Midterm #2

There are four regular questions and one extra credit question. Answer Questions 1 and 2 and either 3 or 4 (but not both). Extra credit questions are low value – answer these questions only if you have time after answering the main questions. Answers should be thorough, but should not contain information not relevant to the question asked. Be careful to show your work and the basis for any calculations; explain any diagrams. With all calculations and presentations of answers, pay careful attention to the units.

1. The 1918 flu pandemic killed 18 million people worldwide. Some experts are afraid that the H1N1 flu (i.e., swine flu) might become pandemic. Consider the economic effects if it were to kill large numbers of working age people. Answer by assuming that the economy is, and remains, at full employment and, using production/labor supply-and-demand analysis, explain the effect that such a loss would have on: a) the real wage rate; b) the real profit rate (i.e., the real rental rates); c) GDP.

2. Let the aggregate demand side of a closed economy (i.e., one without imports or exports) be described as follows:

\[
C = 0.8(Y - T) \\
I = 500 - 20rr \\
T = tY
\]

The variables are defined as we used them in lecture. In particular \( rr = \) the real rate of interest (and is measured in percentage points in the investment equation – e.g., 8 not 0.08 would represent 8 percent). Assume initially that \( G = 1500, \) the market rate of interest (\( r \)) is 4.5 percent, and the expected rate of inflation (\( \hat{p}^e \)) is 2 percent, and the marginal tax rate (\( t \)) is 0.4. (In the questions below report monetary values to the nearest unit (zero decimal places) and other values to three decimal places.)

(a) Using the initial assumptions, what are the implied values of GDP, taxes, investment, and consumption. Is the budget balanced? If not, what is the surplus or deficit?
(b) All other things equal, what is the effect of an increase of 50 in government spending on aggregate demand and the government deficit?
(c) What would the effect be on demand of an increase of 50 in government spending if the tax rates were adjusted to keep the budget balanced? What tax rate would be necessary to achieve a balanced budget?
(d) All other things equal, what would be the effect on aggregate demand of a 1 percentage point increase in market interest rates?
(e) Under the initial assumptions, derive the equation of the IS curve. Sketch the equation and label its slope and the value at which it crosses at least one of the axes.
Answer only one of questions 3 and 4.

The following information is used in questions 3 and 4.

Narnia is a small country reached through an old wardrobe. Its currency is the Aslan (symbol Å). The following table presents some key economic data for Narnia at its latest two cyclical peaks.

<table>
<thead>
<tr>
<th>Date</th>
<th>GDP (Åmillions)</th>
<th>Employment</th>
<th>Labor Force</th>
<th>Unemployment Rate (percent)</th>
<th>Capital Stock (Åmillions)</th>
<th>Capacity Utilization Rate (percent)</th>
<th>Population 16 years and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>1,643</td>
<td>58,618</td>
<td>60,934</td>
<td>3.8</td>
<td>5,602</td>
<td>82</td>
<td>103,068</td>
</tr>
<tr>
<td>2009</td>
<td>2,079</td>
<td>61,044</td>
<td>62,866</td>
<td>2.9</td>
<td>6,581</td>
<td>91</td>
<td>107,056</td>
</tr>
</tbody>
</table>

If you answer question 3 do not answer question 4.

3. (Report final answers for growth rates in percentage points to two decimal places.)
   (a) What is meant by a balanced-growth path (“speed limit”)?
   (b) Write the formula for the rate of balanced growth and using appropriate data calculate its value for Narnia.
   (c) Qualitatively (i.e., without calculations) explain how an unusually rapid increase in the stock of capital (e.g., by a sudden increase in the rate of investment) would affect the growth rate of GDP in the short run and the long run.
   (d) Is the actual average rate of growth of GDP in Narnia faster or slower than the speed limit?

If you answer question 4 do not answer question 3.

4. (a) Assume that the economy is governed by a Cobb-Douglas production function and the labor’s share in output is 0.70. Using growth accounting, determine how much growth in Narnia is attributable to capital, labor, and total factor productivity. (Report final answers to the nearest percentage point (zero decimal places).)
   (b) Using the actual inputs into production in 2009, calculate total-factor productivity (to two decimal places).
   (c) Write the formula defining potential GDP and calculate its value for 2009 (you may use the value of total-factor productivity calculated in (b). (Report final answers to the nearest Aslan (zero decimal places).)
   (d) What is the value of GDP as a percentage of potential GDP (i.e., scaled output) for 2009? (Report final answers to the nearest percentage point (zero decimal places).)

4. Extra Credit: Only do this question when you have finished the others.
   (a) Within 2/10ths of percentage point what are the most recent values for the rate of GDP growth and the rate of unemployment.
   (b) President Obama recently visited which country to talk about trade, debt, and the exchange rate?
   (c) Which house of Congress has passed a health-care bill?
   (d) Approximately what fraction of GDP do health expenditures represent?