

# The impact of fiscal policy on the business cycle

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This article sets out theoretical and empirical evidence on the impact of fiscal policy on the business cycle. Our analysis suggests that fiscal policy has a significant influence on cyclical conditions in New Zealand. Simple measures of the stance of fiscal policy, such as the Treasury's measure of fiscal impulse, are useful, but the details of fiscal initiatives also need to be analysed to determine macroeconomic impact. For example, tax changes can have very different effects: tax cuts designed to spur savings could be mildly contractionary, while company tax cuts will tend to be expansionary. The significance of fiscal changes for monetary policy also depends partly on other factors driving the business cycle.

## 1 Introduction

The spending and taxation plans of the government are often collectively described as fiscal policy. Fiscal policy is generally shaped by factors other than stabilising the business cycle – the government's main focus is to take in tax revenue to pay for services like hospitals and schools, and also fund superannuation and other transfer payments.<sup>2</sup> These activities may help to stabilise the business cycle through so-called 'automatic stabiliser' effects. Beyond that, one conventional view is that the role of macroeconomic stabilisation should be left primarily to monetary policy.<sup>3</sup>

Fiscal policy is one of a range of factors the Reserve Bank considers when assessing the economic outlook. Thus significant fiscal policy changes can lead to changes in monetary policy stance, and the Public Finance Act's provisions on fiscal reporting and transparency help ensure that the Reserve Bank has the information it needs in assessing the potential impact of fiscal policy. While there

is no formal mechanism for coordination of monetary and fiscal policy in New Zealand, in practice, there is regular discussion between the Treasury or Minister of Finance and the Reserve Bank about the economic outlook. At the time of the mid-1990s tax cuts, the Bank was asked to provide advice on the potential implications of tax cuts for monetary policy. The Bank's subsequent review of that business cycle concluded that "the tax cuts and resulting rise in spending pressure further prolonged the period of restrictive monetary policy" (Drew and Orr, 1999). This experience highlights the important effects fiscal policy can have on the business cycle and thus monetary policy. These effects are the focus of this article.

Increased government spending directly adds to the total expenditure on goods and services in the economy (which is referred to as 'aggregate demand'). Furthermore, the government's policy on taxation and transfer payments will directly affect the disposable income available to consumers. Policies that increase disposable income will tend to increase consumption, thus adding to aggregate demand. Analogously, fiscal policy can increase the after-tax profits of firms, which may in turn increase investment and aggregate demand.

In spite of these links to aggregate demand, there is no consensus on the importance of the cyclical impact of fiscal policy. One traditional strand of fiscal policy analysis (stemming from the work of John Maynard Keynes) suggests that a one-dollar expansion in fiscal policy (ie, increased spending or reduced taxes) may well increase economic activity by *more* than a dollar. In contrast, some strands of modern macroeconomic analysis reach the conclusion that,

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<sup>1</sup> Amongst others, the authors would like to particularly thank Aaron Drew, Bernard Hodgetts and John Janssen for comments and suggestions – naturally, remaining errors are the authors' responsibility.

<sup>2</sup> Fiscal policy is set by the Government in accordance with the Public Finance Act. The Public Finance Act provides for the business cycle to be taken into account in the setting of fiscal policy, but it is one of a range of objectives: "decisions are made with a view to goals such as the optimal allocation of resources, economic stabilisation, and the longer term stability of public finances" (Treasury 2005).

<sup>3</sup> There are challenges to this view. For example, some commentators have suggested that formal mechanisms for coordinating monetary and fiscal policy could aid in macroeconomic management. Along these lines, the Reserve Bank and The Treasury's 2006 Macroeconomic Policy Forum heard suggestions from external participants on how fiscal instruments could potentially be used to aid in cyclical stabilisation. For a summary of the forum, see Buckle and Drew (2006). Although this is an important area for future research, policy coordination is outside the scope of this article.

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in some circumstances, fiscal policy will have no effect on the real economy at all. Regardless of the different conclusions reached by various theoretical approaches, empirical work on fiscal policy has generally found that expansionary fiscal policy does increase aggregate demand (see section 3). This implies that taking account of fiscal policy is important when forecasting economic developments and setting monetary policy.

Recent work has emphasised the important long-run effects of fiscal policy on the economy's ability to supply goods and services.<sup>4</sup> While these effects are undeniably important, in the short-to-medium run, it is likely that supply-side effects will be outweighed by the impact on aggregate demand. For example, a cut in company tax would probably spur investment. This investment would lead to greater productive capital in the long term, but, in the short term, the investment will boost aggregate demand as capital is purchased and put in place. In other words, the demand-side effects tend to be the most crucial for monetary policy.

Discussion of the effects of fiscal policy often treats various policies as if they have similar effects on the economy. Indeed, the impact of fiscal policy decisions on aggregate demand is often summarised in measures of 'fiscal impulse' that weight various policies as if they have the same dollar-for-dollar impact on the economy. However, this article explains why different fiscal initiatives may have quite different effects on economic activity. The implication is that any analysis of the effects of a given change should carefully consider the particular policy at hand.

In section 2, we examine the theoretical literature on the effects of fiscal policy and in section 3, we go on to quantitative empirical estimates of those effects. In section 4, we look at New Zealand's recent fiscal history and outlook. Section 5 discusses some special fiscal policies such as savings incentives, and section 6 concludes.

## 2 The literature on the cyclical effects of fiscal policy

Macroeconomic theory about the cyclical role of monetary policy has advanced a lot in recent years. However, there has been less recent research on fiscal policy, and there remain disagreements about the effect of fiscal policy on the business cycle. This section provides a very brief summary of some of the key ideas in this literature. A longer treatment can be found in Hemming, Kell, and Mahfouz (hereafter HKM (2002)).

Prior to the work of Keynes (1936), the classical tradition suggested that government spending (which was generally substantially smaller before World War One at any rate) did not have a stabilisation role because resources would be expected to be fully utilised. For example, a level of aggregate demand that was below the economy's productive capacity should lead firms to cut prices, thus raising demand. This instantaneous process should ensure that demand and supply are always equal. Say's law (that supply creates its own demand) was a classic statement of this position. Fiscal expansions were thought to simply divert resources from the private sector.<sup>5</sup> This view still remains at the core of economic thinking about the demand-side effects of fiscal policy in the long run. When prices are free to adjust, government policy cannot perpetually stimulate aggregate demand beyond the level that is consistent with the full utilisation of resources.

Keynes' *General Theory* introduced the idea that there could be a lack of effective demand for prolonged periods, leading to unemployment and idle resources. In other words, the evolution of the economy could be driven by aggregate demand. Keynes' argument had particular potency in the context of the depression in the 1930s, when economic activity was well below the level consistent with full utilisation of resources. Fiscal policy that stimulates aggregate demand would then have an important role. Idle resources could be used up by government spending and aggregate demand could further be bolstered by expansionary tax and transfer policies. Within this framework, the effect of a change in fiscal policy on aggregate demand could be derived as

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<sup>4</sup> See, for example, Frenkel and Razin (1996). This literature is also reviewed in the work of Hemming, Kell and Mahfouz (2002).

<sup>5</sup> See, eg, Spencer and Yohe (1970) – the classical formulation is traced by these authors back to Smith and Mill as well as Say.

## Box 1

### Fiscal policy multipliers

If the government purchases \$1000 worth of services from a New Zealand worker, GDP will be increased by that \$1000, assuming that worker is able to undertake that job without crowding out other jobs (by working extra hours). To the extent that the additional revenue is spent by the worker, there will also be second round effects on Gross Domestic Product (GDP). The individuals who the worker buys things from will tend to spend some of that additional income, and so on. If people tend to spend a given percentage of any additional income (denoted the marginal propensity to consume, or MPC), the ultimate impact on GDP will turn out to be  $\$1000/(1-MPC)$ . For example, if MPC is 0.8, the ultimate increase in GDP from the initial increase in spending will be \$5000. The term multiplier is commonly used to denote  $1/(1-MPC)$  which in this case equals 5.

$$\begin{aligned} \text{Total increase in demand} &= \$1000 + \$800 + \$640 + \dots + \\ &= \$5000 \end{aligned}$$

This analysis ignores imports and taxes. In reality, spending that accrues to foreigners does not circulate in the economy, and taxes paid to the government will not be circulated unless they prompt new spending initiatives. If 25 percent of all spending is on imports (MPM) and the average tax rate is 30 percent (t), the correct multiplier will be  $1/(1-MPC(1-t)+MPM)$ . This turns out to be approximately 1.4, which is

considerably lower than 5, reflecting that imports and taxes stop money from circulating.

If the government instead cuts taxes by \$1000, the initial impact on household spending should be about \$800 (given that some of the tax cut will be saved by assumption). Moreover, some of that additional initial spending will be on imports. It is possible to derive various tax multiplier formulae under various precise assumptions, but it will generally be the case that the tax multiplier is lower than the multiplier on government spending. Thus, a balanced budget government expansion (where government spending is increased and funded by an increase in taxes) might expand output, but by less than an expansion funded by borrowing.

The role of imports in the multiplier implies multipliers are likely to be smaller in open economies like New Zealand. Conversely, the role of the marginal propensity to consume suggests multipliers might be relatively large in countries like New Zealand with relatively low savings rates (although savings rates represent an *average* propensity to consume, which may be quite different to the marginal propensity).

As noted below, pressure to expand output will also put some upward pressure on prices, interest rates, and the exchange rate. These effects, which could be called real and financial crowding out, further reduce the multiplier effects that can be expected in reality. This is reflected in the empirical and model-based results we describe in section 3.

a multiple of the dollar amount spent on the policy – this is known as the fiscal ‘multiplier’. In many instances, the multiplier was thought to be greater than one. For example, a one-dollar increase in spending could increase demand by more than one dollar as the extra money flowed throughout the economy. Box 1 discusses the multiplier concept in more detail.

While there have been many critiques of this analysis over the years, the notion of a multiplier is still applied in the empirical literature. With some caveats, the empirical work we review in the next section suggests fiscal expansions are expansionary for the economy as a whole in the short run. However, they also suggest that, in normal circumstances where there are not abundant spare resources, the ‘multipliers’ may be much smaller than this simple framework suggests.

Some of these caveats come out of the classical tradition, and were acknowledged in the *General Theory*. Even over relatively short time horizons, some relative prices adjust to account for the effects of changes in fiscal policy. For example, stimulatory fiscal policy will tend to bid up the interest rate (government spending may require more borrowing, and the competition between the government and the private sector for funds could put upward pressure on the interest rate). This, in turn, would tend to *crowd out* some consumption and investment spending that would otherwise have occurred.

In an open economy, increases in demand (and consequent shortages of domestically produced goods and services) may lead some households and firms to spend a greater proportion of their income on products from foreign

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suppliers. If the economy has a floating exchange rate, expansionary fiscal policy and rising interest rates will tend to cause an exchange rate appreciation that will also encourage this effect. As a result, falling net exports can be an additional channel for crowding out demand. However, this effect may be limited if, as seems likely, some of the new demand can only be fulfilled by local firms.

Government spending can also crowd out private spending by acting as a substitute for it. For example, an increase in public health spending may displace private spending on health care. On the other hand, some government spending (such as a new road) could be complementary and lead directly to increased private consumption or investment.

Some subsequent strands of economic research have more fundamentally questioned the behavioural assumptions underlying multiplier analysis, suggesting it can lead to misleading conclusions about the effects of fiscal policy. This approach has placed a new emphasis on intertemporal decision-making and expectations.

One early, and dramatic, result was the so-called 'Policy Ineffectiveness'<sup>6</sup> proposition. Under certain fairly strong assumptions, this held that systematic policy changes would be predicted and factored into household and business behaviour and pricing and therefore have little or no effect on the real economy. A fiscal policy application of this reasoning is known as Ricardian Equivalence. Suppose the Government is known to try to smooth the business cycle by cutting taxes in recessions, without any corresponding reduction in spending. Rational, forward-looking consumers would save any extra income in recognition of the fact that taxes are likely to increase again at some future date. Thus the policy would be unlikely to have an economically important effect.

This emphasis on how expectations about future outcomes can alter present behaviour raises some interesting issues. For example, if the government wished to change tax rates significantly but have little discernible impact on the business cycle, it seems reasonable to presume that a very gradual approach (repeated small reductions) would be better than one large reduction. However, if people are very forward-

looking, they might respond to the whole programme of tax changes soon after it was announced. This role of expectations can even lead, in certain circumstances, to a contraction in fiscal policy having expansionary effects. If a fiscal contraction signalled lower government spending in the future, and hence a lower future tax burden, it could lead to an increase in consumption. In addition, expectations of lower government spending would tend to lower long-term interest rates, reinforcing the resulting increase in aggregate demand.

Increasingly sophisticated theoretical models of the impact of fiscal policy on the economy are continuing to be devised.<sup>7</sup> Recent theoretical models have introduced a number of new reasons why Ricardian Equivalence may not literally hold, even if consumers are carefully smoothing consumption in the manner described above. For example, credit constrained consumers are likely to increase their consumption in response to a tax cut, even if they are forward-looking.

To summarise, since the work of Keynes, macroeconomic analysis has provided a number of reasons why the impact of fiscal policy on real activity might be small:

- A fiscal expansion might crowd out private spending by increasing interest rates and prices, and causing an appreciation in the exchange rate;
- a fiscal expansion might act as a substitute for some private spending;
- households may choose to save tax cuts to pay for future tax liabilities; and
- the fiscal expansion may be anticipated and factored into decisions in a way that stops real activity from responding (eg, to cyclical movements in tax rates).

All of these insights are important to the analysis of fiscal policy changes. For example, in a macroeconomic model such as the Reserve Bank's Forecasting and Policy System (FPS), an increase in government spending puts upward pressure on interest rates and the exchange rate, so that there is some crowding out of the impact of the spending on output. Some of the expectation effects discussed above also apply (eg, forward-looking consumers are aware of the likely

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<sup>6</sup> Sargent and Wallace (1976).

<sup>7</sup> For a more detailed overview, see Ganelli (2006), which describes recent IMF work in this area.

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increase in future tax liability). However, the central point of multiplier analysis – that expansionary fiscal policy tends to lead to an increase in aggregate demand – remains valid in FPS, and most other macroeconomic models. Furthermore, this simple prediction has been validated in a number of empirical studies, which we review below.

### 3 Model-based and empirical literature

A variety of empirical and analytic techniques have been used to consider the potential impacts of fiscal policy on the economy, and we review some of that literature in this section. Many of the studies we describe below attempt to calculate multipliers (see box 1 for a definition) at various horizons following a change in fiscal policy. As a guide to interpretation, an estimate of a spending multiplier of 0.8 implies that raising government spending by \$1 billion would increase New Zealand GDP by around \$800 million over the relevant time period.

#### Empirical literature

There is a large empirical literature on the cyclical effects of fiscal policy, though it is fairly limited in New Zealand. Recent international studies can be divided into a few strands.

Some studies look at the impact of tax policy changes on the consumption plans of *individual* consumers, and are typically able to demonstrate fairly substantial effects, even if the policy changes are pre-announced.<sup>8</sup> The evidence is consistent with many people using windfalls like temporary tax cuts to facilitate additional spending. The UK Treasury's 2003 study *Fiscal Stabilisation and EMU* describes this literature in some detail (see box 3.3 of that document).

There are also macroeconomic event studies; these look at the impact of special identified fiscal policy shocks (eg, large spending increases or tax cuts) but analyse national macroeconomic variables rather than the behaviour of individual consumers. Blanchard and Perotti (2002) summarise several papers that use large military spending

increases as 'events'. These reveal a significant (positive) effect on aggregate demand. Another event study approach by Romer and Romer (1994) found similar results.

On the other hand, other work (some references are listed in Ganelli, 2006) has documented the possibility of the expansionary fiscal contraction. Giavassi and Pagano (1990), for example, document that fiscal reform packages leading to reductions in spending predated significant consumption booms in Denmark and Ireland. HKM (2002) analyse the fiscal contraction literature in some detail and conclude that while this is a genuine possibility in certain circumstances (eg, if the country has a debt sustainability problem that the contraction mitigates), "caution is needed in drawing more general conclusions about the design of fiscal policy from those episodes".

Other empirical studies work with full econometric models, generally of a class known as structural VARs. Two heavily cited studies are Blanchard and Perotti (2002) and Perotti (2004). Both papers disaggregate fiscal policy into government spending and net taxes (tax revenue minus transfer payments) and estimate the effect of an increase in these variables on economic activity (GDP).<sup>9</sup> The approach allows the authors to calculate the multiplier associated with spending and net tax at various horizons.

Perotti (2004) follows this approach, coming up with the following conclusions from a study of the US, UK, Australia, Germany and Canada:

- The peak impact of an extra dollar of government spending on aggregate demand is frequently less than one, and the corresponding measure for the effect of changes in net tax is considerably weaker again; and
- under plausible assumptions, increases in government spending lead to increases in prices, and have a significant effect on nominal and real interest rates.

On balance, as discussed in HM Treasury (2003), structural VAR evidence is consistent with weaker impacts of fiscal policy than have traditionally been expected (eg, using the macroeconomic models discussed below).

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<sup>8</sup> Alan Blinder's paper at the Federal Reserve Bank of Boston conference (June 2004) describes several papers from this literature.

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<sup>9</sup> Perotti (2002) also controls for the effect of fiscal policy on interest rates and inflation.

Claus *et al.* (2006) apply this approach using New Zealand data. Although their results are sensitive to the statistical approach they use, there are some general points that emerge. First, consistent with the above evidence, they find that, for up until 12 quarters after the policy change, spending has a positive impact on economic activity and net taxes have a negative one. In terms of peak impact, spending is associated with a stronger effect. Second, these multipliers are considerably smaller in New Zealand than in other, larger, economies. This could possibly reflect the fact that New Zealand is a small, open economy where 'leakages' are likely to be more prevalent.<sup>10</sup>

### Model-based studies

Another strand of analysis of the macroeconomic consequences of fiscal policy works with existing macroeconomic models. The estimates of fiscal-policy effects that come from these studies are obviously influenced by the philosophical and empirical design of the model. However, to the extent that they summarise institutional opinion on the effects of fiscal policy, they may be quite useful.

Fiscal-policy effects in the macroeconomic models in use at the Treasury and the Reserve Bank have been compared in internal work. The results suggest that the fiscal sector is quite similar in the two models, with the differences in

simulation properties more attributable to the behaviour of the exchange rate and other non-fiscal issues. In both models, expansionary fiscal policy had a stimulatory effect, and an increase in spending was significantly more stimulatory than a tax cut. In the current version of FPS, the peak annual impact on GDP from a ten-dollar increase in spending is approximately six dollars, suggesting a multiplier of around 0.6. This relatively low multiplier reflects a number of factors. First, a proportion of government spending (around 20 percent) is assumed to be imported. Second, the impact of the increased government spending on household income is constrained because wages are sticky and slow to adjust. Finally, financial crowding out (due to rising interest rates and a rising exchange rate) is quite significant.

Church *et al.* (2000) compare the demand effects of fiscal policy in a number of models of the UK economy. While we have not attempted a comprehensive review of international studies,<sup>11</sup> Church *et al.* is quite relevant, particularly as the openness of the UK economy is fairly similar to New Zealand (which will tend to make the fiscal multipliers more comparable). Table 1 presents the multipliers associated with an increase in government spending and a reduction in taxes, respectively, at horizons of one, three and five years after the expansion begins. Along with the five models presented in Church *et al.*, we have calculated corresponding multipliers for the Reserve Bank's FPS.

**Table 1**  
Spending and tax multipliers in five UK macro models, and FPS

Percentage difference in GDP from base value in year	Spending simulation					
	LBS	NIESR	Treasury	Compact	CUSUM	FPS
1	0.94	0.98	0.47	0.51	1.1	0.61
3	0.9	0.47	0.04	0.12	-0.71	0.06
5	0.79	0.2	-0.82	0.47	-0.51	-0.23
	Income tax simulation					
	LBS	NIESR	Treasury	Compact	CUSUM	FPS
1	0.15	0.78	0.35	0.02	0.76	0.19
3	0.96	1.24	0.92	-0.02	0.95	0.03
5	0.93	0.53	0.97	0.06	1.19	-0.10

Simulations involve an increase in government spending, or reduction in the income tax rate, lasting for five years and scaled to 1 percent of GDP; FPS estimates produced by RBNZ, UK estimates from Church *et al.*

<sup>10</sup> Such leakages include the tendency for additional spending generated by fiscal initiatives to be reflected in higher imports rather than higher domestic production. Consistent with this line of reasoning, the multipliers are also relatively small for Australia.

<sup>11</sup> HKM (2002) survey earlier studies using models across a wider range of countries. They find 'that most expenditure multipliers are in the range 0.6 to 1.4 and most tax multipliers in the range 0.3 to 0.8.'

Table 1 shows that there are significant fiscal multipliers on spending in all of the models, with the first-year effects from FPS within the range of the UK estimates. However, the models have quite different views on the longevity of the fiscal effects (in FPS, the effects are not very persistent, and eventually become negative). These differences may relate to the speed and strength of the monetary-policy response to the fiscal easing, and how the models handle expectations of the ultimate fiscal-policy rebalancing (when the shock ends, the government must tighten fiscal policy to return to its debt target).

The tax multipliers across the models are more varied, even in the first year of the shock. In some models (like FPS), the tax multiplier is relatively small, reflecting that some consumers 'look through' the temporary changes in tax rates. The COMPACT model has a similar assumption about this to FPS (which explains the similarly low tax multiplier), while some other UK models have significantly larger and

more prolonged effects. It seems likely that some of the other models (NIESR, CUSUM) assume consumers respond to current income (and therefore current tax rates) more.<sup>12</sup> We caution that the results from FPS are contingent on the tax cut being temporary and *known to be so*. In general, we think uncertainty about future policy reversals would probably make the tendency to spend out of current tax cuts more significant than the FPS or COMPACT results imply.

Overall, the evidence in this section suggests that fiscal policy can have a material impact on the business cycle, but that spending and tax changes can have quite different effects.

## 4 New Zealand's recent fiscal history and outlook

Fiscal policy stance, in New Zealand and overseas, is often analysed with reference to a measure called fiscal impulse, which is defined and discussed in box 2.

### Box 2

#### The Treasury fiscal impulse measure

It is often convenient to summarise the effects of fiscal policy (whether fiscal policy is acting to expand or contract the economy) in a single indicator variable. Philip and Janssen (2002) is a very useful New Zealand analysis of how to measure fiscal *impulse*, which is a measure of the impact of fiscal policy on aggregate demand. Loosely speaking, an expansionary fiscal impulse implies that government spending on New Zealand-produced goods and services grew faster than tax revenue throughout a given year.

More specifically, the authors begin with the change in a cash-based measure of fiscal balance, which measures the difference between growth in government spending (excluding capital expenditure) and growth in taxation revenue. This measure is then adjusted to remove the effects of the business cycle on tax revenue and benefit payments. Finally, the authors add back capital expenditure items that are likely<sup>13</sup> to represent genuine expenditure on NZ GDP

(eg, roading construction, but not the purchase of imported goods or of existing New Zealand entities).<sup>14</sup> The Treasury measure of Fiscal Impulse, based on Philip and Janssen (2002), is published twice each year. The figure from the December 2006 Half-Yearly Economic and Fiscal Update (HYEFU) is shown in the main text.

There are a number of points that need to be considered in interpreting this measure. Firstly, fiscal impulse is a measure of the *change* in fiscal stance. A policy that involves spending 10 million dollars per annum from this year on will increase the measured fiscal impulse in this year, but not in subsequent years. Implicitly, using a 'change' measure as an indicator of the impact of this year's fiscal policy on this year's economy implies that the economy adjusts to a fiscal change over the course of a year. In practice, the impact of these changes in fiscal stance may be more gradual, so that fiscal impulse from a previous year may still be affecting the economy at any point in time.

(continued on p12)

<sup>12</sup> This could be because they don't attempt to forecast the future (myopia) or because they would like to spend more before the shock but are unable to because financial institutions will not lend them more (liquidity constraints).

<sup>13</sup> For example, military equipment (which is often imported) is excluded. The authors acknowledge this partitioning of capital

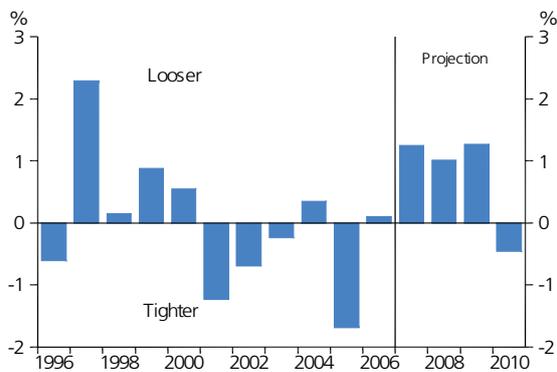
expenditure into 'domestic' and 'imported' is fairly aggregate and thus unlikely to be precisely correct.

<sup>14</sup> While purchasing existing assets does transfer funds to the seller, the seller may be overseas or need to use the proceeds to retire debt secured over the asset, so these purchases are excluded from the fiscal impulse measure.

Secondly, the Treasury measure seeks to exclude the impacts of the business cycle on fiscal stance. The estimates are based on the assumption that the fiscal balance/GDP ratio is 0.5 percent better (because of reduced transfer payments and increased tax receipts) when demand is 1 percent higher than the economy's sustainable capacity (ie, the 'output gap' is 1 percent). This elasticity estimate is based on the work of Tam and Kirkham (2001) and broadly fits with international evidence.<sup>15</sup> However, there is uncertainty about the correct value of the elasticity and also about the magnitude of the 'output gap' at any point in time.

Thirdly, this method effectively weights most items of cash expenditure and taxation equally. However, Philip and Janssen note that different proposed policies may not have the same macroeconomic effects, dollar for dollar. For example, an increase in the top marginal tax rates to fund a new road would probably be expansionary (people paying top tax rates will typically not adjust their consumption patterns a great deal in response to the higher taxes, whereas the government will spend the money fairly quickly on domestic goods and services). However, higher spending and higher taxes would offset each other in the *measured* fiscal impulse, which would remain unchanged.

**Figure 1**  
Estimated fiscal impulse (change in fiscal stance)



The current measure of fiscal impulse suggests that fiscal policy has been relatively tight over the past six years. This

has mainly been a consequence of robust tax receipts, which have risen as a share of GDP while government spending has, until recently, been relatively stable as a share of GDP.

The relatively tight measures of fiscal impulse over 2003-2006 have partly reflected stronger-than-expected company tax revenues. In comparison to other fiscal initiatives, these surprises might be expected to have had a relatively limited impact on private sector demand in New Zealand.<sup>16</sup>

The impulse measure suggests fiscal policy shifted to a broadly neutral stance in 2006 but is expected to be significantly expansionary in 2007-2009. The shift to expansionary policy over the 2007 June year reflects an increase in government spending. This is comprised of a range of spending initiatives

**Table 2**  
Government spending (total core spending and selected components, 2005-2007)

\$ Million, June years	2005	2006	2007	2005-2007
	Actual	Actual	Forecast	Growth
Social Security and Welfare	14,682	15,598	16,970	16%
Health	8,813	9,547	10,673	21%
Education	7,930	9,914	9,640	22%
Transport and Communications	1,635	1,818	2,481	52%
Total Core	46,234	49,900	53,963	17%
Memo: Nominal GDP (production basis, RBNZ estimates)	150,600	157,300	164,600	9%

Source: Half Yearly Economic and Fiscal Update (HYEFU), December 2006

<sup>15</sup> Tam and Kirkham (2002) report earlier OECD work that suggests an elasticity of around .6 for New Zealand. The OECD average elasticity in that study was 0.5.

<sup>16</sup> There are several reasons for this. First, some shareholders in New Zealand firms are overseas residents. Second, the higher tax is to some extent a result of a faster-than-expected using up of accumulated tax losses. The 'using up' of historical tax losses was always going to increase corporate tax payments,

it just happened surprisingly fast. This tax surprise is temporary and thus probably unlikely to have a huge effect on firms' investment plans or greatly alter the spending of many shareholders. It is very different to the planned cuts to the statutory company tax rate discussed in section 5.

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including increased allocations to Education, Health and Transport, as well as the introduction of the Working for Families package (see table 2).

Core Crown spending (on an *accrual*, or GAAP basis) is expected to grow at around the same rate as GDP over 2008-2011, but the new spending has generally not yet been allocated to functional areas. Beyond 2007, Core Crown (government) spending is thus expected to remain around 32 percent of GDP. However, the Treasury's forecasts for actual cash disbursements grow more quickly over 2008-2011. This partly reflects the fact that some spending budgeted for 2007 is expected to actually occur in future years. The stimulatory fiscal impulse in figure 1 uses cash-based forecasts of government spending that reflect this timing.

After 2007, the HYEPU forecasts suggest that revenue will fall slightly as a share of GDP. The fall in revenue is partly cyclical, with a slowing economy reducing the expected company tax take in particular. There is some cyclical adjustment of the impulse measure but, given the unusual behaviour of company tax in the recent cycle, it may not be sufficient to completely remove the cyclical decline in tax revenue from measured fiscal impulse. In any case, there is also a policy element to the revenue reduction, including initiatives such as the business tax review and planned adjustment to personal tax thresholds in 2008.

## 5 Spending versus taxes: considering the disaggregate effects of fiscal policy changes

In this section, we aim to qualitatively consider how different sorts of spending or tax cuts can lead to quite different macroeconomic results, for a given size of fiscal impulse. Our views are summarised in table 3, which considers (in a stylised way) the potential impact of different fiscal policies on a range of macroeconomic variables. We begin (in the first row) by thinking about the impact on domestic demand. The conceptual framework is based on the multiplier approach described in box 1, but we consider some additional dimensions such as the ones below:

- Does a given fiscal initiative lead directly to a change in output (eg, by increasing government spending)?
- Will there be a private-sector response to that spending (eg, will a government-constructed apartment block cause a private sector alternative to be cancelled)?
- Will increased income from the initiative accrue to individuals with relatively high propensities to save, or tend to accrue to individuals who are likely to spend most of their income?
- Supply-side effects: will the fiscal initiative quickly increase the resources available for production (eg, by encouraging more people into the workforce)?

It is likely that spending on transfer programmes or new government initiatives (columns A, B, and C) will tend to be more stimulatory (dollar for dollar) than personal tax reductions. We also note that tax reductions that directly stimulate savings (column E) might have impacts on aggregate demand that are quite different from the way they alter measured fiscal impulse. Savings incentives are treated as expansionary in a fiscal impulse measure, but may well have a contractionary effect on demand. Finally, corporate tax reductions (column F) are likely to have a relatively large impact on aggregate demand.

In the remainder of this section, we consider very briefly some of these 'special' effects that can be caused by certain topical initiatives. These include the potential impact on work incentives of changes to the tax and transfer system, the effect of company tax cuts on investment and the potential effects of savings incentives. This is not an attempt to quantify the impacts of announced Government policy – instead we intend to highlight the issues that need to be considered when assessing the impact of any changes and the associated uncertainties.

### Tax, transfers and labour supply

Many fiscal initiatives (such as tax changes and transfer payments) have an effect on the disposable income available to certain consumers. One recent example of such an initiative was the Working for Families package, which increased weekly payments made to eligible families.

Table 3

## Stylised representation of likely effects of fiscal initiatives (spending increases or tax cuts)

Initiative	A) Spending: transfers	B) Spending: government consumption	C) Spending: government investment	D) Taxes: personal labour income	E) Taxes: personal savings income	F) Taxes: company taxes
<b>Effect on domestic demand</b>	Immediate strong boost to consumption.	Unless buying imports, immediate increase in demand.	Unless buying imports, immediate increase in demand. If complements private activity (eg, new road), may stimulate private investment. If competes, may contract private investment.	Boosts consumption, but less than transfers, especially if high income tax rates are involved.	In short term, may encourage savings (reduce domestic demand). But uncertain: if it mostly leads to a reallocation of existing savings, could be expansionary.	Likely to stimulate investment significantly, especially in export-oriented industries.
<b>Potential output</b>	Small: May encourage/discourage labour supply depending on design.	Small in short term. Upgrading of human capital (eg education) may have long-term benefits.	Small in short term. Depends on nature of investment; eg, roading investment may stimulate other productive activity.	Potential to encourage labour supply, but effects generally thought to be small.	Small. Unlikely to affect investment much (since capital market open).	Small in short term (capital stock should increase but less in short term than aggregate demand rises).
<b>Savings and current account</b>	Current account likely to deteriorate in near term.	Current account likely to deteriorate in near term.	Current account likely to deteriorate in near term.	Current account likely to deteriorate in near term.	Unclear but effects likely to be small.	Current account likely to deteriorate in near term, particularly as investment goods often imported.

Assumptions: Initiative is relatively permanent and perceived as such, is not large enough to alter fiscal credibility, and is introduced fairly abruptly.

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By boosting disposable income available to these families, the package could have powerful effects on aggregate demand. The Bank's own estimates suggest households eligible for Working for Families support are likely to see disposable income gains of around 6 percent on average as a result.

Such policies, however, can also affect supply-side decisions. In particular, declining income tax rates, or transfer schemes that reduce effective marginal tax rates (EMTRs), can increase labour supply by increasing the marginal benefit of an additional hour of work. As payments made in the Working for Families are contingent on a certain amount of hours worked, the initiative could have this effect. An increase in labour supply would increase the supply of productive resources, thereby potentially reducing the 'excess demand' pressures associated with this kind of fiscal easing.

In reality, the effect of the Working for Families package on the incentive to work is more complex. The 'In Work Payments' that are made to families working for more than 30 hours a week or single parents working more than 20 hours a week will generally create financial incentives to work at least that amount. However, in other cases where one family member is already working full time, the In Work Payment may reduce the incentive for the other to take on employment because the abatement of the In Work Payment reduces the net additional income. Thus, the incentive effects of the initiative are likely to be largest for single parents or individuals who are the sole provider for the family.

The impact of these changes ultimately depends on how responsive a family's labour supply is to changes in the incentive to work. *A priori*, there is actually no reason to expect that increases in the incentive to work will increase labour supply. This is because the increase in the incentive to work has opposing effects on labour supply – the 'income effect' (people being made wealthier and thus potentially choosing to work less) and 'substitution effect' (people getting more cash in the pocket per hour of work and thus

potentially choosing to work more) are in conflict.<sup>17</sup> The balance of available evidence suggests that workers are not very responsive in this respect. The net effect of the increase in incentives to work on labour supply tends to be very small and is sometimes even found to be negative (Pencavel, 1986). Female labour supply, however, is generally found to be much more responsive to incentives (Killingsworth and Heckman, 1986). This analysis suggests that the Working for Families initiative is likely to have the largest effect on the labour supply of single, female parents. New Zealand studies of Domestic Purposes Benefit recipients found that decreasing EMTRs significantly increased labour supply.<sup>18</sup>

If labour-supply effects are relatively small, the key effect of tax cuts or increased transfers will still be on aggregate demand. Even holding supply fixed, there is substantial uncertainty surrounding the effects on aggregate demand. However, in general the empirical evidence is consistent with the notion that increases in current disposable income tend to increase consumption (see HM Treasury, 2003). As shown in the table (columns A and C), we assess that tax cuts or increased transfers tend to have a significant stimulatory impact.

## Investment, investment incentives, and company tax

Recently, the Government has announced a review of the tax treatment of businesses, to be implemented in the 2008 Budget.<sup>19</sup> Various policies have been proposed, but in general the intention of the review is to stimulate investment (often in specific activities such as research and development) by reducing the cost of a marginal unit of capital to firms. If the review had this effect, it could substantially increase

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<sup>17</sup> Furthermore, because labour supply is a decision that depends on the entire future path of wage changes (ideally, individuals would like to work more hours when they are paid more) the immediate effects on labour supply can be small.

<sup>18</sup> For example, Wilson (2000) found that DPB recipients increased their labour force participation significantly after benefit changes cut their EMTRs.

<sup>19</sup> Initial documentation suggests that the outcome of the review will be small cuts to the corporate tax rate, changes to the tax treatment of depreciation and the introduction of various initiatives designed to reduce compliance costs. The Government is also considering targeted tax relief for investments in research and development, export market penetration and skills development. For more information, see Policy Advice Division of the Inland Revenue Department (2006).

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aggregate demand and inflation pressures over the medium term.

This impact of corporate tax policy on investment is usually summarised with reference to how the policy affects the *user cost of capital*, which measures the total cost to the firm of holding a piece of capital for one period. Money used to buy capital could instead have earned interest, and the capital item will also tend to depreciate (ie, become less productive over the period). The total cost imposed by these various factors depends on the amount of money that firms must set aside to purchase the unit of capital which, in turn, is influenced by tax policy.<sup>20</sup> For example, an increase in the amount that firms can deduct from their tax burden for depreciation results in firms requiring a smaller net outlay to purchase capital, reducing the user cost.

For a given change in the user cost, the transmission to investment will ultimately depend on how responsive firms are to changes in the net return to investing. The frequency with which the governments of most industrial countries use various fiscal policies to stimulate investment suggests an implicit belief that firms are quite responsive in this regard. However, substantial uncertainty surrounds the nature of this response, and economists have only recently been able to establish a significant relationship between the user cost and the level of the capital stock. Recent estimates imply that a 1 percent reduction in the user cost increases the level of the capital stock by between 0.5 and 1 percent (Hassett and Hubbard, 2002).

Some indicative calculations suggest that a 10 percent reduction in the overall corporate tax bill (which would cost about 1 billion dollars per annum, the forecast cost of the review) might reduce the user cost by around 2.3 percent, which could in turn increase the capital stock by 1.15 to 2.3 percent. To achieve this new level of the capital stock, investment (as a share of output) must be significantly higher over the medium term, and also somewhat higher

over the long run (to cover the increased depreciation of capital assets).<sup>21</sup> Such changes can have substantial effects on long-run production possibilities. However, the increase in investment demand will generally increase inflationary pressure while new capital is built.

An important issue regarding the tax treatment of investment is its effect on the amount of the capital stock owned by foreign firms, which is known as the stock of foreign direct investment (FDI). Tax policy can have large effects on FDI, and FDI is generally thought to be much more responsive to tax policy changes than domestic investment (De Mooij and Everdeen, 2003). However, the inflationary pressures arising from FDI are likely to be smaller, dollar for dollar, than a similar increase in domestic investment. The primary reason for this is that a large proportion of FDI into New Zealand involves foreigners purchasing existing domestic capital rather than building new capital (Boston Consulting Group, 2002). This would involve a transfer of resources from domestic to foreign residents, rather than an increase in aggregate demand.<sup>22</sup> For this reason, we put more weight on the estimates of tax changes on physical investment (which incorporate the FDI involving new capital anyway) rather than the FDI literature.

Besides stimulating investment, corporate tax reductions will increase after-tax profit passing into the hands of shareholders, and this will probably have some stimulatory effect on consumer spending. Overall, corporate taxes are thus likely to have a relatively large multiplier effect on aggregate demand.

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<sup>20</sup> There are other channels by which tax policy could influence investment. One prominent one is the so-called 'financial accelerator'. Essentially, tax policy affects the net worth of firms, which in turn influences the amount that firms can borrow. For example, if a firm is credit constrained and then a reduction in tax increases its net worth, then the tax reduction is likely to lead to an increase in available funds, some of which may be invested. This channel is particularly important for small firms.

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<sup>21</sup> For example, in FPS a percentage point increase in the desired capital stock, which is certainly within the range of plausible changes that could be induced by the review, would make investment permanently higher, with a peak response over the medium term of six percent.

<sup>22</sup> Given the geographic isolation of New Zealand, this international evidence may overstate the response of inbound FDI to New Zealand to tax policy. Most of the FDI into New Zealand is motivated by proximity to Australasian and/or Asia-Pacific markets (Scott-Kennel, 2006). Many other countries have proximity advantages to the latter markets, and there is only limited capacity for expansion in the Australasian region.

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## Savings and savings taxation

The Kiwisaver scheme, which will be introduced this year, is a fiscal initiative designed to encourage private savings for retirement. There are various incentives to make contributions to the scheme. One key incentive is that up to 4 percent of income can effectively be shielded from income tax if it is used to make an employer contribution to the employee's Kiwisaver account.<sup>23</sup>

To the extent that these fiscal incentives increase the total stock of domestic savings, rather than just causing consumers to reduce other savings to offset their Kiwisaver contributions, these policies could substantially reduce consumption over the medium term. The question is how much of this saving will be new savings, rather than savings reallocated into the Kiwisaver scheme. For instance, a homeowner may choose to make Kiwisaver contributions but reduce their mortgage repayments by a similar amount (so their net saving has not actually increased).

There has been a fair amount of international research into the effects of fiscal incentives on domestic savings, centred on the US economy. Hubbard and Skinner (1997) describe the literature as showing a wide variation in empirical estimates of the effect of fiscal incentives on saving, but, based on their survey, they argue there is likely to be a moderate effect. Their analysis suggests that something in the order of 2 dollars in extra private saving is stimulated by forgoing one dollar in income tax through savings incentives.

However, there is a high degree of uncertainty about this estimate. Moreover, across countries, the institutional details are likely to be quite different. US savings incentives use tax-deferred savings plans where the investment returns made on funds in the account are also shielded from tax until they are withdrawn from the plan. Households may respond to the Kiwisaver tax preference (which is effectively smaller, but occurs immediately) in a different way. Overall, it seems likely that the fiscal impulse created by savings incentives will have a significantly less stimulatory effect, and could be mildly contractionary.

## 6 Conclusions

In this article, we have analysed the impact of fiscal policy on the business cycle, and reached a number of conclusions related to this issue:

1. There is evidence that positive fiscal impulses are expansionary, particularly where they do not create fiscal credibility issues and are expected to be sustained. Fiscal multipliers are likely to be around or below 1 for spending changes, and are generally lower for tax policy changes. While fiscal policies can have significant effects on the supply side of the economy, these take long enough that, at the horizons, monetary policy is concerned with this effect will tend to be outweighed by the more immediate demand effects.
2. To some extent, the measured fiscal impulse may have understated the expansionary effects of fiscal policy in recent years because rising spending has probably had more effect (dollar for dollar) than rising taxes (especially in the case of company tax). More generally, the details of fiscal policy initiatives will affect their macro-economic impact.
3. The announced fiscal plans of the Government imply a significant fiscal expansion over the 2007-2009 June years, with spending and transfers increasing over 2007 and tax revenue falling slightly as a share of GDP over the period. Overall, this reduces the Government surplus and causes a substantial measured fiscal impulse.

This analysis suggests that fiscal policy could be a significant source of economic stimulus in the next couple of years. While this could put some upward pressure on interest rates and the exchange rate, whether these injections prove to be assistance or a difficulty for monetary policy will depend on how other driving forces for the business cycle (like the terms of trade) evolve. There is value in continuing to take the business cycle into account when considering substantial fiscal initiatives.

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<sup>23</sup> To receive a benefit of this size, the employee must effectively be contributing at least 8 percent of their total income to their Kiwisaver account.

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