Econ 222 Assignment 1
Spring 2011

Due: Drop Box 2nd Floor Dunning Hall by **noon May 20**, 2011
No late submissions will be accepted
No group submissions will be accepted
No "Photocopy" answers will be accepted

May 13, 2011

Question 1: Some Canadian Macroeconomic Data *(30 Marks)*
This question asks you to retrieve data from CANSIM (Statistics Canada database). Once you have the data, a spreadsheet program such as Microsoft Excel will work well for these purposes. You can access CANSIM through the library website by searching for "Cansim" under "Databases" on the library's home page. Once you connect to CANSIM @ CHASS, you should be able to click on "CANSIM Multidimensional View", and then on "Vital economic and social statistics" to access the data.

(Note: If you try this from off-campus, you may need to use the Queen's library webpage and read "help with off-campus access" if you haven't already set up a "web-proxy".)

In the section "Labour markets" for the period 1979-01-01 to 2011-04-01 retrieve the following 4 series (Seasonally adjusted): Participation rate (V2062816), Persons in Labour Force(V2062810), Employed Persons (V2062811), Unemployed Persons (V2062814).

(Note: one possibility is to select the "MS Excel ready" option, and save the data as Excel files one at a time. Then you can import the files in the spreadsheet, and copy the series in the same workbook)

1. Plot the first series (over time) in a graph and briefly comment on its trends.

2. Using the series above, get the Canadian unemployment rate and plot it in a graph. Comment briefly on its behaviour.

3. Compute the average unemployment rates for the years 1980, 1990, 2000, 2010. Report them on a table (with two decimal points). Briefly comment on the table.

In the section "Prices" for the period 1990-01-01 to 2011-03-01 retrieve the following 3 series : Consumer price indexes for all items (v41690973), Consumer price indexes for total goods (v41691222), and Consumer price indexes for total services (v41691230).

4. Compute and graph the monthly inflation rate for all items.(with three decimal points in percent e.g. 0.001%)

5. Compute and graph the monthly inflation rate for total goods and total services.

6. Briefly comment on the inflation rate in Canada and compare inflation in services with inflation in goods.

Question 2: Nuclear power, Donuts and Financial Services.*(20 Marks)*

Citizens of Oceania produced $12 million worth of nuclear power in 2010. They consumed $10 millions domestically, exported $1 million to the country of Banana Republic and $1 million was left unsold in inventories (assume nuclear power can be stored). Citizens of Oceania also provided financial services totalling $4 million in Oceania and $1 million in Banana Republic. They also purchased $4 million worth of donuts from Banana Republic. Finally, the government paid workers from Banana Republic $2 million to clean up nuclear waste in Oceania and did not collect any taxes in 2010. Calculate the following for the Oceanian economy:

1. GDP.

2. NFP.

3. CA.

4. S_p.

5. S_g.

Question 3: Labour Productivity, Labour Demand.*(25 Marks)*

1. For This part, we consider the following production function:

$$Y = AK^\alpha N^{1-\alpha}$$

   (a) Derive an expression for the marginal product of labour (MPN). (2 marks)
   (b) Assume $A = 1$ and $\alpha = 0.3$, redo the previous part. (1 mark)
   (c) Using a spreadsheet, fix $K = 6$ and plot the MPN vs. L for $N = 1, 2, ..., 9, 10$. (2 marks)
   (d) On the same graph, plot MPN vs. N for $K = 4$. Briefly comment and compare the two graphs (3 marks)
   (e) Suppose the wage paid to labour is $w = 0.3$ for all values of N and K. Plot the wage schedule on your figure, and show where the equilibrium level of labour demand (N^*) is. Find the value of N^*. (2 marks)

2. Now suppose the production function is:

$$Y = K^{0.7}(HN)^{0.3}$$

   Where $H \geq 1$ is human capital (i.e. education), the marginal product of labour is now:

$$MPN = 0.3(K^{0.7}(HN)^{-0.7})H$$

(a) Using a spreadsheet, fix $K = 6$ and plot the MPN for $N = 1, 2, ..., 9, 10$ for $H = 1, 3, 5$ (your figure should have 3 curves in it that look like what you computed in the previous part) (5 marks)

(b) Suppose the wage paid to labour is $w = 0.5$ for all values of N and K. Plot the wage schedule on your figure, and show where the equilibrium level of labour demand (N^*) is for each value of H. Show where each of these values are determined in your figure. (5 marks)

(c) Summarize your results by stating the relationship you found between human capital and equilibrium labour demand. Provide intuition for your finding (5 lines max). (5 marks)

Question 4: Saving for Retirement *(25 Marks)*

Suppose you divide your life into two periods-working age and retirement age. When you work, you earn labour income Y; when retired, you earn no labour income, but must live off your savings and the interest it earns. You save the amount S while working, earning interest at rate r, so you have $(1 + r)S$ to live on when retired. Because you don't need to consume as much when retired, you want to set consumption when working twice as high as consumption when retired.

1. Suppose you earn $1 million over your working life and the real interest rate for retirement saving is 50%. How much will you save and how much will you consume in each part of your life?(6 Marks)

2. Suppose your current income went up to $2 million when working. Now what will you save and how much will you consume each period? (6 Marks)

3. Suppose a social security system will pay you 25% of your working income when you are retired. Now (with Y = $1 million, as in part 1) how much will you save and how much will you consume each period? (7 Marks)

4. Suppose the interest rate rises (starting from the situation in part 1). Will you save more or less? (6 Marks)