ECON 201: Principle of Macroeconomics

Fall 2004    Bellas
Midterm

You have two hours and thirty minutes to complete this exam. Answer all questions, explain your answers, label axes and curves on graphs and do your own work. Fifty points total, points per part indicated in parentheses.

1. The principle of comparative advantage is important in economics. Consider the example of two farmers, Angus and Malcolm, who are growing oats and cane. In one year, they have the following production possibilities:

<table>
<thead>
<tr>
<th>Oats</th>
<th>Cane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angus</td>
<td>8</td>
</tr>
<tr>
<td>Malcolm</td>
<td>12</td>
</tr>
</tbody>
</table>

That is, Angus can grow 8 units of oats or 12 units of cane or any linear combination of the two.

A. Calculate the opportunity cost of each activity for each person. (2)

Angus: $OC_{oats} = \frac{12}{8} = \frac{3}{2}$, $OC_{cane} = \frac{8}{12} = \frac{2}{3}$

Malcolm: $OC_{oats} = \frac{6}{12} = \frac{1}{2}$, $OC_{cane} = \frac{12}{6} = 2$

Each person requires four units of oats to stay alive and, after that, would like to have as much cane as possible.

B. If they do not trade, how much cane can each person have? (2)

Angus does 4 O, taking 4/8 = ½ of his time and leaving ½ of his time in which he can raise ½ $\times$ 12 = 6 units of cane.

Malcolm does 4 O, taking 4/12 or 1/3 of his time, leaving 2/3 of his time in which he can raise 2/3 $\times$ 6 = 4 units of cane.

C. If they specialize and trade, what is the total gain in terms of units of cane? (2)

Malcolm specializes in oat production and does 8 O, taking 8/12 = 2/3 of his time and leaving him 1/3 of his time to raise cane in which he can do 1/3 $\times$ 6 = 2 units of cane.

Angus specializes in raising cane and does 12 units.

Total cane is 14 units, a gain of 4 units of cane.

D. At what rate might they trade oats for cane? (2)

Without trade, Angus had 4O and 6C while Malcolm had 4O and 4C.

With trade, Angus will make 12 C, which he will trade for oats. He will be willing to give Malcolm up to 6 C for 4 O. Malcolm will make 8O and 2C. He will give Angus 4O but will want at least 2C in exchange.

So, 4O will be exchanged for between 2C and 6C.
2. One of the concepts we discussed was a production possibilities frontier (PPF). Imagine an economy that produces bells and whisky. What would be the impact of the following events on the PPF for this economy?

A. New technology from Australia allows more bells to be made using the same inputs as before. (2) 
*This will increase the maximum number of bells that may be produced without affecting the maximum amount of whisky that may be produced.*

B. Government tax reforms allow the economy to operate more efficiently than it had before. (2) 
*This will improve efficiency without actually shifting the PPF.*
3. Show the effect of the following events on the market for labor in the U.S.

The thing that a lot of people got wrong on this question is that it asked about the market for labor in the U.S., not the AS/AD model or the market for anything else or the market for labor everywhere.

A. Cultural changes result in a large number of women leaving the workforce. (2)

![Graph showing reduction in supply, quantity falls and wages rise.]

B. New trade laws make it more difficult for U.S. firms to outsource work to other countries. (2) Increase in demand for labor in the U.S., wages and quantity rise.

![Graph showing increase in demand for labor in the U.S., wages and quantity rise.]

C. A large influx of foreign investment lowers interest rates and allows firms to make large investments in computers, machinery and other capital. (2)

Depending on your view of the world, I was willing to accept either the demand for labor rising (because capital increases the marginal product of labor) or falling (in the short run capital may reduce demand for labor), but not a change in the supply of labor.
4. What’s the difference between gross national product (GNP) and gross domestic product (GDP)? Please be very clear in your answer. (3)

*GNP is the value of final goods and services produced in a year by domestically owned firms, regardless of where it is produced.*

*GDP is the value of domestically produced final goods and services in a year, regardless of what firm produces them.*

5. Show the effect of the following events on the AS/AD model.

A. Higher interest rates make it more costly for households to borrow. (3)  
*Decrease in aggregate demand.*

B. New technological advances make almost every business more efficient. (3)  
*Increase in aggregate supply.*
6. In an AS/AD model with both a short run aggregate supply (SRAS) and a long run aggregate supply (LRAS) curve, show and explain how attempting to push unemployment too low simply leads to inflation in the long run. (3)

If unemployment is pushed too low, perhaps due to an increase in government spending or a tax cut, the low unemployment rate will put upward pressure on wages. As wages rise, aggregate supply will contract, shifting the SRAS curve up and leading to higher prices and a level of real GDP that moves back to the LRAS/full employment level.
7. The following numbers describe the price level in an economy:

<table>
<thead>
<tr>
<th>Year</th>
<th>Price Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>90</td>
</tr>
</tbody>
</table>

A. Calculate the rate of inflation from year 1 to year 2. (3)

\[
\text{inflation} = \frac{75 - 60}{60} = \frac{15}{60} = 0.25 \text{ or } 25\%
\]

B. Did the inflation rate increase or decrease from the period of year 1 to 2 to the period of year 2 to 3? (3)

\[
\text{inflation} = \frac{90 - 75}{75} = \frac{15}{75} = 0.20 \text{ or } 20\% \text{ Inflation decreased.}
\]

C. The figures shown above were all calculated using the same set of goods. How would the calculated inflation rates change if the set of goods were allowed to change as consumers’ consumption patterns changed? (3)

*Assuming that consumers substitute from goods that rose a lot in price to goods that rose less in price or fell in price, the calculated inflation rate would be less if the basket of goods was allowed to change.*
8. The following numbers describe nominal GDP (NGDP) and price level in an economy.

<table>
<thead>
<tr>
<th>Year</th>
<th>NGDP</th>
<th>Price Level</th>
<th>Real GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>100</td>
<td>50</td>
<td>( \frac{100}{50} \times 100 = 200 )</td>
</tr>
<tr>
<td>2000</td>
<td>180</td>
<td>100</td>
<td>( \frac{180}{100} \times 100 = 180 )</td>
</tr>
</tbody>
</table>

A. A major politician, running for re-election, points out that GDP is up 80% over the past ten years, evidence of her excellent record on the economy. Comment on this statement. (3)

*This is a bit silly because real GDP actually fell by about 10%.*

B. In terms of the AS/AD model, which type of shift is consistent with the above data? (3)

*This is consistent with a decrease in AS*

C. Speculate about what happened to real per capita GDP over this period. (3)

*You can’t say for sure because you don’t know how population changed, but if population grew or stayed the same or fell by less than 10%, then real per capita GDP fell over this period.*
9. At the end of the lecture notes on economic growth, a table is given that was produced by
the group Transparency International listing their assessment, based on survey information,
of how transparent different economies around the world are. Economies with lots of
corruption and confusing or unclear restrictions on business ranked low, while those with
clear processes and little or no corruption ranked high. Explain why this table was at the end
of lecture notes on economic growth. (2)

*Capital accumulation is important to economic growth, but this usually requires investment.*
*Investors can choose the country where they want to make their investments and will
generally prefer countries where processes are transparent and the rule of law prevails.*