



Save now, prosper later

Increasing New Zealand's savings rate
- a preliminary dynamic CGE analysis



About NZIER

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We pride ourselves on our independence and reputation for delivering quality analysis in the right form, and at the right time, for our clients. NZIER is also known for its long-established Quarterly Survey of Business Opinion and Quarterly Predictions.

Acknowledgements

Each year NZIER devotes some of its resources to undertake and make freely available economic research and thinking aimed at promoting a better understanding of New Zealand's important economic challenges. This paper was funded as part of this public good research programme.

We thank the **Savings Working Group** for initiating the work presented in this report. The parameters for this initial analysis were selected in consultation with representatives of the group. However, the work is the responsibility of NZIER.

Authorship

This report has been prepared at NZIER by James Zuccollo and John Ballingall, and reviewed by Jean-Pierre de Raad, November 2010.

Key points

The worry about New Zealand's savings performance

New Zealand's rate of savings is such that we cannot finance our investment from domestic savings. Whatever the cause – or policy prescription, if any – the consequence is that for decades we have needed to borrow extensively from overseas, and our net foreign liability has risen to 86% of GDP. This debt exposes us to external economic and financial shocks and raises the country risk premium. This may be one factor that is holding back New Zealand's economic potential and preventing it from closing the income gap with Australia.

Improved saving would reduce our external exposure

This paper uses NZIER's dynamic Computable General Equilibrium (CGE) model of the New Zealand economy to conduct a preliminary investigation into how an increase in New Zealand's national savings would affect New Zealand's GDP and living standards. We do not specify how this increase might take place.

We find that increased saving would reduce our overseas debt and thus cut our debt servicing repayments. It is likely that the risk premium on borrowing costs would also fall under such a scenario. This would help boost investment.

Higher saving rates come at a short term cost to households...

If households are saving more of every dollar earned, then spending must decrease. This trend is already being seen in the New Zealand economy as households deleverage – saving and paying off debt rather than borrowing and consuming – even as Government is dissaving. While this is painful for households and retailers, it is an essential part of a sustainable economic recovery.

...but place the economy on a more sustainable path

A larger pool of domestic savings means that we are less reliant on overseas borrowing for investment purposes. Our offshore interest repayments fall by up to \$10 billion per year by 2025. The consequent depreciation of the New Zealand dollar makes our exports more competitive, assisting to rebalance the economy away from domestic spending.

Cheaper borrowing costs boost investment and productivity

If New Zealand is less indebted to the rest of the world, the risk premium on borrowed funds should drop, making investment more attractive. Our modelling shows New Zealand investment increasing by up to 13% by 2025. This expands the capital stock in the economy, pushing up New Zealand's productive capacity. As New Zealand workers now have a deeper capital stock to work with, they too become more productive, which boosts real wages by up to 7% by 2025.

New Zealand's GDP increases and households are better off

The overall effects of the scenario that we modelled are that:

- New Zealand's GDP would be up to 4% higher in 2025 than it would otherwise have been
- Gross National Disposable Income would be up to 9% higher in 2025 than it would otherwise have been.

This indicates that lifting national savings in a way that reduces net foreign liabilities could make a positive contribution to improving living standards and closing the income gap with Australia.

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1. Objectives of research

*"Increasing our national savings and investment levels is a critical issue for New Zealand, because of our heavy reliance on foreign capital. This has produced high and rising debt to the rest of the world, which cannot continue... So we have a big task to turn around this economy and rebalance it towards savings and growth."*¹

Most economists understand the importance for New Zealand's longer term growth prospects of achieving a sustainable balance between domestic savings and offshore borrowing. But what would be the likely long-run economic consequences of a change in current national savings?

This paper, funded by NZIER's public good programme and initiated following discussions with representatives of the Savings Working Group, aims to contribute to the debate by outlining the channels through which improved national savings could benefit the New Zealand economy in the long term. We use NZIER's dynamic computable general equilibrium model of the New Zealand economy to conduct a preliminary investigation.

We do not debate the extent of New Zealand's saving problem. There are conflicting perspectives on this. NZIER has previously published or contributed to research trying to address this question.²

Nor do we speculate on the precise mechanism that might be used to increase national savings (paying down government debt, compulsory savings schemes, enhancements to Kiwisaver, improved financial literacy, etc). Any options and their relative merits may be discussed by the Savings Working group. We focus solely on the economic outcomes of an assumed increase in national savings.

2. Why might NZ want to lift its savings rate?

Persistent current account deficits indicate that New Zealand's current rate of savings is such that we cannot finance our investment from domestic savings. It will be important to fix the precise diagnosis of the shortfall, as that should inform whether there is a need or ability to do anything, and if so what. Nevertheless, a consequence of the persistent deficit is that our level of net foreign liabilities (NFL) has been steadily rising over the past decade or so and currently sits at 86% of GDP (see Figure 1).

¹ Bill English. 'Wide brief for expert group on savings options'. National Party media Release, 24 August 2010. <http://www.beehive.govt.nz/release/wide+brief+expert+group+savings+options>

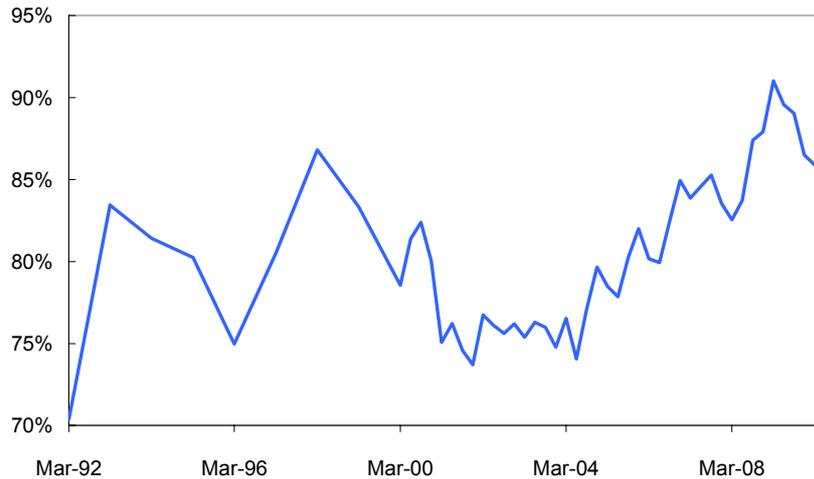
² Le T. 2007. Does New Zealand have a household savings crisis? NZIER working paper, www.nzier.org.nz; Wilkinson B & Le T. 2008, Is poor household saving the cause of New Zealand's high current account deficit? NZIER working paper, www.nzier.org.nz, Le T, Gibson, J, Stillman S. 2010. "Household Wealth and Saving in New Zealand: Evidence from the Longitudinal Survey of Family, Income and Employment". Motu working paper 10-06

That level of liability has two related consequences:

- It makes the economy vulnerable to economic events that might cause investors to withdraw from New Zealand, such as a major biosecurity scare
- It may raise interest costs (and so affect investment decisions) because high indebtedness usually attracts a risk premium in financial markets.

Figure 1 New Zealand's foreign debt

NFL as a percentage of GDP



Source: Statistics NZ, NZIER

Reducing the NFL will reduce the macroeconomic risks mentioned above and will have a number of important impacts on the New Zealand economy over time. One way to reduce net foreign liability is to increase national savings.

To examine the nature of the economic impacts, we consider what would happen if we set a goal of achieving a reduced ratio of NFL to GDP of 60% by 2020. This is Australia's current ratio of NFL to GDP. Once that level has been achieved we maintain it through to the end of our simulation period – 2025.

3. Approach

We use our dynamic computable general equilibrium (CGE) model of the New Zealand economy to estimate the effects of an increase in the savings rate.

3.1 The MONASH-NZ CGE model

The MONASH-NZ dynamic CGE model contains information on 131 industries and 210 commodities. Our model was developed in close collaboration with the Centre of Policy Studies at Monash University, a global leader in building and applying CGE models to assessing policy and industry questions. The model captures the various inter-linkages between sectors, and links to households (via the labour market), the

government sector, capital markets and the global economy (via imports and exports).³

The two key advantages of a dynamic CGE model over alternatives, such as input-output models, are that they allow us to consider resource reallocation in response to price changes and that they can take into account the timing of the shocks to the economy.

3.2 Modelling scenarios

NZIER's CGE model works by comparing what would happen if the New Zealand economy undergoes a significant change (the counterfactual) with what would happen in the business as usual (BAU) or baseline scenario. The BAU scenario in this research is the projections for the New Zealand economy out to 2025, using NZIER's *Quarterly Predictions* forecasts, labour force and productivity assumptions.

We then introduce two significant changes (or 'shocks') to the BAU scenario to show the impact of increasing New Zealand's savings rate and reducing New Zealand's NFL. There are two variables in the model that we shock⁴:

- The savings rate (which reduces foreign borrowing)
- The cost of capital (as reduced exposure to economic shocks may lower the country's risk premium, and lower consumption reduces inflationary pressure).

3.2.1 Savings rate

The primary shock to the model is an increase in the rate of savings. We achieve that by exogenously decreasing the average propensity to consume (APC) out of gross national disposable income (GNDI) from the current level of 84% down to about 80%. That is, for every dollar of national income, a greater share is saved instead of being spent.

In order to achieve the desired level of NFL we reduce it by approximately three percentage points each year for the decade from 2010 to 2020. Once the desired level of NFL has been reached we increase the APC to slightly below its initial level, in order to maintain NFL at 60% of GDP.

The counterfactual scenario, in which the intervention does not occur, assumes that the ratio of NFL to GDP increases over time up to 120% of GDP by 2025. Further research could consider alternative paths of the ratio in the baseline scenario.

³ For more detail on the model, see NZIER. (2009). 'Short term gain, long term pain? Impact of New Zealand's fiscal stimulus: A dynamic general equilibrium analysis'. NZIER Working Paper 2009/03. <http://nzier.org.nz/sites/nzier.live.egressive.com/files/WP2009-03%20Short%20term%20gain%20long%20term%20pain.pdf>

⁴ In reality there would be further effects imposed by the mechanism used to change the savings rate. In this illustrative simulation we abstract from those issues and effectively assume that some means to increase the savings rate without 'side-effects' has been implemented.

3.2.2 Cost of capital

The second shock we impose is a change in the cost of capital. This cost is likely to decline as New Zealand's risk premium drops with the reduction in the level of NFL.

Magnitude of decrease in costs of capital

We do not have robust empirical material on the relationship between NFL and New Zealand's country risk premium. A correlation of the mean values of NFL and money market rates between 1994 and 2004 by Rose (2009) indicates that were New Zealand to reduce its NFL to 60% of GDP then it might enjoy money market rates up to 100 basis points lower on a base of 5.5%.⁵ However, Rose's paper is not a causal analysis. The IMF gives similar estimates of 30 to 100 basis points.⁶

In this paper we take the midpoint of these estimates. A 100 basis point drop from a level of 5.5% implies a reduction in our cost of capital of almost 18%, while a 30 point drop would reduce it by 5.5%. Hence, we assume the cost of capital will progressively fall by a cumulative 10% as the level of NFL drops to 60% of GDP. For a business facing a weighted average cost of capital of about 10% that would reduce their cost of capital by a whole percent.⁷

Timing of decrease in cost of capital

We model the change in the cost of capital as a linear decrease over the course of the nine years as New Zealand's foreign liability diminishes. This assumes that financial markets respond gradually to the changes in the risk premium as there is more certainty that the level of NFL will drop.

It could be argued that if the government announced some mechanism that would increase national savings by the required three percentage points each year, and that change was expected to persist, one might expect capital and equity markets to rapidly price in the future changes to New Zealand's risk premium and significantly reduce our cost of capital. However, there is rarely certainty of government policy over the course of a decade, particularly with topics as contentious as savings policies. As such, our approach of gradually decreasing the cost of capital seems sensible. Further research could examine alternative timing scenarios.

⁵ Dennis Rose, "Overseas indebtedness, country risk and interest rates," *Policy Quarterly* 5, no. 1 (February 2009): 3-9.

⁶ Werner Schule, *New Zealand: Selected issues* (International Monetary Fund, April 2010).

⁷ PricewaterhouseCoopers, *The Cost of Capital Report*, March 2010.

4. Results

In order to better understand the mechanisms at play it is helpful to present first the results into the changes driven entirely by the change in the savings rate and then present the total impact, including the change in the cost of capital.

We report the macroeconomic results using two measures of national income:

- GDP measures the physical amount of goods and services produced in the economy
- GNDI measures the purchasing power of all New Zealanders' income. Because it measures income, rather than production, it is a better proxy for welfare than GDP.

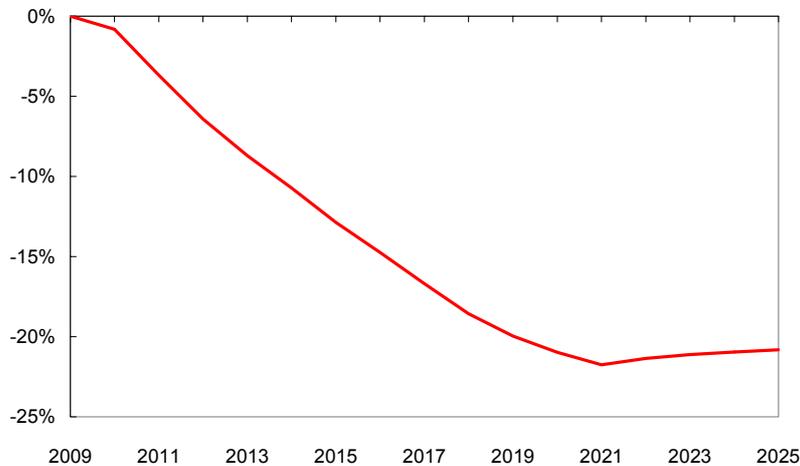
4.1 Change in savings rate alone

4.1.1 Direct impacts

Increasing the savings rate directly reduces household consumption and increases the supply of funds to the investment market. That in turn reduces New Zealand's reliance on overseas borrowing and allows us to pay down overseas debt.

Figure 2 Reduction in net foreign liabilities

Change in NFL as a percentage of GDP



Source: NZIER

The decrease in NFL also reduces the interest payments that New Zealand makes offshore by up to \$10 billion per year by 2025.

4.1.2 Paying off the debt

Reducing New Zealand's overseas debt has a significant impact on the currency: when the rate of savings is increased, New Zealand becomes a net saver instead of a net borrower. What was previously a flow of money into the country becomes a

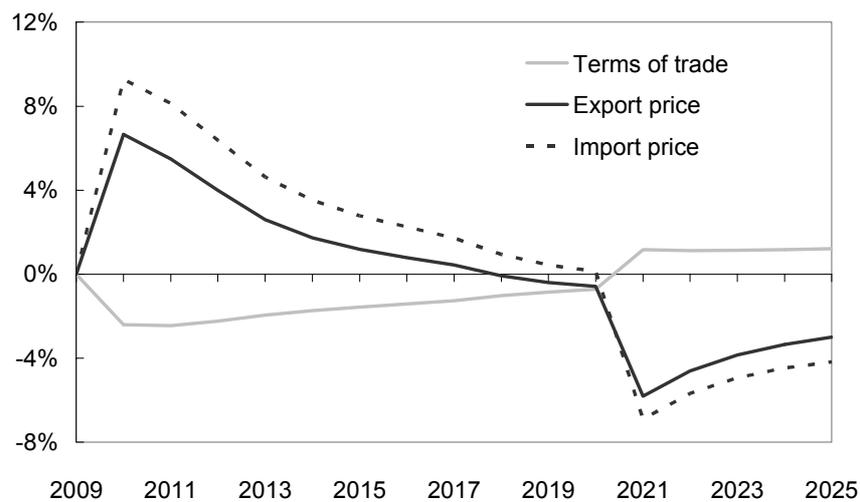
flow out of the country as we repay debt. That increases the supply of New Zealand dollars to foreign exchange markets and causes a depreciation of the currency.

The consequence of the depreciation is to make our exports more attractive to overseas buyers and boost demand for our exports, which increases both the prices at which exports are sold and the quantity exported (see Figures 3 and 4). Concurrently, the local price of imports rises due to the depreciation, which causes consumption of imported goods to fall.

Both import and export prices rise as a consequence of the depreciation, but the net effect is a fall in New Zealand's terms of trade – at least until 2020. That is because the MONASH-NZ CGE model assumes imperfectly elastic demand for exports. The consequence of those assumptions is that the price of imports experiences the full effect of the currency depreciation while the effect on our export prices is dampened by an increase in export quantities. Thus depreciation has a negative effect on our terms of trade.

Figure 3 Trade prices and the terms of trade – savings rate effect only

Percentage deviation from business as usual



Source: NZIER

High import prices combined with lower household spending cause GDP to fall slightly between 2010 and 2020, as shown in Figure 5. However, the cost to households is offset somewhat by the increased export incomes and decreasing interest burden on the nation's incomes.

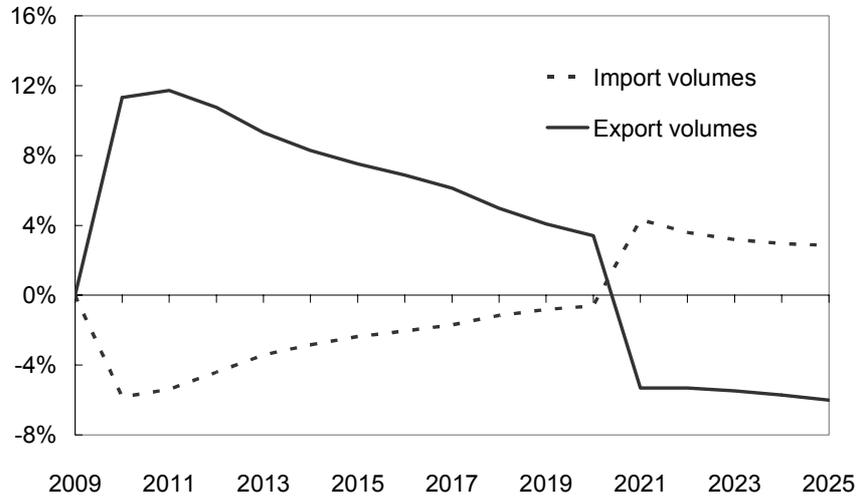
4.1.3 Enjoying the gains

Once the level of NFL has decreased to the target of 60% of GDP we increase the APC to hold the ratio constant. That adjustment in 2020 causes the outward flow of money to cease and the currency to appreciate significantly, as can be seen in

Figure 3. As a consequence of increased terms of trade, the boom enjoyed by exporters is reversed while consumers benefit from cheaper imported goods.

Figure 4 Trade volumes – savings rate effect only

Percentage deviation from business-as-usual

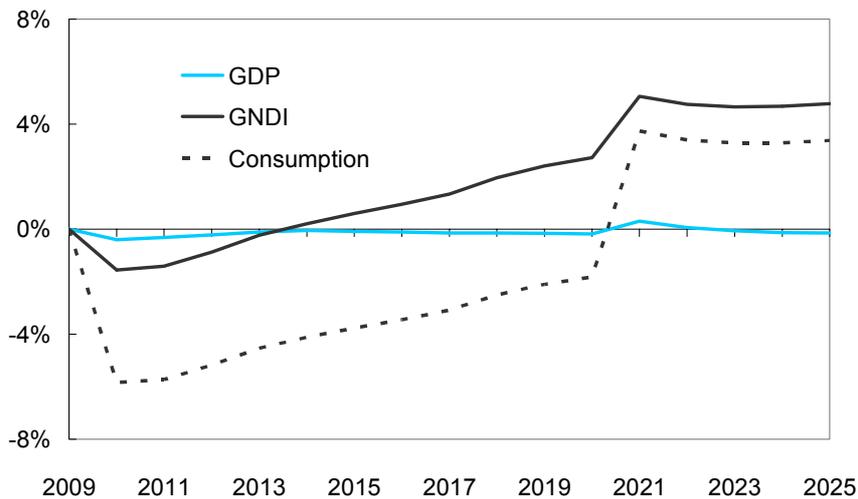


Source: NZIER

As Figure 5 shows, an increase in the propensity to consume, along with a reduction in the price of imports, boosts incomes (as measured by GNDI) once again.

Figure 5 GDP, income and consumption – savings rate effect only

Percentage change from business-as-usual



Source: NZIER

Notably, this causes consumption levels to rise above business-as-usual despite the APC being slightly lower than in the base case (in order to keep NFL down). That is because of the reduction in interest payments overseas, which decline by over \$10

billion per annum by 2025. The gradual decline in overseas payments required to service debt is evident in the recovery of GNDI displayed in Figure 5.

GDP declines slightly by 2025 due to the drop in net exports, while GNDI increases by over 5%. That raises the question as to whether it is proper to describe such a situation as beneficial to the nation. If one believes that utility from market goods is derived from consumption then, while production has diminished, one would count this situation as better than the counterfactual of business-as-usual. Indeed, calculating the equivalent variation of the change in the final year of the simulation (2025) indicates a gain of \$5.8 billion in 2009 prices.

4.2 Total change including fall in cost of capital

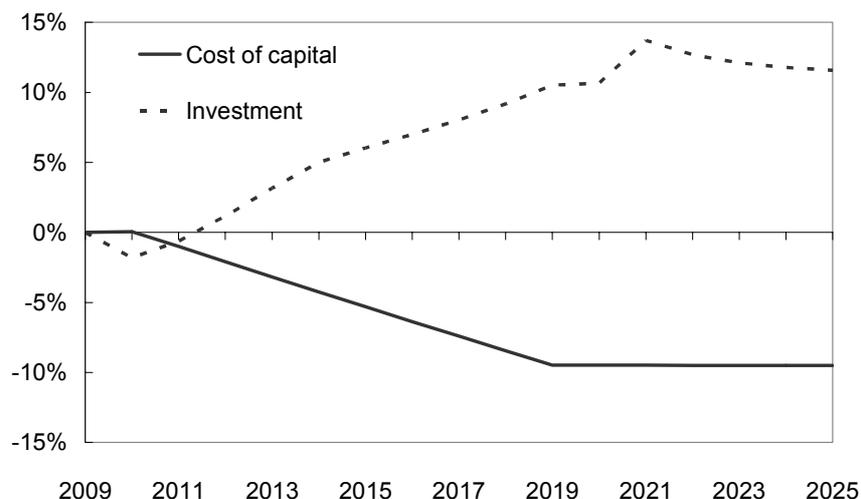
We now combine an increase in saving with a decrease in the cost of capital.

4.2.1 Direct impact

The key difference in this simulation is the addition of a progressive decrease in the cost of capital over time, as shown in Figure 6.

Figure 6 Change in cost of capital and investment

Percentage change from business-as-usual



Source: NZIER

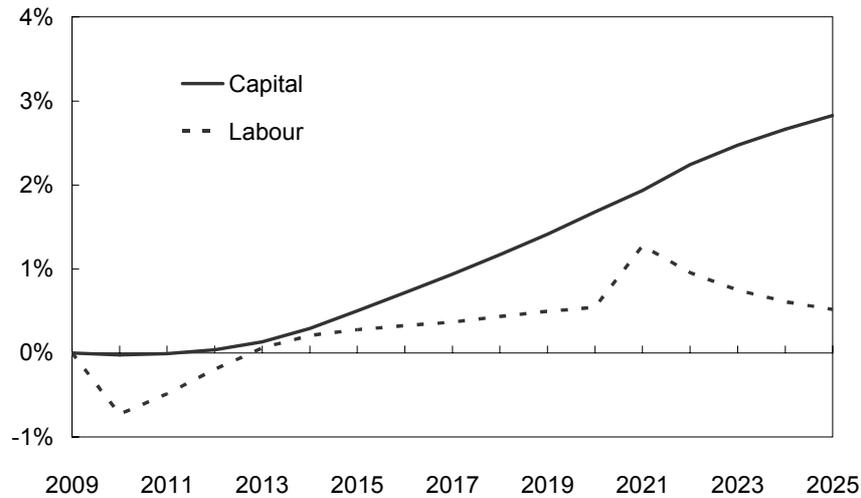
This change is additional to the changes in the savings rate and generates additional investment that peaks in 2021 at 13% above base case.

4.2.2 Capital growth boosts incomes

The primary effect of the decreased cost of investment is to create a large quantity of capital that would otherwise have been unprofitable. Under our scenario, by 2025 the stock of capital in the economy has grown by 6% and continues to increase. That increased capital stock drives production growth and is responsible for 90% of the increase in GDP as production becomes more capital intensive.

Figure 7 GDP contributions by factor cost

Contribution of factors to change in GDP

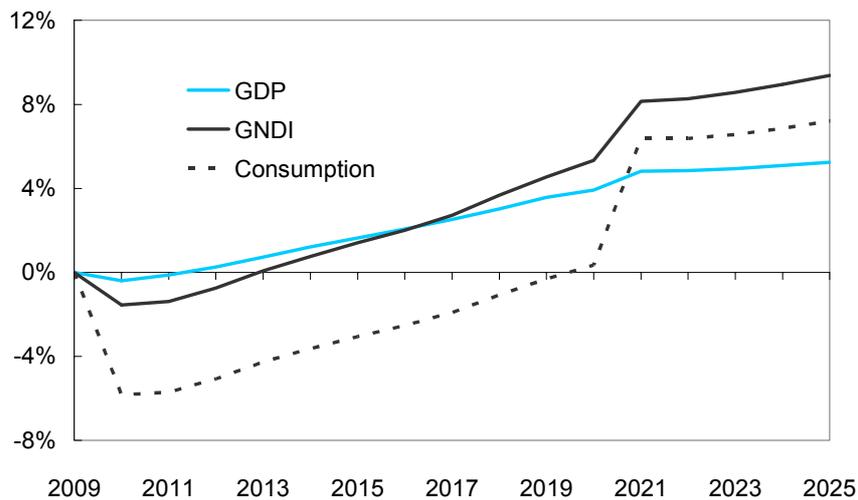


Source: NZIER

Figure 7 shows the change in the contributions of labour and capital to GDP. It clearly illustrates the growing reliance on capital in the production process as it becomes cheaply available. Nonetheless, the returns to labour and land also increase as the available stock of capital rises. By 2025 the real wage has risen by 7% in response to the increased effective marginal productivity of labour.

Figure 8 GDP and income – savings rate and cost of capital effects

Percentage change from business-as-usual



Source: NZIER

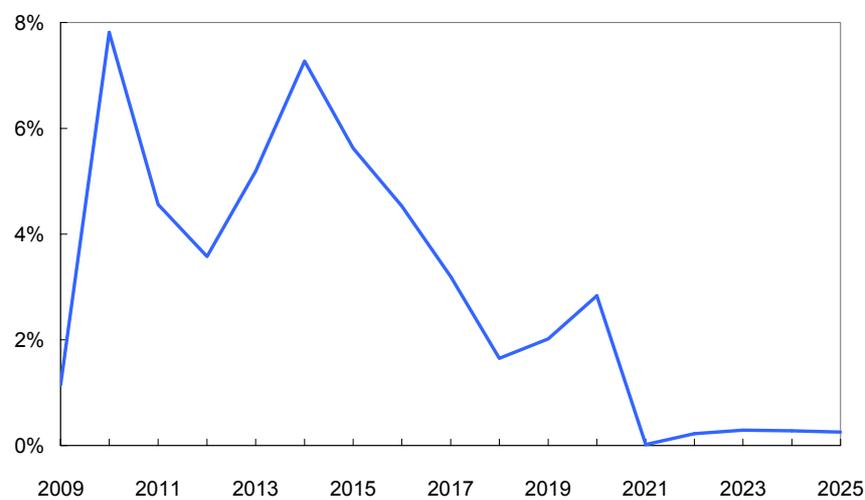
The increased returns to labour and land generated by growth in the stock of capital will lift incomes nationwide. By 2025 GNDI has risen more than 9% above baseline and consumption levels are over 7% higher.

The increased incomes generated are clearly reflected in Figure 8, which shows the path of GNDI and GDP over time. Comparing Figure 8 with Figure 5 shows the dramatically higher levels of GDP and income that are induced by the increased capital stock. Indeed, the initial costs of transition to a new level of NFL would be almost erased if the nation were to enjoy a reduction in its risk premium of this magnitude.

4.2.3 Rebalancing the economy towards tradeables

At an industry level it is interesting to ask who gains and who loses the most from such a significant change in the economy. The greatest impact is upon export-facing industries in the tradeables sector.

Figure 9 Net exports as a share of GDP



Source: NZIER

During the transition period exports grow as the devaluation of the exchange rate make them more competitive overseas. That causes a shift in resources towards the tradeables sector and exports grow as a share of GDP (Figure 9). This outcome is consistent with the Government's desire to see New Zealand's economic growth being more export-driven.

The reverse happens when the APC shifts back towards the baseline level after 2020. A permanent movement in the level of NFL, and thus the terms of trade, causes net exports to be lower as a share of GDP than in the baseline case.

5. Conclusions and next steps

NZIER's modelling exercise has demonstrated that an increase in national savings and a drop in the cost of capital would generate the following benefits for the New Zealand economy:

- The decrease in overseas debt would reduce the interest payments that New Zealand makes offshore by up to \$10 billion per year by 2025.
- Investment would rise to be around 13% higher in 2020 than in the baseline scenario.
- This increase in the capital stock allows GDP to rise by around 4% by 2025.
- Gross National Disposable Income would increase by up to 9% over the same period. The difference between this growth and GDP growth is due to lower levels of net foreign liabilities.
- National consumption would rise by around 7%.
- Real wages would lift by 7% due to improved labour productivity.
- The economy would become more export-driven due to a depreciation of the New Zealand dollar following reduced offshore payments.

However, we also show that there are short-term costs associated with boosting national savings if there is no concomitant fall in the cost of capital. The initial depreciation of the New Zealand dollar pushes up the costs of imports. This, combined with initially lower levels of household spending, depresses GDP below potential for some years. Therefore, the extent to which financial markets perceive that New Zealand's risk premium will fall following any improvement in national savings is a critical driver of the overall economic impacts of such a shift.

These results accord with our broad expectations, but there are a number of possibilities for further research that could be investigated. Possible next steps are to:

- Impose a different base case in which NFL tends to grow over time in accordance with Treasury's forecasts.
- Conduct a range of simulations, to explore different policy goals and to assess the sensitivity of results to changed assumptions.
- Consider the implications of specific savings policies, which are likely to have differing costs and benefits.



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