



Department of Economics

**Course name:** Intermediate Macroeconomics  
**Course code:** EC2201  
**Examiner:** Lars Calmfors  
**Number of credits:** 7,5 credits  
**Date of exam:** 7 December  
**Examination time:** 5 hours (09:00-14:00)

**Write your identification number on each paper and cover sheet (the number stated in the upper right hand corner on your exam cover).**

**Use one cover sheet per question.** Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked. **No aids are allowed.**

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The exam consists of 5 tasks. Tasks 1 and 4 are worth 20 points each, tasks 2 and 3 are worth 25 points each and task 5 is worth 10 points – 100 points in total. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

**Only students who have NOT received a course credit from the seminar exercises should do task 5. Students who have received a course credit should not do task 5 (and cannot get any extra points from doing it).**

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Your results will be made available on your “My Studies” account ([www.mitt.su.se](http://www.mitt.su.se)) on Tuesday 23 December at the latest.

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**Good luck!**

### Question 1 (Maximum 20 points)

Give short answers (maximum two pages per question).

- (a) Use the sticky-price model in Mankiw to derive the aggregate supply curve according to which the deviation of actual output from its equilibrium (natural) level is proportional to the deviation of the actual price level from the expected price level (the expectational error). (Maximum 5 points)
- (b) What is meant by the Fisher effect? Show how the effect can be derived from the interest rate parity and purchasing power parity conditions. (Maximum 5 points)
- (c) What is meant by a liquidity trap? Use the interest rate parity condition to show how the exchange rate is determined in a liquidity trap. (Maximum 5 points)
- (d) Explain what is meant by Ricardian equivalence. Which assumptions must be fulfilled for Ricardian equivalence to hold? (Maximum 5 points)

### Question 2 (Maximum 25 points)

Use the AA-DD-model in Krugman-Obstfeld-Melitz to answer the following questions. Make sure that you explain the economic mechanisms in addition to using diagrams and mathematics.

- (a) Assume that there is a *temporary* increase in government expenditure. How are the nominal and real exchange rates, output, the price level and the interest rate affected in the *short run* under a *flexible* exchange rate? (Maximum 5 points)
- (b) How are the nominal and real exchange rates, output, the price level and the interest rate affected in the *short run* by a *temporary* increase in government expenditure under a *fixed* exchange rate? (Maximum 5 points)
- (c) Assume now that there is a *permanent* increase in government expenditure? How are the nominal and real exchange rates, output, the price level and the interest rate affected in the *short run* under a *flexible* exchange rate? How does the short-run equilibrium in this case differ from the one in (a)? (Maximum 5 points)
- (d) How are the nominal and real exchange rates, output, the price level and the interest rate affected in the *short run* by a *permanent* increase in government expenditure under a *fixed* exchange rate? Compare the short-run equilibrium in this case with the short-run equilibria in (b) and (c). (Maximum 5 points)
- (e) How are the nominal and real exchange rates, output, the price level and the interest rate affected in the *long run* by a *permanent* increase in government expenditure under a *fixed* exchange rate? (Maximum 5 points)

**Question 3 (Maximum 25 points)**

Use the Solow model to answer the following questions.

- (a) Take the simplest version of the model without both population growth and technical progress. Analyse and characterise the steady state. (Maximum 5 points)
- (b) Derive the golden-rule level of capital per worker in the model. (Maximum 5 points)
- (c) Analyse the consequences for different generations of attaining the golden-rule level of capital per worker if the initial capital stock is above the golden-rule level. (Maximum 4 points)
- (d) Analyse the consequences for different generations of attaining the golden-rule level of capital per worker if the initial capital stock is below the golden-rule level. (Maximum 4 points).
- (e) Analyse and characterise the steady state of the Solow model in a situation where we have both population growth and technical progress. (Maximum 7 points).

**Question 4 (Maximum 20 points)**

During the euro crisis there were severe government debt crises in several countries in the euro area. Discuss how government debt as a share of GDP can get out of control when a country starts with a high government debt ratio and a primary fiscal deficit. Discuss various ways of dealing with such a situation.

**Task 5 (Maximum 10 points)**

**THIS TASK SHOULD BE SOLVED ONLY BY THOSE WHO DO NOT HAVE A COURSE CREDIT FROM THE SEMINAR EXERCISES. THOSE WHO HAVE A CREDIT DO NOT OBTAIN ANY POINTS FROM THIS TASK.**

The money supply is determined by the behaviour of the central bank, the banking system and depositors. Derive an equation showing how the money supply depends on the monetary base, the reserve-deposit ratio and the currency-deposit ratio.