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PROBLEM SET IV: SOLUTION

EE212 — Principles of Macroeconomics

Semester 2/2019-2020

Total mark: 20 points

Due date: Friday 8 May 2020 **before midnight** to jenmana@econ.tu.ac.th.

Any late submission **will not** be graded.

Please submit in pdf form, and not word document.

Dear students,

Two weeks are given to complete this assignment. As mentioned, we will have four problem sets, each making up 7.5% of your total grade (30% in total). These will be challenging, and will demand you to revisit the topics that have been mentioned so far in class, as well as to read the mandatory readings.

Reminder on academic policy: I encourage you all to work together and exchange ideas out of class. However, I also encourage you all as university scholars to start independently critically approach a topic, a question, or a challenge that will be posed in this class, as well as the future ones.

I expect your independent completion of the short essays, as it would be obvious if they are not your own ideas. Plagiarism and cheating will be treated with disciplinary actions. Thammasat University, our faculty, and I take academic integrity extremely seriously.

Problem I: true, false, or uncertain – explain your reasoning (7 points)

1. The aggregate supply curve is upward sloping because of the fact that firms want to produce more at a higher price. (1 points)

Answer: False. The AS curve is upward sloping because higher output means a lower unemployment rate, which enhances workers bargaining power and results in a higher real wage for a given expected price level, and prices go up in response to an increase in wage

2. Based on the **money neutrality** theorem which says that changes in the nominal money supply (M) does not affect real variables such as *natural rate of employment* and *potential GDP*. Is this true in our long-run AD-AS model? (2 points)

Answer: True. It is true that in the medium and long run, the increase in nominal money is reflected entirely in a proportional increase in the price level, and therefore the increase in nominal money has no effect on output or on the interest rate. However, the neutrality of money in the medium run does not mean that monetary policy cannot or should not be used to affect output: a monetary expansion can, for instance, help the economy move out of a recession and return faster to the natural level of output. In fact, in the short run, an increase in the money supply leads to an increase in output, an increase in the price level, and a decrease in the interest rate. What the term implies is that monetary policy cannot sustain higher output forever.

3. Suppose that there is a deflation from P_1 to P_2 . Given that the Bank of Thailand does not change its nominal money supply, this will cause the real money supply to increase – which shifts the LM curve downwards. This implies that the aggregate demand curve will shift to the right. (2 points)

Answer: False! The first part of the statement is true: the decrease in the price level results in an increase of the real money stock, which leads to a decrease in the interest rate. (The LM shifts down and to the right, while the IS does not shift.) The decrease in the interest rate leads to an increase in the demand for goods and an increase in output (Y to Y'). Thus, because there is no shifts in the IS curve, the AD curve does not shift. All we are doing here is moving along the AD curve.

4. In terms of boosting aggregate income, the central bank's monetary policies are comparatively more effective when the aggregate supply curve is relatively flat, while fiscal policies are more effective when the aggregate supply curve is comparatively steep. (2 points)

Answer: False! Monetary and fiscal policies affect the AD curve, not the AS curve. Monetary and fiscal policies are both more effective in changing output when the AS curve is flatter and less effective when the AS curve is steeper. In the extreme case, when the AS curve is vertical, neither policy has any effect on output (the only effect of monetary and fiscal policy in this case is a change in the price level).

Problem II: an unrealistic AD-AS model (8 points)

Let's assume that interest rates do not affect the aggregate level of investment at all.

1. According to your opinion, when could this happen? Under which circumstances? (0.5 point)

Answer: If for example, financial markets function poorly, and firms cannot borrow and have to finance investment through profits (retained earnings), then the interest rate will have no effect on investment. This is admittedly an extreme case.

2. According to this case, what does the IS curve look like graphically? What is the slope of the IS curve? (0.5 point)

Answer: the IS curve would be vertical ($\frac{dY}{di} = 0$) – that is, the slope would be infinite.

3. What does this also imply about the slope of the LM curve? Show the IS-LM model graphically. (1 point)

Answer: The LM curve remains the same!

4. Based on your previous answers, what should the aggregate demand look like? What does it say about the effectiveness of fiscal and monetary policy? Use diagrams to help answer this question. (2 points)

Answer: the AD curve also becomes vertical, i.e. $\frac{dY}{dP} = 0$. This is because an increase in price would shift the LM curve up, but since the IS curve is vertical, there is no changes in the equilibrium Y . This is because the higher price affects interest rates (to become higher), but it does not lead to changes in the investment – hence no change in output. In this case, monetary policy is useless in boosting aggregate output.

Now, let's keep our assumption that the interest rate has no effect on investment. Let's also assume that we are at the *natural rate of output* (the level of output at full employment). Lastly, let's introduce a negative shock to the production side – there is a higher cost of raw commodities.

5. What happens to the short-run IS-LM relation – and hence, the AD curve? What changes? Use figures to answer. (1 point)

Answer: The price level goes up and output stays unchanged in the short run. The increase in price reduces the real money supply and thus shifts up the LM curve, which leads to a higher interest rate. However, since the interest rate has no effect on investment, investment and output remain unchanged.

6. What happens to overall price levels and output in the short-run based on the AD-AS model? Explain in words. (1 points)

Answer: similar to (5), price level will increase as the AS curve shifts up, but the level of output will not change.

7. What happens over time to price levels and output in the long run? Explain in words. (2 point)

Hint: show that price level will increase forever! This shows that this model is absolutely unrealistic and we need to change our core assumption.

Answer: As price goes up, the expected price level goes up also for workers who will renegotiate wage. However, as long as the interest rate has no effect on investment, output will stay unchanged at its original natural level. Since output cannot adjust to its new lower natural level after the shock, price continues rising and so does the expected price level. As a result, the real money supply keeps shrinking, and the interest rate keeps rising. Clearly, such dynamics cannot be sustainable, and we need to reconsider our assumptions.