ECON202: Macroeconomics (Dr. Lei Pan)

Mid-term Exam Solution

Due Friday, 1st July 2022 at 2:00pm Taipei Time

Instruction to students:

1. The exam duration is **1 hour and 50 minutes** plus **10 minutes** reading time.

2. This is a **closed-book** exam and calculators are permitted.

3. This exam consists of **TWO** sections: Section A: multiple-choice questions, and Section B: problem solving questions.

4. Read each multiple choice question and answer choice carefully and choose the ONE best answer. There are 20 questions in total, each of them is worth 2 marks.

5. The second section contains 6 problem solving questions. All of them carrying 60 marks in total. Students **MUST** answer each question in Section B on a **FRESH** page of the answer book.

6. Try to answer all questions. In general, if you have some knowledge about a question, it is better to try to answer it. You will not be penalised for guessing.

7. You may work on the two sections in any order that you choose. Be sure to allocate your time carefully so that you are able to complete the entire exam with the exam session.

<center>Please do NOT start this exam until instructed to do so.</center>

<center>Good luck and all the best!</center>

<center>(Australian petrol prices hit all-time high. High cost of living!)</center>

Section A: Multiple Choice Questions [Total = 40 marks]

Choose ONE of the best answers for each of the following questions. Each question is worth 2 marks.

Question 1. [2 marks] The expenditure approach to calculate GDP would NOT count which of the following:

 A. a used video game system bought at a garage sale

 B. a sandwich bought at your local deli

 C. a government spending on a new bridge

 D. a business purchasing new ovens for a restaurant

Solution: A

Question 2. [2 marks] The following table contains information about an economy that produces only pens and books. The base year is 2003.

Year	Price of pens	Quantity of pens	Price of books	Quantity of books
2003	$3	100	$10	50
2004	3	120	12	70
2005	4	120	14	70

Refer to the above table, what is the value of real GDP for 2004?

 A. $800

 B. $1,060

 C. $1,460

 D. $1,200

Solution: B

Question 3. [2 marks] How is your purchase of a $50,000 BMW automobile that was produced entirely in Germany recorded in the US GDP accounts?

 A. Consumption increases by $50,000 and net exports decreases by $50,000.

 B. Net exports increases by $50,000.

C. There is no impact because this transaction does not involve domestic production.

D. Investment increases by $50,000 and net exports increases by $50,000.

Solution: A

Question 4. [2 marks] Of the following, who benefit from unanticipated inflation?

A. savers

B. lenders

C. borrowers

D. all of the above

Solution: C

Question 5. [2 marks] Use the table below to answer this question.

Year	Price of pork	Price of corn
2003	$20	$20
2004	$20	$30

Refer to the above table, suppose that the basket of goods in the CPI consisted of 3 units of pork and 2 units of corn. What is the consumer price index for 2004 if the base year is 2003?

A. 100

B. 105

C. 115

D. 120

Solution: D

Question 6. [2 marks] Suppose the price of a gallon of ice cream rises from $4 to $5 and the price of coffee rises from $2 to $2.5. If the CPI rises from 150 to 200, people will likely to buy

A. more ice cream and more coffee

B. more ice cream and less coffee

C. less ice cream and more coffee

D. less ice cream and less coffee

Solution: A

Question 7. [2 marks] Suppose that lawn mowers are part of the market basket used to compute the CPI. Then suppose that the quality of lawn mowers improves while the price of lawn mowers stays the same. If the Bureau of Labour Statistics precisely adjusts the CPI for the improvement in quality, then, other things equal,

A. the CPI will rise.

B. the CPI will fall.

C. the CPI will stay the same.

D. lawn mowers will no longer be included in the market basket.

Solution: B

Question 8. [2 marks] New classical theories of unemployment argue that

A. a competitive labour markets cannot be relied upon to eliminate unemployment.

B. all markets will clear, including labour markets, and unemployment will be eliminated.

C. all unemployment is most easily corrected by government intervention in the economy.

D. all unemployment arises from firms being unwilling to demand labour services.

Solution: B

Question 9. [2 marks] If the labour force is 20,000, structural unemployment is 400 and frictional unemployment is 600, what is the natural rate of unemployment?

A. 10%

B. 20%

C. 15%

D. 5%

Solution: D

Question 10. [2 marks] Janice is a full-time homemaker not currently searching for paid work. Enoch is a full-time student who is not looking for a job. Who is included in the labour force by the Bureau of Labour Statistics?

A. only Janice

B. neither Janice nor Enoch

C. both Janice and Enoch

D. only Enoch

Solution: B

Question 11. [2 marks] Which of the following government policies will NOT raise productivity?
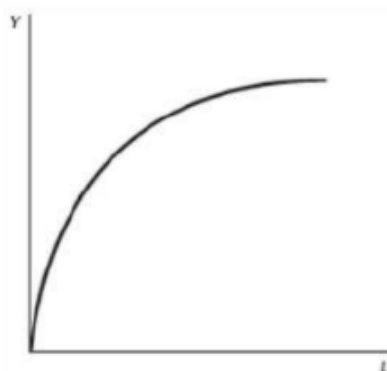
A. Tax cuts

B. Free higher education

C. Innovative machinery

D. Tariffs to protect tomato farmers

Solution: D

Question 12. [2 marks] Considering the following figure:

The shape of this production function suggests:

A. a constant marginal product of capital

B. a diminishing marginal product of capital

C. a diminishing marginal product of labour

D. not enough information is given

Solution: C

Question 13. [2 marks] Which of the following statements regarding the impact of population growth on productivity is TRUE?

A. There is no evidence, yet, that rapid population growth stretches natural resources to the point that it limits growth in productivity.

B. Rapid population growth may dilute the capital stock, lowering productivity.

C. Rapid population growth may promote technological progress, increasing productivity.

D. All of these answers.

Solution: D

Question 14. [2 marks] The opportunity cost of growth is

A. a reduction in current investment.

B. a reduction in current consumption.

C. a reduction in taxes.

D. a reduction in current saving.

Solution: B

Question 15. [2 marks] Consider two economies. If each country has the same production function and the same amount of capital and labour, the country that _____ produces more.

A. is less productive

B. is more productive

C. has more natural resources

D. has lower cost of production

Solution: B

Question 16. [2 marks] Which of the following financial market securities would probably pay the highest interest rate?

A. A bond issued by a start up company.

B. A government bond issued by the government of Australia.

C. A bond issued by a blue chip company.

D. An investment fund with a portfolio of corporate bonds issued by blue chip companies.

Solution: A

Question 17. [2 marks] Use the following information about the economy to answer the question:

Household saving	$300
Business saving	$700
Government purchases	$1,000
Government transfers and interest payments	$500
Government tax collections	$1,500
GDP	$5,000

Public saving is _____ and national saving is _____

A. 0; 0

B. 0; 300

C. 0; 1,000

D. Not enough information provided.

Solution: C

Question 18. [2 marks] Which of the following sets of government policies is the most growth oriented?

A. Lower taxes on the returns to saving, provide investment taxes credits, and lower the deficit.

B. Increase tax on the return to saving, provide investment tax credits, and increase the deficit.

C. Increase tax on the return to saving, provide investment tax credits, and lower the deficit.

D. Lower taxes on the return to saving, provide investment tax credits, and increase the deficit.

Solution: A

Question 19. [2 marks] Using the rule of 70, if your parents place $10,000 in a deposit for you on the day you are born, approximately how much will be in the account when you retire at 70 years old if the deposit earns 3 percent per year?

A. $20,000

B. $40,000

C. $70,000

D. $80,000

Solution: D

Question 20. [2 marks] Which of the following reduces risk in a portfolio the greatest?

A. Increasing the number of shares from 10 to 20.

B. Increasing the number of shares in the portfolio from 1 to 10.

C. Increasing the number of shares from 20 to 30.

D. All of these answers provide the same amount of risk reduction.

Solution: B

Section B: Problem Solving Questions [Total = 60 marks]

Question 21. [10 marks] Which of the following are included in GDP? Why or why not?

(a) [2 marks] Personal trading profits from one's own share portfolio transactions.

Solution: Not counted. This is a pure financial not a real transaction.

(b) [2 marks] The sale of a rare coin to a coin collector.

Solution: Not counted. This is the sale of a used good.

(c) [2 marks] Replacement homes that are rebuilt after being completely destroyed by a hurricane.

Solution: Counted. This is real activity that is investment (I) activity. The reason for the building, in this case as a replacement for hurricane destruction, is irrelevant. What is important is that the real market activity takes place. Interestingly, natural disasters can have the effect of increasing GDP afterwards if the rebuilding is extensive enough because of all the new activity. Destruction of value is not counted in GDP.

(d) [2 marks] The sale of cocaine for $1,000 net profit in New York.

Solution: Not counted since this is an illegal good transacted on the black market. However conceptually, from an economic point of view, it should be counted. But in the US national income accounts it is not captured.

(e) [2 marks] A grandmother moves in with her adult children to help care for her grandchildren while the parents are working during the day.

Solution: Not counted since this is effectively household production, not transacted through a market.

Question 22. [5 marks] Which of the problems in the construction of the CPI might be illustrated by each of the following situations?

(a) [1 mark] the invention of cell phones

Solution: introduction of new goods

(b) [1 mark] the introduction of air bags in cars

Solution: unmeasured quality change

(c) [1 mark] increased personal computer purchases in response to a decline in their price

Solution: substitution bias

(d) [1 mark] more scoops of raisins in each package of Raisin Bran

Solution: unmeasured quality change

(e) [1 mark] greater use of fuel-efficient cars after gasoline prices increase

Solution: substitution bias

Question 23. [8 marks] Usually social security benefits are increased each year in proportion to the increase in the CPI, even though most economists believe that the CPI overstates actual inflation.

(a) [4 marks] If the elderly consume the same market basket as other people, does social security provide the elderly with an improvement in their standard of living each year? Explain.

Solution: If the elderly consume the same market basket as other people, social security would provide the elderly with an improvement in their standard of living each year because the CPI overstates inflation and social security payments are tied to the CPI.

(b) [4 marks] In fact, the elderly consume more healthcare compared to younger people, and healthcare costs have risen faster than overall inflation. What would you do to determine whether the elderly are actually better off from year to year?

Solution: Because the elderly consume more healthcare than younger people do, and because healthcare costs have risen faster than overall inflation, it is possible that the elderly are worse off. To investigate this, you would need to put together a market basket for the elderly, which would have a higher weight on healthcare. You would then compare the rise in the cost of "elderly" basket with that of the general basket for CPI.

Question 24. [5 marks] In the 1990s and the first decade of the 2000s, investors from the Asian economies of Japan made significant direct and portfolio investment in the United States. At the time, many Americans were unhappy that this investment was occurring.

(a) [2 marks] In what way was it better for the United States to receive this foreign investment than not to receive it?

Solution: The United States benefited from the Japanese investment because it made the US capital stock larger, increasing the US economic growth.

(b) [3 marks] In what way would it have been better still for Americans to have made this investment?

Solution: It would have been better for the United States to make the investments itself because then it would have received the returns on the investment itself, instead of the returns going to Japan.

Question 25. [6 marks] For each of the following pairs, which bond would you expect to pay a higher interest rate? Explain.

(a) [2 marks] a bond of the US government or a bond of an eastern European government

Solution: The bond of an eastern European government would pay a higher interest rate than the bond of the US government because there would be greater risk of default.

(b) [2 marks] a bond that repays the principal in year 2030 or a bond that repays the principal in year 2040

Solution: A bond repays the principal in 2040 would pay a higher interest rate than a bond that repays the principal in 2030 because it has a longer time to maturity, so there is more risk to the principal.

(c) [2 marks] a bond from Coca-Cola or a bond from a software company you run in your garage
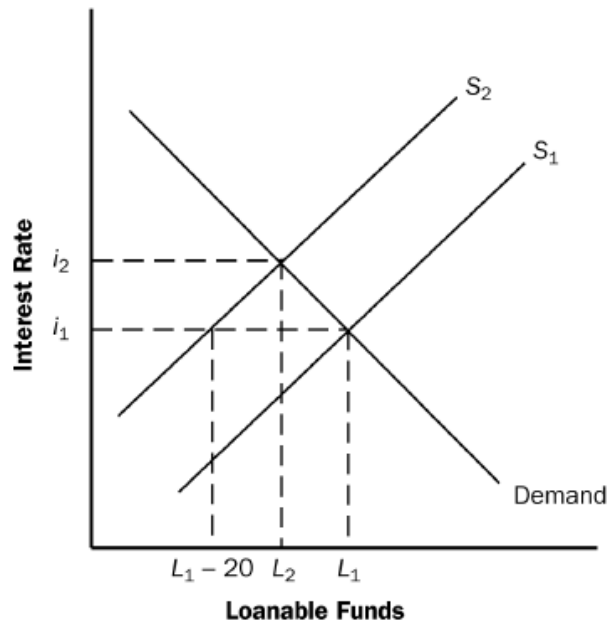
Solution: A bond from a software company you run in your garage would pay a higher interest rate than a bond from Coca-Cola because your software company has more credit risk.

Question 26. [26 marks] Suppose the government borrows $20 billion more next year than this year.

(a) [4 marks] Use the loanable funds market model to analysis this policy. Does the interest rate rise or fall?

Solution: The figure below illustrates the effect of the $20 billion increase in government borrowing. Initially, the supply of loanable funds is curve S_1, the equilibrium real interest rate is i_1, and the quantity of loanable funds is L_1. The increase in government borrowing by $20 billion reduces the supply of loanable funds at each interest rate by $20 billion, so the new supply curve, S_2, is shown by a shift to the left of S_1 by exactly

(b) [7 marks] What happens to investment? To private saving? To public saving? To national saving? Compare the size of the changes to the $20 billion of extra government borrowing.

Solution: Because the interest rate has increased, investment and national saving decline and private saving increases. The increase in government borrowing reduces public saving. From the above figure, we can see that total loanable funds (and thus both investment and national saving) decline by less than $20 billion, while public saving declines by $20 billion and private saving rises by less than $20 billion.

(c) [4 marks] How does the elasticity of supply for loanable funds affect the size of these changes?
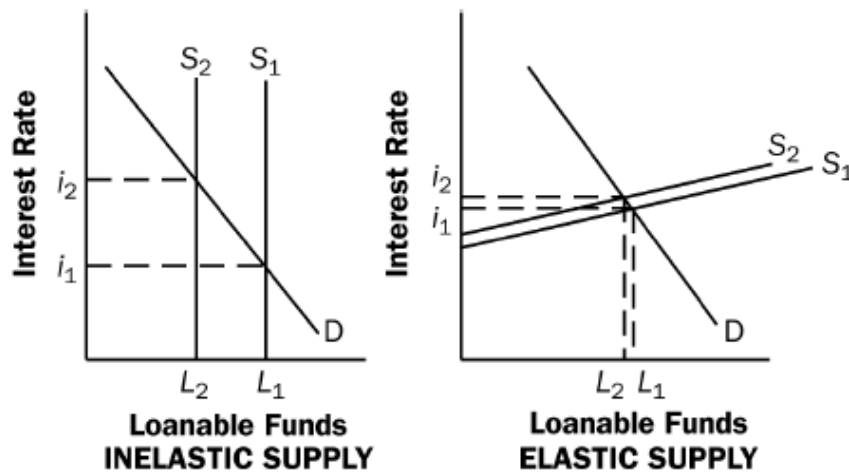
Solution: The more elastic is the supply of loanable funds, the flatter the supply curve would be, so the interest rate would rise by less and thus national saving would fall by less, as the above figure shows.

(d) [4 marks] How does the elasticity of demand for loanable funds affect the size of these changes?

Solution: The more elastic the demand for loanable funds, the flatter the demand curve would be, so the interest rate would rise by less and thus national saving would fall by more, as the figure below shows.
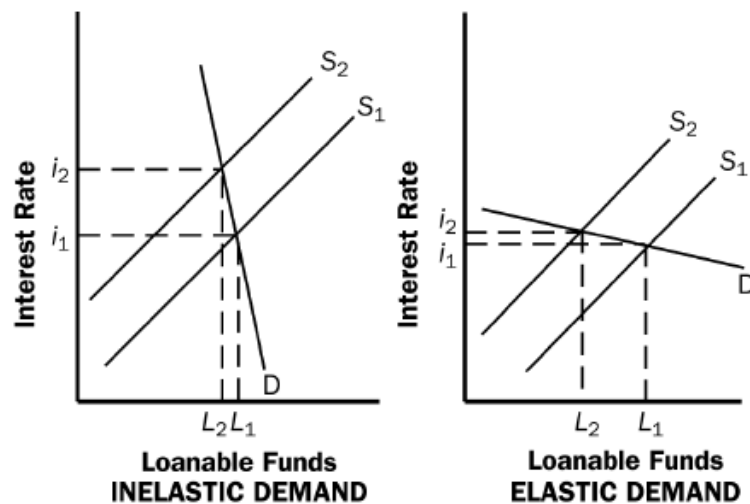
(e) [7 marks] Suppose households believe that greater government borrowing today implies higher taxes to pay off the government debt in the future. What does this belief do to private saving and the supply of loanable funds today? Does it increase or decrease the effects you discussed in parts (a) and (b)?

Solution: If households believe that greater government borrowing today implies higher taxes to pay off the government debt in the future, then people will save more so they can pay the higher future taxes. Thus, private saving will increase, as will the supply of loanable funds. This will offset the reduction in public saving, thus reducing the amount by which the equilibrium quantity of investment and national saving decline, and reducing the amount that the interest rate rises.

If the rise in private saving was exactly equal to the increase in government borrowing, there would be no shift in the national saving curve, so investment, national saving, and the interest rate would all be unchanged. This is the case of Ricardian equivalence.