14.04) for Group)

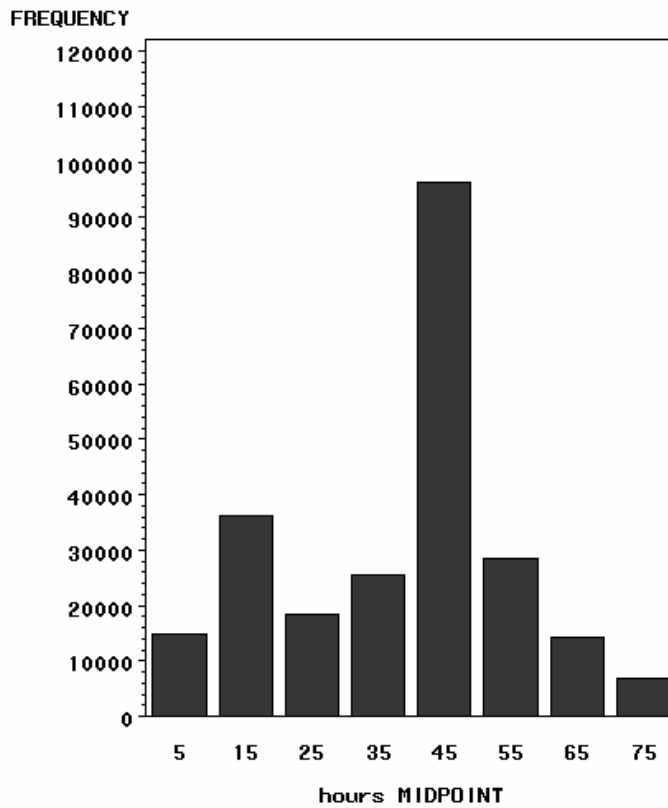
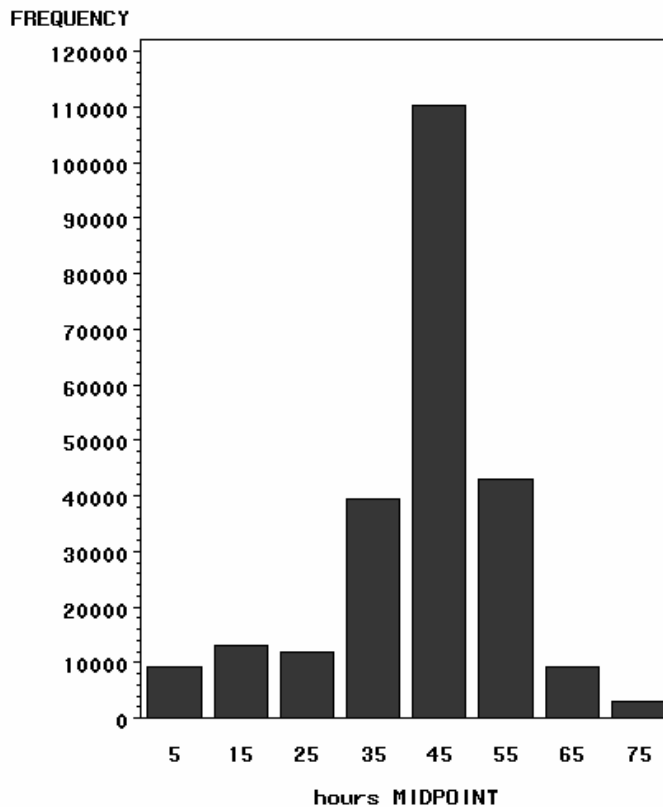


Figure 5: Frequency Distribution of Hours of Work of Single People without Children (Wages over Median (\$14.04) for Group)



2.3.2 Case Two: A Sole Parent With One Child

Figures 6 and 7 show EMTR profiles and budget constraints of a sole parent with one child (aged nine) based upon the person's income and the different sources of this income (market income and Family Assistance and welfare payments). Figure 6 is based on an assumed wage rate of \$10 per hour and figure 7 is based on an assumed wage rate of \$15 per hour. Net incomes are shown on the vertical axes at the left of the figures. EMTRs are shown on the vertical axes at the right of the figures. Hours of work are shown on the horizontal axes of the figures. The extent that personal income taxes reduce gross total income is also shown in the figures. Vertical lines in the figures indicate the hour levels corresponding to personal income tax thresholds applying to market income.

Figures 8 and 9 show the frequency distributions of the hours of work of sole parents. These figures exclude those people with zero hours of work. Given that there are likely to be few observations of particular family types at certain wage rates, wage bands (of below and above median wages for particular demographic groups) have been used to calculate the frequency distributions of hours of work. Figure 8 shows the distribution of hours for those people receiving wage rates up to and including the median wage rate for this demographic group. Figure 9 shows the distribution of hours of work for people receiving wage rates above the median wage rate for this demographic group. The median wage for this demographic group is \$11.08 per hour. As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the measured distribution of hours of work and the measured distribution of incentives would be expected.

The net Domestic Purposes Benefit abates at a rate of 30% against increases in gross non-benefit income between \$80 per week (\$4,160 per annum) and \$180 per week (\$9,360 per annum). When the gross family non-benefit income increases above \$180 per week the net Domestic Purposes Benefit abates at a rate of 70% against increases in gross non-benefit income.

As the gross Domestic Purposes Benefit is greater than \$9,500, when the person's non-benefit income is below \$80 per week the EMTR is made up of a combination of the 21% tax rate and the 1.2% ACC earners' levy. When non-benefit income increases to \$80 per week the net Domestic Purposes Benefit begins to abate against gross non-benefit earnings at a rate of 30%. The gross benefit abatement is thus 0.380 (given by $0.3 / (1 - 0.21)$), the change in gross income is 0.620 (given by $1 - 0.380$), the change in disposable income is 0.478 (given by $0.620 (1 - 0.21) - 0.012$), and the EMTR is thus 52.2%. (The method for calculating EMTRs is explained in appendix 3.)

This 52.2% EMTR continues until the person's total gross income (including market and benefit income) equals \$20,000. At this point the Family Support Tax Credit begins abating against increases in gross income at 18%.¹² The Family Support abatement is 11.2% (given by 0.62×0.18) and the EMTR increases to 63.4%.

When the person's gross non-benefit income reaches \$9,360 the net Domestic Purposes Benefit begins abating at the rate of 70%. The net benefit abatement rate thus increases to 0.886 (given by $0.7 / (1 - 0.21)$), the change in gross income is 0.114 (given by $1 - 0.886$), the change in disposable income is 0.078 (given by $0.114 (1 - 0.21) - 0.012$), and the EMTR thus increases to 92.2%. This EMTR continues until the gross Domestic Purposes Benefit falls below \$9,500 and the marginal tax rate applying to this benefit thus

¹² From 1 April 2004 the Family Assistance abate thresholds will increase to \$20,356 (from \$20,000) and \$27,481 (\$27,000).

falls to 15%. The gross benefit abatement is thus 0.824 (given by $0.7 / (1 - 0.15)$), the change in gross income is 0.176 (given by $1 - 0.824$), the change in disposable income is 0.127 (given by $0.176 (1 - 0.21) - 0.012$), and the EMTR is 87.3%.

The EMTR remains at this rate until the Domestic Purposes Benefit is fully abated. When the benefit is fully abated the family begins to receive the Child Tax Credit. This payment is added together with the Family Support Tax Credit and it is this total figure that abates. The abatement of the Family Assistance programmes is 18% and the EMTR becomes 40.2% (given by $0.18 + 0.21 + 0.012$). When the family's gross income increases to \$27,000 the abatement of the Family Assistance programmes increases to 30% and the EMTR increases to 52.2%. When the Family Assistance programmes are fully abated the EMTR is based on only the personal income tax scale, Low Income Earner Rebate, and ACC earners' levy and initially falls to 22.2%.

A sole parent with one child receiving the Domestic Purposes Benefit faces relatively little disincentive from part-time work, but this disincentive increases so that by about 18 hours of work at \$10 per hour (or 12 hours at \$15 per hour) there is little incentive to increase market income unless it is possible to work for more than 46 hours per week at \$10 per hour (or 30 hours at \$15 per hour). At above this point the Domestic Purposes Benefit is fully abated and the family receives the Child Tax Credit. There is thus a reduction in the disincentive to supply labour above this point (although this is weakened by the abatement of the Family Support and Child Tax Credits).

As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the measured distribution of hours of work and the measured distribution of incentives would be expected. In spite of this, however, the financial incentives from social assistance programmes do appear to play an important role in influencing the frequency distribution of hours of work of different demographic groups.

Relatively small numbers of sole parents with one child and with hourly wages equal to or below the median for the demographic group (\$11.08) locate in the abatement-free zone. The earlier data on the distribution of EMTRs among beneficiaries, however, suggests that there could be a significant proportion of beneficiaries with zero hours of work. The frequency distribution of hours of work of these sole parents demonstrates a mode at around 15 hours. This mode reflects changes in the budget constraint that arise between the \$80 abatement-free zone and the increase in the net benefit abatement rate to 70%. Further, reflecting the relatively flat nature of the budget constraint between the point at which the benefit begins abating at 70% and the point at which the benefit is fully abated, fewer people work as the hours of work increase along this segment of the budget constraint. At this wage rate few people locate at the point above which the benefit is fully abated.

As with sole parents with one child and wages equal or below the median (\$11.08), relatively small numbers of sole parents with one child and wages above the median locate in the abatement-free zone and there is a small mode at around 15 hours (reflecting changes in the budget constraint that arise between the \$80 abatement-free zone and the increase in the net benefit abatement rate to 70%). However, with a higher hourly wage rate the abatement of the Domestic Purposes Benefit occurs over a shorter range of hours. The anti-mode at around 25 hours reflects the change in the slope of the budget constraint due to the completed abatement of the Domestic Purposes Benefit and the payment of the Child Tax Credit. Significant numbers of sole parents who work at wage rates above the median hourly wage also work for 30 hours per week or more. The

incentives that arise from the personal income tax scale, Low Income Earner Rebate, and abatement of the Family Assistance programmes are relatively significant for people who work these hours.

Overall, few people seem to locate in the abatement-free zone for the Domestic Purposes Benefit, but there may be a large number of people at zero hours of work who could nevertheless be affected by a change to this zone. Further, small modes at around 15 hours per week reflect the changes in the slopes of the budget constraints due to the abatement of the Domestic Purposes Benefit. Roughly similar numbers of sole parents work these hours at both hourly wage bands. At the higher wage band, however, larger numbers of sole parents locate at the point above which the benefit is fully abated. The lower the hourly wage the greater the significance of the abatement of the benefit and the abatement-free zone for financial incentives.

In comparison to other family types, the numbers of people in both distributions of sole parents by hours of work are relatively small. Significant numbers of sole parents who work do so for around 15 hours per week. Significant numbers of sole parents who work at wage rates above the median hourly wage also work for 30 hours per week or more.

Figure 6: EMTR Schedule and Budget Constraint of a Sole Parent with One Child (aged 9) and with a Wage Rate of \$10 per Hour

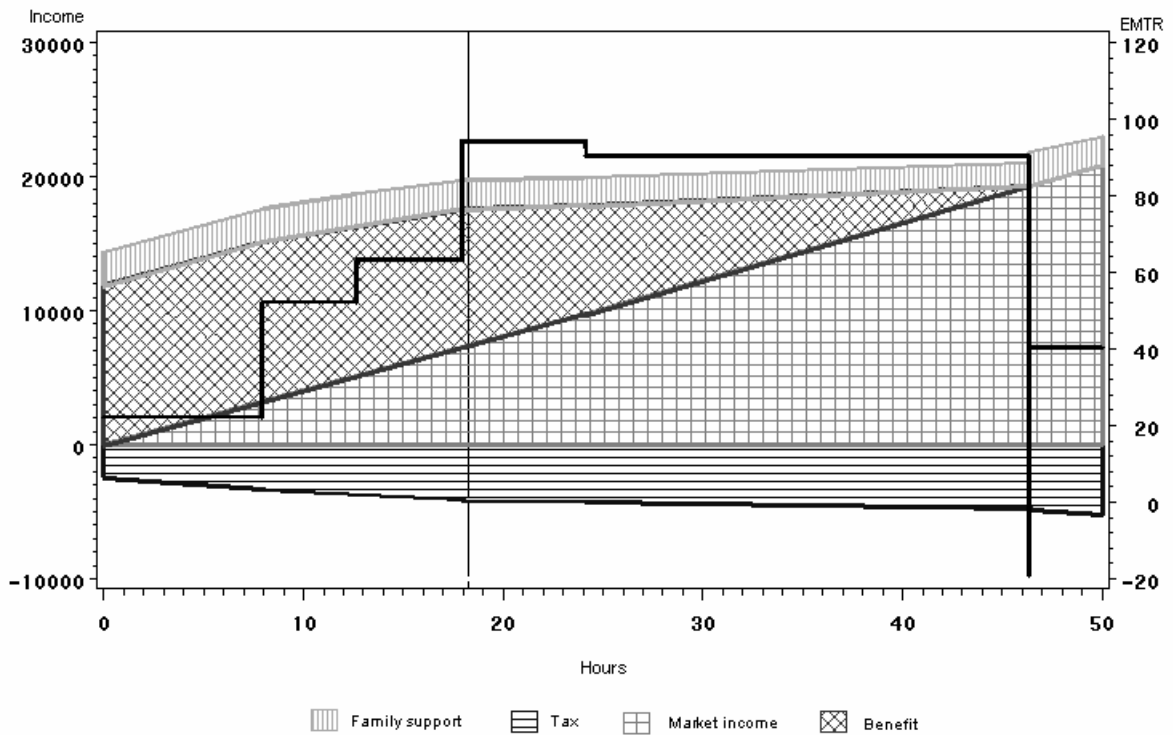


Figure 7: EMTR Schedule and Budget Constraint of a Sole Parent with One Child (aged 9) and with a Wage Rate of \$15 per Hour

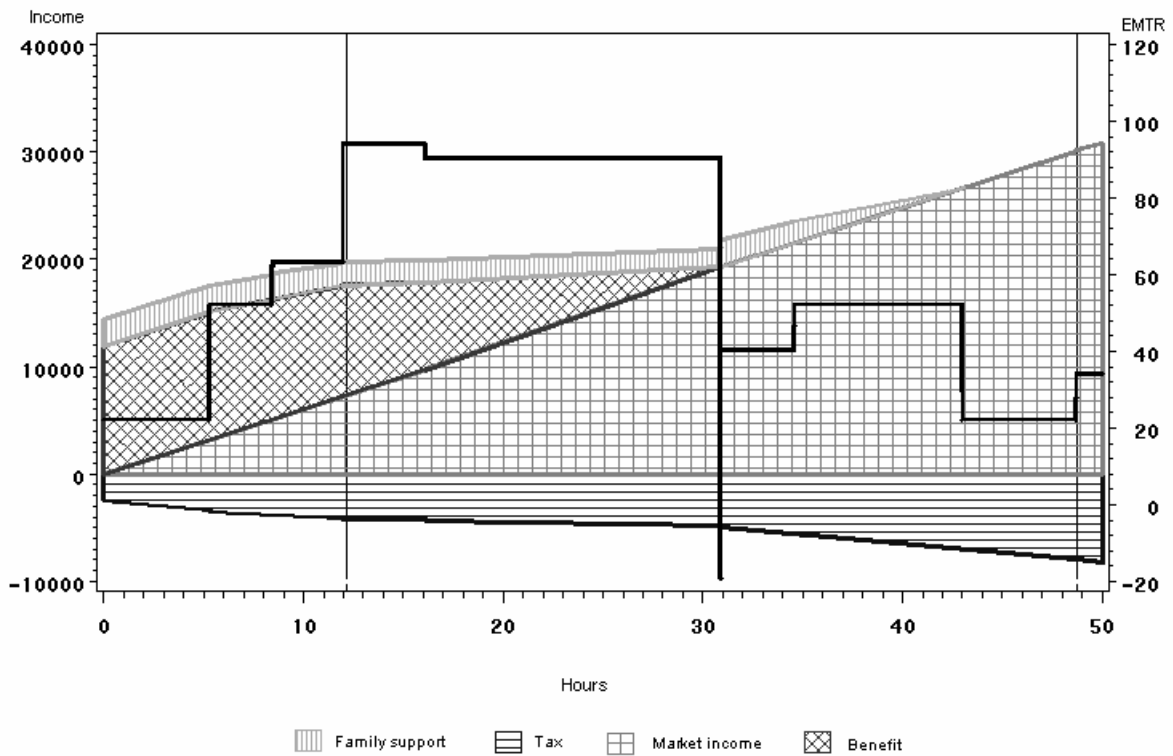


Figure 8: Frequency Distribution of Hours of Work of Sole Parents (Wages up to and including Median (\$11.08) for Group)

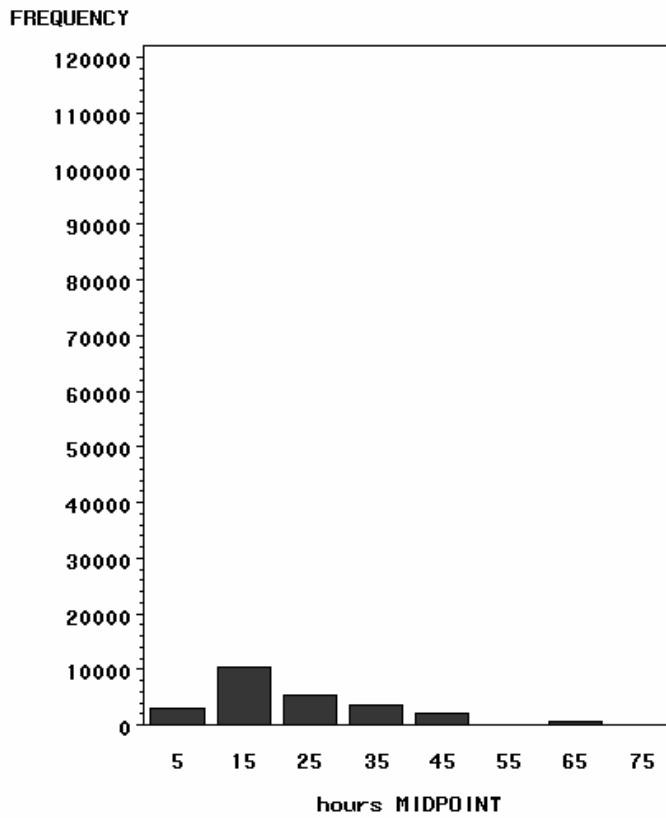
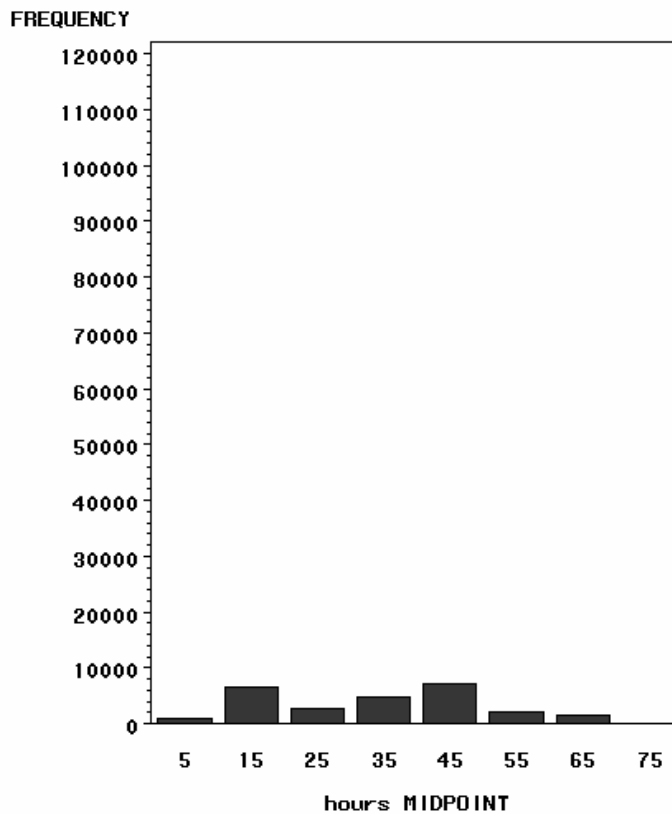


Figure 9: Frequency Distribution of Hours of Work of Sole Parents (Wages over Median (\$11.08) for Group)



2.3.3 Case Three: A Two-Income Couple Without Children

Figures 10 and 11 show EMTR profiles and budget constraints of a person with a working partner based upon the family's combined income and the different sources of this income (market incomes earned by both people and welfare payments). Figure 10 is based on an assumed wage rate of \$10 per hour and figure 11 is based on an assumed wage rate of \$15 per hour. In both cases it is assumed that the working partner has an unchanging gross market income of \$11,500. Net family incomes are shown on the vertical axis at the left of the figure. EMTRs are shown on the vertical axis at the right of the figure. Hours of work are shown on the horizontal axis of the figure. The extent that personal income taxes reduce gross total family income is also shown in the figures. Vertical lines in the diagrams indicate the hour levels corresponding to personal income tax thresholds applying to the market income of the spouse whose hours vary. However, for couples the thresholds applying to personal income tax rates on total individual gross income are not necessarily equivalent to these lines. This is because total individual income for tax purposes includes both individual market income and one half of the family's gross benefit income.

Figures 12 and 13 show the frequency distributions of the hours of work of individuals who are members of couples without children. These figures exclude those people with zero hours of work. Given that there are likely to be few observations of particular family types at certain wage rates, wage bands (of below and above median wages for particular demographic groups) have been used to calculate the frequency distributions of hours of work. Figure 12 shows the distribution of hours of work for those people receiving wage rates up to and including the median wage rate for this demographic group. Figure 13 shows the distribution of hours of work for people receiving wage rates above the median wage rate for this demographic group. The median wage is calculated as the median wage of all those people in couples (including primary and secondary earners) who receive market income. The median wage for this demographic group is \$15.46 per hour. As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the distribution of hours of work and the distribution of incentives would be likely to arise.

As the working partner earns \$11,500 the family non-benefit income is already greater than \$80 per week when the person for whom the profile is drawn begins to earn market income. This person thus immediately faces Unemployment Benefit abatement on non-benefit earnings. In a couple, the income tax rate on benefit income for each individual is calculated on the basis of half of the family's total benefit income. The marginal income tax rate applying to the benefit income is thus 15%. While the person's total income (market income plus half the family's benefit income) is under \$9,500 (until approximately 12 hours of work at \$10 per hour and approximately 8 hours of work at \$15 per hour) the marginal tax rate on the total income is also 15%. Thus when the person works for one hour the gross benefit abatement is 0.824 (given by $0.7 / (1 - 0.15)$), the change in gross income equals 0.176 (given by $1 - 0.824$), the change in disposable income equals 0.138 (given by $(0.176 (1 - 0.15) - 0.012)$), and the EMTR equals 0.862 (given by $1 - 0.138$). (The method for calculating EMTRs is explained in appendix 3.)

This EMTR of 86.2% continues until the person's total income increases to above \$9,500 and the marginal tax rate on total income increases to 21% (the marginal tax rate on benefit income remains at 15%, however). Thus when this person works for one additional hour the gross benefit abatement is 0.824 (given by $0.7 / (1 - 0.15)$), the change in gross income equals 0.176 (given by $1 - 0.824$), the change in disposable

income equals 0.127 (given by $0.176 (1 - 0.21) - 0.012$), and the EMTR equals 0.873 (given by $1 - 0.127$).

This EMTR continues until the point at which the benefit is abated. The higher the hourly wage the person receives the sooner this point is reached. When the benefit is fully abated the EMTR drops to 22.2%, a level that it remains at until the person's income increases to \$38,000 and the EMTR increases to 34.2%.

A person in a couple without children receiving the Unemployment Benefit has little incentive to undertake part-time work if his or her partner has a fixed income of \$11,500. At around 24 hours of work at a wage rate of \$10 per hour (or at 16 hours at a wage rate of \$15 per hour) the benefit is fully abated. There is thus a reduction in the disincentive to supply labour above this point.

As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the measured distribution of hours of work and the measured distribution of incentives would be expected. In spite of this, however, the financial incentives from social assistance programmes do appear to play an important role in influencing the frequency distribution of hours of work of different demographic groups.

The frequency distribution of hours of work for couples with two incomes and without children and with hourly wages equal to or below the median for the demographic group (\$15.46) demonstrates a large mode at around 45 hours. This mode at around 45 hours is above the abatement of the Unemployment Benefit and thus is more likely to be influenced by incentives that arise from the personal income tax scale and Low Income Earner Rebate and abatement of the Family Assistance programmes. A small proportion of people in these couples face relatively high EMTRs due to the abatement of the Unemployment Benefit below this point.

As with those couples with two incomes and without children and with hourly wages below or equal to the median (\$15.46), the frequency distribution of hours of couples with wages above the median demonstrates a small mode at around 5 hours and a large mode at around 45 hours. The large mode is above the abatement of the Unemployment Benefit and is thus more likely to be influenced by incentives that arise from the personal income tax scale and Low Income Earner Rebate and abatement of the Family Assistance programmes. A small proportion of people in these couples face relatively high EMTRs due to the abatement of the Unemployment Benefit below this point.

Overall, few people locate in the abatement-free zone for the Unemployment Benefit, but there may be a large number of people at zero hours of work who could nevertheless be affected by any change to this zone. The lower the hourly wage the greater the significance of the abatement of the benefit and the abatement-free zone for financial incentives. Large proportions of people in this demographic group face incentives that arise from the personal income tax scale and Low Income Earner Rebate.

In comparison to other family types, the numbers of individuals in both distributions of working couples without children are relatively large. Significant numbers of individuals in working couples without children who work do so for around 30 hours per week or more.

Figure 10: EMTR Schedule and Budget Constraint of a Person with a Working Spouse and without Children and with a Wage Rate of \$10 per hour

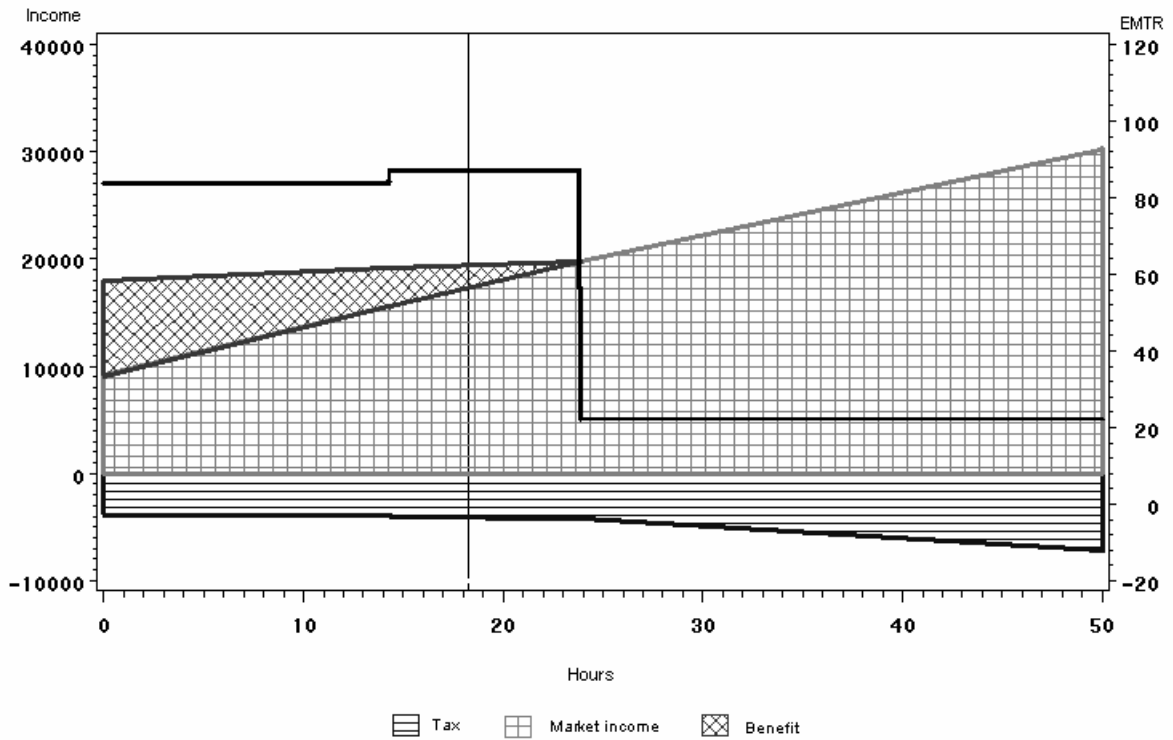


Figure 11: EMTR Schedule and Budget Constraint of a Person with a Working Spouse and without Children and with a Wage Rate of \$15 per hour

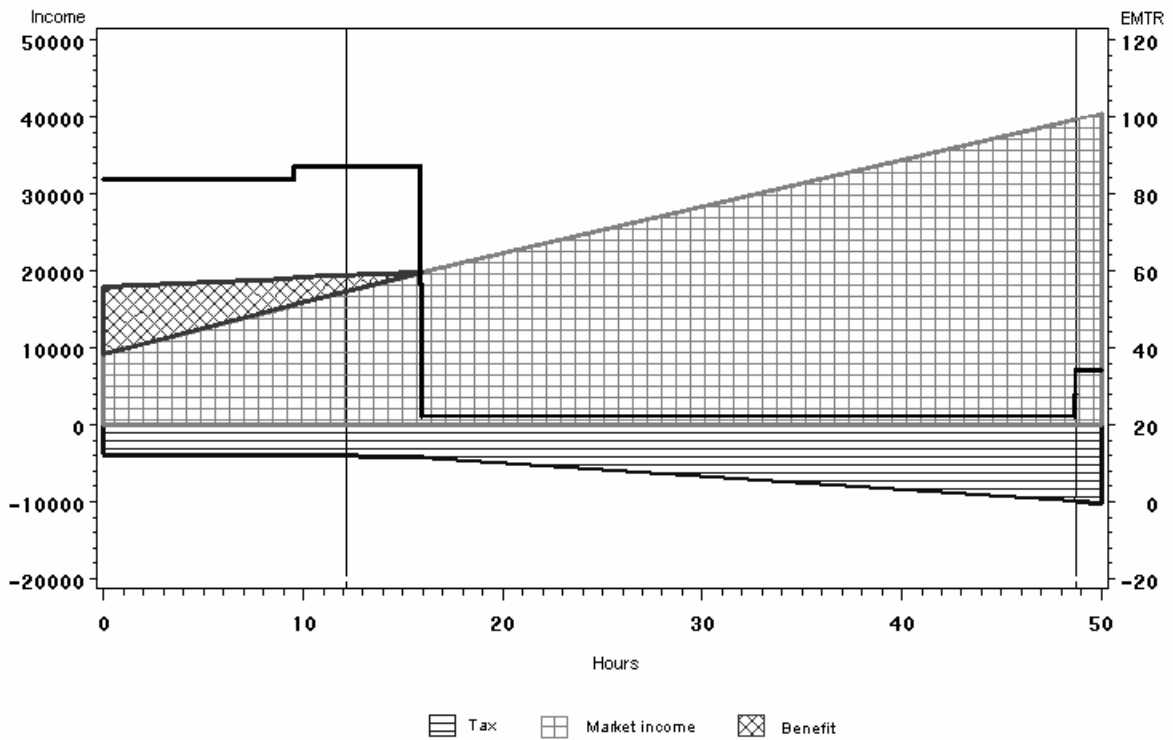


Figure 12: Frequency Distribution of Hours of Work of People with a Working Spouse and without Children (Wages up to and including Median (\$15.46) for Group)

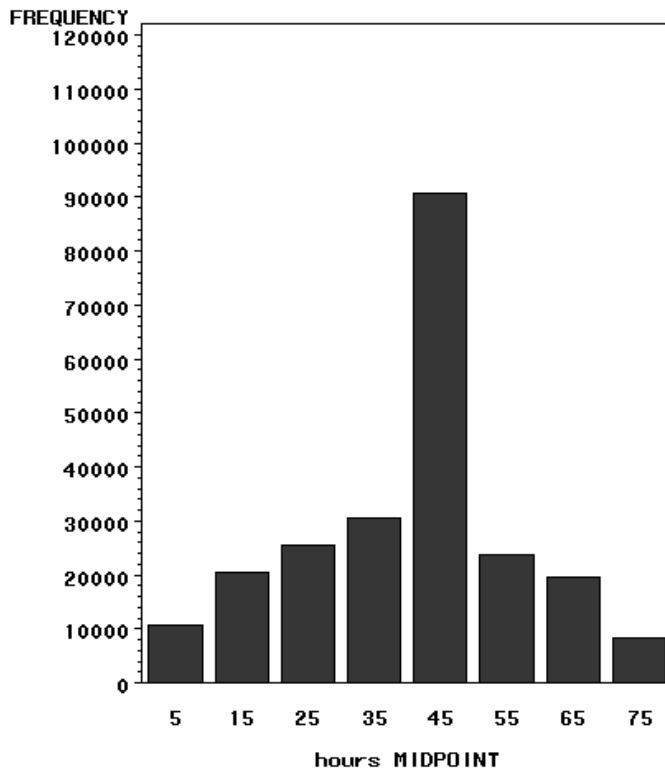
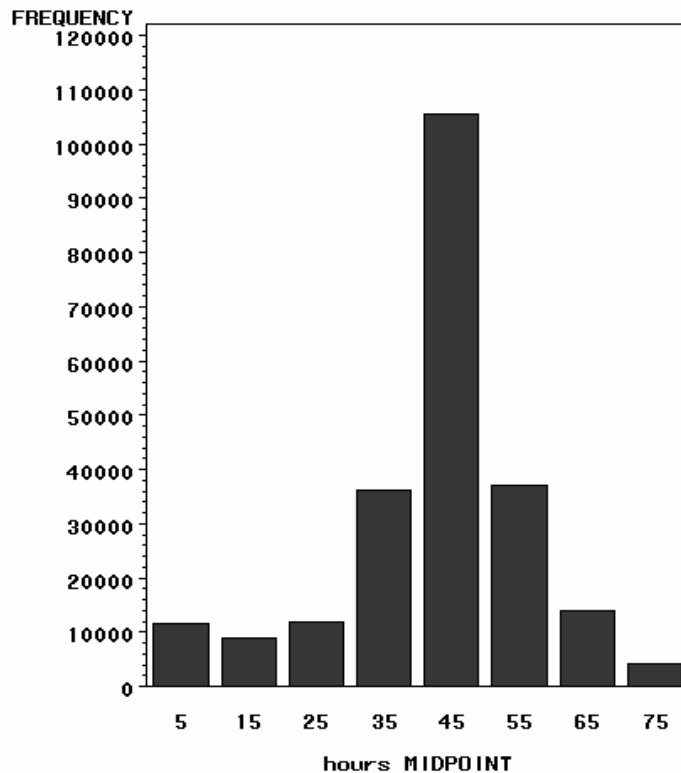


Figure 13 Frequency Distribution of Hours of Work of People with a Working Spouse and without Children (Wages over Median (\$15.46) for Group)



2.3.4 Case Four: A Single-Income Couple With Two Children

Figures 14 and 15 show EMTR profiles and budget constraints of a person with two children (aged six and nine) and a non-working partner based upon the family's combined income and the different sources of this income (market incomes earned by both parents and Family Assistance and welfare payments). Figure 14 is based on an assumed wage rate of \$10 per hour and figure 15 is based on an assumed wage rate of \$15 per hour. Net family incomes are shown on the vertical axis at the left of the figure. EMTRs are shown on the vertical axis at the right of the figure. Hours of work are shown on the horizontal axis of the figure. The extent that personal income taxes reduce gross total family income is also shown in the figures. Vertical lines in the diagrams indicate the hour levels corresponding to personal income tax thresholds applying to the market income of the spouse whose hours vary. However, for couples the thresholds applying to personal income tax rates on total individual gross income are not necessarily equivalent to these lines. This is because total individual income for tax purposes includes both individual market income and one half of the family's gross benefit income.

Figures 16 and 17 show the frequency distributions of the hours of work of individuals who are members of single-income couples with two or more children. These figures exclude those people with zero hours of work. Given that there are likely to be few observations of particular family types at certain wage rates, wage bands (of below and above median wages for particular demographic groups) have been used to calculate the frequency distributions of hours of work. Figure 16 shows the distribution of hours of work for those people receiving wage rates up to and including the median wage rate for this demographic group. Figure 17 shows the distribution of hours of work for people receiving wage rates above the median wage rate for this demographic group. The median wage for this demographic group is \$17.65 per hour. As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the distribution of hours of work and the distribution of incentives would be likely to arise.

The net Unemployment Benefit abates at a rate of 70% against increases in gross non-benefit family income above \$80 per week (\$4,160 per annum). In the \$80 abatement-free zone the EMTR is initially 16.2%, which is a combination of the personal tax scale, the Low Income Earner Rebate, and the ACC earners' levy. The EMTR then increases to 22.2%, when the personal income tax rate facing the working spouse increases to 21% (this occurs at the point at which the working spouse's non-benefit income plus half of the family's benefit income exceeds \$9,500).

This 22.2% EMTR continues until the family's total gross income (including market and benefit income) equals \$20,000. At this point the Family Support Tax Credit begins abating against increases in gross total family income at 18%. The EMTR increases by 18% to 40.2%.

Once the \$80 threshold is reached the net Unemployment Benefit abates at a rate of 70% against increases in gross non-benefit earnings. The gross benefit is above \$9,500 so the marginal tax rate on benefit income is 21%. The gross benefit abatement is 0.886 (given by $0.7 / (1 - 0.21)$), the change in gross income is 0.114 (given by $1 - 0.886$), the change in disposable income is 0.078 (given by $0.114 (1 - 0.21) - 0.012$), and the EMTR is thus 92.2%. (The method for calculating EMTRs is explained in appendix 3.)

The EMTR remains at this rate until the Unemployment Benefit is fully abated. When the benefit is fully abated the family begins to receive the Child Tax Credit. This payment is added together with the Family Support Tax Credit and it is this total figure that abates.

There is thus a reduction in the disincentive to supply labour above this point (although this is weakened by the abatement of the Family Support and Child Tax Credits). At this point the EMTR is a combination of the personal income tax scale, Low Income Earner Rebate, ACC earners' levy, and Family Assistance abatement. The EMTR thus falls to 40.2% (given by $0.21 + 0.012 + 0.18$).

When the family's gross income increases to \$27,000 the abatement of the Family Assistance programmes increases to 30% and the EMTR increases to 52.2%. When the Family Assistance programmes are fully abated the EMTR is based on only the personal income tax scale, Low Income Earner Rebate, and ACC earners' levy.

A person in a couple with two children (under 13) and a non-working spouse receiving the Unemployment Benefit has little incentive to undertake more than around 8 hours of work at \$10 per hour (or around 5 hours of work at \$15 per hour). It is not until around 49 hours of work at a wage rate of \$10 per hour (or at 32 hours at a wage rate of \$15 per hour) that the benefit is fully abated. There is thus a reduction in the disincentive to supply labour only above this point.

The frequency distribution of hours of work for single-income couples with two children and hourly wages below or equal to the median for the demographic group (\$17.65) indicates that relatively small numbers of people in this demographic group locate in the abatement-free zone. The earlier data on the distribution of EMTRs among beneficiaries, however, suggests that there could be a significant proportion of beneficiaries with zero hours of work. Further, reflecting the relatively flat nature of the budget constraint between the point at which the benefit begins abating at 70% and the point at which the benefit is fully abated, relatively few people who work locate at the point below which the benefit is fully abated. There is a mode at around 45 hours that reflects the change in the slope of the budget constraint when the Unemployment Benefit becomes fully abated and the family becomes eligible for the Child Tax Credit. Large proportions of people in this demographic group work around 45 hours per week or above and thus do not face the relatively high EMTRs that arise below this point due to the abatement of the Unemployment Benefit. The incentives that arise from the personal income tax scale, Low Income Earner Rebate, and abatement of the Family Assistance programmes are relatively significant for people who work these hours.

As with the frequency distribution of hours of work for single-income couples with two children and hourly wages below or equal to the median for the demographic group (\$17.65), the frequency distribution of hours of work for single-income couples with two children and hourly wages above the median for the demographic group demonstrates a mode at around 45 hours. The mode at around 45 hours is above the abatement of the Unemployment Benefit and thus is more likely to be influenced by the personal income tax scale and Low Income Earner Rebate and abatement of the Family Assistance programmes. Large proportions of people in this demographic group work around 35 hours per week or above and thus do not face the relatively high EMTRs that arise below this point due to the abatement of the Unemployment Benefit. The incentives that arise from the personal income tax scale, Low Income Earner Rebate, and abatement of the Family Assistance programmes are relatively significant for people who work these hours.

Overall, few people seem to locate in the abatement-free zone for the Unemployment Benefit, but there may be a large number of people at zero hours of work who could nevertheless be affected by any change to this zone. The lower the hourly wage the greater the significance of the abatement of the benefit and the abatement-free zone for financial incentives. Large proportions of people in this demographic group face

incentives that arise from the personal income tax scale, Low Income Earner Rebate, and abatement of the Family Assistance programmes.

In comparison to other family types, the numbers of people in both distributions of single-income couples with two children are relatively small (although larger than the equivalent distributions of sole parents). Significant numbers of the income earners in these families who work at wage rates below or equal to the median hourly wage work for around 45 hours per week or more. Significant numbers of the income earners in these families who work at wage rates above the median hourly wage work for around 35 hours per week or more.

Figure 14: EMTR Schedule and Budget Constraint of a Person with a Non-Working Spouse and Two Children (Under 13) and with a Wage Rate of \$10 per hour

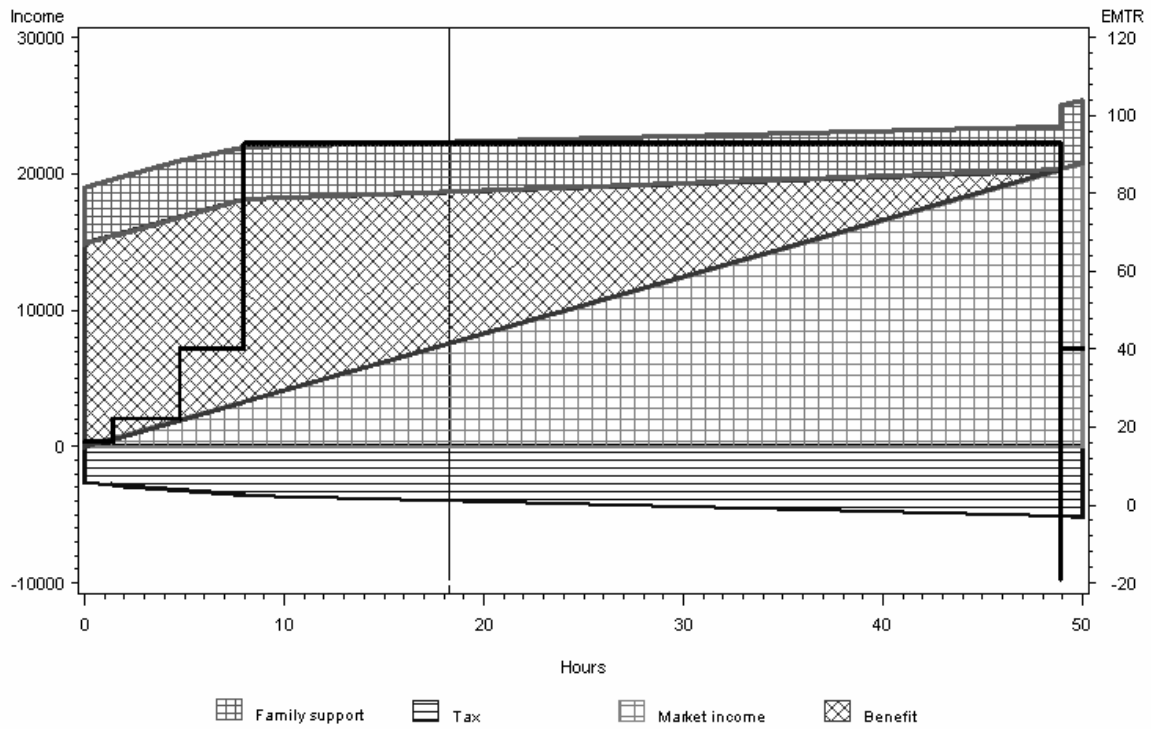


Figure 15: EMTR Schedule and Budget Constraint of a Person with a Non-Working Spouse and Two Children (Under 13) and with a Wage Rate of \$15 per hour

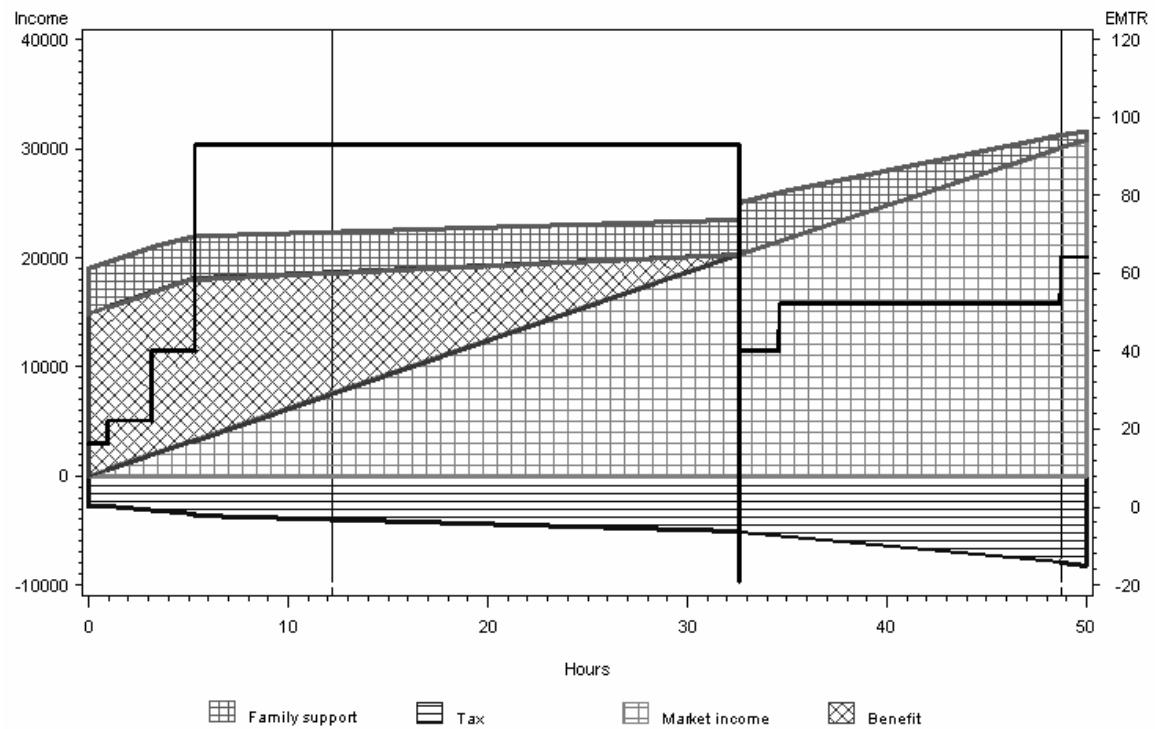


Figure 16: Frequency Distribution of Hours of Work of People with a Non-Working Spouse and Two or More Children (Wages up to and including Median (\$17.65) for Group)

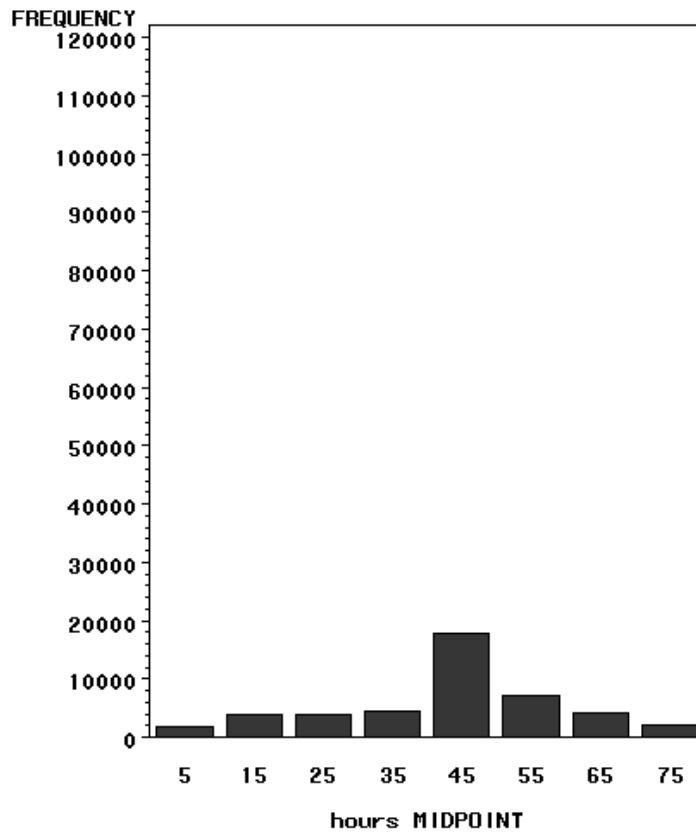
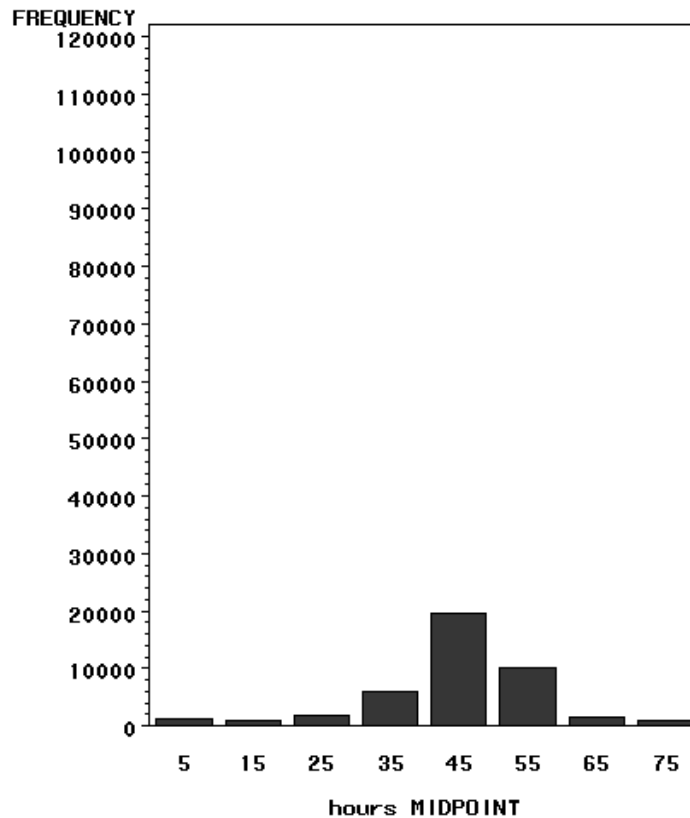


Figure 17: Frequency Distribution of Hours of Work of People with a Non-Working Spouse and Two or More Children (Wages over Median (\$17.65) for Group)



2.3.5 Case Five: A Two-Income Couple With Two Children

Figures 18 and 19 show EMTR profiles and budget constraints of a person with two children (aged six and nine) and a working partner based upon the family's combined income and the different sources of this income (market incomes earned by both parents and Family Assistance and welfare payments). Figure 18 is based on an assumed wage rate of \$10 per hour and figure 19 is based on an assumed wage rate of \$15 per hour. In both cases it is assumed that the working partner has an unchanging gross market income of \$11,500. Net family incomes are shown on the vertical axis at the left of the figure. EMTRs are shown on the vertical axis at the right of the figure. Hours of work are shown on the horizontal axis of the figure. The extent that personal income taxes reduce gross total family income is also shown in the figures. Vertical lines in the diagrams indicate the hour levels corresponding to personal income tax thresholds applying to the market income of the spouse whose hours vary. However, for couples the thresholds applying to personal income tax rates on total individual gross income are not necessarily equivalent to these lines. This is because total individual income for tax purposes includes both individual market income and one half of the family's gross benefit income.

Figures 20 and 21 show the frequency distributions of the hours of work of individuals who are members of two-income couples with two or more children. These figures exclude those people with zero hours of work. Given that there are likely to be few observations of particular family types at certain wage rates, wage bands (of below and above median wages for particular demographic groups) have been used to calculate the frequency distributions of hours of work. Figure 20 shows the distribution of hours of work for those people receiving wage rates up to and including the median wage rate for this demographic group. Figure 21 shows the distribution of hours of work for people receiving wage rates above the median wage rate for this demographic group. The median wage is calculated as the median wage of all those people in couples (including primary and secondary earners) who receive market income. The median wage for this demographic group is \$16.04 per hour. As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the distribution of hours of work and the distribution of incentives would be likely to arise.

The net Unemployment Benefit abates at a rate of 70% against increases in gross non-benefit family income above \$80 per week (\$4,160 per annum).

As the working partner earns \$11,500 the family non-benefit income is already greater than \$80 per week when the person for whom the profile is drawn begins to earn market income. This person thus immediately faces Unemployment Benefit abatement on non-benefit earnings. In a couple, the personal income tax rate on benefit income for each individual is calculated on the basis of half of the family's total benefit income. The marginal income tax rate applying to the benefit income is thus 15%. While the person's total income (market income plus half the family's benefit income) is under \$9,500 (until approximately 12 hours of work at \$10 per hour and approximately 8 hours of work at \$15 per hour) the marginal tax rate on the total income is also 15%. Thus when the person works for one hour the gross benefit abatement is 0.824 (given by $0.7 / (1 - 0.15)$), the change in gross income equals 0.176 (given by $1 - 0.824$), the change in disposable income equals 0.138 (given by $(0.176 (1 - 0.15) - 0.012)$), and the EMTR equals 0.862 (given by $1 - 0.138$). (The method for calculating EMTRs is explained in appendix 3.)

This EMTR of 86.2% continues until the person's total income increases to above \$9,500 and the marginal tax rate on total income increases to 21% (the marginal tax rate on

benefit income remains at 15%, however). Thus when this person works for one additional hour the gross benefit abatement is 0.824 (given by $0.7 / (1 - 0.15)$), the change in gross income equals 0.176 (given by $1 - 0.824$), the change in disposable income equals 0.127 (given by $0.176 (1 - 0.21) - 0.012$), and the EMTR equals 0.873 (given by $1 - 0.127$).

This EMTR continues until the combined family gross income equals \$20,000, at which point the Family Support programme begins to abate. Between \$20,000 and \$27,000 the Family Support abatement rate is 18%. The abatement of Family Support is this abatement rate multiplied by the change in gross income. The Family Support abatement is thus 0.032 (given by 0.176×0.18) and the EMTR is thus 90.4%.

The 90.4% EMTR continues until the point at which the benefit is abated. The higher the hourly wage the person receives the sooner this point is reached. When the benefit is fully abated the family begins to receive the Child Tax Credit. This payment is added together with the Family Support Tax Credit and it is this total figure that abates. As the family is no longer receiving the Unemployment Benefit the abatement of the benefit no longer reduces gross non-benefit earnings. Thus abatement of the Family Assistance programmes increases to 18% and the EMTR increases to 40.2% (given by $0.18 + 0.21 + 0.012$).

This EMTR continues until the gross family income increases to \$27,000, at which point the Family Assistance abatement rate increases to 30%. At this point the EMTR increases to 52.2%. The EMTR remains at this level until the family's entitlement to the Family Assistance programmes is fully abated. When these programme are fully abated the EMTR drops to 22.2%, a level that it remains at until the primary income earner's income increases to \$38,000 and the EMTR increases to 34.2%.

A person in a couple with two children receiving the Unemployment Benefit has little incentive to undertake part-time work if his or her partner has a fixed income of \$11,500. At around 26 hours of work at a wage rate of \$10 per hour (or at 17 hours at a wage rate of \$15 per hour) the benefit is fully abated and the family receives the Child Tax Credit. There is thus a reduction in the disincentive to supply labour above this point (although this is weakened by the abatement of the Family Support and Child Tax Credits).

As the median wage differs from the wage rates assumed in the calculation of EMTR profiles and budget constraints, some variance in the measured distribution of hours of work and the measured distribution of incentives would be expected. In spite of this, however, the financial incentives from social assistance programmes do appear to play an important role in influencing the frequency distribution of hours of work of different demographic groups.

The frequency distribution of hours of work for two-income couples with two children and two incomes and hourly wages equal to or below the median for the demographic group (\$16.04) demonstrates a small mode at around 25 hours and a larger mode at around 45 hours. For these families the small mode at around 25 hours reflects the change in the slope of the budget constraint when the Unemployment Benefit becomes fully abated and the family becomes eligible for the Child Tax Credit. The larger mode at around 45 hours is above the abatement of the Unemployment Benefit and thus is more likely to be influenced by the personal income tax scale, Low Income Earner Rebate, and abatement of the Family Assistance programmes. Large proportions of people in this demographic group work around 25 hours per week or above and thus do not face the relatively high EMTRs that arise below this point due to the abatement of the Unemployment Benefit.

As was the case for those couples with two incomes and two children and hourly wages below or equal to the median for the demographic group (\$16.04), the frequency distribution of hours for couples with hourly wages above the median demonstrates a mode at around the 45 hour point. This mode is above the abatement of the Unemployment Benefit and is thus more likely to be influenced by the personal income tax scale, Low Income Earner Rebate, and abatement of the Family Assistance programmes. Large proportions of people in this demographic group work around 20 hours per week and above and thus do not face the relatively high EMTRs that arise below this point due to the abatement of the Unemployment Benefit.

Overall, few people seem to locate in the abatement-free zone for the Unemployment Benefit, but there may be a large number of people at zero hours of work who could nevertheless be affected by any change to this zone. The lower the hourly wage the greater the significance of the abatement of the benefit and the abatement-free zone for financial incentives. Large proportions of people in this demographic group face incentives that arise from the personal income tax scale, Low Income Earner Rebate, and abatement of the Family Assistance programmes.

In comparison to other family types, the numbers of individuals in both distributions of working couples with two children are relatively large. Significant numbers of individuals in working couples with two children who work do so for between 40 and 60 hours per week.

Figure 18: EMTR Schedule and Budget Constraint of a Person with a Working Spouse and Two Children (under 13) and with a Wage Rate of \$10 Per Hour

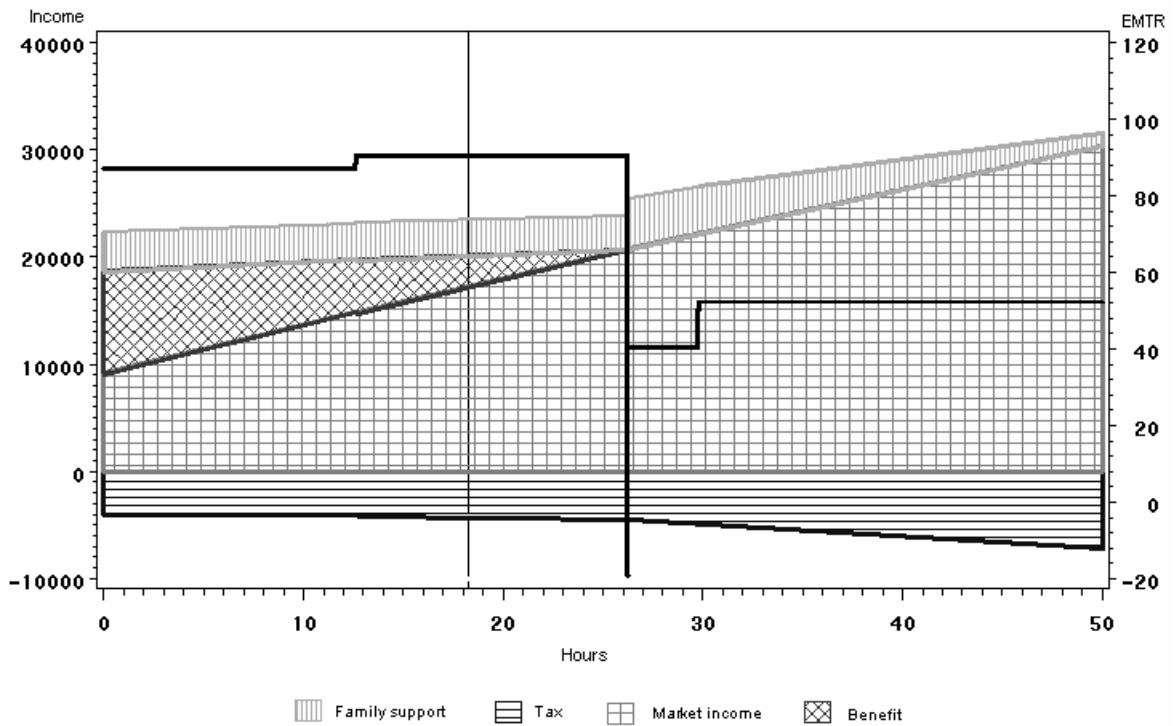


Figure 19: EMTR Schedule and Budget Constraint of a Person with a Working Spouse and Two Children (under 13) and with a Wage Rate of \$15 Per Hour

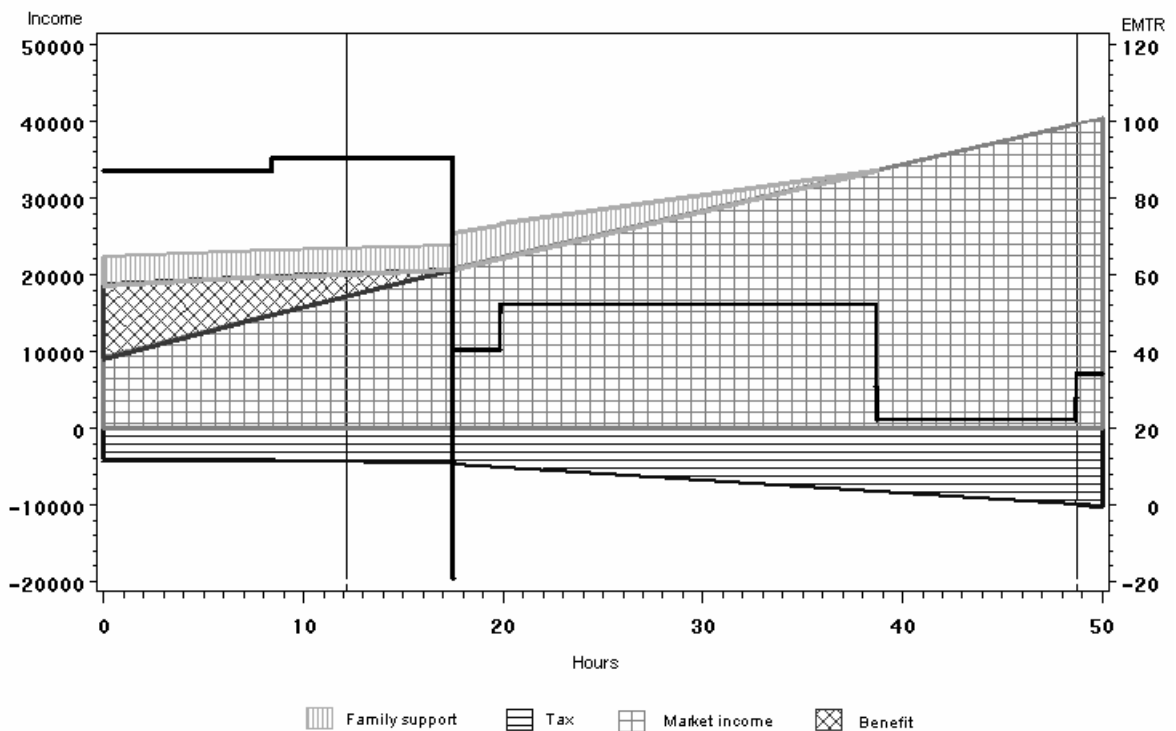


Figure 20: Frequency Distribution of Hours of Work of People with a Working Spouse and Two or More Children (Wages up to and including Median (\$16.04) for Group)

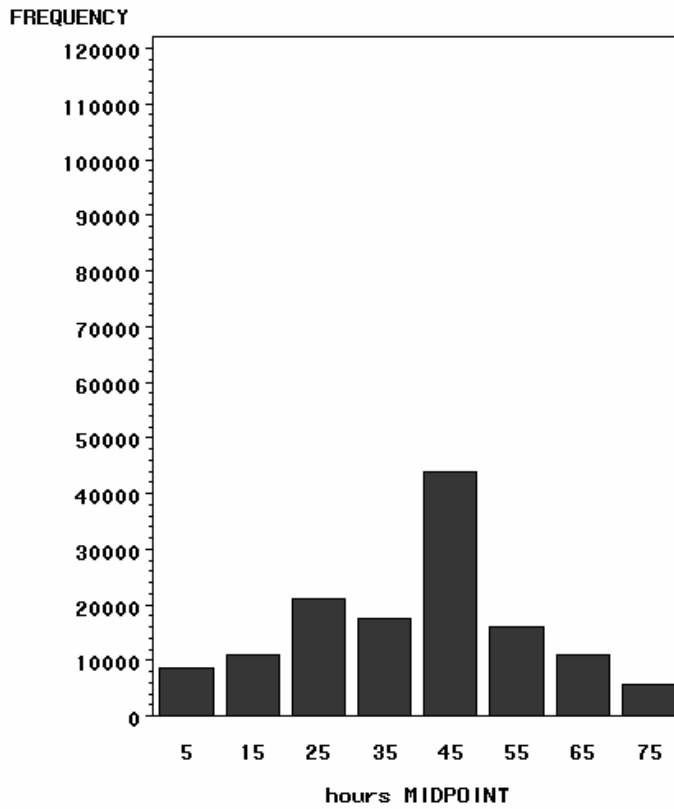
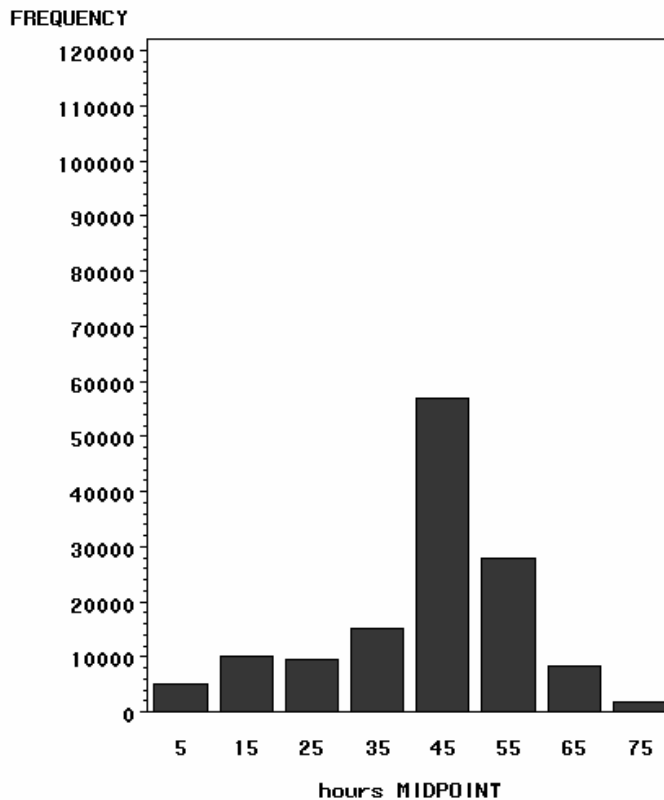


Figure 21: Frequency Distribution of Hours of Work of People with a Working Spouse and Two or More Children (Wages over Median (\$16.04) for Group)



3 Further Considerations

A number of considerations that are additional to the analysis above are discussed below. Accommodation and childcare costs are discussed in section 3.1 and the length of time that people tend to spend on social welfare benefits is discussed in section 3.2.

3.1 Accommodation and Childcare Costs

Due to the difficulty of accurately incorporating issues surrounding accommodation and childcare costs into the type of analysis above, these two factors have been treated separately in this paper. However, this should not be seen as reducing the importance of these factors. Accommodation costs have been identified as an important indicator of poverty and low living standards [Stephens *et al*, 2001]. Childcare costs are an important cost associated with working and have particular implications for the labour market participation of caregivers.

Issues surrounding accommodation and childcare costs are difficult to accurately incorporate into the analysis above for two reasons. Firstly, considerable variability exists among the families who face these costs. Accommodation costs, for example, vary widely among and within different regions of the country.¹³ Families also differ in the degree to which they can access informal childcare provided by other family members (such as grandparents). Modelling these costs accurately requires information that is more detailed than that captured by the HES or during routine programme administration. Secondly, the nature of accommodation and childcare costs are such that they are both largely endogenous, which means that their consumption to some degree reflects other factors, such as the degree to which people choose to participate in the labour market.

The following discussion largely focuses on those people who currently receive assistance for accommodation, childcare, or both types of cost. However, the assumption that receipt of income support is an indicator of need is limited as take-up of assistance among the needy population is likely to be less than 100% [Atkinson, 1989, p. 197]. For instance, not all low-income families in need of accommodation assistance receive public assistance for their accommodation costs (Income Related Rentals and the Accommodation Supplement). Further, not all those who take-up assistance may not be in need, due to fraudulent behaviour and overpayments due to administrative error. Receipt of assistance may also reflect the potential for moral hazard associated with the provision of such assistance. For example, some people may alter their circumstances in ways viewed as undesirable by policymakers (e.g., place themselves in positions of need) in order to remain eligible for assistance [Sen, 1995, p. 11].¹⁴

The two main areas of publicly funded accommodation assistance are the Income Related Rentals and Accommodation Supplement programmes.¹⁵ These programmes address different needs (with Income Related Rentals only being available to state house tenants while Accommodation Supplement payments are available for both public and private

¹³ People in Auckland tend to spend the highest proportion of their income on accommodation and increases in accommodation costs have been highest in the Auckland and Wellington regions [Roper *et al*, 2002, pp. 52, 57-59].

¹⁴ However, in some cases social assistance programmes could themselves be a factor in creating subgroups' needs. The abatement of assistance may, for example, create high work disincentives.

¹⁵ As at March 2002, 34% of Accommodation Supplement recipients lived in Auckland, 35% in other urban areas, and 31% in the rest of New Zealand [Roper *et al*, 2002, p. 55].

accommodation) and differ in terms of their generosity (with Income Related Rentals generally being the more generous of the two programmes). The Accommodation Supplement is the main form of accommodation assistance for non-beneficiaries.

For recipients of main benefits the Accommodation Supplement reduces by 25 cents per dollar for the first \$80 of non-benefit income. Above the \$80 threshold the Accommodation Supplement is not reduced until the recipient is no longer a beneficiary. The abatement then follows the rules for non-beneficiaries. For non-beneficiaries, the supplement abates at 25 per cent when income exceeds the rate of the applicable gross Invalids Benefit plus an add-on of \$17.92.

Both forms of accommodation assistance tend to be targeted towards beneficiaries. As at March 2002, the largest numbers of people benefiting from Income Related Rentals were beneficiaries (as these people make up 88% of tenants in state houses) and the large majority (91%) of Accommodation Supplement recipients were beneficiaries [Roper *et al*, 2002, pp. 55-56]. Disincentives associated with the receipt of these programmes therefore mostly face beneficiaries.

Further, a majority (56%) of the recipients of the Accommodation Supplement were in families without children (of this group 89% were single and 11% were in partnered relationships). A large majority (81%) of the families with dependent children who were receiving the Accommodation Supplement were sole parents [Roper *et al*, 2002, p. 56]. The majority of the families that face any disincentives associated with the receipt of the Accommodation Supplement are childless. Of the families with children who face these disincentives the majority are sole parents.

The Childcare Subsidy provides financial assistance to low-income families with a dependent child under the age of five to obtain access to childcare services. The OSCAR Subsidy helps low-income families to pay for before and after school programmes and school holiday programmes for children aged five to 13.¹⁶

As with accommodation assistance, the majority of childcare assistance goes to recipients of main benefits. At August 2002 the majority (61%) of caregivers receiving the Childcare Subsidy were in families who also received main forms of income assistance and of these families the majority (59%) were Domestic Purposes Benefit recipients and a small proportion (2%) were Unemployment Benefit recipients. Disincentives associated with the receipt of these programmes therefore mostly face beneficiaries (and Domestic Purposes Beneficiaries in particular). The majority of families who receive childcare assistance do so for formal childcare arrangements.¹⁷

Overall the disincentives associated with the Accommodation Supplement are likely to mostly face childless beneficiaries but a significant proportion of these recipients are also sole parents (particularly Domestic Purposes Benefit recipients), who are the group that account for the majority of (and thus may mostly face any disincentives associated with) childcare assistance.

¹⁶ The 2001 Census estimated that approximately 197,000 families had a child under five. The majority (73%) of these families were two-parent families but a sizeable number (23.5%) were sole mother families. Labour force participation of mothers tends to increase with the age of children, particularly when the youngest child was older than one. Half of the partnered mothers with a youngest child over five were employed and 29% of sole mothers with a youngest child over five were employed. There was little recorded difference in the hours of work between sole and partnered mothers. The most common hours of work for mothers were recorded as 30 hours or more per week.

¹⁷ Formal care arrangements are held by 141,000 families and 44,000 families hold informal care arrangements. As at August 2002, 11,000 families received the Childcare Subsidy.

3.2 The Time People Spend on Social Assistance

The probability of a person's spell on a social welfare benefit ending decreases as benefit duration increases. This could be due to a wide range of factors, such as reservations employers may have about hiring the long-term unemployed workers, discouragement that may arise when a person has been unable to move off a benefit for a long period, or a composition effect (where, as the length of time on benefit increases, people with low probabilities of employment account for greater proportions of those who receive assistance) [Wilson, 1999, p. 66; Wilson, 2002, p. 48].

Wilson [1999] examines administrative data on the duration of receipt of and numbers of spells on main working-aged social welfare benefits (excluding supplementary benefits and New Zealand Superannuation) between 1993 and 1998 for a cohort of around 250,000 people who were granted a working aged benefit in 1993. For the majority (an estimated 54%) of recipients the duration of receipt of the first observed spell on a benefit was less than 20 weeks. For an estimated 79% of recipients the duration of receipt for the first spell on a benefit was less than one year. Further, for an estimated 93% of recipients the duration of receipt for the first spell on a benefit was less than three years. An estimated 4% of recipients spent at least five years on their first spell on a benefit [Wilson, 1999, p. 66].

The duration of the first spell on a benefit varied among the benefit types. It was estimated that approximately 3% of Unemployment Benefit recipients spent all of the five years from 1993 to 1998 receiving a benefit. In contrast, it was estimated that approximately 26% of Domestic Purposes Beneficiaries, 39% of Widows' Benefit recipients, 58% of Invalids' Benefit recipients, and 15% of Sickness Benefit recipients spent all of the five years receiving a benefit [Wilson, 1999, p. 68].

For those people who transfer to another benefit or return to a benefit after some period off a benefit, the duration of the first spell on a benefit clearly understates the length of time that they spend on a benefit. In terms of the total time on a benefit, an estimated 8% of the cohort spent all of the five-year period on a benefit, 33% spent three or more of the five years on a benefit, and 62% spent at least one of the five years on a benefit [Wilson, 1999, p. 67].

An alternative view on the duration of benefit receipt is provided by comparing the number of people in the cohort that received a benefit at different points of time. Of those people who entered a benefit in 1993, an estimated 47% of Sickness Benefit recipients, 52% of Widows' Benefit recipients, 57% of Domestic Purposes Benefit recipients, and 69% of Invalids' Benefit recipients who entered a benefit in 1993 were receiving a benefit (whether continuously or not) at the end of the five-year period. Unemployment Benefit recipients were the least likely to have remained on or be back on benefit at the end of the five-year period. However, due to variations in seasonal employment, receipt of the Unemployment Benefit was strongly cyclical [Wilson, 1999, p. 71].

4 Trade-Offs Between Outcomes

Social assistance programmes are often designed to pursue a broad range of outcomes, such as increasing the reward from working for low-income people, controlling the fiscal burden of programmes on taxpayers, ensuring that families have adequate incomes, controlling the costs facing recipients and their employers of complying with programmes, reducing the costs to the government of administering programmes, redistributing income throughout recipients' lifecycles, supporting parenting and strengthening families, and supporting the operation of private charitable organisations.

It is seldom possible to develop reforms that improve all the outcomes of social assistance programmes. For instance, an objective for increasing labour supply could be satisfied by redesigning programmes in order to create an incentive structure that encourages parents to increase their participation in the labour market. To the extent that this incentive structure encourages long-term investments (such as human capital acquisition) that create future gains, the need to make trade-offs between public policy outcomes may be reduced [Blank, 2002, p. 2]. For instance, evidence suggests that as well as increasing labour supply this incentive structure could improve outcomes for the children in these families in later life through increasing family incomes (poverty is associated with poor outcomes for children) and the labour market participation of mothers with older children (which is associated with positive outcomes for these children). Yet there is, however, remaining potential for conflict between public policy outcomes, as evidence also suggests that if the policy change also increases the labour market participation of mothers with young children the benefits from the reform may not be unambiguously positive as their labour market participation could lead to poor outcomes in later life for the children in their families [Jacobsen *et al*, 2002, pp. 23-24].

The discussion of financial incentives to work in this paper illustrated a number of tensions that arise when designing social policy initiatives. For instance, as shown by the abatement of the Domestic Purposes Benefit, lowering abatement at low hours of work in order to encourage participation in the labour market comes at the economic cost of increasing abatement rates further up the distribution of hours of work (thus potentially discouraging advancement within the labour market). If an objective of policy was to increase the financial incentives to enter the labour market facing low-wage single people (possibly in response to labour shortages) this would be likely to come at the economic cost of increasing the abatement of assistance further up the income distribution and thus potentially decreasing these people's financial incentives for full-time work.

In the design of social policy initiatives tensions may also arise between government objectives for improving financial incentives to work and other government objectives, such as ensuring income adequacy (which could be indicated by poverty reduction effectiveness) and controlling the fiscal costs of programmes (which could be indicated by targeting efficiency).¹⁸ For instance, poverty reduction effectiveness could be increased by raising the level of an income transfer to people below a poverty threshold. However, if the rate at which the transfer abates does not change, targeting efficiency could decline

¹⁸ Measures of poverty reduction effectiveness are based on the comparison between pre-transfer and post-transfer rates of poverty [Stephens *et al*, 2001, p. 83]. Poverty reduction effectiveness is measured by the ratio of benefits going to the pre-transfer poor (the target) group to the total benefits needed by that group [Stephens *et al*, 2001, p. 85]. There are two measures of targeting efficiency. The first measure, vertical expenditure efficiency, is the proportion of total transfers going to the pre-transfer poor [Creedy, 1996, p. 104]. The second measure, poverty reduction efficiency, is the proportion of total transfers that goes to the pre-transfer poor excluding the expenditure that raises these people above the poverty threshold [Creedy, 1996, p. 104].

because of greater spillover to the non-poor. In contrast, targeting efficiency could increase if the spillover of benefits to the non-poor was reduced through a reduction in the transfer payment. Yet this could lead to an increase in the incidence of poverty and thus reduce poverty reduction effectiveness. Targeting efficiency and poverty reduction effectiveness could, however, both be maximised if the level of the transfer was set as equal to the poverty threshold and there was a 100% EMTR on additional earnings. Yet this EMTR results in disincentives for labour supply for those in poverty before transfers (a poverty trap) [Stephens *et al*, 2001, p. 86].

Tensions in the design of social policy initiatives could be mediated through introducing administrative requirements, such as work testing, in programmes. Yet these administrative requirements are themselves subject to tensions in their design. For instance, increasing the intensity of administration (and consequently increasing administration and compliance costs) can encourage recipients' labour supply (and also reduce fraud and opportunities for moral hazard) but may also reduce rates of take-up and the effectiveness of programmes at reducing poverty. To some degree these tensions reflect the administrative vehicle chosen to deliver assistance, as tax-based and social welfare-based social assistance programmes differ in the extent to which they can accurately assess entitlement, respond to recipients' changing circumstances, and ensure compliance and participation in programmes [Alstott, 1995].

As a consequence of these tensions decisions about particular social assistance initiatives should be placed within the context of a government's wider economic and social agenda, such as developing a more inclusive and growing economy [Treasury, 2001]. Priority should also be accorded to developing initiatives that would lead to general improvements in the social assistance system. When large structural problems are not dealt with, smaller but significant and time-consuming problems arise frequently.

5 Conclusions

The current financial incentives to work contained in the social assistance system reflect efforts to tailor different financial incentives to different groups in the population. No single structure of financial incentives is appropriate for all people and at all times. It is therefore necessary from time to time to consider whether existing financial incentives continue to meet government objectives, such as encouraging work among different groups in the population. Improving the structure of financial incentives, however, defies simple solutions and requires trade-offs between competing and conflicting objectives to be made.

To illustrate the broad variety of financial incentives facing different groups in the population the financial incentives facing various groups of people are discussed below. These financial incentives reflect the proportions by which increases in gross income are reduced by taxes and the abatement of social assistance benefits. Note that due to the difficulty of accurately modelling accommodation and childcare assistance the financial incentives created by these forms of assistance are discussed separately below.

The distribution of financial incentives to work over the total population is shown with the distribution of individuals by EMTRs and benefit receipt. For the majority of the population the EMTRs created by the interaction of the personal income tax and social assistance systems are less than 48%. There are, however, a small number of demographic groups at certain income levels who face EMTRs of 48% or above. These groups include a number of people who receive income-tested main benefits, the Accommodation

Supplement, the Family Assistance programmes, or some combination of all of these programmes.

The distribution of incentives among different family types is shown with the EMTR profiles, budget constraints, and frequency distribution of hours of work of different family types at different hourly wage rates. For all family types the lower the hourly wage the greater the significance of the abatement of the benefit and the abatement-free zone for financial incentives.

For single people without children the social assistance system provides relatively few disincentives for increases in hours of work above 30 hours per week at \$10 per hour (or 20 hours per week at \$15 per week). There are greater disincentives for small increases in hours of work at hours below this level due to the abatement of the Unemployment Benefit.

For sole parents with one child the social assistance system provides relatively few disincentives for small increases in hours of work for people when they first begin to work in the labour market. However, due to the abatement of the Domestic Purposes Benefit these disincentives increase so that by about 18 hours of work at \$10 per hour (or 12 hours at \$15 per hour) there is little incentive to work increased hours unless it is possible to work for more than 46 hours per week at \$10 per hour (or 30 hours at \$15 per hour). These disincentives are reduced when the Domestic Purposes Benefit is fully abated and the Child Tax Credit is received.

A person in a couple with two children (under 13) and a non-working spouse receiving the Unemployment Benefit has little incentive to undertake more than around 8 hours of work at \$10 per hour (or around 5 hours of work at \$15 per hour). It is not until around 49 hours of work at a wage rate of \$10 per hour (or at 32 hours at a wage rate of \$15 per hour) that the benefit is fully abated. There is thus a reduction in the disincentive to supply labour only above this point.

For people with working partners (with fixed incomes of \$11,500) and without children the social assistance system provides relatively large disincentives for small increases in hours of work once they begin working in the labour market. However, there are relatively few disincentives for increases in hours of work above the point at which the family's Unemployment Benefit is fully abated (around 24 hours of work at a wage rate of \$10 per hour or 16 hours at a wage rate of \$15 per hour).

The disincentives facing people with working partners (with fixed incomes of \$11,500) and children are similar to those facing people with working partners (with fixed incomes of \$11,500) and without children. These people face relatively large disincentives for small increases in hours of work once they begin working in the labour market, but these disincentives fall once abatement of the Unemployment Benefit ceases and the Child Tax Credit is received (at around 26 hours of work at a wage rate of \$10 per hour or 17 hours at a wage rate of \$15 per hour).

The discussion of financial incentives above did not include the incentives created by the receipt of accommodation and childcare assistance. As a result disincentives for small increases in hours of work facing recipients of main social welfare benefits would have been underestimated. This is because the disincentives associated with the receipt of the Accommodation Supplement and Income Related Rentals mostly face recipients of main social welfare benefits, as the majority of expenditure on these programmes goes to these people. Likewise, any disincentives associated with the receipt of the Childcare and OSCAR Subsidies also mostly face recipients of main social welfare benefits, as the

majority of expenditure on these programmes also goes to these people (particularly Domestic Purposes Benefit recipients). Overall the disincentives associated with the Accommodation Supplement are likely to mostly face childless recipients of main social welfare benefits but a significant proportion of these recipients are also sole parents (particularly Domestic Purposes Benefit recipients), who are the group that account for the majority of (and thus may mostly face any disincentives associated with) childcare assistance.

The financial incentives present in the social assistance system, particularly as they relate to recipients of main social welfare benefits, are also reflected in the length time for which beneficiaries receive social assistance. Sole parents, incapacitated people, and widows tend to have the longest durations on social assistance benefits. The unemployed are the most likely to move off a benefit. Receipt of the Unemployment Benefit is highly cyclical, however. The social assistance system thus both supports people deemed as largely unable to work and provides temporary relief for people capable of working but unable to do so for short-periods. The challenge is to develop initiatives that reconcile these potentially conflicting objectives.

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Appendix 1: New Zealand's Social Assistance System

New Zealand's Three-Tiered Social Assistance System

Tier One: Main Benefits

Programme	Entitlement Criteria	Abatement Regime
Domestic Purposes Benefit: Care for Sick and Infirm	Provides income support to people who care for people who need constant care at home. Must be aged 16 and over and caring full-time for someone who would have to be in hospital if applicant was not looking after them (this person cannot be the applicant's partner or dependant child).	Every dollar of non-benefit taxable family income between \$80 and \$180 reduces the net benefit by 30 cents and every dollar of non-benefit taxable income above \$180 reduces the net benefit by 70 cents.
Domestic Purposes Benefit: Sole Parent	Provides income support to parents who, without the support of their partners, care for children. Must be 18 or over (or 16 or over if having been legally married), the sole caregiver of a dependant child under 18, a resident of New Zealand, and have been resident for at least two years. If the dependent child is born outside New Zealand the residency requirements increases to between three to ten years, depending on circumstances.	Subject to the same regime as that applying to the Domestic Purposes Benefit: Care for Sick and Infirm.
Domestic Purposes Benefit: Woman Alone	Provides income support to older women who are alone. Must be aged 50 or over, a resident of New Zealand, and have become alone after 50. Must also either have cared for a dependant child for at least 15 years, or cared full-time for a sick or frail relative for at least five years, or been previously supported by a partner for at least five years.	Subject to the same regime as that applying to the Domestic Purposes Benefit: Care for Sick and Infirm.
Invalids' Benefit	Provides income support to people permanently and severely restricted in their capacity for work because of a sickness, injury, or disability. Must be aged 16 and over, either permanently and severely restricted in the capacity to work for a minimum of two years or permanently blind, a legal resident of New Zealand, and have been resident for at least ten years.	Every dollar of non-benefit taxable family income between \$80 and \$180 reduces the net benefit by 30 cents. Every dollar of non-benefit taxable income above \$180 reduces the net benefit by 70 cents.
New Zealand Superannuation	Provides a retirement income to people once they reach the qualifying age. Must be 65 or over, a New Zealand citizen or permanent resident, and have lived in New Zealand for a total of ten years since turning 20 and a total of five years since turning 50. A partner of a qualifying recipient may receive a payment even if he or she does not qualify for his or her own New Zealand Superannuation, this payment will be at the lower non-qualifying spouse rate, however.	No income or means test unless the recipient's partner receives a non-qualifying spouse payment. The non-qualifying spouse payment is subject to the same regime as the Unemployment Benefit.

Tier One: Main Benefits		
Programme	Entitlement Criteria	Abatement Regime
Orphans' and Unsupported Childs' Benefits	Provides income support to the main caregivers of children whose parents cannot care for them. The child must be under 18, single, and financially dependent on the caregiver. The caregiver must be 18 or over, the main caregiver of the child, expect to care for the child for 12 months or more, not be the child's natural or adoptive parent, and not be a professional caregiver or childcare organisation.	The payment neither abates against the caregiver's income nor the 'active' income of the child (money from working). The payment abates against the child's 'passive' income (income from their parents' estate, a family trust, investments, or regular insurance payments). Above an income limit (between \$1,988 and \$2,841 gross per annum depending on the child's age) the benefit abates dollar for dollar.
Sickness Benefit	Provides income support for people who are unable to work due to sickness, illness, or pregnancy. Must be aged 18 or over (or aged 16 or over if living with a partner and dependent child), unable to work temporarily because of sickness, injury, or pregnancy (if more than 26 weeks pregnant), a legal resident of New Zealand, and have been resident for at least two years.	Subject to the same regime as the Unemployment Benefit.
Transitional Retirement Benefit	Provides income support to people who are retired or have low incomes and who have not yet reached the qualifying age for New Zealand Superannuation. Must be have reached the qualifying age (was 64.5 at 1 April 2003 but increasing to reach 65 by 1 April 2004), have lived in New Zealand for a total of ten years since turning 20 and a total of five years since turning 50.	Subject to the same regime as the Unemployment Benefit.
Unemployment Benefit	Provides income support for people who are looking for work or training for work. Must be aged 18 or over (or aged 16 or over if living with a partner and dependent child), unemployed, actively seeking work or undertaking an approved work-related training course, a legal resident of New Zealand, and have been resident for at least two years.	Every dollar of non-benefit taxable family income above \$80 per week reduces the net benefit income by 70 cents.

Tier One: Main Benefits

Programme	Entitlement Criteria	Abatement Regime
War and Veterans' Pensions	War and Veterans' pensions are for ex-service people with a disability from their service. There are four War and Veterans' Pensions: the War Disablement Pension, Surviving Spouse Pension, Veterans' Pension, and Special Allowances.	No income or means test except for Veterans' pension recipients with partners under the New Zealand Superannuation qualifying age. For the Veterans' Pension, a recipient with a spouse under this age can either decide not to include the spouse in the pension (half of the married rate will be paid free of any income test) or to include the spouse (the pension will be income-tested and every dollar of joint income above \$4,160 per year will reduce the pension by 70 cents).
Widows' Benefit	Provides income support to women who have had a husband or partner die. Must be aged 16 and over, a woman whose husband or partner has died, and a resident of New Zealand. Must also be either the caregiver of a dependant child, or have been married for at least 15 years and have had children, or had a dependant child for at least 15 years while married or widowed, or have been married for at least five years and widowed after the age of 50, or be over 50 and have been married for ten years and widowed after the age of 40. The benefit is only available to those people who do not remarry or find a new partner.	Subject to the same regime as that applying to the Domestic Purposes Benefit: Sole Parent.

Tier Two: Supplementary Assistance

Programme	Entitlement Criteria	Abatement Regime
Accommodation Supplement	Provides non-taxable assistance towards accommodation costs. The Accommodation Supplement is paid to welfare recipients and low-income workers.	For welfare recipients, the supplement reduces by 25 cents per dollar for the first \$80 of non-benefit income. Above the \$80 threshold the Accommodation Supplement is not reduced until the recipient is no longer a beneficiary. The abatement then follows the rules for non-beneficiaries. For non-beneficiaries, the supplement abates at 25 per cent when income exceeds the rate of the applicable gross Invalids Benefit plus an add-on of \$17.92.
Away from Home Allowance	Payment towards the living costs of dependent children who have to live away from home to do an approved tertiary study or go on a training course.	
Childcare Subsidy and the OSCAR Subsidy	The Childcare Subsidy provides financial assistance to low-income families with a dependent child under the age of five to obtain access to childcare services. The OSCAR Subsidy helps low-income families to pay for before and after school programmes and school holiday programmes for children aged five to 13. Assistance is paid directly to the care provider.	The subsidy depends on the size of the family, the family's income, and how many hours a week the child goes to the care provider.
Community Services Card	Provides assistance towards the cost of healthcare. Subsidises visits to the family doctor and reduces the cost of prescriptions. The card covers the person it is issued to and their dependent children under 18. The cardholder must be 18 or over (or 16 or over if studying full-time at university or polytechnic or working and supporting himself or herself), have a low to middle income or receive a main benefit, and be a New Zealand resident. People with refugee status can also receive the card. Other assistance that may also be available includes the High Use Health Card and the Pharmaceutical Subsidy Card.	The subsidy for cardholders reduces the cost of each visit to the doctor by \$15 for an adult and \$20 for a child six years or older. All children under six automatically get a subsidy of \$35 on doctors' fees. For cardholders many prescription items have a subsidised cost of \$3. Premiums may be charged on some prescription items however. There is no government prescription charge on items for children under six. Cards remain valid for their period of issue if family circumstances change. The periods of issue are three, six, or 12 months for people who are receiving main benefits, between 12 and 24 months for people receiving New Zealand Superannuation, and 12 months for people on low to middle incomes.

Tier Two: Supplementary Assistance

Programme	Entitlement Criteria	Abatement Regime
Disability Allowances	The Disability Allowance (of up to \$47.44 per week) reimburses people for ongoing regular costs that they incur because they have a disability. It can be paid on its own or with a main type of income support. Recipients must meet an income test. The amount paid depends on costs. The Child Disability Allowance (of up to \$35.75 per week) is paid to the main caregiver of a child with a serious disability and who requires constant care and attention at home. It is not means-tested. The Special Disability Allowance (of up to \$29.60 per week) is for people whose partners are in hospital (for at least 13 weeks) or receiving a Residential Care Subsidy. Recipients must be on income support to receive this allowance.	The income limits for the Disability Allowance are: single person aged 16-17 years, \$20,592; single person 18 or older, \$23,608; single person with one child, \$28,652; single person with two or more children, \$30,212; and married or de facto (with or without children), \$34,320.
Family Plus Tax Credits: The Family, Child, and Parental Credits	Refundable tax rebates paid to low-income working families with dependent children. Families qualify for the Family Tax Credit (a guaranteed minimum income) if they work a combined total of thirty hours (or twenty hours for sole parents) per week. Families qualify for the Child and Parental Tax Credits through being independent from state assistance (not receiving an income-tested main benefit). The levels of the rebates depend on the family's income and the number of children.	The Family Tax Credit abates dollar-for-dollar against increases in net family income (after income adjustments) above \$15,080 (the guaranteed minimum family income). The Child and Parental Tax Credits are added to Family Support and the total amount abates following the Family Support abatement regime. The order of abatement is Family Support, the Child Tax Credit, and then the Parental Tax Credit.
Family Support Tax Credit	A refundable tax rebate available to low-income (both working and not working) families with dependent children. The level of the rebate depends on the family's income and the number and ages of children.	Abates at a rate of 18% when gross family income is between \$20,000 and \$27,000 and abates at a rate of 30% when gross family income exceeds \$27,000. From 1 April 2004 the thresholds will increase to \$20,356 and \$27,481.
Income Related Rentals	Subsidises state tenants' rents so that they pay no more than 25% of their net income in rent unless their income is above a particular threshold, at which point the subsidy is abated at the rate of 50 cents for each additional net dollar earned.	
Paid Parental Leave	Provides up to \$325 gross per week (\$334.75 gross from 1 July 2003) for 12 weeks to parents with a newborn or recently adopted child. Recipients must have worked 12 months for the same employer for an average of ten hours per week. Not available to recipients of the Parental Tax Credit.	
Training Incentive Allowance	Available to those on Domestic Purposes Benefit, Widows Benefit, Emergency Maintenance Allowance or Invalids Benefit. It is paid to help with the costs associated with training that will increase a person's chance of getting a job.	

Tier Three: Discretionary Assistance

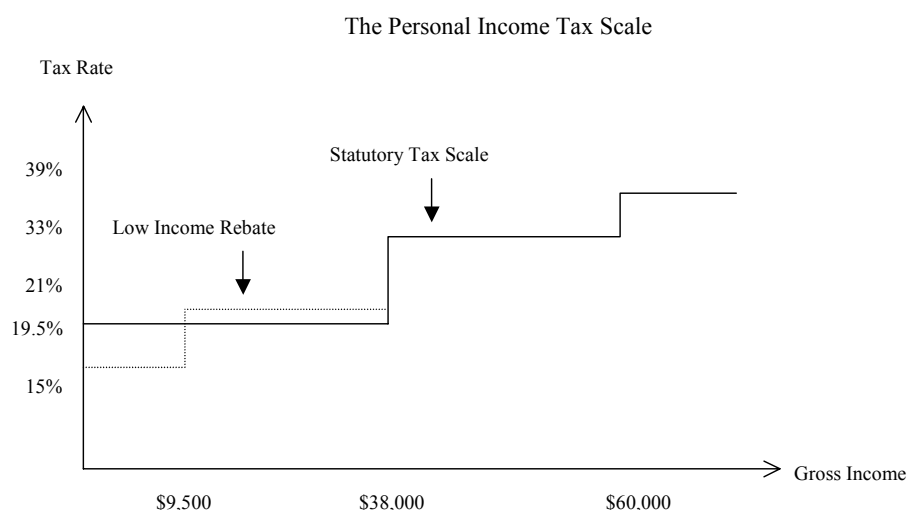
Programme	Entitlement Criteria	Abatement Regime
Independent Youth Benefit	Provides income support for people who are looking for work or training for work. Must be aged 16 or 17, single, without children, unable to live with parents, unable to get financial support from parents or anyone else, and unemployed. Must also be either actively seeking work, or undertaking an approved work-related training course, or enrolled in and regularly attending secondary school, or unable to work temporarily because of sickness or injury.	Every dollar of non-benefit taxable family income above \$80 per week reduces the net benefit income by 70 cents.
Recoverable Assistance Benefit Advances	Interest free and recoverable financial assistance to non-beneficiaries to meet essential immediate needs for specific items or services. Must meet an income and asset test, have an immediate and essential need, and generally be ordinarily resident in New Zealand.	
Special Benefit	Available both to people receiving another social welfare benefit and to people not receiving another benefit. Must have an ongoing substantial deficiency of income over expenditure and commitments, expenses which are essential and not reasonably avoidable, no other means of financial assistance or resources, be a New Zealand Citizen or Permanent Resident, and be generally be ordinarily resident in New Zealand. Only available to people with cash assets (including benefits) of below \$786.80 for singles and \$1,311.36 for couples and sole parents.	
Special Needs Grants	One-off recoverable or non-recoverable financial assistance to meet immediate needs. Available both to people receiving another social welfare benefits and to people not receiving benefits. Must meet an income and asset test, have an essential need, emergency need, or require payment for specific circumstances, not be able to meet the need from their own resources or through other sources, and generally be ordinarily resident in New Zealand.	Every dollar of non-benefit taxable family income between \$80 and \$180 reduces the net benefit by 30 cents. Every dollar of non-benefit taxable income above \$180 reduces the net benefit by 70 cents.

Appendix 2: New Zealand's Personal Income Tax Scale

The personal income tax scale is made up of the three-step statutory scale and the Low Income Earner Rebate. ACC earners' levies also interact with the personal income tax system.

The three-step statutory personal-tax scale has the following tax rates and thresholds:

- 19.5% on income up to and including \$38,000;
- 33% on income above \$38,000 and equal to or below \$60,000; and
- 39% on income above \$60,000.



The interaction between this three-step scale and the Low Income Earner Rebate results in a four-step personal tax scale that applies to most incomes and most people.¹⁹ The Low Income Earner Rebate is received at the rate of 4.5 cents per dollar on the first \$9,500 of labour income (such as wages, salaries, and main welfare benefits). Investment income (such as rents, interest, dividends, and royalties) is not eligible for the Low Income Earner Rebate (except for the investment income of recipients of New Zealand Superannuation and War and Veterans' Pensions) and is thus taxed at 19.5% up to \$38,000. The Low Income Earner Rebate abates against total income at the rate of 1.5 cents per dollar between \$9,500 and \$38,000. The rebate is fully abated once total income reaches \$38,000.

The interaction of the statutory personal income tax rates and the Low Income Earner Rebate leads to a four-step tax scale for labour income of:

- 15% on income up to and including \$9,500;
- 21% on income above \$9,500 and equal to or below \$38,000;
- 33% on income above \$38,000 and equal to or below \$60,000; and
- 39% on income above \$60,000.

¹⁹ A very small number of people are on a five-step tax scale. These people receive a combination of labour and investment income, less than \$9,500 labour income, and less than \$38,000 total income.

The 1.2% ACC earner's levy is levied upon gross (before taxation and abatement of assistance) labour income (excluding main welfare benefits) up to \$87,185. Payments made under this levy go to the Accident Compensation Corporation, not to personalised social security accounts.

Appendix 3: Method for Calculating EMTRs

EMTRs can be calculated with the following algebraic approach, which was developed by Ivan Tuckwell and Matthew Bell of the New Zealand Treasury [Treasury, 1999; Nolan, 2002, pp. 17-21].

The net benefit is abated against gross non-benefit earnings. Thus when a family earns an extra dollar in gross non-benefit earnings the total gross income (which includes the gross benefit) does not rise by the full dollar because of the benefit abatement.

The gross benefit abatement (r_b) equals the net benefit abatement (r_B) divided by one minus the marginal tax rate on benefit income (t_B).

$$r_b = r_B / (1 - t_B) \quad (1)$$

In this paper it is assumed that the change in the tax on gross non-benefit earnings is the marginal personal income tax rate on earnings (t) multiplied by the change in gross income. (However, in practise beneficiaries' non-benefit earnings are generally taxed under a withholding tax regime (secondary tax) at 21 percent.²⁰) Further, the tax on the gross abated benefit and the non-benefit earnings are calculated separately as the tax rate applying to the benefit income may differ from the tax rate applying to non-benefit earnings. Differences in the tax rates applying to benefit and non-benefit income occur when a beneficiary's annual gross benefit income is below a personal income tax threshold and non-benefit earnings increase total gross income above the threshold. For instance, under the current personal income tax scale, such a difference would occur if a beneficiary receives a gross benefit below \$9,500 along with non-benefit income that increases total gross income to above \$9,500. In a couple, total gross income is the total of gross non-benefit income and one half of the gross benefit income.

The change in gross income (y_G) is one minus the gross benefit abatement.

$$\Delta y_G = 1 - r_b \quad (2)$$

The change in disposable income (y_D) is the change in gross income multiplied by the changes in tax liability (t) and Family Assistance abatement (r_P) minus the ACC earners' account levy.

$$\Delta y_D = \Delta y_G (1 - t - r_P) - ACC \quad (3)$$

The EMTR is one minus the change in the disposable income.

$$EMTR = 1 - \Delta y_D \quad (4)$$

²⁰ The secondary tax is a withholding tax, so excessive tax withheld during the year is returned when taxes are reconciled at the end of the income tax year.

Appendix 4: TaxMod and the HES

This paper draws on estimates calculated with TaxMod (which is a micro-simulation model of New Zealand's income tax and social assistance systems) [Prebble *et al* (eds.), 1992, pp. 29-44].²¹ TaxMod estimates are also often used when considering potential social assistance reforms.

Survey data (the 2000-01 Household Economic Survey) obtained using TaxMod and administrative data on the recipients of social assistance programmes both have their areas of relative strength. For instance, while administrative data on social assistance programmes contain little information on the large number of people who do not participate in such programmes (but who may nevertheless be affected by a policy change), detailed information on these people can be generated with estimates based on a general survey of households. These estimates may, however, not provide information on the recipients of social assistance programmes as accurately as the administrative data on these programmes (although at times administrative data is limited in the degree to which the characteristics of individuals (e.g., extent of work effort, level of investment income) are recorded).²² One approach to address these limitations is to draw on a combination of both data sources.²³

TaxMod calculates income tax liabilities and social assistance entitlement based upon characteristics of the population and rules regarding eligibility and abatement of income tax and social assistance programmes. A population of families is derived from demographic, income, and expenditure data contained in the HES. The HES was established to measure the Consumers' Price Index and was conducted annually from 1983-4 to 1997-98. The HES is now conducted every three years with the most recent survey being completed in June 2000-01. TaxMod has 12 databases of HES data from 1987-88 through to 2000-01.

The HES collects demographic, income, and expenditure data from approximately 3,000 households over the course of a year [Gordon, 1997]. Although the HES collects a large amount of data from each household and surveys a large number of households by New Zealand standards, the survey is designed to measure CPI accurately and so the sample design does not always provide accurate results on social assistance entitlement. For example, in comparison to administrative data collected by Work and Income New Zealand the HES data consistently contains relatively low numbers of ex-beneficiaries. Thus in TaxMod each surveyed household is given a weighting representing the degree to which households of that type occur in the total population. This technique allows the sample to be weighted up to estimate the entire New Zealand population.

²¹ TaxMod is currently undergoing enhancement with, for example, the proposed addition of a component that accounts for people's changes in behaviour due to policy changes.

²² For instance, the Inland Revenue Department has demographic information for only approximately two thirds of the total of Family Assistance recipients as approximately one third of Family Assistance recipients are social welfare beneficiaries who do not provide information to the department. For these people the only information that the Inland Revenue Department holds is the amount of Family Assistance and the monthly social welfare benefit they receive. However, based on data on beneficiaries who do file with the department, a number of assumptions regarding the demographics of non-filing beneficiaries can be derived and their characteristics estimated.

²³ The combination of administrative and survey data can introduce a number of other problems, however. Differences may, for instance, arise between receipt recorded in administrative data, receipt recorded in survey data, and entitlement estimated with survey data due to factors such as the complexity of administrative rules and discretion in the application of these rules in practise [Atkinson, 1989, p. 194].

The HES collects information on family composition and other demographic data. The HES records blood relationships between people in each household. TaxMod, however, allocates some people in such relationships into separate families if this is the treatment that applies under income tax and social assistance rules.

The HES collects expenditure data for entire households and income data for individuals within households. In HES each person aged 15 or above is asked to record income from various sources received over the previous 12 months. These various income sources include up to three current jobs, six jobs that ended in the previous 12 months, social assistance payments, interest income, dividends, and other income from sources. Each household is asked to keep an expenditure diary recording all expenditure for two weeks. Each household is also asked to record all items of expenditure over \$200 that occurred in the previous twelve months. Both the location and cost of accommodation are recorded. Some expenditure items (particularly alcohol and tobacco consumption) tend to be inaccurately reported.

TaxMod calculates benefit receipt based on data on benefit duration (not benefit income) contained in HES and assumes complete participation (100% take-up) in programmes. TaxMod contains incomplete information on wealth and does not model entities such as companies or trusts. TaxMod does not model people's behavioural responses to income tax and social assistance programmes. Estimates of the fiscal costs of policy changes are not, therefore, adjusted in the light of any behavioural changes that these policy changes may induce.

When modelling the effects of a policy change it is important to recognise the limitations of estimates of outcomes and the risks that consequently apply when using these estimates. This modelling risk was illustrated in the case of the Parental Tax Credit, where estimates of the cost of the Parental Tax Credit prepared during its establishment differed significantly from the programme's actual expenditure due to the complexity of the programme's entitlement criteria and the consequently small number of eligible families contained in the HES survey data used to prepare these estimates. Initial estimates used during the development of the Parental Tax Credit were based on 1995-96 HES data, which contained 66 families potentially eligible for the proposed programme. This sample was scaled up to give an estimate of an eligible population of 26,000. In contrast, later estimates based on 1997-98 HES data contained a sample of 51 potentially eligible families, which was scaled up to give an estimate of an eligible population of 20,000 families.