



Short term gain, long term pain?

Impact of New Zealand's fiscal stimulus | A dynamic general equilibrium analysis

NZIER viewpoint | Working paper 2009/3

About NZIER

NZIER is a specialist consulting firm that uses applied economic research and analysis to provide a wide range of strategic advice to clients in the public and private sectors, throughout New Zealand and Australia, and further afield.

NZIER is also known for its long-established Quarterly Survey of Business Opinion and Quarterly Predictions.

Our aim is to be the premier centre of applied economic research in New Zealand. We pride ourselves on our reputation for independence and delivering quality analysis in the right form, and at the right time, for our clients.

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.

The preparation of this paper was funded from those resources.

NZIER was established in 1958.

Authorship

This report has been prepared by James Giesecke of the Centre of Policy Studies, Monash University and Chris Schilling at NZIER. It was reviewed by John Ballingall and Jean-Pierre de Raad.

Key points

The fiscal stimulus of almost \$10b over four years will result in an extra 10,000 jobs in the short run, but it will reduce future consumption by \$160 per person per year. We can spend now, but we have to pay for it eventually.

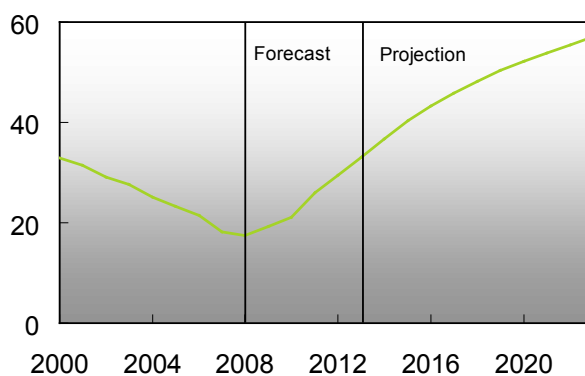
The Government faces a real juggling act in its forthcoming Budget between short and long term objectives. Its expenses are now exceeding tax revenues; according to the Budget Policy Statement 2009 operating deficit is forecast to reach 3% of GDP over the next years and debt will rise – possibly to 57% of GDP in 2023 in the absence of policy changes (Treasury 2008c).

To repay debt and balance its budget, the Government may need to do more than forego its planned tax cuts. Taking into account also the future superannuation and health cost pressures, we think that its medium term position implies the need to consider a combination of public spending cuts and productivity improvements, tax reforms, and asset sales.

We find that a policy that reduces the cost of employing people could boost employment more at a similar cost to long-run consumption. Better still would be well-targeted spending on infrastructure to deliver long-run productivity improvements. Given New Zealand's longer term growth challenge, any fiscal efforts to stabilise the economy and avoid a more severe recession should have productivity at the centre of the policy radar screen.

Figure 1 Government gross debt projection

Percent of GDP, year ending 30 June



Source: Treasury (2008c)

In this report we use our new dynamic computable general equilibrium model to analyse the impact of the personal tax cuts, cuts to small business taxes, and infrastructure spending that have been announced since late last year. We have assumed in this paper that the Government will need to raise taxes after the economy recovers to deal with the projected budget deficits and worsening net Crown debt.

Based on those assumptions we find that the current package is likely to:

- generate an extra 10,000 jobs in the short run
- raise GDP in the short term by 0.6 percentage points
- lead to lower employment after 2012 and a 0.8 percentage point fall in long-run real consumption per annum than without the stimulus.

If the aim is to boost employment then personal income tax cuts are not the most effective policy. This is because they take an indirect route to employment generation. Extra disposable income can be saved rather than spent, or spent on imports rather than domestic products.

An alternative policy would be to introduce a cut in the cost of employing people equivalent to the personal income tax cuts. One way to achieve this is to (temporarily) reduce payroll taxes that employers have to pay, such as the ACC levy. This would generate more than double the short-run employment gain – 22,000 – for a similar long-run real consumption cost.

We also find that well-targeted infrastructure spending that leads to long-run productivity improvements can generate persistent net benefits. The challenge with this kind of initiative would be to identify projects with the highest impact on productivity.

Generally speaking, the role of fiscal policy is better suited to addressing medium term challenges than pursue short-term employment goals. Monetary policy can be used to maintain the near term balance between inflation and economic growth. The Reserve Bank has reduced the official cash rate significantly and this should be allowed to work.

Based on our analysis we conclude that:

- there are no free lunches – spending now has to be repaid so lets spend it wisely
- policies that reduce employment costs can create more employment per dollar spent than personal income tax cuts in the current environment
- well-targeted spending on infrastructure has a much better potential to deliver long term gains through productivity improvements.

Contents

Key points	4
Background	8
The model	9
Modelling the fiscal stimulus	10
Personal tax cuts	10
Business tax cuts	10
Infrastructure spending	10
Results	11
Short run employment boost followed by a knock	11
Consumption boost now must be paid for later	11
Alternative: a cut in the cost of employment	14
Result: more gain for the same pain	15
Conclusions	16
References	18

Background

In light of weakening economic conditions spurred on by the global financial crisis that deepened in 2008, governments around the world have introduced discretionary fiscal stimulus policies in an attempt to boost aggregate demand and avoid unemployment (OECD 2009).

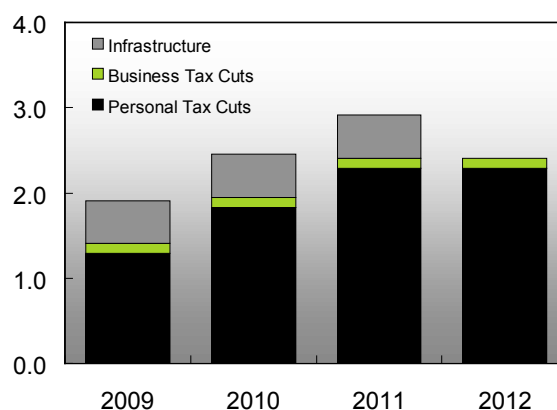
The New Zealand Government has likewise introduced a series of discretionary fiscal stimulus policies.

We investigate the impact of three such policy measures introduced or reconfirmed after October 2008, totalling \$9.7b over four years:

- personal tax cuts of \$1.29b in 2009, \$0.54b in 2010 and \$0.47b in 2011 (0.7%, 0.3% and 0.2% of GDP respectively)
- small business tax cuts totalling \$0.48b over four years commencing in 2009 (\$0.12b or 0.1% of GDP per year)
- infrastructure spending of \$1.5b over three years (0.3% of GDP per year).

Collectively, these policies contribute 5.4% to what is termed the fiscal impulse indicator. This is the discretionary movement toward deficit, expressed as a percentage of GDP over the 2009-2012 period.

Figure 2 New Zealand fiscal stimulus
\$ billion



Source: Treasury (2008a)

The model

We evaluate the economic consequences of the fiscal stimulus package using MONASH-NZ, NZIER's new dynamic computable general equilibrium model of the New Zealand economy. It captures the interaction between agents (e.g. government, consumers, and industry), factors (labour, capital and land) and markets within a consistent economic framework. The model reports the impact over time on key indicators, such as economic growth, workers' wages, returns to capital, the fiscal balance, and productivity.

The benefit of this model over other analytical techniques is that it can trace the second, third and subsequent flow-on effects of a 'shock', such as a tax cut, to the economy. Furthermore, being a dynamic model, it is able to show precisely how these adjustments take place over time – a unique and important part of the story.

MONASH-NZ is a recent development from the collaboration between the Centre of Policy Studies and NZIER. It is a New Zealand implementation of the well-known MONASH model (Dixon and Rimmer 2002) that has been widely used for policy analysis within Australia and around the world.

Features of MONASH-NZ include:

- 131 industries and 210 commodities
- Business as Usual (BAU) path calibrated out to 2025 using NZIER forecasts and Statistics New Zealand long-term productivity and labour supply estimates
- a database based on 1996 input output data and 2003 supply and use data (Statistics New Zealand 2008)
- three types of dynamic adjustment:
 - industry-specific capital accumulation linked to industry-specific net investment
 - annual changes in the national net foreign liability position, related to the annual national investment/savings imbalance
 - a lagged adjustment path for the labour market. In the short-run, real consumer wages are assumed to be sticky. Hence short-run labour market pressures mostly manifest as changes in employment. In the long-run, all labour is assumed to be fully employed, so that labour market pressures are reflected in changes in real wages.

Results are shown as changes from the base case or business as usual path.

Modelling the fiscal stimulus

Personal tax cuts

The reduction in personal income taxes is modelled as a transfer from government to households.

In the model, government spending is assumed to be fixed. It is also assumed that there is no budget surplus, so that the government runs a budget deficit to pay for the income tax cuts. Hence, the government will pay for tax cuts from increased overseas borrowing, which they pay interest on. This is a close reflection of the current situation faced by the New Zealand Government.

Because an ongoing budget deficit is not sustainable, it is also assumed in the model that personal income tax rate cuts are undone after the crisis ends. Personal income tax is progressively returned to the base case level over 2012-2017.

Business tax cuts

We treat the cuts to business taxes as reductions in net production taxes. We do not distinguish the size of firms within the model, so business tax cuts are applied across the board. For the same reason as for the personal income tax cuts, we return the business tax cuts to base case over the period 2012-2017.

Infrastructure spending

The stimulus package includes an increase in public infrastructure spending equal to 0.3 percent of GDP in each year over 2009-11. We identify and model two effects:

- government spending on construction services rises relative to the base case
- public capital produced by extra infrastructure spending will generate ongoing benefits.

We assume that each additional dollar of infrastructure spending provides an annuity of 15 cents. This assumption is taken from Giesecke, Dixon and Rimmer (2008) who reviewed the literature on returns from public infrastructure. It is consistent with rates of return on Australian public infrastructure capital found by Demetriades and Mamuneas (2000).

In our modelling, this impact is delivered as a rise in economy-wide factor productivity.

Results

Short run employment boost followed by a knock

Figure 3 plots deviations from the base case in employment, capital and real GDP at market prices. As might be expected, GDP rises sharply through 2009-2012. The positive deviations in employment and capital account for much of the initial boost.

However, after the stimulus is turned off GDP starts to trend back towards the base case. In broad terms, aggregate demand falls when the stimulus expires and debt (net foreign liabilities) is being repaid. The demand for labour falls accordingly and, with sticky wages, employment has to fall as a result. Employment falls below the base case. GDP then starts to trend back to the base case. Over time wages get pulled back into line, so that employment can return to the base case. We assume that in the long run there is full employment.

Overall though, GDP remains above base case in the long-run. This is caused by the assumed productivity improvement from the infrastructure spending. Real GDP ends our simulation period approximately 0.25 percentage points above base case, with approximately 0.14 percentage points of this due to the productivity gain generated by the new infrastructure.¹ The remainder is due to the positive impact on capital and an allocative efficiency effect arising from stimulation of indirectly-taxed consumption.

In the short-run, we assume capital stocks are slow to adjust. But with employment and the terms of trade above base case, the rate of return on capital rises. This explains the lift in real investment and the capital stock growth relative to base case.

The increase in government spending is funded by overseas borrowing. The terms of trade rises in the short run as the demand for New Zealand dollars exceeds its supply. The overseas borrowing is matched by a trade deficit. Higher export prices and demand for capital raise the return to capital. In the long run the terms of trade fall as New Zealand pays back its overseas debt. This fall in the real exchange rate results in a matching trade surplus.

Figure 4 decomposes the impact on employment into the contributions made by each of the three components of the fiscal stimulus package. The largest contributions are made by the personal tax cuts and the infrastructure spending components.

¹ $= 0.9 * 0.15$. That is, 0.9 percentage points of GDP (representing the size of the infrastructure spending) generating an annuity of 15 cents in the dollar.



Consumption boost now must be paid for later

The fiscal stimulus has a big initial impact on private consumption (Figure 5), but in the long run consumption is below that of the base case.

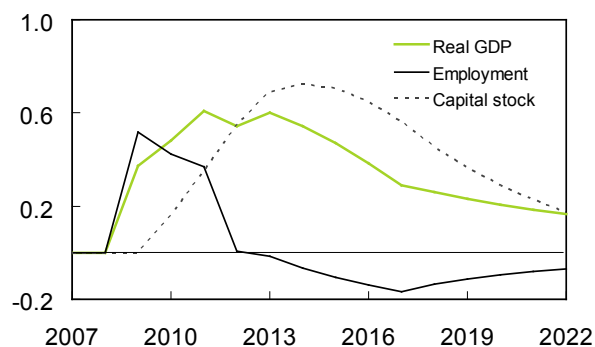
This pattern is because we assume that tax rates are progressively returned to base case levels over 2012-2017, and because resources are devoted to repaying debt.

The government must do this to bring the budget back into balance and return to a sustainable debt-to-GDP ratio. (The alternative would be to cut public spending. This will have a different – and the OECD (2009) would suggest bigger – dollar-for-dollar impact compared to reversing the personal income tax cuts.)

In other words, there is no such thing as a free lunch – New Zealand must pay for the increased net foreign liabilities incurred to fund the fiscal stimulus.

Figure 3 Impact on GDP, employment and capital stock

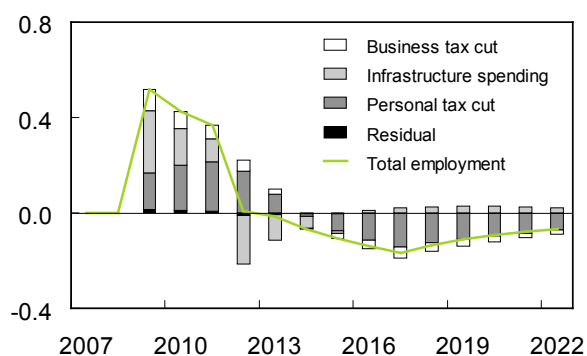
% deviation from base case



Source: NZIER

Figure 4 Contribution to employment result

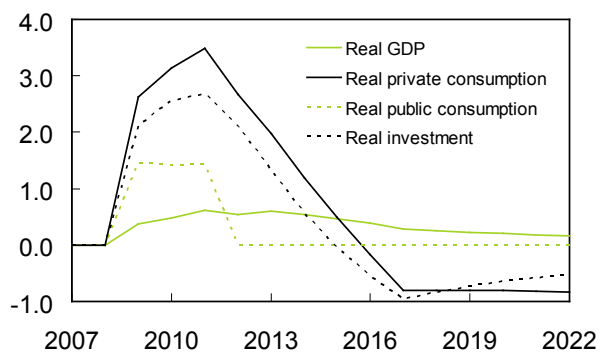
% deviation from base case



Source: NZIER

Figure 5 Impact on GDP, consumption and investment

% deviation from base case



Source: NZIER

Alternative: a cut in the cost of employment

The infrastructure spending and personal income tax cuts of the fiscal stimulus promote employment over 2009-2011. But it comes at a cost of a period of employment being below base case in the medium term, and a fall in consumption.

If employment protection or creation is the policy objective, then a more direct way to target fiscal policy would be to cut the cost of employing people. As there is no national award system or some other way to orchestrate an across-the-board wage cut, wages are not a useful policy target. But a feasible option would be to cut payroll taxes or other costs on labour paid by the employer. A policy of this type has been advocated by Dixon (2009) for Australia's response to the global financial crisis.

In New Zealand, payroll taxes as such are largely absent, but there are other forms of taxes on labour paid by employers, rather than employees. For example, the ACC Workplace Cover, Residual Claims and Health and Safety in Employment levies are essentially payroll taxes imposed on employers to cover work-related personal injury costs, the on-going costs of historical injuries, and the Occupational Health and Safety Department of the Department of Labour. The combined levy averages 1.26% of the payroll.

The default annual leave provision in the Holidays Act is another lever the Government could consider to adjust the cost of labour. Turning back the clock from 4 to 3 weeks default annual leave would cut two percent off labour costs. But this is unlikely to filter through quickly to the full labour force, so may turn out to be as sticky as wages.

Given this, we model the impact of cutting payroll taxes instead of an equivalent personal income tax. This could be achieved by the Government giving employers a time-limited levy holiday on the ACC Workplace Cover and instead paying ACC directly (instead of introducing personal income tax cuts).

In this alternative simulation, we reduce the employer cost of labour by one percentage point.¹ The lower levy is left in place for two years. Then, as before, we steadily unwind the payroll tax cut over 2011 to 2017. From the Government's point of view, this would be the same as directing 0.3% percentage points of the fiscal impulse in 2009 from personal income tax cuts to a net cut to employer labour taxes.

¹ The ACC Annual Report 2008 estimates the revenue from the Workplace and Residuals Claims levies totalled \$1.18 billion in 2008, or around 1% of employer payroll costs.

Result: more gain for the same pain

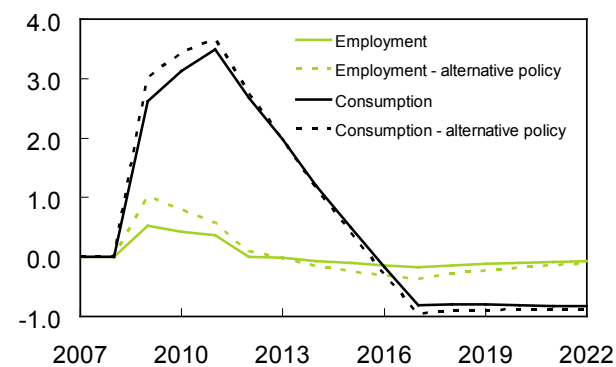
Figure 6 compares employment and real consumption deviations under the fiscal stimulus package analysed above and our alternative.

Key results are:

- a cumulative movement towards fiscal deficit and a net increase in foreign liabilities, similar to the current fiscal stimulus package
- by 2022, real private consumption spending 0.88 percent below base case, similar to the 0.83 per cent we estimate to be the impact under the current fiscal stimulus
- an employment impact in 2009 and 2010 that is approximately double that under personal income tax cuts – 22,000 or 1.0 percent instead of 10,000 or 0.5 percent in 2009.

Figure 6 Impact of cutting the cost of employment

% deviation from base case



Source: NZIER

Conclusions

New Zealand is not immune from the economic fall-out of the global financial crisis, even if its financial system has not been buffeted to anywhere near the same extent as some countries in the Northern Hemisphere (such as the US, UK, and Ireland). Aggregate demand is affected by the fall in household wealth, the slowing of demand for our exports from our trading partners, and a caution on spending commitments by consumers and firms.

Monetary policy has led to a rapid winding-down of interest rates and its effect is yet to work through. Monetary policy is being supported by automatic stabilisers (welfare spending) and complemented by a number of discretionary fiscal initiatives, such as the bringing forward of personal income tax cuts, and infrastructure spending. The initiative amount to just under \$10b delivered over four years.

The New Zealand fiscal impulse indicator – one particular measure of the size of the fiscal stimulus – amounts to about 5.4 percent of GDP by 2012. Even though combined the policies appear modest, based on the initiatives announced between October 2008 and March 2009, the fiscal stimulus was rated as among the highest in the OECD (OECD 2009).

We find that the stimulus package will improve GDP and have some impact on reducing the extent of job losses. The latter is the stated aim of the fiscal stimulus. Even so, the impact is a modest gain of 10,000 jobs saved in the short run, compared to the 50,000 plus increase in unemployment forecast to occur over the next year.

The downside is that the efforts to boost employment now come at a long-run cost to private consumption – the fiscal stimulus is debt financed, and this needs to be repaid at some stage. The government budget has to return to balance. This implies public sector spending cuts or tax increases. Given this, we have assumed that the tax and spending increases that make up the fiscal stimulus are only time-limited – as recommended by the IMF (Spilembero et al 2008).

We also find that cutting the cost of employing people would be more cost-effective at reducing job losses, compared to personal income tax cuts of an equivalent fiscal cost. Relative to base case, cutting pay-roll levies or similar would stimulate employment by up to 22,000 (one percent). The long-run financing cost of this alternative, as measured by a cut in long-run real consumption, would be comparable to that of the Government's present fiscal stimulus package, but the impact would be greater.

Regardless, infrastructure spending remains the type of initiative with the best long-run pay-off. This is because of the productivity gains we assume would occur. This requires of course for there to be high quality public infrastructure projects to be available and for money to be directed to opportunities with the highest return. That is easier said than done. The task will be beset by the usual imperfect information and capture problems. But it is also a real opportunity to chip away at addressing New Zealand's productivity challenge.



Our overall assessment is as follows:

- fiscal stimulus comes at a cost – there are no free lunches
- policies that reduce the cost of employing people can create more employment per dollar spent than personal income tax cuts in the current environment
- well-targeted spending on infrastructure will deliver long-term gains through productivity improvements.

References

Demetriades PO, Mamuneas TP (2000) "Intertemporal output and employment effects of public infrastructure capital: evidence from 12 OECD economies". The Economic Journal 110: 687–712.

Dixon, P. B., Rimmer, M. T., (2002) "Dynamic General Equilibrium Modelling for Forecasting and Policy: A Practical Guide and Documentation of MONASH" Contributions to Economic Analysis Vol. 256. North Holland, Amsterdam.

Dixon, P.B. (2009) Stimulating the Australian economy: comments to the Senate Standing Committee on Finance and Public Administration. Centre of Policy Studies, 9th Feb 2009,
http://www.monash.edu.au/policy/Senate_Dixon_090209.pdf

Giesecke, J.A., P.B. Dixon and M.T. Rimmer (2008). "Regional macroeconomic outcomes under alternative arrangements for the financing of public infrastructure". Papers in Regional Science, Vol 87, No. 1, March 2008, pp. 3-31.

Law Library of Congress (2009) Fiscal Stimulus Plans: Recent Developments in Selected Countries.
http://www.loc.gov/law/help/financial_stimulus_plan.php

OECD (2009) Interim Economic Outlook March 2009 OECD: Paris.

Spilimbergo A., S Symansky, O Blanchard, C Cottarelli (2008) Fiscal Policy for the Crisis IMF Staff Position Note. www.imf.org

Treasury (2008a) Additional Information for Economic Fiscal Forecasts December 2008. 18th December 2008.
<http://www.treasury.govt.nz/budget/forecasts/eff2008/eff08-add.pdf>

Treasury (2008b) Budget Policy Statement 2008.
<http://www.treasury.govt.nz/budget/2008/bps/bps08.pdf>

Treasury (2008c) Economic and Fiscal Forecasts December 2008. 18th December 2008.
<http://www.treasury.govt.nz/budget/forecasts/eff2008/eff08.pdf>

Treasury (2008d). Pre-election Economic and Fiscal Update 2008.
<http://www.treasury.govt.nz/budget/forecasts/prefu2008/prefu08-pt1of9.pdf>

Treasury (2008e). 2008 Pre-election Update Additional Information.
<http://www.treasury.govt.nz/budget/forecasts/prefu2008/prefu08-pt9of9.pdf>



8 Halswell St, Thorndon | PO Box 3479, Wellington
Tel: +64 4 472 1880 | Fax: +64 4 472 1211
econ@nzier.org.nz | www.nzier.org.nz

NZIER's standard terms of engagement for contract research can be found at www.nzier.org.nz. While NZIER will use all reasonable endeavours in undertaking contract research and producing reports to ensure the information is as accurate as practicable, the Institute, its contributors, employees, and Board shall not be liable (whether in contract, tort (including negligence), equity or on any other basis) for any loss or damage sustained by any person relying on such work whatever the cause of such loss or damage.