Drexel University
Econ 202: Principle of Macroeconomics
Fall 2019 - Midterm 2 (Version 2)

Professor: Marco Airaudo Name_____

TOTAL POINTS: 105 (100+5 BONUS POINTS)

MULTIPLE CHOICE SECTION (30 points total, 3 each)

Correct answer marked by ***

1. Suppose the reserve requirement is 20%. Then the money multiplier should be (approximately)

   (a) 80%
   (b) 20%
   (c) 5 ***
   (d) 1.25

2. The aggregate supply curve (AS) is upward sloping because

   (a) as prices of final goods/services increase, profits per unit tend to increase (as most input prices do not change very much over the business cycle) ***
   (b) as prices of final goods/services increase, profits per unit tend to remain unchanged (as most input prices grow as well)
   (c) the demand for final goods/services declines as prices increase
   (d) as prices of final goods/services increase, profits per unit tend to decrease (as most input prices grow faster than prices over the business cycle)

3. A contractionary fiscal policy aims at:

   (a) decreasing the recessionary gap by selling reserves to banks through an open market operation
   (b) decreasing the inflationary gap through higher T and lower G ***
   (c) decreasing the recessionary gap through higher G and lower T
   (d) lowering the federal funds rate

4. Suppose that a commercial bank has $400 million in checking deposits and $100 million in net worth, with a reserve requirement equal to 25%. What is the maximum amount of loans that the bank can issue to, say, firms and business?

   (a) $500 million
   (b) $400 million ***
   (c) $100 million
   (d) $300 million

5. The key difference between a demand-side (ex: lower taxes on households' income) and a supply-side (ex: lower taxes on corporate profits) expansionary fiscal policy is the following:

   (a) a demand-side tax cut would likely lead to higher output and inflation, while a supply-side tax cut would likely lead to lower output and inflation
   (b) a demand-side tax cut would likely lead to higher output and deflation, while a supply-side tax cut would likely lead to higher output and inflation

(c) a demand-side tax cut would likely lead to lower output and deflation, while a supply-side tax cut would likely lead to lower output and inflation

(d) a demand-side tax cut would likely lead to higher output and inflation, while a supply-side tax cut would likely lead to higher output and deflation ***

6. A smaller reserve requirement makes

(a) banks safer and the money multiplier larger

(b) banks less safe and the money multiplier larger ***

(c) banks less safe and the money multiplier smaller

(d) banks safer but the money multiplier smaller

7. In which of the following cases an expansionary fiscal policy is more effective at increasing output?

(a) When the AS curve shifts leftward

(b) When the AS curve does not move and is very steep

(c) When the AS curve does not move and is very flat ***

(d) When the AS curve is downward-sloping

8. A decrease in labor productivity is likely to determine

(a) a leftward shift of the AS curve ***

(b) a move along the AS curve

(c) a rightward shift of the AS curve

(d) a flattening of the AS curve

9. The value of the money multiplier is equal to

(a) the fraction of money that people want to keep as a deposit

(b) the ratio of newly created bank deposits to newly injected money in the banking system (ex: new reserves) ***

(c) the speed at which money circulates in the economy

(d) the fraction of deposits that commercial banks have to keep as reserves

10. The formula $\frac{1}{1-MPC}$ is likely to

(a) underestimate the true size of the fiscal multiplier because the AS curve is upward-sloping

(b) underestimate the true size of the fiscal multiplier because it does not consider proportional taxes

(c) overestimate the true size of the fiscal multiplier because it does not consider the reserve ratio

(d) overestimate the true size of the fiscal multiplier because the AS curve is upward-sloping.***

OPEN QUESTIONS SECTION (75 POINTS TOTAL)

Please answer to the following questions. You have to show your work to get full credit. Ex: if you are asked to compute the multiplier, you have to write down its formula, not just the final result.

11. **(15 points)** Suppose the economy is experiencing an inflationary gap. The size of the gap is estimated to be \$50 billion. The MPC is 0.8 and the proportional tax rate is 25%.

    (a) Write down the multiplier's formula and compute its value.

    Answer

    $$\text{multiplier} = \frac{1}{1 - MPC * (1 - t)} = \frac{1}{1 - 0.8 * (1 - 0.25)} = 2.5$$

    (b) Suppose that the government decides to decrease public spending by \$20 billion. Is this a contractionary or an expansionary fiscal policy? How large would be shift in AD? Draw an AD-AS graph to show what happens.

    Answer

    It will be an contractionary fiscal policy. The shift in AD is given by the multiplier times the cut in spending

    $$\text{shift in AD} = 2.5 * 20 = \$50 \text{ billion}$$

    (c) Using the AS-AD graph, show what happens to equilibrium output and price once the shift you have found in b. occurs? Is the gap closed? Briefly motivate your answer.

    Answer

    It depends on the slope of the AS curve.

    If the AS curve was completely flat, than the gap will be closed. This is because a flat AS curve means that firms will not increase prices to satisfy the increase in demand.

    If instead the AS curve was upward-sloping (as it is usually the case), then the increase in spending will not be enough to close the gap. The change in equilibrium output will be less than \$50 billion. This is because prices will increase (at least a bit). There will be some inflation.

12. **(20 points)**Suppose that the economy is in recession with a recessionary gap of $2 trillion. The MPC is 0.8 and the tax rate on income is 20%. Answer to the followings

    (a) Suppose the AS curve is completely flat. What would be the change in G needed to make the gap equal to zero?

    Answer

    First, get the multiplier:

    $$\text{multiplier} = \frac{1}{1 - MPC * (1 - t)} = \frac{1}{1 - 0.8 * (1 - 0.2)} \approx 2.8$$

    Since the AS curve is flat, the shift in AD implied by the increase in G will be equivalent to the change in the equilibrium level of output. Hence:

    $$\underbrace{\Delta Y^*}_{\$2 \text{ trillion}} = \underbrace{multiplier}_{2.8} * \Delta G$$

    The change in G has to be:

    $$\Delta G \approx \$715 \text{ billion}$$

    See Figure 2: we move from point 1 to point 2.

    (b) Would the change in G you found in a. be enough if the AS curve was positively sloped? Explain using the appropriate graph.

    Answer

    No, it would not be enough (see Figure 2: we move from point 1 to point 3). This is because, while facing higher demand for their products, some firm will prefer to increase prices (rather than supplying more goods). Higher prices will diminish the purchase power of households, and likely lead to a drop in private consumption (C), which will then, partly, counter-act the expansion in AD due to higher government spending.

    (c) Starting from your graph in b., show how the remaining gap could be closed through 1) an additional demand-side fiscal policy, or 2) a new supply-side fiscal policy. For both cases, describe what should the government do and draw the appropriate graph.

    - an additional demand-side fiscal policy
      Answer
      The government will have to further expand government spending till the gap is closed. This will make the output gap equal to zero, but will imply higher equilibrium prices.. See Figure 3: we move from point 3 to point 4
    - a new supply-side fiscal policy
      Answer
      The government could try to cut taxes to the corporate sector. This will likely shift the AS curve rightward...hopefully till the output gap equals zero. In this case, if appropriately implemented, the price level might not change. See Figure 4: we move from point 3 to point 5

13. **(25 Points)** Consider a bank where total loans plus T-bills are equal to $500 million and required reserves are $20 million, and where the reserve requirement is 10%.

    (a) Fill the bank's balance sheet, assuming that it does not hold excess reserves.

Assets	Liabilities
Loans + T-bills: 500	Deposits: 200
Required Reserves: 20	Net Worth:320

(b) Write the formula for the money multiplier and compute its value. How does it depend on the reserve ratio? Negatively or positively?

Answer

$$\text{money multiplier} = \frac{1}{\text{reserve requirement}} = \frac{1}{0.1} = 10$$

The larger the reserve requirement the lower is the multiplier.

(c) Suppose that a foreign investor deposits \$50 million in the bank. What would change in the balance sheets of the bank? Given the money multiplier computed in b., how large would be the *total* change in money supply in the *whole* banking system driven by the initial increase in deposits?

Answer

The total change in money supply is equal to the multiplier times the change in deposits. Hence:

$$\text{Change in money supply} = 10*50 = \$500 \text{ million}$$

(d) Briefly, give the two main reasons why the formula you have used in b. and c. overestimates the actual size of the money multiplier.

Reason 1: the formula assumes that all banks keep reserves at the minimum (in this case at 10% of deposits), while some banks might want to keep a larger amount of reserves (that is, to have excess reserves)

Reason 2: the formula assumes that all loans extended to firms/households get immediately redeposited at other banks, which will then extend new loans to other customers. In reality, not all loans generate new deposits.

(e) The reserve requirement is one instrument to keep the banking system more stable. The other two are 1) bank supervision and 2) the FDIC. Briefly explain what they are, and why the might prevent a bank run.

Bank Supervision: bank supervision requires banks to keep the riskiness of their assets under control. For instance, banks have to keep a certain amount of their money invested in riskless T-bills/bonds. Not all banks' money can be invested in loans, mortgages, etc....

FDIC: banks pay an annual premium to be part of the Federal Deposit Insurance Corporation. Their deposits are insured up $100K (in normal times), and to $250K during the recent crisis.

Both instruments lower the probability of a bank run, which is, the fact that depositors might decide to withdraw all their money from a bank, fearing that the bank will become insolvent due to bad investments (non-performing loans/mortgages...). Bank supervision makes sure that part of the bank's investments have low risk. FDIC makes sure that the vast majority of depositors perceives their deposits to be safe as they are covered by insurance in case of bank's insolvency.

14. **(15 Points)** Answer to the followings.

(a) Draw a AD-AS graph for which there is a recessionary gap (identify the recessionary gap in the graph). Label the two axes and all curves correctly!

Answer

See Figure 1. The gap is equal to the difference between Y^* (point 1 in the figure) and Y^P.

(b) What type of demand-side fiscal policy should the government implement? Assuming that such policy is successful, draw a new AD-AS graph showing the effect of such policy. Does this policy create inflation? Explain.

Answer

The government should implement an expansionary fiscal policy: cut taxes, and increase public spending.

This policy will create an increase in the price level, hence inflation. Equilibrium moves from point 1 to point 2 in the Figure.

See Figure 1.

(c) Next, suppose that, after the policy found in b. takes place, the economy experiences a large decrease in the price of oil.

What type of fiscal policy should the government implement to bring GDP back to full potential? Support your answer by using an AD-AS graph.

Answer

An oil price decrease will imply a right-ward shift in the AS curve, hence bring output above potential. Equilibrium moves from 2 to 3. The government should counteract this with a contractionary fiscal policy: increase T, cut G.. The AD curve will shift left, till equilibrium moves to 4.

See Figure 1.

FIGURE 1

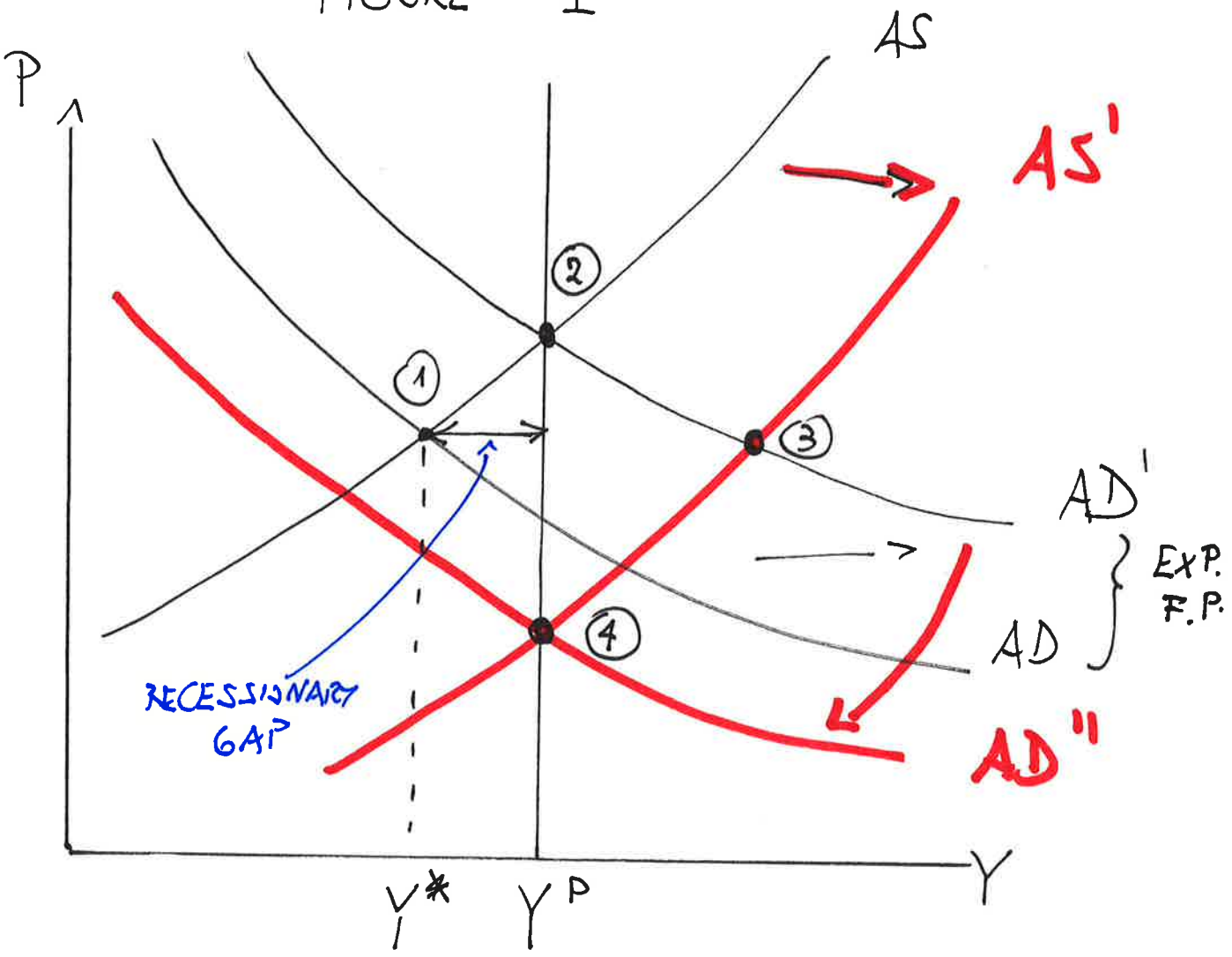

FIGURE 2

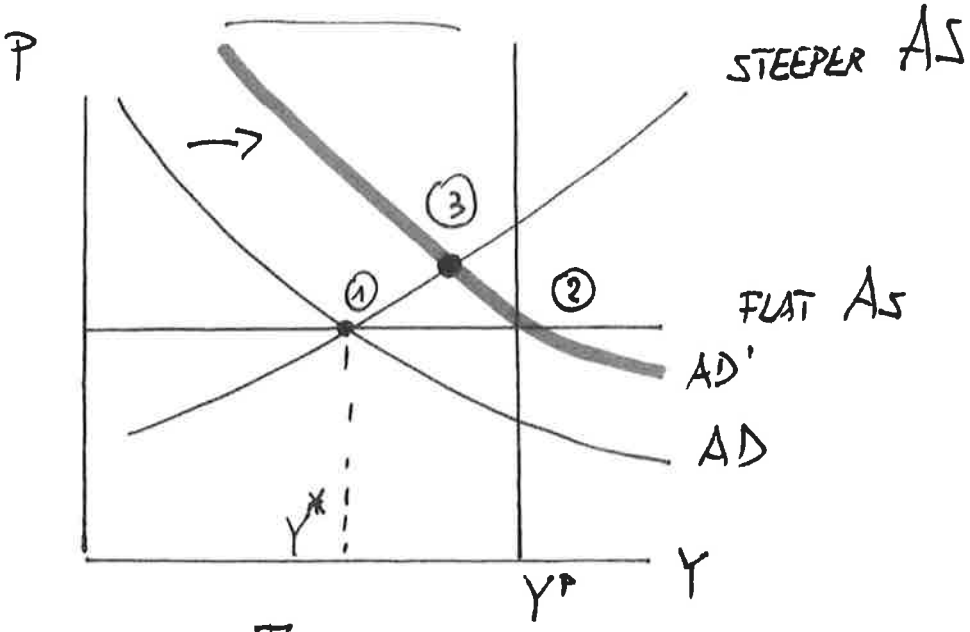

FIGURE 3

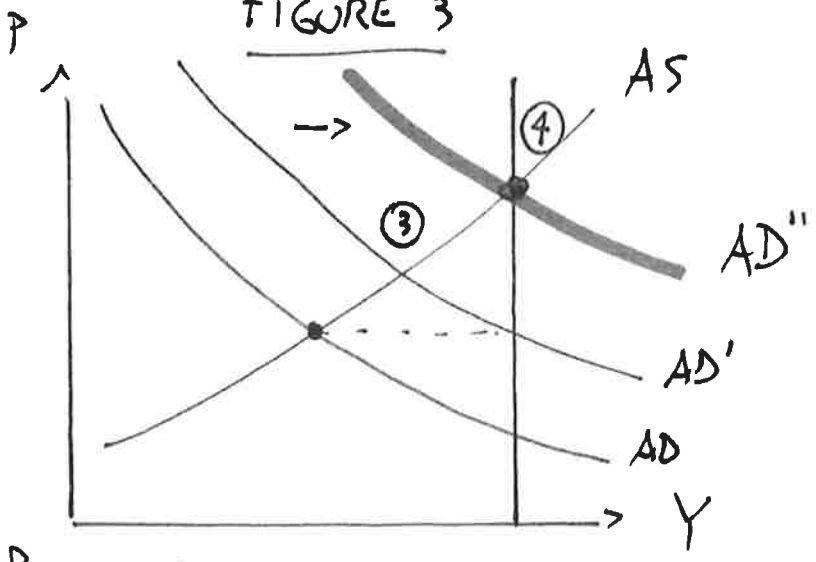

FIGURE 4