

Solutions to Problem Set 3

1. a. False : an increase in G shifts the IS to the right, $Y \uparrow$ and $i \uparrow$, so $C \uparrow$ because income has increased, but the effect on I is ambiguous.
- b. Uncertain : $Y \uparrow$ but the interest rate could go up or down depending on the entity of the shifts and the slopes of the IS and LM.
- c. True : the reduction of the fiscal deficit is pursued through a $\downarrow G$ or an $\uparrow T$, both policy shift the IS to the left, the $i \downarrow$ and $Y \downarrow$, and the $I \uparrow$ (no effect of $\downarrow Y$)
- d. False : with banks the CB controls only indirectly the M_s

2. a. dI : output sensitivity (sales) of investment
 dI : interest sensitivity of investment

$$Y = [1/(1-cI-d0)]\{c0 - cIT + G\} - [dI/(1-cI-d0)]i$$

Or in the i - Y space :

$$i = \{c0 - cIT + G\}/dI - [(1-cI-d0)/dI]Y$$

- b. slope = $-[(1-cI-d0)/dI]$
- c. the larger is the interest sensitivity of investment, the flatter is the IS, thus a small reduction of i has a large impact on I and therefore on Y .
- a. e : income sensitivity of M_d
 f : interest sensitivity of M_d

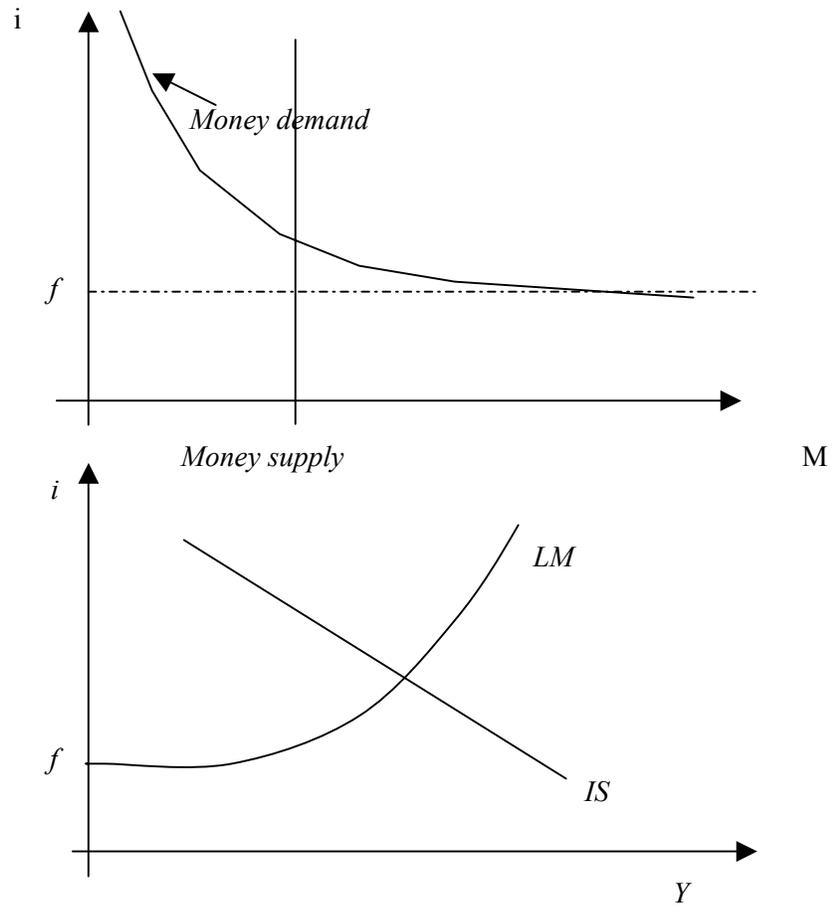
- b. the slope is (e/f)
- c. the larger is the income sensitivity of the money demand, the steeper is the LM, the larger is the interest sensitivity of the money demand the flatter is the LM.
- d. LM: $i = [e/f]Y - [1/f]M/P$
 IS: $Y = [1/(1-cI-d0)]\{c0 - cIT + G\} - [dI/(1-cI-d0)]i$

plug the LM in the IS and let $m = (1-cI-d0)$

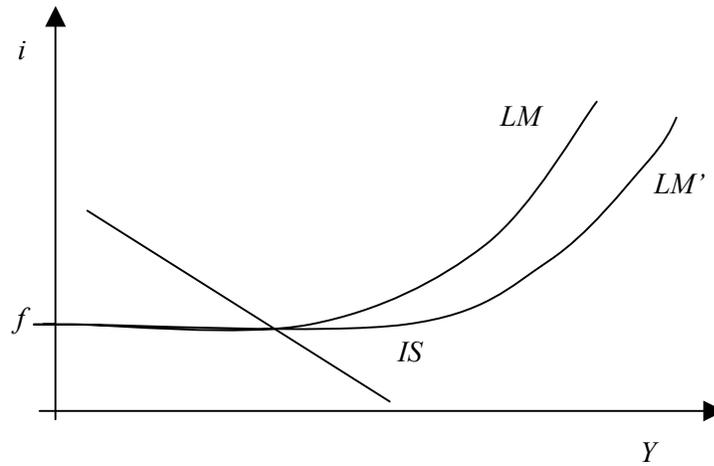
$$Y = [(fc0)/(mf + dIe)] - [(cIf)/(mf + dIe)]T + [f/(mf + dIe)]G + [dI/(mf + dIe)]M/P$$

- e. from the previous equation you have all the multipliers (fiscal/monetary): when f is large monetary policy has little impact and fiscal policy has large impact
- f. vice-versa with dI

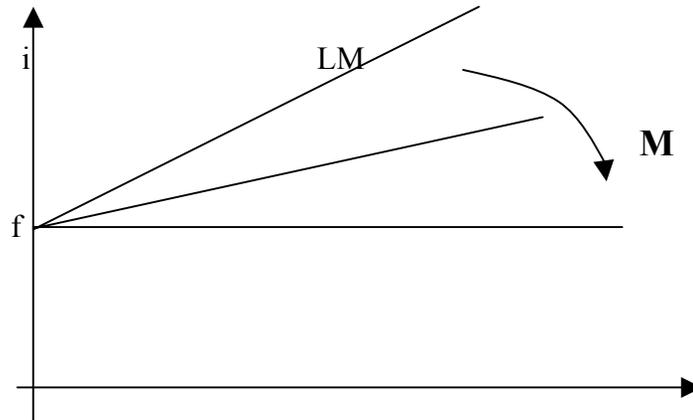
3.



c. we can imagine that Japan has reached $f \Rightarrow$ a shift in the Money supply is ineffective. This is for the general case.

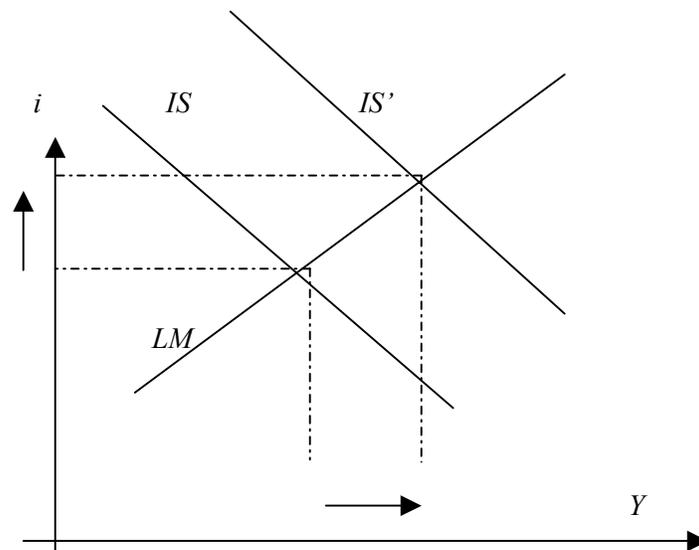


For the linear case, the LM is a , and the increase in M flatten the LM, making monetary policy ineffective when M becomes large enough.

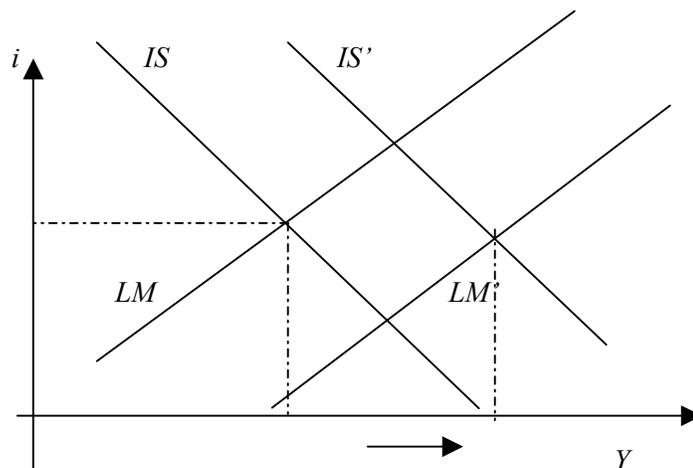


4.

The simple fiscal policy has the usual effect : shifts the IS



b. now $\Delta G = \Delta M$, and the LM shifts as well, $Y \uparrow$, but I is uncertain



c. Once wealth is included as an argument in the money demand equation it is clear that the increased government bonds brought about by the deficit causes a condition of excess demand in the money market (money supply is fixed), thus the LM shifts to the left. (increase in demand for money at every i - Y combination) to restore equilibrium Y must fall or i must increase. On the IS part, the expansionary policy shifts the curve on the right through the increase in G and the effect of increased wealth on consumption. The final position will depend on the shapes of the curves.

(You could answer also saying $B \uparrow$ thus $M \downarrow$ and W does not change. Thus The fiscal expansion shifts the IS, but there is no more secondary effect caused by the \uparrow in C . $M \downarrow$, the LM shifts again backwards)