EXC 35251
Macroeconomics

Department of Economics

Start date:	23.05.2018	Time 14:00
Finish date:	23.05.2018	Time 17:00

For more information about formalities, see examination paper.

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The exam consists of 10 multiple choice questions where right answer = 3 points while wrong answers = -1 points. The option not to answer = 0 points. In each multiple choice question the answers are shuffled. The multiple choice questions make up 50 % of the total. The rest consists of two essay questions. Each of them makes up 25 % of the total.

Exercise 1 (weight 50 %) Multiple choice:

(i)
If the real GDP increases while the nominal GDP decreases, it must hold that…

a. …the price level stays constant.

b. …the price level increases.

c. …the given information is not enough to answer the question.

d. …the price level decreases.

e. I choose not to answer this question.

Correct answer d: … the price level decreases.

(ii)
Which ONE of the following variables is NOT a flow variable?

a. A nation's trade surplus.

b. The government budget deficit.

c. A business's balance sheet.

d. One year's savings by a household from its disposable income.

e. I choose not to answer this question.

Correct answer c: A business's balance sheet.

(iii)

Consider an economy where the GDP is equal to 2400, private consumption is 1200, public consumption is 900, net investments in real capital is 500 and depreciation of real capital is 100. Net export (export - import) is then given by

   a) - 200

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b) - 300

c) 0

d) 200

e) I choose not to answer this question.

Correct answer b: - 300

Explained: Because Net export (export – import) = GDP – (private consumption + public consumption + Gross investments in real capital (net investments + depreciation)).

(iv)

Suppose in a country that consumption is 750, the government budget deficit is 20, total fiscal revenues equal 440, the current account is in surplus by 10, and total private saving equals 220. Which ONE of the following is true?

a. GDP is 1320.

b. GDP is 1260.

c. Net private saving is - 50.

d. Net private saving is 30.

e. I choose not to answer this question.

Correct answer 30: Net private saving is 30.

Explained: Net private saving = (S-I). It follows from equation (2.7), that (S – I) + (T – G) = (X – Z) and then (S – I) –20 = + 10 and finally (S – I) = + 30. It follows from equation (2.6), that GDP equals 1410: Y = C + S + T = 750 + 220 + 440 = 1410.

(v)
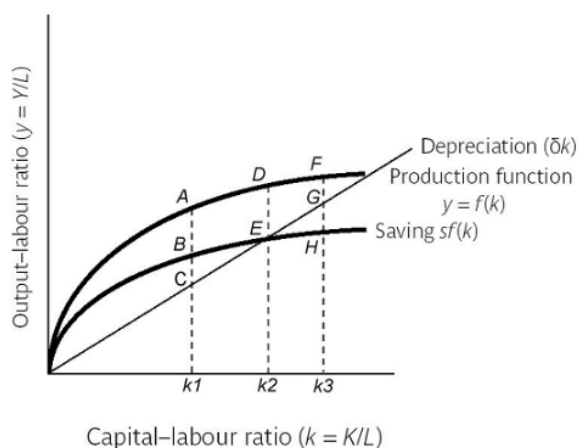
The figure above represents an economy with a constant population and unchanging labour force participation, as well as unchanging technology. Assume that output only has two uses: consumption and investment. When is net investment positive?

a. At capital intensity k1.

b. At capital intensity k2.

c. At capital intensity k3.

d. At k1 and k2, but not k3.

e. I choose not to answer this question.

Correct answer a: At capital intensity k1.

Explained: Because at capital intensity k1, investment (I = sf(k)) exceeds depreciation (δk), and hence net investment is positive (Δk=sf(k) - δk > 0). See also Figure 3.5.

At capital intensity k2, investment (I = sf(k)) equals depreciation (δk), and hence net investment is zero (Δk=sf(k) - δk = 0). See also Figure 3.5.

At capital intensity k3, investment (I = sf(k)) is lower than depreciation (δk), and hence net investment is negative (Δk=sf(k) - δk < 0). See also Figure 3.5.

(vi)

Suppose an economy with zero technological progress and constant labour force is in a steady state that does NOT correspond to the 'golden rule' capital–labour ratio and that an increase in steady-state consumption per unit labour was only possible by decreasing consumption per unit labour initially from its current steady state value. From this information, what would you conclude?

a. That the economy is dynamically inefficient because steady-state consumption is NOT at its maximum value.

b. That the economy is dynamically efficient.

c. That the economy can achieve the 'golden rule' by reducing its capital intensity.

d. That all of the answers given here are true.

e. I choose not to answer this question.

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Correct answer b: That the economy is dynamically efficient.

Explained: There is no free lunch. To increase the capital intensity for larger future consumption, it will be necessary to save more now, i.e. to consume less now, see Figure 3.10.

(vii)
According to a model for the household's trade-off between consumption and leisure. Which ONE of the following is true?

a. The budget line states all combinations of leisure and work that can be afforded.

b. Each indifference curve shows combinations of leisure and work that can be afforded.

c. The optimal choice for a consumer is where an indifference curve is tangent to a budget line.

d. The rate at which a household is willing to give up leisure for work is called the marginal rate of substitution.

e. I choose not to answer this question.

Correct answer c: The optimal choice for a consumer is where an indifference curve is tangent to a budget line.

(viii)

In a flexible exchange rate regime

a. the Central Bank must adjust money supply to keep the interest parity condition.

b. the Central Bank cannot engage in traditional monetary policy.

c. the Central Bank must keep the money supply fixed.

d. monetary policy can be used to affect aggregate demand.

e. I choose not to answer this question.

Correct answer d: monetary policy can be used to affect aggregate demand.

(ix)

Under a fixed exchange rate regime, a devaluation

a. has no effect on aggregate demand.

b. leads to an increase in aggregate demand via an increase in the Primary Current Account (PCA).

c. leads to a decrease in aggregate demand via a decrease in the Primary Current Account (PCA).

d. is not feasible.

e. I choose not to answer this question.

Correct answer b: Leads to an increase in aggregate demand via an increase in the Primary Current Account (PCA).

(x)

For a small economy in a fixed exchange rate system in the long run, the domestic *underlying rate of inflation* must equal the foreign *rate of inflation* because:

a. Otherwise the real exchange rate would change.

b. The Principle of Purchasing Power Parity would be violated.

c. This is inconsistent with Okun's Law.

d. Each must equal the domestic rate of inflation so that AS does not shift and the relative competitiveness of domestic goods does not change.

e. I choose not to answer this question.

Correct answer d: Each must equal the domestic rate of inflation so that AS does not shift and the relative competitiveness of domestic goods does not change

Exercise 2 (weight 25 %)

In this exercise you can, but you are not expected to use diagrams when answering these questions.

  a) In a model for the money market. Explain public's demand for money.
  b) What are instruments in direct control of the Central Bank?

c) Use the money market model to explain how a central bank can react to an increase in the public's money demand.
d) Define money growth targeting and its assumptions. Why was it abandoned in the 1990s?
e) Explain the Taylor rule and how it can be used to deal with the objectives of a Central Bank.
f) In March 2018 the Norwegian inflation target was lowered. Use the interest rate parity condition and the purchasing parity condition to discuss how this will affect the economy.

Answer: B & W 7th edition mainly chapter 9 and 10.

a) Public's demand for money is negatively related to the interest rate, which represents the cost of borrowing from commercial banks (fig 9.7). It is negative because the interest rate represents the opportunity cost of holding money. If the interest rate increase, the opportunity cost of holding money (no interest) increase. Also explained in equation 9.4. The curve shifts if there is a change in GDP.

b) Instruments are the policy rate that affects the interbank or money market interest rate, the supply of bank reserves by carrying out open market operations and the required reserve ratio. As shown in table 9.2 many countries do not use reserve ratio requirements.

c) If the public's demand for money increase, the demand curve shifts to the right. Then a central bank has different options. Either it can do nothing – then the interbank rate increase, or it can increase money supply by using instruments (lowering the policy rate and/or buying assets (securities). Here it is important to clarify how central banks can achieve any interest rate it chooses by supplying whatever amount of money the private sector wisher to hold at that rate (fig 10.3).

d) Money growth targeting implies forecasting GDP growth and allowing money to grow at a rate that delivers low inflation. The strategy of monetary targeting rests on two links. Assumption one: Money supply growth = monetary base growth if the money multiplier is stable (chapter 9). Assumption 2: Inflation = money growth – real GDP growth (as presented in chapter 5 and 10). It was abandoned in the 1990s because it was never clear which monetary stock should be targeted. It also became more and more difficult as the financial sector introduced new innovations. As a result of this, the money multiplier became highly variable. The instability of the public demand for money also made the link between money growth, inflation and GDP unusable as a guide to policy.

e) The Taylor rule summarize how a Central Bank deal with the two objectives – inflation and output stabilization. $i = \bar{i} + a \cdot \pi_{gap} + b \cdot Y_{gap}$ The equation states that the interest rate increase above the neutral or natural interest rate both if an inflation gap or if an output gap. The importance of each factor is described by then parameters a and b respectively.

f) From low interest rates and increasing economic growth, lowering the inflation target increased the assumptions that higher interest rates will come earlier than before excepted. This would then in the short run according to the interest rate parity condition (chapter 12) lead to an appreciation of Norwegian kroner. In the long run using the purchasing power parity (chapter 5), Norwegian kroner should appreciate because of lower inflation compared to foreign inflation. Assuming everything else constant.

Exercise 3 (weight 25 %)

In this exercise you can, but you are not expected to use diagrams when answering these questions.

a) Define the real exchange rate, what do you call it if the real exchange rate increase and explain reasons why this can happen.
b) Explain how the example from a), a higher real exchange rate, can affect output according to Keynesian assumptions.
c) Define the IS curve and explain what determines the slope.
d) Define the Keynesian multiplier and explain how a change in the multiplier affects the slope of the IS curve.
e) Define the TR curve (Taylor rule) and use the IS TR model (ignoring how the exchange rate can influence financial flows) to discuss the effect of a reduction in Government taxes.
f) In 2008-9 (the global financial crisis), GDP in many countries dropped dramatically. Use the same IS TR model to discuss this case and explain in what way the model does not hold.

Answer: B & W 7th edition mainly chapter 11.

a) B & W 7th edition chapter 5: The real exchange rate = the cost of foreign goods in terms of domestic goods. A higher real exchange rate = real appreciation and could be caused by either higher nominal exchange rate (British Term = units of foreign currency per one unit of domestic currency) and/or if the domestic inflation rate is higher than the foreign inflation rate.
b) B & W 7th edition chapter 11: An appreciation affects net exports (exports – imports) in a negative way because it reduces the competitiveness of domestic firms. More imports because these goods become cheaper and less exports because our goods become more expensive in foreigners' eyes. A reduction in net exports reduce aggregate demand and therefor total output.
c) The IS curve = for given values of exogenous variables (everything else constant), it represents combinations of the nominal interest rate and real GDP (Y) that are consistent with goods market equilibrium. The IS curve slops downward in a diagram

with real GDP on the horizontal axis and nominal interest rate on the vertical axis because a reduction in the interest rate leads to an increase in investment spending, which in turn leads to an increase in equilibrium output.

d) Keynesian multiplier = a ratio indicating the effect of increases in exogenous components of aggregate demand on total aggregate demand. First of all, the Keynesian multiplier depends on the marginal propensity to consume. The higher the propensity, the higher the multiplier. Other factors that increase the multiplier are if taxes and/or the propensity to import, are lowered. The slope of the IS curve becomes flatter, the higher the Keynesian multiplier.

e) The TR curve is a simple description of how central banks set the interest rate in response to output fluctuations and to deviation of inflation from its desired rate. It is explained in equation 11.11 and equation 11.12 that is used in the model in chapter 11. A reduction in Government taxes (an expansionary fiscal policy) will increase aggregate demand (shift IS curve to the right) because a reduction in taxes, increase disposable income and private consumption. This leads to higher output via the Keynesian multiplier, but also to higher interest rates because of the reaction from the Central Bank, to the output expansion (fig 11.12a).

f) The drop in output can be explained by shifting the IS curve to the left, but this shift was so large that the point meeting the TR curve should indicate a huge negative interest rate. The Taylor rule assumes that the Central Bank can choose any interest rate they please, but the global crisis showed that central bankers cannot always do that. Banks can experience negative interest rates when dealing with Central Banks, but the nominal interest rate charged to household and firms cannot fall below zero. A negative nominal interest rate would mean that depositors at banks would actually pay for the privilege. If GDP drops as much as in 2008-9, Central Banks cannot reduce the interest rate as much as their policy preferences would indicate. Using the model this can be explained by a TR curve starting out horizontal along the horizontal output curve, before it slops upward (fig 11.14). The topic is also discussed in chapter 10.4.4. Positive if students mention **Zero Lower Bound**: a situation where a central bank has reduced its policy interest rate to 0% and therefore cannot go lower and **quantitative easing**: the strategy for many Central Banks to conduct large-scale open market purchases, directly in financial assets markets.