



# He Tirohanga Mokopuna 2021

The Treasury's combined Statement  
on the Long-term Fiscal Position and  
Long-term Insights Briefing

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*He Tirohanga Mokopuna was first used in the title of the 2016 Statement. It conveys the sense of a future outlook and taking a long-term view. The term mokopuna is used conceptually to signify a new generation; our mokopuna are the future and we have the responsibility today to leave New Zealand a better place for them in the decades ahead. He Tirohanga Mokopuna also underscores the unique relationship between the Crown and Māori under the Treaty of Waitangi as an imperative in lifting living standards for New Zealanders.*

*The purapurawhetū design element on the cover comes from tukutuku panels adorning the Treasury's whareniui, Ngā Mokopuna a Tāne. It symbolises the many people of a nation and likens them to the myriad of stars. We have used it here to represent equitable distribution of wellbeing outcomes.*

## Acknowledgements

We thank submitters and those we met with as part of our consultation on the scope and the draft of this document. A summary of the feedback we received can be found on our website: [www.treasury.govt.nz/news-and-events/reviews-consultation/long-term-fiscal-challenges](http://www.treasury.govt.nz/news-and-events/reviews-consultation/long-term-fiscal-challenges)

## A note on He Tirohanga Mokopuna 2021 – the Treasury's combined Statement on the Long-term Fiscal Position and Long-term Insights Briefing

The analysis and conclusions in the consultation draft were finalised before new data releases were incorporated and the modelling updated. Additionally, we reviewed and considered all feedback we received through the consultation. As a consequence the analysis and conclusions presented in this final version differ slightly from those presented in the consultation draft published in July. While we have been unable to fully reflect all the feedback received on the draft, this feedback will still help to inform our ongoing policy advice and development of our future stewardship reports.

Underpinning the analysis and conclusions are a number of background papers. We intend to publish these papers by the end of September 2021:

- How fiscal strategy affects living standards.
- Golden years – understanding the New Zealand Superannuation Fund.
- The economic impacts of an ageing population in New Zealand.
- Demographic, economic and fiscal assumptions and logic in the 2021 Long-term Fiscal Model.
- Long-term projections of the New Zealand Government's interest rate.
- Labour productivity growth in the Treasury's fiscal projections.
- Shocks and scenarios analysis using a stochastic Neoclassical Growth Model.

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# The Treasury's regular stewardship reports

With recent changes to the Public Finance Act and the new Public Service Act, the Treasury must regularly produce four reports: a Statement on the Long-term Fiscal Position (Long-term Fiscal Statement) and a Long-term Insights Briefing (combined in the current report) as well as an Investment Statement and a Wellbeing Report.

*Long-term Fiscal Statement (LTFS):* every four years, the Treasury must prepare a statement on the long-term fiscal position. The LTFS must relate to a period of at least 40 consecutive financial years. The LTFS indicates possible trends in spending, revenue, the operating balance and debt over the relevant period, based on current policy settings and recent history.

*Long-term Insights Briefing:* every three years the Treasury provides to the Minister of Finance a report, the aim of which is to make publicly available (1) information about medium- and long-term trends, risks and opportunities that affect or may affect New Zealand, and (2) information and impartial analysis, including policy options (but not recommendations) to respond to these trends, risks and opportunities. This report must be done independently of Ministers. The public must also be consulted on the scope and a draft of the briefing. For this briefing, we have decided to focus on the fiscal outlook in the context of COVID-19. This does not imply that there is not a wide range of other significant issues for New Zealand. However, given our role, the fiscal outlook was a logical topic.

*Investment Statement:* every four years the Minister of Finance must present to the House of Representatives a statement prepared by the Treasury that describes the state and value of significant assets and liabilities; how those have changed in value over time; how they are forecast to change over at least the next two years; and changes since the last statement.

*Wellbeing Report:* every four years the Minister of Finance must present to the House of Representatives a report describing, with the use of indicators, the state of wellbeing in New Zealand; how this has changed over time; and the sustainability of, and any risk to, the state of wellbeing in New Zealand.

## Publication Schedule

**2021:** Long-term Fiscal Statement/Long-term Insights Briefing

**2022:** Wellbeing Report; Investment Statement

**2024:** Long-term Insights Briefing

# Foreword

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## Kia ora koutou

The Treasury's Māori name, Te Tai Ōhanga, represents the role we play in overseeing the 'tides' of the New Zealand economy. Charting the tides of New Zealand's fiscal position over the coming 40 years is the role of the Long-term Fiscal Statement.

This year we have combined the Long-term Fiscal Statement with the Treasury's first Long-term Insights Briefing. This has provided us with the opportunity to analyse key trends and their potential long-term fiscal impacts directly alongside a range of policy options available to address them.

We deliberately kept the name 'He Tirohanga Mokopuna', from the 2016 LTFS because the concepts underpinning the name (the need to take an intergenerational view, the importance of mokopuna and whānau and the potential for the Māori-Crown relationship under Te Tiriti o Waitangi to act as an enabler in lifting living standards for all New Zealanders) are even more salient now in 2021. We are making greater use of our Living Standards Framework to ensure we take a broad and rigorous view of how fiscal sustainability contributes to wellbeing now and in the future. For this Statement, we have introduced a te ao Māori perspective, drawing from He Ara Waiora, which is a waiora (wellbeing) framework built on te ao Māori knowledge and perspectives of wellbeing.

Through ongoing engagement with Māori and external stakeholders, we aspire to improve and deepen the quality of this analysis over time and ensure its relevance for all New Zealanders.

In preparing this report we sought input and submissions from key subject matter experts on topics such as superannuation, demographics and climate change to help shape its contents and our analysis.

Like so much else in New Zealand, this work has been affected by the COVID-19 pandemic. We originally intended to publish this report in March 2020 but decided to wait so we could evaluate the effects of the pandemic, at least in its early stages. As we finalised the draft of this document we went into lockdown again, illustrating that COVID-19 remains a big challenge.

Welcome to the Treasury's 2021 Long-Term Fiscal Statement and Long-term Insights Briefing. I hope you find it illuminating and thought provoking.

Ngā mihi nui



**Caralee McLiesh**  
*Secretary to the Treasury*

# Executive summary

The impacts of the COVID-19 pandemic cast a shadow over the fiscal position of the Government and will do so for years to come. There is considerable uncertainty about its future effects. We still don't know when the world's borders will re-open and the new 'normal' our economies will return to.

However, it is not only the COVID-19 pandemic that we must consider. Other economic and societal matters, such as climate change and population ageing, must also be factored into the long-term fiscal position of New Zealand.

In this report we look at some of the economic and societal factors most likely to affect New Zealand now and into the future. We then look at our current economic situation, analyse the possible future impacts of current trends, and discuss some options for moderating these impacts.

Where possible we have incorporated the impacts of COVID-19 on key economic variables such as interest rates, labour productivity, migration and trend growth. However, it is still too early to accurately assess the longer-term impacts on important drivers of the economy, including migration and tourism.

## COVID-19 – the immediate challenge

**The COVID-19 pandemic has demonstrated the importance of a strong and sustainable fiscal position**

New Zealand was well positioned to respond to COVID-19. Prior to the pandemic, net core Crown debt (net debt) was 19% of GDP. This strong fiscal position allowed the Government to respond to the COVID-19 pandemic with significant fiscal support, which has been critical to maintaining relatively low unemployment and enabling a swift economic recovery from the initial shock. This complemented the national health response and monetary policy stimulus.

While New Zealand's health and economic responses to COVID-19 have supported living standards to date, the economy has still faced a significant shock, uncertainty remains, and some groups have been more negatively affected than others. Sectors such as retail, trade and accommodation have been the most impacted by pandemic-related disruption. This affected a disproportionate number of young people, Māori, Pacific Peoples and women, exacerbating pre-existing inequities in labour market outcomes.

**While the fiscal response to the COVID-19 pandemic has caused net debt to increase significantly, the Treasury views this response and current debt levels to be prudent**

The most recent forecast for net debt is that it will peak at 48% of GDP in 2023. Though more recent fiscal and economic data indicates that the net debt position is more favourable than forecast. In any event, the Government's fiscal response has helped prevent a deeper and longer-lasting recession, which could have had long-term impacts on New Zealand's wellbeing.

The Treasury's judgement is that there is currently no need to reduce debt levels. The fiscal response to COVID-19 is largely temporary. Deficits will shrink as the temporary fiscal measures put in place since March 2020 to support the public health response to the pandemic end, putting less upward pressure on net debt.

Current debt levels are also unlikely to limit our ability to borrow further if required. New Zealand's debt level remains low relative to its peers and the interest rate and composition of debt are much more favourable than when net debt peaked at 55% of GDP in 1992.

## Other key factors at play

**Climate change will have significant economic and fiscal impacts both now and into the future. The scale of these impacts remains uncertain, partly because many policy decisions are still to be taken**

Climate change will impact the fiscal position through both the physical impacts of a changing climate, such as more frequent and severe weather events, and the transition to a net zero emissions economy by 2050. Climate change has started to impact New Zealand today, but the long-run effect is highly uncertain at this stage.

More frequent and severe extreme weather events and the gradual increase in temperature and sea levels will have economic and fiscal impacts in the future, which adaptation policy today could reduce. Governments will also face trade-offs when choosing the pace of emissions reduction and the policy levers to achieve it.

## **New Zealanders are, on average, living longer and healthier lives. This is a good thing, but combined with ongoing increases in health spending it is likely to put pressure on public finances over the long-term**

Driven by lower average fertility rates and improvements in life expectancy, 26% of the population is projected to be over 65 years old by 2060, compared to 16% in 2020. This is expected to increase superannuation expenditure under current settings. In addition, we expect healthcare costs will likely continue to grow over time, with an ageing population projected to make up around one third of the increase.

This ageing population will also change the demographics of New Zealand as ageing varies considerably by ethnicity. Māori and Pacific Peoples are on average significantly younger than other New Zealanders. By 2043 Māori are projected to account for 21% of the total population and only 11% of the 65+ population.

Beyond COVID-19 and climate change, there are other significant trends or issues which will impact New Zealand – including technology and the changing global strategic context. We have not considered these in this document.

## **Looking to the future**

### **Fiscal sustainability helps maintain and improve intergenerational wellbeing**

Fiscal sustainability ensures governments can continue to pay for the services and transfers they provide into the future. This helps ensure that governments can respond to unexpected negative shocks to protect living standards and future generations are not unfairly burdened by the current generation through higher taxes or a lower level of government services.

### **Net debt is likely to be on an unsustainable trajectory if expenditure and revenue follow historical trends**

Our projections indicate that the gap between expenditure and revenue will grow significantly as a result of demographic change and historical trends, in the absence of any offsetting action by governments. This will cause net debt to increase rapidly as a share of GDP by 2060. For the first time, the Treasury has also modelled the economic impact of alternative scenarios where governments take action to stabilise net debt instead of allowing it to increase. This modelling can help inform the policy trade-offs future governments will face.

## **Any long-term projections are uncertain, and there will be shocks in the future**

Uncertainty about the path of the economy through the COVID-19 pandemic heightens the already significant uncertainty associated with long-term projections. The projections are sensitive to many factors, including the future path of interest rates and the starting point for economic and fiscal projections. Built up over time, small initial differences in demographic, social and natural trends can lead to very different future economic and fiscal positions. Additionally, governments will change policies and technological advances will surprise us, and some factors will eventuate that we are not aware of, like the COVID-19 pandemic.

Therefore, the long-term projections in this Statement should be viewed as an illustration of the trajectory of the fiscal position under a set of assumptions rather than a forecast. Even optimistic changes to those assumptions do not change the fact that New Zealand will face significant long-run fiscal pressures. However, lower interest rates will provide more time to make policy adjustments as debt-financing costs will be lower (and these adjustments will be relatively smaller).

New Zealand will face shocks in the future such as recessions, earthquakes, and further pandemics. They are expected to add to fiscal pressures in the long-term. By ensuring that enough capacity exists in the public finances to respond to these shocks, the wellbeing of the future populations that have to manage them can be supported.

## **Options and choices**

### **Governments have choices about the level of debt to target in the future, and when they make policy adjustments to achieve this**

While the Treasury's judgement is that there is currently no immediate need to reduce debt, policy action will be necessary to achieve and maintain a sustainable debt trajectory over time. This will ensure that New Zealand is resilient to future shocks, and that future generations do not face an unduly large burden of debt. Governments will need to decide how large an adjustment is necessary, and at what time. Both judgements are complicated by uncertainty in the near term due to COVID-19, the future path of interest rates, and international debt levels, while fiscal policy will need to be flexible to be able to respond to a range of scenarios.

The Public Finance Act 1989 requires governments to 'reduce debt to prudent levels' and maintain it at those levels. Defining 'prudent' requires both analytical and value judgements, including considering the value of additional expenditure, how decisions to allocate resources affect current and future wellbeing (which can be done using the Treasury's Living Standards Framework and He Ara Waiora), how much fiscal resilience New Zealand needs to respond to future shocks, and the impact of higher debt on future generations. The Government views current debt levels as prudent, an assessment the Treasury supports.



However, long-term expenditure trends mean that, without any policy adjustments, net debt will likely breach the prudent upper limit at some future point either within or beyond the projection period. In this report, we consider some of the possible policy adjustments, but these are by no means an exhaustive list of all the options.

Although the increased uncertainty as a result of COVID-19 makes it difficult to calculate the exact speed of adjustment, considering changes to improve the long-term fiscal position now is likely to be beneficial. Small and gradual changes in the near term could help minimise the cost of fiscal pressures across generations, preventing higher debt and a larger, relatively more costly adjustment in the future.

### **Policy choices on the level of debt, speed of adjustment, and policy options present trade-offs for current and future wellbeing in several ways**

The Treasury's Living Standards Framework, which recognises that environmental, social, human, and physical and financial capital need to be developed and sustained in order to achieve wellbeing, and He Ara Waiora are both useful frameworks for considering the wider wellbeing implications of fiscal objectives and the means of achieving them.

These frameworks consider the distributional impact of policies on different groups. They help ensure that policies are fair and consistent with tikanga Māori. This is achieved by working in the spirit of kotahitanga (unity) with those most affected by any policy changes, and by considering the intergenerational impact of the choices we make to support our tiakitanga (stewardship) or mana whanake (intergenerational prosperity).

### **Future governments could manage the growth in expenditure over time, supported by a drive to improve the quality of public spending**

We have considered options to manage the growth of health expenditure or to change the policy settings for New Zealand Superannuation such as increasing the age of eligibility and changing the rate at which payments are increased. Both would contribute to a more sustainable trajectory for debt, and could have broader macroeconomic benefits, but would come with trade-offs particularly for groups of the population who already face challenges accessing health services or an adequate income in retirement.

The context for retirement income policy has now changed given, for example, COVID-19, home ownership patterns over the past decade, and the changing nature of work. This needs to be taken into consideration when analysing the costs and benefits of New Zealand Superannuation options. Further, any changes should be signalled in advance.

Health reform now under way provides an opportunity to improve fiscal sustainability over the long-term through enhanced productivity and efficiency, although the extent of this is uncertain. It is unlikely, however, to achieve a permanent and significant reduction in healthcare spending given the upfront investment required, the ambitious focus of reform (for example, improving equity of access) and the underlying drivers of health expenditure.

Reforms to our public finance system will give governments more tools to improve fiscal management and sustainability. While these tools are unlikely to deliver significant fiscal savings, they will help governments focus on the quality of expenditure and value for money through better collaboration, multi-year Budget cycles and spending reviews. Maximising the quality and value of expenditure will be critical to enhancing social capital in an increasingly constrained fiscal environment. It will also ensure that governments are investing in expenditure that will contribute to current and future wellbeing, help build our future resilience to shocks and deliver long-term gains in both outcomes and cost.

### **There are options to increase tax revenue, although the impact would depend on the tax lever chosen**

The Treasury has considered options to increase tax revenue and modelled the impact of increasing revenue from the personal income tax system. Raising additional revenue has economic costs, as it reduces individuals' and businesses' ability or incentives to work, save, or invest in businesses, the economy, themselves, or their whānau, which could reduce financial and human capital. The net impact on New Zealand's wellbeing depends on who ends up paying and how additional revenue is spent.

There are many ways in which governments could seek to raise additional revenue from existing and new tax bases beyond personal income tax. All have trade-offs; there is no perfect way to raise revenue, and different levers have different economic and social impacts.

### **A comprehensive package will be necessary over time to stabilise net debt, but the balance of policy measures is largely a value judgement for governments**

Changing tax rates or restricting expenditure growth can help close the growing gap between revenue and expenditure. However, analysis in this Statement shows that one policy change by itself is unlikely to stabilise debt over the long run. This means that future governments will likely need to draw on multiple levers and consider trade-offs across different policy options in responding to our fiscal challenges.

# 1

# New Zealand's long-term fiscal position

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## 1.1

### New Zealand's current fiscal position

New Zealand's strong fiscal position when the COVID-19 pandemic hit allowed the Government to support the wellbeing of New Zealanders through an extraordinary shock, which has prevented a deeper and longer-lasting hit to living standards.

While the impact of COVID-19 on annual borrowing is largely expected to be temporary, net core Crown debt (net debt) in New Zealand has increased substantially and is expected to peak at 48% of GDP in 2023. Though more recent fiscal and economic data indicates that the net debt position is more favorable than forecast.

Increasing net debt is an appropriate policy response to COVID-19, and while the Treasury considers there is currently no need to reduce the level of net debt, governments will need to ensure that it is on a sustainable trajectory in the long-term.

In the year to June 2019 net debt was 19% of GDP. The Government's strong fiscal position allowed a significant fiscal response to the COVID-19 pandemic, which has been critical to minimising the rise in unemployment and supporting a swift economic recovery from the initial shock.

New Zealand's fiscal response was large by international standards (see figure 1).<sup>1</sup> Discretionary COVID-19 fiscal measures totalled \$62.1 billion. Automatic fiscal stabilisers and existing discretionary fiscal policy initiatives have also provided support to the economy.<sup>2</sup>

That fiscal support complemented the health response and action taken by the Reserve Bank of New Zealand (RBNZ) to support the economy. New Zealand's elimination strategy resulted in generally fewer domestic movement restrictions after May 2020 than those seen in many other parts of the world, and the RBNZ eased monetary policy to support the economy using both existing and new monetary policy tools. As a result, New Zealand's health and economic responses to COVID-19 have helped support living standards<sup>3</sup>. Consistent with this, most New Zealanders continue to enjoy high levels of life satisfaction.<sup>4</sup>

Nevertheless, some groups have been more negatively impacted by the pandemic than others. Business owners and individuals working in retail, trade and accommodation have been the most impacted by pandemic-related labour market disruption. This affected a disproportionate number of young people, Māori, Pacific Peoples and women, which has exacerbated pre-existing inequities in labour market outcomes.<sup>5</sup> In addition, house prices have increased sharply.

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1 While New Zealand's fiscal spending has been large by international standards, the scale of equity loans and guarantees has been at the low end.

2 Spending and forgone revenue from automatic fiscal stabilisers is forecast to total around \$5.8 billion over the three years to June 2022, and the Government had committed to \$12 billion of infrastructure-based fiscal stimulus (the New Zealand Upgrade Programme) in January 2020, shortly before the impacts of COVID-19 became apparent.

3 See: <https://www.treasury.govt.nz/sites/default/files/2020-08/dp20-02-covid-19-impacts-on-wellbeing-v2.pdf>

4 See: <https://www.stats.govt.nz/information-releases/wellbeing-statistics-december-2020-quarter>

5 See page 17 of the following link for information on the distributional impacts of COVID-19 in the labour market: <https://www.treasury.govt.nz/system/files/2020-12/hyefu20.pdf>

This has exacerbated housing affordability challenges, particularly for those seeking to buy their first home, and placed further pressure on intergenerational equity.

There is a risk that COVID-19 may have longer-lasting economic costs. A growing body of evidence shows that recessions can have a long-lasting effect on the earning and employment potential of workers – particularly those who lose their job – and reduce investment and innovation in the economy.<sup>6</sup> The size of the long-run impact is uncertain; however, the relatively small increase in unemployment and the fast economic recovery following lockdowns provide reasons to be optimistic.

In the absence of a strong fiscal response to COVID-19, the economic and fiscal position and outlook could have been much worse, and those permanent impacts more likely.

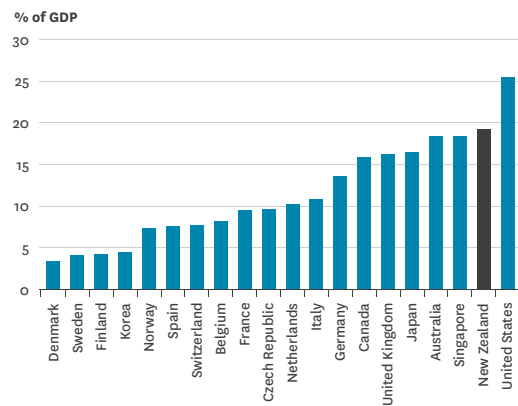
Lower spending, lower investment and lower employment could have fallen into a vicious cycle, resulting in a deeper and longer-lasting recession.<sup>7</sup> Fiscal policy needed to play a larger than usual role in supporting the economy, given both the nature of the shock and the limits on monetary policy. A smaller fiscal response may have required the RBNZ to use new monetary policy tools more aggressively to meet their economic objectives, which would be more difficult to target and would not have supported the economy as quickly as, for example, the Wage Subsidy Scheme.

However, the fiscal response has shifted New Zealand's debt position significantly – net debt is now forecast to peak at 48% of GDP in 2023 (see figure 2).<sup>8</sup> The change in net debt-to-GDP as a result of COVID-19 is largely attributable to the increase in debt, rather than changes to forecast GDP. Net worth, another measure of government balance sheet strength, has also deteriorated (see figure 3).

The fiscal response to COVID-19 is largely temporary. Current and future forecast deficits are largely being caused by one-off COVID-19 expenditure or revenue measures. Deficits will shrink as the temporary fiscal measures put in place since March 2020 to support the public health response to the pandemic end (see figure 4), putting less upward pressure on net debt.

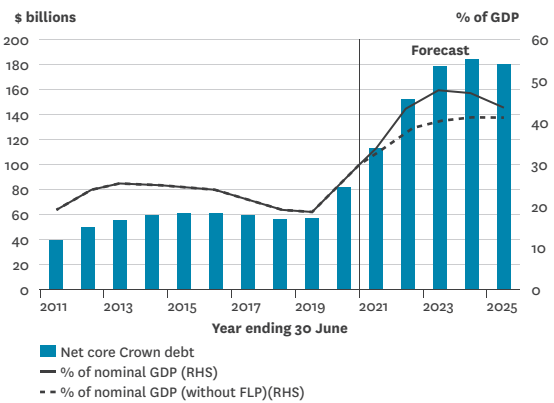
The Treasury views this temporary increase in borrowing and the increase in net debt as an appropriate response to the significant shock that COVID-19 represented.

**Figure 1: Discretionary public spending and forgone revenue in response to COVID-19**



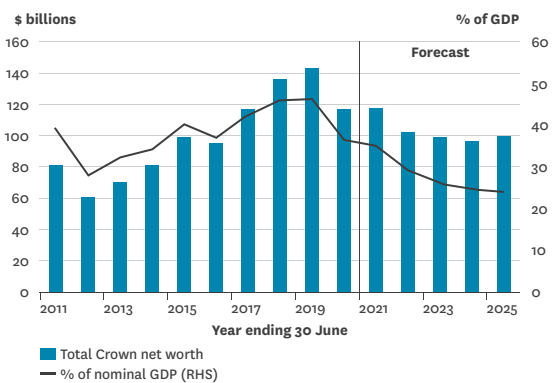
Source: IMF

**Figure 2: Net core Crown debt<sup>9</sup>**



Source: The Treasury's 2021 Budget Economic and Fiscal Update

**Figure 3: Total Crown net worth**



Source: The Treasury's 2021 Budget Economic and Fiscal Update

6 For example, see: [http://motu-www.motu.org.nz/wpapers/17\\_12.pdf](http://motu-www.motu.org.nz/wpapers/17_12.pdf)

7 This cycle would see households' reluctance to spend reduce demand for goods and services produced in New Zealand; this makes the outlook more challenging for businesses, who then become more reluctant to hire new staff or retain existing employees. This, in turn, makes households even more reluctant to spend as they face lower incomes and more uncertain employment prospects.

8 The debt forecasts are based on the 2021 Budget Economic and Fiscal Update: <https://www.treasury.govt.nz/sites/default/files/2021-05/befu21.pdf>. Since then, the economy has performed more strongly than expected and debt levels are now expected to be somewhat lower. The appropriateness of the net debt definition is currently being reviewed as part of a broader review of fiscal indicators, which is expected to be completed during 2021/22.

9 Excluding the Funding for Lending Programme (FLP), the level of net core Crown debt is lower across the forecast period and is expected to increase to \$171.5 billion (41.4% of GDP) in the final year of the forecast.

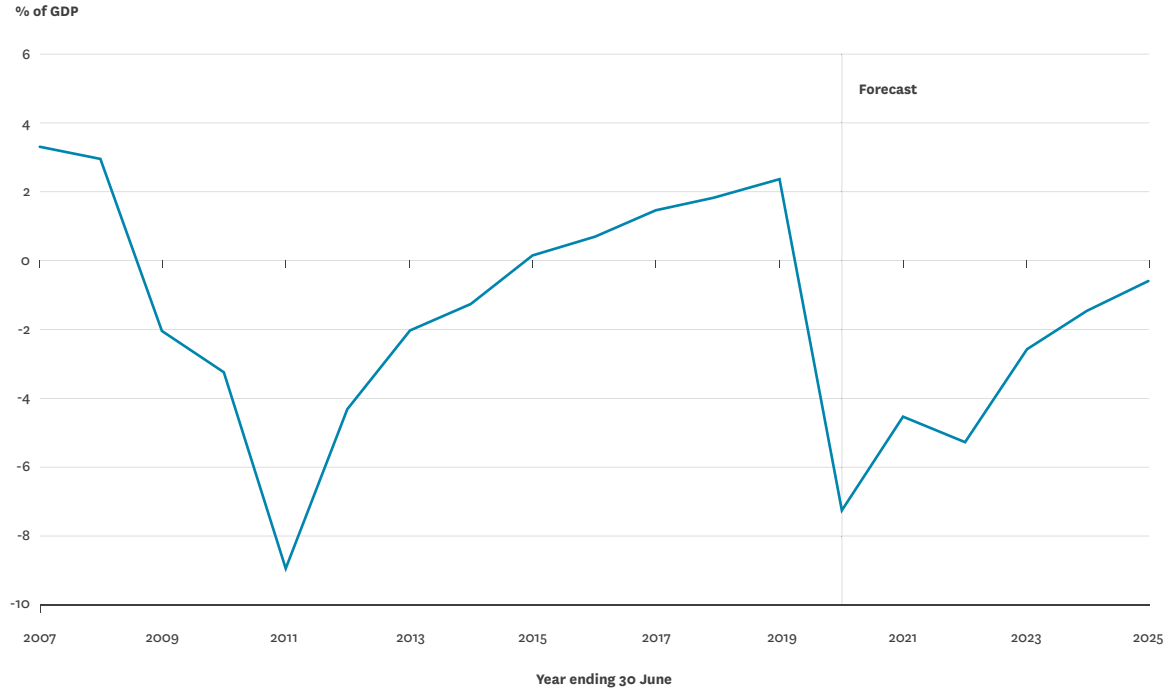
Furthermore, compared to the previous debt peak in 1992 (at 54.8% of GDP), interest rates and the composition of debt are much more favourable:

- Interest rates are at near historical lows, with the 90-day yield at 0.54% (as at August 2021) compared to around 6% in August 1992.
- All long-dated debt is New Zealand dollar denominated (NZD), with only a small amount (just under NZD \$2 billion or 1.25% of total debt) of short-dated United States dollar denominated debt at the end of January 2021, whereas in 1992 foreign currency denominated debt comprised around 40% of total debt based on the best data we have available. NZD denominated debt has a lower exposure to exchange rate changes.
- New Zealand's debt is relatively low compared to its peers (figure 5).

These factors inform the Government's view that current levels of debt are prudent, as articulated in the Budget 2021 Fiscal Strategy Report. The Treasury supports this assessment and considers that there is currently no need to reduce debt levels, and as appendix one shows, there could be significant economic costs to reducing debt from its current level too quickly.

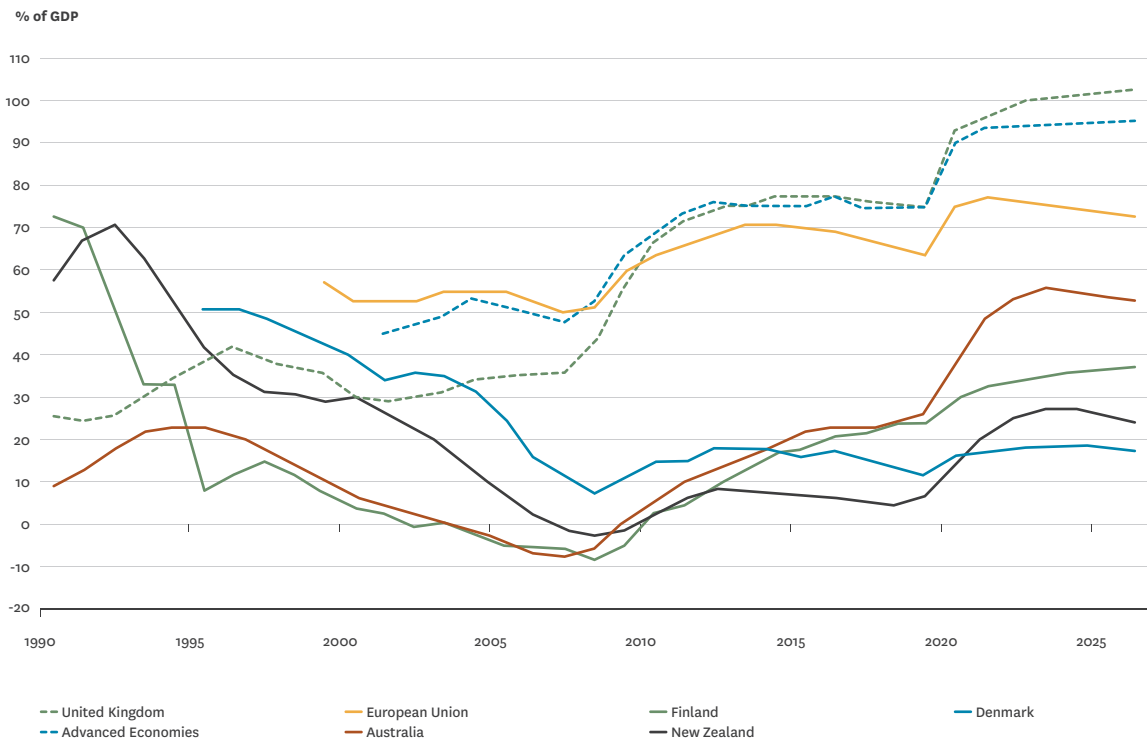
However, that does not mean that higher debt today, and long-term fiscal trends, are not important or that they will not require policy action in the future. Sections 1.3 and 1.4 describe how those trends could develop under different policy scenarios. Section 2 of this report explores how New Zealand could respond to those trends, including how the Treasury views prudent debt and fiscal sustainability, and the potential scale of policy adjustment required. The remainder of section 2 sets out policy options for governments to make that policy adjustment and achieve fiscal sustainability.

**Figure 4: Operating balance before gains and losses (OBEGAL)**



Source: The Treasury's 2021 Budget Economic and Fiscal Update

**Figure 5: IMF general government net debt<sup>10</sup>**



Source: IMF (April 2021 database)

Note: Forecasts are included in the graph.

10 The IMF's general government net debt definition is different to the net core Crown debt measure that the Treasury produces. The difference reflects variations in accounting frameworks, entity coverage, and the financial assets included within the respective net debt measures. For example, the IMF measure includes the financial asset portfolios held by ACC and the NZ Superannuation Fund. Over the forecast period, this produces a relatively lower net debt figure. The financial assets coverage attributes a large portion of the difference between the two measures.

# 1.2

## Demographic change

Stats NZ projects that people aged 65+ will make up 26% of the population in 2060, compared to 16% in 2020. This is partly because people are, on average, living longer and are in better health. This is a positive thing for New Zealand.

These population projections differ by ethnicity and region and so will change the demographics of New Zealand. Despite longevity also increasing for Māori and Pacific Peoples, their average age will increase more slowly than European and Asian ethnic groups, largely because of higher fertility rates and lower life expectancy.

There is uncertainty about how an ageing population will affect the economy. One of the more certain outcomes is that, on average, labour supply growth will be lower, although by how much is less certain. As people get older, they are less likely to work, and if they do work it is generally for fewer hours. However, this may be partly offset by an increase in labour force participation by women and if elderly people work more than expected. We make assumptions about these effects in the projections.

The New Zealand population is growing and ageing. It is expected to reach 6.5 million by 2060, and people aged 65+ are projected to account for more than a quarter of the total population by 2060, compared to 16% in 2020.

This demographic change is an important driver of long-term fiscal trends. This section analyses the drivers and impacts of New Zealand's ageing population.

### 1.2.1 Drivers of demographic trends in New Zealand

The three key factors driving these projections are fertility, mortality, and net migration.

- **Fertility – people are having fewer children:** New Zealand's fertility rate has been below the 'replacement rate' of 2.1 since 2013.<sup>11</sup> Stats NZ assumes the fertility rate will stabilise at 1.65 from 2021.
- **People are living longer, healthier lives:** since the 1950s, New Zealand's life expectancy at birth has increased by around 12 years for both males and females. Stats NZ projects that it will continue to increase gradually, reaching 89 years for females and 86 years for males by 2060, up from 84 and 81 years respectively in 2021.
- **The effect of migration:** New Zealand had relatively high rates of migration before COVID-19. We expect that this could slow population ageing, but the impact is unlikely to be significant over the long term. While migrants tend to be younger, they also age and there is international evidence that over time migrant populations tend to shift towards having similar numbers of children as native-born populations.

Fertility and life expectancy differ by ethnic group.<sup>12</sup> Therefore, not all population groups in New Zealand will age at the same pace. In particular, Māori and Pacific Peoples have higher fertility rates than European and Asian ethnic groups, and while Māori and Pacific Peoples' longevities are increasing, they remain below those of other ethnic groups.<sup>13,14</sup> This is likely to change the demographics of New Zealand over time:

11 Replacement level fertility is the average number of children every woman must theoretically have in order for the population to exactly replace itself from one generation to the next. In most countries, the replacement fertility level is roughly 2.1, as not everyone reaches child-bearing age, but the exact number depends on gender ratios at birth and infant and child mortality rates. Migration trends are not taken into account.

12 Ethnic groups are not mutually exclusive, since some people identify with more than one ethnicity.

13 In 2019 life expectancy for Māori males and females was approximately 7.7 and 7.4 years less than males and females respectively in the European or Other (including New Zealander) ethnic group. In 2043 the gap in life expectancy is expected to close to 5 and 4.8 years for males and females respectively. In 2019 life expectancy for Pacific males and females was approximately 6.0 and 5.4 years less than males and females respectively in the European or Other (including New Zealander) ethnic group. In 2043 the gap in life expectancy is expected to close to 2.3 and 2.1 years for males and females respectively.

14 Some of these differences in life expectancy are driven by inequities in health outcomes; for example, obesity rates are particularly high for Pacific Peoples and Māori. If these can be improved, this will lead to lower mortality rates, as well as having other positive economic and social impacts.

- By 2043, Māori are projected to account for 21% of the total population and 11% of the 65+ population. Pacific Peoples are projected to account for 11% of the total population and 5% of the 65+ population.
- European New Zealanders are projected to have a substantially greater proportion of their population aged 65+ relative to the 15-64 year age group compared with other New Zealanders (figure 6).

The social and economic impacts of these trends in Māori and Pacific Peoples demographics – and of their divergence from trends in the rest of the New Zealand population – are explored in the interviews with Māori leaders and experts that we conducted as part of this work.<sup>15</sup> These trends have implications for labour market dynamics and policy settings.

Table 1 provides a breakdown of population projections by ethnicity and some key economic variables under historical trends.

## 1.2.2 Economic impacts of an ageing population

Understanding the potential economic impacts of an ageing population is an important part of the long-term fiscal sustainability story given that tax revenue is closely linked to economic growth. An ageing population can affect the economy in four main ways:<sup>16</sup>

- **Reduction in labour supply growth:** as people get older, they are less likely to participate in the labour force, and if they do participate they generally work fewer hours. For this reason, the labour force participation rate is projected to fall by around five percentage points between 2020 and 2060.<sup>17</sup>
- **Changes in labour productivity:** the impact of an ageing population on productivity is ambiguous. Hourly earnings tend to decrease as people get older, which suggests that their productivity declines. However, studies on this subject provide ambiguous results and the declining wages for older workers could be driven by other factors such as prejudice against older workers or older workers stepping out of higher-paying jobs.<sup>18</sup>
- **Shifts in demand for different types of goods and services:** both the level and composition of consumption will look different as New Zealand's population ages. Sectors that might grow their shares of GDP as the population ages include health, old-age care, financial services, and retail trade.

- **Changes in savings and investment decisions:** as more of the population moves into retirement, this may lower overall savings rates and shift savings towards lower-risk investments. However, as outlined in section 1.4.1, there is a high level of uncertainty about what savings and interest rates will be in the long-term.

## The economic impacts of an ageing population will also differ across the population

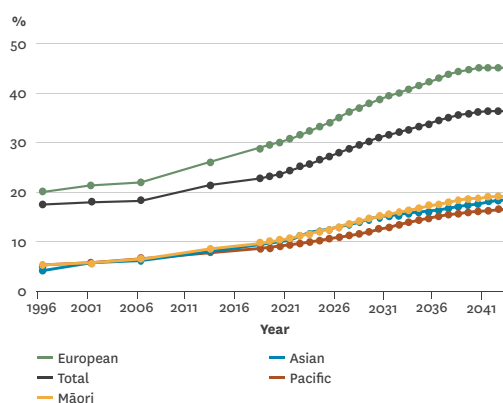
In particular, it is likely that the labour force participation rates will differ across ethnicities. However, these economic impacts may also differ owing to historical inequality among ethnic groups. For example, labour force participation rates tend to be lower and unemployment higher among Māori and Pacific Peoples compared to other New Zealanders.

## 1.2.3 Fiscal impacts of an ageing population

Section 1.3 of this Statement provides our projections on how an ageing population could affect the long-term fiscal position. This shows three trends:

- **Rising New Zealand Superannuation expenditure:** the number of people eligible to claim New Zealand Superannuation will increase, and so expenditure will increase.
- **Rising healthcare expenditure:** older individuals will require more healthcare services than younger individuals, on average. Therefore an ageing population will increase the cost of a healthcare system providing an equivalent level of service to today. However, this is only around one third of expected growth in healthcare spending in the future, as general increases in demand for, and cost of, healthcare services are also projected to rise.
- **Reduced tax revenue:** lower labour force participation will likely reduce real GDP growth, which will place downward pressure on tax revenues.

Figure 6: Ratio of 65+ to 15-64 population by ethnicity



Source: Stats NZ

15 See: <https://www.treasury.govt.nz/publications/research-and-commentary/rangitaki-blog/conversations-about-future>

16 See background paper: *The economic impacts of an ageing population in New Zealand*: <https://www.treasury.govt.nz/publications/strategies-and-plans/long-term-fiscal-position>

17 Working-age population is the resident population aged 15 years and over.

18 In addition, the impact of population ageing on labour productivity will be affected by investment, technology and innovation over time. These impacts are uncertain, and as a result the Treasury assumes that ageing has no effect on productivity when making its long-term projections.

**Table 1:** Population (million) and economic variable projections

Variable	2020	2030	2043	2060
Population total	5.1	5.6	6.1	6.5
Māori population	0.9	1.0	1.2	-
Pacific Peoples population	0.4	0.5	0.6	-
Asian New Zealander population	0.9	1.2	1.6	-
European population	3.5	3.7	3.9	-
Working-age population	4.1	4.6	5.1	5.6
Labour force participation rate	70.4%	68.4%	67.1%	65.2%

Source: Stats NZ

Note: Ethnic groups are not mutually exclusive. Projections by ethnicity only go to 2043.



# 1.3

## New Zealand's long-term fiscal position

To illustrate the scale of potential changes to New Zealand's long-run fiscal position, we present spending growing at historical rates assuming no response from the government or individuals, which shows net debt rising unsustainably.

The most significant spending pressures come from a combination of healthcare and NZ Superannuation, which we project will increase by 6.4% of GDP from 2021 to 2061.

We examine the macroeconomic effects of illustrative policy choices to stabilise net debt, which can help inform trade-offs that governments will need to make between the economic and social impacts of tax and spending choices.

### 1.3.1 Our approach to projecting the public finances

In alignment with previous Statements, we present projections for key classes of government spending and revenue based on historical trends (the *historical trends* scenario). In addition, this Statement for the first time introduces a new model where we more explicitly model behavioural and policy responses of governments to stabilise debt, households, and businesses and how their decisions might affect the economy as a whole (the *alternative* scenarios).<sup>19</sup>

These approaches are complementary. Simply projecting forward historical trends summarises the scale of the fiscal pressures we face – but it is an unrealistic scenario. The *alternative* scenarios inform the economic trade-offs that governments will face in the future by looking at the impact of stylised adjustment scenarios that differ in the type of adjustment – spending or tax – and the timing of adjustment.

Both the *historical* trends scenario and *alternative* scenarios are projections that illustrate the broad fiscal trends that could happen in the future. They are underpinned by up-to-date information and near-term forecasts. However, they are not detailed forecasts of what we expect to happen. Section 1.4 sets out how these projections may change if some of our key assumptions about the future turn out differently.

<sup>19</sup> The *historical trends* scenario uses the Treasury's Long-term Fiscal Model (LTFM). The background paper titled *Demographic, economic and fiscal assumptions and logic in the 2021 Long-term Fiscal Model* explains the LTFM in more detail. The *alternative* scenarios uses the new Neoclassical Growth Model (NCGM) – see appendix two for a technical summary of this model. A background paper titled *Shocks and scenarios analysis using a stochastic Neoclassical Growth Model*, explains the NCGM in more detail. For background papers, see: <https://www.treasury.govt.nz/publications/strategies-and-plans/long-term-fiscal-position>

## Box 1: How do these projections compare to those presented alongside the Government's fiscal strategy?

In May the Government published projections of the fiscal position over the next 15 years (see Wellbeing Budget 2021, p49), meeting the requirements of section 26L of the Public Finance Act. Aside from the time period covered, those projections differ in some important aspects from the scenarios shown in this section. This leads to different results: the Budget projections show net debt falling steadily to reach 28% of GDP in 15 years, and OBEGAL returning to surplus by 2026/27.

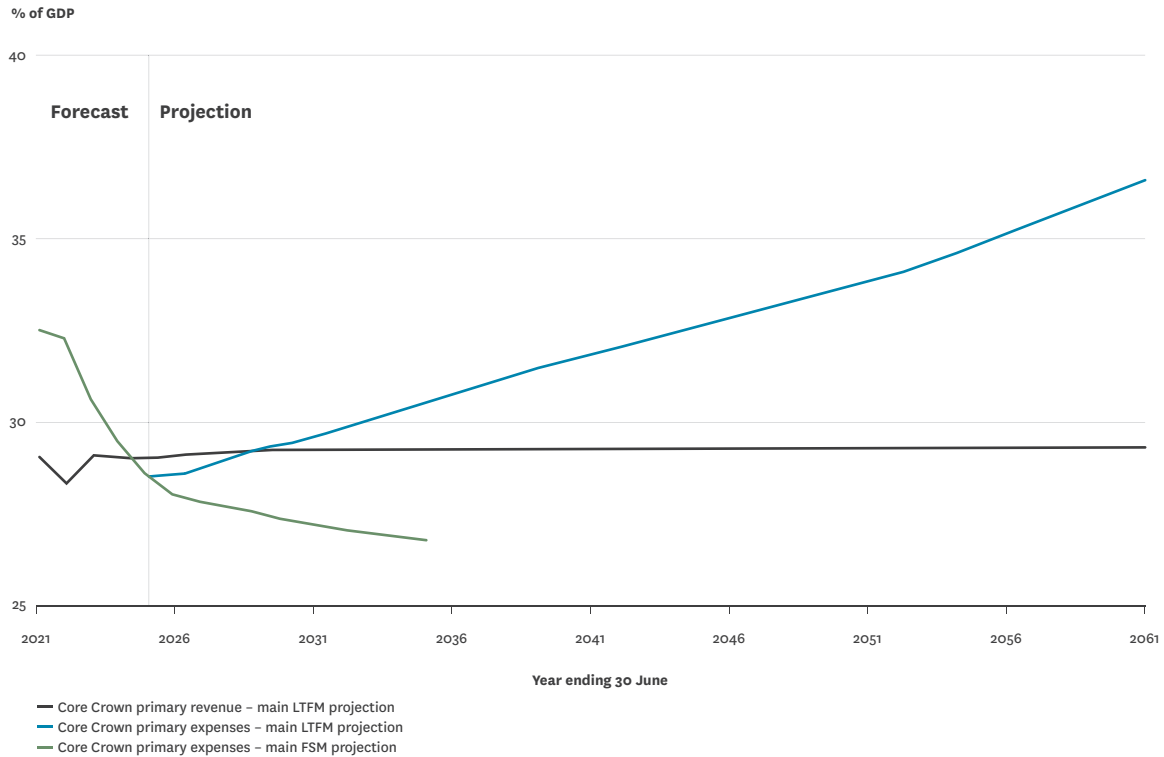
The modelling approach used in the Budget projections is very similar to that used in the *historical trends* scenario. Both projections use the 2021 Budget economic and fiscal forecasts as a starting point. Both projections use the same long-run economic and tax revenue assumptions based on historical trends or levels, and assume a gradual transition towards those levels from the end of the forecast period. In neither model is there any feedback loop between the level of government expenditure and economic growth.

They differ in that, while the *historical trends* projections presented here assume that government spending grows in line with historical trends, the Budget projections assume that the majority of government expenditure will be constrained by an

annual allowance. In the Budget projections, only New Zealand Superannuation and indexed welfare expenditure is assumed to grow as the economy and population grow over time, and interest costs grow as a function of debt levels and interest rates. All other growth in operating expenditure – including health, education, and most other government services – is assumed to be met from within an operating allowance which begins at \$2.0 billion in Budget 2025 in the central projection, growing at 2% per annum thereafter.

The projections follow different approaches because they serve different purposes. The projections in this Statement aim to neutrally present the likely impacts of current and future governments acting (or not acting) in certain ways to inform policy choices now and in the future. This is the same methodology used in previous Statements. The projections published in Budget 2021 are intended to demonstrate how the current Government intends to achieve its fiscal strategy – in this instance, by controlling non-welfare expenditure growth to remain below its historical rates. The impact of these different assumptions on core Crown primary expenses (expenses excluding debt-financing costs) is shown in figure 7.

**Figure 7: Core Crown primary revenue and primary expenses (LTFM and 2021 Budget projections using the FSM)<sup>20</sup>**



Source: LTFM, Fiscal Strategy Model (FSM)

**Table 2: Key assumptions in long-term fiscal projections**

	Historical trends scenario	Alternative scenarios
Real interest rate on government borrowing	Transitions to 2.3% by 2045	Model determines rate that ensures the demand for government debt meets the supply of government debt
Labour productivity growth	1% per year	Model determines based on households' willingness to work/invest and response to taxes
Labour supply	Based on population projections and assumed participation per age	Model determines based on workers' preference between work/leisure, based on returns to labour net of taxes
Real GDP	Grows each year in line with labour supply and productivity	Model determines stock of capital and hours worked based on inputs (e.g. tax rates)
Government policy	Health, education and New Zealand Superannuation (NZS) spending and the main working-age benefits spending grow in line with historical and demographic trends. Other operating spending is kept constant at its historical level as a % of GDP.	Government adjusts tax rates or spending to stabilise net debt
Government investment	Property, Plant and Equipment for the core Crown is assumed to stabilise at 14% of GDP, and at 54% for the total Crown	Government investment is assumed to equal 5.1% of GDP (the average between 1994 and 2019)

<sup>20</sup> For more information on how the projections in this Statement differ from the Budget projections see: <https://www.treasury.govt.nz/publications/fsm/fiscal-strategy-model-befu-2021>

## Box 2: How do the projections incorporate government investment spending?

In the case of the historical trends scenario, government investment is incorporated into the debt projections although it is not reflected in the primary balance, which is calculated on the basis of operating expenses. In the case of the alternative scenarios, primary expenditure and so the primary balance both include government investment. In the alternative scenario model, government investment features in the production function (see appendix two). Unlike spending on health and NZS, government investment is not projected to follow an increasing trend relative to GDP and we do not undertake any specific sensitivity analysis around this assumption.

As discussed in section 2.2, the wellbeing approach to assessing prudent debt involves a consideration of whether spending is likely to have long-term benefits that outweigh debt servicing costs and reduced fiscal resilience. The background paper *How fiscal strategy affects living standards* discusses the role of borrowing for investment in more detail.

The choice about how to finance government investment depends on questions about the nature of the investment and intergenerational impacts. The

traditional approach in the economics literature is the so-called ‘golden rule’ of public finance. This suggests that the government should borrow to fund additional public investment and allow public debt levels to vary accordingly.

However, a potential drawback of a golden rule is that mechanical application of ‘borrowing for public investment’ could lead to excessive borrowing and public capital formation. In recognition of the benefits and costs, the application of golden rules is typically supported by other limits. For example, the United Kingdom introduced a golden rule in the form of a multiyear spending framework that sought to increase predictability and avoid a historical bias against capital spending, which was termed the ‘sustainable investment rule’. To support this rule, there was also a requirement that public sector net debt be kept over the economic cycle at a ‘stable and prudent’ level, which was interpreted as below 40% of GDP. This approach is consistent with the principles in the PFA for prudent debt and ensuring that, on average, over a reasonable period of time, total operating expenses do not exceed total operating revenues.

### 1.3.2 Historical trends scenario

In the historical trends scenario, we project the fiscal position over the next 40 years assuming that expenditure and revenue follow historical trends and legislative settings remain unchanged.<sup>21</sup> The most significant fiscal impacts come from health and NZS expenditure:

- NZS expenses increase from 5.0% of GDP in 2021 to 7.7% by 2061, due to demographic change.
- Health expenditure increases from 6.9% of GDP in 2021 to 10.6% in 2061. Demographic change accounts for around one third of the projected increase, with increasing demand for healthcare, rising prices for health services, and wage growth making up most of the remainder.

As a result, the gap between expenditure and revenue grows significantly (figure 8). If this continues, net debt will start increasing exponentially. Increases in debt to higher levels will make achieving fiscal sustainability more challenging as higher debt levels put upward pressure on interest rates and subsequently debt-financing costs, as shown in previous Treasury working papers.<sup>22</sup> In addition, higher debt levels are also likely to lower longer-term welfare as economic growth

is constrained by crowding out private investment and the higher future taxes required to meet debt-financing costs. The historical trends scenario, which assumes no adjustment, is unlikely to play out; however, it usefully illustrates the magnitude of policy adjustment governments may need to manage if historical trends persist.

### 1.3.3 Alternative scenarios

In these alternative scenarios, the government doesn’t allow debt to rise substantially above current levels. Rather, the government is continuously trying to stabilise debt around a specific target by adjusting tax rates or expenditure to accommodate the fiscal pressures illustrated in the historical trends scenario.<sup>23</sup> The scenarios are being presented relative to a world where government spending and taxation are kept to within historical levels and the economy continues to grow at the long-run trend rate we see today.

We have modelled three alternative scenarios, the outputs of which are summarised in table 4.

21 This includes holding tax revenue constant as a share of GDP over the longer term, which assumes that governments adjust tax settings to compensate for the effects of rising prices and wages, which move people into higher tax brackets (so-called ‘fiscal drag’). Without these compensating adjustments, tax-to-GDP would increase.

22 See: <https://www.treasury.govt.nz/publications/wp/long-run-fiscal-projections-under-uncertainty-case-new-zealand-html>

23 We assume that net debt stabilises at its peak across the forecast period. In the 2021 *Budget Economic and Fiscal Update* debt-to-GDP peaked at 48%. It is important to emphasise that this does not represent the Treasury’s view of where debt-to-GDP should or should not stabilise over the long run.

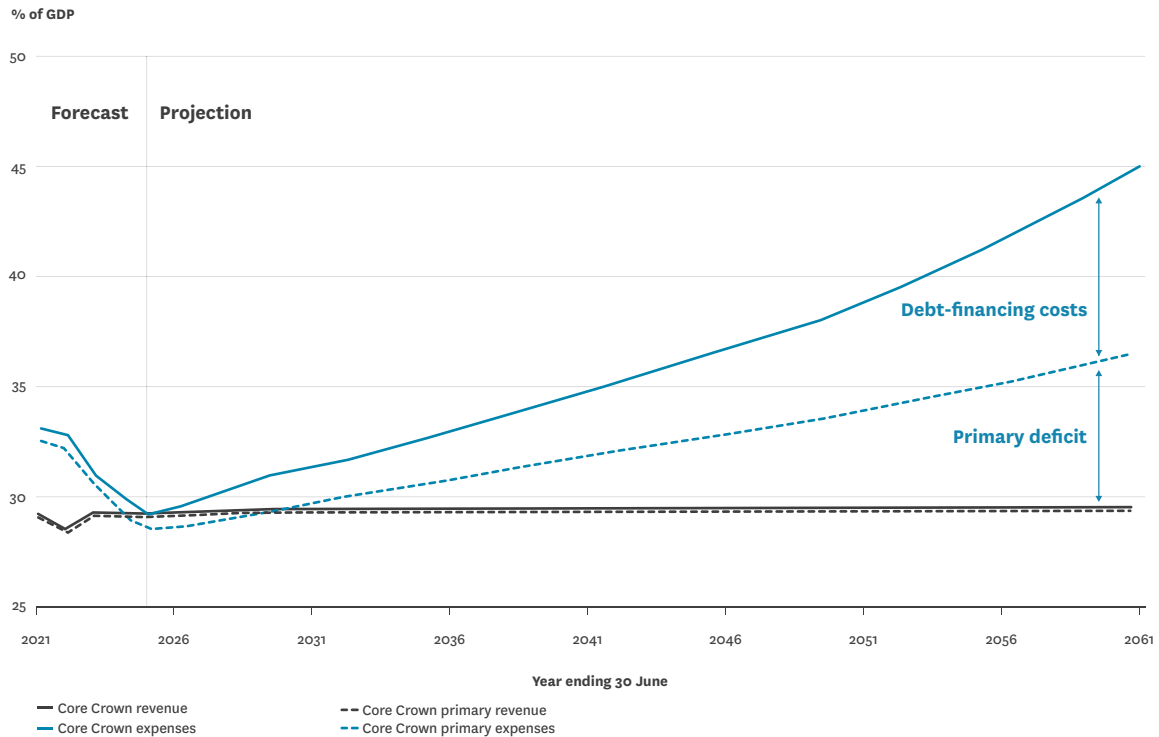
**Table 3: Fiscal projections in the historical trends scenario (% of GDP)**

Historical trends scenario	2021	2030	2045	2061
Healthcare	6.9	6.8	8.6	10.6
Gross New Zealand Superannuation (NZS)	5.0	5.6	6.6	7.7
Education	4.7	5.0	5.4	6.4
Debt-financing costs	0.6	1.6	3.7	8.4
Other expenses	15.9	12.1	12.1	11.9
<b>Total expenses</b>	<b>33.1</b>	<b>31.1</b>	<b>36.4</b>	<b>45.0</b>
<b>Total revenue</b>	<b>29.3</b>	<b>29.5</b>	<b>29.5</b>	<b>29.6</b>
Operating balance	-2.6	-0.3	-5.1	-13.3
Primary balance	-3.5	-0.2	-3.3	-7.3
Net debt	34.0	42.9	84.2	196.9
Net worth	11.7	7.7	-30.3	-137.1
<b>Nominal GDP (\$ billion)</b>	<b>334.4</b>	<b>508.8</b>	<b>872.9</b>	<b>1,474.7</b>

Source: LTFM

Note: All fiscal variables are on a core Crown basis. Totals may not add up due to rounding. The primary balance is the difference between revenue (excluding interest revenue) and expenses (excluding debt-financing costs). Appendix one provides a more detailed breakdown.

**Figure 8: Core Crown revenue, primary revenue, expenses and primary expenses as a % of GDP**



Source: LTFM

## **Increase tax rates**

In the first scenario (increase tax rates) future governments raise tax rates to contain net debt, raising Core Crown revenue to nearly 39% of GDP by 2061, which would require significant increases to taxes on labour, capital and consumption.<sup>24</sup>

Tax changes of this magnitude would have a significant impact on the wellbeing of both current and future generations, with different impacts across different groups of the population, but the precise impacts would depend on the mix of taxes chosen. Section 2.5 sets out these trade-offs in more detail as applied to specific policy options.

In this alternative scenario we can also model the impact that demographic and tax changes would have on the economy. As figure 9 shows, consumption, investment and GDP are all projected to be lower in the future than their historical trends would suggest. In this scenario, around half of this impact on GDP (or around 3.7% by 2061) is because higher tax rates alter the economic incentives faced by households and businesses, which in turn affect economic decisions, such as how much to work or invest. Around half of the impact on investment and most of the consumption impact is due to higher taxes.

The overall impact that taxes have on our country's wellbeing depends both on the tax changes made (as some changes will cause less economic distortion than others) and on the wellbeing, including economic growth, generated by the government expenditure funded by the tax changes. These projections simply illustrate some of the trade-offs governments will face, rather than offering a full cost-benefit analysis of any particular option.<sup>25</sup>

## **Contain expenditure growth**

The second two scenarios contain the growth of NZS expenditure and healthcare expenditure respectively to around their current levels as a share of GDP, with the remaining adjustment to contain net debt filled by tax.

The key difference in these scenarios is that the projections suggest that the long-run level of GDP relative to trend would be higher by around one to two percentage points than in the increased tax rates scenario by 2061. That reflects the fact that tax rates – and therefore disincentives to work or invest – would not need to rise as much.

As noted above, these scenarios illustrate the macroeconomic impact of alternative tax and expenditure choices in the future. The ways in which those choices could be achieved, and the overall impact that they have on individuals' wellbeing and on our wellbeing as a country, are questions we explore in more detail in section 2.

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<sup>24</sup> This tax structure is a simplification. In practice, New Zealand's tax system is more complex and tax treatment depends on how people earn income and hold wealth.

<sup>25</sup> Academic literature supports the modelling assumption that tax has a distortionary economic impact (see appendix two). However, there is less certainty around the size of the impact. Therefore, it would not be unreasonable to assume a larger or smaller distortionary impact which would have an impact on the modelling results.

**Table 4: Projections in the alternative scenarios (% of GDP)<sup>26,27</sup>**

	2021	Increase tax rates			Contain transfers growth			Contain services growth		
		2030	2045	2061	2030	2045	2061	2030	2045	2061
Healthcare	6.0	6.8	8.6	10.6	6.8	8.6	10.6	6.0	6.0	6.0
Gross New Zealand Superannuation (NZS)	5.0	6.2	7.2	8.3	5.1	5.2	5.3	6.2	7.2	8.3
Debt-financing costs	1.6	1.5	1.5	1.4	1.5	1.4	1.4	1.6	1.6	1.5
Other expenses	17.6	18.0	18.4	19.3	18.0	18.4	19.3	18.0	18.4	19.3
<b>Total core Crown expenses</b>	<b>30.1</b>	<b>32.5</b>	<b>35.7</b>	<b>39.7</b>	<b>31.4</b>	<b>33.7</b>	<b>36.6</b>	<b>31.7</b>	<b>33.2</b>	<b>35.1</b>
<b>Total core Crown revenue</b>	<b>29.1</b>	<b>31.6</b>	<b>35.2</b>	<b>38.9</b>	<b>30.6</b>	<b>33.0</b>	<b>35.9</b>	<b>30.7</b>	<b>32.7</b>	<b>34.4</b>
Operating balance	-1.0	-0.9	-0.5	-0.7	-0.7	-0.6	-0.7	-1.0	-0.5	-0.7
Primary balance	0.5	0.6	1.0	0.7	0.7	0.8	0.7	0.5	1.0	0.8
<b>Net Debt</b>	<b>48.0</b>	<b>48.3</b>	<b>47.4</b>	<b>46.7</b>	<b>47.2</b>	<b>45.5</b>	<b>46.4</b>	<b>49.3</b>	<b>49.0</b>	<b>47.6</b>
Real GDP (relative to trend)	1.0	0.98	0.95	0.93	0.98	0.96	0.94	0.98	0.95	0.94

Source: Neoclassical Growth Model (NCGM)

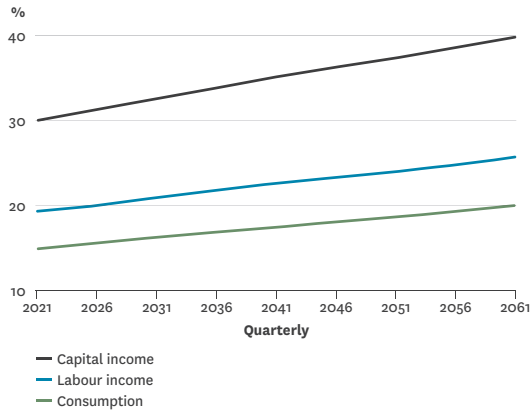
Note: All variables are on a core Crown basis. The primary balance is the difference between revenue (excluding interest revenue) and primary expenses. Totals may not add up due to rounding.

26 The starting point for the government expenditure categories in historical trends and alternative scenarios does not exactly line up because the models use slightly different accounting definitions as source data. However, the changes in expenditure over the projection period, which drive the long-term trends, are equal.

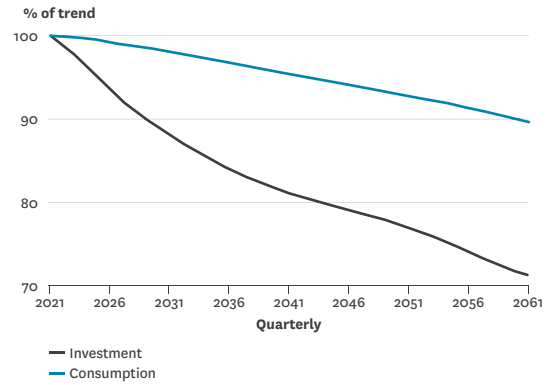
27 The starting point for net debt-to-GDP in the alternative scenarios does not match up with the current level of net debt-to-GDP. The starting point we have chosen to illustrate the impact of stabilising net debt over time is for net debt to remain at around its peak of 48% of GDP in 2021. This approach requires less judgement and therefore produces more robust results. As the scenarios are largely looking at changes to debt and expenditure, this does not materially affect the applicability of the results.

**Figure 9: Increase tax rates alternative scenario – key economic variables<sup>28</sup>**

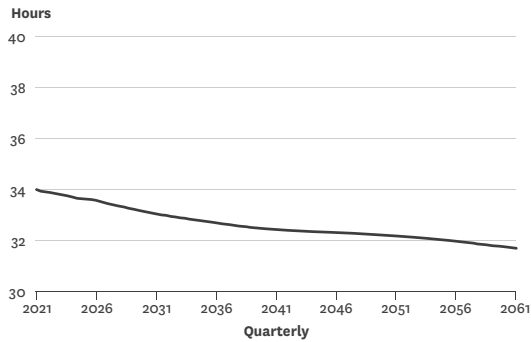
*Average tax rates*



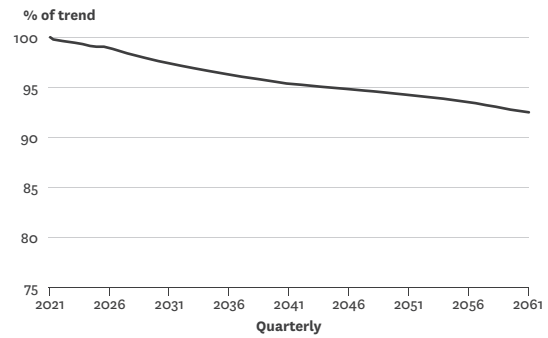
*Consumption and investment relative to trend*



*Hours worked*



*GDP relative to trend*



Source: NCGM

28 In this scenario, a number of economic variables are displayed relative to trend. This means that the scenario is being presented relative to a world where government spending and taxation are kept to within historical levels and the economy continues to grow at the long-run trend rate we see today. This comparison is in percentage form, e.g. in figure 9 consumption is projected to be around 90% of our long-run trend amount (or 10% lower) by 2061. Similarly, investment is projected to be around 71% of the long-run trend level (i.e. 29% lower) by 2061.



# 1.4

## Uncertainties and risks in the long-term fiscal position

Long-term fiscal projections are, by their nature, very uncertain, and should be viewed as an illustration of the trajectory of the fiscal position rather than a forecast.

However, even optimistic changes to the assumptions we make on growth or interest rates do not change the central conclusion that New Zealand will face challenging fiscal pressures in the next 40 years.

Like all economies, New Zealand will face economic shocks and natural disasters such as earthquakes. We have modelled their potential fiscal impact, which would add to longer-term fiscal pressures.

Ensuring that fiscal space exists to prepare for and respond to these uncertainties and shocks would support the wellbeing of future populations that have to manage them.

This section sets out the impact of some key long-run uncertainties and risks to our long-term fiscal projections, using both modelling approaches set out in section 1.3.

### 1.4.1 The impact of different interest rates

The interest rate on government debt, and the gap between this and the rate of nominal GDP growth, is one of the key determinants of debt sustainability in the long-term. If the nominal rate of GDP growth is higher than the interest rate, then the stock of debt can fall as a share of GDP even if the government is running a small deficit. The larger the gap, the larger the deficit the government can run while debt continues to fall as a share of GDP.

Economists have tended to assume that in the long-term the interest rate will be higher than the growth rate. However, in recent years the interest rate has fallen significantly. The Treasury's most recent forecasts suggest

that it will remain below the nominal GDP growth rate for the forecast period.

Our historical trends scenario assumes that the interest rate will remain below the growth rate until the 2030s, but will gradually increase to a steady-state rate of 4.3%.<sup>29</sup> There are upside and downside risks to that assumption. It is possible that interest rates will remain low and below nominal GDP growth for a much longer period. It is also possible they will increase further. Therefore we consider a scenario where interest rates rise to around 5.5%.<sup>30</sup> Figure 10 shows these interest scenarios compared to the historical trends scenario projection for nominal GDP growth.

Scenario analysis shows that the interest rate has an impact on the level of debt but does not fundamentally change its trajectory over the next 40 years. As shown in figure 11, the debt-to-GDP ratio increases significantly as a share of GDP from the 2030s onwards under different long-run interest rate assumptions. However, debt-financing costs to the Crown – and therefore the costs of this debt to future generations – diverge to a greater degree depending on the interest rate assumptions. For example, a difference of 350 basis points in the long-run interest rate adds about 100% of GDP to debt by 2061, or an increase in the debt stock of about three quarters. However, as shown in figure 12, the same increase in the long-run interest rate results in a quadrupling of annual debt-financing costs from 3% of GDP each year in the low interest rate scenario to 13% of GDP each year in the high interest rate scenario. Though these debt trajectories may be similar, they will have different costs to society depending on the interest rates the Crown faces.

There has been a trend of decline in government interest rates in many advanced economies since 1990, including New Zealand. While part of the decline reflected lower rates of inflation, real interest rates have also declined. There are reasons to suggest that the real interest rate will continue to stay lower than in recent history, such as an ageing population increasing the supply of saving.<sup>31</sup> However, even if interest rates remained low for an extended period, New Zealand would remain vulnerable to a reversal back to higher rates, particularly if debt is at higher levels.

Historical experience shows that interest rates can remain below growth rates for prolonged periods, but they can also vary significantly over time and can be difficult to predict.<sup>32</sup> Figure 13 illustrates the challenge of accurately forecasting variables heavily influenced by international financial markets.

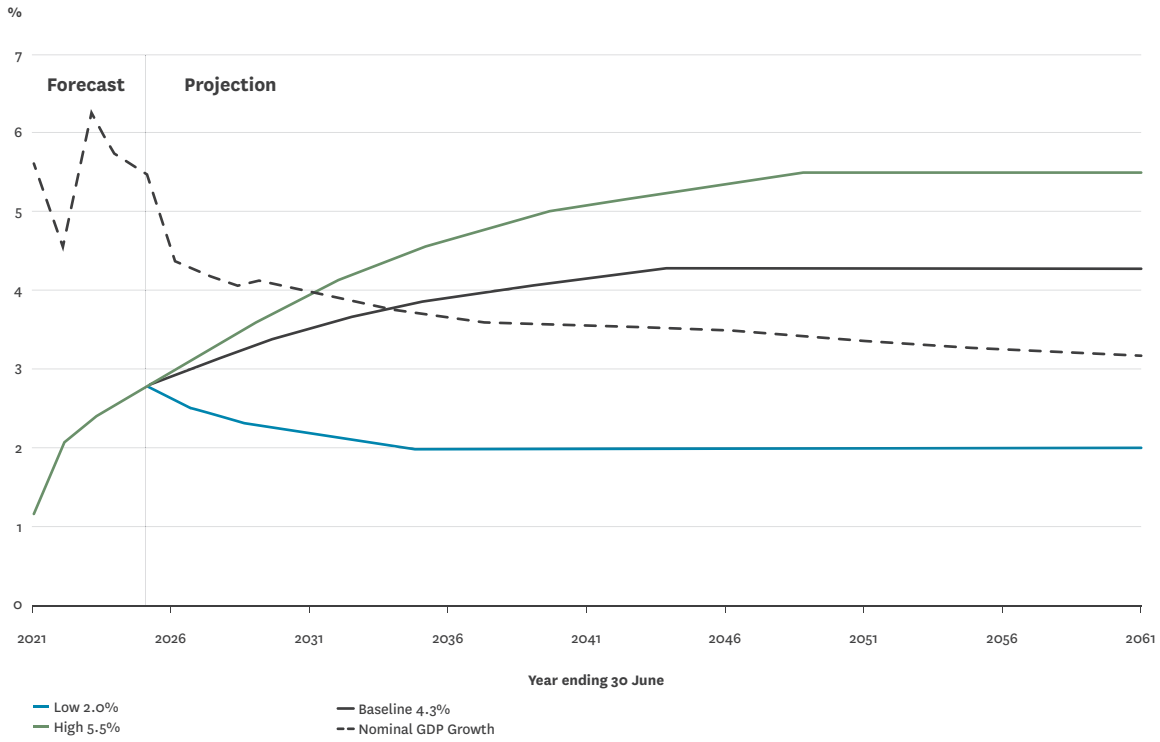
29 The background paper: *Long-term projections of the New Zealand Government's interest rate* outlines the logic behind the 4.3% interest rate assumption. For background papers, see: <https://www.treasury.govt.nz/publications/strategies-and-plans/long-term-fiscal-position>

30 30-year average.

31 The background paper *Long-term projections of the New Zealand Government's interest rate* discusses the influences on the interest rates in more detail. For background papers, see: <https://www.treasury.govt.nz/publications/strategies-and-plans/long-term-fiscal-position>

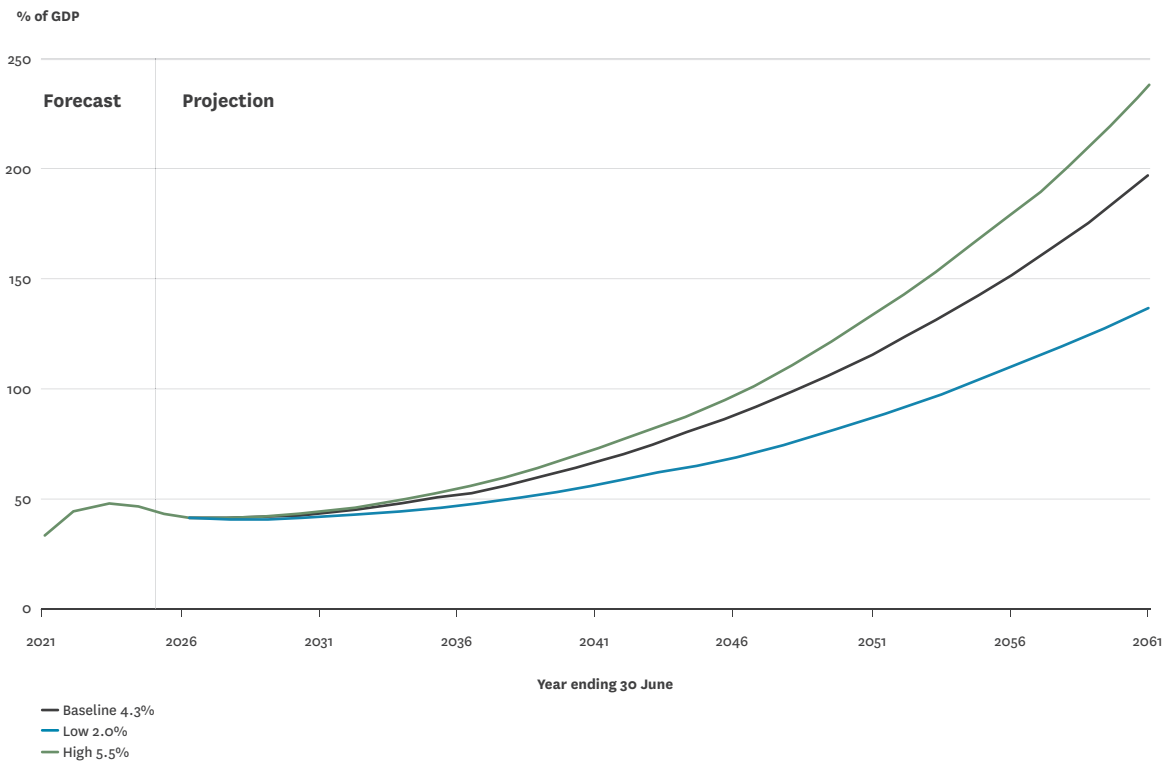
32 See: <https://www.imf.org/en/Publications/WP/Issues/2020/03/13/r-minus-g-negative-Can-We-Sleep-More-Soundly-49068>

**Figure 10: Nominal GDP growth projection and interest rate scenarios**



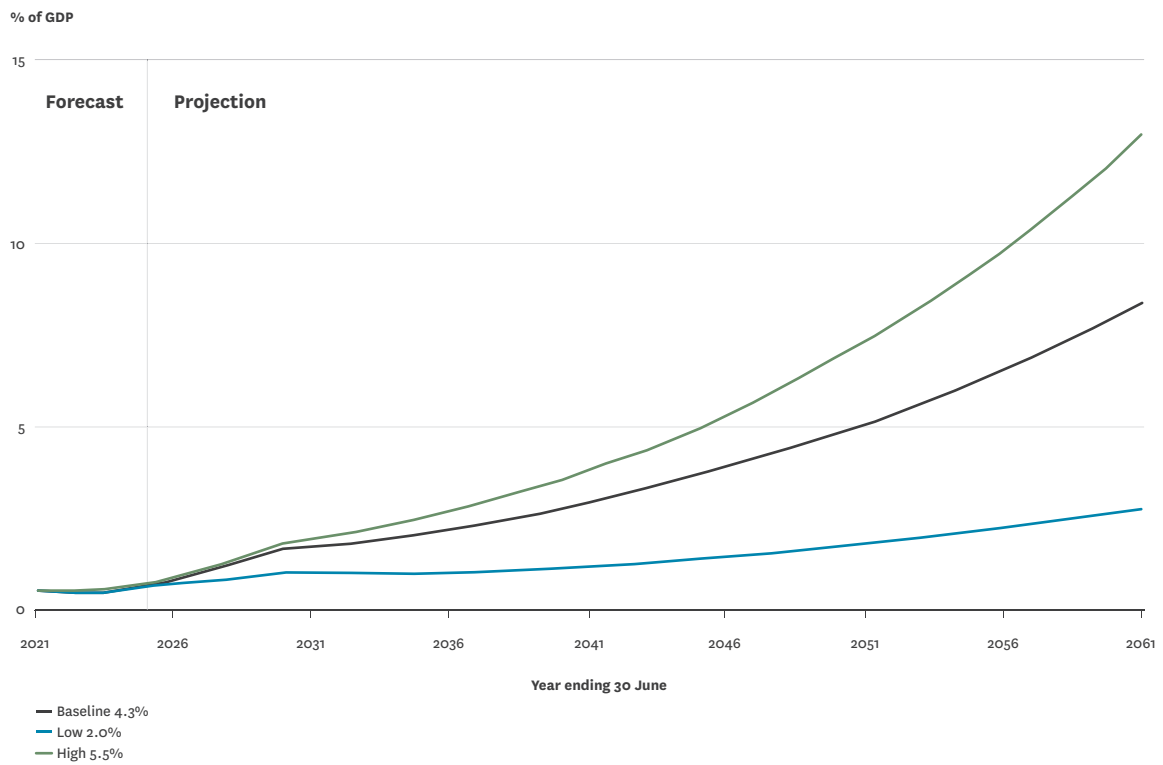
Source: LTFM

**Figure 11: Net core Crown debt as a % of GDP under different interest rate scenarios**



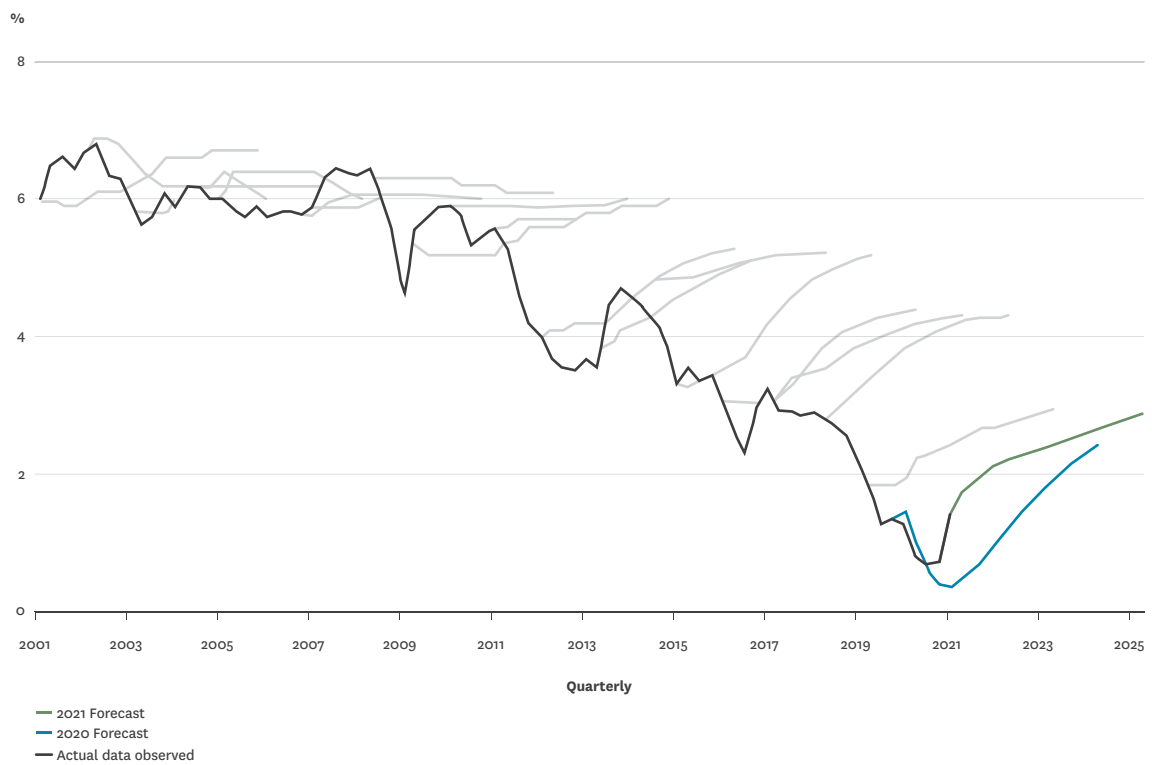
Source: LTFM

**Figure 12:** Core Crown debt finance costs as a % of GDP under different interest rate scenarios



Source: LTFM

**Figure 13:** New Zealand's 10-year government bond yield and Treasury forecasts each year



Source: The Treasury

Note: This chart shows the Treasury's forecasts of the 10-year New Zealand government bond yield from each Budget Economic and Fiscal Update, and how these compared to the actual 10-year rate that eventuated.

## 1.4.2 The impact of long-term economic growth

If the economy performs better or worse than expected in the future, that will affect tax revenues and, therefore, how affordable any given level of expenditure is, and how affordable our existing stock of debt is in the future.

### Labour productivity

Higher labour productivity growth means that New Zealand will be wealthier, will likely have more government services (even if a constant share of GDP), and a higher overall level of wellbeing. Thus, when productivity is higher, the trade-offs the government faces would be relatively less challenging than if productivity growth were lower. For example, it may be possible for expenditure on public services to grow more slowly than economic growth without compromising the quality of services, or New Zealanders may be more willing to pay a greater share of our higher incomes in tax. Over the past 20 years New Zealand's labour productivity growth has slowed relative to its peers, which suggests room for growth in the future (see figure 14).

While economic growth driven by labour productivity generates additional income and tax revenues, it is also likely to increase government expenditure. There are three reasons for this. First, some of this is automatic: if higher labour productivity causes wages to rise, that will automatically increase the rate and expenditure of NZS. Second, there is an informal link between public services and wage costs. Over time, public sector wages tend to move with private sector wages because workers are mobile between the two sectors. Third, historical experience shows that demand for public services such as healthcare tends to increase as incomes increase. Therefore, when we project public finances, we assume that governments increase expenditure in line with economic growth.

As a result of labour productivity improvements leading to increased government expenditure, improvements in labour productivity growth (one of the inputs into economic growth) make very little difference to our historical trends projection. For example, a 50% improvement in annual labour productivity growth to 1.5% would reduce net debt in 2061 only slightly from around 197% to around 185% (see figure 15).

### Labour supply

The other input into economic growth is labour supply.<sup>33</sup> This input depends on the proportion of the population that are of 'working age', the share of that group who participate in the labour market, the extent to which they are employed, and the hours they work per week.

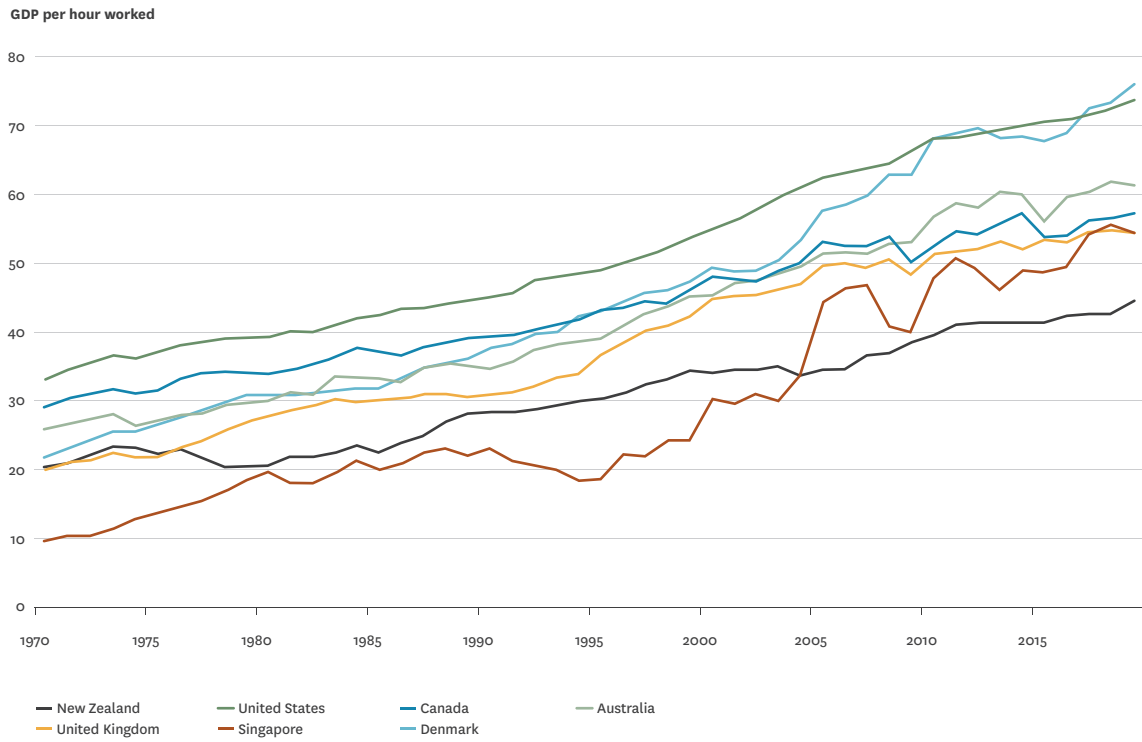
Higher than expected population growth and labour force participation has led to higher than expected economic growth. In 2006 labour force participation was projected to reach 65.4% in 2019/20, but by 2013 this had been revised up to 68.5%. The labour force has continued to grow faster than anticipated, with participation reaching 70.0% in 2019/20. Appendix four explains how the LTFM results have changed since 2016.

These factors resulted in higher than expected tax revenue, which improved the fiscal position. Migration has contributed to the increased labour supply. Initially, migrants add to the workforce, which improves GDP and government net revenue over and above the extra demands on education and health. However, eventually younger migrants age and add to the demands for government transfers, services and infrastructure. Net migration is assumed to reach 25,000 per year from 2023. However, governments can alter migration settings, which could lead to a higher or lower level, or a change in composition, of migration.

In the historical trends scenario, increased labour supply does not flow through to higher wages and consequently government expenditure growth. As a result, economic growth that is driven by labour supply, all else being equal, improves the fiscal position more than productivity growth. Where increased participation reflects people's choices, this can improve wellbeing. However, increased labour productivity has the advantage of giving people more choices overall, including over work and leisure.

<sup>33</sup> New Zealand Productivity Commission (2021) *Productivity by the numbers*. See: <https://www.productivity.govt.nz/research>

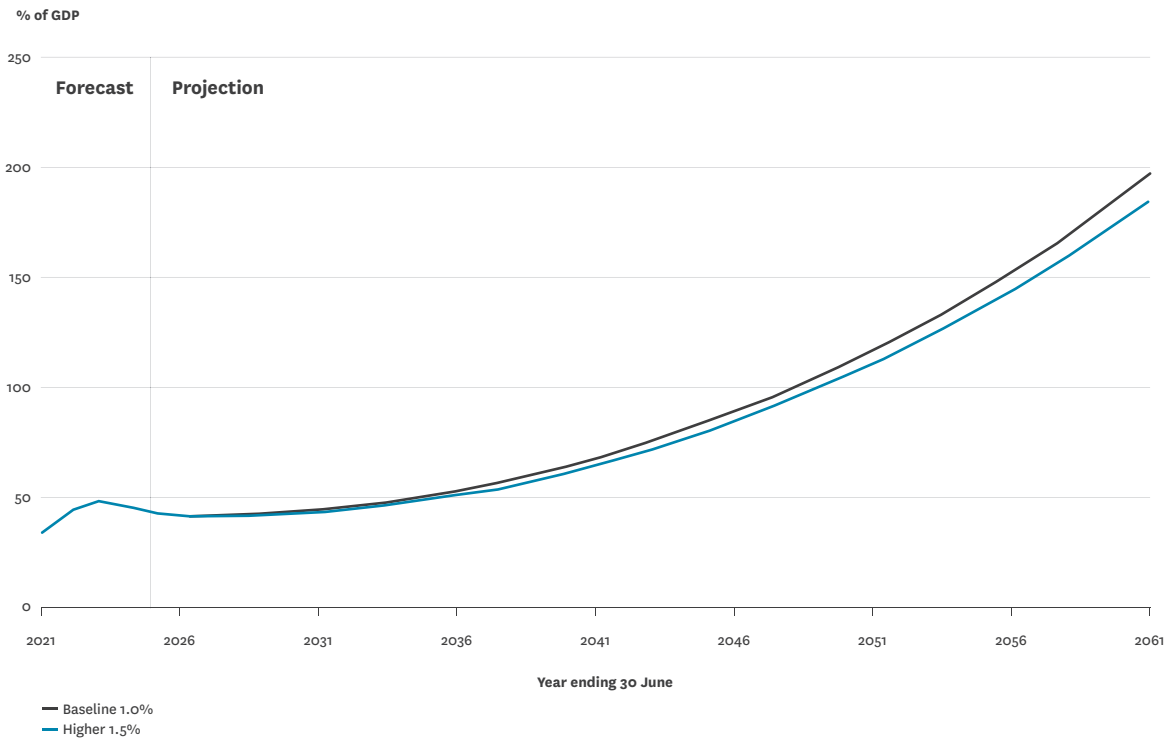
**Figure 14:** New Zealand's labour productivity compared to international peers



Source: The Treasury's analysis of Penn World Table data, version 10.0

Note: Productivity levels are measured as GDP per hour worked using output-side real GDP at chained purchasing power parities (in 2017 USD)

**Figure 15:** Net core Crown debt under different labour productivity assumptions



Source: LTFM

### 1.4.3 Economic shocks

Economic shocks create fiscal pressures. In response to shocks governments typically increase spending to stimulate economic activity, via automatic fiscal stabilisers (e.g. Jobseeker Support benefit) and discretionary spending (e.g. bringing forward infrastructure projects). At the same time, tax revenues may fall with lower incomes, profits and consumption.

This section analyses the impact of a single recession (an economic shock) in isolation, as well as a sequence of recessions. Both of these are presented on top of the ‘increase tax rates’ alternative scenario where taxes have already been adjusted to stabilise net debt. Table 5 sets out the key assumptions underlying these illustrative shocks, which are set to be similar to recessions that have occurred

over New Zealand’s post-war history.<sup>34</sup> There are many potential sources of shock to the economy. The insights from these illustrative scenarios are less about the source of the shock, and more about the impact on fiscal aggregates of any given shock.

Given these assumptions, each recession increases net debt by around 10 percentage points (relative to the date the recession occurs). Net debt peaks at between 10 and 13 percentage points above the counterfactual case where the recession does not occur. The results from the recession scenarios are presented in figure 16.

Further details on the assumptions for this section can be found in the background paper detailing the NCGM and the scenarios presented in this Statement.

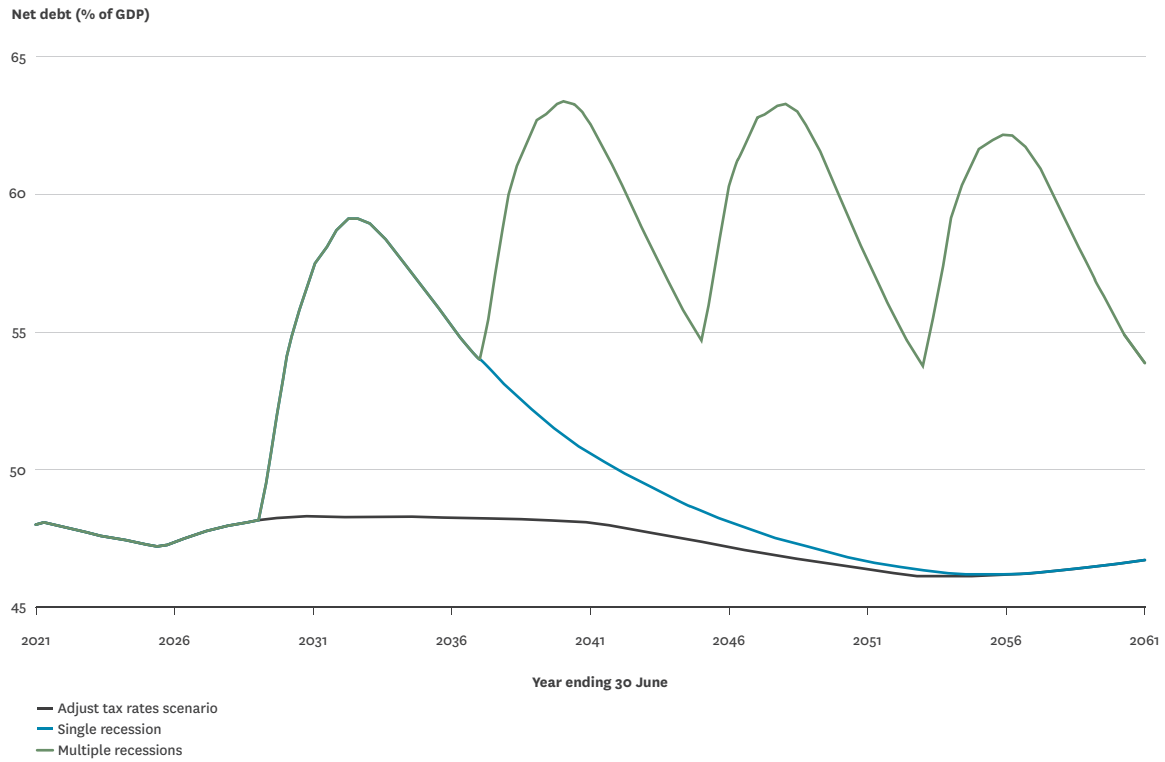
**Table 5:** Key assumptions in economic shocks scenario

Demand and labour market	4% fall in private consumption and nearly 18% fall in investment over 4 quarters. Total hours worked falls by around 5%
Productivity	The productivity rate falls by 0.75% per quarter for 4 quarters, resulting in a 3% fall in total factor productivity (peak to trough), before the productivity rate resumes its 1% growth rate
Government policy	Temporarily allow debt to rise. Increase government spending and investment by 0.5% of GDP and transfers by 0.75%. Look to reduce debt after recession over the business cycle
Frequency	Single recession, and further recessions every 8 years
Fiscal consolidation	The government increases tax revenue following each recession to bring debt back down to its pre-recession level <sup>35</sup>

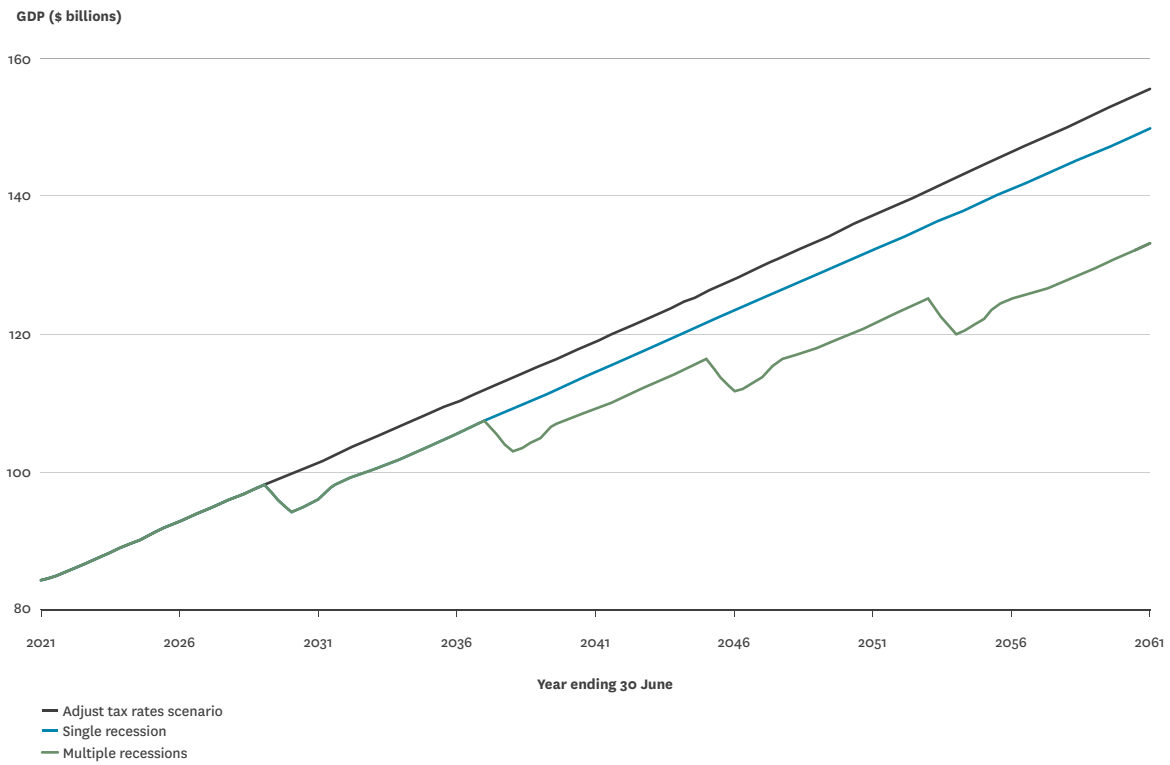
<sup>34</sup> Evidence from the three most recent recessions (prior to COVID-19). Hall, VB & McDermott, CJ (2016) *Recessions and recoveries in New Zealand's post-Second World War business cycles*. New Zealand Economic Papers, 50(3), 261-280. Retrieved from: <https://www.tandfonline.com/doi/full/10.1080/00779954.2015.1129358>

<sup>35</sup> This is a modelling assumption for illustrative purposes. The prudent fiscal response might instead be to accept a higher level of debt following a recession(s).

**Figure 16:** Impact of a single recession and repeated recessions on net debt and real GDP



Source: NCGM



Source: NCGM

## 1.4.4 An earthquake

In this section we model the potential economic and fiscal impacts of an earthquake. This tests New Zealand's fiscal resilience as well as the government's capacity to respond to disasters.

We have modelled a significant earthquake that occurs in Wellington in 2028, causing 50% more damage than the Canterbury earthquake.<sup>36</sup> A significant Wellington earthquake is generally regarded as one of the most damaging potential earthquakes for New Zealand.<sup>37</sup>

Our modelling is intended to test New Zealand's economic and fiscal resilience. This does not capture that such an earthquake would have significant and wide-ranging impacts on wellbeing, including potential loss of life, impacts on physical and mental health, and wider social consequences across our communities.

Table 6 sets out our assumptions for this scenario, which are informed by the response to the Christchurch earthquake. The assumptions and results should be viewed as merely indicative because the actual impacts of a future disaster will vary. More information on these assumptions is available in appendix five.

Figure 17 below provides the key results from our modelling. The earthquake causes a sudden decrease in capital stocks, which spurs a lengthy period of investment and rebuilding. Compared to the other economic shocks we have modelled, the earthquake causes a shallower recession followed by a faster rebound. Despite these differences the long-run fiscal impacts are broadly similar. The government's fiscal response to the earthquake causes net debt to increase by approximately 12% of GDP.

**Table 6:** Assumptions in earthquake scenario

Size of shock	Earthquake destroys 3% of New Zealand's capital stock, and GDP is permanently 3% lower
Investment	Private and public investment increase in response by around 3% of GDP at its peak before falling back to pre-earthquake levels
Fiscal response	The government significantly increases spending and reduces tax revenue in response to the earthquake. The spending is a mix of public investment and increased transfers (including EQC payments)
Fiscal consolidation	The government increases tax revenue following the disaster to bring debt back down to its pre-earthquake level <sup>38</sup>

<sup>36</sup> Previous modelling by GNS has indicated that a significant earthquake in Wellington would cause damage broadly similar to this. This GNS modelling is based on a series of earthquakes, a main shock and some aftershocks.

<sup>37</sup> We have chosen a Wellington-based earthquake as this is a common standard used by insurance and geological modellers for major earthquake events. 1 in 1000-year earthquakes in other regions would likely cause less damage than the one we have modelled. For example, the 2010-11 Christchurch earthquakes are considered some of the most severe potential earthquakes for Christchurch. A severe earthquake in Auckland is less likely and also potentially less damaging due to the Auckland CBD being further away from known active faults.

<sup>38</sup> This is a modelling assumption for illustrative purposes. The prudent fiscal response might instead be to accept a higher level of debt following an earthquake.

## 1.4.5 What do shocks and uncertainty mean for our projections?

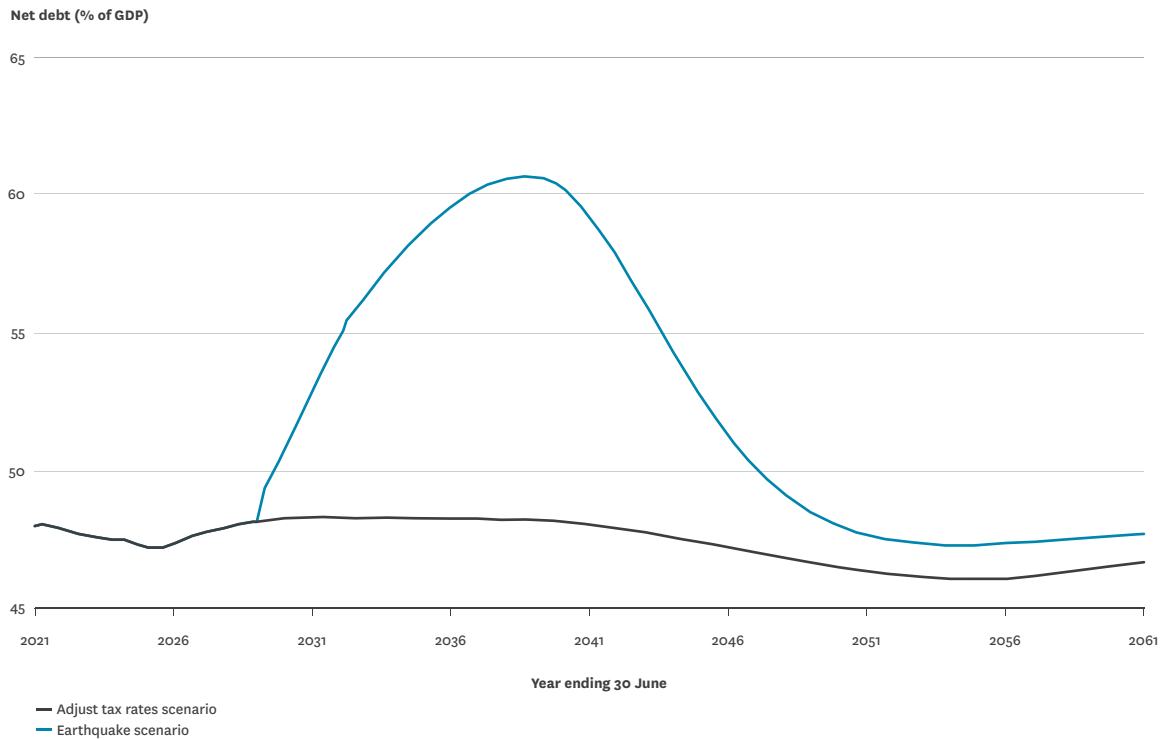
The future is inherently uncertain, both in terms of trends and in shocks to those trends. As this section has shown, uncertainty about the future does not change our analysis of the long-term fiscal trends that governments will need to manage.

The significant impact of frequent shocks on the fiscal position makes it important that governments have the fiscal space to support the economy through shocks and support the wellbeing of the populations that have to manage them.

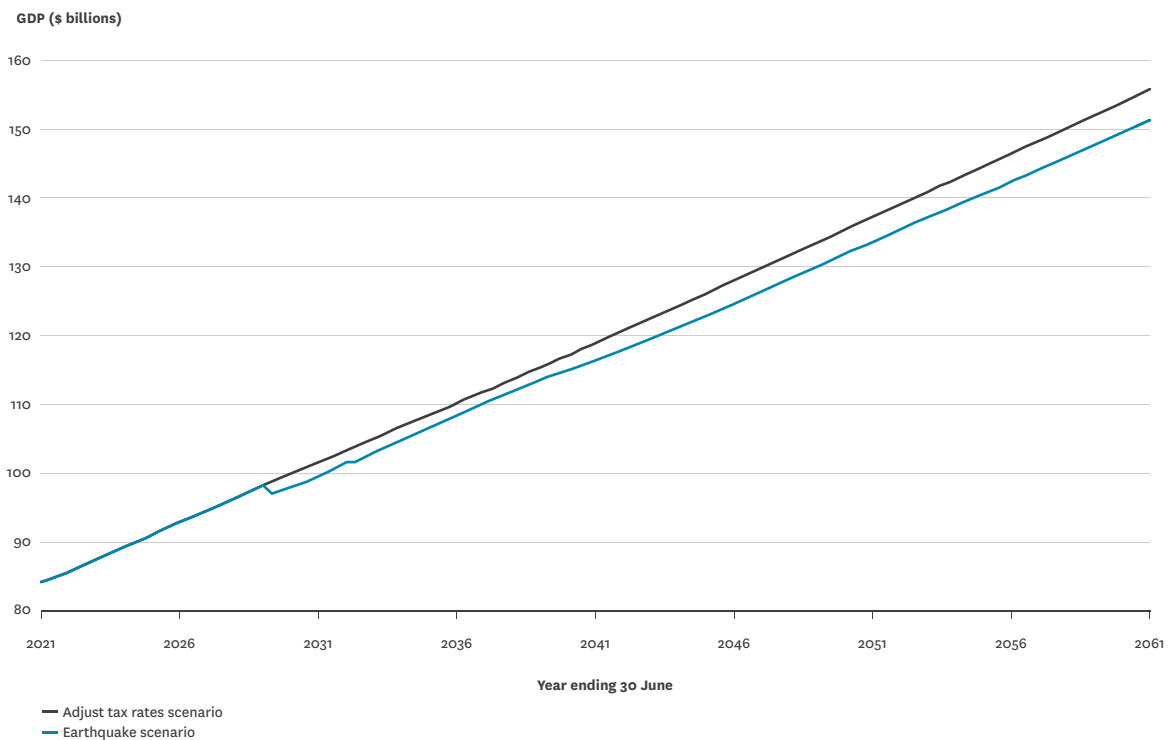
This is particularly important because it is possible that fiscal policy will have to play a larger role in supporting the economy in the future – in 'normal times' and in response to negative shocks. Declining real interest rates have compressed traditional monetary space, fiscal policy has proven highly effective in responding to both the Global Financial Crisis and COVID-19, and fiscal policy has offered policy-makers a means of targeting support to those most affected by shocks. A larger role for fiscal policy in the future places an even greater premium on an adequate fiscal buffer to allow governments to respond to shocks. Understanding and adapting our economic and fiscal frameworks to this new reality will take time.



**Figure 17: Impact of earthquake scenario on net debt and real GDP**



Source: NCGM



Source: NCGM

Note: The black line shows the net debt and real GDP trends projected without an earthquake. The blue line shows the net debt and real GDP change with the earthquake.

# 1.5

## The fiscal impacts of climate change

Climate change is occurring today and we are already feeling its impacts. Without a significant global response, many of these impacts are expected to grow over time.

Climate change will have significant impacts on our wellbeing across all domains – directly affecting our natural and social capital, our economy and indirectly affecting our economic and fiscal metrics.

Natural disaster events are likely to become more common and add economic and fiscal costs on top of the costs of more gradual temperature and sea level changes. Policy action today on adaptation could reduce some of those costs in the future.

The fiscal costs of transitioning to a low-carbon economy are not yet fully known and depend on the speed of emissions reduction and the tools used. Evidence suggests that reducing emissions earlier is likely to reduce overall transition costs by avoiding the need for more dramatic reductions later.

Government will face trade-offs including between fiscal and economic impacts of the Emissions Trading Scheme (ETS) and the cost of domestic action versus entering the international emissions credit market.

This section focuses on the impacts of climate change on the government's finances, including those that result from the wider impact of climate change and climate change policy. The size and distribution of those impacts depend on New Zealand's approach to *adaptation* (preparing for, managing, or controlling the physical impacts of climate change), and *mitigation* (efforts to reduce emissions and so the magnitude of climate change).

Many key choices are still under consideration, such as formalising the government's response to the Climate Change Commission's advice<sup>39</sup>, key policy choices supporting New Zealand's first Emissions Budgets and Emissions Reduction Plan and decisions on a National Adaptation Plan in 2022.

### 1.5.1 Adapting to the impacts of climate change

The recently released Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report highlights that the scale of recent changes to the climate system across the globe are unprecedented and expected to increase in impact. This includes flooding, drought, extreme weather events and a general increase in global surface temperatures.<sup>40</sup>

In New Zealand, we are already feeling some of these impacts of climate change; temperatures have risen, glaciers have melted, and the sea level has risen. These and other impacts are expected to increase in the future. The National Climate Change Risk Assessment (NCCRA) has identified a number of expected impacts. These are summarised in table 7. Importantly, most of these impacts – some of which are already being observed – will not be distributed evenly across New Zealand.

To give a more detailed picture of one of these potential impacts, table 8 illustrates the exposure of people and assets in New Zealand to a large coastal flooding event at considered sea level rises of 0.2m, 0.5m and 1m from current levels. Specifically, the table considers a flooding event that would have ~1% chance of occurring in any given year at present-day mean sea level – this is known as ESL1.

39 Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa*. Retrieved from: <https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/inaia-tonu-nei-a-low-emissions-future-for-aotearoa/>

40 IPCC (2021) *Climate Change 2021: The Physical Science Basis. Summary for Policymakers*. Retrieved from: <https://www.ipcc.ch/report/ar6/wg1/>

**Table 7:** Selected physical impacts of climate change in New Zealand (as identified in the National Climate Change Risk Assessment)<sup>41</sup>

Variable	Change in 2040	Change in 2090
Mean temperature will increase overall, with greatest changes at higher elevations and in summer and autumn	+1.0 deg	+3.0 deg
Extreme rainfall event intensity will increase everywhere	A 1 in 10-year event up +11% for 1-hour events, up 5%+ for 5-day events	A 1 in 10-year event up +34% for 1-hour events, up 15%+ for 5-day events
Drought will increase in severity and frequency, especially in already dry areas	A wide range, including: <ul style="list-style-type: none"> <li>5-10% additional time spent in drought in certain regions<sup>42</sup></li> <li>Time spent in drought in eastern and northern NZ projected to double or triple<sup>43</sup></li> </ul>	<ul style="list-style-type: none"> <li>Drought probability up 50-70%. Time spent in drought increases by 5-10%</li> <li>Up to 50mm or more increase in PED (potential evapotranspiration deficit) per year, on average, in July-June</li> </ul>
Sea level rise	Median sea level +0.28 to +0.33m	Median sea level +0.79 to +0.89m

Source: Summarised from the National Climate Change Risk Assessment, Ministry for the Environment, 2020

**Table 8:** Additional population and assets exposed to a large coastal flooding event (ESL1), at sea level rise of 0.2m, 0.5m, and 1m<sup>44</sup>

	0.2m rise, increase from now	0.5m rise, increase from now	1m rise, increase from now
People	16,935	48,917	105,311
Buildings	12,618	36,085	76,081
Roads	266.6km	711.1km	1441.7km
Railways	16.9km	45.3km	101.7km
Electricity transmission lines	15.1km	36.3km	72.6km
Electricity structures (e.g. pylons)	34	85	141
Three-waters pipelines	720.5km	1,972.4km	4,008.1km
Built-up land	11km <sup>2</sup>	31.4km <sup>2</sup>	63km <sup>2</sup>
Production land	103.5km <sup>2</sup>	257.4km <sup>2</sup>	507.8 km <sup>2</sup>
Natural/undeveloped land	25.3km <sup>2</sup>	64.1km <sup>2</sup>	125.3 km <sup>2</sup>

Note: The figures in the table are over and above the people and assets already at risk from ESL1 at current sea levels.

41 Ministry for the Environment (2020) *National Climate Change Risk Assessment for Aotearoa New Zealand: Main report*. Figures presented here are based on the 'representative Concentration Pathway 8.5', a scenario of rapidly increasing greenhouse gas concentrations through to 2100 considered to be a plausible upper limit of risk, prepared by the Intergovernmental Panel on Climate Change (2014). Lower concentration pathways may have lesser physical impacts. Retrieved from: <https://environment.govt.nz/publications/national-climate-change-risk-assessment-for-new-zealand-main-report/>

42 Clarke et al (2018) in Ministry for the Environment (2020). Retrieved from: <https://environment.govt.nz/publications/national-climate-change-risk-assessment-for-new-zealand-main-report/>

43 IPCC (2014) in Ministry for the Environment (2020). Retrieved from: <https://environment.govt.nz/publications/national-climate-change-risk-assessment-for-new-zealand-main-report/>

44 Data sourced from Paulik, RB et al (2019) *Coastal Flooding Exposure Under Future Sea-level Rise for New Zealand*. National Institute of Water & Atmospheric Research.

These physical effects, driven both by distinct extreme events as well as more gradual, ongoing changes in the climate, will impact the New Zealand economy in a number of ways, including damage to property, disruption to agricultural production, and biosecurity incursions. While many of these effects will negatively impact New Zealanders' wellbeing, the NCCRA has identified a small number of positive opportunities, for example higher productivity for certain crops in some areas and reduced rates of winter mortality levels. However, the benefits of these opportunities are expected to be far exceeded by the costs of the negative impacts of climate change. The impacts on the primary sector are particularly relevant for the Māori economy, because of its heavy investment in natural resources. For example, Māori interests own or control 50% of fishing quotas, and own or control 50% of exotic forests.<sup>45</sup> Climate change-driven impacts of increased wildfire risk, drought, ocean acidification and the increase in the oceans' temperature present particularly important risks to these industries.

These economic impacts then have flow-on fiscal effects. Tax revenues could be affected; government will need to replace and repair its own assets, and government will need to spend money on disaster preparedness, response, recovery, and health and welfare for those affected.

## **Economic and fiscal impacts of droughts, storms and floods**

The Treasury created some illustrative scenarios involving natural disasters that grow in intensity and frequency over the next 40 years and looked at their impact on net debt and GDP. This is not a prediction of the future, but an analysis of how some of the shocks associated with climate change could affect the economy and public finances.

Table 9 sets out the assumptions underlying this modelling.

Based on these assumptions, the Treasury ran a number of simulations, which are summarised in figures 18 and 19. The median of these simulations suggested that more frequent and severe droughts could lead to net debt being 1.12% of GDP higher, and increasing storms could add 2.65% of GDP to net debt (or 3.77% of GDP at the median if droughts and storms are combined). However, as these figures also illustrate, there is a significant range, with larger economic and fiscal effects possible.

These results indicate that the New Zealand economy and the government's fiscal position were relatively resilient to natural disasters. However, these events tend to be highly localised, and so there are likely to be much larger impacts on particular communities.

Importantly, this modelling does not reflect the full cost of climate change. Rather, it considers just two specific types of extreme weather events, and does not include other impacts such as gradual and ongoing sea-level rise or temperature increases. Furthermore, the climate may respond to increased emissions levels in unexpected or non-linear ways, including irreversible impacts or the crossing of 'tipping-points'. Some impacts of climate change could 'cascade' or cause secondary effects, such as floods that damage roads or water supply as well as flood defences themselves, increasing vulnerability and spreading impacts across the economy. Finally, given the lifetime of greenhouse gases in the atmosphere, larger cumulative effects over a longer period than 40 years are likely.

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<sup>45</sup> Insley, C (2010) *Māori issues and opportunities arising out of the ETS*. Primary Industry Management, 14(3), 39. Retrieved from: [https://www.nzpim.co.nz/Folder?Action=View%20File&Folder\\_id=120&File=PIM%20Sept2010%20lowres%20with%20cover.pdf](https://www.nzpim.co.nz/Folder?Action=View%20File&Folder_id=120&File=PIM%20Sept2010%20lowres%20with%20cover.pdf)

### Adaptation policy choices

Adaptation efforts may involve upfront costs, but also have the potential to reduce the total costs from climate change over the long term.

A large proportion of adaptation decisions are decentralised, with local government having a significant role to play at both the regional and municipality level. Furthermore, people and businesses can decide, for example, where to live, what crops to grow, where to do business, what type and level of insurance to buy, and so on. Both local and central government can set adaptation policies that influence those choices and therefore the scale of fiscal costs in the longer term. That could include:

- providing information and funding research on climate change impacts, and
- ensuring that government policies do not incentivise overly-risky behaviour or do incentivise private actions that reduce risk or increase our resilience to climate impacts, and
- ensuring that the regulatory framework in areas such as land use, building standards and insurance is appropriate.

The government has an important role in managing climate change risks to its own assets – such as schools, hospitals, police stations, and prisons – and to the services it provides (including conservation and biosecurity). At least some of these costs will rise in the future.

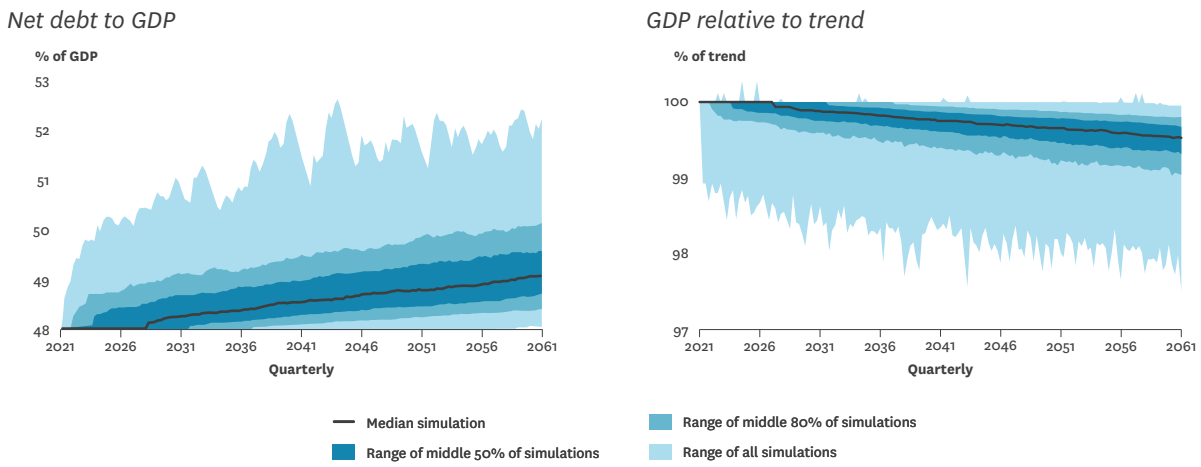
Another significant choice for government is whether to take on some of the costs of adaptation that would otherwise fall on the private sector or on local government, so as to redistribute costs in way that is considered fairer, or to recognise national benefits arising from others' decisions. Some individuals or groups will have less access to resources or knowledge to adapt. Government will need to consider these socioeconomic factors in its response.

Given the Crown's role as a Treaty Partner, it will be important for both Crown and Māori to work together to understand and address any special challenges for climate adaptation that may be faced by Māori communities. For example, Māori have an enduring connection with their ancestral lands, which are held in communal ownership, and some of which are subject to regulatory restrictions on sale, leasing and mortgaging. These characteristics may limit the ability of many Māori landowners to respond to climate change policy as rapidly as other landowners. Ensuring the government's adaptation planning supports Māori and reflects Māori values is an important area of focus for the ongoing work to develop New Zealand's first National Adaptation Plan.

**Table 9:** Assumed changes in the frequency and severity of severe weather for modelling the macroeconomic and fiscal impact of climate change

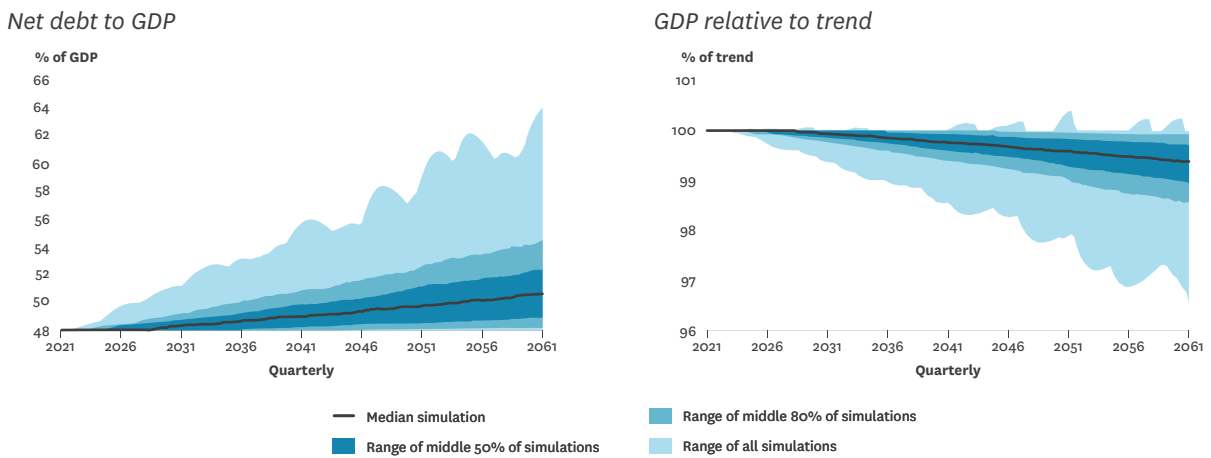
	Moderate drought	Severe drought	Severe storms/floods
Frequency	Initially a 1 in 10-year event, gradually increasing to approximately 1 in 3 years by 2060	Initially a 1 in 20-year event, gradually increasing to approximately 1 in 7 years by 2060	A 1 in 10-year event, unchanging
Impacts/ magnitude	Productivity shock: GDP falls by 0.5% before recovering	Productivity shock: GDP falls by 1.0% before recovering	Capital destruction event: An event in 2020 destroys 0.2% of the capital stock. This increases over time so that an event in 2060 destroys 2% of the capital stock
Fiscal policy	Government spending increases by 1.5% (annualised) over 3 quarters	Government spending increases by 2.5% (annualised) over 3 quarters	Government spending increases by 2.5% (annualised) over 3 quarters

**Figure 18:** Impact of increasing frequency of severe and moderate droughts on net debt and GDP



Source: NCGM

**Figure 19:** Impact of increasing storms and/or floods on net debt and GDP



Source: NCGM

Note: These results are an indication of New Zealand's possible fiscal and macroeconomic exposure to storms and/or floods in the future, under a specific set of assumptions – they are not a statement of what the Treasury expects to happen.

## 1.5.2 The transition to a low-emissions economy

New Zealand has made international and domestic commitments to reduce its emissions and transition to a low-emissions economy.<sup>46</sup> While New Zealand is a relatively small emitter on a global scale, the long-term impact of climate change on New Zealand's natural capital stocks depends heavily on the actions of other nations.

Given New Zealand's strong incentive to see emissions mitigated across the world, a key action the country can take is to reduce its own emissions to help influence other nations to reduce theirs.

The fiscal and economic impacts of reducing emissions depend heavily on the policy choices that governments make. The main levers that the government has are:

1. Setting the overall speed of emissions reductions, as expressed in the total permitted volume of emissions in each successive emissions budget under the Climate Change Response Act. The independent Climate Change Commission has provided advice on the first three emissions budgets to 2035, and the Government will take decisions on these this year;
2. The mix of policy instruments used to achieve each emissions budget, which includes emissions pricing (mainly through the ETS) and complementary measures that address different market or regulatory failures, including:
  - improving public and business information about action they can take, and
  - setting regulation and building infrastructure appropriate for a low-carbon economy, and
  - support for research and application of low-emissions technology, and
  - regulatory signals and change, such as phasing out certain fuels and/or subsidies for cleaner fuels or activities, and
  - Government's own procurement decisions; and
3. Purchasing or trading international emissions reduction units. The government may decide to purchase emission reductions from other jurisdictions, or to allow New Zealand emitters to trade internationally in emission reduction units. Currently, there is no mechanism for the New Zealand Government or emitters to do this, but this could change in future.

The government faces various trade-offs as it builds a portfolio of actions over time using these levers. These trade-offs include:

- Pursuing more ambitious reductions earlier on may have larger economic and fiscal cost in the short term, particularly if it means investing before cheaper policy levers or technologies become available. However, starting earlier is likely to reduce total transition costs by requiring less dramatic reductions later, smoothing economic adjustment.<sup>47</sup>
- More intensive regulation and/or tighter emissions allowances under the ETS could reduce economic growth with knock-on fiscal and economic impacts that the government may then need to offset by spending.
- Using the ETS as a tool to reduce emissions will generate revenue for the government. Some complementary measures such as subsidies may come at a fiscal cost. Regulatory measures on the other hand will generally have less fiscal cost because they push the cost of adjustment to the private sector.
- Whether – and how much – to use international emissions reductions to meet a given target instead of domestic action, and the balance of government versus emitter purchase of international units, would have a direct impact on the fiscal cost.<sup>48</sup>
- Balancing distributional impacts, that is, how the costs and benefits of mitigation should be shared across households, firms or communities who have differing capacity to absorb changes. This also applies across generations.

There are also costs associated with inaction. Not proceeding with a given action to reduce emissions implies that other actions – with their own costs or benefits, financial, social and broader economic – will be needed if New Zealand is to achieve its emission reduction targets. In starting to address these, the Treasury has introduced initial shadow pricing values in guidance on cost-benefit analysis, in order to start factoring in the cost of future emissions, or the value of avoided emissions, in investment or policy decisions.<sup>49</sup> By supporting decision-makers to understand the potential future mitigation costs (or benefits) of the emissions (or reductions) associated with an action, shadow pricing helps bring the consideration of future costs (or benefits) into today's decisions.

Table 10 illustrates the government's policy levers and some of the first-order impacts on New Zealand's fiscal and economic position, as well as distributional considerations.

<sup>46</sup> The Climate Change Response (Zero Carbon) Amendment Act 2019 set a 2050 target of net zero for all gases except methane (which will reduce by 24-47% compared to 2017). New Zealand is also a party to the multilateral Paris Agreement including a commitment to reduce emissions by 30% by 2030 compared to 2005 levels.

<sup>47</sup> Westpac New Zealand (2018). *Climate Change Impact Report*. Westpac NZ modelled delayed versus early transition and found significant additional economic costs from delay. Retrieved from: <https://www.westpac.co.nz/assets/About-us/sustainability-community/documents/Climate-Change-Impact-Report-April-2018-Westpac-NZ.pdf>. The Climate Change Commission's 2021 modelling found higher impacts on GDP if action in key emitting sectors (agriculture and transport) is delayed.

<sup>48</sup> Under the Climate Change Response (Zero Carbon) Amendment Act 2019 domestic emissions budgets are to be met, as far as possible, through domestic reductions and removal.

<sup>49</sup> See: <https://www.treasury.govt.nz/publications/guide/cbax-tool-user-guidance>.

**Table 10:** Fiscal, economic and distributional impacts of climate policy levers

Policy lever	Fiscal impact	Economic impact	Distributional impact
	Relative to no action		
Emissions Trading Scheme	Positive	Negative	Moderate regressive impact on households
• Domestic only	ETS proceeds		
Emissions Trading Scheme	Positive	Negative	Moderate regressive impact on households, less than domestic-only scheme
• International units allowed into existing ETS	ETS proceeds (possibly less than domestic-only ETS)	Probably less impact than domestic only ETS	
Government purchase of international units	Negative	Negative	Socialised cost
	Increased expenditure	(Probably greater impact than ETS or complementary measures, due to allocative inefficiency)	
Regulation that overcomes barriers to emissions reductions	Neutral	Positive	Neutral
		Possible increase in economic efficiency	
Funding for innovation to unlock long-term emissions reductions or improve energy efficiency	Negative	Uncertain	Socialised cost
	Increased expenditure	(May increase economic efficiency if lower costs are unlocked for firms or households. There also may be a return on investment for some projects)	
Subsidies for lower-emission activities	Negative	Negative	Socialised cost, specific industries receive subsidy
	Increased expenditure	(Possibly larger impact than ETS, depending on design)	
Emissions standards and bans on high-emission activities	Neutral	Negative	Increased input costs borne by emitter
		(Possibly larger impact than ETS)	

Note: The Government has a legislative commitment to its 2050 targets; the 'no action' counter-scenario is illustrative only.

The impacts are first order; they do not account for second-order effects including long-run fiscal or economic benefits from avoiding dangerous climate change (or the long-run costs of no action). Nor do they capture every policy choice, such as recycling of ETS proceeds.



### Approximate scale of economic impact

A number of studies have looked at the possible economic impacts of a transition to a low-emissions economy in New Zealand. They generally find that the transition to a low-emissions economy results in lower GDP growth than would otherwise have been the case:

- In June 2021 the Climate Change Commission's final advice included modelling that estimated that meeting the 2050 target by their preferred demonstration pathway would incur a net cost to the economy each year (1.2% of projected GDP in 2050).<sup>50</sup>
- NZIER provided modelling to support the Climate Change Response (Zero Carbon) Amendment Act 2019.<sup>51</sup> The average rate of GDP growth ranged from 1.58% per annum to 2.03% per annum, depending on the scenario, compared to a status quo of 2.15%.
- A summary of international modelling found economic costs ranging from 1% to 5% of GDP depending on the goal and time period. However OECD modelling has suggested a positive 'green growth' effect on GDP of 2.8% in 2050 across G20 countries, relative to a continuation of existing policies.<sup>52</sup>

The constraint on GDP growth arising from climate change mitigation will have flow-on effects to the government's fiscal position, likely including lower tax revenue driven by slower economic growth.

### Approximate scale of fiscal flows for mitigation

The net fiscal impacts of emissions mitigation over the 40-year period of the LTFS are difficult to forecast or predict. This is because of the wide range of factors impacting revenue and expenses including:

- The scale of public spending, including the direct fiscal costs of complementary measures, purchase or trade in international units, or supporting communities to adjust to the transition.
- The Government's ETS liability will also vary as ETS prices change, altering the Government's net worth.
- Loss in receipts, for example if electric vehicle uptake impacted fuel excise duty.
- Impacts from mitigation policies on the economy then indirectly impacting fiscal metrics, for example on the ratio of public spending to GDP.
- The interplay between all of the above.

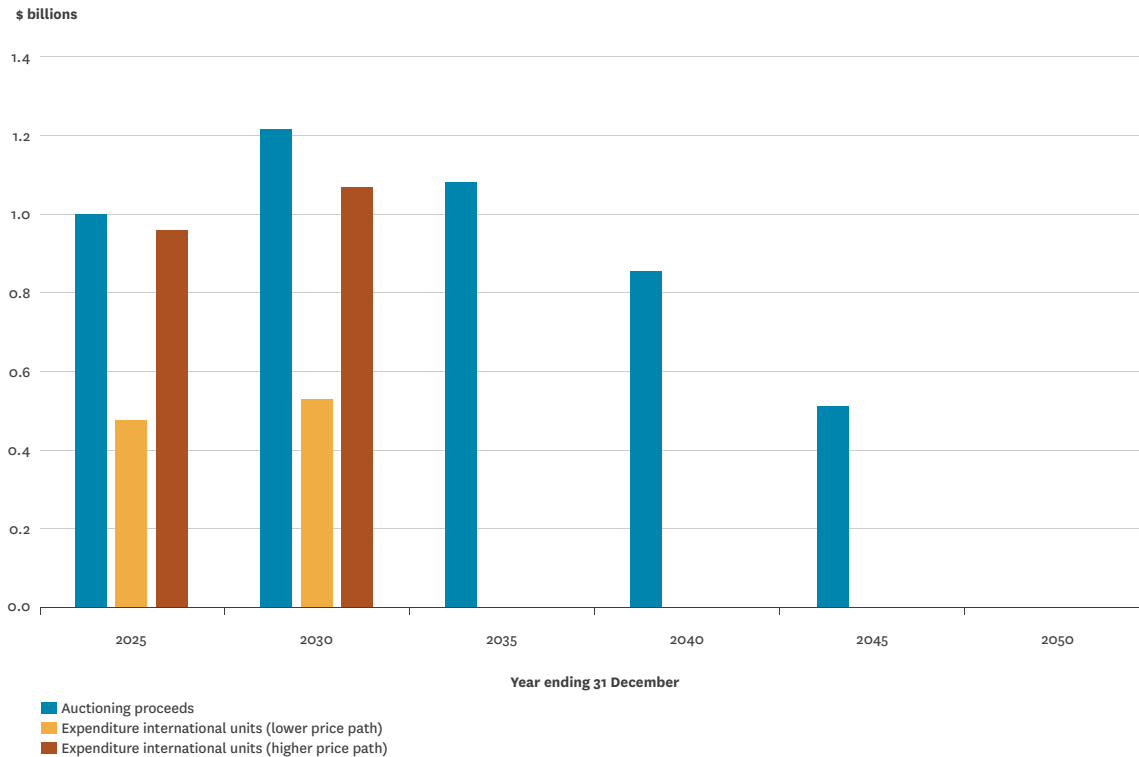
In Budget 2021 the Government made an in-principle decision that proceeds from the sale of units in the ETS would be hypothecated (recycled) into emissions reduction programmes. Figure 20 gives an indicative scale for the ETS proceeds that may be available to 2050. However, these proceeds are highly uncertain and sensitive to a range of variables that could deviate from our assumptions. Figure 20 also illustrates the possible fiscal expense should the government decide to purchase international emissions reduction units, under two different price scenarios. New Zealand's domestic emissions reductions are unlikely to fully meet our commitment under the Paris Agreement to reduce net emissions by 30% by 2030. Consequently, the government may decide to purchase international units to make up the shortfall.

<sup>50</sup> Retrieved from: <https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/inaia-tonu-nei-a-low-emissions-future-for-aotearoa/>

<sup>51</sup> Retrieved from: <https://environment.govt.nz/publications/economic-impact-of-meeting-2050-emissions-targets-stage-2-modelling/>

<sup>52</sup> Insley, C (2010).

**Figure 20: Scenarios of selected annual fiscal flows: ETS auctioning and purchase of international units**



Source: Treasury

### Key assumptions for Figure 20

- Government ETS auction volumes reduce from 2024/25 levels in BEFU 2021 to zero in 2050, in line with falling net emissions.
- The ETS price path is based on the mid-point between the Climate Change Commission’s marginal abatement cost path to 2050 and the Commission’s proposed ETS price floor, in current (2020) prices.
- International units’ lower price path is the lower bound price range derived from the Commission on Carbon Pricing (2017).<sup>53</sup>
- International units’ higher price path is the mid-point of the price range derived from the Commission on Carbon Pricing (2017).
- No international units are purchased after 2030.
- All amounts are annual, for the calendar year specified.

Source: Treasury calculations drawing on Climate Change Commission final advice (2021), High Level Commission on Carbon Pricing (2017)

<sup>53</sup> Retrieved from: <https://www.carbonpricingleadership.org/report-of-the-highlevel-commission-on-carbon-prices>

# 2

## Responding to long term fiscal trends

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Section 1 shows the size of the fiscal challenge we face in the future and the various uncertainties related to this future, owing to factors such as demographic change and rising costs of government services. There are options for how New Zealand responds to these trends that we explore in more detail in this section.

This Statement considers the following broad areas:

- How we consider the trade-offs between key policy choices (section 2.1) using the Living Standards Framework (LSF) and He Ara Waiora (HAW).
- What a 'prudent' level of debt is (section 2.2): what level or trajectory of debt could the government target in the future, and what does that mean for the size of the fiscal gap and how quickly it needs to be addressed?
- Reducing the growth in health expenditure (section 2.3): what are alternative levels of health expenditure that can help restrict spending growth relative to historical rates?
- Responding to demographic change (section 2.4): what settings can we change for New Zealand Superannuation to reduce the growth of expenditure related to demographic change and higher life expectancy rates?

- Increasing tax revenue (section 2.5): how can we increase revenue in the future by changing tax settings?
- Getting more value from public expenditure (section 2.6): how can we get more value from existing and new government expenditure, which can minimise fiscal pressures on top of existing trends in the future?

There are other policy choices that are relevant to considering fiscal sustainability. This document is not intended to provide an exhaustive list of all these options but rather present illustrative examples of the kinds of choices and trade-offs future governments can make to close the fiscal gap.

The document does not make policy recommendations on the 'optimal' policy option or package of options required to manage our fiscal sustainability challenge. This is something that will require careful consideration and analysis by future governments. The options discussed also assume that current policy settings (the 'status quo') across tax, health and superannuation will remain in the future.

# 2.1

## Framework for wellbeing analysis of policy options

Fiscal impacts are not the only factor that governments will consider through their policy choices in the future. All policy choices involve a degree of trade-off between different groups, generations and objectives, while still meeting Treaty of Waitangi obligations.

The Treasury has two analytical frameworks to consider these trade-offs more holistically (relative to considering fiscal trade-offs alone). Section 2.1.1 sets out the He Ara Waiora framework<sup>54</sup> (Waiora is often translated as a Māori perspective on wellbeing) and section 2.1.2 sets out the Living Standards Framework.<sup>55</sup> Combining these perspectives brings broader views to trade-offs, and places greater emphasis than traditional economic analysis on natural and social capital, te taiao (natural environment) and ira tangata (the people).

**Table 11:** Key concepts in He Ara Waiora

ENDS	Wairua	Spirit
	Taiao	Natural world, environment
	Ira tangata	Human domain, including activities and relationships between generations
	Mana tuku iho	Mana deriving from a strong sense of identity and belonging
	Mana tauutuutu	Mana found in participation in and connectedness to one's community, including knowing and fulfilling one's rights and responsibilities
	Mana āhienga	Mana in the individual's and community's capability to decide on aspirations and realise them in the context of their own unique circumstances
	Mana whanake	Mana in the power to grow sustainable, intergenerational prosperity
MEANS	Kotahitanga	Working in an aligned, coordinated way
	Tikanga	Making decisions in accordance with the right values and processes, including in partnership with the Treaty partner
	Whanaungatanga	Fostering strong relationships through kinship and/or shared experience that provide a shared sense of belonging
	Manaakitanga	Enhancing the mana of others through a process of showing proper care and respect
	Tiakitanga*	Guardianship, stewardship (e.g. of the environment, particular taonga or other important processes and systems)

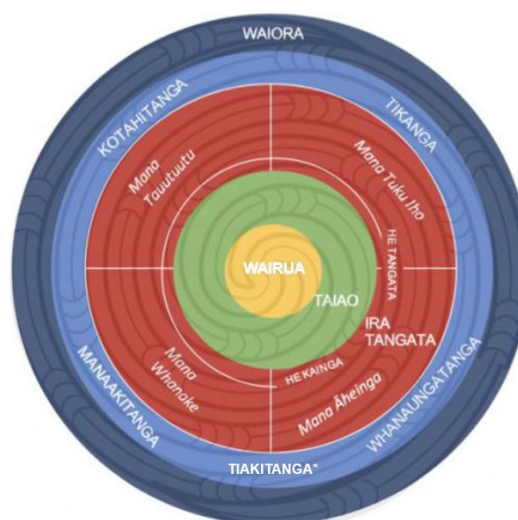
\*Under discussion for inclusion in framework.

### 2.1.1 He Ara Waiora

He Ara Waiora is a wellbeing framework built on te ao Māori knowledge and perspectives of wellbeing. It takes a holistic approach that sees people as part of a system of wellbeing that is predicated on the health of the natural environment, as the natural environment provides the resources for wellbeing. This system extends across generations, as our actions have intergenerational consequences and an ongoing impact on wellbeing. For example, a sustainable level of debt today minimises the burden that we place on future generations, and allows them more opportunities to prosper.

He Ara Waiora is a way to approach the Treasury's vision of lifting living standards for all through a uniquely Aotearoa lens. It complements the Living Standards Framework, which is based on an OECD understanding of wellbeing, by considering not just stocks of capitals related to wellbeing, but a set of values that represent what it means to be well in New Zealand. Considering trade-offs in this context is consistent with Te Tiriti o Waitangi Guidance issued by Cabinet.<sup>56</sup> Also, as the Māori and Pacific Peoples<sup>57</sup> populations grow as a percentage of the population, an emphasis on an interconnected system of wellbeing is more relevant than ever.

**Figure 21:** He Ara Waiora framework



<sup>54</sup> For more information on the He Ara Waiora Framework see: <https://www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/he-ara-waiora>

<sup>55</sup> For more information on the Treasury's Living Standards Framework see: <https://www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/our-living-standards-framework>

<sup>56</sup> Te Tiriti o Waitangi/Treaty of Waitangi Guidance, 22 October 2019. See: <https://dpmc.govt.nz/publications/co-19-5-te-tiriti-o-waitangi-treaty-waitangi-guidance>

<sup>57</sup> The Pacific model of wellbeing is the Fonofale model. This is also an interconnected system of wellbeing which resonates with the values of He Ara Waiora. While one should not stand in place for the other, many of the analytic contributions are comparable.

## 2.1.2 Living Standards Framework

The LSF is a wellbeing framework that the Treasury has developed to ensure that we consider the broader impacts of our policy advice in a systematic and evidenced way. The Treasury published its initial version of the LSF in 2011, which has continued to evolve in response to the emerging international and New Zealand literature, our own research, and dialogue with people across Aotearoa New Zealand. The latest version, which was released in 2018, drew extensively from the OECD's 'How's Life' framework. It includes:

- The domains of wellbeing, which reflect what research and public engagement have shown are important for New Zealanders' wellbeing. In identifying a range of outcome domains, the framework recognises that wellbeing is multidimensional but we recognise that different individuals, groups and cultures will define wellbeing in different ways or value some domains more highly than others, and some additional domains will be important to the wellbeing of some people.
- The four capitals (natural, human, social, and physical and financial) which underpin our wellbeing and our ability to sustain future wellbeing. This level of the framework is designed to support monitoring and analysis of our overall wealth as a country, particularly whether that wealth is being sustained for future generations. The level and quality of our capital stocks is also an important factor in our resilience to shocks or unexpected events.

It is not just the level of wellbeing that matters, but how it is distributed across population groups. Different groups vary in their levels of wellbeing (the domains), the resources they have to sustain their wellbeing over time (the stocks) and their capability to cope with unexpected negative events (risk and resilience). The framework highlights that we need to think about distribution across people, places and time or generations.

The Treasury also released the LSF Dashboard in December 2018, as a measurement tool to inform Treasury advice to Government on policy priorities for improving wellbeing, such as advice on Budget priorities, and for wellbeing and stewardship reporting. The LSF Dashboard provides a range of outcome indicators across 12 wellbeing domains, and 4 capital stocks. Where the data is available, the Dashboard provides international comparisons, distributional analysis and time trends.

By drawing extensively from the OECD's 'How's Life' framework, the current version of the LSF benefited from the OECD's extensive research on what matters for wellbeing across countries. It also made it easier for us to understand how Aotearoa New Zealand is doing compared to other countries. However, our external engagement around the development of the LSF Dashboard in 2018 highlighted that our international approach may not fully capture the distinctive nature of wellbeing in Aotearoa New Zealand or the wellbeing of children. The Treasury is planning to release a new framework later this year which aims to better reflect children's wellbeing and culture, including being more compatible with wellbeing as understood in te ao Māori and by Pacific Peoples.

## 2.1.3 How are these frameworks being applied?

The Living Standards Framework and He Ara Waiora have been used throughout the policy chapters (sections 2.3 to 2.5) to consider the distributional impacts of policy choices. This includes both demographic implications of choices and how trade-offs between policy options can be considered from both a capitals and Waiora perspective.

For example, we consider the policy option to raise the age of New Zealand Superannuation through multiple perspectives. From a distributional impact approach alone, we know that it is likely to adversely impact groups such as Māori and Pacific Peoples, who have lower life expectancies (particularly if the growth in life expectancy for these groups is different from other groups). From a capitals perspective, we can consider this as potentially adding to the stock of human capital over time through potential changes to labour force participation rates. From a He Ara Waiora perspective, we can view New Zealand Superannuation as a form of manaakitanga and mana tauutuutu, where the use of tax revenue to support kaumātua is a social obligation and form of intergenerational care, and this might put more weighting on higher taxation relative to changing New Zealand Superannuation settings.

Overall, the use of these frameworks helps us to come to a more holistic understanding of what these trade-offs mean materially for New Zealanders (using different perspectives) and therefore help better inform decision-makers on their policy choices.

## 2.2

### How much, and when, should we adjust fiscal policy?

The government has choices about the level of debt to target in the future. To do this it needs to balance the costs of reducing debt (such as wellbeing implications of cutting government spending) with the benefits that lower debt has for the wellbeing of future generations and for our fiscal resilience to economic shocks.

Uncertainty in the near term makes it challenging to define a ‘prudent’ level around which debt should stabilise in the future. While we do not know exactly how large a policy adjustment will be necessary for stable, prudent debt in the long term, the scale of the long term fiscal challenges will make a significant adjustment necessary.

New Zealand needs to start thinking about these changes now. Small and gradual changes in the nearer term would help to minimise the cost of fiscal pressures across generations, preventing higher debt and a larger adjustment in the future.

This section sets out the choices the government has on the scale and timing of any adjustments to fiscal policy to respond to long-term trends. Section 2.2.1 sets out the key considerations the government should take into account when considering the right level and trajectory of debt.

Section 2.2.2 sets out what that means for the size of the adjustment that the government might need to make in the future. Section 2.2.3 concludes by setting out the trade-offs between making an adjustment quickly, or over time.

#### 2.2.1 Fiscal sustainability and prudent debt

Fiscal sustainability is the ability for the government to continue to fund the services and transfers it provides into the future without requiring major adjustments in expenditure or revenue settings. This is important because:

- It is one of the components of our tiakitanga (stewardship) for mana whanake (intergenerational prosperity). An unsustainable level or trajectory of debt (explained below) today would impose costs on the wellbeing of future generations that could reduce the quality of the public services they receive, or increase the taxes they pay;
- As section 1.4 sets out, New Zealand will face shocks and natural disasters in the future. Incurring an unsustainable level or trajectory of debt today could prevent the populations at the time from managing those shocks as effectively as possible, imposing additional costs on them at what would already be a challenging time; and
- As discussed in Box 2, choices about the funding of government investment will also have a bearing on the level of prudent debt. In turn, government investment has the potential to lower some fiscal costs today and in the future, thereby reducing the amount of debt needed over time.

There are lots of measures that can indicate whether the fiscal position is sustainable or not. The debt-to-GDP ratio is generally the preferred measure internationally of long-run fiscal sustainability, as it reflects both the amount (level) of debt and the ability of the government to service it. This is reflected in the Public Finance Act 1989, which requires governments to reduce debt to a ‘prudent’ level and thereafter sustain it at that level.

There is no explicit definition of what a ‘prudent’ level of debt is. That is because that level may vary over time, is more likely to be a range, and the decision involves both value judgements and analytical judgements.

However, as is common with international practice, the Treasury has tended to advise on a 'prudent' level of debt on the basis of an 'upper limit' with a buffer to manage economic shocks. There are three main ways to consider the 'upper limit' for debt:

1. The **debt sustainability** approach, which considers the level above which the government could default on its debt.
2. The **market access** approach, which considers the level and trajectory of debt beyond which creditors are no longer willing to lend on reasonable terms.
3. The **wellbeing** approach, which considers the level of debt beyond which taking on more debt would generally reduce current and future wellbeing more than it enhances it. This is the preferred, but most judgement-heavy, approach and involves considering, for example, whether spending is likely to have long-term benefits that outweigh the long-term debt servicing costs and reduced fiscal resilience.<sup>58</sup>

Prior to COVID-19, the Treasury recommended a prudent upper limit for net debt of 50% to 60% of GDP based on the wellbeing approach, with a buffer of around 20% of GDP to respond to shocks.<sup>59</sup> The net debt-to-GDP ratio at which New Zealand would risk default or be unable to access markets would be substantially higher than this.

COVID-19 has changed the judgements involved in setting an upper limit under the wellbeing approach. As discussed in section 1, the benefits of spending to support the economy through the border closure and other restrictions were very high, and the costs of additional borrowing relatively low. It is uncertain how long these conditions will persist.

As a result, it is challenging to judge whether the levels of debt shown in the projections are below the 'upper limit' under the wellbeing approach. For example, the level of debt reached under the historical trends scenario could, under specific conditions (for example high GDP growth rates and sustained low interest rates) potentially be maintained without default or market access issues. However, there would be a higher risk of such events than at lower debt levels. Debt reaching these levels would also have large living standards impacts through higher debt-financing costs and reduced fiscal resilience to future shocks. These costs, risks and reduced fiscal resilience would need to be evaluated against the outcomes achieved by higher spending, for example an increase in resilience in other areas such as natural disasters. In addition, as discussed in Box 2 above, choices about the funding of government investment will also have a bearing on the level of prudent debt.

Conversely, the alternative scenarios showed a much stronger fiscal position where debt was stabilised at around 48% of GDP, resulting in increased fiscal resilience and minimising risk of market access issues or default. However, this required large tax increases and reductions in expenditure which would have significant living standards impacts.

The historical trends and alternative scenarios are illustrative fiscal projections that could happen in the future. In practice, the government will weigh up the benefits of higher expenditure against the costs of higher levels of debt which will likely result in the long-run path for net debt ending up somewhere in between the scenarios or on completely different paths.

Consequently, it is useful to consider both the *level* and the *trajectory* of net debt. It may not be possible to specify an exact target for net debt today. However, the projections in section 1 of this Statement show that, if unchecked, fiscal trends will result in net debt rising on an unsustainable trajectory. Regardless of where the prudent upper limit for net debt is, based on the trajectory of net debt in the historical trends scenario, it will likely be breached at some point in the future (either within or beyond the projection period).

In the absence of a long-run target for the level of net debt governments can still identify and implement policy options that return net debt to a sustainable trajectory.

The remainder of this part considers options for achieving this.

## 2.2.2 The size of the policy adjustment

Regardless of the level of prudent debt a government ultimately targets, ensuring that level is sustainable will require debt to be stabilised at that level. That will require reducing the gap between expenditure and revenue to the point where debt is no longer growing as a share of GDP.

One measure of this 'fiscal gap' is the primary deficit, which is illustrated in figure 22. Options that help close the gap will mostly result in reduced expenditure growth or higher taxes. These will have wellbeing consequences that will vary depending on the size and speed of implementation. The government will need to weigh up the costs of these options against the benefits of helping to close the fiscal gap, which would be higher fiscal resilience and reduced debt-financing costs.

The exact size of the fiscal gap that needs to be closed will depend on the level of debt a government seeks to stabilise at, and the interest rates it faces at the time. All else being equal, higher government debt levels and higher interest rates will require larger policy adjustments to place debt on a sustainable trajectory.

58 While low debt levels support fiscal resilience to shocks, increasing debt can build resilience in other ways. For example, increasing debt to invest in more earthquake-resilient buildings is costly now, but can reduce the negative impacts of earthquakes in the future. The background paper *How fiscal strategy affects living standards* discusses these issues further. For background papers, see: <https://www.treasury.govt.nz/publications/strategies-and-plans/long-term-fiscal-position>

59 Makhlof, G (2019). *What is prudent debt?* Lecture delivered by Gabriel Makhlof, Secretary to the Treasury at the Treasury's Economic Forum. See: <https://www.treasury.govt.nz/sites/default/files/2019-06/sp-fiscal-lecture-prudent-debt-14jun19.pdf>

### 2.2.3 The timing of the policy adjustment

In addition to the size of any policy adjustment, governments have choices about when they make any policy changes to address long-term fiscal trends.

There are different choices at either end of the spectrum. Governments could make significant and immediate changes now that improve the fiscal position and reduce debt. The benefit of an immediate response is that governments can potentially avoid the costs associated with delayed action, including higher debt-financing costs (more analysis on this is set out in the paragraphs below). Alternatively, they could take a more phased approach, which involves making small and gradual changes to reduce the gap between expenditure and revenue to stabilise debt over time. The benefit of a delayed approach is that the response can adjust to new information and help to smooth the impacts of any policy adjustments over time.

Appendix one analyses the costs and benefits of delaying the policy adjustment to stabilise debt levels and stabilising debt at a higher level. The key insights from this analysis are:

- Allowing net debt to rise before reducing and then stabilising has short- to medium-term economic benefits from having relatively lower tax rates. However, allowing net debt to rise before reducing and stabilising results in higher debt-servicing costs. As a result, this requires higher taxes to reduce and stabilise net debt, which has costs for the economy over the long run.
- Whether allowing debt to rise before reducing and then stabilising is the appropriate response depends on more than just the economic impact. It also depends on factors such as the benefits of the higher levels of government expenditure.
- Stabilising net debt at a higher level produces a similar result. In the short to medium term there are positive economic impacts from having relatively lower tax rates. However, again, in the long run debt-servicing costs are higher, which requires having relatively higher tax rates in the long run to stabilise net debt.

Given the pandemic, governments are faced with more uncertainty than in previous years in making this choice. For example, we don't know how long the COVID-19 recovery is going to last and whether there may be resurgences that lengthen the recovery period. In making this choice, governments will also need to consider the broader welfare and other implications of the policy option being used to make the policy adjustment.

Acting sooner rather than later would make a larger impact on our long-term fiscal position for comparatively smaller policy changes, which could support the wellbeing of future generations. However, that would mean additional economic and social costs now, rather than smoothing them over time. As time goes on, we are likely to have more information about some of the big uncertainties that we face in this Statement. But there will never be a time when we have all the information about the future.

Therefore, in making a decision about when to act (and how hard) the following factors require consideration:

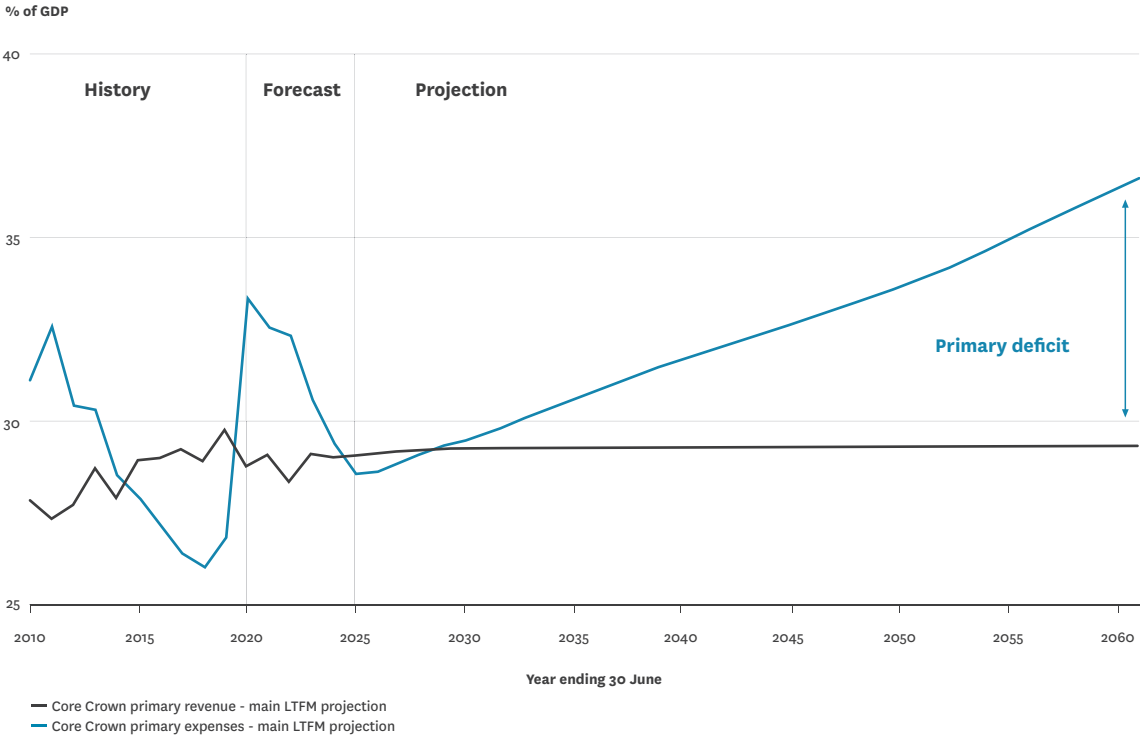
- Where we are in the economic cycle: making immediate and large spending changes when the economy is recovering from a shock is likely to come with economic costs.
- What the broader wellbeing implications of policy options are: policies which have significant impacts on certain groups or behaviours may require careful phasing as this could further exacerbate fiscal sustainability challenges.
- How long it will take for policies to have an impact: this is likely to be different depending on the policy areas and the levers available to government (e.g. the impact of tax changes can be seen immediately).
- What interest rates and growth rates are doing: judgements on what the new long-run debt target is and how much of a buffer we want to rebuild will help determine whether action in the near term is necessary.

Overall, it is important to think about these changes now given the trajectory of our long term expenses. Policies often have long lead times and it is important that any changes are signalled in advance, giving time for people to adjust. Small and gradual changes in the nearer term could help to minimise the cost of fiscal pressures across generations, preventing higher debt and a larger adjustment in the future. There are also likely to be costs to delaying action, particularly if interest rates start to rise (increasing our debt-servicing costs).

The policy options discussed in the following sections are all assumed to be implemented from the 2025/26 fiscal year to illustrate their impact, but governments could choose to implement them earlier or later. There are also choices about how these policy options are phased over time.



**Figure 22:** Core Crown primary revenue and primary expenses, % of GDP (historical trends scenario)



Source: LTFM

## 2.3

### Managing healthcare expenditure

Health expenditure is projected to grow to over 10% of GDP by 2061, up from about 7% today. This reflects both demographic change and the fact that health expenditure tends to grow more quickly than income over time in most economies.

New Zealand's health system is comprehensive and supports our collective wellbeing. But it is also complex and fragmented. Government has limited levers to control spending. Delivering substantial efficiencies or productivity gains is likely to require reform that improves the underlying incentives and behaviour in the system.

We have modelled the fiscal impact of health spending growing more slowly over time. Achieving the upper end of those scenarios would likely require tough choices. Governments would need to weigh the impact of those choices against accommodating more significant increases in healthcare expenditure over time. This will involve judgements around what society values the most, which is likely to be different for different generations. We have not explicitly modelled other approaches such as a more insurance-based scheme.

Healthcare spending is central to the long-term fiscal challenge because it is a large and growing part of total government spending. This section sets out how managing the growth in government health expenditure could support fiscal sustainability.

It is important to note that a strong and resilient health system acted as a cushion for New Zealand's COVID-19 outbreaks and that, while health expenditure is subject to significant uncertainty given the unfolding situation around the world, it has been and will continue to be a significant stabiliser for the economy in navigating through the pandemic's impacts.

#### 2.3.1 Healthcare in New Zealand

New Zealand has a national healthcare system which is primarily publicly funded and provides a broad coverage of services. These services are delivered by a mix of public and private providers and there are some costs that are passed on to users but still subsidised by the government (for example, GP visits). Box 3 sets out how this public health system supports our wellbeing as a country.

Health expenditure has been rising significantly and this is likely to continue in the future. The historical trends base scenario shows that health expenditure is projected to increase from 6.9% in 2020/21 to 10.6% of GDP by 2060/61 if there are no changes to current settings. This growth is consistent with international trends as modelled by the OECD and illustrated in figure 23 below (noting that the level of government expenditure on health is likely to be different for different countries depending on the nature of their health system).

We have considered two alternative spending pathways for health in New Zealand that allow healthcare expenditure to continue to grow, but at a slower rate than in the historical trends scenario.

- **Scenario 1:** reducing the growth of health spending by 0.1% on a cumulative basis to 2060 (health expenditure is 0.4% of GDP lower by 2060 relative to the historical trends scenario).
- **Scenario 2:** reducing the growth of health spending by 0.5% on a cumulative basis to 2060 (health expenditure is 1.7% of GDP lower by 2060 relative to the historical trends scenario).

These scenarios align with the OECD's overall approach to illustrating different health spending projections for member countries.<sup>60</sup>

60 Lorenzen, L et al (2019) *Health spending projections to 2030: New results based on a revised OECD methodology*. OECD Health Working Papers No. 110. OECD Publishing. Retrieved from: <https://doi.org/10.1787/5667f23d-en>

### Box 3: The purpose of New Zealand’s public health system and broader wellbeing implications

Our free (or low-cost) at the point of need health system reflects an implicit social contract which embodies manaakitanga, an ethic of care, and the expectations that health is fundamental to overall wellbeing/waiora and that all people should be able to access it in the same way. An insurance-based health system, as employed in various countries, does represent an alternative means of managing rising costs to the government by spreading risk across public and private spheres but would represent a departure from the existing social contract, and would have other economic costs.

The purpose of the New Zealand health and disability system, as set out in legislation, is that it is strong, effective and delivers equitable health outcomes for all New Zealanders.<sup>61</sup> This includes:

- achieving for New Zealanders the overall improvement, protection and promotion of their health, and
- reducing health disparities by improving the health outcomes of Māori and other population groups (kotahitanga) and working with these groups to do this (tino rangatiratanga/self-determination/sovereignty), and
- providing the best care or support for those in need of services (mana tauutuutu/fulfilling rights and obligations to the community), and
- promoting the inclusion, independence, and social and economic participation of all people, including those with disabilities (mana tuku iho/inclusion and sense of belonging and mana āheinga/ability to fulfil aspirations).

Analysis shows that health status is strongly correlated with overall subjective wellbeing for New Zealanders,<sup>62</sup> which means that maintaining the health of the population as it ages will be important for sustaining wellbeing and is a key determinant of mana āheinga– the ability to fulfil one’s aspirations.

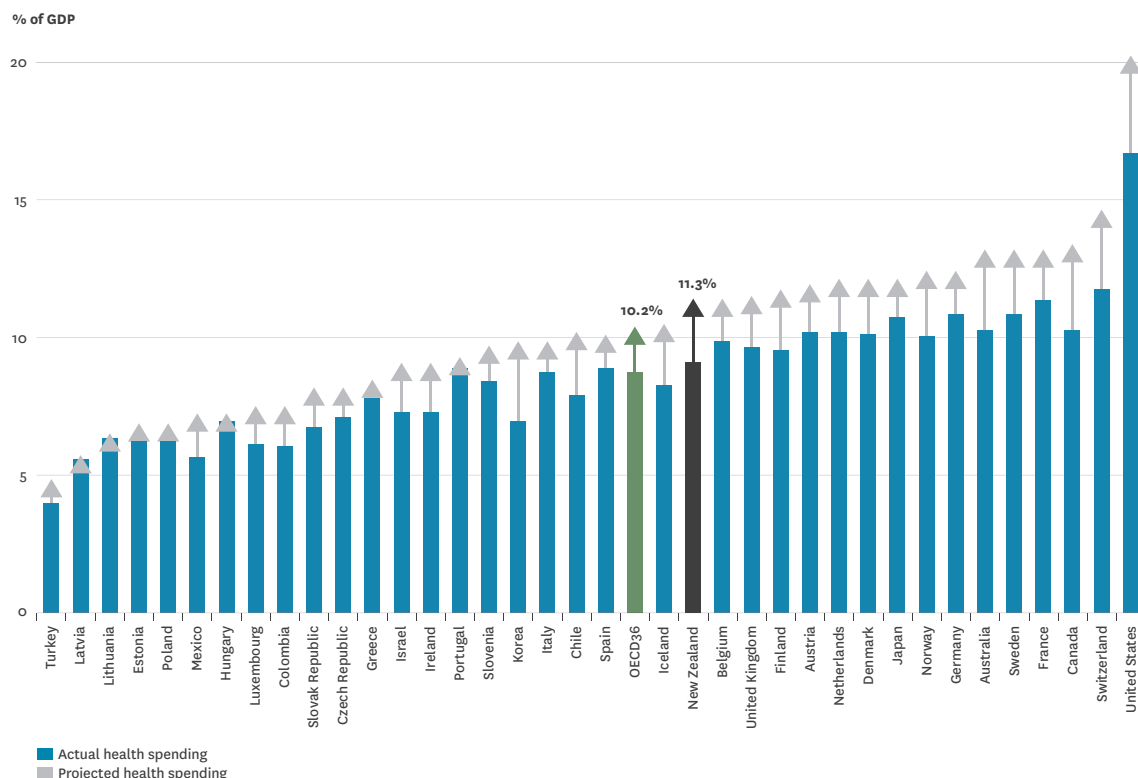
It is important to note that the health system is but one influence (albeit an important one) on an individual’s health. There are a number of social determinants to good physical and mental health (for example, stable and high-quality housing, employment and the wellbeing of the environment, taiao). Health status (including mental health) also impacts on other things such as an individual’s ability to participate fully in society and contribute to the stock of human capital over time. In this respect, health is also fundamental to overall economic growth.

Although in this chapter we have focused on trade-offs that could be made within the health system, it is important to highlight the interdependence between health status and other external factors that could impact on one’s health (which cannot be managed through changes to health expenditure alone).

61 New Zealand Public Health and Disability Act 2000. See: <https://www.legislation.govt.nz/act/public/2000/0091/latest/whole.html>

62 New Zealand Productivity Commission (2016) *Subjective Wellbeing in New Zealand – some recent evidence*. See: <https://www.productivity.govt.nz/research/subjective-wellbeing>

**Figure 23: Total health spending by country (2015 and 2030 projections)**



Source: OECD

Controlling spending has historically been challenging in the health sector as the drivers are multiple, difficult to control, and interdependent. These drivers are a combination of volume changes (the health system is expected to do more) and price increases (providing care costs more over time), and include:

- **Demographic change:** our growing and ageing population puts increasing pressure on the health system as there are more people who need care, and more people facing more significant (and more complex) health issues later on in their life.<sup>63</sup>
- **Increase in expectations:** as incomes increase, people’s expectations and demand for what the healthcare system should deliver also increase.<sup>64</sup>
- **Wages and productivity:** the health sector is labour intensive, and so while productivity tends to grow more slowly than the economy as a whole, wages need to rise to keep pace with the economy as a whole.
- **Technological change:** technology has extended the scope of health services, with significant wellbeing benefits, but this often comes at higher cost (for example,

more specialised training and resources are required, so that individuals can benefit from the new technology).<sup>65</sup>

- **Socioeconomic factors:** wider determinants of health and wellbeing can affect health costs such as poverty, housing, employment and social support systems.

Health costs can also be influenced by system settings and government decisions around funding levels. Our system is comprehensive, but it is also complex and health services are provided through a mix of government, non-government and private organisations. Different accountability arrangements and funding mechanisms exist between all these providers and services often vary depending on where they are provided. For example, in the places where after-hours accident and urgent medical centres are accessible, people can see a specialist outside of work or General Practice hours if needed, and the centres can also reduce pressure on emergency department wait times; however, these centres are not accessible everywhere and may not be affordable for all, which means people experience different standards of care in different parts of New Zealand.

63 Relative to the impact this has on New Zealand Superannuation costs, population ageing only accounts for around a third of the projected increase in health expenditure as outlined in section 1. The projections also assume some level of healthy ageing, which offsets some of the health costs related to population ageing.

64 Lorenzen et al (2019) measure the income effect using an income elasticity of health spending, which captures the percentage change in health expenditure in response to a given percentage change in income. Current evidence using international panel data shows this income elasticity to be around 0.7-0.8 for OECD/high-income countries.

65 This driver is more complex and there are a number of interdependencies with other drivers. For example, technological change may have an impact on demographic change and life expectancy and shapes productivity and to some extent consumer demand as incomes increase (Lorenzen et al, 2019).

While variability in services has an impact on costs, it also has significant implications for equity of access, particularly for groups such as Māori and Pacific Peoples who may also face barriers to accessing other government services. An example of this inequity and variability can be seen in statistics for hip operations, with the percentage of Māori having an operation for a hip fracture on the same or next day of admission to hospital having decreased steadily since 2013, whereas the percentage for non-Māori has consistently increased.<sup>66</sup> More generally, there are significant disparities across a wide range of health status indicators between Māori and non-Māori, with varied improvements across time.<sup>67</sup>

### 2.3.2 Reforms to New Zealand’s health system

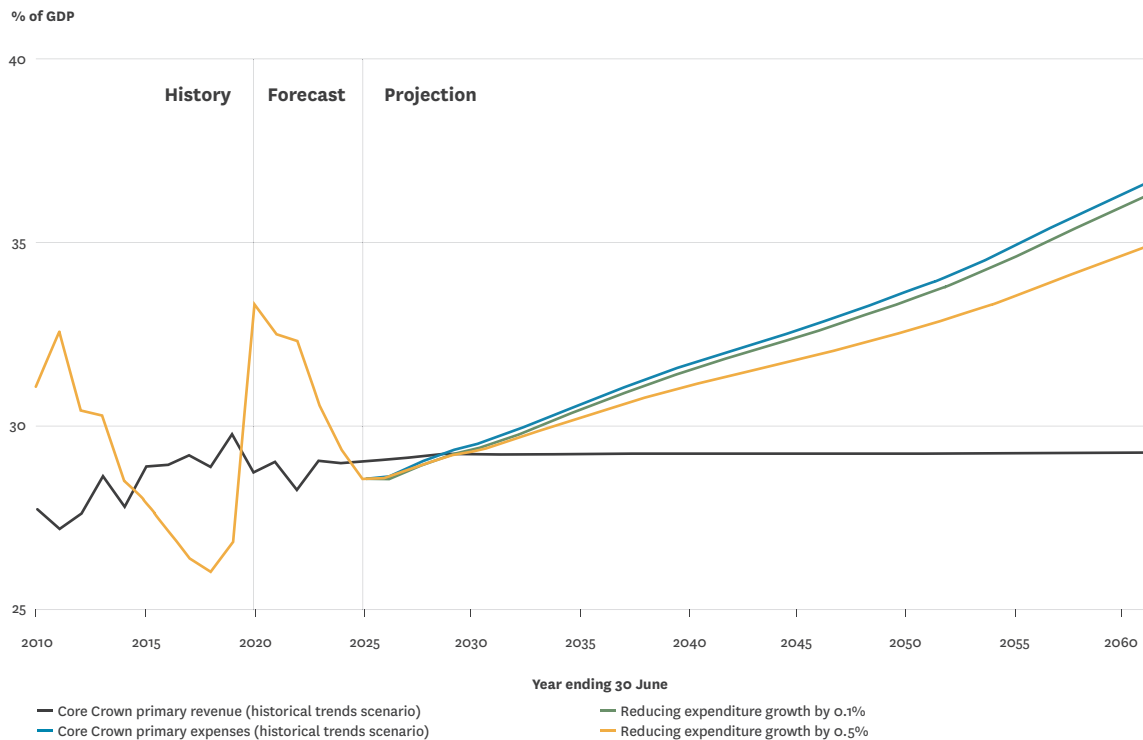
The Government has announced major reform to the health system to address these issues, with a goal to improve the quality, consistency and equity of care.<sup>68</sup> This includes making structural changes to how healthcare is delivered to ensure the system is simpler and more coordinated for both those who provide, and those who receive, services.

Current health projections are based on existing system settings and historical growth rates in expenditure. Over the longer term these reforms are expected to have an impact on fiscal sustainability and the trajectory of health expenditure (see options presented in section 2.3.3 below on preventing illness and reducing inefficiency); however, this is difficult to quantify at this point. More importantly, the focus of the reform is much broader in terms of tackling inequities in the current system, which could lead to further increases in expenditure (but with better outcomes for those who are currently disadvantaged).

The COVID-19 pandemic has also highlighted the importance of managing risks by investing in health protection functions (e.g. public health units), which involve upfront costs but have an impact on fiscal resilience and sustainability over the long term by improving the speed of our response and managing the impacts of any future outbreaks or resurgences.

Even in a reformed health system, health spending will continue to increase given the underlying drivers of expenditure set out above. The key fiscal challenge is how significant spending growth can be managed to a sustainable level while at the same time ensuring consistency, quality and equity in health outcomes.

**Figure 24:** Alternative government spending pathways for health, % of GDP



Source: LTFM

66 Health and Disability System Review (2020) *Health and Disability System Review: Final report/Pūrongo Whakamutunga*. See: <https://systemreview.health.govt.nz/assets/Uploads/hdsr/health-disability-system-review-final-report.pdf>

67 Ministry of Health (2019) *Wai 2575 Māori Health Trends Report*. See: <https://www.health.govt.nz/system/files/documents/publications/wai-2575-maori-health-trends-report-04mar2020.pdf>

68 DPMC (2021) *Our Health and Disability System: Building a stronger health and disability system that delivers for all New Zealanders*. See: <https://dpmc.govt.nz/sites/default/files/2021-04/health-reform-white-paper-summary-apr21.pdf>

### 2.3.3 Alternative pathways for health expenditure under current settings

This section sets out alternative health spending pathways and discusses the implications and trade-offs of each. These scenarios are illustrative only and are not intended to model what could potentially be achieved from health reform; however, they do draw on some of the options and changes recommended through the Health and Disability System Review (HDSR).

Figure 24 shows how much difference it would make if the health expenditure growth curve was reduced by 0.1% and 0.5% per annum, respectively. Healthcare spending would continue to grow in the future, but not to the extent that the historical trends scenario (and known trends such as population growth and inflation) suggests.

As figure 24 shows, reducing the growth of health expenditure by 0.1% and 0.5% respectively has a small to modest impact on reducing the primary deficit. Even a lower projected spending growth track for health still implies that spending will grow faster than the overall economy given the drivers set out in section 2.3.1.

New Zealand's health system is predominantly publicly funded, so the government can control the funding it receives through the amount of additional funding injected into the system each year (although, note Box 4 on DHB deficits). However, as the above historical trends illustrate, it would take more than the government's ability to set budgets to achieve a lower rate of growth.

Savings in health can be achieved in various ways, with varying wellbeing impacts including (from least to most severe):

- Preventing illness through public health measures and social determinants of health, or preventing deterioration in illness through early intervention, and
- Reducing waste and inefficiency in the health system, and
- Spreading costs or changing entitlements.

Investing in prevention and early intervention is one way to reduce 'downstream' costs – by preventing a more expensive admission to hospital. This is a major focus of the HDSR reforms.

Focusing on health promotion and social determinants includes broader population and public health measures which promote healthy behaviour and environments to curb major illness risk factors such as those around smoking, alcohol consumption and obesity. Health system savings are achieved by preventing illness that would otherwise have occurred. In addition to these savings,

overall wellbeing outcomes are improved for the individual who can continue to participate in society and the economy. The Health and Disability System Review notes that further work is needed to scale up health promotion efforts on non-communicable diseases (e.g. respiratory diseases, cancer, and diabetes) and implement more comprehensive screening programmes. Much of the health loss and inequities around these diseases are related to the common risk factors mentioned above. In addition to prevention of common diseases, early intervention is also critical for areas like mental health.

The Government's Mental Health and Addiction Inquiry<sup>69</sup> noted that mental health is a growing issue with significant gaps in services for people with mild to moderate mental health needs that could impact on their ability to participate in day-to-day activities. Supporting people who are vulnerable early in the cycle can avoid crisis situations and lead to better long-term outcomes. However, it is worth noting that governments will not see immediate pay-off from initiatives investing in prevention, and it is important to take a long-term view of the ability of such initiatives to reduce costs in the system. There are also some illnesses that cannot be prevented through public health measures – such as genetic conditions.

For those illnesses that cannot be prevented, we can still seek to prevent unnecessary hospital care. The OECD<sup>70</sup> notes that avoidable hospital admissions for conditions that can be managed in a primary care setting “put an important yet avoidable financial burden on healthcare systems”. This puts emphasis on increasing the availability, accessibility and quality of primary care services<sup>71</sup> (which is likely to involve more upfront investment for longer-term gains in health costs and outcomes). Alternatively, greater spending on primary care and community care could also shift costs by uncovering unmet health needs or if services now need to be provided in multiple locations and homes instead of one ward. Another key consideration is how primary care can provide holistic support that addresses not only health issues and inequities but wider social determinants that are critical for overall wellbeing (for example mental health, unemployment and unstable housing conditions).

Some savings in health could be achieved with little impact on service levels, or a change in outcome for the people who receive those services – we might call this 'reducing waste', or 'improving inefficiency'. The HDSR recommendations capture a lot of these options with a focus on where the current system is not delivering outcomes. We know that there is a lot of variability and duplication in the provision of current services, so there could be some opportunities to gain efficiency or productivity savings through:

69 *He Ara Oranga: Report of the Government Inquiry into Mental Health and Addiction* (2018). See: <https://mentalhealth.inquiry.govt.nz/>

70 OECD (2017) *Tackling Wasteful Spending on Health*. OECD Publishing, Paris. See: <https://www.oecd.org/els/health-systems/Tackling-Wasteful-Spending-on-Health-Highlights-revised.pdf>

71 OECD studies show that there is a negative association between ease of access to primary care and the use of emergency departments. For example, Germany and Netherlands, where more people report easy access to after-hours care, have relatively fewer ED visits. Further, a study of England shows that emergency admissions for ambulatory sensitive conditions could be reduced by between 8% and 18%, producing savings between \$96 million to \$238 million a year.

- **Implementing workforce changes** which allow for better triaging of patients at the community level (for example, nurses and pharmacists playing a greater role in addressing patient needs). Studies show that around half of OECD countries have expanded the scope of practice for non-physicians between 2007 and 2012 and, if managed well, "such changes could produce cost-savings with no adverse effects on quality of care".<sup>72</sup> The Health and Disability System Review also noted that there is scope to change the role of the paramedic workforce in the future (ambulance services) such as providing treatment at home or at the accident location.<sup>73</sup>
- **Better coordination and consistency of care** (for example, through improved digitisation of services such as telehealth and digital systems for accessing and sharing information), which could help reduce administration costs and increase productivity. One example of this is the use of Health Technology Assessments (HTAs), which will provide a consistent base of evidence on the effectiveness of new technologies and interventions. The capacity for this is currently dispersed in New Zealand compared to, for example, the UK, where there is a dedicated National Institute for Health and Care Excellence (NICE).<sup>74</sup>
- **Exploring efficiencies available through centralisation.** For example, since 1993, Pharmac, a New Zealand government agency, has been the sole purchaser of publicly funded pharmaceuticals. According to Pharmac estimates, based on pharmaceutical prices in 2005 mapped onto actual prescribing activity, joint procurement allowed for cumulative savings of about \$5.1 billion between 2005 and 2015, including around \$1.9 billion in 2014/15.<sup>75</sup>

Although the initiatives above can help to reduce health expenditure growth, they are unlikely to achieve a permanent and significant reduction in healthcare spending growth (at least in the short to medium term) and could also involve increased upfront costs.<sup>76</sup> While they can support a more moderate rate of expenditure growth, the underlying drivers of healthcare spending growth remain.

The changes and options discussed above also assume that the system is already sustainably funded and the government has levers to ensure that lower funding levels lead to providers changing their behaviour. This is not always the case, as demonstrated by provider deficits (as explained in Box 4). This reinforces the need for reform (including a refresh of system and accountability settings) before productivity and efficiency gains can be expected across the system.

#### Box 4: Current context – DHB deficits

District Health Board (DHB) deficits have become a feature of New Zealand's health system in recent years. Deficits exist where a DHB has spent more than it has received in revenue in a given year. The majority of revenue received by DHBs comes from the government. In 2019/20 the consolidated deficit across New Zealand's 20 DHBs was \$1.049 billion (around 6% of total revenue for DHBs<sup>77</sup>). About half of these costs reflected in the deficit relate to one-off (or unanticipated) costs that are difficult to plan for, including statutory remediation and COVID-19 response costs; however, the existence of deficits can be viewed as evidence for the relative lack of control the government currently has over health system expenditure growth. In other words, in the current system the government cannot control the cost of the health system simply through limiting the funding (revenue) provided.

Because deficits have grown significantly in recent years, additional DHB spending (over and above the revenue received from the Crown) is unlikely to be fully reflected in expenditure projections for core Crown health, which are based on historical funding trends. If these deficits continue to increase, this has significant implications for financial sustainability in health beyond what is modelled through the historical trends scenario presented in section 1.

<sup>72</sup> OECD (2017).

<sup>73</sup> Health and Disability System Review (2020).

<sup>74</sup> Health and Disability System Review (2020).

<sup>75</sup> OECD (2017).

<sup>76</sup> This is particularly evident in the case of IT investment, which has significant productivity benefits, but is expensive and takes time to train to use.

<sup>77</sup> Ministry of Health. *DHB Sector Financial Reports 2019-2020*. See: <https://www.health.govt.nz/new-zealand-health-system/key-health-sector-organisations-and-people/district-health-boards/accountability-and-funding/summary-financial-reports/dhb-sector-financial-reports-2019-2020>

Making any more significant or more immediate fiscal savings in health (as seen in the scenario above, which reduces growth by 0.5%) is likely to have a more significant impact on access and health outcomes. Two examples of this include:

- **Rationing services or introducing higher thresholds for access.** This could also include introducing higher co-payments for certain services, such as GP visits, and
- **Reconsidering the balance of responsibility the government takes on relative to the private sector** in providing healthcare services (for example, an insurance-based health system). Under this scenario, there would be a widening gap between what is provided free by the public health system and the full range of health services and treatments that New Zealanders will want to access.

### 2.3.4 Impacts and trade-offs of lower health spending growth

This section looks at the broad impacts of the policy changes mentioned above with a focus on the impacts of increasing co-payments or changing the mix of public-private provision of health services. We focus on these specific options as they are likely to have the most significant wellbeing impacts relative to initiatives that improve efficiency and reduce waste in the system (the latter are likely to improve both outcomes and cost).

- **Macroeconomic impacts:** there are impacts on both financial and human capital from increasing co-payments or changing the mix of public-private provision. Adopting a lower public health spending growth track could lead to more efficient use and delivery of services, which would improve overall productivity. On the other hand, if some people are missing out on services and therefore compromising on their health, this could impact the wider economy through their ability to work as well as participate fully in society and fulfil their aspirations (mana āheinga).
- **Distributional impacts** (across different groups and over time): increases to co-payments as a way of rationing services will have an impact on low-income groups and those who already face significant barriers to access under current system settings. For example, the most recent New Zealand Health Survey found that in 2019/20 more than one in five Māori adults had not visited a GP due to cost barriers and around 12.7% of Māori adults had not collected a prescription due to cost.<sup>78</sup>

If cost is already a barrier, increasing co-payments for primary healthcare could lead to further downstream costs as the demand for hospital care increases and through higher rates of long-term illness if people can't access primary care. We already see evidence of this through high rates of hospital admissions for

conditions that would have been treatable in a primary care setting for Māori compared to non-Māori.<sup>79</sup> Māori and Pacific Peoples are also known to face multiple and complex health issues with higher presentations of, for example, obesity and respiratory illness.

If the government decides to stop publicly providing certain services, this is also likely to have the most impact on those who are on low incomes and have lower savings. This could be seen as undermining manaakitanga, an ethic of care, towards those who require support in accessing health services.

A lower health spending track is likely to have intergenerational impacts. For example, future generations may not be able to enjoy the same level of healthcare as previous generations if the government has to start looking at reducing access or increasing co-payments.

- **Other socioeconomic impacts:** interdependencies exist between health and other social determinants. If people aren't getting good access to healthcare, this could have an impact on their ability to sustain housing or remain in employment and therefore their overall subjective wellbeing (mana āheinga). The causal effect also works the other way, where poor housing can lead to poor health, as we have seen through high rates of rheumatic fever amongst Māori and Pacific children and young adults (primarily due to damp and cold housing and overcrowding).<sup>80</sup>

Further, Māori and Pacific Peoples are likely to be a higher proportion of the working-age population in the future, which means it is going to be even more important to consider the wider social determinants that have an impact on their waiora (wellbeing).

Changing the mix of services provided by the public health system could have an impact on social capital. The right to public healthcare is ingrained in our culture and making any significant shifts away from this to improve fiscal sustainability could affect the level of public trust in government.

Overall, the exact impacts will depend on which services are still under public provision and how the costs of these services are distributed. Better targeting public services to those most in need (for example, means testing or progressive co-payments) could help to offset some of the equity impacts described above but would likely involve a higher administrative cost.

78 Ministry of Health (2020) *Annual Update of Key Results 2019/20: New Zealand Health Survey*. See: <https://www.health.govt.nz/publication/annual-update-key-results-2019-20-new-zealand-health-survey>

79 Between 2002 and 2017 Māori children aged 0-4 years had an approximately 20% higher ASH rate than non-Māori children of the same age group. See: <https://www.health.govt.nz/system/files/documents/publications/wai-2575-maori-health-trends-report-04mar2020.pdf>

80 Rheumatic Fever Prevention Programme, Ministry of Health. See: <https://www.health.govt.nz/our-work/diseases-and-conditions/rheumatic-fever>



## 2.4

### Responding to demographic change

New Zealand Superannuation (NZS) expenditure is projected to grow from 5.0% of GDP in 2020/21 to 7.7% of GDP by 2060/61 as a result of demographic change. The NZS Fund smooths this increase but does not fully fund it.

We have modelled the impact of increasing the age of eligibility for NZS from 65 to 67 and increasing NZS payments in line with inflation rather than wages. Both options would generate substantial long-term savings and could have economic benefits; but they would most affect those least able to work in older age and on lower incomes.

Any changes to NZS would benefit from being signalled well in advance to enable those affected to make work, saving, investment and retirement decisions in an informed way.

This section sets out how governments could respond to the impact of demographic change on NZS expenditure. It sets out the key features of New Zealand's retirement income system, and focuses on two illustrative changes governments could consider: changing the age of eligibility or slowing the rate at which NZS payments grow.<sup>81</sup> The section concludes with a summary of an option that changes NZS into a basic income and combines it with a clawback mechanism operating through the tax system.

#### 2.4.1 New Zealand's retirement income system

NZS is available from age 65 to residents who have lived in New Zealand for 10 years since age 20, with five of those years after age 50. The level of NZS is increased every year to account for increases in inflation and wages. The net rate for a couple is currently set at 66% of the net average wage.

The government supports voluntary savings to supplement NZS income via KiwiSaver, which provides retirement income over and above NZS. It is an auto enrolment scheme with an option to opt out, which is intended to support increased saving for retirement. KiwiSaver members make contributions into a scheme of their choosing. Employers contribute an equivalent amount (up to a set level) and the government also makes small annual contributions.

Annual NZS is largely funded from annual general taxation, but a 'tax-smoothing' role is played by the New Zealand Superannuation Fund (NZSF). That means that taxpayers today are contributing more than they otherwise would, which is then invested to fund a proportion of NZS in the future, thereby reducing the need for higher taxes on future taxpayers. Box 6 discusses the NZSF in more detail.

The combination of demographic trends and current policy settings sees projected expenditure on gross NZS rising to 7.7% of GDP in 2060/61 in the historical trends scenario in section 1 of this Statement.

New Zealand spends less as a share of GDP than most OECD countries on public pensions. This is partly because New Zealand's age structure is younger relative to most other OECD countries, but also because NZS aims to provide a basic income, rather than aiming to replace (or smooth) pre-retirement incomes. In addition, many OECD countries make greater use of fiscal incentives to encourage private saving for retirement.

<sup>81</sup> The New Zealand Superannuation and Retirement Income Act 2001 requires the Retirement Commissioner to review retirement income every three years. The Commission for Financial Capability (CFFC), as the Office of the Commissioner, released its latest review in December 2019. The CFFC is now known as Te Ara Ahunga Ora Retirement Commission.

### Box 5: The role of NZS in supporting New Zealanders' wellbeing

The focus of NZS is on social protection rather than earnings replacement. Maintaining standards of living into retirement is left to individuals, who can supplement NZS by continuing to work, relying on family support, or accessing voluntary savings.

Alongside social protection, we can infer two other principles that have guided pension policy in New Zealand. The first is that individuals are generally best placed to make decisions about their own financial wellbeing. The second is that all citizens should derive a 'dividend' from their contributions to New Zealand's society and economy over the course of their lives, regardless of how much or how little market income they may have earned.

New Zealand's implied intergenerational contract assumes that people generally pay the most taxes during their working lives, but less at the beginning and end of life, when they are more likely to receive services and transfers funded by other taxpayers. Implicit in this intergenerational contract is a duty of care towards children/tamariki and elders/kaumātua. This aligns well with the principle of manaakitanga or showing proper care and respect. In the case of elders/kaumātua, this is an acknowledgement of both their mana and the contributions they have already made as well as the contribution they can continue to make in guiding future generations.

Older people are often carers, and often volunteer their time, provide community leadership and facilitate the transmission of culture. This is especially significant for some population groups (e.g. Māori, Pacific and Asian communities). Their ability to do these things is likely closely linked to the income support provided by NZS, and is therefore likely to be affected by changes to it.

### Box 6: The New Zealand Superannuation Fund<sup>82</sup>

The NZSF began investing in September 2003, initially with \$2.4 billion. Since then it has grown to be one of the largest public financial assets, with a 2019/20 closing balance of \$44 billion, or 13.9% of GDP in that year.

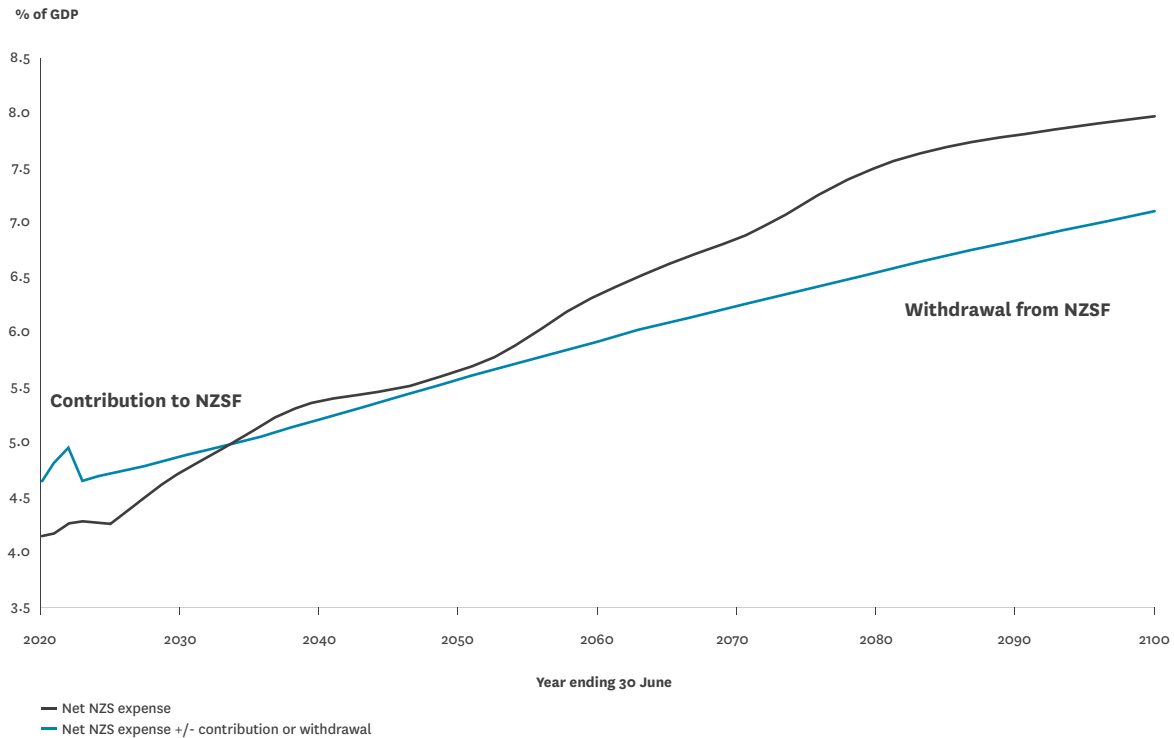
By contributing to the NZSF, taxpayers today are covering more than just current NZS expenses. Once withdrawals from the NZSF begin in future years, that money can be used to help taxpayers at that time cover NZS expenses. Those expenses will be higher than now, not just in dollar terms but also as a percentage of GDP, because of the ageing population. This 'tax-smoothing' role is illustrated in table 12. In 2060 the NZSF will cover 0.4 percentage points of the 6.3% of GDP net cost, the rest being covered by tax revenue. In other words, in that year the NZSF will contribute around 6.6% of total net of tax NZS costs.

The main variables that affect the degree of tax smoothing by the NZSF are the projected paths, over the 40 years, of the Fund's balance and after-tax return rate, nominal GDP, and total net-of-tax NZS expenses. By its own estimates, since its inception, the NZSF has outperformed its reference portfolio return in the majority of years and so added significant extra after-tax earnings to its closing balance.

Although the Fund provides a degree of tax-smoothing, there is no explicit intergenerational link between taxes paid and NZS received.

<sup>82</sup> For more information see the background paper *Golden years – understanding the New Zealand Superannuation Fund*. For background papers, see: <https://www.treasury.govt.nz/publications/strategies-and-plans/long-term-fiscal-position>

**Figure 25:** Net NZS expenses vs net NZS expenses +/- NZSF contributions or withdrawals



Source: LTFM

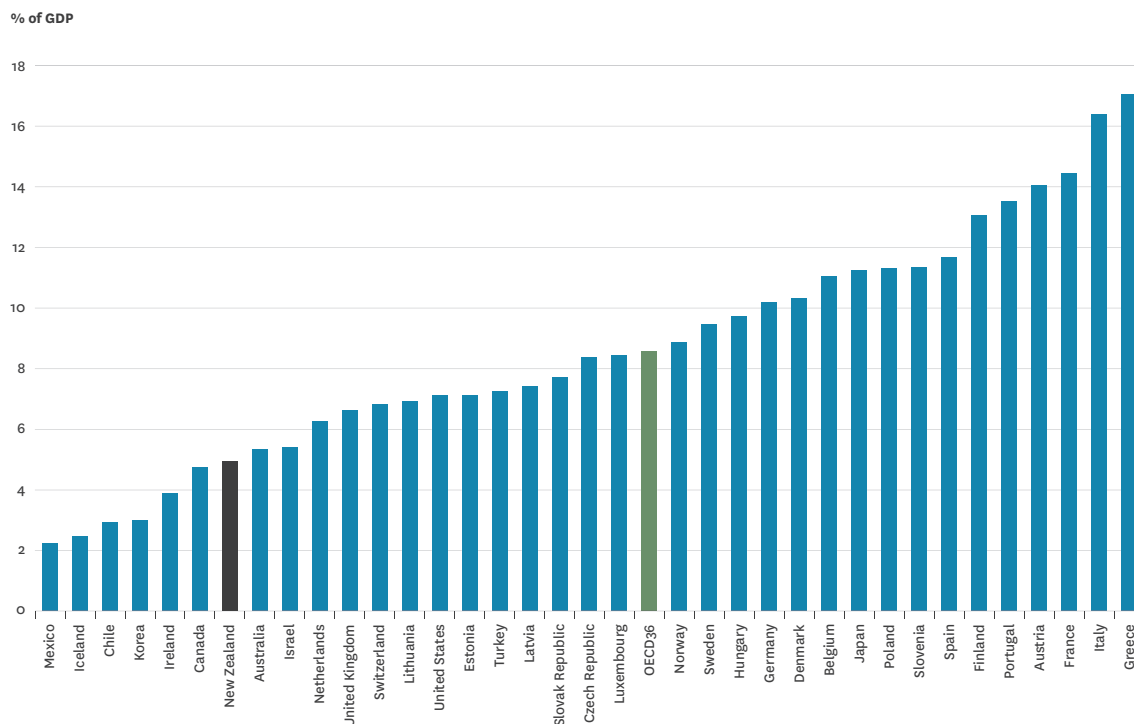
**Table 12:** NZS and NZSF contributions/withdrawals

Year ended June	2010	2020	2040	2060	2080	2100
Net NZS-to-GDP	3.5	4.1	5.4	6.3	7.5	8.0
Net NZS +/- NZSF contribution/ withdrawal (% GDP)	3.7	4.6	5.2	5.9	6.5	7.1
NZSF contribution (+)/withdrawal (-) (% GDP)	0.1	0.5	-0.2	-0.4	-1.0	-0.9
NZSF contribution (+)/withdrawal (-) (as % of total net NZS cost)	3.6	11.1	-3.3	-6.6	-12.7	-10.8
NZSF contribution (+)/withdrawal (-) (as % of rise in net NZS-to-GDP above 2010)	N/A	76.2	-9.6	-15.0	-24.1	-19.4

Note: Additions or subtractions between rows may not match due to rounding. Using 2060 as an example, the figures in the final row are calculated as follows: in 2060 the projected value of net NZS expenditure is \$90.9 billion or 6.3% of GDP. If it were still at the 2010 percentage, which was 3.5%, it would be \$50.8 billion, a difference of around \$40 billion. The withdrawal from the NZSF in 2060 is projected to be \$6.0 billion, which equals 15% of the difference.

The financing role of the Fund begins to take effect from around 2050. The extent of financing is more modest if compared to overall NZS, and larger if compared to the post 2010 increase in NZS. The year 2010 is selected as the reference point because: it is 65 years after the end of World War 2 and the start of when growth in the population aged 65 and over really begins to increase; NZS to GDP was at a relatively low historical level; and the Fund did not start investing until 2004.

**Figure 26: Gross cost of public pensions in 2015**



Source: OECD

The age at which individuals are eligible for retirement benefits differs significantly across the OECD.<sup>83</sup> According to the 2019 OECD assessment, four countries had an eligibility age of 67 (Italy, Iceland, Israel and Norway). The same OECD assessment indicated that the eligibility age would increase from an average of 64.2 to 66.1 in the future, with 15 countries at or above 67 (including Australia). A small number of OECD countries have linked eligibility ages to life expectancy (Denmark, Estonia, Finland, Italy, the Netherlands and Portugal).

A final piece of context to New Zealand's retirement income system is participation in the labour market.<sup>84</sup> Since 2000 labour force participation amongst New Zealanders aged 65 to 69 has risen from 17% to 46% and for those aged 70+ it has risen from 4% to 15%. A number of contributing factors are involved, including: healthy ageing, flexible labour market settings, the removal of a compulsory retirement age; the move towards more knowledge-based and skill intensive rather than physically intensive work; a greater proportion of older people renting; increases in the NZS age of eligibility through the 1990s to 2001; and the absence of means testing.

## 2.4.2 Raising the age of eligibility for NZS

This section examines the impact of raising the age of eligibility for NZS from 65 to 67 by 2030. In this scenario, the increase commences from 2025/26, the first year of the projection period. The change is phased in over the four years up to 2028/29, with the age increasing by six months every year.

Because this scenario involves a transition to a single new age of eligibility, the fiscal cost eventually settles on a path parallel to and below the current NZS projection (see figure 27). Overall, lifting the age of eligibility to 67 reduces future expected costs by around 0.7%<sup>85</sup> of GDP once fully in place, but as a 'level shift' does not change the fact that NZS expenditures would grow as a share of GDP in the long term.

This option would have a range of impacts and trade-offs, including:

- **Macroeconomic impacts:** individuals could respond by working for longer, living more frugally, relying more on family support before they access NZS, increasing their savings at younger ages so they can continue to retire at 65, or some combination of these changes. The impacts on saving are difficult to quantify

83 OECD (2019) *Pensions at a Glance 2019: OECD and G20 Indicators*. OECD Publishing. See: [https://www.oecd-ilibrary.org/social-issues-migration-health/pensions-at-a-glance-2019\\_b6d3dcfc-en;jsessionid=30uX\\_-OZpgGeDBpTGbQbo49L.ip-10-240-5-159](https://www.oecd-ilibrary.org/social-issues-migration-health/pensions-at-a-glance-2019_b6d3dcfc-en;jsessionid=30uX_-OZpgGeDBpTGbQbo49L.ip-10-240-5-159)

84 More detail on labour force participation rates in New Zealand and other countries is set out in the background paper *The economic impacts of an ageing population in New Zealand*. For background papers, see: <https://www.treasury.govt.nz/publications/strategies-and-plans/long-term-fiscal-position>

85 Note this does not reflect any flow-on costs to welfare assistance (for example, more people between the ages of 65 and 67 seeking a working-age benefit if they are unable to work past 65).

as they require assumptions about how different people will respond. Previous estimates indicated that lifting the age of eligibility from 65 to 67 could yield between 8% and 38% of GDP improvement in cumulative national savings by 2061 depending on how governments use the fiscal benefit.<sup>86</sup> That could increase the accumulation of physical capital and economic growth in the long term.

Lifting the age of eligibility encourages higher levels of labour force participation among older people and therefore will have an impact on the stock of human capital over time. All else being equal, more people working for longer would increase New Zealand's level of GDP, and in many cases improve people's own health and wellbeing.

- **Distributional impacts:** many people may prefer to retire earlier than 67. There are also individuals for whom NZS represents a higher income than they can earn during their working lives. The adjustment will have a greater impact on individuals or groups who have limited opportunities to work in later stages of their lives, especially those in physically demanding jobs who are unable to find other work.

Increasing the NZS age of eligibility also has implications for ethnic groups such as Māori and Pacific Peoples who have lower life expectancies relative to the rest of the population. The difference in life expectancy rates can have distributional impacts if, for example, the growth in life expectancy for Māori is lower than that of non-Māori by 2030 (which is when changes to the age of eligibility will take effect under this scenario). People with shorter life expectancies will receive less over their lifetimes, even though they may earlier have paid broadly similar net taxes and contributed to their elders' pensions. Figure 28 shows that, although the life expectancies of Māori and Pacific Peoples are converging with the rest of the population, the gap is not expected to close in the next few decades.<sup>87</sup>

NZS entitlements for the generations affected by the change will reduce relative to the status quo. Under this scenario, those presently approaching middle age will face the largest reductions in the length of time they can expect to receive NZS after reaching the eligibility age.

While this is also true of younger generations, Treasury analysis in 2014 found that increases in life expectancy would mean that average 20- and 40-year-olds could still expect to receive NZS for a longer time than those aged 65 years in 2013 in this scenario.<sup>88</sup> Average years in receipt of NZS will increase further over time unless the age is adjusted for increasing life expectancy on an ongoing basis.

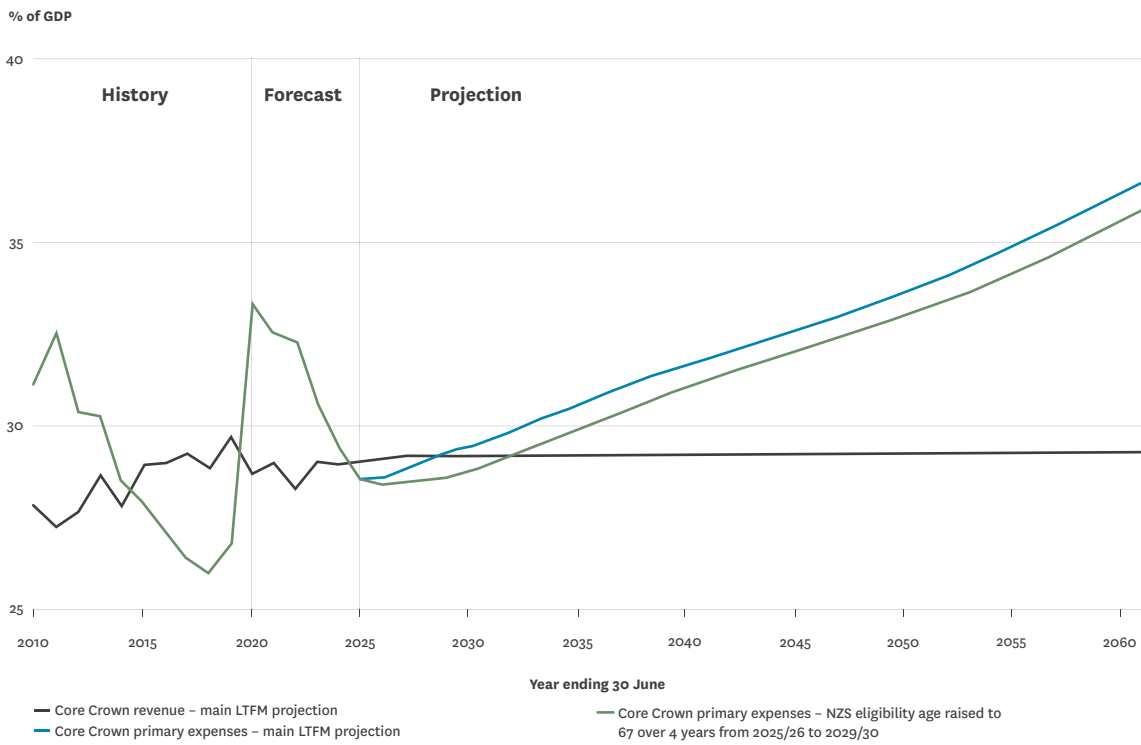
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86 See: Law, D (2013) *Retirement income policy and national savings. Working Paper 13/28*. New Zealand Treasury. The estimates cover the impact on the flow of national saving and the stock of national savings. The estimates include the effects of the policy on household saving and government saving. Under certain assumptions, improvements in national savings would translate one-for-one to improvements in national savings investment position (NIIP). However, a detailed examination of how the options might affect the NIIP are outside the scope of this paper.

87 Stats NZ. Note that life expectancy for Māori during 1980-1997 is the adjusted figures in Ajwani et al (2003) *Decades of Disparity: Ethnic mortality trends in New Zealand 1980-1999*. Ministry of Health and University of Otago. This adjustment is required because Māori mortality was undercounted during this period.

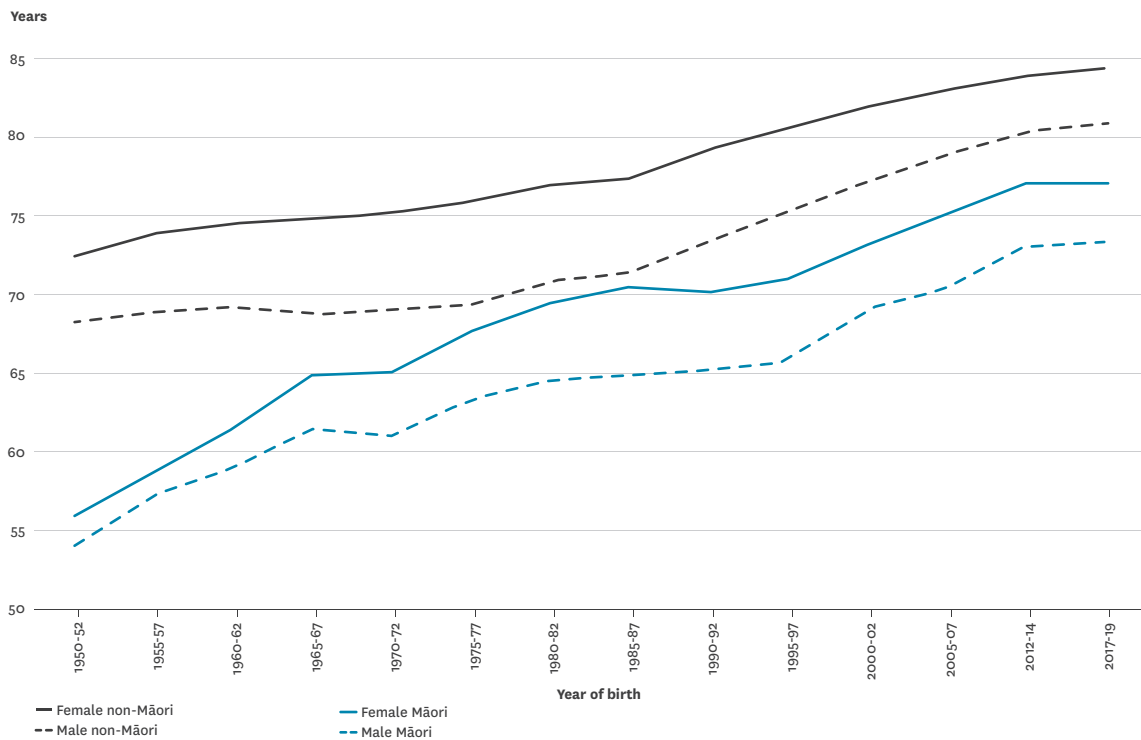
88 A summary, prepared in June 2014, was released in July 2017. The policy recommendations reached in 2014 are not indicative of the current Statement.

**Figure 27: Impact of increasing the age of eligibility for NZS from 65 to 67**



Source: LTFM

**Figure 28: Life expectancy at birth, by gender, Māori and non-Māori**



Source: Stats NZ

### 2.4.3 Reducing the rate at which NZS payments grow

This section examines the impact of linking the rate at which NZS payments grow to inflation only rather than wages from 2025/26 onwards. While NZS would maintain its purchasing power, as a proportion of wages it is falling, and would fall below 50% of the average net wage in the 2050s.

This change would significantly reduce the future growth of NZS expenditure and the primary deficit, which would grow only slowly and peak in the 2030s before remaining relatively stable, and would be 2.3% of GDP lower than the baseline projection.

This option would have a range of impacts and trade-offs, including:

- **Macroeconomic impacts:** changing the indexation of payments could encourage people to save more in order to maintain their desired standard of living in retirement. It could also encourage people to keep working for longer. However, evidence on both these points is limited.

Compared to the lifting the age option, indexing NZS by price inflation is more likely to encourage an increase in saving among working-age people. This is because people are more likely to think that they can work for a few more years to fill the shortfall caused by a delay in their access to NZS than they are to think that they can work or rely on their families for the whole of their retirement to fill the shortfall created by the lower real value of NZS.

Indexing NZS by the average of wage inflation and price inflation was estimated to yield between 30% and 87% of GDP improvement in cumulative national savings by 2061 depending on how governments use the fiscal benefit.<sup>89</sup> We would expect full price indexation to have an even larger impact. That could increase the accumulation of financial/physical capital and economic growth in the long term.

This option would reduce NZS entitlements more than the age option (discussed above) and would also expose individuals to greater longevity risk by reducing their NZS entitlements through to the end of life. This option is therefore likely to have an even stronger impact on labour force participation (and therefore the stock of human capital) than lifting the age of eligibility for NZS.

- **Distributional impacts:** the largest impacts will fall in the short to medium term and on those who are currently close to, or already in, retirement, since they will have less opportunity to work or save to manage the impact on their standard of living. This will include women, who have longer life expectancy but lower savings due in part to being more likely to work part time for extended periods of their career. Unless people respond to the change by voluntarily building up more savings for their own retirement, this approach would be likely to undermine the effectiveness of the present system at preventing poverty in old age and enabling older New Zealanders to share in increases in national income which their labour and investment have helped to create.

Changing patterns of home ownership are likely to add to concerns around old age poverty as we see an increase in the number of people not owning their own home. Given this, more people are likely to find NZS insufficient to live on if they are renting. This will disproportionately impact those on low incomes throughout their working life. Stats NZ data shows that between 1986 and 2013 the proportion of Māori and Pacific Peoples living in owner-occupied housing fell at a faster rate than the overall population (down 20% and 34.8%, respectively).<sup>90</sup>

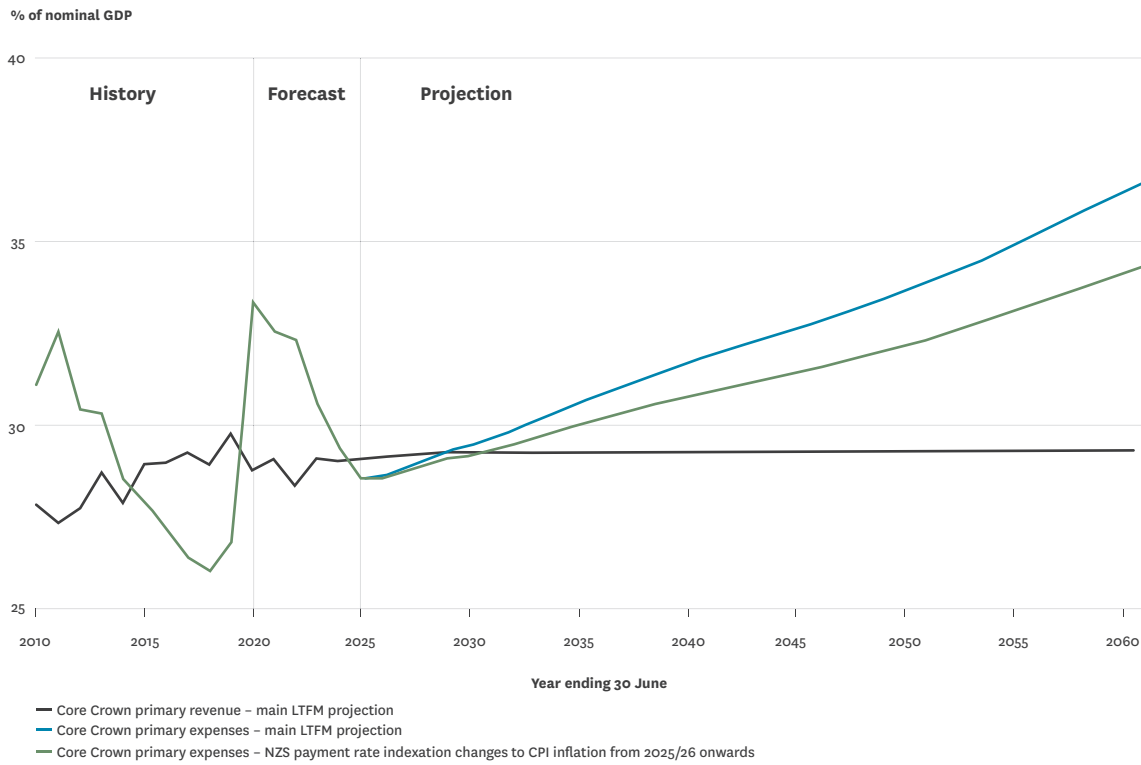
Previous analysis of price indexing NZS has been carried out in the context of policy settings where main benefits in the income support system were at rates generally below NZS and where they were price indexed. Increases in main benefits and the introduction of wage indexation (since 1 April 2020) change the context of the NZS price indexation option. Although price indexation would maintain purchasing power, if it is maintained over the entire projection period then NZS rates will fall relative to benefits. Currently, rates of main benefits are generally lower than NZS rates.<sup>91</sup> There may also be flow-on impacts to supplementary assistance (such as the Accommodation Supplement) if NZS payments are insufficient to meet costs of living.

<sup>89</sup> Law (2013) does not model a price-only indexation option.

<sup>90</sup> Stats NZ (2016) *Changes in home-ownership patterns 1986–2013: Focus on Māori and Pacific people*. See: [www.stats.govt.nz](http://www.stats.govt.nz)

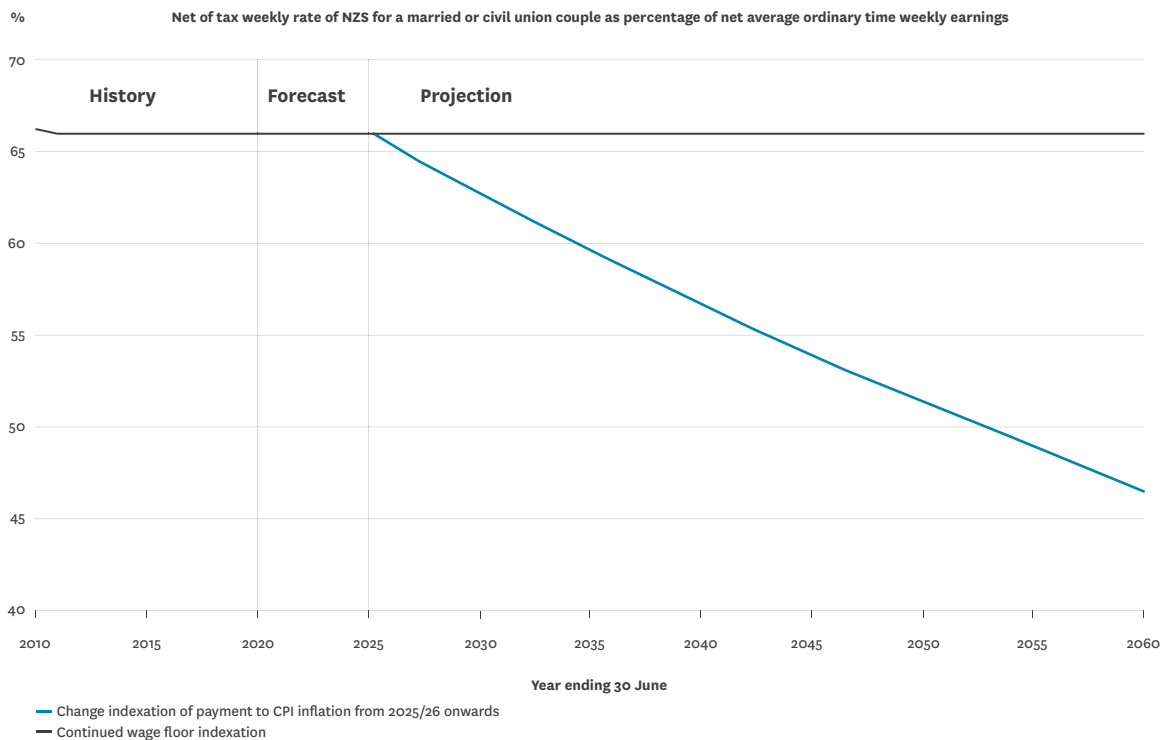
<sup>91</sup> An exception is the rate of Supported Living Payment for sole parents, which is approximately equal to or higher than NZS rates.

**Figure 29: Impact of indexing NZS payments to inflation rather than wages**



Source: LTFM

**Figure 30: Impact of indexing NZS payments to inflation rather than wages – NZS as a % of average earnings**



Source: LTFM



Overall, a comprehensive assessment of the options would require more analysis around distributional impacts and the support role to be played by the income support system.

For example, in 1992, the age of eligibility for NZS was increased from 60 to 61, with a further phased increase to 65 during the period 1993 to 2001. A Transitional Retirement Benefit (TRB) was payable to the people who were most financially affected by the increase in the age of eligibility. It was intended to smooth the impact of the increase, and was phased out by 2004.

People with different retirement circumstances, however those circumstances come about, will have different needs. Some of these needs are met through policies on health, accommodation and welfare benefits, or are left to individuals to address.

The 2019 Commission for Financial Capability (CFFC) review, together with the background paper by St John and Dale (2019) covers some of the changing context around retirement incomes and the pros and cons of the two options modelled in this chapter.<sup>92</sup> That changed context includes the effects of the Global Financial Crisis, changes in the labour market and the nature of work, the rising cost of housing, and more recently the effects of COVID-19. In addition, there have been changes in New Zealand's wealth distribution that have demographic aspects. These are outlined in Box 7.

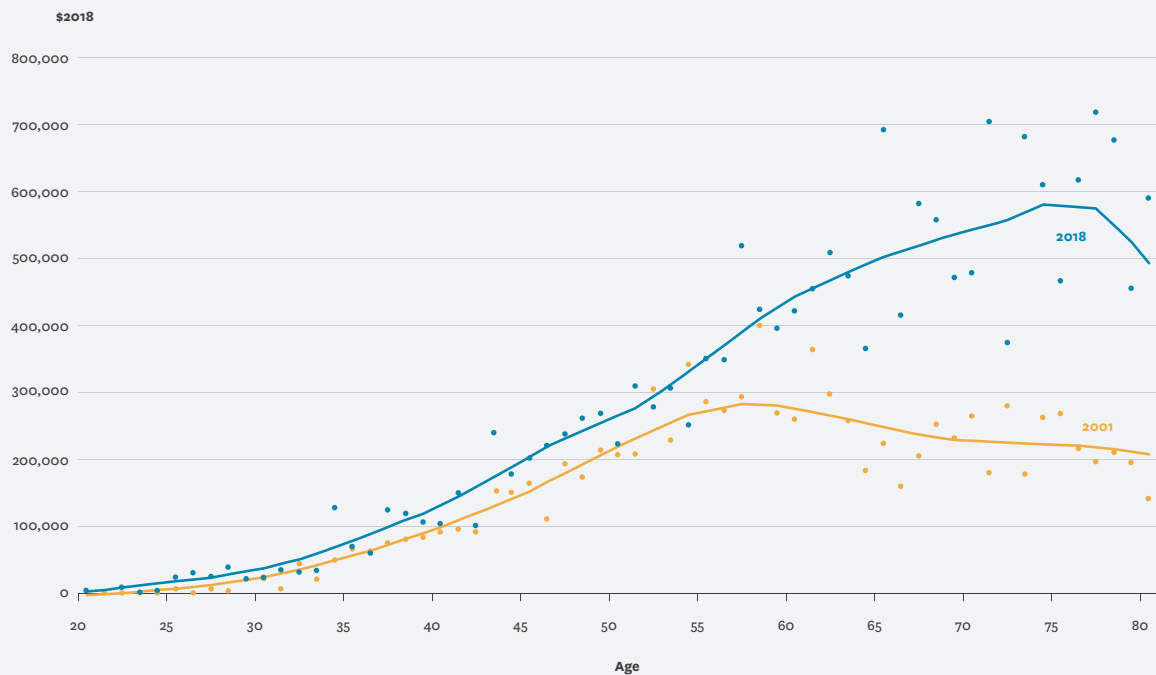
### Box 7: The changing wealth distribution, housing wealth, and inequality

Wealth distribution has been changing over the last two decades. Important aspects of wealth include how it is distributed by age, as people generally accumulate wealth over their working life, and home ownership, as housing is a major component of wealth in New Zealand.

Figure 31 indicates that between 2001 and 2018, total wealth increased, and that older people gained relatively more than younger people. In particular, the number of people aged 65 and

older in the top wealth quintile has increased from around 30% to about 50%. This will have had multiple causes, including changing aspects of the housing market over time (including house prices and interest rates) and capital gains accruing to certain cohorts more than others. Changes in the labour market may have also played a role. For example, the increase in the retirement age from 60 to 65 has been associated with a subsequent increase in the labour participation rates of older people.

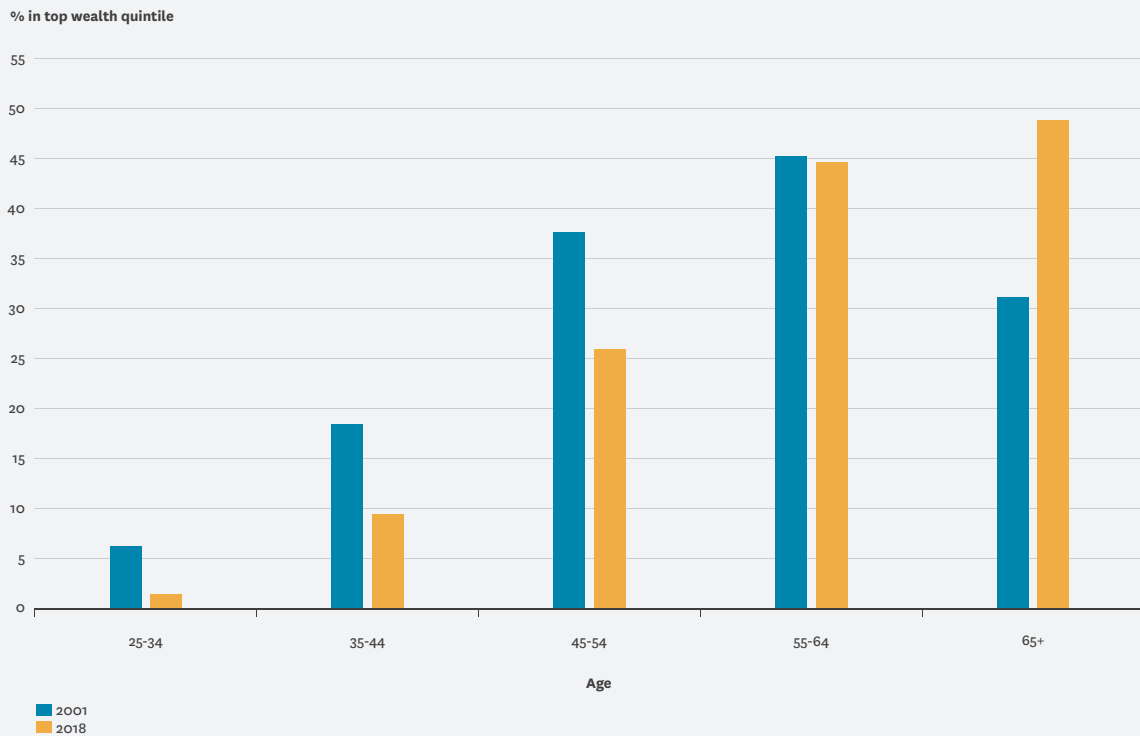
**Figure 31: Median wealth by age in 2001 and 2018**



Source: Household Savings Survey 2001, Household Economic Survey 2014/2015 and 2017/2018  
Note: Solid lines are smooth fits to the points.

92 For more detail on the income trends for older New Zealanders see Section I in: Perry, B (2019) *Household Incomes in New Zealand: Trends in indicators of inequality and hardship 1982 to 2018*. Ministry of Social Development. See: <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/household-incomes/household-incomes-1982-to-2018.html>

**Figure 32:** Percentage of people in the top wealth quintile by age in 2001 and 2018



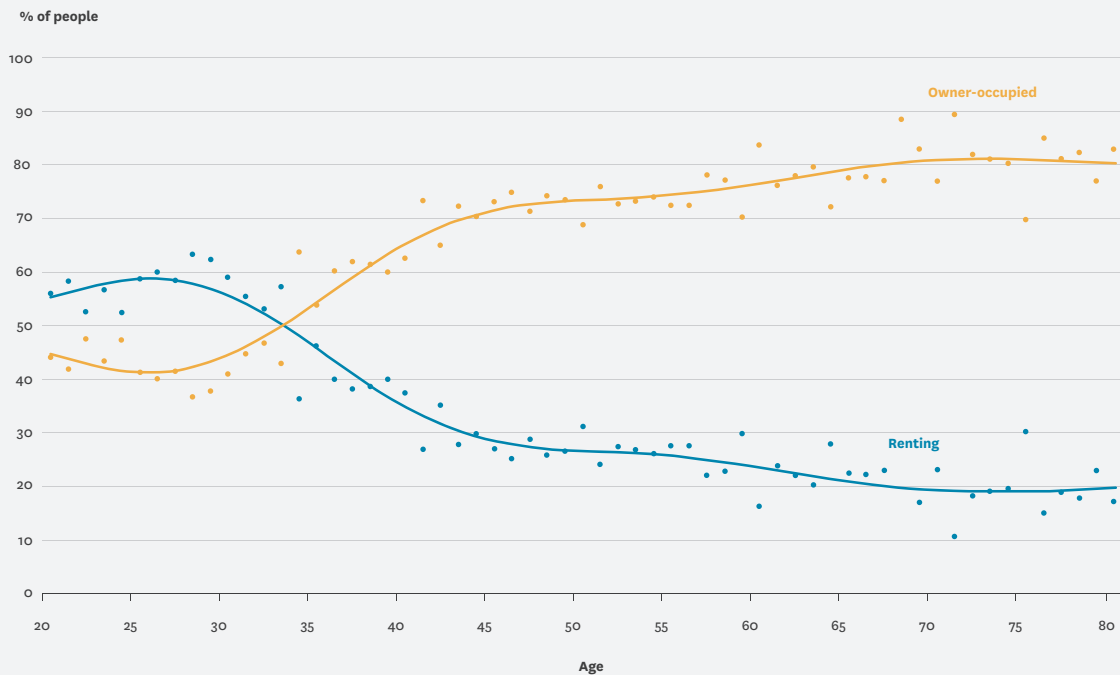
Source: Household Savings Survey 2001, Household Economic Survey 2014/2015 and 2017/2018

In the most recent wealth data, housing wealth is the main component of wealth for most households, although there are also many households with very low wealth (predominantly renters). The very wealthiest households own much of the country's financial assets, which are also the main component of their wealth.

People generally accumulate wealth over their working life, including moving into home ownership. Younger people are more likely to be renters and in the bottom half of the household wealth distribution, while older people are more likely to be home-owners and in the top 50% of households.

All else being equal, house price increases are expected to have a small net impact on average wealth inequality as measured by the Gini coefficient. This is because the resulting narrowing of inequality within home-owners (the majority) hides a widening inequality between home-owners and renters. This may exacerbate existing inequalities in wellbeing, with renters more likely to have high housing costs and more likely to be living in material hardship. The age distribution of home ownership also means that older people will generally benefit more than younger people from house price increases.

**Figure 33:** Percentage of people in renting households and owner-occupied households by age.



Source: Household Economic Survey 2017/2018  
 Note: Solid lines are smooth fits to the points.

### 2.4.4 Other options to reform NZS

There are a number of other options to manage growth in NZS expenditure including changing eligibility requirements for permanent residents, instituting mandatory private savings, and means testing NZS payments.

We have not considered these options in this section. However, we have summarised an option that effectively targets public provision to those who might need it the most. St John and Dale (2019) suggest a tax-based clawback system.<sup>93</sup> While they provide a detailed assessment of the proposal and its impacts, the key features are to:

- Apply a ‘basic income’ approach to NZS so that it is paid as a non-taxable grant regardless of other gross income from work or investments. NZS becomes the New Zealand Superannuation Grant (NZSG), and
- Subject other gross income earned by pensioners to an alternative tax regime that has higher than usual tax rates.

From 1985 to 1998 New Zealand operated a surcharge on superannuitants’ other income. Although this approach was complex, the fiscal cost of abolishing the surcharge in 1998 was estimated to be 10% of the net cost of NZS.

In a basic income approach, each person receives a universal grant that is not part of taxable income. When additional income is earned, it is taxed under a progressive tax regime so that the tax system provides a claw back of the universal grant for those on higher incomes.

The objective of the NZSG approach is to retain the simplicity and universality of NZS while offsetting some of the expenditure at the higher income part of the distribution via additional revenue. This seeks to balance intergenerational concerns and to reduce income inequality within the retired population.

A break-even point exists where the NZSG, plus extra income from work or investment, net of the new tax regime, is equal to the disposable income of an ordinary taxpayer paying the usual rates of income tax. This point is effectively where the gain from the NZSG has been effectively clawed back, or offset, by the additional tax.

The fiscal savings from the NZSG approach depend on any decisions to align NZS rates and on the tax rates chosen. A total of 12 combinations – four NZS net rate options and three different tax regimes – have been modelled by the Treasury on the basis of no behavioural responses. Because most NZS recipients rely primarily on NZS income, with

93 St John, S & Dale, C. (2019) *Intergenerational Impacts: The sustainability of New Zealand Superannuation*, commissioned report for the 2019 Review of Retirement Income Policies; and Retirement Policy and Research Centre (2021) *New Zealand Superannuation as a basic income 2021*. RPRC Pension Briefing 2021-2.

relatively low amounts of income from other sources, St John and Dale include tiered tax regimes to provide relief to those on lower incomes. The three alternative tax regimes are:

- **Tax Scenario 1:** 39% flat tax rate on all non-NZS taxable income;
- **Tax Scenario 2:** 17.5% on the first \$15,000 of non-NZS taxable income and then 43% on non-NZS taxable income above \$15,000 per year; and
- **Tax Scenario 3:** 20% on the first \$20,000 of non-NZS taxable income and then 45% on non-NZS taxable income above \$20,000 per year.

The break-even points associated with the three tax regimes are around \$112,000, \$122,000 and \$140,000 of non-NZS income respectively.

The costings are relative to net NZS in 2022. They assume an immediate adjustment to the assumed net NZS option. In practice, any alignment of NZS rates would likely be phased in over time and the savings would increase more gradually. As the number of New Zealanders over age 65 increases, some will continue in work and others will have

accumulated financial assets, so the clawback revenue will likely increase over time. This will be reinforced if the tax thresholds for the NZSG tax regime are not adjusted for inflation. Finally, the costings do not capture tax on Portfolio Investment Entity (PIE) income as it is not included in the Household Economic Survey data.

The scenario of aligning the single living alone and single sharing rate to the married NZS rate achieves the most saving in all three tax regimes (24%, 17% and 17% respectively). Around eight percentage points of this saving is due to the alignment of the NZS rates under each tax regime.

If the net NZS rates are not changed, savings of between 14% and 9% of net NZS are possible, under the three tax regimes. These are comparable to fiscal savings achieved by the surcharge as it operated at the end of the 1990s. There are losses in annual disposable income relative to current settings, although losses for people with small amounts of additional income are lower in the two-tiered tax approach of tax regimes two and three.

# 2.5

## Raising tax revenue

Our long-term projections assume tax will remain constant as a share of GDP. However, future governments could choose to raise additional revenue to manage long-term fiscal pressures.

Raising additional revenue has economic costs, as it affects decisions to work, save, and invest in the economy or ourselves. The net impact on our wellbeing as a country depends on how additional revenue is spent, and who ends up paying the higher taxes. We have illustrated these trade-offs by modelling options to raise income tax revenue.

There are many ways in which governments could seek to raise additional revenue from existing and new tax bases. All involve trade-offs, and there is no ‘perfect’ way to raise revenue, although some could come with smaller economic and social costs than others.

This section sets out how governments could seek to raise more revenue to respond to long-term fiscal pressures. It sets out the current state of New Zealand’s tax system, presents two illustrative options to raise more income tax revenue (through rate increases or so-called ‘fiscal drag’) and a summary of further options that could be available.

The options we present in this section are illustrative. None of the options are enough on their own to fully address the fiscal challenges explored in earlier chapters.

For example, Chapter 1.3 explored increasing revenue by up to 8% of GDP to accommodate fiscal pressures. It may not be desirable or even feasible to raise this much revenue within our current tax structure. Instead, tax changes of this size may require a more fundamental review of the structure and integrity of the tax system as a whole.

Instead this section focuses on smaller changes to illustrate the choices and trade-offs in raising revenue.

### 2.5.1 The role of tax in supporting New Zealand’s wellbeing

A well-functioning tax system supports the collective wellbeing of New Zealanders. The whakataukī “nāu te rourou, nāku te rourou, ka ora ai te iwi; with your food basket and my food basket the people will thrive” encapsulates this. Tax provides a source of revenue through which we as a country collectively provide services for one another and redistribute resources in a way that enhances our wellbeing.

How taxes are spent is as important for our collective wellbeing as the system that raises them – the net impact on living standards involves consideration of both the costs of taxation and the benefits of expenditure.

However, this section will focus on our understanding of the narrower question of how we raise revenue and the impact of taxation in isolation.

## Box 8: How raising additional revenue affects New Zealand's wellbeing

By their nature, taxes reduce individuals' or businesses' income. They will affect different communities and generations differently, and different tax levers will have different effects across levels of income and wealth, demographic groups, and generations. These direct effects are important in and of themselves, but their distribution and broader impact are critical to understanding how they affect our collective wellbeing as a country.

The LSF and He Ara Waiora are two ways in which we can develop that understanding. Some of the key insights they offer when considering potential ways to raise revenue are:

- Higher taxes could reduce individuals' and businesses' ability or incentives to work, save, or invest in businesses, the economy, themselves, or their whānau, which could reduce financial and human capital. Tax changes could affect manaakitanga for Māori enterprise to the extent it affects their relationship to, and decisions on the basis of, the tax system.
- Ensuring tax changes are considered 'fair' by taxpayers and wider society is important to maintain social capital and reflects the concepts of tika and pono. This includes ensuring that we

consider how options affect different groups and generations, how options can result in unintended outcomes or avoidance that undermine trust, and whether options have particular impacts on Māori and the Crown-Māori partnership.

- Some taxes have broader objectives than raising revenue. Environmental taxes are a good example, where their primary purpose is to protect the environment and others from activity with large social costs, in doing so protecting the wellbeing of the natural environment (taiao), and therefore supporting the tiakitanga of our environment and maintaining natural capital.

These insights will often expose trade-offs; for example taxes that achieve more redistribution may come with larger economic costs.

This is not an exhaustive list of the impacts that decisions to increase or introduce new taxes can have on our wellbeing. Particularly from a te ao Māori perspective, there are various additional principles to consider, such as whanaungatanga, which may be relevant for some options but not others; and the impact of the tax and transfer system as a whole on manaakitanga and its different dimensions of fairness.

### 2.5.2 New Zealand's tax system

New Zealand raises taxes primarily from personal income taxes, GST, and corporate income taxes, which collectively account for nearly 90% of core Crown tax revenue and around 83% of core Crown total revenue.

Our long-term projections assume that core Crown revenue will remain at between 29% and 30% of GDP, but since 1970 that ratio has fluctuated between 25% and 35%. That can reflect the economic cycle, but also changes in governments' preferences on how much to tax. Our current tax-to-GDP ratio is below the OECD average (figure 34), but New Zealand depends more than most OECD countries on a relatively narrow range of taxes on income and

consumption – around 90% compared to an OECD average of around 70%. Provided that current taxes are considered fair and efficient, a relatively narrow range of efficient taxes could be the best choice for New Zealand.

There are other factors that could mean that the government collects a different amount of tax than we expect in the future. Many of those risks are on the downside, and reflect the fact that as the New Zealand and international economy changes, tax bases will change. This could mean that tax-to-GDP would be lower than our projections, requiring additional action to maintain fiscal sustainability. Box 9 explores some of those trends.

## Box 9: Economic trends affecting long-term revenue sustainability

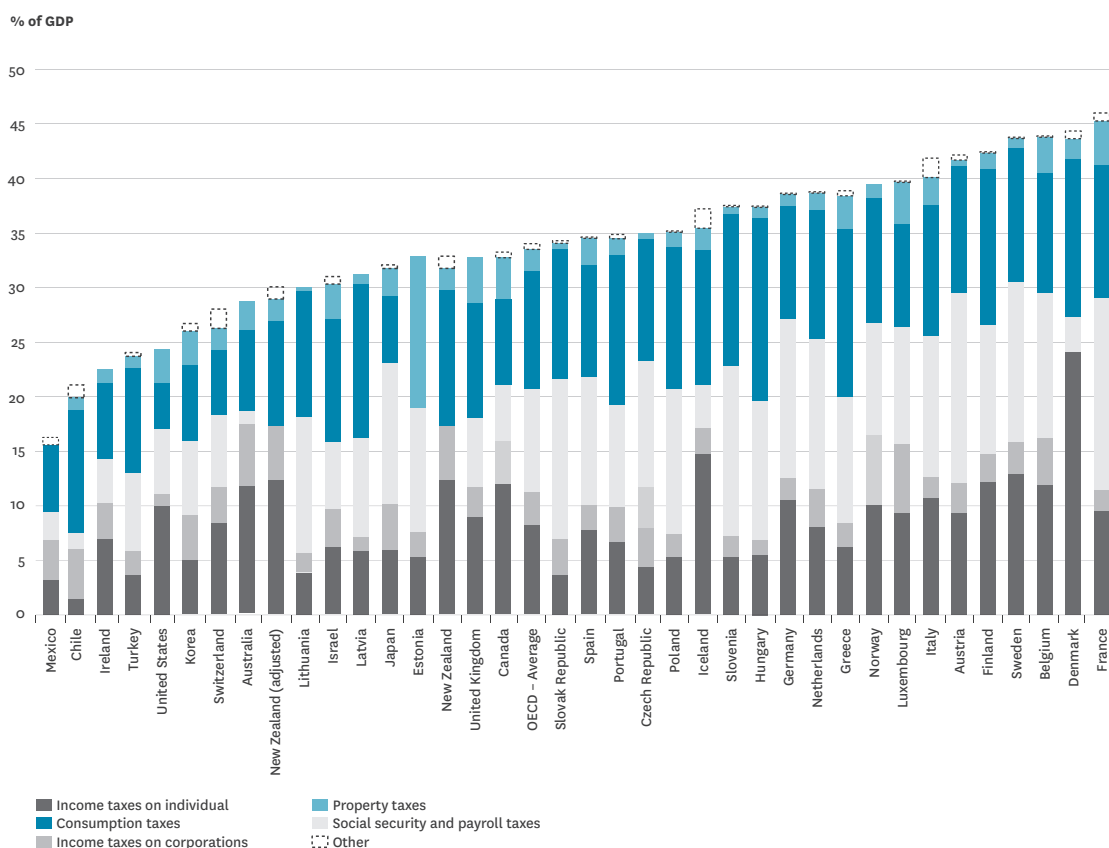
Economic trends may change either the size of the tax bases we tax, or the effective tax rate we are able to apply to them, which could mean that tax-to-GDP does not stay constant over time. Those include:

- Behavioural or technological changes: revenue from so-called 'corrective taxes', such as on smoking and environmental harm may fall over time as a share of GDP as a result of behavioural and technological changes (such as lower smoking rates or reduced environmental harm).
- Globalisation: globalisation has increased the mobility of capital and highly-skilled labour, such that both are responsive to tax (and other) differences between

countries. Whether this is positive or negative for tax sustainability depends on whether it leads to a net inflow or outflow to these tax bases, and the extent to which tax is such a determining factor that it leads to significant international tax competition (and therefore makes sustaining current tax rates difficult).

- Changing nature of work: possible trends towards self-employment and incorporation could create additional compliance pressures for Inland Revenue Department (IRD). In the longer term, a trend towards greater automation could lead to a shift in the relative size of tax bases (e.g. a larger capital share in income), which could affect tax revenues if they are taxed at different rates.

Figure 34: Tax as a share of GDP in OECD countries in 2018<sup>94,95</sup>



Source: OECD

94 'Property taxes' include local government rates as per OECD definitions.

95 New Zealand's tax-to-GDP ratio looks artificially high relative to its international peers using the OECD's standard methodology as, unlike other OECD countries, GST is charged on public services in New Zealand. GST on public services does not generate additional net revenue but does increase measured GST receipts. The 'New Zealand (adjusted)' entry adjusts for this.

If Governments want to raise additional revenue, they could look to:

- increase revenue from the existing tax system, for example by increasing tax rates, or
- broaden the tax base to which the system applies, or
- introduce new kinds of taxes.

### 2.5.3 Options to raise additional revenue from income tax

We have modelled two illustrative policy scenarios set out below to show the impact of raising additional revenue from personal income tax, the largest source of government revenue. Those scenarios are:

- an increase in all personal income tax (PIT) rates by one percentage point, and

- ten years of 'fiscal drag', where income tax thresholds are kept at their nominal value rather than rising with wages as assumed in the baseline projections, which means that more taxpayers and taxable income would be taxed in higher tax brackets over time.

Table 13 summarises the impact of these scenarios on the tax schedule.

Raising personal income tax rates by one percentage point (while thresholds rise with wage growth) would raise around 0.6% of GDP each year, while 10 years of fiscal drag would build up every year it operates and raise around 1.0% of GDP in steady state, before accounting for any behavioural or economic impacts.

Figure 36 shows the impact of the two options on the average tax rate individuals would pay by 2035.

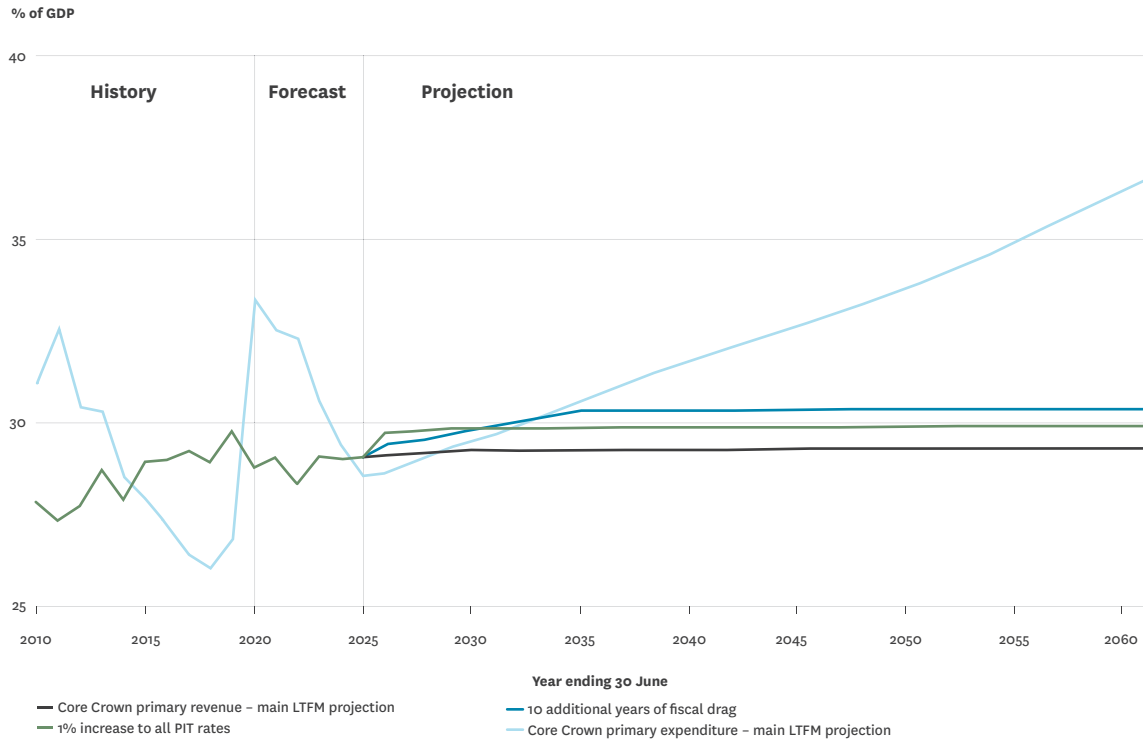
**Table 13:** Personal income tax rates and thresholds by 2035<sup>96</sup>

Current rates and thresholds		Scenario A – increase all rates by 1% in 2025		Scenario B – 10 years of “fiscal drag”	
Thresholds	Rates	Thresholds	Rates	Thresholds	Rates
\$0 - \$14,000	10.5%	Thresholds increase in line with average wages each year from 2025 onwards	11.5%	Thresholds remain at the same nominal value as 2025 while wages grow	10.5%
\$14,000 - \$48,000	17.5%		18.5%		17.5%
\$48,000 - \$70,000	30%		31%		30%
\$70,000 - \$180,000	33%		34%		33%
Over \$180,000	39%		40%		39%

96 The assumptions we make in our historical trends scenario imply that wages will grow by approximately 35% between 2025 and 2035.



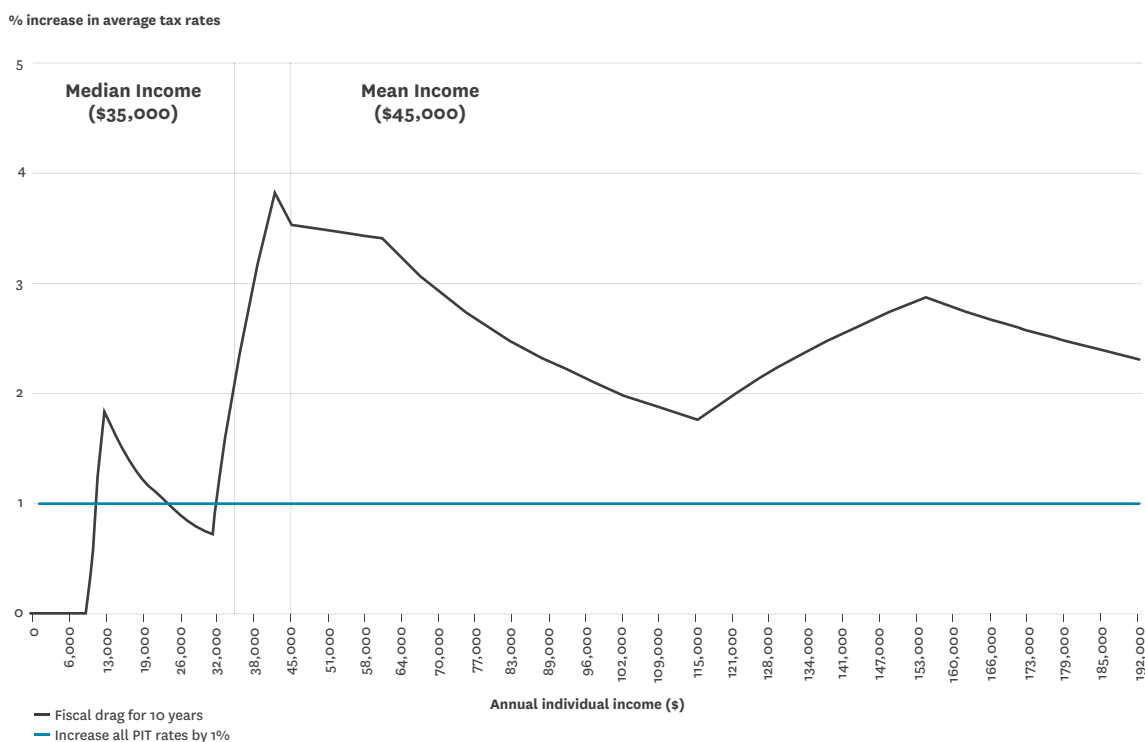
**Figure 35: Tax, primary revenue, and primary expenditure under tax option scenarios<sup>97</sup>**



Source: LTFM

<sup>97</sup> Tax changes may also lead to a modest reduction in expenditure growth in the long term. This is because NZS and main benefit payments are indexed to after-tax average ordinary time weekly earnings, which may grow more slowly in the presence of fiscal drag.

**Figure 36: Impact of policy on average tax rates by 2035 (in 2020 incomes)<sup>98</sup>**



Source: Treasury analysis. Average incomes are from Stats NZ

Note: This distributional analysis focuses on the additional tax individuals would legally have to pay. It does not incorporate the costs tax creates through distorting behaviour.<sup>99</sup>

These options would have a range of impacts and trade-offs, including:

- **Macroeconomic impacts:** both options would reduce incentives for individuals to work, save, and invest compared to no change in tax rates by reducing the post-tax return to those activities. Setting aside the larger scale of fiscal drag, a rate change could be more likely to reduce marginal incentives to save as most saving is undertaken by higher-income individuals, while fiscal drag will have a larger relative impact on incentives to work at the middle of the income distribution where individuals move into higher tax brackets. However, the introduction of the 39% rate means that fiscal drag will have a larger impact at higher incomes than it otherwise would have.
- **Distributional impacts:** An increase in the income tax rate has a proportional impact on average tax rates paid across the income distribution, while fiscal drag's impact varies with the largest impact on those whose income is closest to tax thresholds already. At the

moment, that means its largest impact is likely to be on those earning slightly above the median wage (figure 36), although taxpayers who cross the \$14,000 threshold by 2035 would see an increase in taxes.

This distributional impact means that the options have different impacts across demographic groups. Because the impact of fiscal drag is currently largest at the middle and upper-middle of the income distribution, it may have a proportionally smaller impact on those groups, including Māori, Pacific Peoples, and women, with lower average incomes (figure 37).<sup>100</sup>

- **Distributional impacts across time:** most income tax is paid by people of working age. To the extent that higher taxes are financing increased expenditure on ageing, this could be seen as a transfer from working-age individuals to government services provided mainly to older generations – however, this calculation is relatively complex.

98 We have calculated the impact of fiscal drag by comparing the tax paid under current thresholds with thresholds updated in line with assumed wage growth in the baseline projections. We have calculated how this would impact someone with a given income in 2020 by assuming that their income increases in line with the average in those projections. This approach is illustrative and does not incorporate a number of important factors such as potential differences in income growth across the population or the interaction of the tax and welfare system.

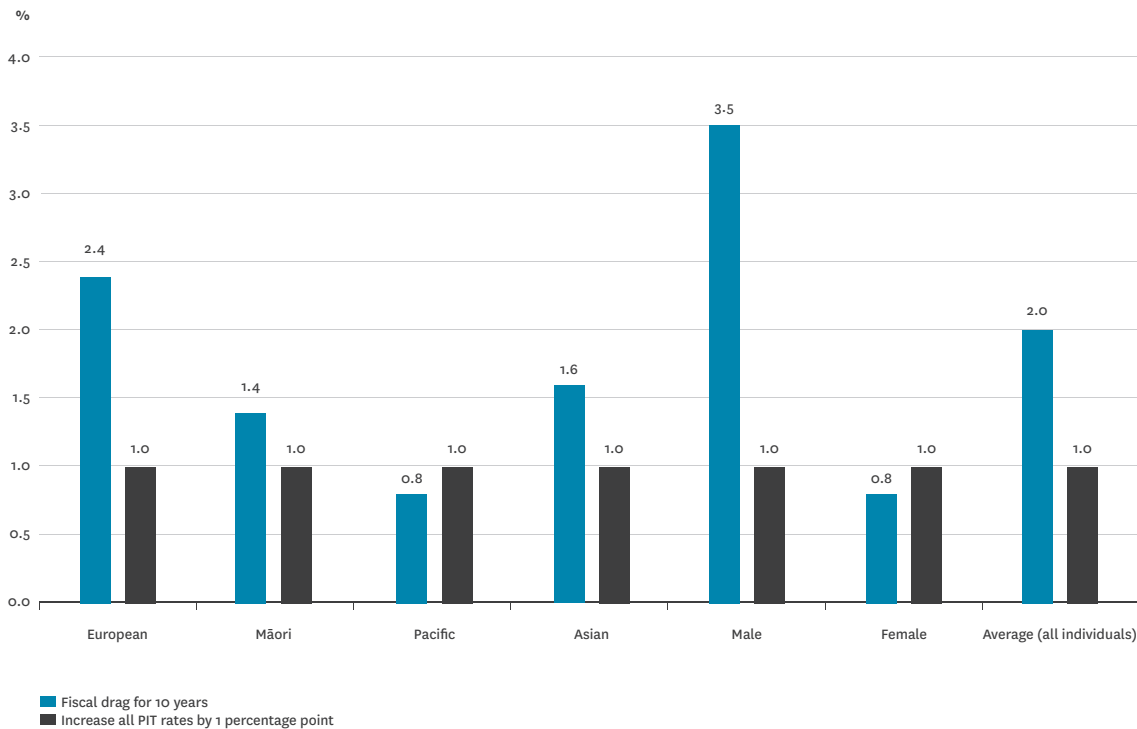
99 However, for these changes, we expect the economic incidence of the tax will mostly fall on the individuals legally paying the tax. This is because broad-based personal tax increases are predominantly taxes on labour and for example (Melguizo & Gonzalez-Paramo, 2013) suggest that the bulk of labour taxes fall on workers through lower net wages. Melguizo, A & Gonzalez-Paramo, J (2013) *Who bears labour taxes and social contributions? A meta-analysis approach*. SERIES, 4(3), 247-271. Retrieved from: <https://link.springer.com/content/pdf/10.1007/s13209-012-0091-x.pdf>

100 The impact across these groups would be more evenly distributed if, over time, incomes became more equal between these demographic groups.

- **Risk and social capital:** increasing personal income tax rates with no consequent changes to other rates would create additional rate misalignment at the higher end of the income distribution between the top rate(s) of income tax, the trust rate, the corporate rate, and the rate for Portfolio Investment Entities (PIEs). This would introduce additional incentives for tax planning, which could reduce the tax raised, as well as undermine confidence in the tax system.

While fiscal drag would not raise rates, it would expose more taxpayers to these higher rates of tax over time and to these rate misalignments. In addition, a significant period of fiscal drag could lead to a high proportion of individuals paying tax rates previously paid only by higher-income earners, which could undermine perceptions of fairness in the tax system.

**Figure 37:** Increase in average tax rates for median individual by demographic<sup>101</sup>



Source: Treasury analysis based on Stats NZ data

### 2.5.4 Other options to raise revenue

There are various options to raise additional revenue beyond the personal income tax system, particularly given as noted above New Zealand's tax system currently relies heavily on a small number of tax bases. This section sets out an overview of some of those options but does not provide a full analysis or an exhaustive list of potential tax options available.

- **GST:** raising the equivalent of one percentage point on all personal income tax rates (0.6% of GDP) would require an increase in GST of roughly 1.5 percentage points<sup>102</sup> before any behavioural change. Increasing the GST rate is generally considered a more economically efficient means of raising revenue than income tax, although as it is ultimately a tax on labour, it will still affect incentives to work. A higher rate could also increase pressure to exempt certain goods from GST, which would reduce the tax's efficiency as well as create compliance costs for Inland Revenue and for businesses.

Assessing the distributional impacts of GST is complex. When viewed as a percentage of annual income, GST appears regressive. However, the distributional impact of GST will change over people's lifetimes as they will spend more of their total income while young and retired and less while working. When compared against lifetime income, the impact of GST is expected to be roughly proportional. Furthermore, discussions about distributional impact, like all taxes, ultimately depend on how tax revenue is spent.

- **Company tax rate:** raising the equivalent of one percentage point on all personal income tax rates (0.6% of GDP) would require an increase in the company tax rate of roughly six percentage points, before any behavioural change.<sup>103</sup> Increases in the company tax rate are likely to have relatively large economic effects, particularly to the extent that they lead to multinational companies restructuring profits away from New Zealand or reductions in investment and the capital stock.

<sup>101</sup> Based on median incomes in 2020. This is illustrative, and assumes that the incomes of all groups grows at the same rate out to 2035.

<sup>102</sup> Based on Treasury estimates published in Budget 2020.

<sup>103</sup> Based on Treasury estimates published in Budget 2020.

Given these broader economic impacts, understanding the distributional impacts of changes to company tax rates is challenging.

- **Capital gains:** governments could consider further extensions of the taxation of capital gains. The Tax Working Group estimated that the full extension of taxation to capital gains could raise around 1.2% of GDP a year,<sup>104</sup> although that is highly uncertain and likely to be lower given recent increases to the bright-line test. Taxing capital gains comes with an economic cost by increasing the overall tax rate on capital. However, it could improve the allocative efficiency of saving and investment by ensuring more economic income is taxed neutrally, would be progressive, and would improve the integrity of the tax system. Specific consideration would need to be given to the treatment of Māori freehold land<sup>105</sup> and iwi assets.
- **Land:** annual taxes on the unimproved value of land are generally considered to be highly efficient, simple to administer, and difficult to avoid. However, they come with challenges, such as their impact on land values, which would affect the initial owners of land irrespective of their actual wealth; and the disproportionate impact that a broad land tax could have on Māori by increasing the cost of holding whenua in trust for future generations, cutting across their mana whakahaere. Previous analysis of a land tax suggested that a 0.7% annual levy would raise 1% of GDP.<sup>106</sup>
- **Wealth:** there has been significant additional attention internationally since the beginning of the COVID-19 pandemic on taxing wealth. Common ways in which wealth is taxed internationally include:
  - a Net wealth taxes: some countries including US states levy or have proposed an annual tax on net wealth. While highly progressive, these taxes tend to be subject to a high level of avoidance and exemptions, and raise relatively little revenue while coming with a relatively higher economic cost than other capital taxes. OECD countries with these taxes raise between 0.1% and 1.1% of GDP from them<sup>107</sup>; and

- b Taxes on inheritance: many countries levy a tax on large inheritances or gifts. While these often come with significant exemptions and integrity risks, their economic cost is likely to be relatively low although they do raise questions of fairness for those affected. OECD countries with these taxes raise between 0.1% and 0.7% of GDP from them.<sup>108</sup>

Like capital gains and land taxes, taxes on wealth would have important implications to consider for Māori, direct impacts both on land owners and on their mana whakahaere.

- **Digital multinationals:** the OECD is actively working towards a multilateral solution to the tax challenges arising from the digitalisation of the economy.<sup>109</sup> If a solution is reached, it is likely to generate a small amount of revenue for New Zealand (with the revenue depending on design). In addition to direct revenue, the solution will also have the wider benefit of supporting New Zealand's relatively high corporate tax rate by reducing the incentive for foreign multinationals to shift profits out of New Zealand.<sup>110</sup> Several countries have implemented, as an interim solution, a Digital Services Tax (DST), which is a flat tax on gross turnover from certain digital platforms.
- **Environmental taxes:** New Zealand raises less from environmental taxes than other OECD countries. At 1.3% of GDP in 2019, New Zealand's environmental tax take was lower than the average OECD country for which data was available, which was 2.1% of GDP.<sup>111</sup> Given that these taxes can induce changes in behaviour that reduce the tax base (and are often applied to activities that are in decline), they may not offer a substantial or sustainable additional source of tax revenue in the long term. They could, however, have broader benefits including supporting the accumulation of natural capital (by preventing environmental harm) and improving the wellbeing of the natural environment (taiao).
- **Improving compliance:** Ensuring compliance with existing tax rules is essential for maintaining integrity and perceptions of the fairness of the tax system. Improving compliance could also help address fiscal challenges. A recent study estimates that self-employed New Zealanders may be underreporting up to 20% of their income<sup>112</sup>. Reducing this gap could help address fiscal challenges as well as improve the integrity of the tax system.

104 Tax Working Group (2019) *Future of Tax: Final Report*. See: <https://taxworkinggroup.govt.nz/resources/future-tax-final-report.html>

105 Māori freehold land is defined under legislation and is collectively owned.

106 The Treasury (2013) *Affording Our Future: Statement on New Zealand's Long-Term Fiscal Position*. See: <https://www.treasury.govt.nz/publications/lftp/affording-our-future-statement-new-zealands-long-term-fiscal-position>

107 OECD Revenue Statistics Database.

108 OECD Revenue Statistics Database.

109 The G7 has agreed a proposal that might form a basis for that multilateral solution, and a high-level political statement on the key design elements of the solution has been agreed by 130 countries including New Zealand.

110 Our system of imputation credits, which is unusual internationally, makes cross-country comparisons of company tax rates difficult.

111 OECD Environmental Tax Statistics. Latest data excludes data for six OECD countries, but earlier and more complete data shows a similar picture.

112 Cabral et al (2021). Are survey-based self-employment income underreporting estimates biased? New evidence from matched register and survey data. *International Tax and Public Finance*, 28, 284-322.

## 2.6

### Modernising the public finance system

The public finance system (PFS) governs the use of public resources, and the means through which we as a country ensure that public spending is having as positive an effect on our living standards as possible.

It has been 30 years since the system has been fundamentally reformed. While the system has worked well, there are opportunities to improve it to meet new and enduring challenges and maximise the value taxpayers get from public spending.

Any changes are not likely or intended to generate large fiscal savings, but they can support our management of long-term fiscal pressures by ensuring that public spending is as high-value as possible.

#### 2.6.1 New Zealand's public finance system

The PFS, which governs the use of public resources, is a key part of New Zealand's system of government. It influences both the short-term delivery of government services, and their long-term sustainability (table 14).

The PFS includes the system for:

- How governments establish what they aim to achieve, including wellbeing objectives, with the money they collect from taxpayers;
- How governments budget, allocate funding and manage the overall fiscal position to improve the wellbeing of the nation, both now and in the future. This includes expenditure, revenue, and balance sheet management (e.g. the level of assets and liabilities held);
- Checks and balances to ensure that public money is used wisely and for the purposes intended. Parliamentary authorisation of government spending plans is central to this: the government cannot levy a tax, borrow or spend money except with the authority of Parliament; and

- Accountability requirements for government departments and agencies around the use of public resources, including requirements for strategic planning, and performance reporting.

The annual Budget process is where the Government makes many spending and revenue decisions, which need to align with its fiscal strategy. These decisions have an impact on New Zealanders' living standards through the way in which resources are distributed – now and across future generations. Fiscal strategy decisions are also one way the government can affect the rate at which the four capital stocks outlined in the Treasury's Living Standards Framework (natural, human, social, financial and physical) change over time.<sup>113</sup>

The Public Finance Act sets out principles of responsible fiscal management which governments must adhere to when setting fiscal strategy. This includes maintaining debt at prudent levels and considering the intergenerational impacts of spending and revenue decisions. These principles are not intended to be prescriptive and there is flexibility in terms of how each government interprets and applies these principles.

#### 2.6.2 Modernising New Zealand's public finance system

It has been 30 years since the PFS was last fundamentally reformed. While the system has worked well in many ways, and has continued to evolve, a number of concerns have been challenging to address:

- Public finances are under pressure, which has increased post-COVID-19. There is a need to achieve greater value from baseline spending and improve fiscal management and sustainability. The system currently focuses heavily on options for new spending, with limited attention to the value gained from existing expenditure.
- The PFS does not adequately support joined-up work on cross-sector issues, particularly the response to complex, intergenerational issues.
- The annual government reporting and funding cycle is short, consumes a large amount of time and effort, and can be superficial. It can be hard for departments and agencies to focus on long-term wellbeing and sustainability.

To help address some of these issues, the Treasury is looking at opportunities to modernise the PFS. The objective of this work is to support better fiscal management through improved and more collaborative planning, reporting and funding arrangements.<sup>114</sup>

<sup>113</sup> See background paper *How fiscal strategy affects living standards* for more analysis on how fiscal strategy choices affect the living standards of New Zealanders now and in the future. For background papers, see: <https://www.treasury.govt.nz/publications/strategies-and-plans/long-term-fiscal-position>

<sup>114</sup> This work is intended to complement the initiatives to increase public service collaboration, including new organisational forms to support progress in priority areas, in the Public Service Act 2020.

Over the last few years, the Government has implemented a programme of spending reviews, feeding into the Budget process. Spending reviews allow insight into the performance and value for money of government by assessing the efficiency, effectiveness, sustainability and resilience of current baseline spending.

As a next step, the Minister of Finance has decided to trial a new approach to making Budget decisions. This involves agencies with common or overlapping areas of responsibility being brought together to agree on cluster-specific priorities, strategic planning and performance reporting. In Budget 2022, we are testing this model using two pilot clusters – Justice and Natural Resources. The lessons we learn from this experience will help shape a public finance system that can better serve the interests of New Zealanders and manage some of the complex, multigenerational issues that we are facing.

It is important to note, however, that having better tools is only part of the solution to the country’s long-term fiscal challenges. While potentially useful, changes to the PFS are unlikely to generate large fiscal savings or change the nature or order-of-magnitude of the significant policy choices and trade-offs governments face in the future.

These changes will, however, help shift the focus to more value-for-money expenditure, including investing in expenditure that will deliver long-term gains in both outcomes and cost.

**Table 14:** Overview of the public finance system

	<b>Parliament Authorises</b>	<b>Ministers Govern</b>	<b>Departments/Agencies Administers</b>
<b>Role</b>	<ul style="list-style-type: none"> <li>Approves spending</li> <li>Scrutinises the Executive</li> <li>Represents the people</li> </ul>	<ul style="list-style-type: none"> <li>Set priorities and allocate funding</li> <li>Direct officials</li> <li>Accountable to Parliament</li> </ul>	<ul style="list-style-type: none"> <li>Manage public money</li> <li>Deliver services</li> <li>Accountable to Ministers</li> </ul>
<b>Rules</b>	<p><b>Public Finance Act and Standing Orders</b></p> <ul style="list-style-type: none"> <li>Estimates of Appropriations and supporting information</li> <li>Annual review process</li> </ul> <p><b>Office of the Auditor General</b></p> <ul style="list-style-type: none"> <li>Supports Parliament scrutiny</li> </ul>	<p><b>Public Finance Act</b></p> <ul style="list-style-type: none"> <li>Fiscal responsibility and fiscal strategy requirements</li> <li>Wellbeing budget priorities</li> <li>Responsibilities of Ministers</li> </ul> <p><b>Non-statutory</b></p> <ul style="list-style-type: none"> <li>Budget and Cabinet processes</li> </ul>	<p><b>Public Finance Act, Crown Entities Act and Public Service Act</b></p> <ul style="list-style-type: none"> <li>Role of chief executives and boards</li> <li>Reporting by departments and agencies to portfolio Ministers</li> <li>Annual reports and performance information</li> </ul>

Source: *The Treasury*

## 2.7

### Bringing it all together

Overall, section 2 has set out an illustrative set of policy options to respond to long-term fiscal pressures. The population is ageing, and while there is significant uncertainty about the future, it is almost certain that governments will need to take policy action to manage the growing cost of demographic change and healthcare.

Governments now and in the future face three fundamental decisions:

- What level of debt is prudent in the medium to long term, and how quickly to make any adjustment necessary to achieve that over time.
- The balance between meeting any resulting fiscal gap (or reducing the primary deficit) by increasing revenues, or controlling expenditure.
- The specific means by which they would seek to raise revenue or control expenditure, with some illustrative examples explored in this section.

These choices have trade-offs: there is no simple answer, and most choices will affect all of us and future generations in some way as current or future taxpayers, consumers of health services, and recipients of or contributors to superannuation. Successful public finance system reforms that enable us to achieve as much value as possible for taxpayers' money are a critical part of maintaining social capital in the face of those choices.

The LSF and He Ara Waiora provide a framework through which we can consider these trade-offs across different policy options or packages of options.

We have explored some of these trade-offs in this section, including:

- **Macroeconomic impacts:** higher tax rates affect incentives to save and invest, which could reduce the accumulation of financial capital. Restraining spending growth can have macroeconomic effects too – a less effective health system could degrade human capital, and other areas of spending (such as education) have broader economic benefits.
- **Distributional impacts:** while in general the tax and transfer system is progressive, as noted in this section some tax options would affect those on relatively low

incomes, or from lower-income demographic groups, more than others; and some spending benefits those on relatively higher incomes or higher-income demographic groups.

- **Social capital:** ensuring that any package of measures to maintain fiscal sustainability is considered fair is important, as is reflecting the concepts of tika and pono. Individual New Zealanders and different communities will have different views on what 'fair' means, and those views can change over time.

The intergenerational impacts of ageing and measures to respond to its fiscal impact are an important factor to consider when thinking about how New Zealanders' wellbeing will be affected across generations.

The government (on-net) taxes more from those of working age than it spends on them, and on average redistributes it to those younger and older than working age.<sup>115</sup> Policy changes would alter that – for example, higher taxes would increase the net contribution made by those of working age. On an annual basis, therefore, some measures will appear to redistribute income from the working population to the retired population, or vice versa.

If particular demographic groups make up a growing share of the working population (e.g. the Māori share of the New Zealand working population is projected to grow in the future) this could also mean that shifts in those annual intergenerational transfers affect those groups more than others.

However, intergenerational fairness is more complicated than just looking at these annual transfers, and depends on what individuals pay and receive across their entire lifetimes (including welfare transfers).

Given the projected size of the fiscal gap, no single illustrative option presented would be sufficient alone, and therefore some package of policies will be needed over time to maintain fiscal sustainability. Developing such a package will involve thinking about the balance of risk the government takes on collectively and how much is left for individuals to address in areas such as the provision of health services and old age pensions. The size, balance, and details of any policy changes are, however, value judgements rather than having clear analytical answers. It is important that we as a country are thinking about these changes now. Small and gradual changes in the nearer term could help to minimise the cost of fiscal pressures across generations, preventing higher debt and a larger adjustment in the future.

115 Aziz, Gemmill and Laws estimate that in 2010 those aged 25-65 are net fiscal 'contributors' and those under 25 and over 65 are net 'recipients'.

# Appendix one

## Alternative paths for net debt

Appendix one builds on the long-run projections presented in section 1.3 and the discussion in sections 2.2.2 and 2.2.3 to explore the costs and benefits of different paths for net debt.

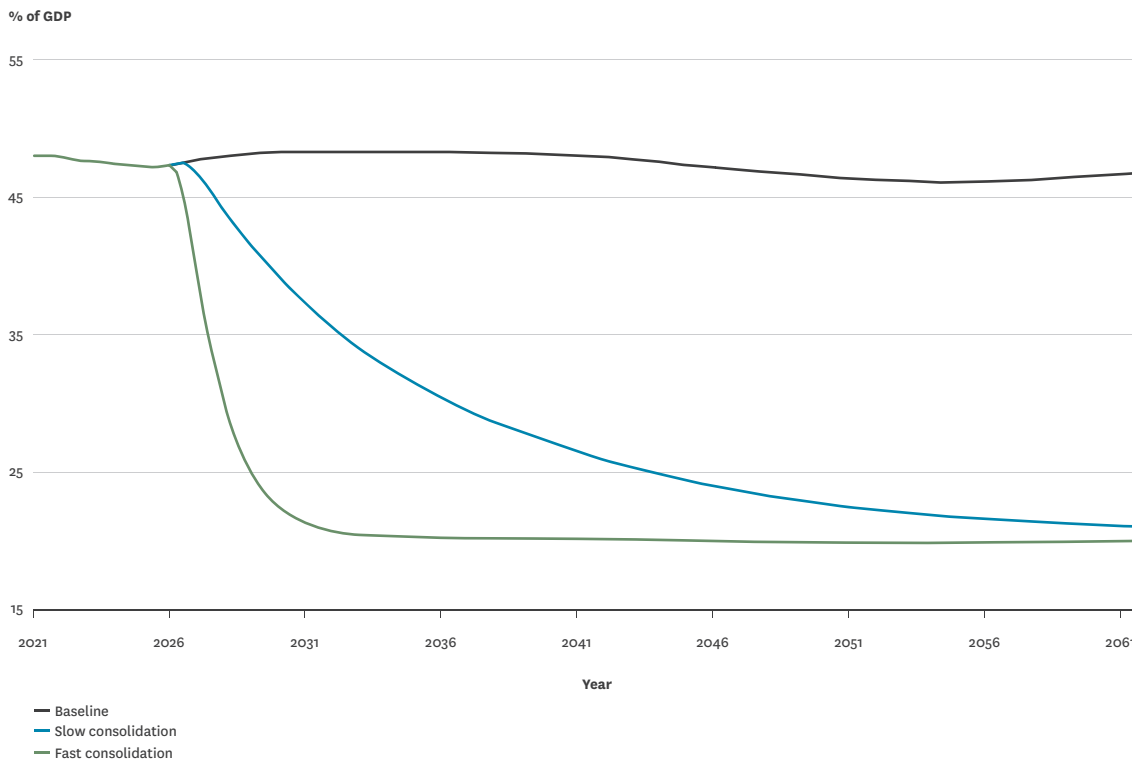
In the alternative scenarios in section 1.3 the government doesn't allow debt to rise substantially above current levels. Rather, the government is continuously trying to stabilise debt at the peak of the forecast period (48% of GDP in 2023) by adjusting tax rates or expenditure to accommodate the fiscal pressures illustrated in the historical trends scenario. This assumption isn't based on a view that this is the 'right' level of debt to aim for, but is chosen as a neutral assumption to demonstrate the impacts of maintaining debt at current levels.

As explained in Sections 2.2.2 and 2.2.3, governments have choices about the size and timing of any policy changes to

address long-term fiscal trends. This appendix presents the costs and benefits of alternative paths for net debt. The scenarios presented are:

1. Returning to pre-COVID-19 net debt levels of 20% of GDP – a 'fiscal consolidation' scenario;
2. Allowing net debt to rise before reducing to 48% of GDP – a 'delayed stabilisation' scenario; and
3. Stabilising net debt at 80% of GDP – a 'stabilise net debt at a higher level' scenario.

**Figure 38:** Net core Crown debt under fiscal consolidation scenarios



Source: NCGM



## Fiscal consolidation scenario – net debt at pre-COVID-19 levels

The debt reduction scenarios in this section build on the alternative scenarios by demonstrating the impacts of reducing debt instead of stabilising it. Instead of stabilising debt, the government seeks to return to pre-COVID-19 net debt levels of 20% of GDP. This is done through a mixture of increases to average tax rates and spending restraint.

We have modelled two scenarios. The fast and slow debt reduction scenarios return net debt to 20% of GDP within 5 and 30 years respectively. The fast scenario is for illustrative purposes only since the policy path, particularly for tax, is not credible.

### Key results and insights

The choice to reduce or stabilise debt poses trade-offs across time. In the short-term, debt reduction of any size and speed will negatively impact economic activity and living standards. Tax increases have a distortionary impact, while spending restraint reduces public services.

Faster debt reduction has a larger near-term impact on economic activity, while slower debt reduction has a more prolonged impact. Faster debt reduction requires larger tax hikes and greater spending restraint, while slower debt reduction requires smaller change but for a longer period. In the absence of any other shocks, the model suggests that the fast debt reduction scenario could cause a technical recession, which is two quarters of negative growth.

Debt reduction can be self-defeating if carried out while the economy is weak and monetary policy space is limited. The negative impact on economic activity tends to be larger when the economy is weak. If the resulting fall in GDP

outweighs the fall in debt levels, the debt ratio could rise. Furthermore, debt reduction can be deflationary. If interest rates are very low, the RBNZ may not have the monetary policy space to respond to a weaker economy.

In the long term, debt reduction decreases debt-financing costs and increases fiscal resilience, with flow-on benefits for long-term economic activity. Lower debt-financing costs means lower levels of distortionary taxes are required. This increases levels of economic activity over the long run.

Lower debt levels increase the government's ability to spend more in the future to respond to future shocks and support living standards. The benefits of this resilience depend on whether current debt levels are sustainable and if there is space to increase spending while maintaining debt sustainability. Research shows that if fiscal space remains ample, the distortive cost of debt reduction can outweigh the crisis-insurance benefit from lower debt.

These short-term losses and long-term gains have intergenerational trade-offs. In the fast debt reduction scenario the long-term GDP gain outweighs the short-term GDP loss. This is shown by the more positive cumulative GDP gap at the end of the period than when compared to a scenario where debt is stabilised. In the slow debt reduction scenario the long-term GDP gain outweighs the short-term GDP loss, but this happens after the projection period. However, this finding only holds under specific assumptions and is measured by the GDP impact, which is a narrow measure of living standards.

Additionally, the costs and benefits are undiscounted and, in reality, fast debt reduction means that costs fall heavily on one generation, while slow debt reduction spreads this cost over several generations.

**Table 15:** Results from the fiscal consolidation scenarios

	Fast debt reduction scenario	Slow debt reduction scenario
Increase in tax revenue-to-GDP ratio at peak	7.5 ppt	1.7 ppt
Decrease in government expenditure-to-GDP ratio at peak	4.1 ppt	1.6 ppt
Decrease in quarterly real GDP growth rate at peak	1.8 ppt	0.3 ppt
Cumulative GDP gap at the end of the projection period	21.8%	-6.3%

## Delayed stabilisation scenario – net debt increases before falling to 48% of GDP

This scenario illustrates the economic costs and benefits of net debt rising to 57% of GDP around 2030 before tax rates are adjusted to gradually reduce and stabilise net debt at around 48% of GDP in the early 2030s.

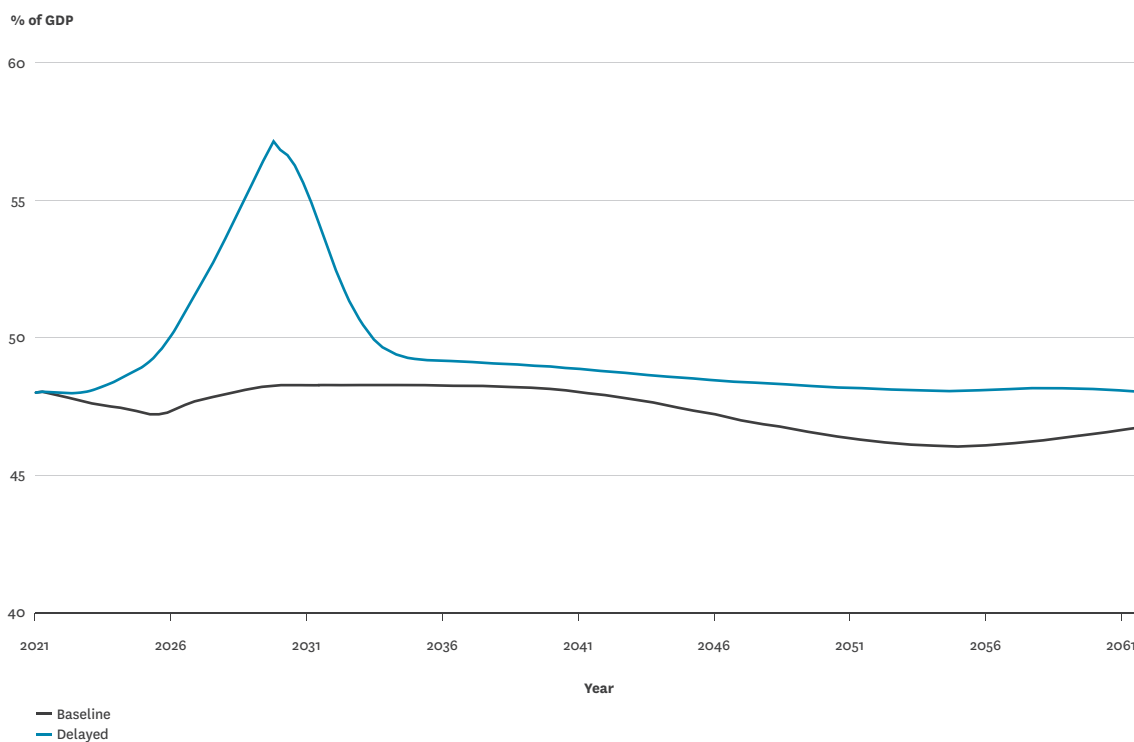
### Key results and insights

Allowing net debt to rise before reducing and then stabilising has short- to medium-term economic benefits arising from relatively lower tax rates than otherwise. This results in a cumulatively higher level of GDP relative to the baseline in the short term (figure 40).

However, the higher level of debt leads to higher debt-servicing costs. As a result, to reduce and stabilise debt requires higher tax rates relative to the baseline where net debt is stabilised at 48% of GDP starting from 2021. Therefore, over the long run there are higher economic costs from allowing net debt to rise before being reduced and then stabilised.

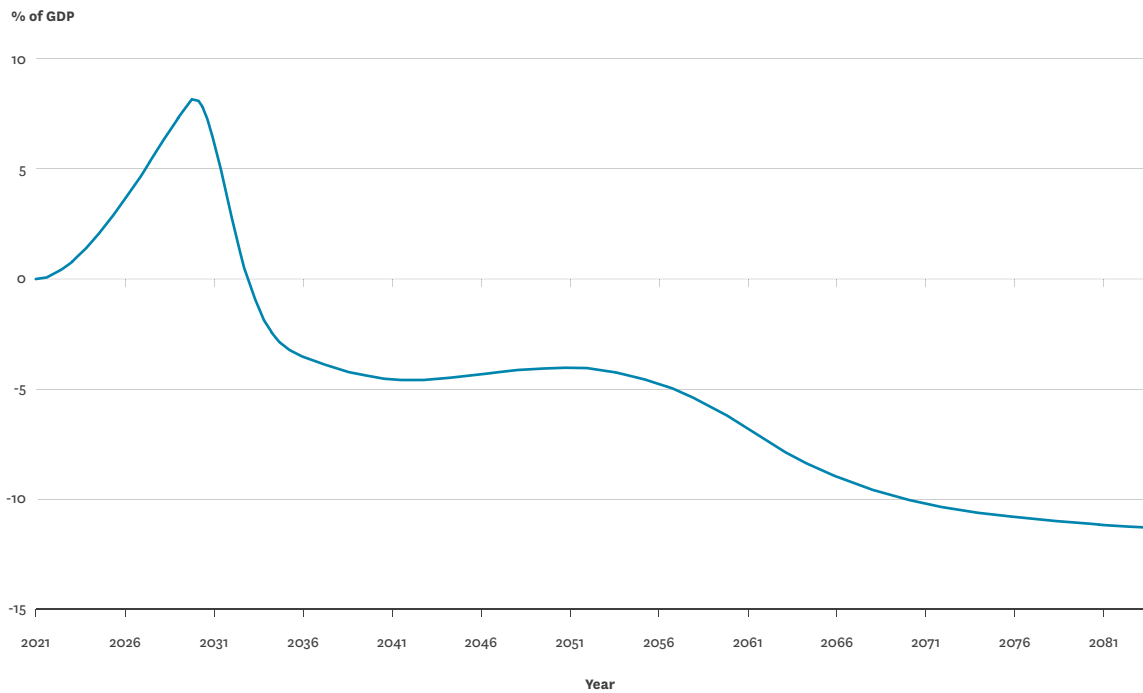
Whether allowing debt to rise before reducing and then stabilising is the appropriate approach depends on more than just the economic impact. It also depends on considerations such as the benefits of the higher levels of government expenditure and the question of what generation should pay.

**Figure 39:** Net debt



Source: NCGM

**Figure 40:** Cumulative GDP gap between the delayed response and the baseline



Source: NCGM

### Stabilise net debt at a higher level – net debt is stabilised at 80% of GDP

This scenario (Figure 41) illustrates the economic costs and benefits of net debt slowly rising and stabilising at 80% (an early tax adjustment scenario – green line) and net debt rising more quickly before stabilising at 80% of GDP (a late tax adjustment scenario – blue line).

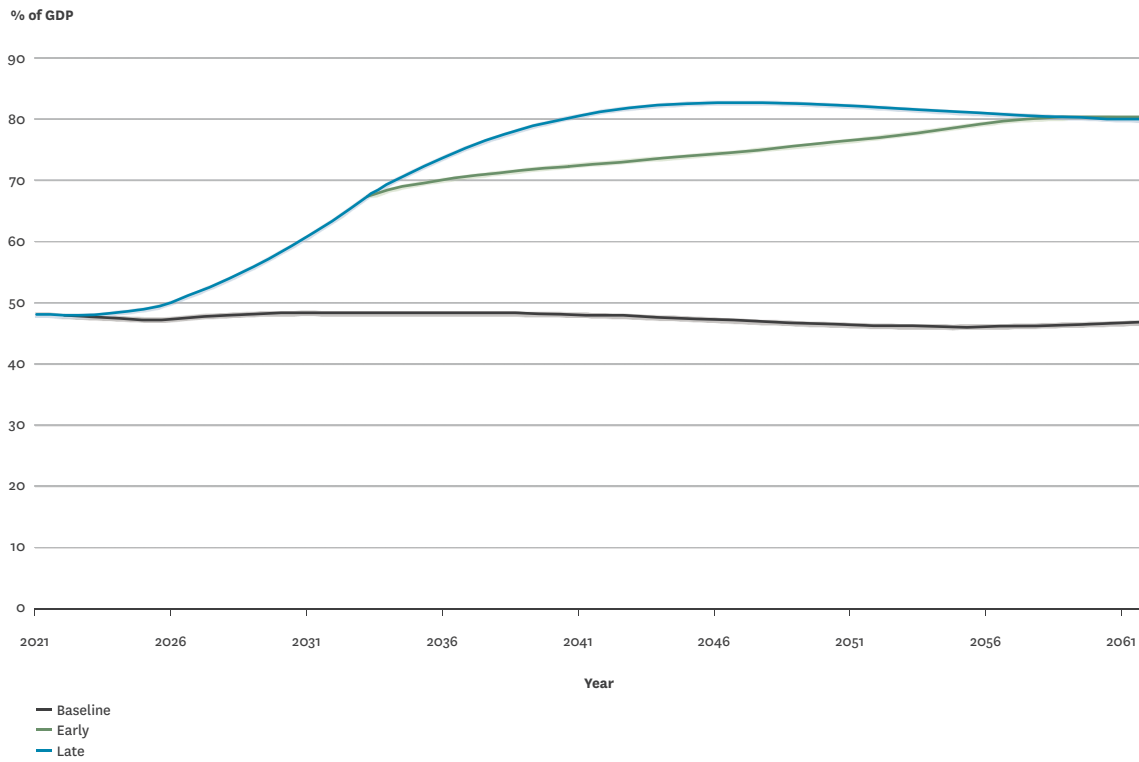
#### Key results and insights

Stabilising net debt at a higher level produces similar insights to the delayed stabilisation scenario. Allowing net debt to rise results in relatively lower tax rates than otherwise which has positive economic benefits in the short to medium term.

However, as a result of a higher level of debt, debt-servicing costs are also higher. This requires having relatively higher tax rates to stabilise net debt over the long run, which have a negative economic impact.

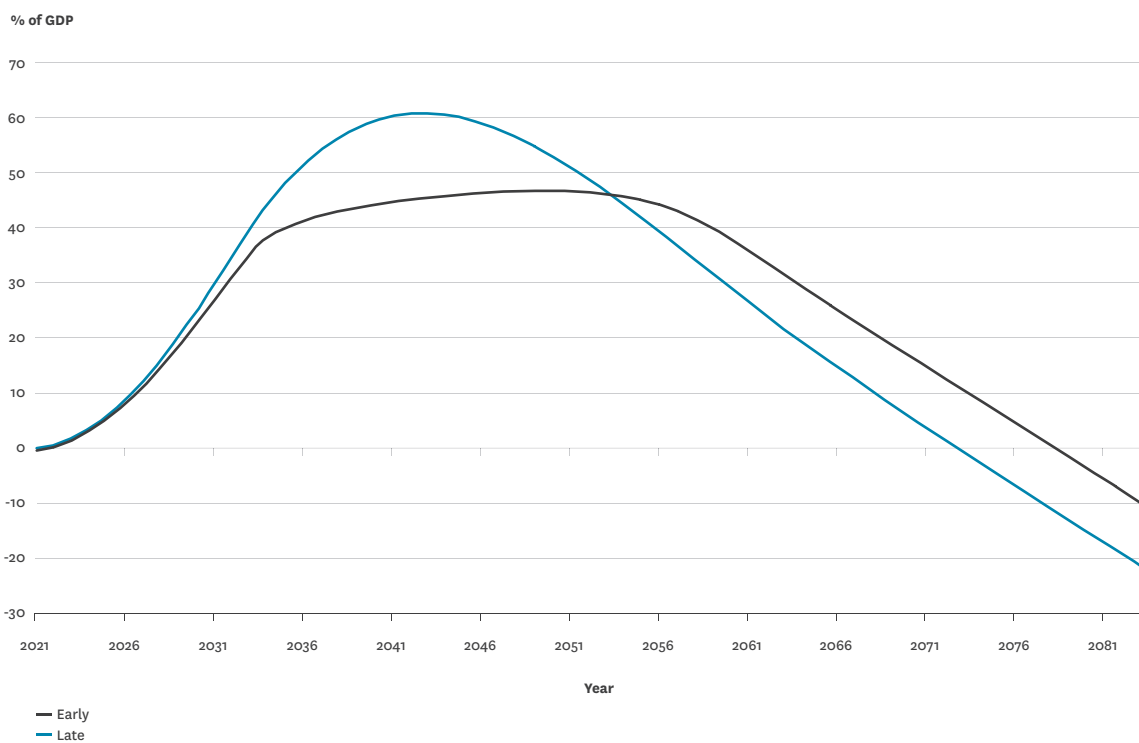
Adjusting tax rates earlier (green line) rather than later (blue line) to stabilise net debt at a higher level results in a slower transition to a higher level of debt. This results in relatively lower tax rates, implying that a slow adjustment is better than a late adjustment to a higher level of debt for the economy over the long run.

**Figure 41: Net debt**



Source: NCGM

**Figure 42: Cumulative GDP gap relative to the baseline**



Source: NCGM

# Appendix two

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## *Neoclassical Growth Model (NCGM)*

The NCGM explicitly models the behaviour of the government, households, and businesses using assumptions about economic behaviour.

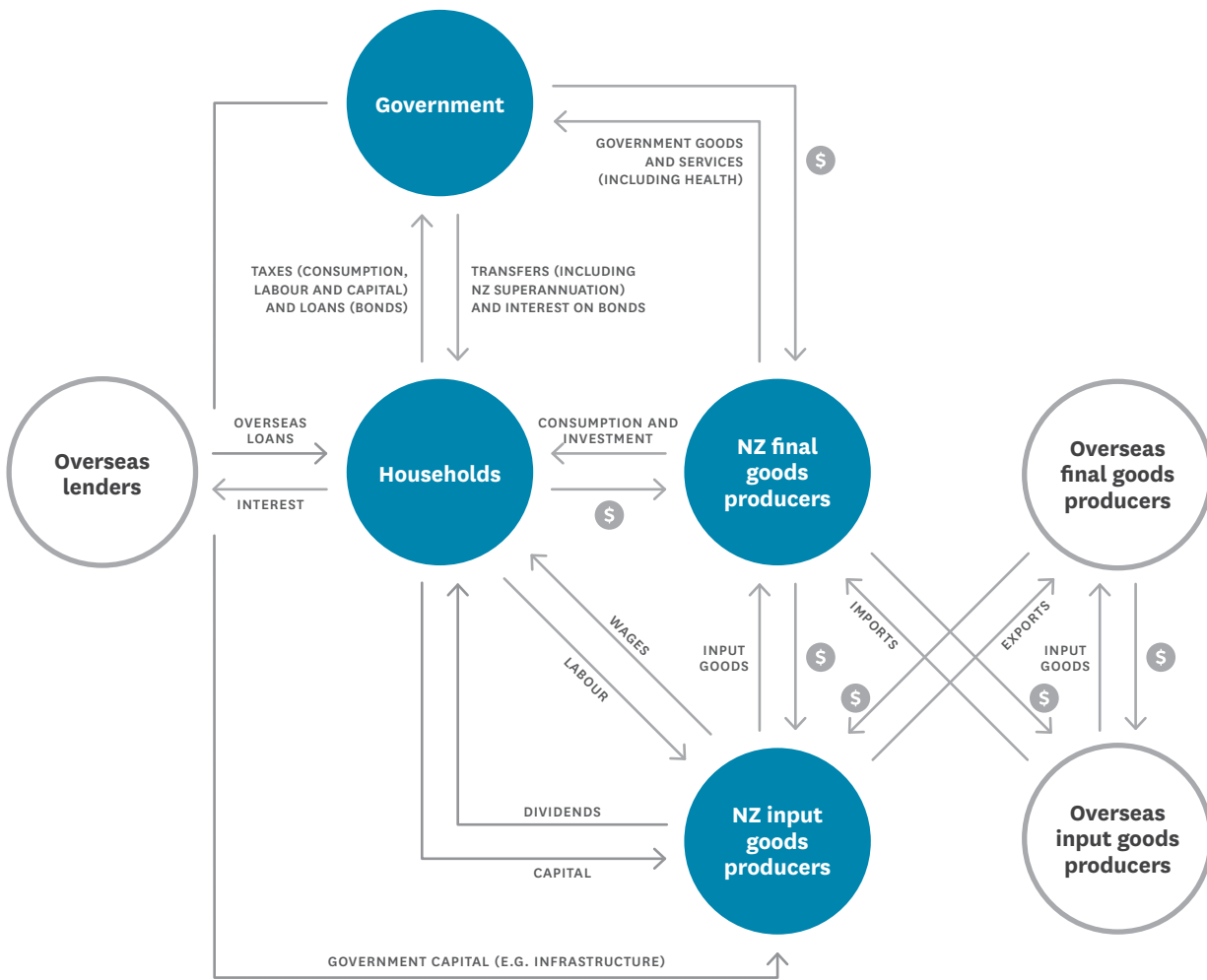
- Households choose to allocate their time between work and leisure by balancing their own preferences against market incentives. Income from work (after taxes and transfers) can be either spent now or set aside as savings by investing in capital or lending to the government. These savings help to finance the household's future consumption spending. Households can also borrow, though any borrowing must be financed with future income.
- Businesses aim to maximise profits by hiring labour and capital from households in exchange for wages and dividends, to produce goods and services that are sold to households, the government and the rest of the world. As New Zealand is a small, open economy, it is important for the model to capture trade dynamics with the rest of the world. As such, production in the NCGM is split into the production of an intermediate input good and a final output good. Exports and imports of intermediate inputs between New Zealand and the rest of the world capture trade flows.
- The government raises revenue by taxing economic activity – namely consumption spending, labour income and capital income – and by borrowing from the public. The revenue is used to deliver government services and transfers, such as health and NZS, as well as public infrastructure. However, governments face a public finance constraint in that growing expenditure cannot be financed by ever-increasing borrowing. Governments must work to stabilise debt over the long-term – either by controlling expenditure or by raising tax rates.<sup>116</sup> In the model, the degree of government responsiveness to fluctuations in debt can be varied, to analyse how different government policies might influence New Zealand's long-term fiscal position.

The relationships between households, businesses and the government are summarised by the model flow diagram (figure 43).

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<sup>116</sup> Ultimately all government expenses (i.e. spending on public services plus debt-financing) must be funded by taxation, present or future.

Figure 43: NCGM flow diagram



- **Equilibrium:** The decisions of households, businesses and governments interact to determine the equilibrium in the economy. All prices (goods prices, wages, interest rates and exchange rates) adjust to balance supply and demand in each market (goods, labour, capital and debt), not just for the current time period, but over the entire course of the projection period.<sup>117</sup>
- **Economic dynamics:** Any disturbance from this long-run equilibrium, for example, due to fiscal pressures from an ageing population or a sudden shock to infrastructure as a result of a natural disaster, triggers a complex chain of responses throughout the economy. These responses are governed by the behavioural rules and macroeconomic relationships set out above, which ultimately return the economy to trend.
- **Relationships and differences from the LTFM:** The LTFM consists of ‘bottom-up’ projections of a number of key macroeconomic and fiscal variables. As such, the LTFM

can utilise the best available data to construct detailed projections of individual variables. The fiscal variables are then aggregated using accounting relationships to derive projections of the government’s key fiscal indicators such as net debt and the primary balance.

This approach allows for a great deal of detail for modelling individual variables, such as health and NZS spending, but it misses the relationships and feedbacks between economic and fiscal variables. This is the key role of the NCGM: the decisions of households, businesses and government all change simultaneously, and in response to each other – as well as other economic variables. By calibrating key variables in the NCGM to those constructed in the LTFM, we can leverage the advantages of both models to improve our fiscal projections. As such, the NCGM and LTFM can be viewed as complements.

<sup>117</sup> Formally, the NCGM is what is referred to as a Dynamic Stochastic General Equilibrium (DSGE) model: ‘dynamic’ as it specifies how macroeconomic and fiscal variables interact and evolve over time; ‘stochastic’ as variables can be subject to unpredictable shocks (rather than being entirely deterministic); and ‘general equilibrium’ as the model is a simplified representation of the economy as a complete system, as opposed to a model of individual markets or sectors in isolation from the wider economy.

## Key NCGM assumptions

### Expenses

The key expense pressures in this scenario arise from NZS and health spending. The spending paths for these two variables are projections from the LTFM.

### Labour supply

The two models – the LTFM and NCGM – differ in their assumptions about how people’s working patterns change over the period. The LTFM assumes that labour force participation falls as the average age of the population increases, whereas the NCGM makes no such assumption. Instead the model leaves hours worked to vary freely in response to changing economic drivers; however, as the population ages, households’ preferences for leisure will increase, making them less willing to work. This difference between these two scenarios must be kept in mind when comparing them directly.

### Fiscal policy

As stated, we assume higher spending paths for health and NZS, and try to stabilise government debt by adjusting tax rates on labour and capital income. These tax rates adjust in response to deviations of net debt from its long-run target – which is set at 48% of GDP, the peak of the BEFU forecasts. This is not the Treasury’s view on the long-run prudent level of debt – refer to section 2.2.1 for a discussion about sustainable debt. The adjustments will vary depending on the size of the deviation. If debt is below target the government will reduce tax rates. In other words, the LTFM assumption of holding tax revenue-to-GDP constant does not hold.

In this analysis, the key parameters are how much governments adjust labour and capital tax rates in response to debt deviations. The size of the responses in the model parameters is calibrated by reference to the international literature.

### Tax structure

The tax structure assumed in the NCGM is a simplification. Specifically, the 19% and 30% tax rates for labour and capital income represent assumed averages. They are calibrated so that the overall shares of labour and capital income tax revenue relative to GDP match the empirical data as closely as possible. In reality, New Zealand has a progressive income tax schedule which seeks to tax all forms of income consistently irrespective of how that income is earned.

However, New Zealand’s capital tax settings are complex with effective tax rates differing depending on asset types, the owner of the asset, and underlying returns and economic conditions. We have chosen a 30% capital tax rate to calibrate our results with the empirical data. A 30% rate is also broadly within the range of estimates produced by the literature.<sup>118</sup>

### Taxes are distortionary

A key feature of the NCGM modelling is that taxation has a ‘distortionary’ impact on the macroeconomy. This means that tax rates alter the incentives that households and businesses face when making economic choices. For instance, an increase in income tax rates alters the incentives to work. Therefore, just as we would expect a reduction in tax rates to stimulate economic activity, we would expect an increase in tax rates to dampen economic activity.

Creedy *et al* (2018) show that small changes in labour supply as a result of higher labour taxes can have large economic costs, and a number of studies have suggested that capital taxes can have important economic costs (for example, Bastani and Waldenström (2020) provide a review).<sup>119,120</sup> Also implicit within the NCGM is the assumption that the effects of changes to taxation on GDP are non-linear. So for example, the higher the initial tax rate, the greater the economic impact of a proportionate tax increase or tax cut. This assumption is broadly supported by the literature.<sup>121</sup>

That said, the overall impacts of taxation should also take into account the economic impacts of how the revenue is spent. Government spending on goods and services provides a source of demand in the economy, which in turn generates further rounds of spending and income creation for households and businesses. Similarly, government transfers are a direct transfer of resources back to households and businesses, and if appropriately targeted can boost aggregate demand. Furthermore, government investment – for example through the provision of infrastructure – should enable economic transactions in the macroeconomy, thereby raising productivity and output. All of these channels act to offset the distortionary impacts of taxation.

The NCGM captures some, but not all, of these mechanisms. The principal focus of the NCGM is to shed light on the effects of fiscal policy on income and output. Ultimately, the net impact of taxation and spending should be assessed in terms of the wider effects on living standards.

118 For example, see: <https://www.otago.ac.nz/economics/otago703148.pdf>

119 Creedy, J *et al* (2018) *Microsimulation analysis of optimal income tax reforms*. An application to New Zealand. Working Papers in Public Finance 08/2018. Victoria Business School.

120 Bastani, S & Waldenström, D (2020). *How should capital be taxed?* Journal of Economic Surveys, 34(4), 812-846.

121 For example see:

Creedy, J (2003) *The excess burden of taxation and why it (approximately) quadruples when the tax rate doubles*. Working Paper 03/29. New Zealand Treasury. See: <https://www.treasury.govt.nz/publications/wp/excess-burden-taxation-and-why-it-approximately-quadruples-when-tax-rate-doubles-wp-03-29.html>  
Auerbach, AJ (1985) *The theory of excess burden and optimal taxation*. In Handbook of Public Economics, vol 1. Elsevier Science Publishers.

# Appendix three

## LTFM projection assumptions<sup>122</sup>

Assumptions	2016 LTFM	2021 LTFM
<b>Demographic</b>		
Base case population projection	50th percentile 2014-base, 2014-2068	50th percentile 2020-base, 2020-2073
Fertility	Falls to 1.9 babies per woman from 2030	Falls to 1.65 babies per woman from 2021
Life expectancy at birth	Rises to 88.0 (M), 90.7 (F) in 2060	Rises to 86.1 (M), 89.0 (F) in 2060
Net migration	Reaches and holds at 12,000 per year from 2017	Reaches and holds at 25,000 per year from 2023
Labour force	Reaches 3.25 million in 2060	Reaches 3.76 million in 2060
<b>Economic</b>		
Participation rate	50th percentile labour force (2015); participation rate in 2060: 64.5%	50th percentile labour force (2017); participation rate in 2060: 67.2%
CPI measured inflation rate (annual growth per year)	2% from 2021	2% from 2028
Labour productivity growth per year	1.5% from 2023	1.0% from 2028 <sup>123</sup>
Long-term government bond rate per year	5.3% from 2025	4.3% from 2045
Unemployment rate	4.5% from 2021	4.25% from 2028
Average weekly hours worked	33.08 from 2022	33.70 from 2028
Average hourly wage growth	3.53% from 2023	3.02% from 2028

<sup>122</sup> For more information on the LTFM projection assumptions see background paper *Demographic, economic and fiscal assumptions in the 2021 Long-term Fiscal Model*.

<sup>123</sup> The Treasury's labour productivity growth methodology was changed at the 2019 Half Year Economic and Fiscal Update. For an explanation of the new methodology see: <https://www.treasury.govt.nz/system/files/2019-12/hyefu19-bp-labour-productivity-growth.pdf>



Assumptions	2016 LTFM	2021 LTFM
<b>Fiscal</b>		
Revenue as a ratio of GDP	Core Crown taxation revenue building to 28.6% by 2027 and holding there (historical spending patterns)	Core Crown taxation revenue transitioning to 27.6% by 2029 and holding there
Expenditure	Growth controlled by operating allowances for five years (to 2020) Bottom-up projections begin in 2021	Growth controlled by operating allowances for five years (to 2025) Bottom-up projections begin in 2026
Operating allowance controlled expenditure (excluding health and education expenditure)	Ratio of nominal GDP: Operating allowance controlled expenditure (excluding health and education) is transitioned to a stable percentage of GDP from 2021 (i.e. expenditure is indexed to nominal GDP growth). Expenses reach a combined stable percentage of 6.8% once they all attain their long-term stable rates. A transition rate of 0.05 percentage points from the end of the forecast period is applied.	Ratio of nominal GDP: Operating allowance controlled expenditure (excluding health and education) is transitioned to a stable percentage of GDP from 2026 (i.e. expenditure is indexed to nominal GDP growth). Expenses reach a combined stable percentage of 6.6% once they all attain their long-term stable rates. A transition rate of 0.05 percentage points from the end of the forecast period is applied.
Health expenditure (non-demographic growth in spending in projection period)	Spending growth rate of 4.58% per year Healthy ageing effects modelled	Spending growth rate of 4.15% per year Healthy ageing effects modelled
Education expenditure (non-demographic growth in spending in projection period)	Spending growth rate of 4.09% per year	Spending growth rate of 4.46% per year
Other spending (non-demographic growth in spending in projection period)	Spending growth rate of 3.53% per year	Spending growth rate of 3.02% per year
NZ Superannuation (NZS)	Per recipient spending indexed by nominal wage growth	Per recipient spending indexed by nominal wage growth
Non-NZS welfare	Ratio of nominal GDP: Main benefits, supplementary benefits and others reach a stable percentage of GDP. Total non-NZS welfare spending reaches a stable percentage of GDP of 4.7% (i.e. payments are indexed to nominal GDP growth).	Main working-age benefits indexed by nominal wage growth. Supplementary benefits and others reach a stable percentage of GDP. Total non-NZS welfare spending reaches a relatively stable percentage of GDP of 4.2% by 2028.
Debt finance costs	Average of opening and closing stock for the year multiplied by an effective interest rate. This is transitioned to the 10-year government bond rate by 2027.	Average of opening and closing stock for the year multiplied by an effective interest rate. This is transitioned to the 10-year government bond rate by 2030.
NZ Super Fund contributions	Capital contributions resume in 2021; drawdown from the Fund begins in 2033.	Capital contributions resume in 2018 and average \$0.9 billion from 2026; drawdowns from the Fund begin in 2034.
Property, plant and equipment	Nominal GDP growth	Nominal GDP growth

# Appendix four

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## *How have the LTFM results changed since 2016?*

By 2060 the net debt to nominal GDP projection has reduced from 206% in the 2016 LTFM to 187% in the 2021 LTFM. This reduction reflects the net effect of a number of factors including updated demographic and labour force information, changes to assumptions, updated economic and fiscal information, and revisions to projection approaches. Changes to the labour productivity growth methodology were set out in a December 2019 background paper.<sup>124</sup> Changes to the interest rate assumption and the overall LTFM are described more fully in two background papers: *Long-term projections of the New Zealand Government's interest rate and Demographic, economic and fiscal assumptions and logic in the 2021 Long-term Fiscal Model*.

The contribution to the net change from the individual factors depends on the order in which they are introduced, because earlier changes are compounded by later ones. For example, updating the labour force projections affects the GDP projection, which is an economic component, and this is also affected by updating the economic forecast base and projection assumptions. The sequence of updating steps used in this analysis aligns with the order in which new data and modelling changes are introduced into the LTFM. The four key updates behind the shifts in figure 44 are outlined below.

First, updating demographic outturns, and labour force forecasts and projections, including higher net migration, reduces the projection of net debt largely through producing a higher nominal GDP track (from the black line to the dashed black line in figure 55). This is mainly caused by stronger labour force growth, via an increased population. This increases projections of revenue and expenses by similar amounts, which means the operating balance remains close to what it was in the 2016 LTFM. In nominal dollars net debt is still around 96% of its 2016 LTFM level by 2060. However, the higher GDP values produced by the update reduce net debt, so that it is only 89% of its 2016 LTFM value by 2060.

Second, changes related to the updated economic forecasts and projections further reduce the net debt projection (to the green line). This occurs through changes to both the economic forecast base and assumptions applied in the economic projections. Because revisions by Stats NZ to historical GDP figures significantly lift them, the projections of GDP begin from a

level that is over 8% higher than in the previous updating step. This, in turn, means that tax revenue, which is projected as a percentage of GDP, is considerably higher in the early years of projections. While this is also true for many expense types, the increase is greater for revenue than expenditure overall, which helps to reduce the rise of debt relative to that of the previous step.

A higher nominal GDP track does not persist, because of a lower labour productivity annual growth assumption of 1.0%, compared to the 1.5% applied in the 2016 LTFM. This means that, by 2040, the nominal GDP track is about equal to that of the previous updating step, and is only 91% of that step's value by 2060 (and slightly below the 2016 LTFM's nominal GDP level in this year). Despite this gradual reversal in relativity in the GDP projection, the differences for projected revenue remain higher than those for projected expenses. This is because the projection method for health and education expenses in the 2016 LTFM applied an elasticity to labour productivity growth, used as a proxy for real labour costs. Consequently, reducing the assumption for labour productivity growth lowers these major expense type projections more than it does those of other expense types and of revenue.

If the economic forecast base and the labour productivity growth assumption were the only changes, this alone would reduce net debt to 147% by 2060. However, another economic projection assumption change, namely lowering the long-run stable nominal annual return rate on the government 10-year bond from 5.3% to 4.3%, further lowers net debt in 2060 to 126%. This is used as the interest rate applied to debt in the LTFM, so its reduction markedly lowers debt-financing costs and, due to that, slows the rise of net debt.

Third, updating the fiscal forecast base, the exogenous input tracks and all fiscal projection modelling changes, except for those for health and education expenses, lifts the net debt track (to the blue dashed line) relative to the previous updating step. Most of this rise comes from the higher net debt levels in the forecast base, due to increased borrowing in response to the impacts on the economy of the COVID-19 pandemic. Net debt in 2025, the last year of the Budget 2021 forecast base, is 22 percentage points higher. This gap is largely maintained over the projection, with net debt in 2060 being 19 percentage

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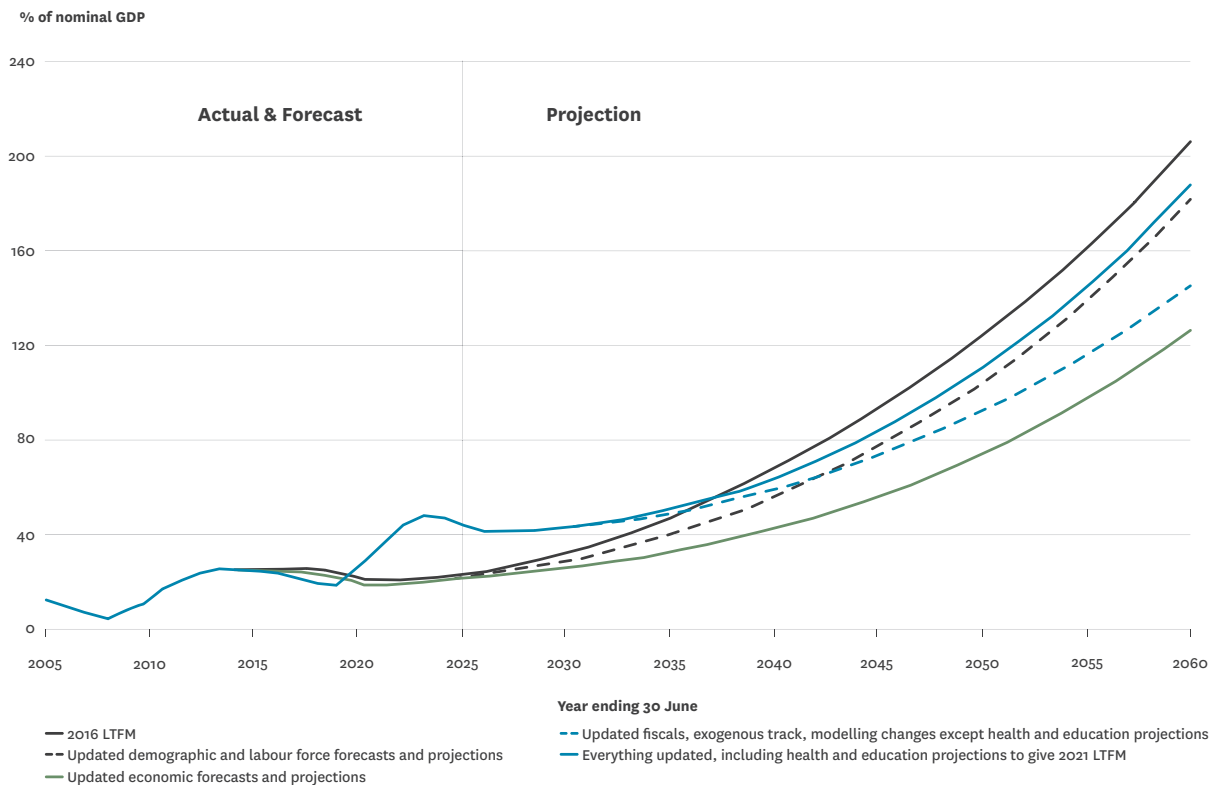
<sup>124</sup> See: <http://www.treasury.govt.nz/publications/background/labour-productivity-growth-in-treasurys-fiscal-projections>

points higher than in the previous updating step, at 145% compared with 126%.

The final projection update, to match the 2021 LTFM, brings in the new modelling approach for education and health expenses. This further increases projected net debt to 187% by 2060 (blue line). To better capture the impacts of an ageing population structure, overall health spending has been divided into more categories, based on the health service categories that the Ministry of Health applies in its modelling. In addition, the elasticity approach has been

replaced by a non-demographic real growth factor. For both health and education this factor was based on average growth in expenditure outturns over the last two decades above that which can be attributed to recipient growth, inflation and real labour costs. This improved the match of modelled outturns to actual outturns, relative to the technique used in the 2016 LTFM. Health and education expenditures reached 9.7% and 5.7% respectively of GDP in the 2016 LTFM, while in the 2021 LTFM they rise to 10.4% and 6.3% respectively.

**Figure 44: Changes in net debt projection from 2016 to 2021 LTFM**



# Appendix five

## Assumptions for earthquake disaster

The key assumptions we have used in modelling the impact of an earthquake in section 1.4.4 are outlined in table 16 below.

We made these assumptions by looking back at the evidence of how the government and New Zealanders responded to the Canterbury earthquake, including the

investment and fiscal responses. However, there is significant uncertainty regarding some of these investment and fiscal responses, and the total economic impact of a disaster will depend on the severity of the shock as well as wider fiscal and economic conditions.

**Table 16:** Modelling assumptions for an earthquake scenario

Assumptions	Modelling assumption
The earthquake creates significant short-term and long-term economic damage	<ul style="list-style-type: none"> <li>The earthquake causes a 3% reduction in the total capital stock</li> <li>There is a 3% reduction in total factor productivity</li> </ul>
Private sector investment increases to rebuild following the earthquake	<ul style="list-style-type: none"> <li>Private investment increases by around 2% of GDP. However, it takes 3 years to slowly increase to this level, where it remains for 7 years, before tapering off</li> </ul>
The government significantly increases spending in response to the earthquake	<ul style="list-style-type: none"> <li>Public investment increases by 0.5% of GDP. However, this is not done immediately: the government slowly increases investment until it reaches 0.5% of GDP 3 years after the disaster. Investment remains at this level for 7 years before tapering off</li> <li>There is a discretionary increase in transfer spending of approximately 0.7% of GDP to account for EQC payments<sup>125</sup></li> <li>The automatic fiscal stabilisers increase government consumption by 1% of GDP for 3 years and decrease tax revenue temporarily by approximately 0.5% of GDP</li> <li>The government gradually increases tax until 10 years after the earthquake the tax-to-GDP ratio is 2% higher than the level expected without the earthquake</li> </ul>
The government increases tax revenue following the disaster in order to bring debt back down to its pre-earthquake level	<ul style="list-style-type: none"> <li>20 years after the earthquake tax revenue to GDP is reduced to the level expected without the earthquake</li> <li>Real interest rates are 50 basis points lower for two years</li> </ul>
There are some other cosmetic and technical assumptions	<ul style="list-style-type: none"> <li>There are several other technical changes made to smooth out the labour supply and wage responses</li> </ul>

<sup>125</sup> For this modelling we have assumed that the EQC fund is depleted and this is funded from government debt.

