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The Government: Functions and Scope

In Fig. 5.1, government expenditure increases from G to G' and causes equilibrium income to increase from Y to Y'.

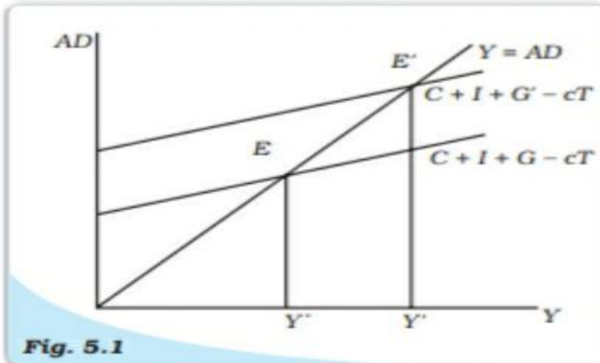

Fig. 5.1

Effect of Higher Government Expenditure

5.2.2 Changes in Taxes

We find that a cut in taxes increases disposable income $(Y - T)$ at each level of income. This shifts the aggregate expenditure schedule upwards by a fraction c of the decrease in taxes. This is shown in Fig 5.2.

From equation 5.3, we have

$$\Delta Y^* = \frac{1}{1-c}(-c)\Delta T \qquad (5.7)$$

The tax multiplier

$$= \frac{\Delta Y}{\Delta T} = \frac{-c}{1-c} \qquad (5.8)$$

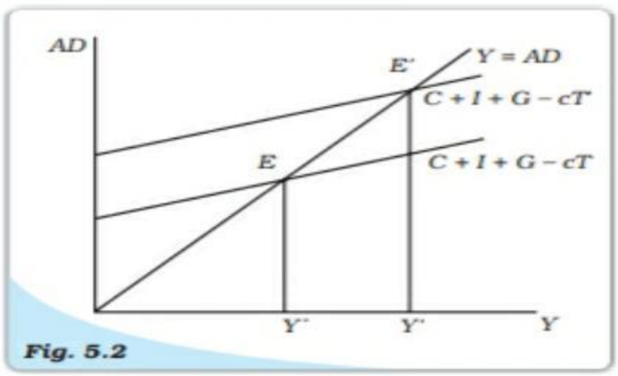

Fig. 5.2

Effect of a Reduction in Taxes

Because a tax cut (increase) will cause an increase (reduction) in consumption and output, the tax multiplier is a negative multiplier. Comparing equation (5.6) and (5.8), we find that the tax multiplier is smaller in absolute value compared to the government spending multiplier. This is because an increase in government spending directly affects total spending whereas taxes enter the multiplier process through their impact on disposable income, which influences household consumption (which is a part of total spending). Thus, with a ΔT reduction in taxes, consumption, and hence total spending, increases in the first instance by $c\Delta T$. To understand how the two multipliers differ, we consider the following example.

Why is the poor man crying? Suggest measures to wipe off his tears.

EXAMPLE 5.1

Assume that the marginal propensity to consume is 0.8. The government expenditure multiplier will then be $\frac{1}{1-c} = \frac{1}{1-0.8} = \frac{1}{0.2} = 5$. For an increase in government spending by 100, the equilibrium income will increase by 500 $(\frac{1}{1-c}\Delta G = 5 \times 100)$. The tax multiplier is given by $\frac{-c}{1-c} = \frac{-0.8}{1-0.8} = \frac{-0.8}{0.2} = -4$. A tax cut of 100 ($\Delta T = -100$) will increase equilibrium income by 400 ($\frac{-c}{1-c}\Delta T = -4 \times -100$). Thus, the equilibrium income increases in this case by less than the amount by which it increased under a G increase.

Within the present framework, if we take different values of the marginal propensity to consume and calculate the values of the two multipliers, we find that the tax multiplier is always one less in absolute value than the government expenditure multiplier. This has an interesting implication. If an increase in government spending is matched by an equal increase in taxes, so that the budget remains balanced, output will rise by the amount of the increase in government spending. Adding the two policy multipliers gives

$$\text{The balanced budget multiplier} = \frac{\Delta Y^*}{\Delta G} = \frac{1}{1-c} + \frac{-c}{1-c} = \frac{1-c}{1-c} = 1 \qquad (5.9)$$

A balanced budget multiplier of unity implies that a 100 increase in G financed by 100 increase in taxes increases income by just 100. This can be seen from Example 1 where an increase in G by 100 increases output by 500. A tax increase would reduce income by 400 with the net increase of income equal to 100. The equilibrium income refers to the final income that one arrives at in a period sufficiently long for all the rounds of the multipliers to work themselves out. We find that output increases by exactly the amount of increased G with no induced consumption spending due to increase in taxes. To see what must be at work, we examine the multiplier process. The increase in government spending by a certain amount raises income by that amount directly and then indirectly through the multiplier chain increasing income by

$$\Delta Y = \Delta G + c\Delta G + c^2\Delta G + \ldots = \Delta G\,(1 + c + c^2 + \ldots) \qquad (5.10)$$

But the tax increase only enters the multiplier process when the cut in disposable income reduces consumption by c times the reduction in taxes. Thus the effect on income of the tax increase is given by

$$\Delta Y = -\,c\Delta T - c^2\Delta T + \ldots = -\,\Delta T(c + c^2 + \ldots) \qquad (5.11)$$

The difference between the two gives the net effect on income. Since $\Delta G = \Delta T$, from 5.10 and 5.11, we get $\Delta Y = \Delta G$, that is, income increases by the amount by which government spending increases and the balanced budget multiplier is unity. This multiplier can also be derived from equation 5.3 as follows

$$\Delta Y = \Delta\bar{G} + c\,(\Delta Y - \Delta T) \text{ since investment does not change } (\Delta I = 0) \qquad (5.12)$$

Since $\Delta\bar{G} = \Delta T$, we have

$$\frac{\Delta Y}{\Delta G} = \frac{1-c}{1-c} = 1 \qquad (5.13)$$

Case of Proportional Taxes: A more realistic assumption would be that the government collects a constant fraction, t, of income in the form of taxes so that $T = tY$. The consumption function with proportional taxes is given by

$$C = \bar{C} + c\,(Y - tY + \bar{TR}) = \bar{C} + c\,(1-t)\,Y + c\bar{TR} \qquad (5.14)$$

We note that proportional taxes not only lower consumption at each level of income but also lower the slope of the consumption function. The mpc out of income falls to $c\,(1-t)$. The new aggregate demand schedule, AD', has a larger intercept but is flatter as shown in Fig. 5.3.

Now we have

$$AD = \bar{C} + c(1-t)Y + c\overline{TR} + I + G = \bar{A} + c(1-t)Y \quad (5.15)$$

Where $\bar{A}$ = autonomous expenditure and equals $\bar{C} + c\overline{TR} + I + G$. Income determination condition in the product market is, $Y = AD$, which can be written as

$$Y = \bar{A} + c(1-t)Y \quad (5.16)$$

Solving for the equilibrium level of income

$$Y^* = \frac{1}{1-c(1-t)}\bar{A} \quad (5.17)$$

so that the multiplier is given by

$$\frac{\Delta Y}{\Delta \bar{A}} = \frac{1}{1-c(1-t)} \quad (5.18)$$

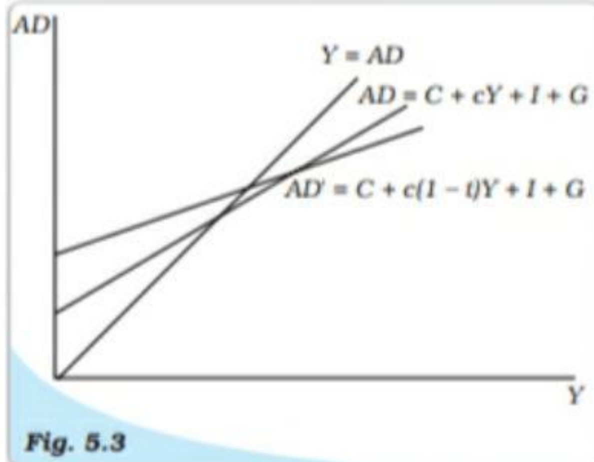

Fig. 5.3

Government and Aggregate Demand (proportional taxes make the AD schedule flatter)

Comparing this with the value of the multiplier with lump-sum taxes case, we find that the value has become smaller. When income rose as a result of an increase in government spending in the case of lump-sum taxes, consumption increased by c times the increase in income. With proportional taxes, consumption will rise by less, $(c - ct = c(1-t))$ times the increase in income.

For changes in G, the multiplier will now be given by

$$\Delta Y = \Delta\bar{G} + c(1-t)\Delta Y \quad (5.19)$$

$$\Delta Y = \frac{1}{1-c(1-t)}\Delta\bar{G} \quad (5.20)$$

The income increases from Y^* to Y' as shown in Fig. 5.4.

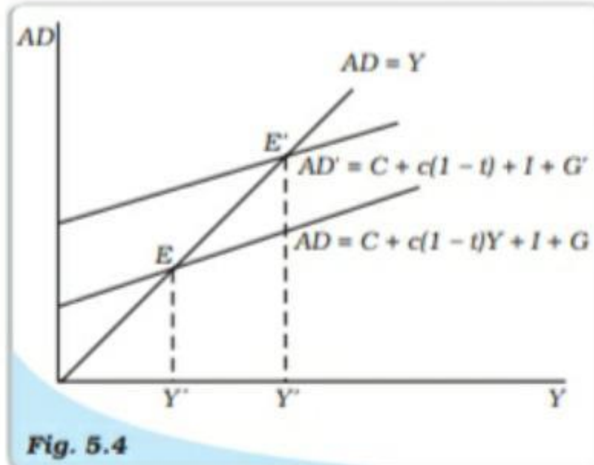

Fig. 5.4

Increase in Government Expenditure (with proportional taxes)

The decrease in taxes works in effect like an increase in propensity to consume as shown in Fig. 5.5. The *AD* curve shifts up to AD'. At the initial level of income, aggregate demand for goods exceeds output because the tax reduction causes increased consumption. The new higher level of income is Y'.

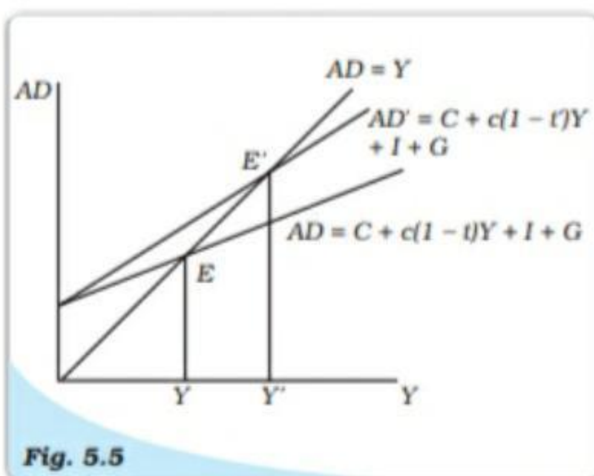

Fig. 5.5

Effects of a Reduction in the Proportional Tax Rate

EXAMPLE 5.2

In Example 5.1, if we take a tax rate of 0.25, we find consumption will now rise by 0.60 ($c(1-t) = 0.8 \times 0.75$) for every unit increase in income instead of the earlier 0.80. Thus, consumption will increase by less than before. The government expenditure multiplier will be $\frac{1}{1-c(1-t)} = \frac{1}{1-0.6} = \frac{1}{0.4} = 2.5$ which is smaller than that obtained with lump-sum taxes. If government expenditure rises by 100, output will rise by the multiplier times the rise in government expenditure, that is, by $2.5 \times 100 = 250$. This is smaller than the increase in output with lump-sum taxes.

The proportional income tax, thus, acts as an **automatic stabiliser** – a shock absorber because it makes disposable income, and thus consumer spending, less sensitive to fluctuations in GDP. When GDP rises, disposable income also rises but by less than the rise in GDP because a part of it is siphoned off as taxes. This helps limit the upward fluctuation in consumption spending. During a recession when GDP falls, disposable income falls less sharply, and consumption does not drop as much as it otherwise would have fallen had the tax liability been fixed. This reduces the fall in aggregate demand and stabilises the economy.

We note that these fiscal policy instruments can be varied to offset the effects of undesirable shifts in investment demand. That is, if investment falls from I_0 to I_1, government spending can be raised from G_0 to G_1 so that autonomous expenditure ($C + I_0 + G_0 = C + I_1 + G_1$) and equilibrium income remain the same. This deliberate action to stabilise the economy is often referred to as **discretionary fiscal policy** to distinguish it from the inherent automatic stabilising properties of the fiscal system. As discussed earlier, proportional taxes help to stabilise the economy against upward and downward movements. Welfare transfers also help to stabilise income. During boom years, when employment is high, tax receipts collected to finance such expenditure increase exerting a stabilising pressure on high consumption spending; conversely, during a slump, these welfare payments help sustain consumption. Further, even the private sector has built-in stabilisers. Corporations maintain their dividends in the face of a change in income in the short run and households try to maintain their previous living standards. All these work as shock absorbers without the need for any decision-maker to take action. That is, they work automatically. The built-in stabilisers, however, reduce only part of the fluctuation in the economy, the rest must be taken care of by deliberate policy initiative.

Transfers: We suppose that instead of raising government spending in goods and services, government increases transfer payments, $\overline{TR}$. Autonomous spending, $\overline{A}$, will increase by $c\Delta\overline{TR}$, so output will rise by less than the amount by which it increases when government expenditure increases because a part of any increase in transfer payments is saved. The change in equilibrium income for a change in transfers is given by

$$\Delta Y = \frac{c}{1-c}\Delta TR \qquad (5.21)$$

or

$$\frac{\Delta Y}{\Delta TR} = \frac{c}{1-c} \qquad (5.22)$$