The Treasury

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THE TREASURY
Kaitohutohu Kaupapa Rawa

Treasury Report: Taxes and labour supply

Date:	1 February 2017	**Report No:**	T2017/4
		File Number:	SH-13-5-3

Action Sought

	Action Sought	Deadline
Minister of Finance (Hon Steven Joyce)	Note the contents of this report	None

Contact for Telephone Discussion (if required)

Name	Position	Telephone		1st Contact
Thomas Allen	Senior Analyst, Tax Strategy	[39]	N/A (mob)	✓
Suzy Morrissey	Acting Manager, Tax Strategy	[39]	N/A (mob)	

Actions for the Minister's Office Staff (if required)

Return the signed report to Treasury.

Note any feedback on the quality of the report	

Enclosure: No

Treasury Report: Taxes and labour supply

Executive Summary

This report provides an overview of how taxes influence labour supply. It responds to your request at a meeting with officials on 15 December 2016.

Taxes affect labour supply by influencing individuals' decisions about whether to participate in the workforce, the number of hours they work and whether to migrate.

Average and marginal tax rates are both important for labour supply incentives. Average and marginal personal income tax rates decreased between 2007/08 and 2010/11, but have since risen moderately owing to fiscal drag.

Some individuals face high effective marginal tax rates (i.e., the tax and abatement of transfers from an extra dollar earned) owing to the interaction of the transfer and tax systems. Around 390,000 individuals (11 per cent of the adult population) face effective marginal tax rates that are greater than 33 per cent. For example, the effective marginal tax rate for a primary earner, on the average wage and working more than 30 hours a week, with two children can be around 50 per cent.

New Zealand's relatively high labour force participation rate suggests the tax system is not creating a major disincentive for employment. Nevertheless, there is likely scope for further increases in labour force participation and working hours amongst certain groups, such as secondary earners and part-time workers.

Taxes may influence the size of the labour force by influencing migration flows, especially between New Zealand and Australia. A range of factors will influence migration decisions and the significance of tax for migration is very uncertain. New Zealand has low average tax rates on labour income compared to many OECD countries, including Australia. However, New Zealand's overall tax-to-GDP ratio is slightly below the OECD average although slightly above Australia's.

The response of labour supply to tax and transfer changes can be estimated using a Treasury model. The simulated labour supply responses show that targeted and narrow threshold adjustments are unlikely to result in large labour supply increases. This is because the changes only impact individuals with incomes around the particular threshold. Across the board reductions in marginal tax rates are estimated to have a larger effect on labour supply as they affect the incentives of more households. However, materially reducing all marginal tax rates will have a greater fiscal cost and may not achieve equity and other objectives.

A targeted package of tax and transfer reforms focussing on reducing high effective marginal tax rates would likely have an even greater impact on labour supply. This would require further detailed analysis and involve significant trade-offs across a range of objectives, particularly equity and fiscal cost. Treasury will continue to provide advice on labour supply impacts in the development of a potential tax and transfer package for Budget 2017. A comprehensive review of welfare policy and how it interacts with the tax system, as recommended by the 2010 Tax Working Group, could be considered to systemically address these issues.

Recommended Action

We recommend that you **note** the contents of this report.

Noted.

Suzy Morrissey
Acting Manager, Tax Strategy

Steven Joyce
Minister of Finance

Treasury Report: Taxes and labour supply

Purpose of Report

1. For your information, this report provides an overview of how taxes influence labour supply. It responds to your request at a meeting with officials on 15 December 2016.

Taxes and economic performance

Taxes matter for economic performance through a range of channels

2. Taxes impact on economic performance as almost all taxes involve distortions to individuals', households' or firms' decisions. Taxes reduce returns from earning income. Lower returns imply lower incentives to work, invest in physical and human capital and for entrepreneurship. Taxes also encourage taxpayers to spend time and resources trying to minimise their tax liability.

3. Ideally, a tax system should be designed to raise revenue as efficiently as possible while contributing to distributional objectives. New Zealand is generally regarded as having a relatively efficient and 'low distortion' tax system as it is broad-based with relatively low rates.

Labour supply is an important channel

4. The impact of taxation on labour supply is one of the main sources of inefficiency in a tax system. Taxes affect labour supply by influencing individuals' decisions about whether to participate in the workforce, the number of hours they work and about migration (given the high international mobility of New Zealand's labour force, particularly between New Zealand and Australia).

5. While all taxes can potentially have an impact on labour supply decisions, high tax rates on personal income act as a particular disincentive to earn labour income.

6. This report focuses on how tax can affect labour supply, but in practice many factors beyond the tax system influence decisions about labour force participation, hours worked and migration. These factors may include the availability of jobs, childcare costs, transport costs, and the cost and availability of accommodation near employment.

Labour supply responses vary across individuals

7. Each individual's labour supply responsiveness varies and can be dependent on a number of factors, which means that any tax rate change may affect groups and individuals differently.[1] For example, individuals/couples without children may trade off work and non-work differently compared to individuals/couples with children

8. In general, tax policy changes that are targeted at individuals with high labour supply responsiveness and who face high marginal tax rates will likely induce a greater increase in labour supply. While studies have come to varying conclusions, some general observations can be made about the labour supply response of particular individuals and households to tax changes:

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1 Taxes have particularly complicated effects on labour supply since tax rate changes have both a "substitution effect" (e.g., lower income taxes could incentivise greater working hours as work pays a higher after-tax wage) and an "income effect" (e.g., lower income taxes could incentivise fewer working hours as an individual can afford to work less). Depending on which effect is greater, labour supply may either increase or decrease in response to a reduction in tax rates.

- The labour supply responsiveness to tax changes is relatively low for those with full-time, high-paying jobs, partly because there may be limited ability to increase hours of work.
- Low paid and low skilled workers may be relatively more responsive to tax changes than other groups.
- Secondary earners and sole parents may be more responsive. This group may have greater ability to increase work hours or enter the workforce. However, these groups may also face high, non-tax, barriers to work, such as additional child care costs associated with working more hours.

9. The labour supply response should not be interpreted as an indicator of the welfare impact of taxes on an individual. While some individuals may be relatively unresponsive in their labour supply to tax changes, taxes may nevertheless have a significant adverse impact on their welfare. Treasury is developing measures of the efficiency cost of taxation for different households.

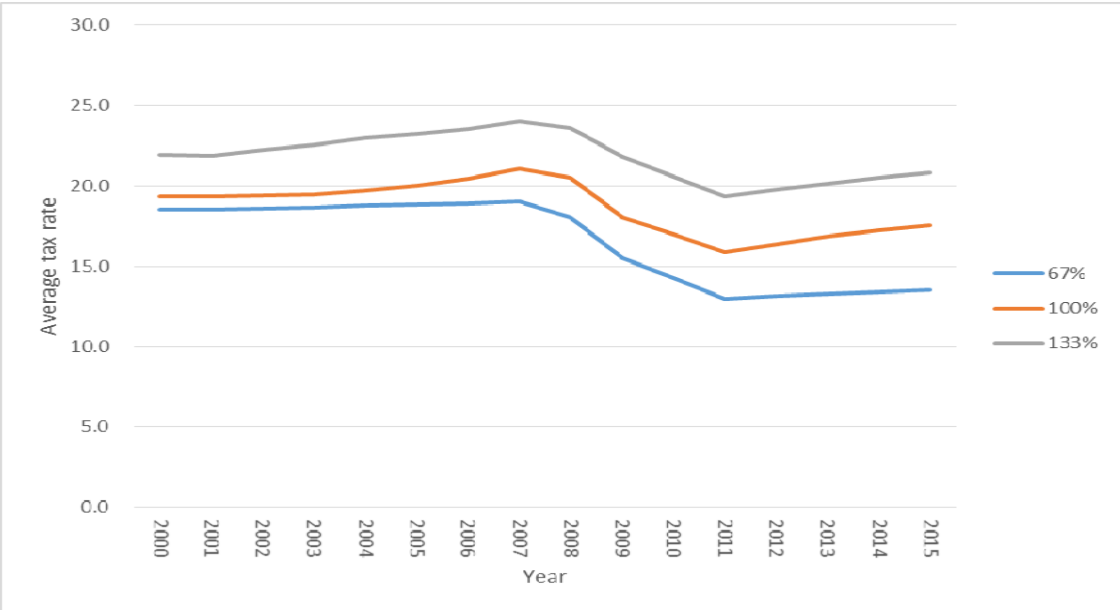
The tax system and labour supply incentives

Average and marginal tax rates matter for labour supply

10. Average tax rates and marginal tax rates are both important for labour supply incentives. High average tax rates, both in absolute terms and relative to other countries, may discourage individuals from entering the labour market and encourage emigration. High marginal tax rates may discourage labour supply and skill acquisition and encourage tax planning and avoidance.

11. Average income tax rates for earners at different wage levels are shown in Figure One. While average tax rates reduced between 2007/08 and 2010/11, they have been increasing over the past six years due to fiscal drag.

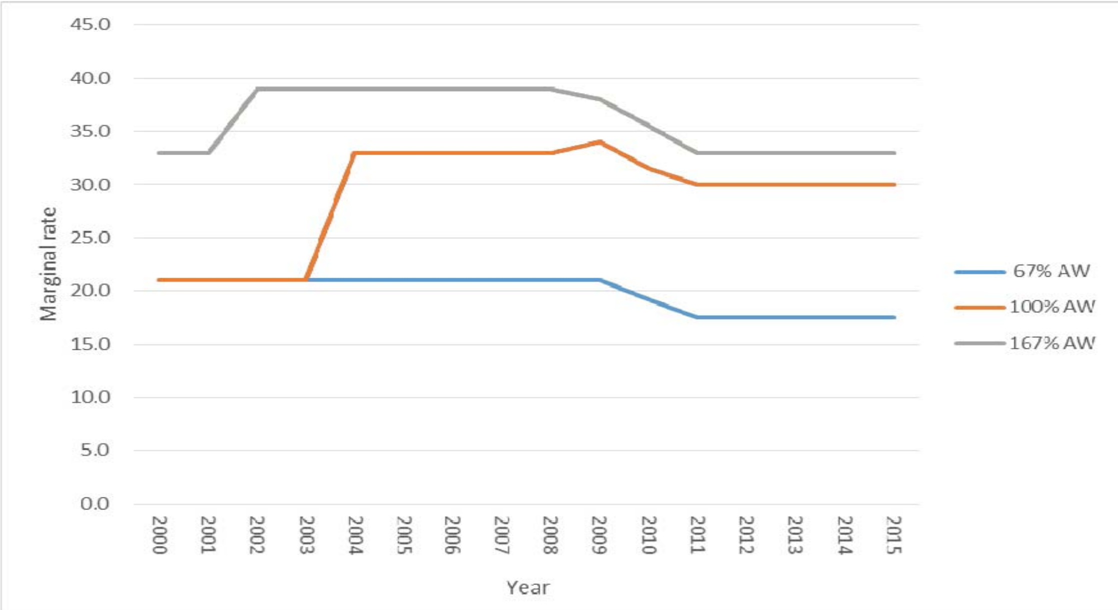
Figure One: Average tax rates (67 per cent, 100 per cent and 133 per cent of the average wage)



(Source: OECD data, 2015)

12. Marginal tax rates represent the tax rate on the next dollar of income but do not include the loss of benefits or transfers. Individuals face higher marginal tax rates as income increases due to New Zealand's progressive income tax rates. Marginal income tax rates overtime are shown in Figure Two.

Figure Two: Marginal tax rates (67 per cent, 100 per cent and 133 percent of the average wage)



(Source: OECD data, 2015)

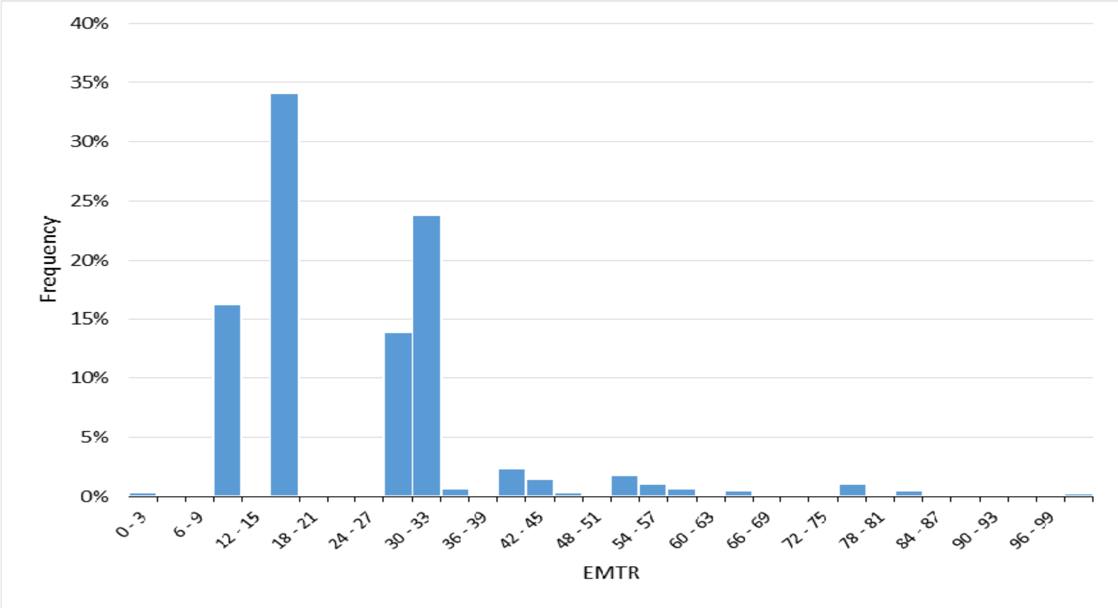
Some individuals face high effective marginal tax rates

13. The picture gets more complex when tax credits and social assistance payments are considered, such as Jobseeker Support, Working for Families (WfF) and the Independent Earner Tax Credit (IETC). Effective marginal tax rates (EMTRs) measure the combined impact of tax and transfers, specifically the tax and abatement of transfers from an extra dollar earned. The interaction of the tax and transfer system can result in some individuals facing high EMTRs.

14. Figure Three shows the distribution of EMTRs across the adult population.[2] The welfare system does not create high EMTRs for most people as 85 per cent of individuals have EMTRs equal to their statutory marginal tax rate. However, there are around 390,000 individuals (11 per cent of the adult population) that face EMTRs higher than 33 per cent. These individuals face abating tax credits or social assistance due to varying individual and family circumstances, and are likely to be lower to middle income earners. Part-time workers and sole parents appear to face particularly high EMTRs.

2 Individuals aged 15 or older who are not dependents (this excludes 15-18 year olds in secondary school and includes retirees). It also represents EMTRs for individuals earning an additional dollar of income per week, EMTRs could be different given additional income or hours of work.

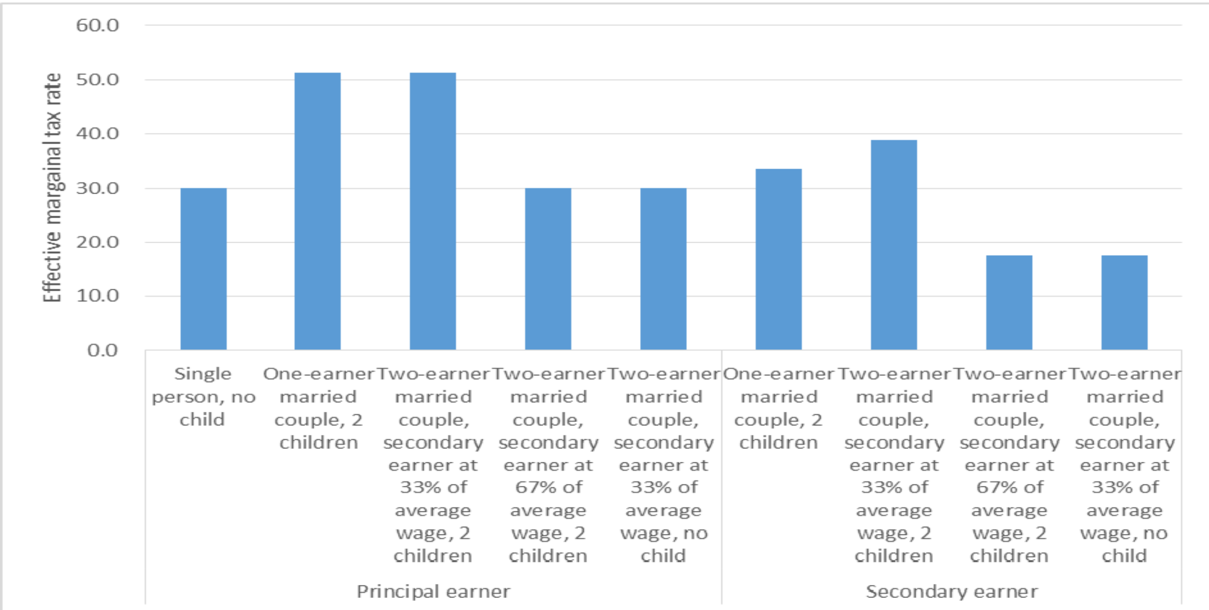
Figure Three: The distribution of effective marginal tax rates



(Source: The Treasury)

15. Families with average earnings can face EMTRs between 17.5 per cent to over 50 per cent depending on household composition and circumstances (Figure Four).[3] While the marginal income tax rate for a single person on the average wage is 30 per cent, EMTRs for households with two children on the average wage can be around 50 per cent for the primary earner. This assumes individuals and families are working more than 30 hours a week in order to qualify for certain tax credits.

Figure Four: Effective marginal tax rates (only includes taxes and tax credits)

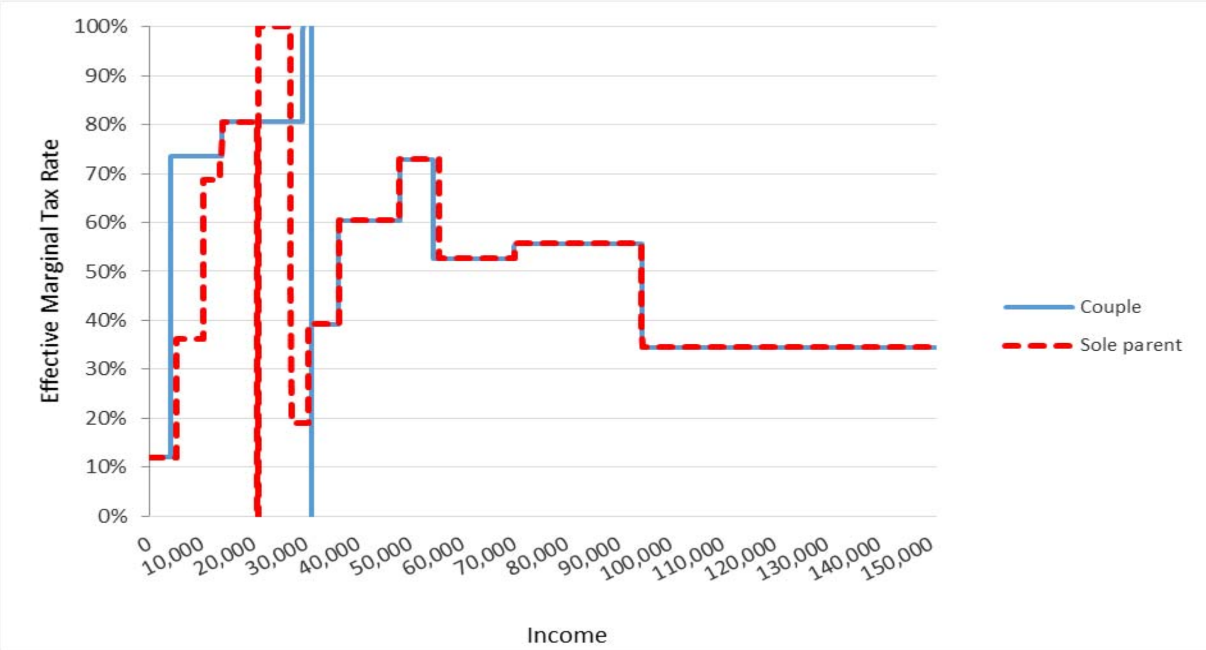


(Source: OECD data, 2015. Note that the principal earner is earning 100 per cent of the average wage in all the relevant scenarios)

3 Note that Figure Four only considers taxes and some transfers, such as WfF, but does not include benefits such as the Accommodation Supplement.

16. EMTRs can also change markedly at different income levels. Figure Five shows the average EMTRs for a couple and sole parent household each with two children aged under 13. At certain thresholds the EMTR is well above 50 per cent and can be as high as 100 per cent.

Figure Five: EMTRs for couples with 2 children and sole parents with 2 children



(Source: The Treasury)

17. The variability in the EMTR is a result of the eligibility and abatement of certain benefits and transfers. Individuals often face high EMTRs at low levels of income as benefits, such as the Jobseekers Support, abate. Similarly, high EMTRs are experienced when transfers like the Accommodation Supplement, Family Tax Credit (FTC) and In Work Tax Credit (IWTC) abate. In contrast, low EMTRs occur when a person becomes eligible for a benefit or transfer, such as when the couple above becomes eligible for the IWTC at $31,000 of income.

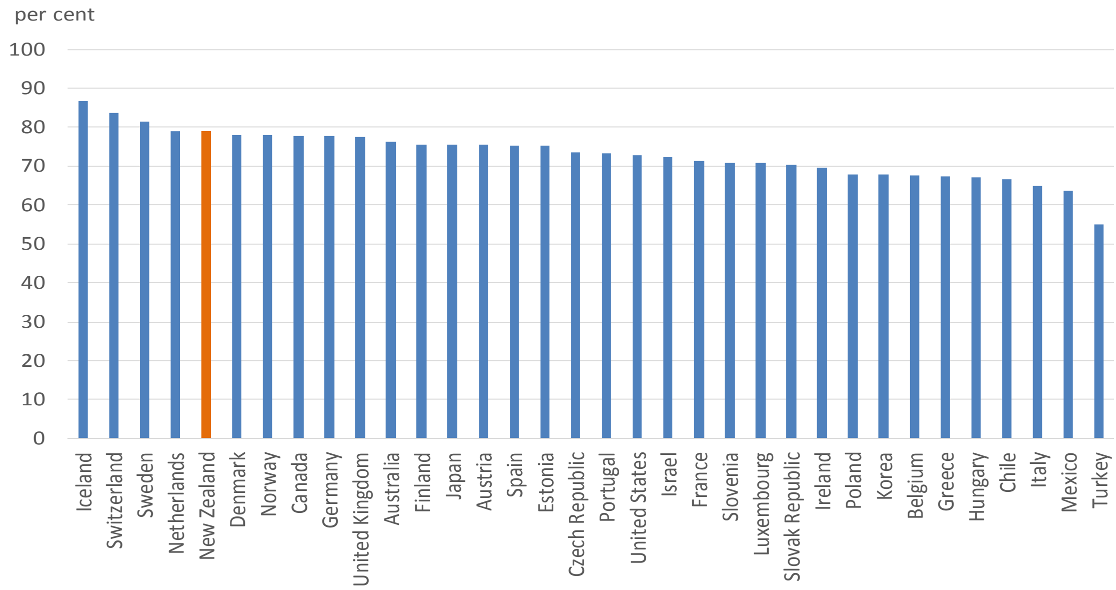
18. Individuals that are close to income thresholds or benefit abatement thresholds may be less responsive to a real wage change as their effective marginal tax rate may be relatively high in response to a wage increase. This may result in bunching of individuals around these thresholds.

19. This analysis does not take account of early childhood education subsidies, childcare subsidies or student loan repayments. The Aide Memoire, *Effect of Accommodation Supplement on effective marginal tax rates* (T2016/2551), dated 10 January 2016, provides further detailed examples of varying EMTRs faced by individuals and households. It also highlights that other costs, such as childcare and transport costs, combined with high EMTRs can also affect people's decisions to work.

New Zealand's labour force participation rate is relatively high, although there is likely scope for further increases in labour supply amongst certain groups

20. New Zealand's labour force participation rate is high (Figure Six) and currently growing strongly due to high net migration, increasing participation rates, and age structure effects (e.g., people moving into ages where participation rates are higher). This suggests the tax system is not creating a major disincentive for employment.

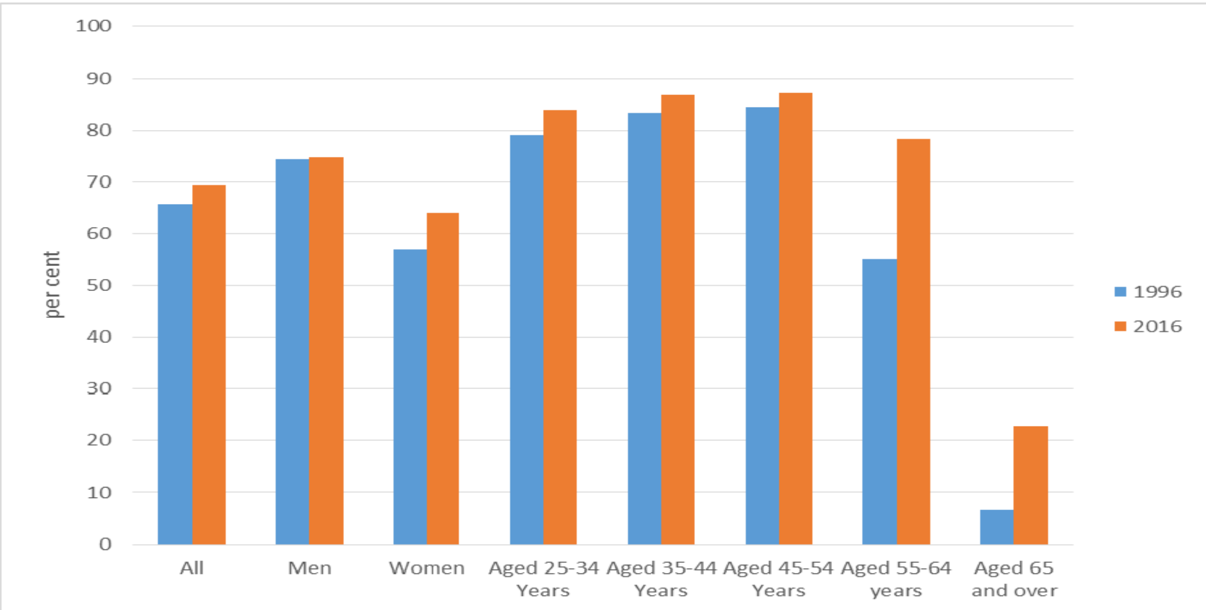
Figure Six: Labour force participation rates in OECD



(Source: OECD. Note, data is for 2014 and for population aged 15-64)

21. There could be scope for further increases in participation amongst certain groups. For example, there has been a significant structural lift in participation rates by women and older age groups in the last twenty years (Figure Seven). However, it is important to note that labour force participation rates amongst these groups (and others) are already higher than the OECD average, and leaving aside significant changes to work incentives, in the longer term, labour force participation is projected to fall.[4]

Figure Seven: Labour force participation rates across different groups



(Source: Statistics New Zealand,1996 and 2016)

4 This is because net migration is expected to reduce and age structure effects are likely to be less positive. For example, the projections indicate increasing proportions of people aged 65+ in the population, who are less likely to participate in the labour force than people at younger ages.

22. Labour supply could further lift through changes in working hours by part-time workers, as around 22 per cent[5] of employees are in part-time employment. The average number of hours of work reduced over the past 30 years, dropping from about 39 hours per week in the late 1980s to 37 hours per week in 2015.

Trans-Tasman migration flows may respond to tax changes, although the magnitude of response is uncertain

23. After-tax earnings are likely to be one factor that influences migration decisions by internationally mobile workers. The current strong net migration inflows have been significantly driven by fewer departures of New Zealanders and associated reversal in trans-Tasman flows, consistent with relative labour market conditions. New Zealand's workforce has a high degree of international mobility, particularly with a common labour market with Australia. However, the magnitude of the response of migration flows to taxes is very uncertain.

24. New Zealand has lower average personal income tax rates than many OECD countries, including Australia. This is due to a number of reasons, including the lack of social security deductions from income, and the fact that New Zealand relies more heavily on GST and less on personal income taxes as a source of revenue than other countries. New Zealand's overall tax-to-GDP ratio is somewhat above Australia's, although below the OECD average.

25. The table below shows the personal income tax schedules for New Zealand and Australia.

New Zealand		
Thresholds (NZD)		Rates
$1	$14,000	10.50%
$14,001	$48,000	17.50%
$48,001	$70,000	30%
$70,001	+	33%

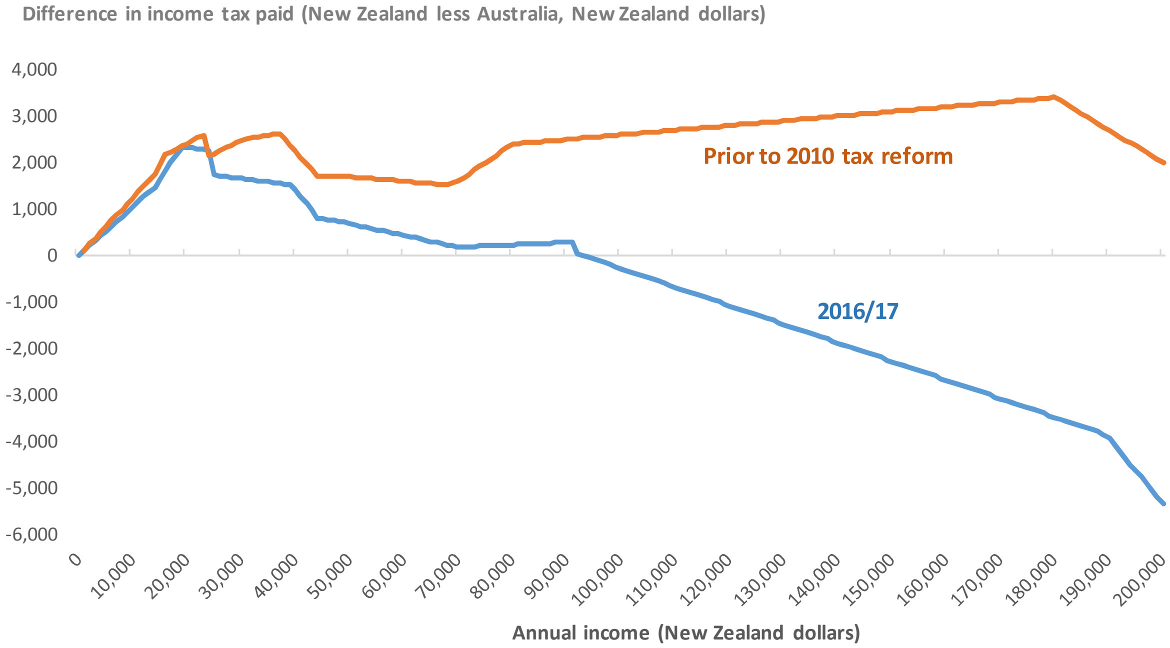
Australia		
Thresholds (AUD)		Rates
$1	$18,200	0%
$18,201	$37,000	19.00%
$37,001	$80,000	32.50%
$80,001	$180,000	37%
$180,001	+	47%

26. While Australia has a tax-free income bracket (0 - $18,200), the marginal tax rates faced at higher income levels are greater, particularly for individuals on higher incomes.

27. The 2010 Tax Working Group highlighted their concerns about the differential in income tax paid between New Zealand and Australia. Figure Eight shows that this differential has improved in New Zealand's favour since the 2010 tax reforms.

5 OECD, 2013.

Figure Eight: Difference in income tax paid (New Zealand less Australia tax paid, New Zealand dollars)



(Source: Treasury)

Estimated impact of tax and transfer policy changes on labour supply

Treasury maintains a model for estimating labour supply responses to tax and welfare changes

28. Cross-country empirical studies tend to find that there is a strong negative relationship between average hours worked and average tax rates with significant variation in responses by different types of individual and household.

29. Treasury maintains a model for estimating labour supply responses that takes account of the variation in types of households and the structure of the New Zealand tax and welfare system (T2016/2540 refers). We have modelled the magnitude of labour supply responses to the mid-2000s WfF changes and the 2010 Budget tax package, as well as two illustrative scenarios with changes to income tax thresholds and rates.

30. There are several limitations of the modelling:

- Only labour *supply* is modelled, not the *demand* side by firms.
- The model estimates the long run response, not the adjustment through time. In reality, it takes time for workers to negotiate more/fewer hours of work or enter/exit the workforce.
- There is no modelling of labour supply choices by self-employed people, retirees or their partners, full-time students or people with disabilities.
- It assumes a fixed population (i.e., does not model migration or fertility rates) and fixed household composition.

31. The simulated labour supply responses show that targeted and narrow threshold adjustments, particularly for the middle income tax bracket, are unlikely to result in large labour supply increases. This is because the changes only impact individuals with incomes around a particular threshold, and are only likely to encourage additional hours of work for those individuals rather than encourage work participation by those not currently in employment.

32. Across the board reductions in marginal tax rates are likely to have a larger effect on labour supply as they affect the incentives of more households. However, materially reducing all marginal tax rates will have greater fiscal cost and may not achieve equity and other objectives.

33. The GDP impact of a tax change could be greater or smaller than indicated by the labour supply response. The GDP change would depend on the marginal productivity of the additional workers, which could be weighted toward lower skilled workers. Moreover, this analysis does not capture the potential productivity gains of increased investment, skill acquisition and entrepreneurship that may be induced by tax reform.

Labour supply was boosted by the 2010 tax reforms, however, there were mixed labour supply responses to the mid-2000s WfF changes

34. The 2010 Budget tax package is the most recent significant reform of New Zealand's tax system and is useful to illustrate labour supply responses. It included several personal income tax rate reductions that were made as part of a larger package of tax reforms. The reforms also included increases in the main benefit payments and assistance to families with children.

35. The personal income tax changes resulted in a moderate increase in labour supply for all demographic groups (couples, single men, single women and sole parents):

    - Women with children, single women and sole parents were the most responsive in terms of entering the workforce – 0.2 per cent of women with children, 0.3 per cent of single women and 0.9 per cent of single parents went from non-work to work.
    - Men and women with children, single women and sole parents were the most responsive in terms of working more hours – 0.3 per cent of men with children, 0.3 per cent of women with children, 0.4 per cent of single women and 0.6 per cent of single parents worked more hours.

36. From 2004 to 2007 substantial changes were made to WfF and other benefits. The changes included shifting financial support for children from the welfare system to the tax system, increasing the rates of the FTC and the Accommodation Supplement, introducing the IWTC (which replaced the former Child Tax Credit) and changing the abatement regime of WfF tax credits. The policy changes were aimed at encouraging beneficiaries with children to participate in the labour market and to address income adequacy issues for families with children.

37. The changes increased the labour supply of sole parents by an average of 0.62 hours per week and labour force participation by 1.76 percentage points. However, labour supply for married men and women decreased by 0.1 and 0.5 hours per week respectively.

38. This was mainly due to the ‘work test’ where couples must work at least 30 (combined) hours per week in order to be eligible for the IWTC. Most couples already worked over 30 hours and, therefore, the changes lowered incentives to work. This is different to the case of sole parents where half of sole parents are not participating in the labour market.

Across-the-board marginal tax rate reductions have a larger effect than targeted threshold adjustments

39. Using the Treasury model, we have modelled the labour supply responses to changes in thresholds and tax rates. Specifically, the following illustrative scenarios:

- increasing the tax threshold at $48,000 to $62,000 (you previously received advice on this scenario in T2016/2540), and
- reduction in all marginal tax rates by two percentage points.

Status Quo			**Scenario one:** $48k to $62k threshold change		**Scenario two:** Reduction in all marginal tax rates by two percentage points		
Thresholds		Rates	Thresholds		Thresholds		Rates
$1	$14,000	10.50%	$1	$14,000	$1	$14,000	8.50%
$14,001	$48,000	17.50%	$14,001	$62,000	$14,001	$48,000	15.50%
$48,001	$70,000	30%	$62,001	$70,000	$48,001	$70,000	28%
$70,001	+	33%	$70,001	+	$70,001	+	31%
Fiscal cost (18/19 tax year)			$ 2,000 m		$ 3,300 m		
Estimated labour supply response (per cent change in total hours worked across the economy)			0.3		0.9		

Illustrative scenario one: $48k to $62k threshold change

40. In this scenario, the labour supply changes for all demographic groups are positive but only modestly so. Total hours worked across the economy increases by 0.3 per cent. The results suggest that this scenario provides a relatively strong incentive for certain workers to work more hours but provides limited encouragement for individuals to enter the workforce. Single women and sole parents are the most responsive – 0.7 per cent of single women and 1.1 per cent of single parents work more.

41. The tax revenue on the additional labour income would reduce the net fiscal cost by 5 per cent.

Illustrative scenario two: Reduction in all marginal tax rates by two percentage points

42. In this scenario, there is also a positive labour supply response for all demographic groups. Total hours worked in the economy are expected to increase by 0.9 per cent, which is three times as large as the threshold adjustment scenario. This change encourages more individuals to enter the workforce, particularly single women, single parents and to a lesser extent partnered women (1.1 per cent of single women, 1.2 per cent of single parents and 0.4 per cent of partnered women enter the workforce). Scenario two also encourages single women and single parents to work more hours, but to a lesser extent than scenario one (0.3 per cent of single women and 0.8 per cent of single parents work more).

43. The tax revenue on the additional labour income would reduce the net fiscal cost by 9 per cent.

A targeted set of tax and transfer changes may have a greater impact on labour supply

44. A more targeted package of tax and welfare reforms focussed on reducing effective marginal tax rates could have greater impacts on labour supply than the scenarios discussed in this report.

45. Further detailed consideration of the interface between the tax and welfare settings would involve significant trade-offs across a range of objectives, particularly equity and fiscal cost. Treasury will continue to provide you with advice on labour supply impacts in the development of a potential tax and transfer package for Budget 2017.

46. A comprehensive review of welfare policy and how it interacts with the tax system, as recommended by the 2010 Tax Working Group, could be considered to systemically address these issues. This would require significant resources and could be undertaken during 2017/18 but not in time to inform Budget 2017 decisions.