

Intermediate Macroeconomics

ECON 302

Sample Midterm Exam: Solutions

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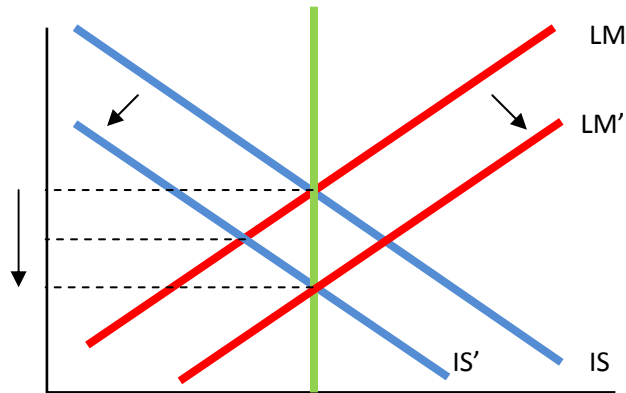
Section A - Short Questions [15 points each]

Answer **THREE** of the following five questions. Provide brief, clear answers along with your reasoning. Marks are awarded for the clarity and specificity of your arguments in each of the questions. Relate the context of the questions to any of the models you have studied in the lectures, using graphs and equations to elucidate your answers as necessary. [Hint: To increase your marks, reread the question along with your answer to see if you have answered what the question has asked.]

1. Consider your basic IS-LM model at a long-run equilibrium. Suppose that there is a reduction in the budget deficit. What does this mean? Describe the effects of this reduction in both the short run and the long run on interest rates, output and prices giving economic intuition for the changes.

Answer: *A reduction in the budget deficit means that $G-T$ falls and as a result the IS curve shifts inwards (towards the origin). In the short run the real interest rate falls, and output falls since planned expenditure is less than actual expenditure and firms accumulate unwanted inventories and cut back on production. Thus in the short run, we have a recession and produce below the natural rate of output. Real rates have fallen, output has fallen but prices remain unchanged.*

With a recessionary equilibrium, there is a downward pressure on prices/inflation since we are below the full employment level of output. In moving to the long run, prices/inflation decline and this decrease leads to an increase in output. The reason is that as prices decline, real money balances increase causing a surplus in the money market. Interest rates decline further to raise the demand for real money balances (the LM curve shifts to the right). The further cuts in interest rates raise investment spending. Thus at the long run, there is no change in Y (as compared to the initial long run equilibrium), but r is lower, and P is lower.



2. What is meant by a "Liquidity Trap"? Under a Liquidity Trap, output is independent of prices. Suppose that there are real balance effects present. Describe the economic intuition for what happens when there is an increase in the supply of money, i.e. does it have an impact on output, and if so, how? If it does not have an impact on output, what happens?

Answer: A liquidity trap refers to the situation where an expansionary increase in the money supply does not have an impact on output because the interest elasticity of the demand for money is highly sensitive. The LM curve is horizontal in this case. Basically an increase in the supply of money cannot affect interest rates because any change in the money supply is dominated by a large h .

If real balance effects are present, then consumption depends on total wealth (as well as disposable income), i.e. $C = C\left(Y - T, \frac{M^s}{P} + B\right)$. Thus a change in money supply (- although it does not affect interest rates) impacts consumption by increasing the total amount of wealth in the economy. Thus consumption rises and causing an increase in output.

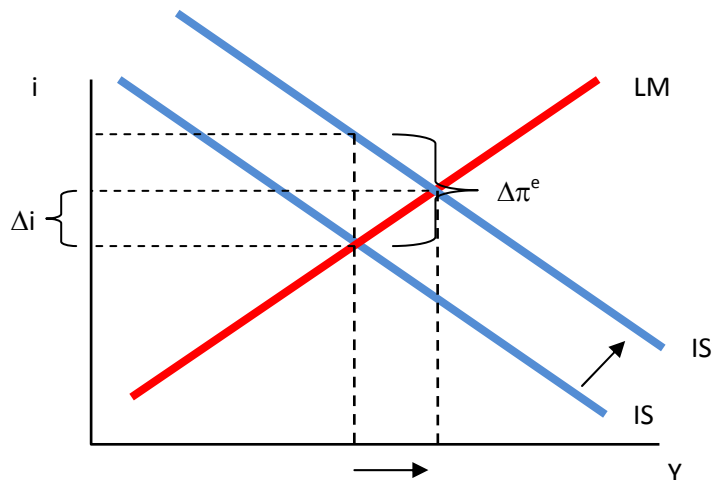
3. "The Fisher equation implies that the best predictor of inflation is the nominal interest rate". Do you agree? Why or why not?

Answer: The statement is false. Although the Fisher equation states that $i = r + \pi$, the ex ante rate of interest is $i = r + \pi^e$ which is given by the Fisher equation along with the Quantity Theory. This says that changes in anticipated or expected inflation will be reflected in the nominal interest rate. Actual inflation may not be reflected in i because it is unanticipated.

4. What effect does an increase in the expected rate of inflation have on the level and composition of aggregate demand, holding prices fixed? Under what circumstances will this expected inflation effect be neutral in terms of its effect on economic activity?

Answer: This question examines the standard analysis of the Mundell-Tobin effect. An increase in the expected rate of inflation increases the nominal interest rate. However in the typical case, the rise in the nominal interest rate is not as large as the rise in expected inflation. Hence, the

real interest rate falls, causing an increase in investment, consumption and output. The only time that effect will be neutral on output (i.e. not cause output to change) is if the LM curve is vertical, in which case, $\Delta i = \Delta \pi^e$, and thus there will be no change in interest rates. This will happen if the demand for money is insensitive to interest rates ($h=0$).



5. Suppose that a financial innovation makes the demand for money more interest-elastic. How does this affect the relative efficacy of monetary and fiscal policy?

Answer: The relative efficacy of monetary versus fiscal policy is given by the respective slopes of the IS-LM curves. Hence (from the notes), we can construct the ratio:

$$\frac{\Delta Y / \Delta G}{\Delta Y / \Delta (M / P)} = \frac{h}{b}$$

Thus, if the demand for money is more interest elastic, then h is larger. This would have the effect of making the LM curve flatter (relative to the IS curve). Thus looking at the ratio above, the fraction (h/b) is larger as well making fiscal policy more effective than monetary policy in influencing output.

Section B - Long Questions [55 points]

Answer **ONE** of the following two questions. Marks are awarded for **clarity** and **specificity** of your answers as well as how you **communicate** the thesis of your argument. Be sure to relate the context to any applicable models you have studied in lectures. Use graphs and equations to elucidate your answers as necessary.

6. Consider one of the four models used to explain the short run aggregate supply curve. Explain what happens in the labor market if there is a negative shock to demand that leads to a fall in prices. How does the real wage behave?

Answer: Essentially from the notes. The solutions here should pick one of the four models of aggregate supply and work through the mechanism of how the above shock would impact the labor market. The student should first outline the structure of the model, the assumptions made, the economic environment etc. The solution should emphasize the role that the expected price level plays whichever model is chosen, and outline how the actual price level differing to the expected price generates an upwards sloping supply curve. Thus:

- *Sticky wage model would focus on wage rigidity and that this is a non market clearing model. A decline in the price level would make the actual real wage come out higher than the ex-ante (anticipated) real wage, causing a decline in employment and output. Thus the real wage would be countercyclical here.*
- *Workers Misperceptions Theory should highlight that we are looking at a market clearing model. However, workers get fooled since they do not know the actual price level. In much the same way as the sticky wage model, we obtain a countercyclical real wage.*
- *Lucas Islands/Imperfect Information model should highlight the role of informational asymmetry in a market clearing model. However when observing a decrease in the price level, a supplier gets confused by whether it a change in the overall price level, or a change in relative prices. If they observe a decrease in the price of their product, they do not know whether to attribute it towards an overall decrease in the price level, or a decrease in the relative price of their product. Rationally, they would think it is a little bit of both, and so (at least partially) attribute it to a decrease in relative prices. Hence they would work less and produce less. In much the same way, wages would end up being countercyclical.*
- *Sticky price model should emphasize the role of price inertia for a fraction of firms in the economy and focus on the difference between the substitution and income effects in the*

labor market from a decline in real wage to show that this is the only model that is able to generate procyclical real wages.

7. What are the main competing explanations for the Great Depression? Discuss to what extent each hypothesis is consistent with the facts. How could monetary and fiscal policies have been used to combat that recession and what might make you prefer the use of monetary rather than fiscal policy, or *vice versa*?

Answer: *Solutions here should highlight the main arguments of the competing hypotheses of the Great Depression: the spending hypothesis, the money hypothesis, the credit crunch and the anticipated and unanticipated effects of deflation (via the Mundell-Tobin effect and debt deflation theory).*