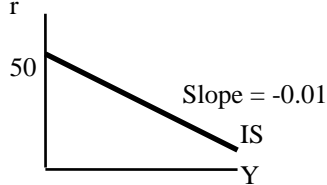


**Solution Key: Homework 4**  
Economics 101 - Chapters 10 & 11

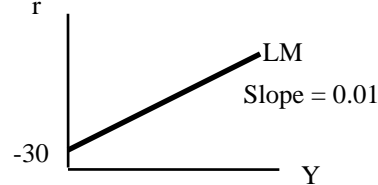
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- 1a) The tax multiplier here is:  $-MPC/(1-MPC) = (-0.75 / (1 - 0.75)) = -3$ .  
So  $\Delta Y = \text{tax multiplier} \times \Delta T = (-3) \times (-10) = 30$ .  
The change in gov saving  $(T-G) = \Delta T = -10$ . This is a budget deficit, so the president will not be satisfied.
- b) The government purchases multiplier  $= (1 / (1 - 0.75)) = 4$ .  
So the combined change in  $Y = (\text{gov purchases multiplier}) \Delta G + (\text{tax multiplier}) \Delta T$   
 $= (4) \times (-10) + (-3) \times (-10) = -40 + 30 = -10$ .  
The change in government saving  $= \Delta T - \Delta G = (-10) - (-10) = 0$ .  
The budget is balanced, but output falls rather than rises. The president again will not be satisfied.
- c) Now the combined change in  $Y = (4) \times (30) + (-3) \times (30) = 30$ . The budget now is balanced and output rises. So the president will finally be satisfied. The key is that government spending has a more direct and more powerful effect on total expenditure than do taxes.
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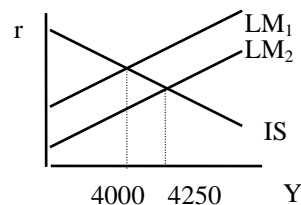
2a)  $Y = C + I + G$   
 $Y = 0.8(Y-1000) + 800 - 20r + 1000$   
IS:  $r = 50 - 0.01 Y$ .



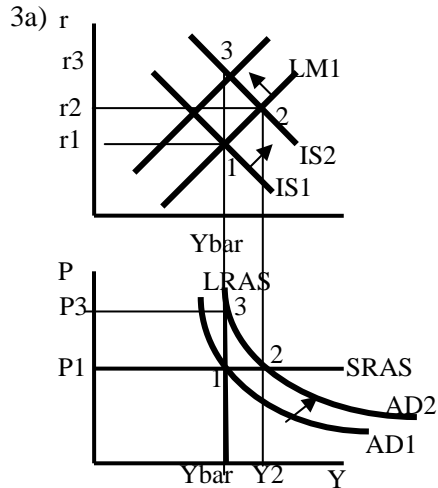
c)  $(M/P)^d = (M/P)^s$   
 $0.4Y - 40r = 1200$   
LM:  $r = -30 + 0.01 Y$



- b) If investment did not depend on the interest rate, movements in  $r$  would have no effect on output. So the IS curve would be vertical.  
For example, if we recomputed the IS curve above assuming  $I=800$ , we get  $Y=5000$  (a vertical line at 5000).
- d) If money demand did not respond to output at all, then money market equilibrium would require one particular level of interest rate, so the LM curve would be completely horizontal (zero slope) at that level of  $r$ . For example, if you solve the above equation for the case of  $(M/P)^d = -40r$ , the resulting LM is  $r = -30$ , a horizontal line.
- e) Combining IS and LM:  $50 - 0.01 Y = -30 + 0.01 Y$  so  $Y = 4000$   
So:  $r = 50 - 0.01(4000) = 10$ . (using the IS equation; you could also use the LM equation).  
 $I = 800 - 20(10) = 600$   
 $C = 0.8(Y-T) = 0.8(4000 - 1000) = 0.8(3000) = 2400$ .
- f)  $Y$  increases by 250.  
The fall in  $r$  raises investment.  
The rise in income raises consumption.



- g) A higher value for  $d$  makes the IS curve flatter, which means the shift in the LM curve makes  $Y$  rise more. Intuitively, the monetary policy lowering interest rates is more powerful in raising expenditure, if investment expenditure responds more to the lower interest rates.



The cut taxes raises consumption and hence overall demand at any interest rate: this is a rightward shift in the IS curve and AD curve in the short run. In the long run, the rise in price lowers real money supply: this is the leftward shift in the LM curve in the long run.

b) Short run:  $Y$  rises,  $r$  rises, consumption rises (both due to the cut in taxes and the rise in  $Y$ ), investment falls.

c) Long run: Output returns to its original level, but the interest rate is higher, investment is lower (due to the interest rate), and consumption is higher (due to the taxes). This is the same result you found for a tax cut in the neoclassical model in homework #1.