Date: 6 May 2010 SH-13-5-2-1

To: Minister of Finance

cc: Minister for Social Development and Employment, Minister of Revenue

AIDE MEMOIRE: DISTRIBUTIONAL MEASURES IN RELATION TO TAX CHANGES

On 12 April 2010, Cabinet made final decisions on the tax package for Budget 2010 (Cab Min (10) 12/10 refers). This aide memoire provides additional information on distributional measures for the tax package.

In recent weeks officials have provided advice on the distributional effects of the tax package. This advice built on earlier analysis provided to the Tax Working Group (TWG) in its deliberations about reform of New Zealand's tax system. The TWG considered distributional measures including the Gini coefficient and the 80/20 ratio, as well as child and household poverty measures.

As shown in the table below, these measures have been modelled for the current tax system and the personal tax, GST changes and main compensation measures that will come into effect on 1 October 2010[1]. The measures do not reflect the impact of the full tax package because our Taxwell modelling based on Household Economic Survey data:

- is unable to capture the full compensation package (e.g. increases to student allowances, supplementary welfare assistance, GSF/NPF etc); and
- does not capture the effects of other measures in the tax package (e.g. base broadening measures)

	Status Quo		**1 Oct 2010**	
	Equality measures		**Equality measures**	
Gini coefficient	0.348		0.351	
80/20 ratio	2.893		2.906	
Poverty reference line	**Median household disposable income (equivalised)**		**Median household disposable income (equivalised)**	
Relative reference	$31,593		$32,094	
Fixed reference	$23,276		$23,276	
Poverty line: % of reference line	**% households below poverty line**	**% children below poverty line**	**% households below poverty line**	**% children below poverty line**
50% relative	13.2%	15.6%	13.3%	16.7%
60% relative	26.1%	24.7%	26.2%	25.3%
50% fixed	5.0%	3.5%	5.0%	3.5%
60% fixed	10.5%	11.2%	10.4%	11.1%

Sources: Treasury, Statistics NZ Household Economic Survey (HES) 2007/08 data

[1] Modelling is based on preliminary BEFU forecasts (to be consistent with previous advice) and excludes any dynamic effects.

Although the fixed poverty measures are unchanged or slightly improved, the personal income tax rate, GST and transfer payment compensation changes by themselves result in a slight deterioration in the inequality and relative poverty measures.

However, other tax changes that are expected to disproportionately increase the tax burden on higher income households (e.g. depreciation changes) are not able to be incorporated into the modelling. These changes would by themselves reduce inequality. Therefore the net static effects of the package are unclear. We have separately provided distributional and tax burden allocation analysis of the total tax package in the "block diagrams", however that work rests on several significant assumptions and caveats. For example, although we capture information on the distribution of income from dividends in HES, it is not clear what impact the reduction in company tax rate will have on household incomes.

Dynamic effects are also not captured in the modelling. Treasury's assumptions of the growth effects of the tax package include growth in the level of GDP of 0.9% over seven years, largely due to labour supply effects. This is estimated to lead to a 0.8% increase of private sector hours worked and 10,000 more people in employment. The additional employment will have a positive impact on the lower end of the income distribution, thereby expected to improve the fixed poverty measures. On the other hand, the tax changes may affect rents over time, which could have an adverse effect on these fixed poverty measures[2]. How the broader dynamic growth impacts will affect income distribution, and therefore how the relative measures change as a result, is unclear.

Inequality measures

The Gini coefficient gives a measure of inequality of incomes: a Gini coefficient of 0 implies that all incomes are distributed equally, and a coefficient of 1 indicates all income goes to one individual/household in the economy. The Gini coefficient shows an increase of 0.8% from 0.348 to 0.351 due to the personal tax, GST changes and main compensation aspects of the tax package modelled here, based on equivalised household disposable income[3]. By comparison, the Gini coefficient based on pre-tax total incomes (as opposed to disposable incomes) for the existing tax parameters is 0.392.

The 80/20 ratio is another commonly used measure of inequality. It gives the ratio of income (here we use equivalised household disposable income) of a household at the 80th percentile to a household at the 20th percentile. The effect of the personal tax, GST and main compensation changes is a 0.4% increase in the ratio from 2.893 to 2.906.

Poverty measures

A variety of poverty measures are shown here: both the proportions of households and children in poverty, for both fixed and relative measures. A fixed measure can help indicate the number of people in society that may not be able to support a basic

[2] The Accommodation Supplement provides a means for addressing any adverse impacts on rents for low-income people – officials are due to report back to Ministers on any housing affordability impact from the tax package by 30 September 2011.

[3] Equivalisation reduces the household incomes to that of an equivalent adult in that household, where the same share of income is attributed to each adult, so that households of different sizes can be compared.

standard of living, whereas a relative poverty measure helps indicate the number of people that may not be able to support a certain standard of living from a social cohesion perspective. Here we provide relative measures based on the number of households/children below a poverty line at 50% and 60% of the median equivalised household disposable income. For absolute measures, the poverty line is set at 50% and 60% of the inflation-adjusted median income from 1998[4].

On the fixed measures, the aspects of the tax package modelled here have little effect. In fact the 60% measures for both households and children in poverty sees poverty decline slightly; by 0.1 percentage points. This supports our other analysis that the income tax reductions and compensation are more than sufficient to offset the GST increase. On the other hand the net effect of the three elements of the package we have modelled (personal income tax rates, GST, main compensation) result in the relative poverty measures increasing slightly: a 0.1 percentage point increase on the household measures and 1.1 and 0.6 percentage point differences on the 50% and 60% child poverty measures respectively.

The improvement in fixed poverty measures and deterioration in relative poverty measures reflects two of the package's design aims of leaving the vast majority of individuals no worse off in terms of their real consumption, and significantly reducing the top tax rate, implying gains in real income growing as income increases. Moreover, as outlined earlier this analysis is incomplete even on a static basis, as it excludes the distributional impact of policies that disproportionately hit higher income earners that address other design aims, such as reducing investment imbalances and improving the integrity of the tax system.

Discussion

While the measures above give some indication of the effects of the personal tax, GST and main compensation changes on poverty and inequality, there are a number of things to be considered when using these measures.

While the tax system certainly affects the distribution of incomes, this is small in comparison to the distribution of pre-tax income (as shown earlier, pre-tax Gini is 0.392 vs 0.348 post-tax under the existing tax system). As an example, we compared the Gini measures calculated here with the same measures using a HYEFU 2009 economic basis (thereby affecting the wage growth in the model). As can be seen, the effect of the tax package on the Gini coefficient during either forecast round is smaller than the change in Gini coefficient of either tax system due to changes in wage growth assumptions.

Gini coefficient	Status Quo	1 Oct 2010	% increase (tax package)
HYEFU 2009	0.345	0.348	0.76%
Prelim BEFU 2010	0.348	0.351	0.79%
% increase (forecast round)	0.86%	0.88%	

Note % figures are based on unrounded values of the coefficient not shown

[4] This reflects the approach taken in MSD's *Household incomes in New Zealand: trends in indicators of inequality and hardship 1982 to 2008* report

The Ministry of Social Development's notes in its report: *Household incomes in New Zealand: trends in indicators of inequality and hardship 1982 to 2008*, that the Gini can also jump around between income survey years. Nonetheless, comparison of the trend of inequality and poverty measures over time may more usefully provide information on the extent to how the tax changes affect the distribution on incomes. Inequality measures and relative poverty measures have shown a small but steady rise in New Zealand (as in other countries) since the early 1990s. For example, the Gini coefficient in 1990 was 0.290. It is worth keeping in mind that such measures do not capture the targeted nature of other forms of government spending, such as the Community Services Card, school decile funding and so on. New Zealand trends and international comparisons of the measures discussed here are shown in the Annex.

Other assumptions

The effect of GST has been captured in these income-based poverty measures by deflating post-tax change incomes by 2.02%. (Note that the GST change has no effect on the Gini coefficient and 80/20 ratio as all incomes are scaled down equally under this assumption.) This effectively assumes that all households spend 91% of their disposable income on items that attract GST, and that the GST rise is fully passed through to prices. Treasury analysis of HES data has shown large variation in household expenditure patterns across all incomes and no statistically meaningful changes between the average expenditure ratios of household groups.

The analysis of distributional measures has assumed that the ACC levy remains at 2.0% after the tax changes. As we are unable to predict if any change to the Earners' Levy will be made, factoring this into distributional analysis would be premature at this stage (refer *Aide Memoire: Potential Impacts on ACC from Tax Changes*, 30 April 2010*).*

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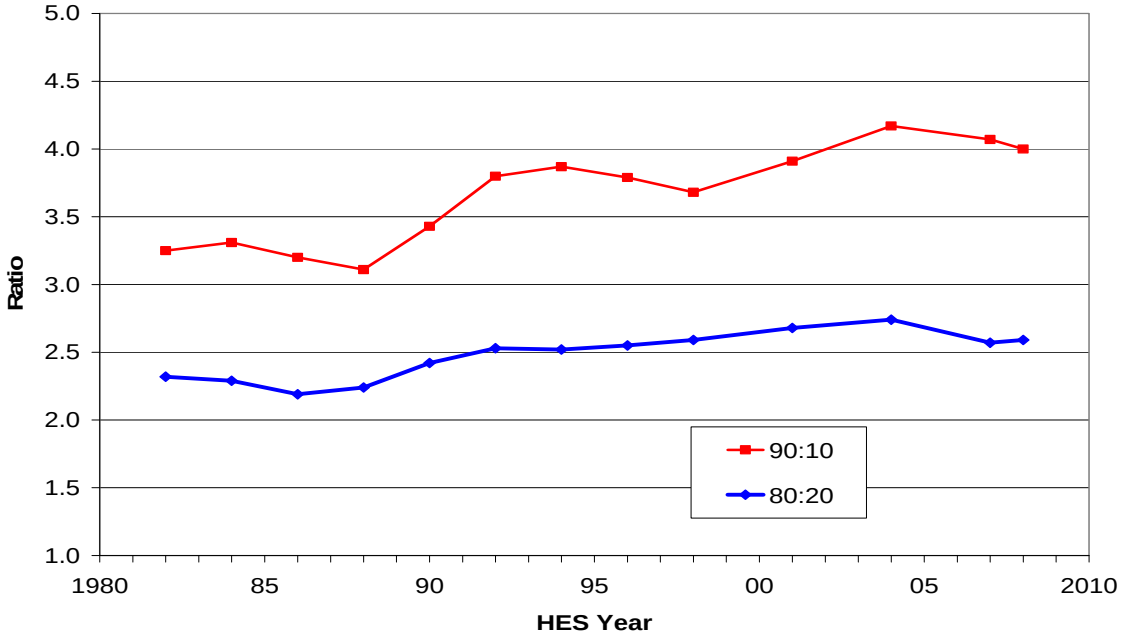
Appendix – Excerpt from Background Paper for the Tax Working Group: Design of the Income Tax/Transfer System

Inequality statistics

Figure 3 shows the trends in the 90:10 and 80:20 percentile ratios. In 2008 the equivalised[5] disposable income of a household at the 90th percentile was 4.0 times larger than that of a household at the 10th percentile. In 1988 it was 3.1 times; in 2004 this figure was 4.2 times.

Figure 3: Inequality in New Zealand: the 90:10 and 80:20 ratios of equivalised disposable household income, 1982–2008

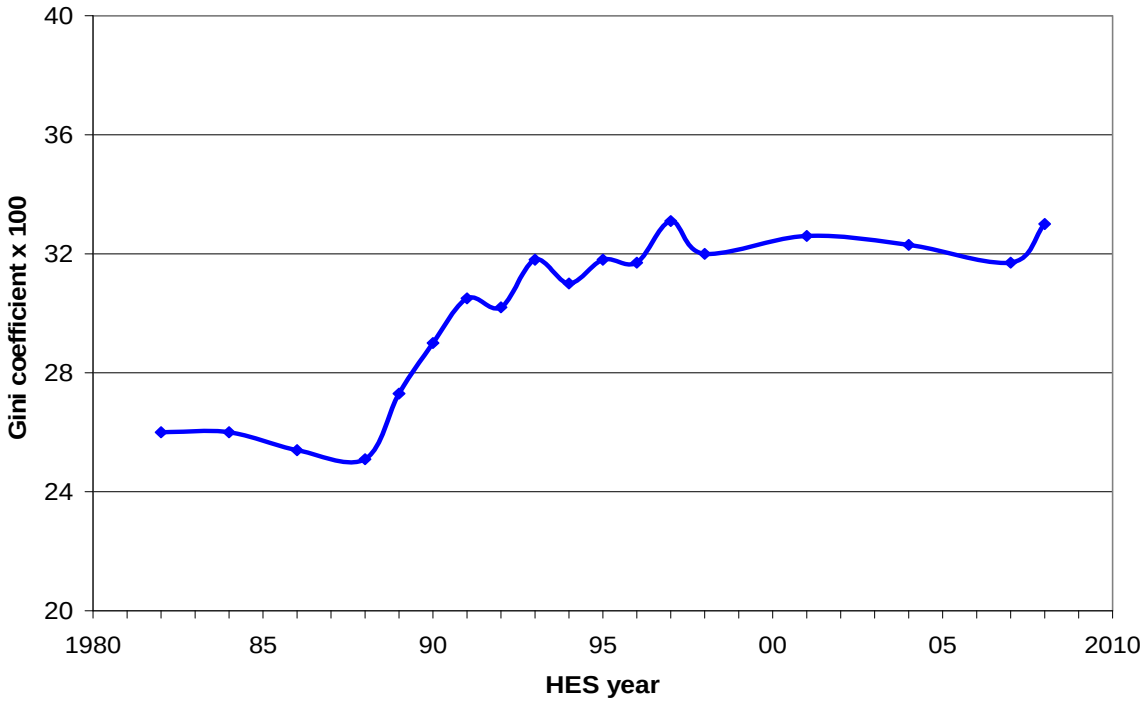


Source: Perry (2009)

Figure 4 shows the trend in inequality using the Gini coefficient. In contrast to the percentile ratios, the Gini coefficient takes the incomes of all individuals into account. It gives a summary of the income differences between each person in the population and every other person in the population. The Gini scores (x100) range from 0 to 100 with scores closer to 100 indicating higher inequality and those nearer zero indicating lower inequality (i.e. greater equality).

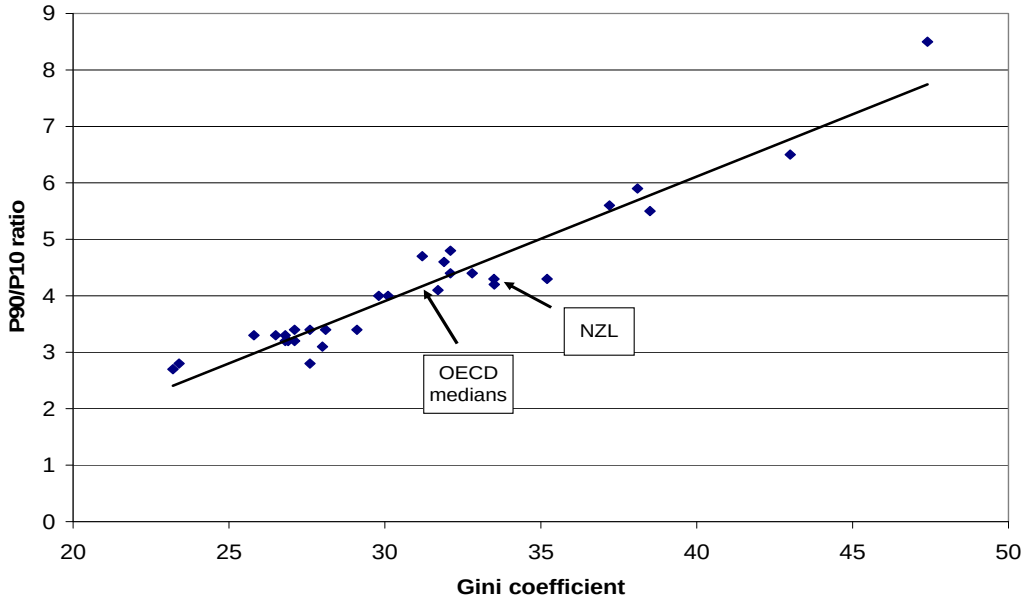
[5] Equivalisation reduces the household incomes to that of an equivalent adult in that household, where the same share of income is attributed to each adult. While this involves value judgement, it is helpful in comparing households of different sizes.

Figure 4: Inequality in New Zealand: the Gini Coefficient , 1982–2008



Comparisons with other OECD countries are available using the Gini coefficient and the 90:10 ratio. Rankings are very similar on both measures. The latest comparative information is for 2004 and is shown in Figure 5.

Figure 5: International comparisons of income inequality: the Gini and the 90:10 ratio in the OECD



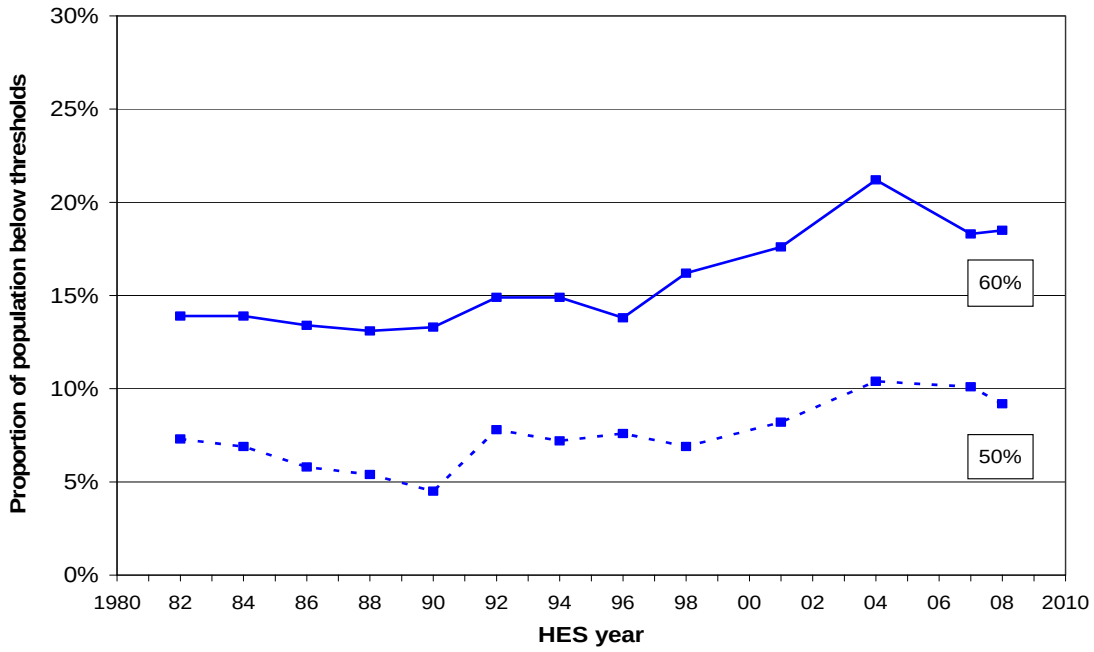
New Zealand's Gini score of 34 in 2004 was below that of the United States (38), very close to the United Kingdom (34) and Ireland (33), a little above Canada and Japan (32), and a little

further above the OECD median (31) and Australia (30). Denmark and Sweden had the lowest Gini scores of 23. In 2008 the Gini for New Zealand was still 34.[6]

Income poverty statistics

A poverty line set at 50% of median household income is used for international comparisons by the OECD. The EU nations have agreed to use 60% of the median as their benchmark. The trends for New Zealand using these measures are shown in Figure 6.

Figure 6: Proportion of population in households with incomes below 50% and 60% of median thresholds, 1982–2008



Source: Perry (2009)

Using the EU measure (60% of median), New Zealand's population poverty rate in 2006 (18%) was just above the EU average (16%). Using the OECD measure (50% of median) New Zealand in 2004 was at the OECD median of 11%. For child poverty, New Zealand is around the EU average (2006) and a little above the OECD median (15% compared with 12%). For child poverty, New Zealand is around the EU average but a little above the OECD median (15% compared with 12%). On the OECD measure, the New Zealand ratio of child poverty to adult poverty is above average for OECD countries.

[6] There are slight differences between the values of the Gini used in the OECD comparisons and those in Figure 4. These differences arise because of the different equivalence scales used. The overall trends and so on are not affected by the choice of equivalence scale.