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Can the Fiscal Multiplier Be Less than Zero?
A Different Kind of Crowding Out

Possibly yes– if money demand depends on total wealth, defined as the sum of money and government bonds. The intuition is that when the government has to borrow to finance a budget deficit resulting from government spending, the additional (government) bonds the government has to sell pushes down bond prices, and hence up interest rates on government bonds. The crowding out of investment that results is called "portfolio crowding out".

1. Standard IS-LM

In the standard IS-LM model, when the marginal tax rate is zero, t_1=0, the IS schedule is given by:

(1) $$i = -\left(\frac{1-c_1-b_1}{b_2}\right)Y + \left(\frac{1}{b_2}\right)\Lambda_0$$ <IS curve>

The parametric form of the linear LM schedule is given by

(2) $$i = \left(\frac{\mu_0}{h}\right) - \left(\frac{1}{h}\right)\left(\frac{M_0}{P}\right) + \left(\frac{1}{h}\right)Y$$ <LM curve>

Solving for Y yields:

(3) $$Y_0 = \hat{\gamma}\left[\Lambda_0 + \frac{b_2}{h}\left(\frac{M_0}{P}\right) - \frac{b_2\mu_0}{h}\right]$$ <Equilibrium income>

Where $\hat{\gamma} \equiv \dfrac{1}{1-c_1-b_1+\dfrac{b_2}{h}}$

2. Portfolio Crowding Out

Suppose that money demand, instead of looking like

(4a) $$\frac{M^d}{P} = \mu_0 + Y - hi$$

Looks like:

(4b) $$\frac{M^d}{P} = \mu_0 + Y - hi + j\left(\frac{M+B}{P}\right)$$

Solving for the new LM curve yields:

(5) $$i = \frac{\mu_0}{h} - \left(\frac{1}{h}\right)\left(\frac{M_0}{P}\right) + \frac{j}{h}\left(\frac{M_0}{P} + \frac{B_0}{P}\right) + \left(\frac{1}{h}\right)Y$$

You will observe that the vertical intercept depends upon stocks of both money and bonds. Substituting this revised LM curve into the IS curve yields:

(6) $$Y_0 = \hat{\gamma}\left[\Lambda_0 + \frac{b_2}{h}\left(\frac{M_0}{P}\right) - \frac{b_2 j}{h}\left(\frac{M_0}{P} + \frac{B_0}{P}\right) - \frac{b_2\mu_0}{h}\right]$$

Notice that the stock of bonds now enters into the determination of equilibrium income.
The linkage to fiscal policy becomes obvious when one considers how budget deficits are financed.

(7) $BuS \equiv T - G$

Recall, for simplicity, we have set t_1=0; now work with the budget deficit, *BuD*,

(8) $-BuS \equiv BuD \equiv G - T = GO_0 - t_0 = \Delta(B/P)$

This budget deficit has to be financed somehow; this constraint is reflected in the last term on the right hand side of (8): if the government spends more than it takes in in terms of revenue, then it must borrow by issuing new debt. So, let's consider a thought experiment, increasing government spending on goods and services by ΔGO, ***starting from an initial budget deficit of zero***, then:

(9) $\Delta GO = \Delta(B/P)$

Now consider the total differential of (6):

(10) $$\Delta Y = \hat{\gamma}\left[\Delta\Lambda_0 + \frac{b_2}{h}\Delta\left(\frac{M}{P}\right) - \frac{b_2 j}{h}\Delta\left(\frac{M}{P} + \frac{B}{P}\right) - \frac{b_2\Delta\mu}{h}\right]$$

And "zero out" those terms that are constant when only government spending is changed:

$$\Delta\left(\frac{M}{P}\right) = 0 = \Delta\mu$$

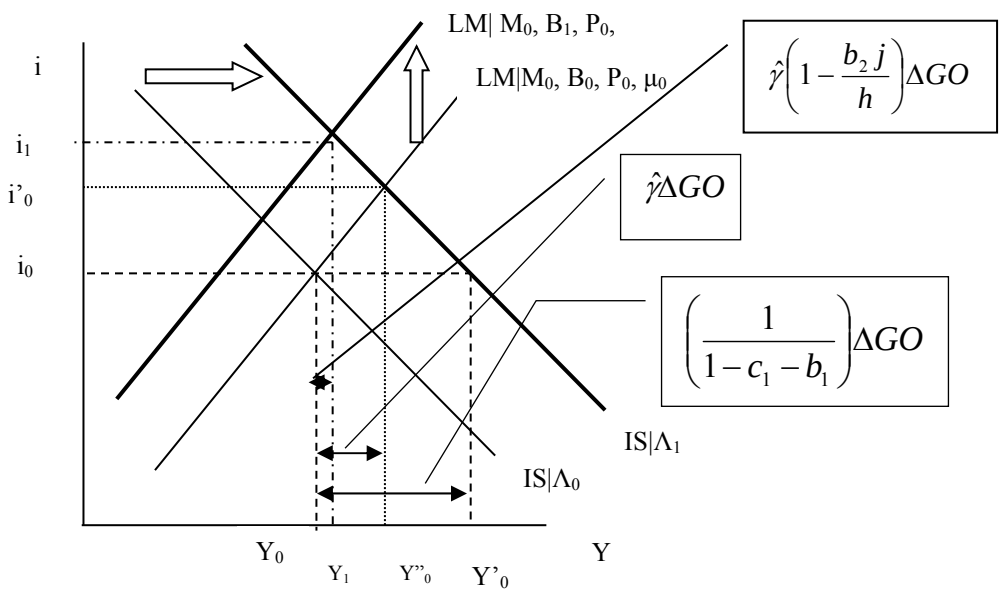
And substitute (9) in:

(11) $$\Delta Y = \hat{\gamma}\left[\Delta GO - \frac{b_2 j}{h}\Delta GO\right]$$

This implies the multiplier for government spending on goods and services is:

(12) $$\frac{\Delta Y}{\Delta GO} = \hat{\gamma}\left[1 - \frac{b_2 j}{h}\right] < \hat{\gamma} \equiv \frac{1}{1 - c_1 - b_1 + (b_2/h)}$$

Thus the change in output for a change in government spending will be the same as in the standard case, as long as money demand does not depend upon wealth (j = 0). The larger either b_2 or j, the smaller the multiplier. In the figure below, as the IS curve shifts out, the increased bond issuance associated with the resulting budget deficit induces an upward shift in the LM curve.



Notice that in principle $\Delta Y / \Delta GO$ could be greater or less than zero. In particular, if j is very large (i.e., as wealth goes up, households want to hold a lot of their incremental wealth in the form of money, rather than bonds), then the more likely portfolio crowding out is to occur.