

is called an expansionary policy effect.
When economy produces an output level below the full employment level then what may be a fiscal policy measure?

Ans- If the economy produces an output level, below the full employment level with certain govt purchase and tax then fiscal policy can increase equilibrium output, shifting the demand curve to the right either (i) by increasing govt expenditure or (ii) by reducing tax.

First we consider (i) the effect of an increase in govt purchase.

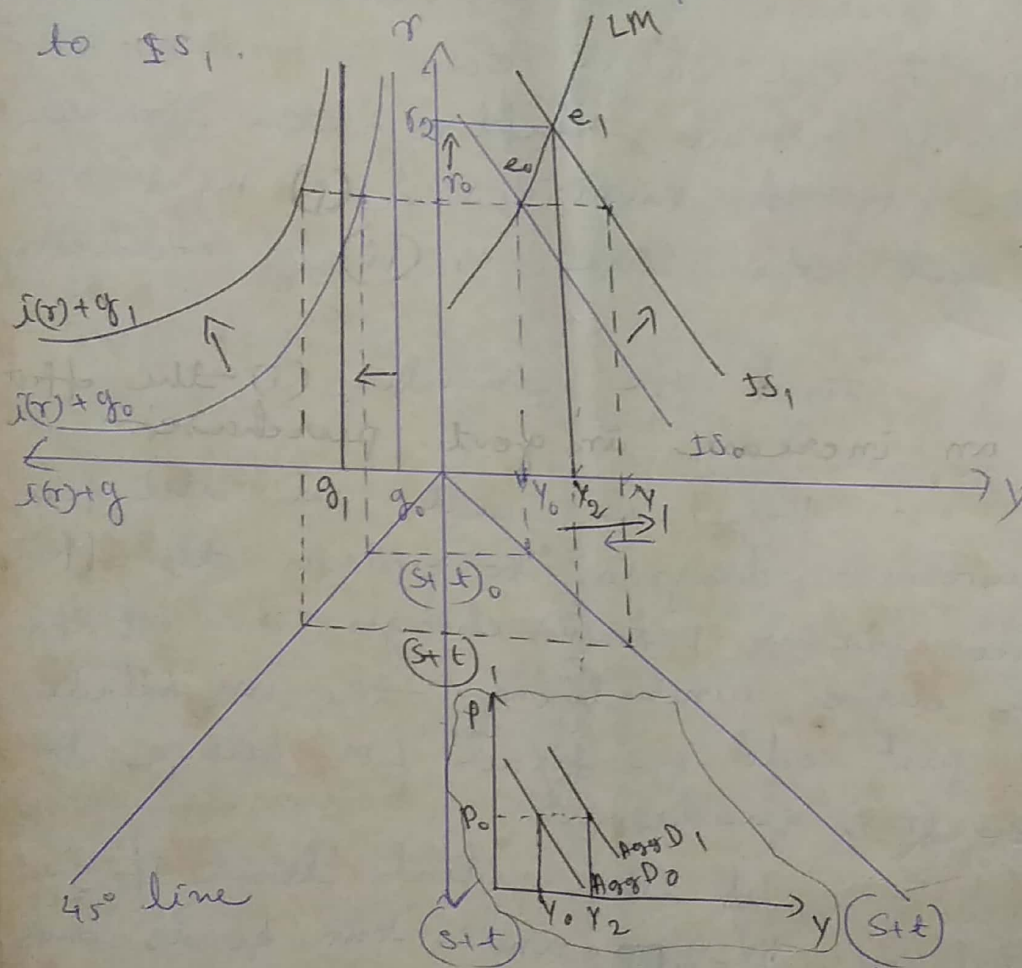
Here we will use the four quadrant diagram to explain the effect. Since fiscal policy changes do not affect the curve underlying the LM schedule, we just add a fixed LM curve to the (r-y) quadrant.

Let the initial level of govt purchase be g_0 and tax be t_0 and the given price level be P_0 . The initial equilibrium combination of interest rate and income (r_0, y_0) belonging to the IS schedule.

Consider, first an increase in govt. purchase from g_0 to g_1 with the tax schedule unchanged. The increase in govt purchase adds directly

to g_0 is called an expansionary & right

to real GNP. Through the multiplier process output further increases. If the interest rate did not raise from its initial level to r_0 not affecting $i(r)$ equilibrium output (Y) rise from Y_0 to Y_1 . This measures ~~the~~ outward shift of IS schedule to IS_1 .



But with a fixed level of real money balance, the increase in output raises transaction demand for money. It results into an excess demand for money in money market and pulls up the interest rate. The increase in interest rate along LM schedule reduces

the level of investment demand. The reduced level of investment moves to the new equilibrium level of output demanded downed from Y_1 to Y_2 , with the rate of interest raising from r_0 to r_2 . Ultimately the equilibrium output becomes Y_2 which is higher than its initial level at Y_0 . This increase in equilibrium demand side output is rate reflected by the shift of ~~agg~~ demand schedule.

Multiplier effect due to change in govt expenditures.

Goods market equilibrium condition

$$Y = c[Y - t(Y)] + i(r) + G$$

Totally differentiating it

$$dy = c'[dy - t'dy] + i'dr + dG$$

$$\Rightarrow [1 - c'(1-t')]dy = i'dr + dG \quad \text{--- (1)}$$

Money market equilibrium condition

$$\frac{M}{P} = K(Y) + L(r)$$

Totally differentiating

$$0 = K'dy + L'dr$$

$$\Rightarrow dr = -\frac{K'}{L'}dy \quad \text{--- (2)}$$

Substituting (2) in (1) we get,

$$[1 - c'(1-t')]dy = i' \left[-\frac{K'}{L'}dy \right] + dG$$

$$\Rightarrow [1 - c'(1-t')] dy = - \frac{j'k'}{u'} dy + dy$$

$$\Rightarrow [1 - c'(1-t') + \frac{j'k'}{u'}] dy = dy$$

$$\Rightarrow \frac{dy}{dy} = \frac{1}{[1 - c'(1-t') + \frac{j'k'}{u}]}$$

$$[1 - c'(1-t')] > 0$$

$$\left. \begin{array}{l} j' < 0 \\ u' < 0 \\ k' > 0 \end{array} \right\} \Rightarrow \frac{j'k'}{u'} > 0$$

$$\frac{dy}{dy} > 0$$

So there is positive relationship between govt. expenditure and income. In other words, if g increases to maintain product market equilibrium, income must increase and vice versa.

Graphical and theoretical result of this increased govt. expenditure is same with mathematical result.

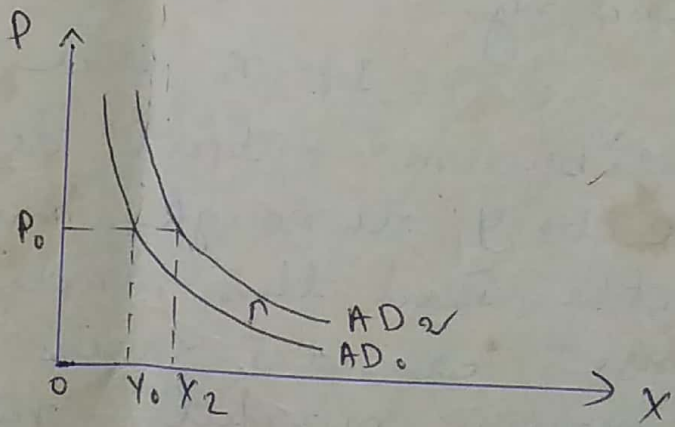
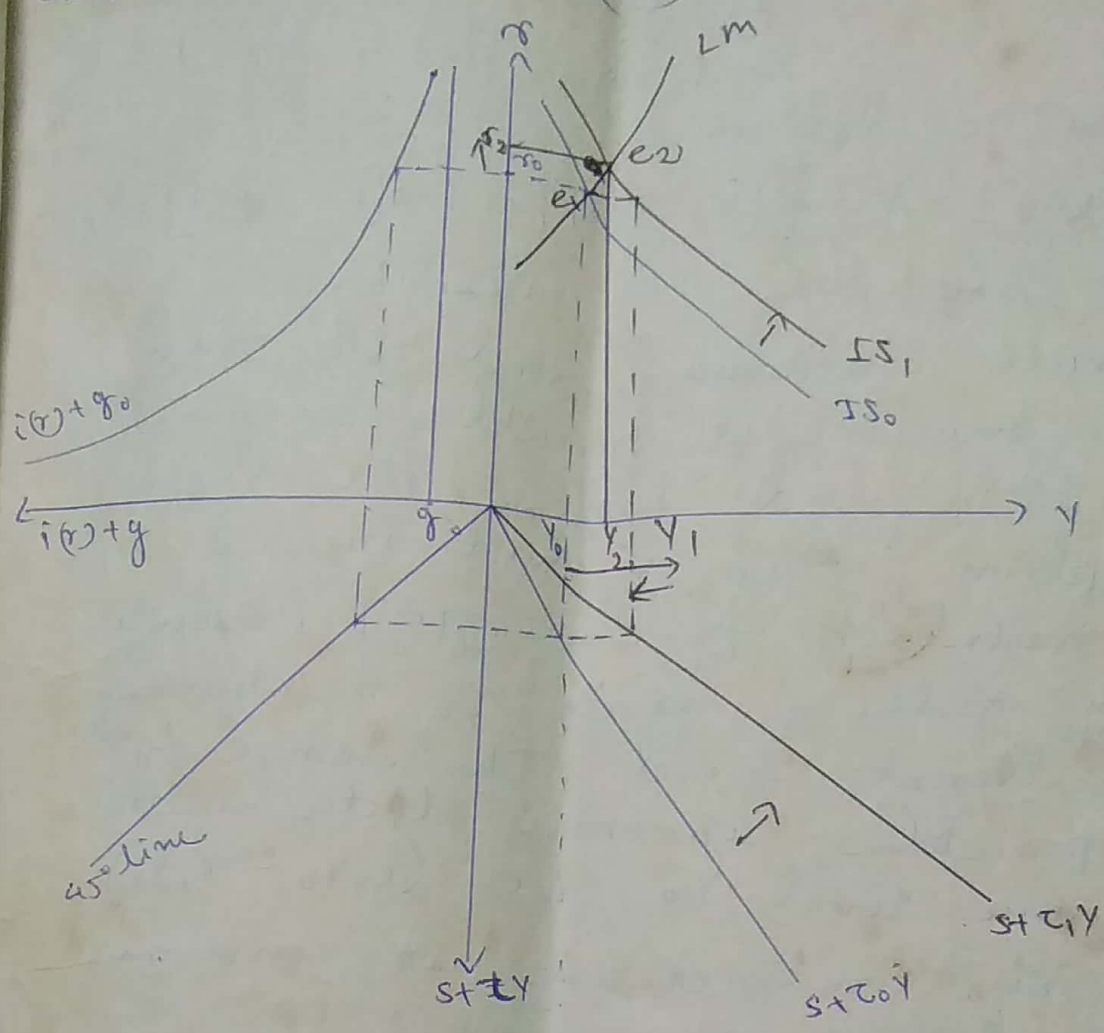
~~Second part~~

Second we will consider

(ii) The effect of a decrease in tax schedule:-

Here we will use the four quadrant diagram to explain the effect. Since fiscal policy changes do not affect the curves underlying

the LM curve to (r, y) quadrant.



We assume tax schedule to be proportional i.e., $t(y) = \tau y$.

So that tax revenue is a constant fraction, τ , of income Y . Then the tax cut just reduces the tax revenue from $\tau_0 Y$ to $\tau_1 Y$. The ~~down~~^{up}ward relation of the tax schedule increases the level of equilibrium

income at any given interest rate
From the basic equilibrium condition,

$$i(r) + g = Y - [c + t(Y)] = s[Y - t(Y)] + I(r)$$

We can see if $i(r)$ and g remain unchanged and the tax cut raises disposable income $[Y - t(Y)]$ and hence raises consumption, then Y must increase to maintain $[Y - c = i(r) + g]$. Essentially with a given r_0 maintaining investment fixed. The change in disposable income at the initial income level Y_0 , i.e. $(\tau_0 Y_0 - \tau_1 Y_0)$ generates an increase in consumer spending.

If r_0 were maintained equilibrium output demanded would raise to Y_1 through multiplier effect. But this increase in income creates excess demand in money market, raising interest rate along LM. It reduces investment to offset partially the exogenous increase in consumer spending. In the end, equilibrium demand side output raises to Y_2 and rate of interest to r_2 . The aggregate demand schedule

shifts out with equilibrium income from Y_0 to Y_2 at initial price level P_0

* multiplier effect due to change in tax :-

Goods market equilibrium

$$Y = c[Y - \tau Y] + i(r) + \bar{g}$$

Totally differentiating it,

$$dy = c'[dy - \tau dy - y d\tau] + i' dr$$

$$\Rightarrow dy = c'(1 - \tau) dy - c' y d\tau + i' dr$$

$$\Rightarrow [1 - c'(1 - \tau)] dy = -c' y d\tau + i' dr \quad \text{--- (1)}$$

Money market equilibrium :-

$$\frac{M}{P} = K(r) + L(r)$$

$$\therefore dr = -\frac{k'}{l'} dy \quad \text{--- (2)}$$

Substituting the value of (2) in (1), we get,

$$[1 - c'(1 - \tau)] dy = -c' y d\tau - \frac{i' k'}{l'} dy$$

$$\Rightarrow \left[1 - c'(1 - \tau) + \frac{i' k'}{l'}\right] dy = -c' y d\tau$$

$$\Rightarrow \frac{dy}{d\tau} = -\frac{c' y}{\left[1 - c'(1 - \tau) + \frac{i' k'}{l'}\right]} < 0$$

Since $\frac{i' k'}{l'} > 0$ and $0 < \tau < 1$

$$\Rightarrow 0 < (1 - \tau) < 1$$

$$\Rightarrow 0 < c'(1 - \tau) < 1$$

$$\Rightarrow 0 < [1 - c'(1 - \tau)] < 1$$

$$\frac{dy}{d\tau} < 0$$

It implies that the relation between income and tax is inverse. In other words, if tax increases income must increase and vice versa.

Logically and graphically result of this increased tax is identical with mathematical result.

When the economy produces an output level below the full employment level then what may be a monetary policy measure?

Ans:- If the initial equilibrium value of real output is below the full employment level, then monetary policy can increase the equilibrium output (a movement towards full employment output), shifting the aggregate demand schedule to the right by an increase in real money balance.

Here we will use a four quadrant diagram to explain the effect. Since money supply changes do not affect any of the curves underlying the IS ~~curve~~ schedule, we just add a fixed