HONG KONG: MACROECONOMIC IMPACT OF RECENT FISCAL MEASURES

The recent economic downturn has brought fiscal policy to the forefront, given the limited scope for independent monetary policy in Hong Kong. The budget recorded a deficit of 1¾% of GDP in FY1998 and is expected to have remained in the red in FY1999. How much stimulus to aggregate demand has been provided by recent fiscal measures? The conventionally measured fiscal balance is affected by cyclical conditions and irregular factors, and thus may not fully reveal the underlying policy stance. This paper provides empirical indicators of the stance that are purged of cyclical effects and other influences that distort the relationship between the fiscal balance and aggregate demand.

Estimates of the fiscal impulse indicate a significantly expansionary fiscal position in FY1998. The policy stance is expected to have remained expansionary in FY1999. Specifically, the fiscal impulse is estimated to have raised GDP by over 1½% in FY1998, mostly due to increased expenditure. In FY1999, fiscal operations based on the budget forecast are projected to have boosted GDP by a further 1½%, in large part attributable to revenue loss as the budget started to bear the full cost of the tax concession package announced in FY1998.

In the event, the fiscal outturn for the first 8 months of FY1999 suggests that the fiscal deficit will likely be smaller than budget projection. Land premia in the first half of FY1999, for instance, already accounted for over 70% of the total land sales revenue projected in the budget. Income and profit taxes and other revenue including stamp duties and investment income should be boosted by the stronger-than-expected recovery in the economy and the stock market. These developments are not expected to change significantly our estimates of the fiscal impulse, however, as they reflect either endogenous responses to faster growth or asset transactions that do not directly affect aggregate demand.

Analysis of the longer period since the establishment of the linked exchange rate suggests that fiscal operations were also counter-cyclical in previous downturns, although the magnitude of the stimulus was smaller. However, there is no strong evidence of a counter-cyclical fiscal stance in previous economic upturns. In particular, despite booming activity, the stance was expansionary in FY1994-95, reflecting the effects of tax relief measures and accelerated spending on the Airport project.

Introduction

The severe economic downturn in Asia has brought fiscal policy to the forefront. In Hong Kong, fiscal measures are recognised as being of particular importance as a counter-cyclical tool given that there is little room for manoeuvre on the monetary policy front under the linked exchange rate system. At the same time, because interest rates follow trends in the U.S., fiscal policy could be more effective than under a flexible exchange rate regime, as interest rates would not rise to crowd out the fiscal stimulus. In the event, budget data suggest that the fiscal stance in Hong Kong has indeed been expansionary during the downturn. Government spending has been raised to offset the contraction in private demand, while tax revenue declined due to falling incomes and asset prices, as well as tax concession measures. As a result, the budget recorded a deficit of about 1 3/4% GDP in FY1998—compared with the surplus of 6 1/2% of GDP in FY1997—and is projected to continue to be in deficit in FY1999.

Published budget deficits can be misleading indicators of the underlying effect of fiscal activity on aggregate demand, however. Some movements on the revenue side, for instance, reflect induced responses to weaker activity. Other elements, such as land sales, reflect asset transactions that do not directly affect private sector wealth. This paper abstracts from these factors to provide an empirical analysis of the fiscal stance from the perspectives of its short-term effect on aggregate demand. To assess how expansionary fiscal policy has been in the face of the economic downturn, observed fiscal data are purged of the effects of the downturn on tax revenue and other irregular elements to

Table 1 : **Hong Kong: Summary of Fiscal Operations**

	Actual							Projection[1/]
	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00
	(In billions of Hong Kong dollars)							
Revenues	135	167	175	180	208	281	216	205
Direct taxes	56	67	76	79	85	93	77	77
Indirect taxes	67	77	75	74	89	113	88	73
Land sales	8	17	17	17	24	60	19	31
Asset income	4	6	8	10	10	16	31	25
Expenditures	113	146	162	183	183	194	239	242
Recurrent	82	93	106	120	135	149	164	180
Capital	32	53	56	63	48	45	75	62
Overall balance	22	20	13	-3	26	87	-23	-37
Fiscal reserves	121	140	151	148	174	458	434	398
	(In percent of GDP)							
Revenues	16.8	18.0	17.0	16.4	17.0	20.8	17.1	16.0
Direct taxes	6.9	7.2	7.4	7.2	7.0	6.9	6.1	6.0
Indirect taxes	8.3	8.3	7.3	6.8	7.2	8.4	7.0	5.7
Land sales	1.0	1.8	1.6	1.6	1.9	4.4	1.5	2.4
Asset income	0.5	0.7	0.8	0.9	0.8	1.2	2.5	1.9
Expenditures	14.0	15.8	15.7	16.7	14.9	14.4	18.9	18.9
Recurrent	10.1	10.0	10.3	11.0	11.0	11.1	13.0	14.1
Capital	3.9	5.7	5.4	5.7	3.9	3.3	5.9	4.8
Overall balance	2.7	2.2	1.3	-0.3	2.1	6.4	-1.8	-2.9

1/ *Government projections, except breakdowns between direct taxes and indirect taxes which are HKMA Research Department staff estimates.*

provide a measure—albeit still approximate—of the underlying fiscal stance.

The rest of the paper is organised as follows. The next section provides a brief description of recent fiscal developments, covering both the revenue and expenditure sides. Section III considers some conceptual and methodological issues in assessing the short-term effects of fiscal policy on aggregate demand. Based on these concepts, Section IV presents empirical estimates of recent fiscal measures on aggregate demand. The final section provides a historical perspective by reviewing the role of fiscal policy as a demand management tool since the establishment of the exchange rate link in 1983.

Recent Fiscal Developments

Following a large surplus of about 6 1/2% of GDP in FY1997, the fiscal accounts recorded a deficit of about 1 3/4% of GDP in FY1998 (Table 1). Slightly over one half of the swing in the budget balance was due to lower revenue. Total revenue declined by 23% from the previous fiscal year, much larger than the decline of 6 1/4% in nominal GDP. The deterioration reflected the negative shocks of economic recession and asset market contraction, as well as tax relief measures. Of the major revenue items, income and profit taxes declined by 17%, reflecting in part a 10% rebate of the FY1997 final assessments of profits, salaries, and property taxes.[1] Indirect taxes and nontax revenue fell by 22% in FY1998, reflecting the combined effect of slower activity and tax cut measures.[2] Of particular significance was a sharp decline of 65% in stamp duties, which dropped from 10% of total revenue in FY1997 to under 5% in FY1998. The decline reflected sharply lower turnover in both stock and property markets. Another special factor that contributed to the decline in nontax revenue was the suspension of land auctions from the 2nd quarter of FY1998. As a result, land premium dropped from HK$60 billion in FY1997 to HK$19 billion in FY1998. Offsetting these declines in revenue were higher-than-expected earnings on the investment of the fiscal reserves, due to capital appreciation in the shares purchased by the government in August 1998.

On the expenditure side, total spending increased by 23% to account for 19% of GDP in FY1998, up from 14 1/2% in FY1997 and an average of 15 1/2% in the previous five fiscal years. The increase in government spending was in large part due to a sharp rise of 66% in capital expenditure intended to offset the drop in private demand. Of the total increase of HK$30 billion in capital spending, about HK$20 billion was an equity injection by the government into the Kowloon-Canton Railway Corporation (KCRC). Recurrent spending increased by just over 10% from FY1997, not much higher than the trend rate of growth in nominal GDP in recent years. Reflecting the drop in nominal GDP, recurrent expenditure increased from 11% of GDP in FY1997 to 13% in FY1998.

For FY1999, the government budget projects a deficit of HK$37 billion or close to 3% of GDP. The increase in the deficit was expected to come mostly from a further drop of 5% in revenue, as the budget starts to bear the full cost of the tax concession package introduced in FY1998. Expenditure was projected to increase by only 1 1/4%, as a 9 3/4% increase in recurrent expenditure more than offsets a decline of 17% in capital spending. It should be noted that this forecast was based on a projected increase in real GDP of 1/2% in 1999. Developments in recent months suggest that the economy has performed better. The government has revised its growth forecast upward to 1.8% in 1999. As a result, revenue could be

1 The rebate was announced in the Budget Speech for FY1999, with an estimated total effect of HK$8.5 billion. Other income and profits tax relief measures in the FY1998 budget included: an increase in tax allowances; a widening of the marginal tax bands and a reduction in the incremental steps for marginal tax rates from 6% to 5%; a new salaries tax deduction for home mortgage interest payments; and a reduction of the corporate profits tax from 16.5% to 16%. However, it is estimated that most of the effect of these measures will fall on revenue in the three years from FY1999, reflecting lags in tax collection.

2 The measures announced in the FY1998 budget included mainly cuts in estate duty and stamp duty rate on stock transactions; reductions in the rate of hotel accommodation tax and air passenger departure tax; a reduction in the overall Rates percentage charge from 5% to 4.5% for one year in FY1998; and freezing most government fees and charges for one year. Further temporary relief measures were announced in June 1998, including a Rates rebate for the June 1998 quarter and a cut of duty on diesel by 30% up to end-March 1999.

higher than the budget projection, reducing the deficit.

Fiscal Stimulus to Aggregate Demand: Conceptual Issues

The first issue in any empirical analysis of fiscal policy is to choose between fiscal accounts and national income accounts (NIA) data. In terms of assessing the short-term impact of fiscal policy on economic activity, the latter have the advantages of having a wider coverage of the public sector and excluding transfers to the private sector (Box 1). Fiscal accounts data are more readily available and reliable, however. This paper uses fiscal accounts data, primarily because of considerations of data availability and transparency. However, fiscal accounts data will be adjusted to the extent possible to derive a fiscal balance that is closer to the NIA concept.

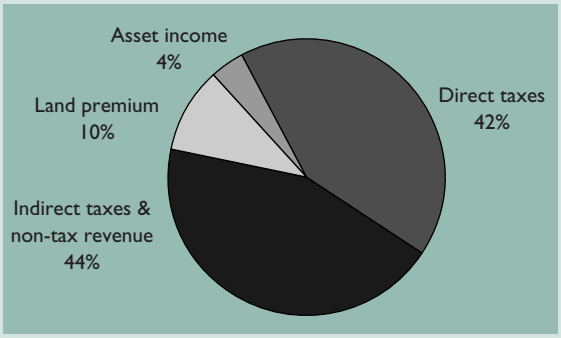
The fiscal position is influenced by different forces, including discretionary policies, cyclical conditions, and irregular elements such as equity investments mentioned above and transitory changes in government earnings (e.g. temporary surges/declines in natural resource receipts or government investment income). To assess the effect of fiscal policy on the economy, the actual budget balance should be adjusted for the effects of cyclical conditions and asset transactions that temporarily distort revenues and expenditures. Three steps are thus involved in estimating the fiscal stimulus to aggregate demand. The first step is to derive from the observed fiscal balance an "adjusted" balance that reflects only the effects of policy measures and cyclical conditions. Secondly, the adjusted balance is purged of the effect of the business cycle. Finally, the impact on aggregate demand is estimated by applying tax and spending multipliers to the adjusted indicator.

In Hong Kong's case, an important issue for the first step involves the treatment of the land premium and asset income-earnings on the investment of fiscal reserves with the Exchange Fund. These two items have accounted for a significant share of total revenue in recent years (Chart 1). However, their relationship with domestic economic activity is very different from other revenue sources. Both should be excluded from revenue in deriving an indicator of the fiscal stance. Land transactions represent an exchange of assets between the government and the private sector and thus do not directly generate a change in private sector wealth and thus aggregate spending. As a result, an increase in land premium would not imply a less expansionary or more contractionary fiscal policy. Indeed, an increase in land sales could well have expansionary effects on economic activity, as the purchase of land by the private sector normally leads to increased investment for property development.

Earnings on investment of the fiscal reserves with the Exchange Fund consist mainly of interest income from holdings of foreign government debt paper, and dividend yields and capital appreciation on holdings of domestic and foreign equities. An increase in interest income from holdings of foreign debt paper does not imply a tightening of fiscal policy. Also, capital appreciation due to rising stock prices does not represent a transfer of resources from the private sector to the government. Dividends from local investments, however, would be a withdrawal of resources from the private sector. Nevertheless, dividend yields account for only a small share of total asset income.

In addition, some irregular elements should also be adjusted for. For recent years, these include the equity investment by the government into the KCRC in FY1998 and FY1999 for the

Chart 1
A Breakdown of Revenues in Percent of the Total (Averages for FY 1992-96)



West Rail Project, and the salaries and profits tax rebate announced in the FY1999 budget speech. The West Rail Project is expected to cost HK$51.7 billion, of which HK$29 billion is to be financed by government equity investment. The government paid HK$20.5 billion in FY1998 and an additional HK$8.5 billion in April 1999, but the construction will span the period from late 1998 to 2003. Thus, the published government spending numbers for FY1998 and FY1999 should be adjusted to exclude the part of the equity injection that does not contribute to aggregate spending in these two fiscal years. The tax rebate was recorded as a revenue loss in FY1998. However, as cheques were disbursed at the end of March 1999, most of the spending associated with the rebate would take place in the new financial year. Published tax revenue data should thus be adjusted to add the amount of the tax rebate for FY1998, and subtract the same amount for FY1999.

The budget balance resulting from the adjustments discussed above can be called the "adjusted" primary balance. Next, this balance should be purged of the effect of cyclical conditions. It is well known that the fiscal position fluctuates with the state of the economy. The two most cited components that have this effect are progressive taxation and unemployment benefits. When spending plans and tax rates are held constant in an economy experiencing a downturn, lower tax revenues and higher spending on unemployment benefits result in a deteriorating fiscal balance. If an economy is, in contrast, on a cyclical upswing, then tax revenue will rise and unemployment benefits fall. These effects are known as automatic stabilisers. To disentangle automatic stabilisers from policy effects, the concept of potential output is employed. The assumption is that actual real GDP fluctuates over time around an underlying path that reflects the long-term potential growth rate of the economy. The empirical analysis involves quantifying both the size of the deviation of actual output from potential (the output gap), and the cyclical sensitivity of revenues and expenditures to such deviations.

Box 2 provides a technical note on the decomposition of the primary balance into cyclical and its policy components. This involves the selection of a base year in which output is at potential and the fiscal position is used as a reference point. The balance in the base year could be a surplus or a deficit, in line with the structural features of the economy. The actual balances in individual years can then be decomposed into three components: the base year surplus/deficit, the automatic stabiliser (cyclical component), and the effect of policy measures (fiscal stance).[3] The fiscal stance measures the stance in a given year relative to the base year. To assess whether fiscal operations have become more expansionary relative to the previous year, the change in the fiscal stance in percent of GDP—the so-called fiscal impulse—is employed. A positive fiscal impulse implies an expansionary position relative to the previous year.

The interpretation of the fiscal impulse requires a degree of caution. In light of the above discussion, the year-on-year change in the budget balance ($\triangle B$) can be decomposed into contributions from a combination of sources:

$\triangle B$ = (1) normal cyclical factors +
(2) ex ante stance implied by budget forecast +
(3) deviation from ex ante stance implied by budget outturn +
(4) asset transactions (land sales, equity injection, etc) +
(5) investment income +
(6) other

The adjustments discussed above deal with items (1), (4), (5) and part of (6)[4]. The fiscal

3 Because expenditure on unemployment benefits accounts for only a small proportion of total expenditure in Hong Kong, the cyclical component reflects only the automatic stabilisation effect on the revenue side. Expenditure under the Comprehensive Social Security Assistance Scheme—only part of which is on unemployment benefits—has increased at a rather large rate of 36% per annum in recent years, but was still less than 1% of GDP in FY1998. As only part of the unemployment benefit expenditure is related to business cycles, an estimate of the cyclical component would require an estimate of the cyclical component of the unemployment rate and the elasticity between unemployment benefits and the unemployment rate.

4 To the extent that these "other" effects can be identified, e.g. the timing of the tax rebate discussed above.

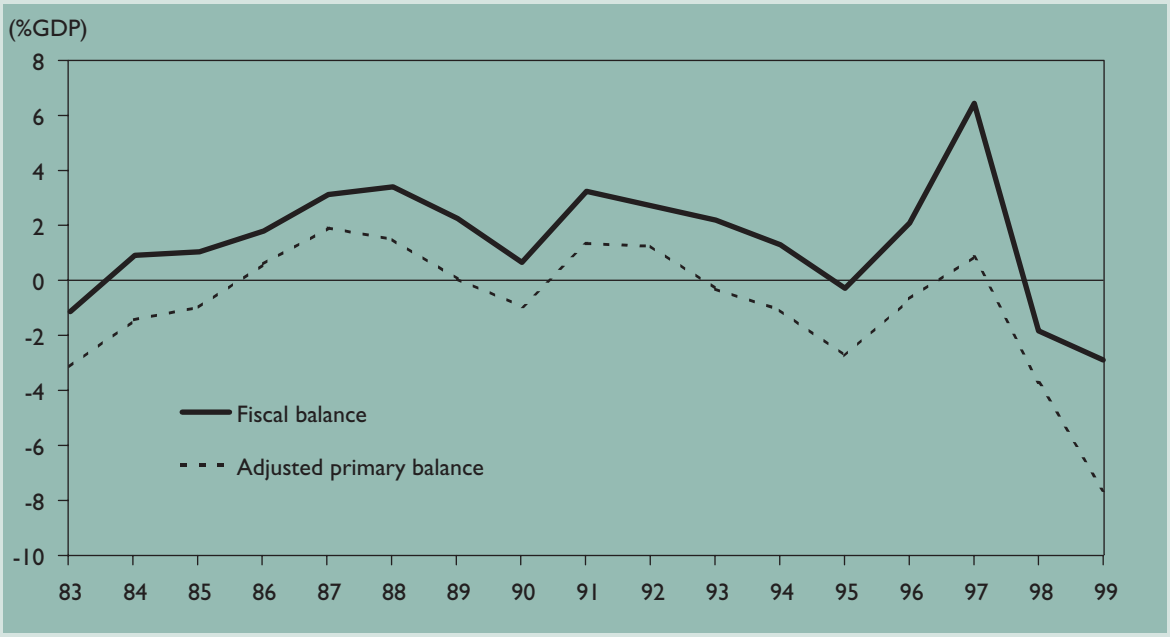
impulse thus includes (2), (3) and the part of (6) that is not directly adjusted for. Based on these considerations, the fiscal impulse term is interpreted in this paper as a measure of ex post stimulus of government fiscal position on aggregate demand relative to the previous year. Thus it reflects policy intentions embodied in the original budget, as well as influences not expected in the budget and not accounted for by normal cyclical factors.

The fiscal impulse can be decomposed into contributions from revenue and expenditure sources. Estimates of tax and spending multipliers can then be applied to the revenue and expenditure components to derive a quantitative measure of the stimulative effect of fiscal operations.

Empirical Estimates of Recent Fiscal Stimulus

For the reasons explained above, the "raw" data on revenue were adjusted to exclude the land premium and asset income. In addition, revenues for FY1998 and FY1999 were adjusted for the timing of the salaries and profits tax rebate announced in the FY1999 budget speech.[5] On the expenditure side, capital spending was adjusted for the equity injection into the KCRC in FY1998 and FY1999[6]. The resulting fiscal balance is termed the "adjusted" primary balance. Chart 2 compares the published fiscal balance and the adjusted primary balance. As can be expected, the latter shows much larger deficits or smaller surpluses. The adjusted primary balance was in

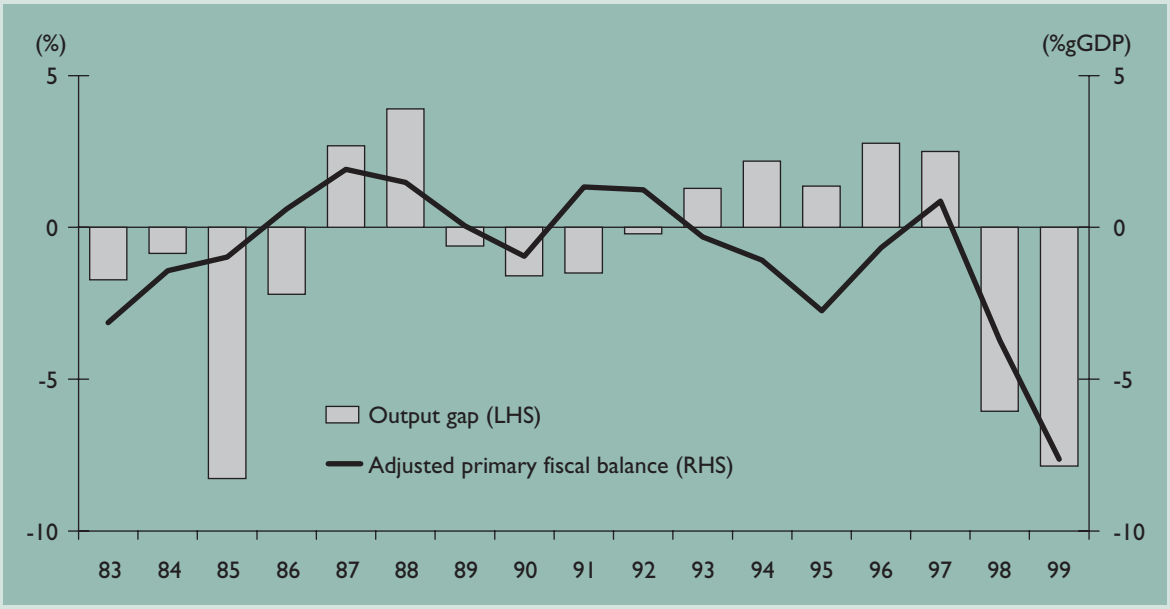
Chart 2
Adjusted Fiscal Balance



5 HK$8.5 billion was added to published tax data in FY1998, and the same amount subtracted in FY1999.

6 Of the total budget of HK$51.7 billion for the West Rail Project, HK$43.4 billion is budgeted for capital spending; the rest is for land acquisitions and financing costs including consulting fees, etc. The capital spending thus accounts for about 84% of the total budget for the project. Applying this ratio to the government equity injection, about HK$24 billion out of the total HK$29 billion will be for capital spending for the period of Q1/1998-Q4/2003. Assuming an even spending profile, the capital spending financed by government equity injection is estimated to be HK$2.2 billion for FY1998 and HK$4.5 billion for FY1999. The published spending numbers under the fiscal accounts were thus adjusted by excluding the equity injection amounts, and adding back HK$2.2 billion and HK$4.5 billion for FY1998 and FY1999 respectively.

Chart 3
Adjusted Primary Fiscal Balance and Output Gap



deficit for all three periods during the past 16 years in which output is estimated to have been below potential (Chart 3).[7]

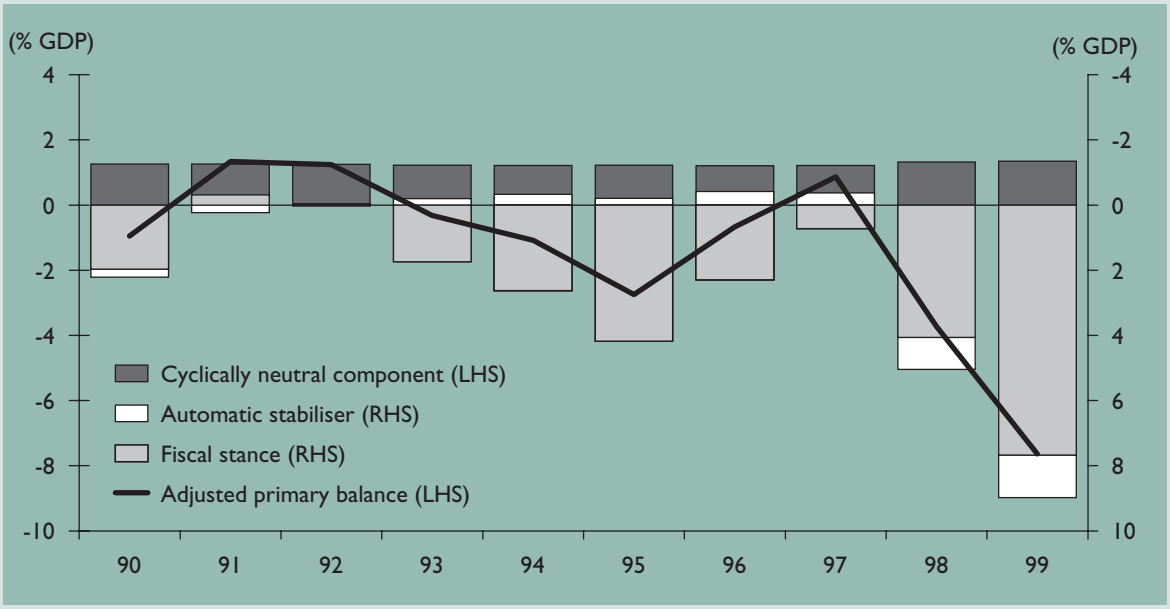
The adjusted primary balance declined from a surplus of close to 1% of GDP in FY1997 to a deficit of 3¾% of GDP in FY1998, and is projected to record even a larger deficit of about 7½% in FY1999. The deterioration reflects the effects of the economic downturn as well as government policies that reduced revenue and raised expenditure. To separate the automatic stabiliser from government policy effects, the fiscal balances were decomposed into three components: the base year balance, the automatic stabiliser, and the ex post stimulus effect. To this end, FY1992 was selected as the base year in which real GDP was close to potential. As noted in Box 1, the decomposition assumes that the elasticity of revenue and expenditure with respect to output is unity. This assumption is generally supported by empirical evidence, particularly because land premia and asset income—whose elasticities appear quite different from unity—are excluded (Box 3)[8].

The decomposition, by definition, gives a stable basic balance that is close to the level in FY1992 (the cyclically neutral component in Chart 4). The automatic stabiliser was small but negative during FY1993-97, as booming activities boosted revenue collection. The automatic stabiliser turned significantly positive from FY1998, as the sharp downturn reduced revenue. The fiscal stance term was positive in all years after FY1992, implying that fiscal operations were expansionary relative to the base year. The extent of the stimulus varied quite significantly, however. The fiscal stance declined from over 4% of GDP in FY1995 to about ¾% of GDP in FY1997, but rose back to above 4% of GDP in FY1998 and is expected to reach 7¾% of GDP in FY1999.

7 The adjusted primary balance recorded deficits in the mid-1990s amid booming economic activity. The deficit was particularly large at 2¾% of GDP in FY1995, reflecting generous tax concessions in the FY1994 budget as well as accelerated government spending on the Airport project. It should be noted that the adjusted balance is a concept that is used in assessing the short-term effect of policy on activity, but not the longer-term sustainability of the fiscal position.

8 Regression estimates presented in Box 3 should be interpreted as the long-run (average) elasticities. In the short run, elasticities may deviate from unity in line with cyclical conditions. For examples, tax revenue tends to decline/increase faster than GDP in a downturn/upturn.

Chart 4
Decomposition of Adjusted Primary Fiscal Balance



The change in the primary balance from the previous year can be decomposed into changes in the automatic stabiliser and those in the fiscal stance (Chart 5). The latter suggest that fiscal operations were contractionary in FY1996 and FY1997. In FY1998, however, there was a positive impulse of about 3¼% of GDP. The fiscal impulse is projected to continue to be positive in FY1999, with an effect of a similar magnitude. The change in the automatic stabiliser reached a higher level of 1½% of GDP in FY1998, but is projected to decline to ¼% of GDP as the economy starts to recover.

The decomposition above indicates that most of the change in the primary balance in recent years has been attributable to the fiscal impulse. Of the total swing of 4½% of GDP in the primary balance in FY1998 from FY1997, the fiscal impulse accounted for 3¼% of GDP. The primary balance is projected to deteriorate further by close to 4% of GDP in FY1999, of which 3½% is expected to come from the fiscal impulse. Thus, fiscal operations are estimated to provide roughly equal amounts of stimulus in FY1998 and FY1999 respectively. The overall budget balance (i.e. without any adjustments) shows quite a different picture, however. The overall balance changed from a surplus of 6½% of GDP in FY1997 to a deficit of 1¾% of GDP in FY1998, and is projected to record a deficit of close to 3% of GDP in FY1999. As a result, on the face of it, the change in the overall budget balance suggests a much smaller stimulus in FY1999 than in FY1998.

The fiscal impulse can be decomposed into contributions from revenue and expenditure (Table 2). In FY1998, of the total impulse of 3¼% of GDP, over 1¾% of GDP was due to increased expenditure. For FY1999, however, the impulse is in large part attributable to revenue loss as the

Table 2 : **Multiplier Effect of Fiscal Impulses (in % of GDP)**

	1997/98	1998/99	1999/2000
Fiscal Impulse	**-1.6**	**3.3**	**3.6**
Contribution from:			
Revenue	-1.1	1.5	2.6
Expenditure	-0.5	1.8	1.1
Multiplier Effect on GDP	**-0.7**	**1.6**	**1.5**
Contribution from:			
Revenue	-0.4	0.5	0.9
Expenditure	-0.3	1.1	0.6

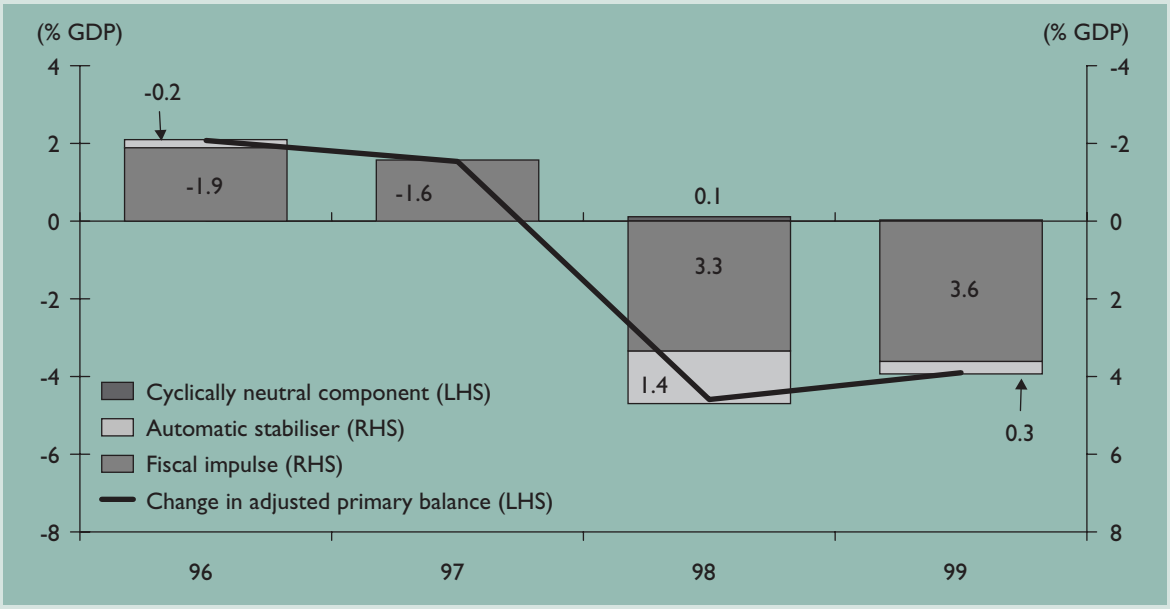
Source: Estimates of HKMA Research Department staff.

budget starts to bear the full cost of the tax concessions introduced in FY1998. Expenditure is expected to contribute about 1% of GDP to the impulse in FY1999.

To gauge how much stimulus fiscal operations are providing to economic activity in the current downturn, estimates of spending and tax multipliers were applied to the expenditure and revenue components of the fiscal impulse, respectively, to derive the total effect on GDP. Spending and tax multipliers were estimated using basic national income identities and rules of thumb (Box 4). The estimates suggest generally small multiplier effects: a tax cut of HK$1 would raise GDP by less than HK$0.4, while an increase in government spending of HK$1 would boost GDP by HK$0.6. The tax multiplier is smaller than the spending multiplier, because the effect on aggregate demand of a tax cut would be reduced by higher private savings, in addition to the leakage through imports. According to these estimates, the fiscal impulse raised GDP by 1½% in FY1998, of which over 1% was a result of increased government spending. In FY1999, fiscal operations are projected to raise GDP by a further 1½%, of which close to 1% is attributable to revenue losses.[9]

Recent developments suggest that the fiscal deficit in FY1999 could be smaller than the initial budget projection. Data released at end-December 1999 indicate a deficit of HK$38.8 billion for April-December—the first eight months of the financial year—slightly above the projected deficit of HK$36.5 billion for the whole year.[10] There tends, however, to be a seasonal pattern in Hong Kong such that most deficits are recorded in the first 7-8 months of the financial year, with revenue collection in the remaining period being boosted in part by the payment of income and profit taxes.[11]

Chart 5
Decomposition of Changes in Adjusted Primary Fiscal Balance

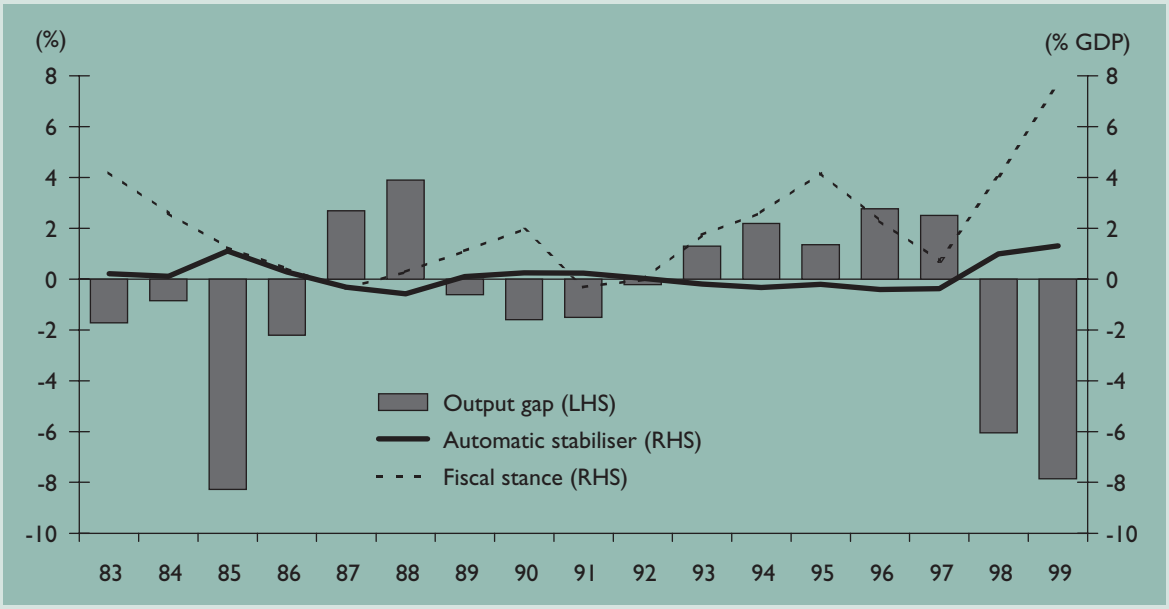


9 Interpretation of these numbers requires a degree of caution. The multiplier effect on aggregate demand of a tax cut or a spending increase could have lags and span more than a year. For example, increased government spending that was budgeted in FY1998 could have part of its multiplier effect in FY1999. Thus, it may be more appropriate to interpret the above estimates as suggesting a total multiplier effect of about 3% of GDP over the two years.

10 Revenue for the first eight months was HK$106 billion, about 52% of the total revenue projected for the whole year, compared with 54% for the same period of FY1998. Expenditure at HK$145 billion was about 60% of the total budget, compared with 62% for the same period a year earlier.

11 In FY1998, for instance, a deficit of HK$27.3 billion was recorded for the first eight months, part of which was subsequently reversed to give rise to a shortfall of HK$23.2 billion for the whole year.

Chart 6
Fiscal Stance and Output Gap



A number of factors suggest that revenues could be above the initial budget projection in FY1999. First, land premia amounted to HK$22.1 billion for the first six months of FY1999, accounting for over 70% of the total land premia that was projected in the budget. Second, investment income on the fiscal reserves—which reflects, in part, the return on local stocks—should be boosted by the rally in the stock market in 1999. Third, income and profit taxes and stamp duties should be boosted by the economic recovery and increased turnover in the stock market. As a result, the fiscal deficit for FY1999 could well be lower than originally envisaged. Nevertheless, insofar as our estimates of the fiscal impulse are purged of cyclical effects and irregular factors such as land premia and investment income, the estimated fiscal stance for FY1999 should not be affected significantly by these developments.

Historical Perspective

The above analysis suggests that fiscal operations have been counter-cyclical in the present downturn. Automatic stabilisers have been allowed to work, and deliberate policies on both revenue and expenditure adopted to provide stimulus in the face of weak private demand. To provide a historical perspective since the establishment of the linked exchange rate system in 1983, the analysis was extended back to the early 1980s.[12]

The estimates suggest that fiscal operations were also counter-cyclical in earlier downturns. In the mid-1980s and the late 1980s and early 1990s, when real GDP was below potential, automatic stabilisers were allowed to work and the fiscal stance was expansionary (Chart 6). The magnitude of the fiscal stance was smaller in the previous downturns than in the present one, however. There was little evidence indicating a counter-cyclical fiscal position in the previous upturns. Two major upturns were recorded-during FY1987-88 and FY1993-97 respectively—in which real GDP was above potential. However, the fiscal stance was around zero in FY1987-88, and significantly positive during the latter period. The latter episode reflects the special factors mentioned earlier, including tax

12 For the earlier cycle, the selection of the base year was complicated by the absence of any year in which real GDP was very close to its estimated potential level. Real GDP was below trend during FY1983-86 and significantly above trend in FY1987-88. The problem was tackled by assuming the base year as being the average of FY1986 and FY1987. The average output gap of the two years was 1/4% of trend GDP, compared with -1/4% of GDP in the base year of FY1992 in the later cycle. The base year surplus-calculated as the average of the fiscal balance in FY1986 and FY1987—was 1 1/4% of GDP, also very close to that in FY1992.

relief measures announced in the FY1994 budget and increased government spending related to the Airport project.

Concluding Remarks

This paper has presented several adjustments to the published budget figures to allow an assessment of the impact of fiscal policy on economic activity. The unadjusted budget data indicate a huge swing in the fiscal position in 1998, with little further support to activity being provided in 1999. This picture, though, is shown to have been strongly influenced by factors that would not directly affect aggregate demand. These include asset transactions such as land sales, revenues on fiscal reserves, and the endogenous effect of changes in economic activity on government revenues. In addition, it is necessary to adjust for the timing of the effect of tax cuts on private spending, in particular the tax rebates implemented toward the end of FY1998.

With these adjustments, we find that the effect of fiscal stimulus was spread more evenly over 1998 and 1999, with an estimated fiscal impulse amounting to about 3% of GDP in each year. After allowing for the multiplier effects of fiscal stimulus on overall aggregate demand, it is estimated that fiscal measures boosted GDP growth by about 1½% in each year beyond what it would otherwise have been the case. This is broadly consistent with the historical record, which suggests that fiscal policy in Hong Kong has been used fairly systematically to buffer downturns in aggregate demand. There is less evidence, however, that fiscal policy has acted to dampen upswings in economic activity.

It should be kept in mind that the adjusted fiscal measures presented here are designed to reveal the underlying impact of fiscal policy on aggregate demand. They are not, in general, appropriate indicators of the sustainability of fiscal policy from a longer-term perspective. The interest income on fiscal reserves, for instance, reflects an ongoing stream of revenues to the government that can be used to meet current payments or accumulate additional reserves, even though changes in the level of the yield on reserves may not directly affect private spending. Similarly, land sales represent an ongoing source of revenues to the government, even though they are an asset transaction. Finally, there is considerable uncertainty in the measurement of some of the concepts discussed in this paper, including the buoyancies of different components of revenue to aggregate activity, potential output growth, and the multiplier effects of fiscal activity on overall demand. Thus the calculations presented here should be regarded as indicating the general thrust of fiscal policy, as opposed to being precise numerical estimates.

- Prepared by the Research Department

BOX 1. FISCAL ACCOUNTS AND NIA GOVERNMENT EXPENDITURE

In general, government expenditure in the National Income Accounts (NIA) is more closely related to aggregate demand than that in the fiscal accounts. This is because the NIA data feature: (1) a wider coverage of the public sector; (2) the exclusion of transfers to the private sector; and (3) accrual accounting (against cash accounting). However, fiscal account data are more readily available and more transparent. In recent years, some European countries have started to employ the NIA data, but many other countries continue to rely on the traditional source-fiscal account statistics. Data on GDP component tend to be readily available, but to derive the revenue counterpart-in order to obtain a fiscal balance-would not be an easy task, in part because of the different coverage noted above.

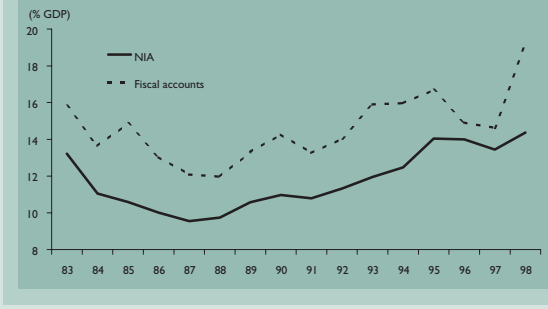
In Hong Kong, the detailed relationship between NIA and fiscal account government expenditures is as follows:

NIA Government Expenditure =

Fiscal Account Government Expenditure
– Subventions (operational & capital) to semi-government and non-profit organisations
+ Expenditure of subvented semi-government bodies (e.g. Hospital Authority, UC, RC, etc.)
– Equity investment through Capital Investment Fund (mainly related to MTR & KCR) & Loan Fund, etc.
+ MTR, KCR capital expenditure
– Expenditure of trading departments (e.g. Water Supplies Department, etc.)
– Sales by non-trading government departments to households and enterprises
+ Expenditure of Airport Authority

The chart below compares NIA government expenditure (in percent of GDP) with its fiscal account counterpart. Reflecting mainly the exclusion in the NIA of subventions and equity investment by the government, this definition expenditure was lower than in the fiscal accounts. Nevertheless, the two shared the same trend, with the gap being broadly stable, until recent years. The gap narrowed during FY1996-97 due to investment spending by the Airport Authority, (as the part financed by the Authority's own issuance of debt paper was not covered in the fiscal account). In FY1998, the gap widened sharply as the fiscal account expenditure included a large equity investment in the KCRC. In the empirical analysis, the fiscal account data were adjusted by excluding the part of equity injection that did not contribute to capital spending by the KCRC in FY1998.

Government Expenditure in Fiscal Accounts and National Income Accounts



BOX 2. TECHNICAL NOTE ON FISCAL STANCE AND FISCAL IMPULSE

To disentangle cyclical from policy influences on the budget to gauge the short-run impact of fiscal policy on aggregate demand, several techniques have been developed. These follow one of two broad approaches. One approach, which can be characterised as "bottom up", seeks to account separately for the budgetary effects of individual policy initiatives on the one hand, and cyclical influences on the other, and thereby explain changes in the budget balance. An alternative "top down" approach consists of estimating the policy effect as the residual, after purging the actual balance of the consequences of the business cycle. For some time, the IMF and the OECD have used the second approach, in part reflecting difficulties in estimating the effects of individual policies and cyclical influences. This paper also employs the second approach, which can be summarised as follows:

- First, a base year is identified in which actual and potential GDP are judged to be the same. Potential GDP is proxied by trend GDP obtained from a Hodric Prescot (HP) filter. The base year selected was FY1992 in which estimated trend real GDP was close to the actual. Fiscal policy in the base year is taken as a reference point.

- The "adjusted" primary budget balance is then broken down into three parts: (1) base year surplus; (2) the cyclical component (automatic stabiliser); and (3) the fiscal stance.

$$B = \underbrace{(t_o Y^p - g_o Y^p)}_{\text{Cyclically neutral component}} - \underbrace{[t_o (Y^p - Y)]}_{\text{Automatic stabiliser}} - \underbrace{FIS}_{\text{Ex post stimulus effect}}$$

Where t_o = T_o/Y_o *, the revenue ratio in the base year*

g_o = G_o/Y_o *, the expenditure ratio in the base year*

Y = *actual GDP in nominal prices*

Y^p = *potential GDP in nominal prices*

FIS = *fiscal stance*

$$FIS = (t_o Y - g_o Y^p) - B$$

$$\text{Fiscal Impulse} = \Delta (FIS / Y)$$

- Expansionary or contractionary fiscal policies for a given year are captured by the fiscal stance to GDP ratio (FIS/Y), which reflects the fiscal policy stance relative to the base year. A positive fiscal stance implies an expansionary fiscal policy compared with the base year.

- To evaluate additional fiscal stimulus for a given year, the fiscal impulse is computed as the first difference of the fiscal stance to GDP ratio. Hence, a positive fiscal impulse indicates that the fiscal policy has been more expansionary (less contractionary) relative to the previous year.

Empirical estimates suffer from limitations that include:

- Error from potential GDP estimates. Two approaches are generally employed to estimate potential GDP. One is based on an estimated production function that requires data on capital stock and factor income shares, and another employs a statistical method such as the HP filter. The latter is used in this paper primarily because of data constraints in relation to the production function approach.

- Elasticity assumption. This approach implicitly assumes that the elasticity of tax revenue and government expenditure with respect to output is unity. As a result, any effect of automatic stabilisers that arises owing to differences from unity in the revenue and expenditure elasticity with respect to output will be included in the fiscal impulse measure.

BOX 3. ELASTICITY OF REVENUE AND EXPENDITURE WITH RESPECT TO OUTPUT

Some empirical evidence on revenue and expenditure elasticities with respect to output was presented in an IMF country report (IMF Staff Country Report No. 96/29, April 1996). A number of observations are made from the following two tables that are reproduced from the IMF report.

- The elasticities of total revenue and expenditure with respect to nominal GDP are close to unity, at 0.96 and 1.10 respectively.
- Capital revenue-mostly premia from land sales-and asset income have the largest and smallest buoyancy coefficients, respectively. The earnings and profits tax-the largest source of revenue-have elasticities that are much closer to unity.
- Current expenditure has a lower elasticity than capital expenditure and is very close to unity, reflecting the government's basic policy of keeping current spending increases in line with the growth rate of nominal GDP.

Estimates of Revenue Buoyancy and Marginal Propensity to Tax, 1980-94

	Buoyancy 1/	Marginal Propensity to Tax 2/
Tax revenue	1.124	0.121
Earnings and profits tax	1.119	0.074
Property tax	0.951	0.052
Excises	1.044	0.076
Stamp duties	1.268	0.014
Bets and sweeps tax	1.255	0.010
Motor vehicle taxes	1.461	0.051
Nontax revenue	0.461	0.022
Interest on reserves	0.402	0.028
Fees and charges	0.947	0.091
Utilities	0.945	0.082
Capital revenue	1.548	0.028
Total revenue	0.961	0.170

Estimates of Expenditure Buoyancy and Marginal Propensity to Spend, 1985-94

	Buoyancy 1/	Marginal Propensity to Tax 2/
Total public expenditure	1.109	0.185
Security	0.882	0.018
Social welfare	1.248	0.013
Health	1.326	0.022
Education	1.094	0.031
Infrastructure	1.176	0.030
Transportation	1.243	0.011
Housing	1.022	0.021
Administration	1.087	0.024
Current expenditure	1.061	0.127
Capital expenditure	1.233	0.058

1/ Estimated by regressing the logarithm of nominal revenue/expenditure on that of nominal GDP.

2/ Estimated by regressing nominal revenue/expenditure on nominal GDP.

BOX 4. ESTIMATES OF FISCAL MULTIPLIERS

The fiscal multipliers can be expressed as:

Government spending multiplier = (1-M)/(t+m+s)
Tax multiplier = (1-m-s)/(t+m+s)

where s = marginal propensity to save;
t = marginal tax ratio;
m = marginal propensity of spending on retained imports; and
M = share of retained imports in targeted government spending.

It is difficult to obtain estimates of the marginal propensities for savings and imports and marginal tax rates. As a result, average propensities and the average effective tax rate are used in the calculations. To derive the parameters for the multipliers, some national income account identities are employed:

$$GDP = C_p + I + C_g + DX - RM$$
$$S_p = DX - RM - (R - C_g) + I$$

where C_p = Private consumption expenditure;
S_p = Private sector saving
I = Investment expenditure;
C_g = Government consumption expenditure;
R = Government Revenue
DX = Domestic exports that include re-export margins; and
RM = Retained imports.

Then:

- The *average effective tax ratio* is defined as the ratio of government revenue to GDP: t = R/GDP
- The *average propensity to save* is the ratio of private sector saving to GDP: $s = S_p/GDP$;
- The average share of retained imports is defined as the ratio of retained imports to domestic expenditure and exports: m = RM/(GDP + RM)

Empirical estimates using data for 1984-97

	Tax Multiplier
Based on long-run propensities	0.36
	Government Spending Multiplier
Case 1 (M = 0.1)	1.05
Case 2 (M = 0.3)	0.82
Case 3 (M = 0.5) 1/	0.58

1/ Spending on imports—including both the public and private sectors—account for about 50% of total domestic spending and exports.

Limitations:

- The estimates represent the long-run average relationship, and a multiplier reflecting the cyclical conditions could be different. For example, tax revenue may decline faster than GDP in a recession, leading to a larger multiplier for tax reductions.

- GDP was used instead of GNP, because data for the latter are available only for recent years. Furthermore, data for R were taken from fiscal account numbers, whereas the proper definition of R in national income accounts should be government revenue net of transfers.