**Economics 102**

**Summer 2014**

**Homework #3**

**Due 7/9/14**

**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 of the described event. Then, explain the reasoning behind your answer.

a. Joe’s T-shirts produces 1000 t-shirts in 2013 and sells 1800 of these t-shirts in 2013 for a price of $10 per t-shirt. In 2014 Joe’s T-shirts produces another 1000 shirts and sells 600 t-shirts in 2014 for a price of $10 per t-shirt. What was the impact of Joe’s t-shirts on GDP in 2013 and 2014?

b. Susie owns 100 shares of IBM stock and during 2013 she sells 70 of these shares for $100 per share to Marty. In 2014 Susie purchases 35 shares of GM stock from Billy for $34 a share. What is the impact of these activities on GDP in 2013 and 2014?

c. Michael cuts his grass every Saturday as does his neighbor Millie. In 2013 Michael incorporates a lawn care business and starts providing lawn care services. Millie is one of his first customers and she pays him $20 a week to cut her grass. Her grass needs cutting for forty weeks. In addition, Millie contracts with Michael for snow removal and he gets paid $10 per week for the ten weeks of winter season to provide this service to Millie. Given Michael and Millie’s actions, what is the impact on GDP in 2014 from these events?

d. Both Josie and Zena in 2013 opened daycare facilities. Josie’s daycare is not licensed and is strictly a word-of-mouth, cash operation. Josie has ten children who come to the daycare facility for $250 per child per week. Josie’s daycare center is open for 50 weeks a year. Zena’s daycare is a licensed daycare facility for young children. She currently has 20 children that come to the daycare facility at a cost of $300 per child per week. The center is open for 50 weeks a year. What was the effect of Josie and Zena’s activities on GDP in 2014?

e. Elizabeth has a desk that has been in her family for 100 years. A recent appraisal of the desk noted that it was worth $1250 due to its age and uniqueness. In 2014 she realized that the desk needed some repair and refinishing after all these years of use. She took the desk to “Dr. Phil”, a local furniture restorer, who re-glued and refinished the desk. Dr. Phil charged Elizabeth $125.38 (including a sales tax of $8.38) for this work. What was the contribution to GDP in 2014 from these activities?

2. Suppose you are told that in the economy of Grantham that rent payments for land resources are equal to $150 million in 2014, interest payments for capital are equal to $120 million in 2014, consumer expenditures on goods and services are equal to $300 million in 2014, profits are equal to $40 million in 2014, government expenditures on goods and services are equal to $100 million in 2014, and net exports are equal to $20 million in 2014. You also know that in Grantham in 2014 that wage income was three times bigger than the level of investment spending on goods and services during that same year. Determine the level of GDP in Grantham in 2014, the level of wage income in 2014, and the level of investment spending in 2014. 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 Mercadia. Consumers in this economy during 2014 make purchases of $3,500,000 on goods and services. Included in these purchases are purchases of $200,000 of Italian leather jackets (produced in 2014 in Italy and not produced in Mercadia), and $100,000 worth of pineapples grown in Cuba. Consumers in Mercadia also purchase $3,200,000 worth of newly constructed homes during 2014. Ace Metals, a company in Mercadia specializing in the manufacture of refrigerator units, produces $400,000 worth of these units in 2014. Ace sells $200,000 worth of these units to customers located outside of Mercadia, sells $50,000 of these units to business customers in Mercadia, and the remaining units are kept as inventory for Ace. In 2014 government purchases in Mercadia totaled $100,000 with $20,000 of these purchases coming from Elsewhere. There is no other data to consider when computing the GDP of Mercadia for 2014. For each question below show how you got your numerical value.

a. Given the above data, what is the level of consumer expenditure in Mercadia in 2014?

b. Given the above data, what is the level of government expenditure in Mercadia in 2014?

c. Given the above data, what is the level of investment expenditure in Mercadia in 2014?

d. Given the above data, what is the level of imports to Mercadia in 2014?

e. Given the above data, what is the level of exports to Mercadia in 2014?

f. Given the above data, what is the level of GDP in Mercadia in 2014?

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

* In Thomasville there are 70 people who are less than 16 years old
* In Thomasville there are 20 people who are over 70 years old and are fully retired
* In Thomasville there are 40 people who are currently not working, are available to work, and have submitted job applications during the past four weeks
* In Thomasville 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 Thomasville
* In Thomasville there are 90 full-time college students who are not currently seeking work
* In Thomasville there are 100 people who are working part-time but who would like to work full-time
* The rest of the Thomasville population is over 16 years old and currently working

In your answers round to the nearest tenth of a percent when calculating the percent value.

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

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

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

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

e. How would the unemployment rate change in Thomasville 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 Thomasville 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. Mary turned sixteen on April 4, 2014. She currently works at Kohl’s Department Store 10 hours a week. She is not enrolled in school.

b. Jose is twenty years old and works in his family’s accounting business for sixteen hours a week. Jose does not get paid for this work. Jose is not enrolled in school.

c. Susie volunteers ten hours a week with Habitat for Humanity. Susie is also enrolled as a full-time college student. Susie celebrated her 21st birthday at the Nitty Gritty in March, 2014.

d. Todd is out of work currently, but he is available to work and three weeks ago he submitted an application to a local software company that was advertising a job that he thought he might be able to get. However, yesterday Todd agreed to go on a four week long vacation with his first cousin to see the western United States. They will leave next Tuesday for their trip.

e. Tyler is not currently working, but is available for work and is looking for work. Tyler is finding it tough to find positions that suit his skills and interests. The last time Tyler submitted a job application was April 15, 2014 and it is now July 5, 2014. Tyler turned 19 on January 1, 2014.

f. Samantha is fifty five years old and she has worked throughout much of her adult life. In 2010 her work hours were cut to 20 hours a week at her job as a quality control officer for a local company. Samantha would like to work full-time and she is persistently looking for that kind of work and she is submitting job applications every week, but she has been unsuccessful in finding a full-time job.

g. Melinda works at a local copy shop forty hours a week. Melinda is 38 years old. But, for the past two weeks Melinda has not been at work and she has not been paid. Melinda and her family have been on a two week-long camping trip as part of their annual vacation.

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 Greensboro the market basket for purposes of calculating the consumer price index (CPI) consists of 50 sandwiches, 1 moped and 60 apples. You are given the following information about prices of these three goods for the years 2010, 2011, and 2012. Assume the price is the price per unit.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Price in 2010 | Price in 2011 | Price in 2012 |
| Sandwich | $3.00 | $4.00 | $5.00 |
| Moped | $800.00 | $820.00 | $840.00 |
| Apples | $1.00 | $1.50 | $1.00 |

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 |
| 2010 |  |
| 2011 |  |
| 2012 |  |

b. Calculate the CPI for 2010, 2011, and 2012 in Greensboro 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 |
| 2010 |  |
| 2011 |  |
| 2012 |  |

c. Calculate the CPI for 2010, 2011, and 2012 in Greensboro using a one hundred point scale and with the base year equal to 2012. Put your answers in the following table.

|  |  |
| --- | --- |
| Year | CPI with Base Year 2012 |
| 2010 |  |
| 2011 |  |
| 2012 |  |

d. Calculate the annual rate of inflation in Greensboro using 2010 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 2010 |
| 2010 |  |
| 2011 |  |
| 2012 |  |

e. Calculate the annual rate of inflation in Greensboro using 2012 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 2012 |
| 2010 |  |
| 2011 |  |
| 2012 |  |

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. Dominique 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 Dominique 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 four 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 Dominique has received.

|  |  |
| --- | --- |
| Location of Offer | Salary (assume that all employee benefits are comparable and that all Dominique needs to consider is the salary) |
| Green Bay, WI | $70,000 |
| San Francisco, CA | $140,000 |
| Minneapolis, MN | $80,000 |
| Madison, WI | $82,000 |

Dominique 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 Dominique 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 |
| Green Bay, WI | 1 |
| San Francisco, CA | 1.71 |
| Minneapolis, MN | 1.16 |
| Madison, WI | 1.13 |

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

|  |  |  |  |
| --- | --- | --- | --- |
| Location | Nominal Salary | Real Salary | Extrapolated Inflation Index |
| Green Bay, WI |  |  | 1 |
| San Francisco, CA |  |  | 1.71 |
| Minneapolis, MN |  |  | 1.16 |
| Madison, WI |  |  | 1.13 |

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

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

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Nominal GDP | Real GDP | GDP Deflator |
| 2000 | $200 Million |  | 80 |
| 2001 |  |  |  |
| 2002 |  | $300 Million | 100 |
| 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?