Department of Economics

Course name:	**Intermediate Macroeconomics**
Course code:	**EC2201**
Type of exam:	**Regular**
Examiner:	**Lars Calmfors**
Number of credits:	**7,5 credits**
Date of exam:	**Wednesday 31 October 2012**
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.**

The exam consists of 5 tasks. Tasks 1 and 3 are worth 20 points each, tasks 2 and 4 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).

Your results will be made available on your "My Studies" account (www.mitt.su.se) on Wednesday 21st of November at the latest. The exam review will take place on Tuesday 27th of November at 10:00-12:00 in E10.

Good luck!

Task 1 (Maximum 20 points)

Give short answers (maximum two pages per question).

(a) Assume that we have an open economy where output is fixed. Consumption depends on real disposable income (output minus taxes). The real rate of interest is exogenously determined in the world capital market. Net export is initially zero. Analyse mathematically and diagrammatically how net export is affected by an increase of taxes. How would the analysis change if Ricardian equivalence were to hold? (Maximum 5 points)

(b) Take the simplest version of the Solow model and show how output per capita and capital per capita is determined in a steady state. How are these variables affected if the savings rate falls? (Maximum 5 points).

(c) Assume that a country has a fixed exchange rate. Assume furthermore that the fixed exchange rate is credible (i.e. the current fixed exchange rate is assumed to hold also in the future) and that output is constant. Explain how monetary policy must be conducted if the foreign interest rate rises. How must monetary policy be conducted if the foreign interest rate is constant but output increases. (Maximum 5 points)

(d) Explain what is meant by the *automatic stabilisers* of fiscal policy. How is the size of automatic stabilisers computed? What are the advantages (and possible disadvantages) of relying on the automatic stabilisers rather than on discretionary fiscal policy? (Maximum 5 points)

Task 2 (Maximum 25 points).

Mankiw sets up a dynamic model of aggregate demand and aggregate supply. It consists of the following equations:

$$Y_t = \bar{Y}_t - \alpha(r_t - \rho) + \varepsilon_t \qquad \text{Aggregate demand}$$

$$r_t = i_t - E_t \pi_{t+1} \qquad \text{Real rate of interest}$$

$$\pi_t = E_{t-1}\pi_t + \phi(Y_t - \bar{Y}_t) + \nu_t \qquad \text{Phillips curve}$$

$$E_t \pi_{t+1} = \pi_t \qquad \text{Adaptive expectations}$$

$$i_t = \pi_t + \rho + \theta_\pi(\pi_t - \pi_t^*) + \theta_y(Y_t - \bar{Y}_t) \qquad \text{Taylor rule}$$

where

Y = output

$\bar{Y}$ = natural (equilibrium) level of output

r = real rate of interest

ρ = natural (equilibrium) real rate of interest

ε = demand shock

i = nominal rate of interest

v = supply shock

π^* = inflation target

α, ϕ, θ_π and θ_π are parameters.

E is the expectations operator (such that $E_{t-1}\pi_t$ for example means the expectation of inflation in period t held in period t-1.

(a) Derive the equation for the dynamic aggregate supply (DAS) curve (Help: Combine the Phillips curve with the assumption that inflation expectations are adaptive.) Draw the curve. (Maximum 4 points)

(b) Derive mathematically the dynamic aggregate demand (DAD) curve. (Help: Combine all the equations except the Phillips curve). Draw the curve. (Maximum 8 points)

(c) Use the DAS and DAD curves to analyse the dynamic response of the economy to an adverse supply shock during one period. (Maximum 7 points)

(d) Discuss how the central bank's preferences for stabilisation of inflation versus stabilisation of output affect how inflation and output respond to a supply shock. (Maximum 6 points)

Task 3 (Maximum 20 points)

Use the AA-DD-model in Krugman-Obstfeld-Melitz to answer the following questions.

(a) Assume first that there is a *temporary* increase in government expenditures. How is the exchange rate, output, the price level and the interest rate affected in the short run? (Maximum 6 points)

(b) How is the exchange rate, output, the price level and the interest rate affected in the long run by a temporary increase in government expenditure? (Maximum 3 points)

(c) Assume now that there is a *permanent* increase in government expenditure? How are the exchange rate, output, the price level and the interest rate affected in the short run? How does the short-run equilibrium in this case differ from the one in (a)? (Maximum 8 points)

(d) How are the exchange rate, output, the price level and the interest rate affected in the long run by a permanent increase in government expenditure? (Maximum 3 points)

Task 4 (Maximum 25 points)

Several countries in the euro area struggle with rapidly increasing government debt. Explain how a country with a large primary fiscal deficit and high initial government debt (relative to GDP) can end up in a vicious circle where the government debt ratio spirals out of control. Discuss the pros and cons of different remedies for such a situation: fiscal austerity (tax rises and government expenditure cuts), financial aid from other euro area countries and real depreciations.

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.

Assume that the consumption of a household is based both on current income and (expected) future income. Apply Irving Fisher's two-period model and derive the household's intertemporal budget constraint showing how consumption in period 2 depends on incomes in the two periods, consumption in period 1 and the real interest rate. Draw the intertemporal budget constraint in a diagram. Illustrate an equilibrium where the household saves in period 1.