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An Analysis of the Fiscal Stance of the New Zealand Government and its
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Malcolm Abbott
and
Akhter Ahmed

Abstract

The aim of this study is to quantify the impact that the fiscal stance of the New Zealand Government has had on the general level of economic activity. By using the concept of the constant employment budget balance and changes in real public debt it is possible to determine the size of the inflation adjusted structural budget imbalance. Using calculations of the inflation structural budget imbalance for the New Zealand Government, the impact of changes in the fiscal stance of the government – and other factors such as changes in the money supply and balance of trade – on the short-term fluctuations in the business cycle will be estimated.

JEL Classifications: **H62: Deficit. H61: Budget Systems**

Introduction

Throughout the post-war period one of the perennial debates in New Zealand economics has been the relative importance of the impact of the fiscal stance of the Government on the general level of economic activity. During the 1950s and 1960s the Government acknowledged a responsibility for managing the level of economic activity (Hawke 1982, pp. 53-55). Using the techniques of Keynesian demand management the Government tried to manipulate the level of aggregate demand in order to iron out extremes in short-term fluctuations of the business cycle. Although today there is less emphasis on using fiscal policy to regulate the general level of activity it is still true that the fiscal stance of the government has some impact of the level of activity, even if the government is not pursuing some deliberate discretionary policy.

The aim of this study is to analyse the impact of the fiscal stance of the New Zealand Government on the general level of economic activity between the years 1950/51 and 1994/95. In the first section the concept of the constant employment budget balance and changes in real public debt are used to determine the size of the structural budget imbalance taking into account the inflation tax capital levy imposed on outstanding debt. In the following section the nominal structural and inflation adjusted structural budget imbalances are related to changes in real GDP, as are changes in the money supply and the balance of trade. In the third section the impact of the fiscal stance on the broader macro-economy is evaluated. From this work there appears to be a clear relationship between both the nominal structural budget and the inflation adjusted structural budget imbalance and changes in the level of real GDP. In particular declines in real GDP are associated with moves towards a surplus in the inflation adjusted structural budget imbalance.

The Nominal, Nominal Structural and Inflation Adjusted Structural Budget Imbalance

In trying to determine the fiscal stance of the government the traditional approach is to simply look at the nominal budget deficit. For the New Zealand Government budget expenditure and revenue statistics are available in the *New Zealand official yearbook* and the New Zealand Government's Department of Statistics, *National income and expenditure*. This data is reproduced in the International Monetary Fund's *International financial statistics* and *Government financial statistics*. In this paper the International Monetary Fund's figures are used. They differ from those in the *Official yearbook* in that the Fund has adjusted the *Year book* data to approximate the operating surplus. Throughout the post-war period the New Zealand central government made up the bulk of public spending and passed on substantial grants to local government and state-owned business enterprises. The fiscal stance of the Central Government can therefore be considered to be a good indicator of the entire public sector. Table 1 presents data for the Government's budget revenue, expenditure and budget surplus (S) (- deficit).¹ In order to give some indication of the size of Central Government expenditure and budget surplus (deficit) their sizes as a percentage of the level of GDP are also given.

¹ For further detail about what is included in central government expenditure and revenue see the Appendix.

One of the major problems with using nominal figures is that they do not take into account the distortionary affects of price changes. The post-war era has been one of inflation; particularly in the years 1949-53 and 1969-90. Buiter (1986), Eisner (1985, 1986), Eisner and Pieper (1984), Abbott (1996) and Makin (1995), amongst others, have argued that in order to determine the government's fiscal stance the budget imbalance is best adjusted to account for the 'inflation tax'. It has also been argued that the distortionary effects caused by cyclical changes in economic activity on the budget deficit should be accommodated for by determining the so-called 'structural budget imbalance' (also known as the constant employment budget imbalance). The size of the budget deficit not only influences the level of aggregate demand it also affects the level of economic activity, and therefore income tax receipts and welfare payments, which in turn influences the size of the budget deficit. If we wish to observe the fiscal impact of the government then these influences need to be removed. A nominal structural budget imbalance, that is the budget imbalance that would have occurred with unchanged nominal tax rates and public spending, can be estimated, and if private sector demand was just sufficient to maintain economic activity at a constant rate of unemployment.² This so-called 'nominal structural budget imbalance' has been constructed using the following identity:

$$S^*/Y^* = (t.Y^*) - G/Y^*$$

where S^* is the nominal structural budget imbalance, t is the overall tax rate (T/Y), Y^* is the constant employment level of GDP (that is the estimated value of what GDP level would have been with constant employment) and G^* is the level of nominal government expenditure minus unemployment benefit payments. Base years (1949/50, 1960/61, 1970/71) were selected when unemployment rates were approximately at the average levels for the years 1949/50 to 1973/74. After 1973/74 the constant employment rate has been adjusted upwards for the base years 1974/75, 1987/88 and 1994/95. Following the method used by Middleton (1981) and pioneered by Brown (1958) the actual series was interpolated between the base years after being converted into real terms. This then is the real level of GDP that would have occurred if

² The estimates of this nominal structural budget imbalance are sensitive to the assumptions made about the elasticity of government receipts with respect to GDP. The analysis in this paper assumes unitary elasticity. For justification of this see OECD (1994). On the expenditure side government expenditure is exogenous, except unemployment benefit payments which are directly affected by the level of economic activity an employment.

unemployment had remained constant.³ Table 2 and Figure 1 give the calculated nominal structural budget imbalance and nominal budget imbalance as a percentage of GDP. From Figure 1 it can be seen that generally speaking the two figures are of a similar size, except in the years of recession when the gap between them widens.

Although the nominal structural budget imbalance gives a good indication of the intentions of the government it does not give a reliable indication of the fiscal stance because the impact of price changes has not been incorporated. If inflation occurs then the government's estimated deficit may be smaller (or surplus larger) than it appears from the nominal figures. If there is a net decrease in the inflation-adjusted stock of public debt then this can be said to be an indication of the inflation adjusted budget imbalance. In order to take into account the inflation induced tax capital levy imposed on outstanding public debt the following identity is used:

$$RS = S^* + (\Delta P/P) / (H + eF)$$

where S^* is equal to $tY^* - G^*$, that is the nominal tax rate ($t = T/Y$) multiplied by the constant employment level of GDP (Y^*) minus the adjusted levels of government spending (G^*).⁴ G^* is the level of government spending minus spending on unemployment benefits, P is the price level (in this case the Consumer Price Index), H is the level of government debt held by New Zealand and eF by foreigners (e being the exchange rate and F the face value of debt).

From Table 2 and Figure 1 it can be seen that the level of the nominal structural budget imbalance and inflation adjusted structural imbalance are broadly the same during the low inflation years of the late 1950s and 1960s. During the high inflation years however (the early 1950s and 1970s) the inflation adjusted structural imbalance moves strongly into surplus, a consequence of the inflation reducing the government's real debt levels.

³ The real level of GDP is given in Table A2 and is calculated by deflating the nominal GDP data by the price index given in Table A1 at the base year 1969/70=1. Between 1949/50 and 1960/61 GDP at constant prices rose by an annual trend rate of 3.51 percent. Between 1960/61 and 1970/71 the annual average was 4.87 percent, between 1970/71 and 1974/75 3.78 percent, between 1974/75 and 1987/88 1.05 percent and between 1987/88 and 1994/95 at 1.84 percent. The constant employment level of real GDP is given in Table A2.

⁴ Adjusted nominal expenditure, revenue and surplus figures are presented in Table A3 in the Appendix.

Table 1: New Zealand Government nominal budget imbalance 1950/51-1994/95

	Expenditure	Revenue	Surplus	Expenditure % of GDP	Surplus % of GDP
	G	T	S	G/Y	S/Y
	\$m	\$m	\$m	%	%
1950/51	467	471	4	32.0	0.3
1951/52	533	456	-77	34.9	-5.0
1952/53	564	493	-71	33.4	-4.2
1953/54	580	558	-22	30.9	-1.2
1954/55	605	565	-40	30.6	-2.0
1955/56	659	585	-74	31.7	-3.6
1956/57	683	572	-111	30.7	-5.0
1957/58	737	703	-34	31.6	-1.5
1958/59	805	707	-98	32.4	-4.0
1959/60	860	785	-75	32.0	-2.8
1960/61	900	825	-75	32.3	-2.7
1961/62	902	800	-102	30.1	-3.4
1962/63	949	784	-165	29.0	-5.0
1963/64	1,009	844	-165	28.1	-4.6
1964/65	977	950	-27	25.2	-0.7
1965/66	1,075	1,019	-56	26.6	-1.4
1966/67	1,172	1,095	-77	28.0	-1.8
1967/68	1,187	1,123	-64	26.8	-1.4
1968/69	1,238	1,173	-65	24.1	-1.3
1969/70	1,329	1,309	-20	22.8	-0.3
1970/71	1,571	1,620	49	22.9	0.7
1971/72	1,821	1,908	87	23.1	1.1
1972/73	2,231	2,146	-85	24.3	-0.9
1973/74	2,614	2,632	18	25.9	0.2
1974/75	3,107	3,124	17	26.6	0.2
1975/76	3,873	3,503	-370	27.5	-2.6
1976/77	4,276	4,283	7	28.7	0.1
1977/78	5,232	5,153	-79	31.0	-0.5
1978/79	6,404	5,651	-753	32.5	-3.8
1979/80	7,338	6,827	-511	32.0	-2.2
1980/81	8,802	7,877	-925	31.7	-3.3
1981/82	11,075	9,753	-1,322	35.6	-4.3
1982/83	12,880	11,207	-1,673	37.6	-4.9
1983/84	14,108	11,724	-2,384	36.4	-6.2
1984/85	16,155	13,705	-2,450	36.2	-5.5
1985/86	18,330	16,933	-1,397	34.0	-2.6
1986/87	22,711	20,843	-1,868	38.0	-3.1
1987/88	27,815	26,668	-1,147	43.0	-1.8
1988/89	28,492	27,160	-1,332	39.9	-1.9
1989/90	31,758	30,866	-892	43.5	-1.2
1990/91	30,084	28,457	-1,627	41.3	-2.2
1991/92	28,598	26,616	-1,982	37.6	-2.6
1992/93	28,440	26,742	-1,698	35.1	-2.1
1993/94	29,662	30,236	574	34.5	0.7
1994/95	31,428	33,990	2,562	34.5	2.8

Source: International Monetary Fund. See Appendix.

Table 2: Nominal, nominal structural and inflation adjusted structural budget imbalance

	Nominal surplus	Nominal structural surplus	Inflation adjusted structural surplus	Nominal surplus % of GDP	Nominal structural Surplus % of GDP	Inflation adjusted structural % of GDP
	\$m S	\$m S*	\$m RS	% S/Y	% S*/Y	% RS/Y
1950/51	4	18	60	0.3	4.1	1.3
1951/52	-77	-26	97	-5.0	5.5	-1.7
1952/53	-71	-24	45	-4.2	2.5	-1.4
1953/54	-22	16	78	-1.2	4.2	0.9
1954/55	-40	-7	6	-2.0	0.3	-0.4
1955/56	-74	-25	37	-3.6	1.7	-1.2
1956/57	-111	-83	-83	-5.0	-3.7	-3.7
1957/58	-34	8	41	-1.5	1.8	0.3
1958/59	-98	-70	-55	-3.9	-2.2	-2.8
1959/60	-75	-72	-56	-2.8	-2.1	-2.7
1960/61	-75	-75	-75	-2.7	-2.7	-2.7
1961/62	-102	-131	-148	-3.4	-5.0	-4.4
1962/63	-165	-216	-198	-5.0	-6.0	-6.6
1963/64	-165	-209	-95	-4.6	-2.7	-5.8
1964/65	-27	-76	-1	-0.7	0.0	-1.9
1965/66	-56	-65	9	-1.4	0.2	-1.6
1966/67	-77	-13	109	-1.8	2.7	-0.3
1967/68	-64	40	141	-1.4	3.3	0.9
1968/69	-65	-17	115	-1.3	2.3	-0.3
1969/70	-20	10	193	-0.3	3.2	0.2
1970/71	49	50	359	0.7	5.0	0.7
1971/72	87	17	212	1.1	2.7	0.2
1972/73	-85	-233	32	-0.9	0.4	-2.5
1973/74	18	-40	352	0.2	3.3	-0.4
1974/75	17	22	561	0.1	4.7	0.2
1975/76	-370	-437	279	-2.6	3.4	-3.1
1976/77	7	336	1,254	0.0	8.7	2.3
1977/78	-79	289	1,150	-0.5	7.1	1.7
1978/79	-753	-402	831	-3.8	4.4	-2.0
1979/80	-511	23	1,795	-2.2	7.5	0.1
1980/81	-925	-584	1,179	-3.3	4.7	-2.1
1981/82	-1,322	-407	1,936	-4.3	7.1	-1.3
1982/83	-1,673	-828	565	-4.9	2.0	-2.4
1983/84	-2,384	-1,934	-593	-6.2	-0.8	-5.0
1984/85	-2,450	-1,892	2,500	-5.5	-1.1	-4.2
1985/86	-1,397	-1,767	2,238	-2.6	12.1	-3.3
1986/87	-1,868	-1,139	5,819	-3.1	7.3	-1.9
1987/88	-1,147	-472	2,048	-1.8	3.0	-0.7
1988/89	-1,332	-934	1,284	-1.9	1.8	-1.4
1989/90	-892	1,286	3,688	-1.2	5.1	1.8
1990/91	-1,627	2,034	3,186	-2.2	4.3	2.8
1991/92	-1,982	1,135	1,562	-2.6	2.1	1.5
1992/93	-1,698	308	929	-2.1	1.2	0.4
1993/94	574	2,296	3,112	0.7	3.6	2.7
1994/95	2,562	3,876	5,614	2.8	6.0	4.3

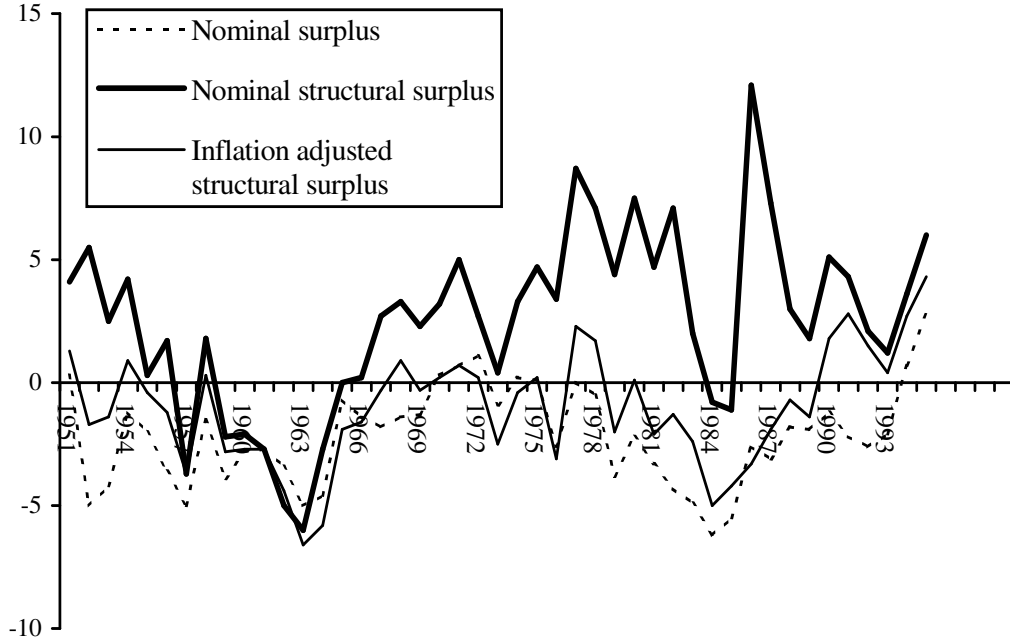


Figure 1: Nominal surplus, nominal structural surplus and inflation adjusted structural budget surplus as a percentage of GDP, 1950/51 to 1994/95

Source: Table 2.

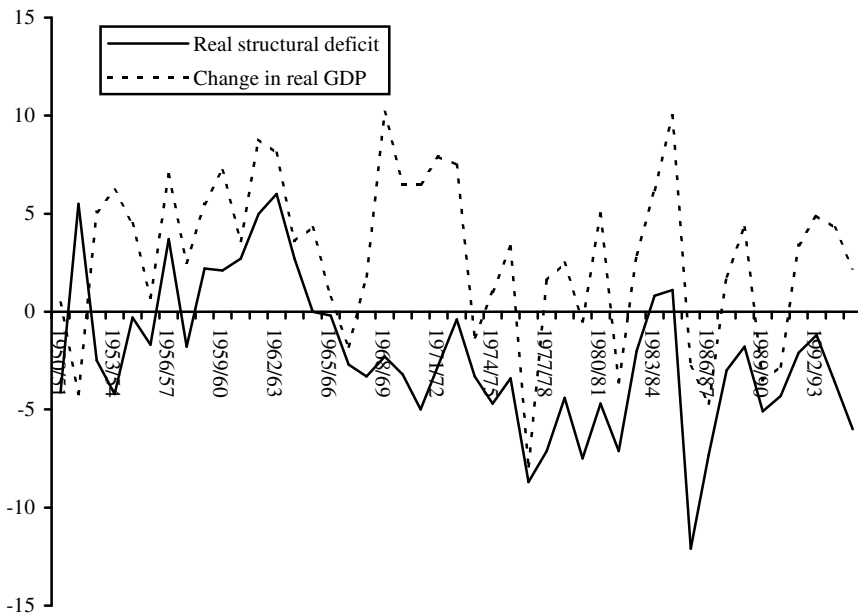


Figure 2: Inflation adjusted structural budget deficit and change in real GDP

Source: Tables 1 and 2.

Empirical Relations

After the nominal structural and inflation adjusted structural budget imbalances have been calculated the relation of the Government's fiscal stance to the rest of the economy can be modelled. In doing so it is possible to determine if the inflation adjusted structural budget imbalance has a greater impact on short-term business cycles than the nominal structural imbalance. Movements in real economic activity in New Zealand can be positively related to the inflation adjusted structural budget deficit. This is illustrated in Figure 2, which shows the relation between the inflation adjusted structural budget deficit as a percentage of GDP and the change in real GDP. This relationship helps us to understand the nature of some of the short-term downturns in the New Zealand economy. The recession of 1952, for instance, is associated with a high degree of inflation and large inflation adjusted structural surplus (see Figure 2) which might indicate that the move into surplus on the part of the fiscal stance may have had a contractionary impact on the economy. Recessions in 1967, 1974, 1977 and 1987 are also associated with movements toward large inflation adjusted structural surpluses.

To determine if there is a positive relationship between the size of the budget deficit and changes in real GDP the nominal structural and inflation adjusted structural imbalances as a percentage of GDP have been taken from Table 2 and least squares regression used to model the relationship between them and changes in real GDP. This methodology follows that presented by Eisner (1986) and the functional equations are as follows:

$$\Delta (Y/P)_t = \beta_1 + \beta_2(D^*/Y) + \beta_3(D^*_{t-1}/Y) + \mu_t \quad \text{for } t=1950/51-1994/95 \quad (1)$$

$$\Delta (Y/P)_t = \beta_1 + \beta_2(RD_t/Y) + \beta_3(RD_{t-1}/Y) + \mu_t \quad \text{for } t=1950/51-1994/95 \quad (2)$$

where D^*/Y is the nominal structural deficit as a percentage of real GDP, RD/Y is the inflation adjusted structural budget deficit as a percentage of real GDP and $\Delta (Y/P)$ the percentage change in real GDP.⁵

Fluctuations in the level of general economic activity are not just determined by changes in budget deficits. In particular a number of economists have maintained that short-term fluctuations are caused by changes in the real quantity of money. As well as modelling the changes in budget deficits with

⁵ The change in real GDP has been calculated using GDP expenditure figures and the Consumer Price Index (IMF, various issues).

fluctuations in the level of real GDP it seems pertinent, therefore, to also model the impact of changes in other variable such as the changes in the money supply, and the size of the balance of trade as a percentage of GDP. The larger model is therefore:

$$\Delta (Y/P)_t = \beta_1 + \beta_2(D^*t/Y) + \beta_3(D^*t-1/Y) + \beta_4(\Delta Mt/Y) + \beta_5(\Delta Mt-1/Y) + \beta_6(\Delta BTt/Y) + \beta_7(\Delta BTt-1/Y) + \beta(\mu t) \quad \text{for } t=1950/51-1986/87 \quad (3)$$

$$\Delta (Y/P)_t = \beta_1 + \beta_2(RDt/Y) + \beta_3(RDt-1/Y) + \beta_4(\Delta Mt/Y) + \beta_5(\Delta Mt-1/Y) + \beta_6(\Delta BTt/Y) + \beta_7(\Delta BTt-1/Y) + \beta(\mu t) \quad \text{for } t=1950/51-1986/87 \quad (4)$$

where $\Delta M/Y$ is the change in the money supply (M3) as a percentage of GDP, and $\Delta B/T$ is the change in the balance of trade as a percentage of GDP.⁶ The data series used here ends in the year 1986/87 because at the end of this financial year a number of non-bank financial institutions had their deposits included into M3 figures making the statistics after that date incompatible with those before.

When empirical work using times series data is conducted there is the assumption that the underlying time series are stationary. That is, the data sets in question do not exhibit trends. Enders (1995) mentioned that using time series data which is non-stationary will result in spurious regression; that is, there is no meaningful relationship between the variables. To test for unit root the Augmented Dickey-Fuller (ADF) test has been carried out.⁷ Using the time series (TSP) version 4.3, we have calculated the ADF statistics for each of the data series, namely the change in real GDP [$\Delta (Y/P)$], the nominal structural budget deficit (D^*/Y), the change in the balance of trade ($\Delta BT/Y$) and the change in the money supply ($\Delta M/Y$). The test suggests that the data series do not exhibit unit root, or they are not stationary.

⁶ Statistics for the money supply (M3: currency plus bank deposits) and the balance of trade (exports minus imports) have been taken from the International Monetary Fund's *International financial statistics*.

⁷ For a theoretical discussion of the ADF test see Gujarati (1995), pp. 709-21.

To test for heteroscedasticity the Breusch and Pagan tests were performed which are particularly useful if the sample size is large as is the case here. The tests reveal that the data are homoscedastic, that is of equal variance.

Table 3: Nominal structural and inflation adjusted structural budget deficits and changes in real GDP (n=43) 195/52-1994/95

	β_1 (constant)	β^2 (D*/Y)	β_3 (D*t-1/Y)
Equation 1	2.33548 (3.31069)	0.66956 (2.62585)	-0.17226 (-0.50363)
	β_1 (constant)	β_2 (RD/Y)	β_3 (RDt-1/Y)
Equation 2	4.58530 (7.94412)	0.77108 (5.69791)	-0.07514 (-0.54828)

Equation 1: adjusted R² 0.1041; Durbin Watson 2.0474

Equation 2: adjusted R² 0.4477; Durbin-Watson 1.9290

Bracket figures are t-statistics

Table 4: Nominal structural and inflation adjusted structural budget deficits, change in the money supply, change in the balance of trade and change in real GDP (n=36), 1951/52 to 1986/87

	β_1	β_2 (D*/Y)	β_3 (D*t-1/Y)	β_4 (Δ Mt/Y)	β_5 (Δ Mt-1/Y)	β_6 (Δ BTt/Y)	β_7 (Δ BTt-1/Y)
Eq' 3	2.762 (3.239)	0.804 (2.271)	-0.547 (-1.587)	1.112 (2.151)	0.821 (1.375)	0.128 (-0.086)	0.528 (-0.469)
	β_1	β_2 (RDt/Y)	β_3 (RDt-1/Y)	β_4 (Δ Mt/Y)	β_5 (Δ Mt-1/Y)	β_6 (Δ BTt/Y)	β_7 (Δ BTt-1/Y)
Eq' 4	4.566 (7.135)	0.676 (3.455)	-0.089 (-0.426)	0.759 (1.467)	0.426 (0.768)	0.139 (0.643)	0.0264 (0.167)

Equation 3: Adjusted R² 0.284 ; Durbin-Watson 1.283

Equation 4: Adjusted R² 0.480; Durbin-Watson 1.393

Bracketed figures are t-statistics.

Table 5: Constant employment and real structural budget deficits, money supply, balance of trade and real GDP (n=36), 1951/52 to 1995/95

	β_1	β_2 (D*/Y)	β_3 (D*t-1/Y)	β_4 (BMt/Y)	β_5 (BMt-1/Y)	β_6 (BTt/Y)	β_7 (BTt-1/Y)
Eq' 5.	2.405 (3.866)	0.914 (2.867)	-0.666 (-2.649)	1.257 (2.945)	-0.224 (-1.612)	0.122 (0.582)	0.100 (0.582)
	β_1	β_2 (RDt/Y)	β_3 (RDt-1/Y)	β_4 (BMt/Y)	β_5 (BMt-1/Y)	β_6 (BTt/Y)	β_7 (BTt-1/Y)
Eq' 6	4.832 (0.362)	0.788 (4.792)	-0.115 (-0.693)	0.061 (0.551)	-0.175 (-1.553)	0.134 (0.910)	0.143 (1.007)

Equation 5: Adjusted R² 0.173 ; Durbin-Watson 1.289

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Equation 6: Adjusted R^2 0.438; Durbin-Watson 1.279
Bracketed figures are t-statistics.

Since times series data is being used it is necessary to test the stability of the regression coefficients over the two sub-samples of data. The Chow test has been performed by dividing the entire data series into two sub periods: 1950/51-1972/73 and 1973/74-1994/95. The Chow test is a special form of F-test which allows for any structural changes which might have occurred during the period of study. In the context of the current study, this test is of particular interest since it is well known that a major structural change occurred in the New Zealand economy following the first oil price shock and Britain's entry into the European Economic Community in 1973. This structural change may mean that the constant terms of the two sub periods are different, or both the intercepts and slopes are different. The Chow test was performed using TSP43 which confirms that for all of the equations the regression coefficients for both sub-periods are stable.

The results of the regression equations 1 and 2 are presented in Table 3. From Table 3 it can be seen that there is a statistically significant, positive relationship between both the nominal structural budget deficit (D^*) and the inflation adjusted structural deficit (RD) and changes in the level of real GDP. The change in the level of the inflation adjusted structural budget deficit however explains 45 percent of the change in the level of real GDP compared to only 10 percent for the nominal structural deficit. The inflation adjusted structural deficit therefore better captures the fiscal impact of the New Zealand Government budget stance on changes in real GDP. The difference between the two can probably be explained by the differences between the size of the inflation adjusted structural deficit and the nominal structural budget deficit during the inflation years.

The results from regression equations 3 and 4 are presented in Table 4. From Table 4 it can be seen that again there is a statistically significant relationship between the inflation adjusted structural deficit and the change in real GDP. There also appears to be a statistically significant relationship between the change in the money supply the level of real GDP.

Finally the regression equations 3 and 4 have been estimated again using an alternative measures of monetary policy instead of M3. In this case the change in broad money (BM) as a percentage of GDP has been used. In this case data for the whole period studied has been used. In Table 5 the results of this operation are presented. In Table 5 similar results to those in Table 4 have been estimated. In each case there was found to be a statistically significant relationship between the inflation adjusted structural deficit and the level of economic activity.

Conclusion

A couple of conclusions can be made from this study. The first is that the nominal structural budget imbalance is a predictor of subsequent changes in real GDP. Larger deficits (or shrinking surpluses) can be associated with greater increases in growth of real GDP. Secondly the inflation-adjusted, inflation adjusted structural budget imbalance is a greater predictor of changes in GDP than the nominal structural imbalance which explain a good deal of the difference between the results of deficits in less inflationary and more inflationary periods. Unfortunately, however, the study on monetary impacts was a little inconclusive although there was found to be a statistically significant relationship between the changes in money supply and the percentage change in real GDP.

In determining the causes of short-term fluctuations in economic activity it would seem important to take into consideration the impact of the fiscal stance of the government on the level of economic activity. Even if the government is not pursuing some conscious fiscal policy aimed at regulating the level of aggregate demand the levels of government expenditure, taxation and changes in the level of the deficit are going to impact on the rest of the economy. In particular the inflation-adjusted, inflation adjusted structural imbalance has a significant positive relationship with the level of real growth in GDP and policy makers should be aware of the impact that this adjusted fiscal stance has on the level of activity.

Appendix

The data taken from the International Monetary Fund's *International financial statistics* are from the following volumes:

1949/50 to 1961/62; *International financial statistics*, supplement to 1956/66 Issue, pp. 180-181.

1962/63 to 1965/66; *International financial statistics*, November 1970, pp. 234-235.

1966/67 to 1994/95; *International financial statistics yearbook 1997*, pp. 632-633.

New Zealand Government budget expenditure and revenue figures are from the *New Zealand Official yearbook* and Department of Statistics, *National income and expenditure* and have been cited in the International Monetary Fund's, *International financial statistics* and *Government finance statistics yearbook (GFSY)*. For the years 1949/50 to 1975/76 see the *International financial statistics* (lines 81 and 82).

1976/77 to 1985/86 see *GFSY* 1987, p. 671. 1986/87 to 1994/95 see *GFSY* 1996, p. 285.

Government revenue comprises all non-repayable and non-repaying government receipts, whether required or unrequited, other than grants. Expenditure comprises all non-repayable and non-repaying payments by the government, whether required or unrequited, or whether for capital or current purposes. These figures comprise the various cash accounts of the central government consolidated into a single account. They include interest payments, transfers to local bodies and expenditure on behalf of administrative bodies, but exclude separately constituted government enterprises. The proceeds from the sale of land and fixed capital assets are included in the revenue but not the proceeds from the sale and purchase of the separately constituted enterprises. The issue of how to treat the sale and purchase of second hand assets is a difficult one but the authors have decided to exclude these sales because they are not important from the view of the influence of the fiscal stance on the level of business activity (Nevile 1990, p. 152).

The price index (P) has been constructed from the Consumer Price Index given in the *International financial statistics* (line 64).

The level of GDP has been taken from the *International financial statistics* (line 98c) and has been calculated using the expenditure approach.

The money supply figures are given in two forms M3 (M) and broad money (BM). M3 equals the sum of currency outside banks plus demand deposits other than those held by the Reserve Bank of New Zealand. Prior to August 1988 the data for M refers to the four trading banks operating in New Zealand but after that data it refers to registered banks plus 'other M3 institutions' (certain savings institutions). M has been taken from the *International financial statistics* (line 34). Broad money comprises M3 plus the savings and foreign currency deposits of resident sectors other than the central government. This figure has been taken from the *International financial statistics* (line 35).

The balance of trade (BT) is the level of merchandise exports minus the level of merchandise imports (cif). These have been taken from lines 70 and 71 in the *International financial statistics*.

Expenditure on unemployment benefits that was used to calculate the figure for G* (ie, G – Un) has been taken from the various issues of the New Zealand official yearbook.

The level of government debt has been taken from the *International financial statistics*.

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Table A1: Data series of variable, 1949/50 to 1994/95

	Price level P 1969/70=1	Money supply (M3) M \$m	Broad money BM \$m	Balance of trade BT \$m
1949/50	0.527	480	501	49
1950/51	0.544	492	587	82
1951/52	0.594	489	580	-73
1952/53	0.625	572	592	86
1953/54	0.654	615	615	-4
1954/55	0.660	614	596	-56
1955/56	0.688	609	628	5
1956/57	0.688	620	680	-41
1957/58	0.703	588	711	-70
1958/59	0.710	659	760	124
1959/60	0.717	745	846	40
1960/61	0.717	733	881	-82
1961/62	0.710	730	846	30
1962/63	0.717	751	855	5
1963/64	0.759	800	913	81
1964/65	0.786	788	915	-26
1965/66	0.813	798	938	-14
1966/67	0.857	781	925	29
1967/68	0.893	780	952	103
1968/69	0.938	801	1,070	185
1969/70	1.000	861	1,167	-20
1970/71	1.107	949	1,359	14
1971/72	1.179	1,219	1,850	226
1972/73	1.277	1,545	2,474	321
1973/74	1.420	1,601	2,623	-881
1974/75	1.625	1,749	2,905	-817
1975/76	1.902	1,910	3,436	-456
1976/77	2.179	1,946	3,941	-169
1977/78	2.429	2,378	4,915	244
1978/79	2.768	2,458	5,827	141
1979/80	3.241	2,535	6,364	-47
1980/81	3.732	2,926	7,407	-164
1981/82	4.339	3,030	8,448	-280
1982/83	4.661	3,426	9,007	118
1983/84	4.946	3,761	10,840	-1,355
1984/85	5.174	4,104	14,371	-473
1985/86	6.429	4,668	17,953	-367
1986/87	7.482	6,667	21,115	-93
1987/88	7.964	14,673	18,394	2,271
1988/89	8.420	21,382	27,402	109
1989/90	8.929	24,217	47,682	22
1990/91	9.161	24,197	55,449	2,144
1991/92	9.250	25,848	57,683	1,076
1992/93	9.375	26,182	63,802	1,711
1993/94	9.536	28,974	65,883	538
1994/95	9.893	33,165	69,120	-464

Table A2: Actual and constant employment GDP, 1950/51 to 1995/95

	Nominal GDP	Actual real GDP	Real constant GDP
	Y	Y/P	(Y/P)*
	\$m	\$m	\$m
1949/50	1408	2,672	2,672
1950/51	1460	2,684	2,766
1951/52	1528	2,572	2,863
1952/53	1690	2,704	2,964
1953/54	1878	2,872	3,068
1954/55	1980	3,000	3,176
1955/56	2078	3,020	3,276
1956/57	2224	3,233	3,391
1957/58	2330	3,314	3,510
1958/59	2482	3,496	3,633
1959/60	2687	3,748	3,760
1960/61	2783	3,882	3,882
1961/62	2999	4,224	4,071
1962/63	3273	4,565	4,269
1963/64	3589	4,729	4,477
1964/65	3877	4,933	4,695
1965/66	4039	4,968	4,924
1966/67	4183	4,881	5,164
1967/68	4436	4,968	5,416
1968/69	5134	5,473	5,680
1969/70	5832	5,832	5,957
1970/71	6874	6,210	6,210
1971/72	7901	6,701	6,445
1972/73	9199	7,204	6,689
1973/74	10095	7,109	6,942
1974/75	11668	7,180	7,180
1975/76	14101	7,414	7,255
1976/77	14879	6,828	7,331
1977/78	16856	6,940	7,408
1978/79	19688	7,113	7,486
1979/80	22947	7,080	7,565
1980/81	27745	7,434	7,644
1981/82	31097	7,167	7,724
1982/83	34384	7,377	7,805
1983/84	38764	7,837	7,887
1984/85	44619	8,628	7,970
1985/86	53879	8,381	8,054
1986/87	59778	7,990	8,093
1987/88	64759	8,132	8,132
1988/89	71415	8,482	8,282
1989/90	73074	8,184	8,434
1990/91	72893	7,957	8,589
1991/92	76129	8,230	8,747
1992/93	80924	8,632	8,908
1993/94	85875	9,005	9,072
1994/95	91045	9,203	9,203

Table A3: Government receipts, expenditure and constant employment surplus, 1950/51 to 1994/95

	Adjusted expenditure G* \$m	Adjusted revenue T* \$m	Constant employment surplus S* \$m	Debt H+eF \$m	Inflation adjusted structural surplus RS \$m
1950/51	467	485	18	1,334	60
1951/52	533	507	-26	1,307	84
1952/53	564	540	-24	1,335	42
1953/54	580	596	16	1,409	78
1954/55	605	598	-7	1,457	6
1955/56	659	635	-24	1,470	36
1956/57	683	600	-83	1,514	-83
1957/58	737	744	8	1,564	41
1958/59	805	735	-70	1,633	-54
1959/60	860	788	-72	1,689	-56
1960/61	900	825	-75	1,736	-75
1961/62	902	771	-131	1,807	-149
1962/63	949	733	-215	1,934	-196
1963/64	1,008	799	-209	2,022	-97
1964/65	977	904	-73	2,140	0
1965/66	1,075	1,010	-65	2,256	10
1966/67	1,172	1,159	-13	2,412	111
1967/68	1,185	1,224	40	2,627	146
1968/69	1,235	1,217	-17	2,777	116
1969/70	1,328	1,337	10	2,887	189
1970/71	1,570	1,620	50	3,007	341
1971/72	1,818	1,835	17	3,187	212
1972/73	2,226	1,993	-233	3,503	36
1973/74	2,611	2,570	-40	3,735	336
1974/75	3,102	3,124	22	4,200	552
1975/76	3,865	3,428	-437	6,305	481
1976/77	4,263	4,598	336	7,508	1,290
1977/78	5,212	5,501	289	8,837	1,199
1978/79	6,350	5,948	-402	10,374	869
1979/80	7,272	7,294	23	11,635	1,721
1980/81	8,683	8,099	-584	14,407	1,311
1981/82	10,919	10,511	-407	18,769	2,219
1982/83	12,685	11,857	-828	21,938	688
1983/84	13,732	11,798	-1,934	28,284	-304
1984/85	15,880	13,988	-1,892	32,002	-482
1985/86	18,040	16,273	-1,766	42,479	6,526
1986/87	22,251	21,113	-1,139	39,112	4,366
1987/88	27,141	26,670	-472	40,259	1,965
1988/89	27,505	26,521	-984	41,591	1,268
1989/90	30,523	31,809	1,286	42,483	3,708
1990/91	28,684	30,718	2,033	44,110	3,150
1991/92	27,153	28,287	1,135	46,092	1,578
1992/93	27,289	27,597	308	47,791	945
1993/94	28,163	30,460	2,296	47,217	3,093
1994/95	30,114	33,990	3,876	44,655	5,487

