Department of Economics   Professor Dowell
California State University, Sacramento   Spring 2013

Problem Set #3
Due in hard copy at <u>beginning</u> of lecture on Wednesday, March 6, 2013

Important: Place all answers in the indicated spaces. <u>Only your work and answers in the indicated spaces will be graded.</u> All pages must be in order and stapled together.

1. Fill in the missing values in the table of data collected in the household survey for the year 2012.

Working Age Population	
Employed	143,305,000
Unemployed	
Unemployment Rate	7.8%
Labor Force	
Labor Force Participation Rate	63.6%

2. You are given the following data:

Good	Quantity in 2005	Price in 2005	Quantity in 2006	Price in 2006
Ice Cream Cones	1,000	$2.50	800	$3.50
Hot Dogs	500	$1.25	400	$2.25
Surf Boards	10	$100.00	14	$100.00

Suppose the typical consumer's consumption basket is 75 ice cream cones, 50 hot dogs and one surf board.

a. Using 2005 as the bas year, calculate the CPI for 2006.

The value of the CPI in 2006 is

b. What is the inflation rate ate the consumer level from 2005 to 2006?

The inflation rate is

3. The following table shows the top ten films of all time through 2007, measured by box office receipts in the U.S., as well as several other films well down the list:

Rank	Film	Total Box Office Receipts	Year Released	CPI
1	Avatar	$760,505,847	2009	215
2	Titanic	658,672,302	1997	161
3	The Avengers	623,279,547	2012	230
4	The Dark Knight	533,316,061	2008	215
5	Star Wars: Episode I – The Phantom Menace	474,544,677	1999	167
6	Star Wars	460,935,665	1977	61
7	The Dark Knight Rises	448,130,642	2012	230
8	Shrek 2	436,471,036	2004	189
9	E.T. the Extra-Terrestrial	434,949,459	1982	97
10	Pirates of the Caribbean: Dead Man's Chest	423,032,628	2006	202
20	Spider-Man 2	373,377,893	2004	189
65	Jaws	260,000,000	1975	54
129	Gone with the Wind	198,655,278	1939	14
146	Snow White and the Seven Dwarfs	184,208,842	1937	14
204	The Sound of Music	163,214,286	1965	32
232	One Hundred and One Dalmatians	153,000,000	1961	30

The CPI in 2012 was 230. Use this information and the data in the table to calculate the box office receipts for each film in 2012 dollars. Assume each film generated all of its box office receipts during the year it was released. Use your results to prepare a new list of the top ten films based on their earnings in 2012 dollars. (Several of the films were re-released several times, so their receipts were actually earned during several different years, but we will ignore that complication.) Hint: The base year is 1982-1984. This simply means the BLS sets the average index level (representing the average price level)-for the 36-month period covering the years 1982, 1983, and 1984-equal to 100 then measures changes in relation to that figure. In essence, you must "deflate" all values to 1982-1984 dollars and then "inflate" to 2007 dollars.

Rank	Film	2012 $ Earnings
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

4. A job paid $53,000 in 2002. The CPI in 1960 was 29.6, compared to 179.9 in 2002. In 1960, what salary would be comparable to 2002's $53,000 in real terms?

```
┌─────────────────┐
│                 │
│                 │
└─────────────────┘
```

5. Many "cell-phones" today are much more than cell phones. They are actually mini-computers on which you can check email, surf the web and do all kinds of other things. Suppose that in calculating the CPI the BLS treated them as old-fashioned cell phones, say like those that existed in the 1990s. How would this cause bias in the CPI? Explain.

```
┌──────────────────────────────────────────────────────────────┐
│                                                                │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
└──────────────────────────────────────────────────────────────┘
```

6. Use the Fisher relation to fill in the blanks in the following table:

Inflation Rate	Real Interest Rate	Nominal Interest Rate
	2%	7%
	0%	7%
2%		6%
9%		6%
2%	2%	
10%	2%	

7. If an investment costs $100 today and pays $107 in on year, what is the maximum interest rate at which one would make the investment?

```
┌───────────┐
│           │
│           │
└───────────┘
```

8. a. Suppose you buy a one-year discount bond with a face value of $10,000 for $9,900 today. What interest rate will you receive by holding the bond until it matures in one year?

```
┌──────────┐
│          │
│          │
└──────────┘
```

b. Suppose you have the opportunity to buy a one-year discount bond with a face value of $5,000. Suppose also that you decide you need to earn at least a 3% return on the bond. What is the most you would be willing to pay for the bond?

```
┌──────────┐
│          │
│          │
└──────────┘
```

c. Suppose you buy a $2,000 discount bond maturing in one year for $1,980.20.

i.   What interest rate will you earn on your bond if you hold it too maturity?

```
┌──────────┐
│          │
│          │
└──────────┘
```

ii. Now, suppose that latter in the day, due to panic in the financial markets, interest rates on all one year bonds that are identical to your rise by two percentage points. In the panic you decide to sell your bond. Assuming there are no transaction costs such as broker fees or taxes, how many <u>dollars</u> do you lose when you sell your bond?

```
┌──────────┐
│          │
│          │
└──────────┘
```

9. Suppose you are borrowing money to buy a car. Which of the following situations would you prefer: The interest rate on your car loan is 20 percent and the inflation rate is 19 percent or the interest rate on your car loan is 5 percent and the inflation rate is 2 percent? Explain briefly.

```
┌─────────────────────────────────────────────────┐
│                                                 │
│                                                 │
│                                                 │
│                                                 │
│                                                 │
│                                                 │
└─────────────────────────────────────────────────┘
```

10. a. Let the supply of loanable funds be represented by $S^F = 20i$ and the demand can be represented by $D^F = 200\text{-}18i$. Graph the supply and demand for loanable funds below. Also solve for the equilibrium interest rate and label it on your diagram. Also correctly label the axes in your diagram.
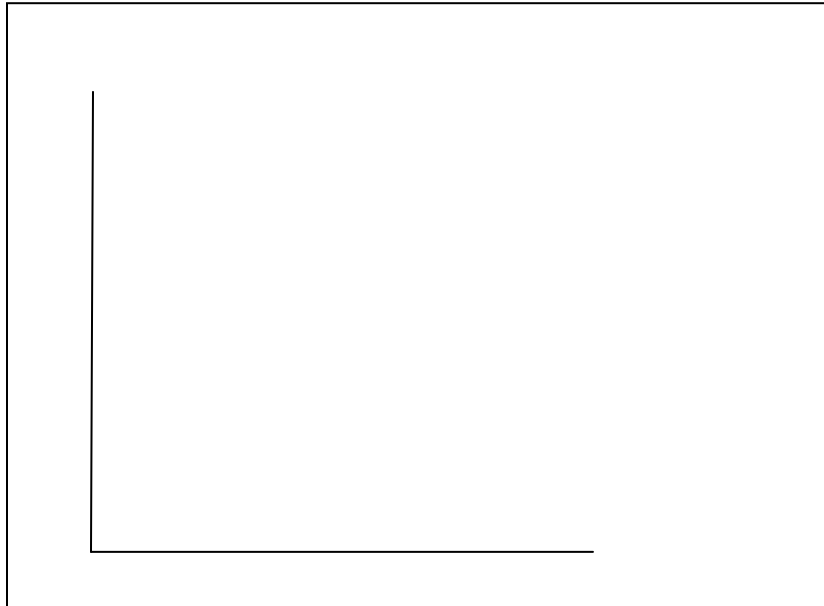
b. Suppose there is an improvement in manufacturing technology within the economy, but that nothing else changes.

   i. After this change, which of the following equations could represent the demand for loanable funds? (Circle the correct one.)

   $D^F = 100 - 18i$ $D^F = 200 - 18i$ $D^F = 300 - 18i$

   ii. After this change, which of the following equations could represent the supply of loanable funds? (Circle the correct one.)

   $S^F = -100 + 20i$ $S^F = 20i$ $S^F = 100 + 20i$

   iii. Using the equations selected in parts I and ii above, find the new equilibrium interest rate.