AP Macroeconomics Unit 2 Review Session

Business Cycles

1. What is the difference between economic expansion as part of the business cycle and long-run economic growth?
   Short-run when actual output is above potential output; long-run is an increase in potential output.

2. In the beginning of 2008, suppose the population of Funland was 2 million people and the level of real GDP, or aggregate output, was $40 million. During 2008 population increased by 3%, while real GDP increased by 3%. During 2009 population increased by 4%, while real GDP increased by 3%. During 2009 population increased by 4%, while real GDP increased by 3%. During 2010 population increased by 5%, while real GDP increased by 3%.

   a. Fill in the following table using the given information. (Round to two decimal places.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>$40 million</td>
<td>$41.2 million</td>
<td>$42.44 million</td>
<td>$43.71 million</td>
</tr>
<tr>
<td>Population</td>
<td>2 million</td>
<td>2.06 million</td>
<td>2.14 million</td>
<td>2.25 million</td>
</tr>
<tr>
<td>Real GDP per capita</td>
<td>$20 million</td>
<td>$20 million</td>
<td>$19.83 million</td>
<td>$19.42 million</td>
</tr>
</tbody>
</table>

   b. What do you know about this country’s standard of living between the beginning of 2008 and the end of 2010? Decreases Explain. Real GDP is not growing at the same rate as population.

Labor Force and Unemployment

**Labor Force = # of employed workers + # of unemployed workers**

**Unemployment Rate = # of unemployed workers x 100**

   Labor force

3. Suppose there are 12,000 people living in Macroland. Of those 12,000 people, 1,000 are either too old or too young to work. Of the remaining individuals, 5,000 are employed full time; 3,000 are employed part time, but wish to work full time; 1,000 are underemployed, but working full time; 1,000 are currently not working, but are looking for work, and the remainder are discouraged workers.

   a. What is the size of the labor force in Macroland? LF = 9,000 + 1,000
   b. What is the employment rate in Macroland? Employment Rate = 9,000/10,000 = 90%
   c. What is the unemployment rate in Macroland? Unemployment Rate = 1,000/10,000 = 10%
   d. What percentage of the population are discouraged workers? 1,000/12,000 = 8.33%
   e. Suppose you are told that 100 people find jobs for every $10,000 increase in the level of aggregate output in Macroland. If you wanted the unemployment rate to equal 8%, what would the change in output need to be? $20,000 for 200 people
   f. Suppose the government department in Macroland responsible for compiling unemployment statistics redefines the employed as including only those with full-time jobs. How does this change the unemployment rate, given the initial information? Unemployment rate would increase from 3,000 to 4,000

4. Suppose that there are 10,000 adults in Finlandia and that 5,000 of these adults are employed, 2,000 are unemployed, 500 are discouraged workers, and the rest are not currently working and/or not seeking employment.

   a. What is the labor force in Finlandia? LF = 5,000 + 2,000 = 7,000
   b. What is the unemployment rate in Finlandia? UR = 2,000/7,000 = 28.57%
   c. What would the unemployment rate be if discouraged workers were counted as unemployed workers? 2,500/7,500 = 33%
   d. How does the Bureau of Labor Statistics decision not to count discouraged workers as unemployed affect the calculated rate of unemployment in the US? Results in an understatement of unemployment rate in the U.S. economy.

Circular-Flow Model

5. Fill in the labels for the simple circular flow model.
1) households, 2) product market, 3) resource market, 4) firms, 5) income/wages, 6) expenses, 7) goods & services, 8) labor, land, & capital, 9) output, 10) input, 11) spending, 12) revenue

a. What three sectors of the economy are not included here?
   International market (rest of the world), government sector, financial market (banks)

Gross Domestic Product

6. You are given the following information about Macronesia: During 2011, the government of Macronesia spent $200 million on goods and services as well as $20 million on transfer payments, while collecting $150 million in taxes. During 2011 households paid $150 million in taxes, purchased goods and services worth $400 million, and received $800 million in the form of wages, dividends, interest, and rent. Firms in 2011 had $100 million of investment spending, and they borrowed or had stock issues of $170 million from the financial markets. In 2011 exports equaled $150 million while imports to this economy equaled $50 million. In the financial markets, there was foreign borrowing of $50 million and foreign lending of $20 million. GDP = C + G + I + (Xn – Im)
   a. What is the GDP in Macronesia for 2011? GDP = 400 + 200 + 100+ (150-50) = $800 million
   b. What is the value of disposable income in Macronesia in 2011? Disposable Income = income − taxes + transfers; $800 − 150 + 20 = $670 million
   c. What is the value of household saving in Macronesia in 2011? Household saving = disposable income − consumption spending; $670 − $400 = $270 million
   d. Is the government running a balanced budget in 2011? Explain. Balanced Budget = tax revenue − government spending − transfers; No. Government spending is $200 and net tax collections is $130. Macronesia is running a balanced deficit.
   e. Are flows of money into the product market and out of the product market equal? Explain. Yes. C + G + I + Xn = wages + dividends + interest + rent; expenditures = income
   f. Are flows of money into the factor market and out of the factor market equal? Explain. Yes, same reasoning above.
7. Does each of the following affect the calculation of GDP for Macronesia in 2011? If yes, indicate if this represents Consumption, Investment Spending, Government Spending, or Net Exports. If no, indicate why not.
   a. A new house is constructed in Macronesia during 2011. Yes, Investment Spending
   c. The government purchases new textbooks for schools in Macronesia during 2011. Yes, Government Spending
   d. Macronesia sells 100,000 pounds of beef to Neverlandia during 2011. Yes, Exports
   e. Judy tutors Ellen’s children in exchange for Ellen driving the carpool three days a week throughout 2011. No, no money is exchanged
   f. A candlemaker produces 500 candles during 2011 but only sells 200 candles that year; the other 300 candles are added to the candlemaker’s inventory. Yes, inventory is investment spending (will not be counted again when sold if in a later year)

8. Suppose you are told that Finlandia produces three goods: tennis shoes, basketballs, and lawn mowers. The following table provides information about the prices and output for these three goods for the years 2010, 2011, and 2012.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price of tennis shoes</th>
<th>Quantity of tennis shoes</th>
<th>Price of basketballs</th>
<th>Quantity of basketballs</th>
<th>Price of lawn mowers</th>
<th>Quantity of lawn mowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$50</td>
<td>100</td>
<td>$10</td>
<td>200</td>
<td>$100</td>
<td>10</td>
</tr>
<tr>
<td>2011</td>
<td>52</td>
<td>108</td>
<td>10</td>
<td>205</td>
<td>100</td>
<td>12</td>
</tr>
<tr>
<td>2012</td>
<td>54</td>
<td>115</td>
<td>10</td>
<td>212</td>
<td>110</td>
<td>12</td>
</tr>
</tbody>
</table>

a. Use the previous information to fill in the following table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$8,000</td>
</tr>
<tr>
<td>2011</td>
<td>$8,866</td>
</tr>
<tr>
<td>2012</td>
<td>$9,650</td>
</tr>
</tbody>
</table>

To calculate nominal GDP, multiply the price of each good times the quantity produced of that good and then sum together these products. For example, nominal GDP in 2010 = (price of tennis shoes)(quantity of tennis shoes) + (price of basketballs)(quantity of basketballs) + (price of lawn mowers)(quantity of lawn mowers) = $8,000

\[
\text{GDP Growth Rate} = \frac{\text{Year 2} - \text{Year 1}}{\text{Year 1}} \times 100
\]

b. What is the percentage change in nominal GDP from 2010 to 2011? \( \frac{8,866-8,000}{8,000} \times 100 = 10.83\% \)
c. What was the percentage change in nominal GDP from 2011 to 2012? \( \frac{9,650-8,866}{8,866} \times 100 = 8.84\% \)
d. Use 2010 as the base year to fill in the following table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Real GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$8,000</td>
</tr>
<tr>
<td>2011</td>
<td>$8,650</td>
</tr>
<tr>
<td>2012</td>
<td>$9,070</td>
</tr>
</tbody>
</table>

To calculate real GDP, multiply price of each good in base year (2010) times quantity of that good produced in a given year and then sum up together.

e. What was the percentage change in real GDP from 2010 to 2011? \( \frac{8650-8000}{8000} \times 100 = 8.13\% \)
f. What was the percentage change in real GDP from 2011 to 2012? \( \frac{9,070-8,650}{8,650} \times 100 = 4.86\% \)
g. Use 2010 as the base year to fill in the following table.

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP deflator</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
</tbody>
</table>
Price Indices

9. In Metro City, the price index is based upon a market basket consisting of 10 apples, 2 pizzas, and 5 ice cream cones. You are given prices for these three items for 2010, 2011, and 2012 in the following table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price of apples</th>
<th>Price of pizzas</th>
<th>Price of ice cream cones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$0.50</td>
<td>$4.00</td>
<td>$1.00</td>
</tr>
<tr>
<td>2011</td>
<td>0.52</td>
<td>3.85</td>
<td>1.10</td>
</tr>
<tr>
<td>2012</td>
<td>0.49</td>
<td>3.90</td>
<td>1.30</td>
</tr>
</tbody>
</table>

a. Fill in the following table using year 2010 as your base year.

Consumer Price Index (CPI) = (cost of basket/cost of basket in base year) x 100

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost of market basket</th>
<th>Price index value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$18.00</td>
<td>(18/18) x 100 = 100</td>
</tr>
<tr>
<td>2011</td>
<td>$18.40</td>
<td>(18.4/18.4) x 100 = 102.22</td>
</tr>
<tr>
<td>2012</td>
<td>$19.20</td>
<td>(19.2/18) x 100 = 106.67</td>
</tr>
</tbody>
</table>

Inflation Rate = \[\frac{\text{Year 2 CPI} - \text{Year 1 CPI}}{\text{Year 1 CPI}}\] x 100

b. Use the information you calculated in part (a) to calculate the rate of inflation between 2010 and 2011.
\[
\frac{(102.22 - 100)}{100} x 100 = 2.22\%
\]

c. Use the information you calculated in part (a) to calculate the rate of inflation between 2011 and 2012.
\[
\frac{(106.67 - 102.22)}{102.22} x 100 = 4.35\%
\]

10. The diagram below provides circular flow for the economy of Littleton.
Consumer spending (C) = $200 million
Investment spending (I) = $50 million
Spending on exports (X) = $20 million
Wages + profit + interest + rent = $320 million
Government borrowing = $60 million
Taxes = $20 million
Transfers = $10 million

a. What is the GDP of Littleton? Use income model = $320

b. What is the value of government spending (G) in Littleton’s economy?
Government borrowing + taxes = Government spending + transfers
60 + 20 = G + 10
G = $70 million

c. What is the value of imports in Littleton’s economy?
We know the value of GDP from answer (a), as well as the values of C, I, and X from the given information. In addition, answer (b) generated the value for G.
So, $320 = $200 + $50 + $70 + ($20 – Im)
Im = $20 million

d. What is the value of private savings in Littleton’s economy?
To find the value of private savings, remember that the inflow of funds into the household sector must equal the outflow of funds from this sector. Households receive funds from their selling of factors of production and these funds are equal to the sum of wages, profit, interest, and rent, or $320 million. In addition, households receive funds from the gov in the form of transfer payments ($10 million). So, the total amount of funds flowing into the household sector is $320 million. The flow of funds out of the household sector is the sum of consumer spending, taxes, and private saving. Because consumer spending and taxes are given in the information ($220 million), this enables us to calculate private savings as $330 – $220 = $110 million.

e. Is the rest of the world a net borrower or a net lender (in relation to Littleton)?
GDP + (borrowing and stock issues by firms) = (sum of wages, profits, interest, and rent) + investment spending. Because GDP is equal to the sum of wages, profits, interest and rent, this implies that borrowing and stock issues by firms must be equal to investment spending, or $50 million.