Assessing the fiscal policy stance in Singapore

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1. Introduction

In this short note, we will examine some recent developments in the government budget position in Singapore, against the backdrop of sharp fluctuations in domestic activity, following the increased volatility in the key IT markets as well as in final demand in the United States. Our objective is to shed some light on the operation of automatic stabilisers in Singapore, particularly in the revenue components as well as on computations of the fiscal impulse measure, which gives an indication of the discretionary budgetary responses adopted by the government during the downturn of 2001.

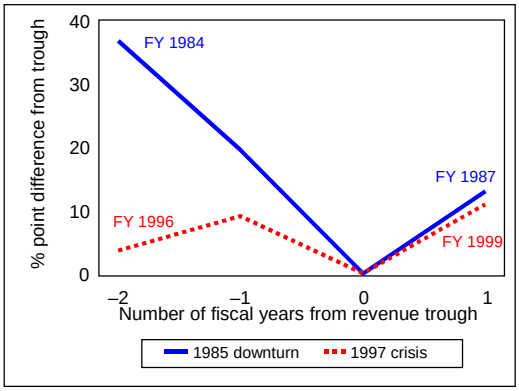
2. The automatic stabilisers in operating revenue

The recovery of operating revenue in 2000 reflected the cyclical upturn, when the economy grew strongly. Government receipts vary to some extent with the business cycle, growing during booms and shrinking in recessions. For Singapore, this automatic stabiliser effect largely operates through taxes, particularly income taxes, which help moderate the fall in income when private economic activity declines and restrain the increase in income when activity rises.

The effect of the automatic stabiliser was observed in both the recent economic downturn during the Asian crisis and the mid-1980s recession in Singapore, when operating revenue initially declined and picked up subsequently as the economy recovered. Graph 1 shows the cycles of operating revenue for both periods: fiscal years 1984-87 (solid line) and 1996-99 (dashed line) relative to the troughs reached in each period. During the mid-1980s economic downturn, operating revenue collection declined for two years before picking up in FY 1987. In contrast, revenue contracted only in FY 1998 during the recent slowdown. At the same time, the rate of contraction in the 1980s was much faster than that in the 1990s, reflecting the relatively more severe recession in the earlier period when nominal GDP shrank by 5.2% in FY 1985, compared to the 4.4% decline in FY 1998.

Graph 1

Operating revenue



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However, the rebound in operating revenue in the 1980s was also quicker. These trends in operating revenue would have been influenced by three factors, for which they should be adjusted before any inferences on the automatic stabilisers can be made. First, in both the mid-1980s and the recent Asian crisis, discretionary policy measures were implemented to help support the economy during the downturn. The impact of these measures was quantified based on estimates in budget speeches and off-budget announcements (Box A), and adjusted for in operating revenue (Box B). Second, there appears to have been a faster response in operating revenue to activity in the 1990s. In contrast, GDP turned around in FY 1986, but operating revenue did not pick up until FY 1987. Lastly, the impact of the differing pace of GDP contraction and resurgence in the two periods was adjusted for by scaling the revenue receipts by nominal GDP.

Box A

Impact of discretionary fiscal policy on operating revenue

We quantified the discretionary policy changes affecting operating revenue from the annual budgets of FY 1985-86 and FY 1998-99 as well as from the off-budget announcements. The revenue loss was then added to the actual operating revenue data.

Estimated revenue loss per annum

(SGD millions)

	Policy changes	
FY 1985 budget	Suspension of payroll and telecom tax	–176
	Reduction in entertainment duty	–26
Off-budget 26 July 1985	30% property tax rebate effective 1 July 1985, for 1½ years	–260
Off-budget 31 August 1985	Reduction in ad valorem duty on petrol from 60% to 50%	–122
Off-budget 24 October 1985	Suspension of 10% tax on PUB gas and electricity charges	–92
FY 1986 budget	50% property tax rebate for the year	–440
	25% rebate on personal income tax for FY 1986	–250
FY 1998 budget	5% tax rebate on personal income tax for FY 1998	–130
	15% property tax rebate	–145
	Property tax exemption for land under development	–200
	Abolition of stamp duty on all instruments, except those related to stock and shares and immovable properties	–33
Off-budget June 1998	Additional 40% property tax rebate	–400
	Suspension of car park surcharge	–37
	Deferment of stamp duty by buyers of uncompleted property	–85
	Suspension of stamp duty on contract notes	–50
Off-budget November 1998	10% corporate tax rebate in FY 1999	–450
	Extension of property tax rebate till June 2000	–680
	Extension of the suspension of stamp duty on contract notes till June 2000	–70
	Reduction in foreign worker levy	–204
	Reduction in custom duty on cars	–47
	Extension of road tax rebate for a second year	–166
	Reduction in petrol excise duty	–75
	Removal of speed diesel excise duty	–32
	Increase in electricity tariff rebate and removal of tax on household bills	–372
FY 1999 budget	10% tax rebate on personal income tax in FY 1999	–275
November 1999 announcement	Reduction in foreign worker levy to be extended by an additional year	–204

Box B

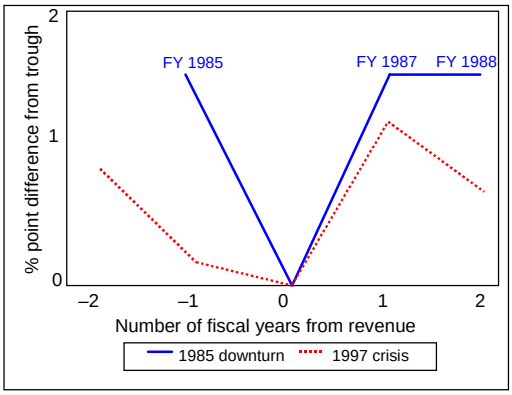
The resulting series gives the operating revenue excluding the effects from discretionary policies. For example, in FY 1985, our calculation indicates that the net impact of discretionary policy changes was SGD 0.5 billion. Hence, the adjusted revenue would come in at SGD 9.0 billion, compared to the actual collection of SGD 8.5 billion.

Fiscal year	Nominal operating revenue		Revenue loss from policy changes (SGD m)	Nominal operating revenue (adjusted)	
	Levels (SGD m)	% change		Levels (SGD m)	% change
1983	9,321	na	0	9,321	na
1984	9,682	3.9	0	9,682	3.9
1985	8,461	–12.6	–522	8,983	–7.2
1986	7,083	–16.3	–830	7,913	–11.9
1987	8,006	13.0	–746	8,752	10.6
1996	27,053	9.8	0	27,053	9.8
1997	28,480	5.3	0	28,480	5.3
1998	26,111	–8.3	–1,061	27,172	–4.6
1999	28,967	10.9	–2,004	30,973	14.0

Graph 2 incorporates all three adjustments. The contraction and subsequent recovery in the ratio of operating revenue to GDP was faster in the 1980s than in the most recent downturn, suggesting that the magnitude of automatic stabilisers in the government's tax system may have declined over the years.

Graph 2

Ratio of adjusted operating revenue to GDP



Two main factors determine the effectiveness of the automatic stabilisers - the elasticity of revenue items with respect to GDP and the effective tax rate.[2] The automatic stabiliser effect is generally stronger the higher the effective tax rate. Similarly, the effectiveness of a tax system in cushioning

[2] A measure of the automatic stabiliser is the change in tax revenue per unit of change in income, dT/dY. Elasticity is the ratio of the percentage change in tax revenues per unit of change in income, $(dT/dY)(Y/T)$.

Therefore $dT/dY = (dT/dY)(Y/T) * (T/Y)$ or measure of automatic stabiliser = elasticity * effective tax rate.

changes in income is greater the higher its elasticity with respect to its base. The Monetary Authority of Singapore's econometric estimates show that the elasticities of revenue have in fact declined compared with estimates obtained from an earlier study done in 1995 (see Table 1). The decline captures the impact from the increasing reliance on broad-based indirect taxes like GST, which generally have lower elasticities.

Table 1

Tax and non-tax elasticities[3]

Singapore	Total tax	Direct	Indirect	Non-tax[1]
1995	na	3.35	2.40	2.00
2000	2.03	2.14	1.87	0.95

[1] This refers to non-tax operating revenue.

With the introduction of GST in 1994 and the gradual reduction in income taxes, the proportion of indirect taxes increased to 34% of total operating revenue in the late 1990s from 27% in early to mid-1980s. While the shorter lags involved in GST collections also work to enhance the stabilising effect of the tax system, on balance it appears that the introduction of the broad-based tax has reduced the cyclical response of government tax revenue. In general, GST has smaller stabiliser effects, as fluctuations in consumption spending are usually not as pronounced as those of income cycles.[4]

Over the years, there has also been a gradual reduction in the effective tax rate. The effective personal income tax rate fell from 10% in the 1980s to 9.5% in the 1990s.[5] In addition, the progressive structure (and therefore stabiliser effects) of the personal income tax system has been weakened slightly with the reduction of the number of income brackets from 13 in 1984 to 10 in 1997. At the same time, the potential stabiliser effects of corporate income tax have been diluted over the years with the reduction in the statutory rate from 38.25% in 1984-85 to 26% in 1998-99.

[3]

Tax elasticities in selected EU countries (1999)

	Corporate tax	Individual tax	Indirect tax
France	1.50	0.90	1.00
Germany	2.50	0.90	1.00
United Kingdom	6.50	1.00	1.40

Source: OECD and IMF staff estimates.

[4] The standard deviation of the growth rates of real private consumption was 4.2 over the period 1981-2000 compared to 9.8 for the MAS macro model's estimate of real disposable income. In addition, it is useful to note that automatic stabiliser effects are greater for income taxes, which are progressive, ie the ratio of tax to income rises when moving up the income scale. Receipts from a consumption tax, on the other hand, tend to respond in proportion to changes in income.

[5] The effective tax rates are calculated based on net tax payable and total chargeable income. Estimates of the effective tax rate for personal income from the MAS Monetary Model of Singapore, based on calculations of private disposable income, also showed a decrease between the mid-1980s and 1997-99 of about 2 percentage points.

3. The fiscal impulse measure

As it is the changes in the size of the fiscal surplus, and not the absolute level per se, that determines the shift in the government's fiscal stance, a smaller fiscal surplus would imply that fiscal policy has become more expansionary compared with the previous year. However, merely observing the change in fiscal balance may be misleading because it is not clear whether shifts in the position are the cause or the result of changes in economic activity. A summary measure is required that captures the change in the fiscal balance resulting from both discretionary government expenditure and tax policies as well as the impact of automatic stabilisers in the budget that respond to economic acitvity.

One method of assessing the stance and thrust of fiscal policy is to measure the total impulse or initial stimulus to aggregate demand arising from the fiscal policy during a given period. A positive (negative) measure of fiscal impulse (MFI) will imply a more expansionary (contractionary) fiscal stance compared to the previous year. The changes in the MFI will capture the changes in both discretionary decisions on expenditure and revenue policies as well as the estimated effects of the automatic stabilisers.

We make use of the IMF methodology described in Heller et al (1986) to calculate the MFI as follows:

$$MFI = -\Delta B - g_0 \Delta Y^p + t_0 \Delta Y$$

where: MFI = Absolute measure of the fiscal impulse

T = Government revenues

G = Government expenditures

ΔB = The actual budget balance (first difference) (B = T – G)

g_0 = G_0/Y_0, base year expenditure ratio

t_0 = T_0/Y_0, base year revenue ratio

ΔY^p = Potential output[6] in nominal prices (first difference)

ΔY = Actual output in nominal prices (first difference)

and the subscript "0" refers to base year values of any variables.

There are two important conceptual issues involved in the construction of the MFI. First, a number of industrialised countries select for the base year ($t=0$) for the MFI a year when the economy is assessed to be at its potential level of activity. Quite apart from the practical difficulties of choosing the base year using this method, it also means that the assessment of the change in fiscal stance in any one year could be distorted by the various changes in the tax policies, especially when the time period t_0 becomes increasingly distant.[7] For the purposes of this study therefore, we have used the increasingly popular variant of adopting a "rolling" base year whereby the figures at time t are sequentially taken as base year figures for the MFI at time $t+1$.

Second, we derive the cyclically neutral budget under the assumption of unitary elasticities of expenditure and revenue with respect to the potential and actual output, respectively. Defining the cyclically adjusted budget in this way allocates the contribution of automatic stabilisers to the MFI. We can think of an actual deficit in excess of the cyclically neutral deficit as expansionary, relative to the base year fiscal stance, and the MFI is positive. This MFI attempts to remove transitory changes (in a cyclical sense) in the actual budget balance. Hence a positive MFI will imply a more expansionary fiscal stance *compared to the previous year*.

In addition, there are definitional issues to resolve before the MFI can be constructed. In line with the usual fiscal analysis, we define government revenue as government operating revenue and government expenditure as government operating and development expenditure. The government paid SGD 1.5 billion and SGD 1.9 billion in 1997 and 1999 respectively, to the telecommunications company for their loss of monopoly. In addition, a payment of some SGD 1.3 billion was made in 1997

[6] Estimates of potential output are derived from the Monetary Model of Singapore.

[7] Singapore's tax structure has shifted progressively towards a greater reliance on indirect sources of tax revenue.

to compensate statutory boards for land returned to the government. Given that these payments were neither government consumption nor investment per se, they were removed to avoid distortions in our analysis.

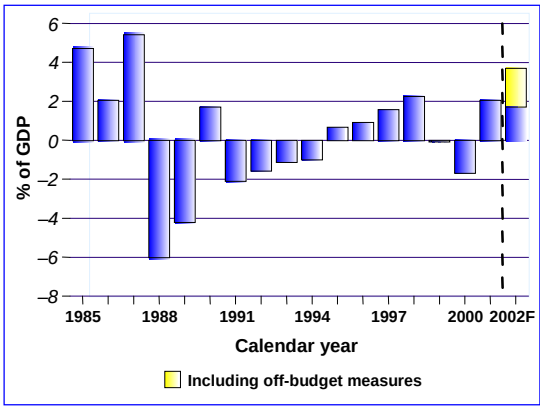
Separately, as there were some changes in the budget presentation starting from the 2001 fiscal year, some adjustments were made to construct a consistent series for our analysis. Net investment income was subtracted from the budgeted figures and the cost of land reclamation was added to development expenditure. While net investment income should not have any impact on the economy, it can also be argued that land reclamation projects do have some economic influence, representing an increase in productive capacity. We also had to re-estimate operating revenue, operating expenditure and development expenditure for calendar year 2002, since the budget numbers are stated for the fiscal year while our analysis is based on the calendar year.

Our analysis shows that MFI has been positive since 2001, implying that the fiscal stance has been more expansionary than the year before. This reflects the more accommodating stance adopted by the government in view of the sharp economic slowdown. The Singapore economy contracted by 2.4% in 2001, before staging a modest recovery of 2.2% the following year.

Similarly, our estimated MFI for 2002 is relatively strong, at 3.7% of GDP, which in turn implies that fiscal policy has been more expansionary than in 2001. Of this, more than half can be attributed to the measures introduced through the off-budget packages in 2001 (see Graph 3). This largely reflects the acceleration of major infrastructure projects as well as the impact of the tax and fee rebates announced in 2001.

Graph 3

Fiscal impulse measure



It should be remembered that the MFI is designed to determine the direction of the change in budgetary stance, rather than to assess its effect on the economy. For a clearer picture of the impact of fiscal policy on the economy, it is necessary to complement the above analysis with a study of the fiscal multiplier effect using a macroeconomic model.

Reference

Heller, P, R Haas and A Mansur (1986): “A review of the fiscal impulse measure”, *IMF Occasional Papers*, no 44, May.