QUIZ 1: Macro – Winter 2011

Name: ______________________

Section Registered (circle one):       T 1:30       T 6:00       W 1:30

For Question 2: put final answers in the space provided. Calculators are allowed. Partial credit will be given to answers with an intuitive attempt at the correct procedure but a wrong answer. Answers with a totally incorrect attempt at the correct procedure (even if the answer is correct) will be given zero partial credit. You must show your work to get full credit!!!!

Question 1

True or False? (No explanation, 1 point each – 6 total)

a. If in 2011 I decide to clean my apartment by myself, while in 2010 I used to pay a cleaning company, measured GDP will be lower in 2011.

   TRUE. Non-market activities are not accounted in the GDP.

b. In 2011 Apple produces more I-Pad than it can sell and ends up with $100,000 I-Pad in its warehouse. This will not be accounted in the U.S. GDP of 2011 according to the expenditure method, because they are not consumed by final users.

   FALSE. This is a case of Inventories which will be accounted as Investment.

c. In 2011, my friend Gaia who lives in Dublin buys a computer at Best Buy in Chicago when she comes for a visit. This transaction will not be accounted as part of the U.S. GDP of 2011 according to the expenditure method.

   FALSE. This transaction will be accounted as Export.

d. The Bureau of Economic Analysis calculates the growth rate of real GDP. If they use a measure of inflation that overstates the effective inflation rate, they end up overestimating the real GDP growth rate.
FALSE. The BEA in fact underestimated the real GDP growth rate of 2010, given that (according to the approximated formula) real GDP growth rate = nominal GDP growth rate – inflation rate.

e. The unemployment rate measures the fraction of working age population that does not have a job.

FALSE. The unemployment rate measures the fraction of population in the labor force who does not have a job. People who are not actively looking for a job are not accounted as unemployed.

f. During the U.S. recessions of the last 40 years, unemployment rate has always increased and inflation decreased.

FALSE. It is true that unemployment rate typically increases during a recession, but inflation can go up or down and looking at the US history of the last 40 years, you can see recessions with high level of inflation (as in '74) or with low level of inflation (as in '81).

Question 2

The NBER declared that the US entered a recession in the fourth quarter of 2007 (more specifically December 2007). Below I report some data about the US economy from the Bureau of Economic Analysis. (The nominal GDP is in billions of US dollars and the price index is calculated with base year 2000.)

<table>
<thead>
<tr>
<th>Nominal GDP</th>
<th>Price Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-Q1</td>
<td>$13,510.9</td>
</tr>
<tr>
<td>2007-Q2</td>
<td>$13,737.5</td>
</tr>
<tr>
<td>2007-Q3</td>
<td>$13,950.6</td>
</tr>
<tr>
<td>2007-Q4</td>
<td>$14,031.2</td>
</tr>
<tr>
<td>2008-Q1</td>
<td>$14,150.8</td>
</tr>
<tr>
<td>2008-Q2</td>
<td>$14,294.5</td>
</tr>
<tr>
<td>2008-Q3</td>
<td>$14,412.8</td>
</tr>
<tr>
<td>2008-Q4</td>
<td>$14,264.6</td>
</tr>
</tbody>
</table>
a. Find the percentage change of US real GDP between the third quarter of 2007 and the fourth quarter of 2007 (when the recession started) using the approximated formula.
-- 4 points

With the approximated formula
% change of real GDP = % change of nominal GDP - % change in price index

Nominal GDP % change = \frac{(14,031.20 - 13,950.60)}{13,950.60} = 0.0058 = 0.58 %

Price index % change = \frac{(120.826 - 119.984)}{119.984} = 0.0070 = 0.7 %

Real GDP % change = 0.0058 - 0.0070 = -0.0012 = -0.12%

b. Find the percentage change of US real GDP between the third quarter of 2007 and the fourth quarter of 2007 using the exact formula. Is it a good approximation? Why? -- 4 points

Real GDP in 2007-Q3 = \frac{13,950.60}{119.984} = 116.2705

Real GDP in 2007-Q4 = \frac{14,031.20}{120.826} = 116.1273

Real GDP % change = \frac{(116.1273 - 116.2705)}{116.2705} = -0.0012 = -0.12%

The approximated formula is a very good approximation in this case, because the inflation rate is very close to 0!
c. Using the exact formula, find the percentage change of the real GDP between the fourth quarter of 2007 and the first quarter of 2008. – 4 points

We have already calculated above that real GDP in 2007-Q4 = 116.1273

Real GDP in 2008-Q1 = 121.613

Hence, you can calculate the growth rate of GDP

Percentage change in GDP between Q4 of 2007 and Q1 of 2008
= (116.3593 - 116.1273)/116.1273 = .0020 = .20%

.20%

d. What is the typical rule of thumb used to define a recession? In light of the results in questions (b) and (c), do you think that the NBER followed that rule to announce the current crisis? Why or why not? -- 4 points

The typical rule of thumb used by the NBER to define a recession is two consecutive quarters of negative real GDP growth rate. However, according to these data, the US did not exhibits two consecutive quarters of negative real GDP growth rate after the beginning of the current recession, given that real GDP declined from Q3 and Q4 of 2007, but slightly increased between Q4 of 2007 and Q1 of 2008 and between Q1 and Q2 of 2008. However, the NBER announced that a recession started in the last quarter of 2007 (specifically in December) because they looked at more indicators, such as employment, consumption, sales, that showed a significant slow-down of the economy.
Question 3

--- 4 points

Suppose that we want to calculate the market value of the economic activity generated by Company A and Company B in 2007. Company A sells computer components to Company B which produces computers. In 2007 Company A sells computers components to company B for the value of $2,000, pays wages to employees for $1,000 and pays taxes to the government for $300. In the same year, company B buys the computer components from A for $2,000, other computer components from a Japanese firm for $1,000, and pays $1,000 in wages to produce 4 computers. By the end of the year A sells the 4 computers for $1,000 each.

<table>
<thead>
<tr>
<th>Company A</th>
<th>Wages paid to employees</th>
<th>$1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenues from sales to B</td>
<td>$2,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company B</th>
<th>Wages paid to employees</th>
<th>$1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Components purchased from A</td>
<td>$2,000</td>
</tr>
<tr>
<td></td>
<td>Components purchased from Japan</td>
<td>$1,000</td>
</tr>
<tr>
<td></td>
<td>Revenues from sales to public</td>
<td>$4,000</td>
</tr>
</tbody>
</table>

Calculate the market value of the economic activity generated by Company A and Company B in 2007, showing that all three approaches seen in class give the same answer.

**Production Method:** value added of A + value added of B = 2,000 + 1,000 = 3,000

**Income Method:** wages + profits = 1,000 + 1,000 + 1,000 + 0 = 3,000

**Expenditure Method:** consumption – imports = 4,000 – 1,000 = 3,000

(It is also ok if you did it with the taxes mentioned in the text but not in the table)
In the Economist article “Measuring What Matters”, the journalist reports that Nicolas Sarkozy appointed a commission chaired by Stiglitz to capture “what people live by”. The journalist mentions that the committee divided its work in three parts. Describe what 1 of these 3 parts were about.
-- 4 points [Your answer should be no more than 1 short sentence!]

The first part of the commission deals with the standard criticisms about the measurement of GDP, such as the absence of non-market activity, depreciation, health care, education, …
The second part deals with measuring the “quality of life” beyond economic resources (an overall judgment about their life and moment-by-moment flows of feelings).
The third part deals with the well-being of future generations: their human capital will depend on investment in education and research today and their environment on today’s decisions.