Queen's University
Department of Economics
ECON 222
Macroeconomic Theory I
Winter Term 2009/10

Sections A and B
Midterm Examination
3rd March 2010

Please read all questions carefully. Record your answers in the answer booklet provided. You are encouraged to draw diagrams to support your answers. Please label the axis and lines or curves on your diagrams.

The exam has two parts. Marks will be awarded also on the basis of the logical arguments given to support your answers.

Part A consists of long questions. Do **TWO** of the *three* questions. Each question is worth 30 marks for a total of 60 marks.

Part B consists of short questions. Do **TWO** of the *three* questions. Each question is worth 20 marks for a total of 40 marks.

The exam is **80 minutes** long. Budget your time carefully. Hand calculators (non programmable) are permitted for this exam. Upon completion of your exam, only hand in the answer booklet clearly labeled with your student number and class section. Any cheating attempt will be sanctioned with the toughest possible punishment.

PART A: Long Questions.

Answer any **TWO** of the following *three* questions. Each question is worth 30 marks for a total of 60 marks. *Answers without any explanations will receive zero marks.*

Question A.1: Equilibrium in the Labor Market (30 Marks)

Consider a developing economy, which produces only agricultural goods. Its labor market is characterized by the following demand ($N^D(\omega)$) and supply ($N^S(\omega)$): $\omega = 50 - N^D$ and $\omega = N^S$.

a) Represent the aggregate labor market in a graph. What are the equilibrium level of employment and the wage rate that clears the labor market?

b) Consider what would happen to the level of employment and the wage rate in these two extreme cases (keeping the same supply curve as before):

i) labor demand is represented by $\omega = 25$;

ii) labor demand is represented by $N^D = 25$.

Which side of the market is affecting the labor market outcomes in these two cases?

Consider now a different economy, where there are two sectors: agriculture and manufacturing. The labor market is now characterized by the following demands and supply: $N_A^D(\omega)$, the labor demand in the agriculture sector, is represented by $\omega = 25 - N_A^D$; $N_M^D(\omega)$, the labor demand in the manufacturing sector, is represented by $\omega = 20 - 2N_M^D$; $N^S(\omega)$, the labor supply, is represented by $\omega = N^S$.

c) Represent the labor market in a graph. What are the equilibrium levels of employment and the wage rate that clear the labor market in this economy? How much labor is demanded in each sector?

d) Consider what would happen to the level of employment and the wage rate in this economy if labor supply were to decrease, becoming $\omega = 2N^S$.

Question A.2: Savings, Investment, and Current Account (30 Marks)

Consider the Country of Bulgaria as initially being a closed economy. You have the following information on desired consumption (C^d), desired investment (I^d), government purchases (G), output (Y), and the marginal propensity to consume (c_Y), while r denotes the real interest rate:

$$\begin{aligned} C^d &= 10 + c_Y Y - 200r \\ I^d &= 60 - 600r \\ G &= 20 \\ Y &= 100 \\ c_Y &= 0.5 \end{aligned}$$

(a) What are the equilibrium values of C^d, I^d, and r? Show your results in a graph representing the goods market equilibrium.

(b) Suppose now that Bulgaria becomes a small-open economy, and that the world interest rate is $r^w = 10\%$ (assume that the Net Factor Payment is $NFP = 0$). What are the equilibrium values for C^d, I^d, and the current account CA? How much is the absorption for this economy?

(c) What value for the world interest rate r^w would give a capital account balance (KA) equal to $KA = -10$?

Question A.3: The Determination of Consumption (30 Marks)

The average person in Ireland divides consumption between two periods, the present and the future. Average current real income is €28,000 while average future real income €26,000. The average Irish person has about €5,000 in assets (in real terms) available for either current consumption or saving. The nominal rate of interest faced by consumers is determined by the European Central Bank (ECB) and is currently set at 8%. Inflation in Ireland is running at 4%.

(a) For the average Irish consumer, derive expressions for and calculate:

1. the present value of their lifetime resources;
2. the maximum amount of real consumption that they could enjoy in the future.

(b) Given that the slope of the average consumer's utility function is $-\frac{23}{27}\left(\frac{c^f}{c}\right)$, calculate their levels of present and future consumption. Verify your results by ensuring that the present value of lifetime consumption is equal to the present value of lifetime resources. Are the Irish on average savers?

(c) While the Irish economy is at full employment, the rest of the euro area is not doing well and the ECB decides to lower the nominal interest rate from 8 to 6%. With Irish inflation unchanged, calculate the new levels of present and future consumption. For the Irish consumer, does the substitution dominate the income effect?

(d) Afraid that the economy may be overheating in the present period, the Irish government applies a lump sum tax on current incomes of €500, aimed at lowering present consumption. At the same time, to placate angry taxpayers, the government promises to refund the €500 in the future period, with interest. Would this policy be effective in lowering current consumption? When answering, be sure to explain your reasoning.

PART B: Short Questions.

Answer any **TWO** of the following *three* questions. Each question is worth 20 marks for a total of 40 marks. *Answers without any explanations will receive zero marks.*

Question B.1: Measuring GDP (20 Marks)

(a) Discuss the three approaches to measure the amount of current economic activity. Are they equivalent for practical purposes?

(b) State the definition of GDP according to the *expenditure approach* and comment briefly on each of its components.

Question B.2: Current Accounts (20 Marks)

The United States has a very large current account deficit, with most commentators calling it "chronic". Its counterpart is a large surplus in Asia (as a group). Partly in response, the US government decides to lower its large budget deficit by cutting spending (leaving taxes unchanged). Starting from the initial position (US current account deficit, Asian current account surplus) show graphically what will be the effect of the policy on current accounts in the two economies as well as the world rate of interest. You can think of these two economies as comprising the world.

Question B.3: Investment (20 Marks)

The Ontario government is moving to a harmonised sales tax (applied to all final purchases of goods and services). One of the effects is that taxes on the purchases of capital goods will be eliminated. What will be the affect of this policy on investment? Use a graph as well as the equation showing relationship between the capital stock and investment to illustrate how you arrive at your conclusions.