**Economics 102**

**Summer 2013**

**Homework #3**

**Due July 9, 2013**

**Directions:** The homework will be collected in a box **before** the lecture. Please place your name, TA name and section number on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade. Please remember the section number for the section **you are registered,** because you will need that number when you submit exams and homework. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

Please remember to

* Staple your homework before submitting it.
* Do work that is at a professional level: you are creating your “brand” when you submit this homework!
* Not submit messy, illegible, sloppy work.

1. For each of the following scenarios determine the effect on GDP in 2013 of the described event. Then, explain the reasoning behind your answer.

a. Joe’s T-shirts produces 1000 t-shirts in 2012 and sells 800 of these t-shirts in 2012 for a price of $10 per t-shirt. In 2013 Joe’s T-shirts produces another 1000 shirts and sells 1200 t-shirts in 2013 for a price of $10 per t-shirt.

b. Marty’s Marketing in 2013 decided to expand the business and to do this it needed to raise financial capital. The company issued 100 shares of stock and sold these shares for $500 per share. The business expansion is slated to begin sometime in mid-2014.

c. Sammy and Joan live next door to each other and they each have two children that are under the age of five. During the week Sammy looks after Joan’s children and on the weekend Joan looks after Sammy’s children. The value of these childcare services is equal to $300 per week for each household. Sammy and Joan, recognizing that the value is equivalent for both of them, do not actually write each other a check in payment for the services and they do not record this income on their respective tax returns.

d. Harry and Megan live next door to each other and they each have two children that are under the age of five. During the week Harry looks after Megan’s children and on the weekend Megan looks after Harry’s children. The value of these childcare services is equal to $300 per week for each household. Harry writes Megan a check each week for fifty weeks (two weeks both households are on vacation) and Megan writes Harry a check each week for fifty weeks. Both Megan and Harry comply with all income tax regulations and social security regulations with regard to reporting this income.

e. Elizabeth has a desk she purchased in 1981 for $75 that was built in 1860. In 2013 she realized that the desk needed repair after years of heavy use. She took it in to “Dr. Phil”, a local furniture restorer, who re-glued and repaired the desk. The bill for this work was $140.64.

2. Suppose you are told that in the economy of Leesville that rent payments for land resources are equal to $150 million in 2010, interest payments for capital are equal to $125 million in 2010, consumer expenditures on goods and services are equal to $350 million in 2010, profits are equal to $50 million in 2010, government expenditures on goods and services are equal to $95 million in 2010, and net exports are equal to -$20 million in 2010. You also know that in Leesville in 2010 that wage income was two times bigger than the level of investment spending on goods and services during that same year. Determine the level of GDP in Leesville in 2010, the level of wage income in 2010, and the level of investment spending in 2010. In determining these levels verbally describe how you are finding these answers and in your verbal description make specific reference to the definition(s) of GDP you are using to find the answers.

3. You are told the following information about the economy of Somewhere. Consumers in this economy during 2012 make purchases of $600,000 on goods and services. Included in these purchases are purchases of $50,000 of French wine (produced in 2012 in France and not produced in Somewhere), and $30,000 worth of mangoes grown in Costa Rica. Consumers in Somewhere also purchase $1,200,000 worth of newly constructed homes during 2012. Acme Metals, a company in Somewhere specializing in the manufacture of refrigerator units, produces $100,000 worth of these units in 2012. Acme sells $40,000 worth of these units to customers located outside of Somewhere, sells $50,000 of these units to business customers in Somewhere, and the remaining units are kept as inventory for Acme. In 2012 government purchases in Somewhere totaled $100,000 with $20,000 of these purchases coming from Elsewhere.

There is no other data to consider when computing the GDP of Somewhere for 2012. For each question below show how you got your numerical value.

a. Given the above data, what is the level of consumer expenditure in Somewhere in 2012?

b. Given the above data, what is the level of government expenditure in Somewhere in 2012?

c. Given the above data, what is the level of investment expenditure in Somewhere in 2012?

d. Given the above data, what is the level of government expenditure in Somewhere in 2012? Duplicate to question (b): so just ignore this one.

e. Given the above data, what is the level of imports to Somewhere in 2012?

f. Given the above data, what is the level of exports to Somewhere in 2012?

g. Given the above data, what is the level of GDP in Somewhere in 2012?

4. Consider the community of Richville. There are two hundred people who live in Richville and your task is to answer the following set of questions based on the information below:

* In Richville there are 40 people who are less than 16 years old
* In Richville there are 30 people who are over 70 years old and are fully retired
* In Richville there are 15 people who are currently not working, are available to work, and have submitted job applications during the past four weeks
* In Richville there are 20 people who are currently not working, are available to work, but who have given up submitting job applications because they do not believe there is any work to be had in Richville
* In Richville there are 50 full-time college students who are not currently seeking work
* In Richville there are 25 people who are working part-time but who would like to work full-time
* The rest of the Richville population is over 16 years old and currently working

a. What is the number of employed people in Richville? Explain how you got your answer.

b. What is the number of unemployed people in Richville? Explain how you got your answer.

c. What is the labor force equal to in Richville?

d. What is the unemployment rate in Richville? Show how you found your answer.

e. How would the unemployment rate change in Richville if discouraged workers were counted as unemployed workers? Verbally describe how the unemployment rate would change and then calculate a numeric value based on this change in the definition of unemployment.

f. How would the unemployment rate change in Richville if part-time workers were counted as unemployed workers rather than employed workers? Verbally describe how the unemployment rate would change and then calculate a numeric value based on this change in the definition of unemployment.

5. For each of the following scenarios decide whether the person is employed or unemployed. Explain the reasoning behind your answers.

a. Joe will turn sixteen on June 6, 2013. He currently works at a local fast-food restaurant twenty hours a week.

b. Mary is eighteen years old and works in her family’s restaurant business twenty hours a week. She does not get paid for this work.

c. Jordan volunteers at a local food pantry twenty five hours a week. He is otherwise in school full-time. Jordan is twenty years old.

d. Vince is currently out of work but is looking for work. However for the next four weeks he will be on an extensive family vacation that will take him away from the town where he lives. Vince is thirty five years old.

e. Leann is currently out of work, is available for work and is looking for work but has recently had trouble finding any possible positions that would suit her skills and interests. She last filled out an application for a potential job in January 2013 and it is now June 2013. Leann is forty five years old.

f. Michael is currently working twenty hours a week but would prefer to be working full-time. He has submitted applications for potential jobs in the last four weeks but has not found anything that is full-time yet. Michael’s birthdate is 8/15/1997.

g. Cory works for a local auto body shop for forty hours a week. Cory is twenty six years old. Cory has been on vacation for the past two weeks and has not been to the auto body shop to work during this time.

6. For this problem you will find it helpful to use either a calculator or an Excel spreadsheet. For your answers, round to the nearest hundredth.

In the economy of Smithville the market basket for purposes of calculating the consumer price index (CPI) consists of 5 hamburgers, 2 bikes and 6 milk shakes. You are given the following information about prices of these three goods for the years 2008, 2009, and 2010. Assume the price is the price per unit.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Price in 2008 | Price in 2009 | Price in 2010 |
| Hamburger | $4.00 | $5.00 | $5.00 |
| Bike | $500.00 | $520.00 | $540.00 |
| Milk Shakes | $2.00 | $2.50 | $2.00 |

a. Given the above information, calculate the cost of the market basket and put your answers in the following table. In your homework show how you got these costs.

Cost of Market Basket

|  |  |
| --- | --- |
| Year | Cost of Market Basket |
| 2008 |  |
| 2009 |  |
| 2010 |  |

b. Calculate the CPI for 2008, 2009, and 2010 in Smithville using a one hundred point scale and with the base year equal to 2008. Put your answers in the following table.

|  |  |
| --- | --- |
| Year | CPI with Base Year 2008 |
| 2008 |  |
| 2009 |  |
| 2010 |  |

c. Calculate the CPI for 2008, 2009, and 2010 in Smithville using a one hundred point scale and with the base year equal to 2010. Put your answers in the following table.

|  |  |
| --- | --- |
| Year | CPI with Base Year 2010 |
| 2008 |  |
| 2009 |  |
| 2010 |  |

d. Calculate the annual rate of inflation in Smithville using 2008 as the base year. In your answer show how you found this annual rate of inflation. Then put your answers in the following table.

|  |  |
| --- | --- |
| Year | Annual Rate of Inflation with Base Year 2008 |
| 2008 |  |
| 2009 |  |
| 2010 |  |

e. Calculate the annual rate of inflation in Smithville using 2010 as the base year. In your answers show how you found this annual rate of inflation. Then put your answers in the following table.

|  |  |
| --- | --- |
| Year | Annual Rate of Inflation with Base Year 2008 |
| 2008 |  |
| 2009 |  |
| 2010 |  |

f. Are your answers in (e) and (f) the same? If they are not, then you have made an error and you should go back and correct the error before submitting your homework.

7. Maryann graduated from college in May and received four job offers for a position in economics in four different cities. The work at each of the jobs will be interesting and challenging to Maryann and she does not have a strong personal preference as to where she would like to live. She does think it is important to compare the salaries for the three offers as well as the likely cost of living in each of the communities. The following table provides the information about the job offers that Maryann has received.

|  |  |
| --- | --- |
| Location of Offer | Salary (assume that all employee benefits are comparable and that all Maryann needs to consider is the salary) |
| Madison, WI | $70,000 |
| New York City, NY | $140,000 |
| Chicago, IL | $80,000 |
| Los Angeles, CA | $82,000 |

Maryann knows that the cost of living is different in these four cities and she would like to choose that job which offers her the best standard of living. Based upon information I got from a Cost-of-Living Calculator on a website entitled [www.payscale.com](http://www.payscale.com) I have extrapolated an “inflation index” for each of these cities. Use this information to help guide Maryann on her decision: remember she only wants to know where her nominal income will provide the best standard of living.

Here is some data that you will find helpful:

|  |  |
| --- | --- |
| Location | Extrapolated Inflation Index |
| Madison, WI | 1 |
| New York City, NY | 2.06 |
| Chicago, IL | 1.06 |
| Los Angeles, CA | 1.20 |

a. Use the above information to fill in the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Location | Nominal Salary | Real Salary | Extrapolated Inflation Index |
| Madison, WI |  |  | 1 |
| New York City, NY |  |  | 2.06 |
| Chicago, IL |  |  | 1.06 |
| Los Angeles, CA |  |  | 1.20 |

b. Given your results in (a), which offer should Maryann accept?

8. You are given the following information about an economy:

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Nominal GDP | Real GDP | GDP Deflator |
| 2000 | $100 Million |  | 100 |
| 2001 |  |  |  |
| 2002 |  | $150 Million | 125 |
| 2003 |  |  |  |
| 2004 |  |  |  |

You are also told that

* Nominal GDP increased by 10% between 2000 and 2001
* Real GDP stayed constant between 2000 and 2001
* Overall inflation, as measured by the GDP deflator, over the period 2000-2004 was 100%
* Real GDP increased 20% between 2002 and 2003
* Inflation increased by 20% between 2002 and 2003 as measured by the GDP deflator
* **Nominal GDP between 2003 and 2004 stayed constant**

a. Given the above information fill in the missing cells in the table.

b. Given the above information calculate the annual percentage change in nominal GDP, real GDP, and the GDP deflator. Put your answers in the following table. Round your answers to the nearest tenth.

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Percentage Change in Nominal GDP | Percentage Change in Real GDP | Percentage Change in GDP Deflator |
| 2000 | ---- | ---- | ---- |
| 2001 |  |  |  |
| 2002 |  |  |  |
| 2003 |  |  |  |
| 2004 |  |  |  |

c. What does it mean if the percentage change in real GDP is a negative number?

d. According to your calculations is the percentage change in nominal GDP always equal to the percentage change in the GDP deflator?

e. According to your calculations is the percentage change in real GDP always equal to the percentage change in nominal GDP?