

**Answer at most three of the questions 1-5**

1. (5%) Using the money creation model, explain whether the money multiplier should rise or fall to increase the level of economic activity in the real sector.
2. (5%) State a monetary policy measure that the central bank could use to lower the money multiplier and explain how that measure decreases the multiplier.
3. (5%) Suppose that the aim of the central bank is to lower the interest rate by using some monetary policy tool, but ignores by how much it has to be decreased. What tool is more convenient to achieve this goal, the reserves requirement or the open market operations? Explain why.
4. (8%) Explain why central banks all over the world have adopted programmes consisting of massive purchases of financial assets to address both the immediate and the foreseeable economic consequences of the COVID-19 pandemic. Represent this policy measure in the liquidity market model and identify its effect on the interest rate.
5. (5%) Consider the money creation model based on the expansion of bank deposits. Imagine that it is discovered that the coronavirus causing the COVID-19 disease remains active on coins and banknotes for several days. Suppose that, in response to that discovery, cash payments are no longer accepted in most shops. Explain how this lack of acceptance of cash would affect the money creation process and the value of the multiplier.

**Answer at most two of the questions 6-9**

6. (7%) Let two countries differ essentially only in their GDP growth rates. Explain in which country the domestic currency has a stronger tendency to appreciate.
7. (7%) Let two countries differ essentially only in their inflation rates. Explain in which country competitiveness has a stronger tendency to improve.
8. (7%) Let two countries differ only in their inflation rate. Explain in which country the interest rate is likely to be higher.
9. (7%) The dollar depreciates against the euro. At the same time, the Japanese yen appreciates against the euro. What can be inferred from just this information about the dollar/yen exchange rate? (Does the dollar appreciate against the yen? The yen appreciate against the dollar? Anything could happen?) Motivate your answer.
10. (10%) Assume that net private savings (the difference  $S - I$  between savings and investment) remain constant. Suppose that the government budget deficit increases: the rise in government spending is larger than the rise in government revenue.
  - (i) Explain what happens to net exports (the difference  $EX - IM$  between exports and imports)
  - (ii) Is it possible that both  $EX$  and  $IM$  rise? Justify your answer.
  - (iii) Is it possible that both  $EX$  and  $IM$  fall? Justify your answer.

**11. (15%)** The table below shows the values of certain macroeconomic variables for a certain economy in three periods: 1, 2 and 3. The currency of this economy is the euro.

| <i>period</i>         | 1    | 2   | 3   |
|-----------------------|------|-----|-----|
| unemployment rate     | 6    | 8   | 7   |
| inflation rate        | 5    | 2   | 7   |
| GDP                   | 1000 | 750 | 900 |
| exchange rate (\$/€)  | 3    | 5   | 3   |
| nominal interest rate | 0    | 2   | 1   |

For each of the following claims identify a pair of periods ( $t, t'$ ) such that  $t' > t$  and such that the claim is true between  $t$  and  $t'$  (that is, the pairs can be (1, 2), or (2, 3), or (1, 3)). Justify your answer.

- (i) Okun's law is not violated
- (ii) The Fisher effect does not hold
- (iii) The Phillips curve is contradicted
- (iv) The figures are consistent with an expansionary open market operation
- (v) The figures are consistent with a contractionary fiscal policy
- (vi) The figures are inconsistent with a contractionary open market operation
- (vii) The euro depreciates against the dollar
- (viii) The dollar does not depreciate against the euro

**12. (20%)** The central bank conducts an expansionary open market policy.

- (i) Explain how that policy would affect the interest rate.
- (ii) Explain which component, or components, of aggregate demand will be affected by the interest rate change.
- (iii) Explain the impact of the variation in aggregate demand on the inflation rate.
- (iv) Explain how the modification of the interest rate is likely to alter the exchange rate.
- (v) Explain how net exports are expected to react to the variation in the inflation rate.
- (vi) Explain how net exports are expected to react to the change in the inflation rate.
- (vii) What is the ultimate effect of the expansionary open market policy on GDP?
- (viii) What is the ultimate effect of the expansionary open market policy on the unemployment rate?

**13. (15%)** Imagine that a large proportion of firms in country A are owned by citizens of country B and that all those owners decide to close down and liquidate their firms and factories in A, and relocate the firms and factories in their home country, B. Using the AS-AD model, analyze graphically the effects of the liquidation of firms in A and their reopening in B in the inflation rate and GDP in both A and B. Explain which functions change and why.

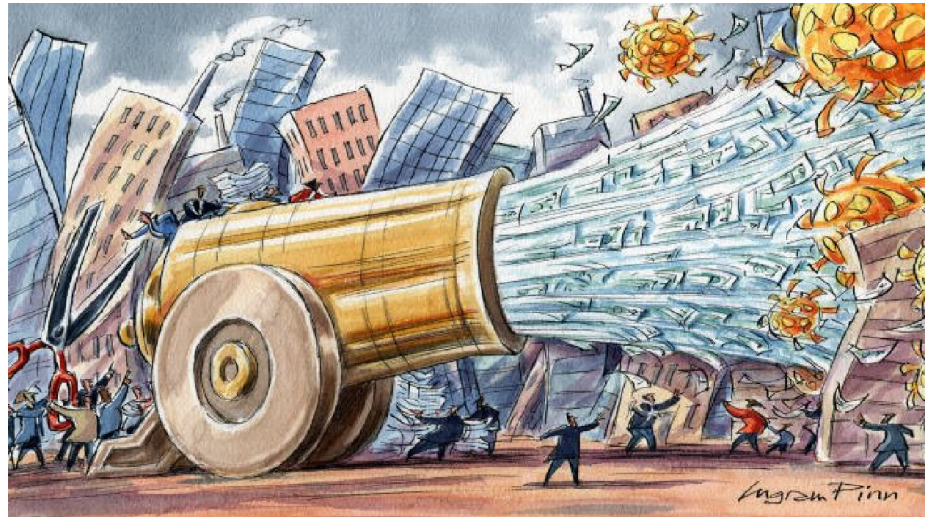
**14. (12%)** Explain briefly, using the concepts and models presented in the course, how the confinement measures to prevent the spread of the COVID-19 pandemic would affect:

- (i) aggregate demand;
- (ii) unemployment;
- (iii) the interest rate;
- (iv) the price of financial assets;
- (v) GDP;
- (vi) the inflation rate;
- (vii) the government budget deficit;
- (viii) the GDP growth rate.

**15. (12%)** The cartoon on the right suggests that money is a successful tool to neutralize the COVID-19 negative effects on the economy.

(i) Explain why and how. Specifically, which economic actor throws the massive amounts of money? And how does this money reach ‘the economy’?

(ii) The people waving the large scissors seem to propose another alternative to offset the COVID-19 consequences. What is that alternative? How would that alternative operate? Which economic actor implements the alternative?



<https://stweetly.com/Cartoon4sale/>

**16. (12%)** The cartoon on the right puts the blame on COVID-19 for causing the recession of the US economy. Explain, with the help of a graphical representation of the AS-AD model, why and how the pandemic may create a recession.



[https://www.koreatimes.co.kr/www/opinion/2020/03/197\\_286945.html](https://www.koreatimes.co.kr/www/opinion/2020/03/197_286945.html)

**17. (20%)** Use graphical representations of the AS-AD model to answer the following questions.

- (i) What is the impact on the inflation rate and GDP of the weeks of confinement imposed to contain the spread of COVID-19? Explain what functions in the models are affected and why.
- (ii) State a monetary policy measure that could neutralize the effect on GDP found in (i). Explain the functions affected and why.
- (iii) Explain if the measure you have proposed in (ii) could neutralize, at the same time, the change in both the inflation rate and GDP that you identified in (i).
- (iv) Suggest a monetary policy measure that could offset the change in the inflation rate identified in (i). Explain what functions affected and why.
- (v) State a fiscal policy measure that could neutralize the effect on GDP found in (i). Explain the functions affected and why.
- (vi) Discuss if a fiscal and monetary policy mix could cancel out all the consequences discovered in (i). If so, suggest one such policy mix. If not, add another measure that, together with the fiscal or the policy measure, could neutralize all the changes in (i).

**18. (15%)** Use graphical representations of the currency market model to answer the following questions.

- (i) Imagine that the European investors believe that the economic impact of COVID-19 on the US economy will be much worse than anticipated. Find the effect on the exchange rate  $\$/\epsilon$  of the sale by European investors of all the assets they bought in the US, followed by the sale of the dollars so collected, to obtain euros, in the currency market. Explain what functions in the model are affected and why.
- (ii) Explain what changes would produce in your analysis in (i) that American investors adopted the same belief and preferred to invest in European assets and corporations.
- (iii) Suppose that the European investors choose to invest in China a fraction of the euros obtained from liquidating their US investments. How would that decision affect the exchange rate  $\text{¥}/\epsilon$  between the Chinese renminbi and the euro. Explain what functions would be affected and why.

**19. (15%)** Use graphical representations of the liquidity market model to answer the following questions.

- (i) As a result of the economic impact of the COVID-19, the government issues more debt (sells T-bills in unprecedented amounts). What is the foreseeable effect of that decision on the interest rate? Explain what functions are affected and why.
- (ii) Explain how your conclusion in (i) would be modified if the buyers of the public debt believed that the government would default (that is, the government will fail to repay the debt in its entirety).
- (iii) Suggest a measure by the central bank that could neutralize the effect on the interest rate found in (i). Explain which function is affected and how.