Economics 222
Assignment 1
due January 27th at 4pm

1. Are Expenditures on Durable Goods Affected by the Real Interest Rate?

This question asks you to retrieve data from CAMSIM (Statistics Canada database). First go to the CANSIM "search and retrieve" web page (available from the 222 webpage): *http://dc1.chass.utoronto.ca/cansim/search.html* .

a) Retrieve the series: "Gross Domestic Product at Market Prices" (label $D15689$) from 1981-2001 by annual frequencies and the average method. Copy the dates and the rates. Paste them in the square A1 of *Excel*. Go to *Data - Text to Columns...* in *Excel*. Choose *Fixed width - Next - Next - Finish*. Your data should be separated in two columns in the *Excel* spreadsheet.

b) In the same way, retrieve the series "Personal Expenditure on Durable Goods" (label $D15667$), "Mortgage Lending Rate - 5 Year" (label $B14024$) from 1981-2001 and finally retrieve the series "Consumer Price Indexes for Canada" (label $P100000$) from 1980-2001.

c) Construct an inflation series from the price series for $1981 - 2001$.

d) Calculate the real mortgage rate from $1981 - 2001$, using the mortgage rate and inflation series.

e) Construct a series of personal expenditure on durable goods as a share of GDP.

f) Use the *CORREL* command to calculate the correlation between the real interest rate and personal expenditure on durable goods as a share of GDP. Briefly interpret your results.

g) Plot the real mortgage rate and personal expenditure on durable goods as a share of GDP on a graph. Make sure the axis are identified and the scale is appropriate.

2. Aquariums, Donuts and Clown Services.

Citizens of Ricardia produced \$10 million worth of nuclear power in 2004. They consumed \$8 millions domestically, exported \$1 million to the country of Modigliania and \$1 million was left unsold in inventories. Citizens of Ricardia also provided clown services totalling \$4 million in Ricardia and \$1 million in Modigliania. They also purchased \$4 million worth of donuts from Modigliania. Finally the government paid Modiglianian workers \$2 million to clean up nuclear waste in Ricardia and did not collect any taxes in 2004. Calculate the following for the Ricardian economy:

a) GDP.
b) NFP.
c) CA.
d) S_p.
e) S_g.

3. Bonds Prices and Arbitrage in Financial Markets.

The market price of a \$100 two-year bond is currently \$84 (i.e. this bond will pay out \$100 two years from now) and the market price of a \$100 one-year bond is \$94. You can assume that there is no term-premium and that arbitrage prevails on the bond market (i.e. the expected returns of holding a two-year bond are the same as those from holding a one-year bond in each year).

a) What is the expected nominal interest rate this year?

b) What is the expected nominal interest rate next year ?

c) What is the expected price of a one-year bond next year?

d) Real interest rates are expected to be the same in both years and the expected inflation rate for this year is 2%. What is the expected inflation rate for next year?

4. Labor Income Tax or Payroll Tax?

The government examines two ways of taxing the labor market: a labor income tax and a payroll tax. The labor demand is:

$$N^d = 70 - w(1 + t^p)$$

and the labor supply is:

$$N^s = 10 + 2w(1 - t^l)$$

a) Initially both the payroll tax (t^p) and the labor income tax (t^l) are null. What is the equilibrium wage and employment?

b) Unions suggest that the government imposes a payroll tax: $t^p = 10.65\%$. Calculate the equilibrium wage and employment under this proposition. What will government revenues be?

c) The business community favors a labor income tax: $t^l = 9.622\%$. Calculate the equilibrium wage and employment under this proposition. What will government revenues be?

d) Which solution is better for the government? Which one should be favored by the workers?

5. MPN in Canada.

What is the dollar value of the MPN in Canada? To do this, use the data from Table 3.1 in page 58 of the textbook. For 1985, 1990 and 2000 calculate MPN in dollars using the production function $Y = AK^{0.3}N^{0.7}$. In order to the get the correct value, make sure that you have Y, K, N measured according to the same scale. You will also have to recalculate A, since the values for A in the table are computed using different scales for K and N.