Assignment 2

Deadline: Friday, June 30, 2017 at 11:59pm.

Instructions: You must submit your assignment **in PDF format through D2L**. If you do not follow these instructions (e.g., you email your assignment, you upload an MS Word file, etc.), you will receive a grade of zero on your assignment.

Please note that you only need to submit your 6 plots (i.e., only part (c) of Question 1, parts (c) and (f) of Question 2, and so on). Each of these plots is worth 1 mark.

1. This question will utilize data from the Bank of Canada (bankofcanada.ca).

   (a) Download daily observations on target for the overnight rate from January 2, 2008 to December 31, 2008.

   (b) Download daily observations on the overnight money market financing rate from January 2, 2008 to December 31, 2008.

   (c) Plot the data you obtained in parts (a) and (b) on top of one another.

2. This question will utilize data from the FRED database (fred.stlouisfed.org).

   (a) Download annual observations on Canadian GDP from 2006 to 2015. (HINT: Use the series labelled "Gross Domestic Product by Expenditure in Constant Prices: Total Gross Domestic Product for Canada".)

   (b) The following table provides estimates on the output gap (as a fraction of potential GDP) from the OECD.

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0.02293	0.01912	0.00672	-0.03982	-0.02836	-0.01744	-0.01995	-0.01701	-0.01038	-0.01602

   Use this data, along with the data you obtained in part (a), to calculate potential GDP for the years from ~~2000~~ 2006 to 2015. (HINT: The numbers in the table above are calculated using the equation at the bottom of p. 352 in the textbook; solve this equation for Y^*.)

   (c) Plot the data you obtained in parts (a) and (b) above in a single figure.

   (d) Download annual observations on the Canadian unemployment rate from 2006 to 2015. (HINT: Use the series labelled "Unemployment Rate: Aged 15 and Over: All Persons for Canada".)

   (e) Use the data provided in part (b), along with the data you obtained in part (d) and Okun's law, to calculate the natural rate of unemployment. (HINT: Make sure to keep in mind that the data you obtained in part (d) is expressed in percentage terms, e.g., in 2006, the unemployment rate was 6.3%, so that $u = 0.063$ in Equation (12.1) in the textbook.)

   (f) Plot the data you obtained in parts (d) and (e) above in a single figure.

3. This question will utilize data from the FRED database (fred.stlouisfed.org) along with some data you obtained in the first assignment.

   (a) Download annual observations on M1 for Canada from 1991 to 2016.

   (b) Use the data you obtained in part (a) to calculate the annual growth rate of M1 for Canada from 1992 to 2016.

   (c) Use the data you obtained in part (a) of Question 3 on the first assignment to calculate the (annual) inflation rate for Canada from 1992 to 2016. (HINT: You can disregard the data you previously obtained for years up to 1990.)

   (d) Plot the data you obtained in parts (b) and (c) above in a single figure.

4. This question will utilize data from Questions 2 – 3 above.

   (a) Use the data provided in part (b) of Question 2 above (potential GDP), along with the data you obtained in part (c) of Question 3 above (the inflation rate), to calculate the interest rate prescribed by the Taylor rule for the years 2006 to 2015. (HINT: Use Equation (15.2) in the textbook, making sure that π is expressed in percentage terms, e.g., in 2006, $\pi = 1.73$.)

(b) The following table shows the Bank of Canada's target for the overnight rate on the final day of the year for 2006 to 2015:

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
4.25	4.25	1.50	0.25	1.00	1.00	1.00	1.00	1.00	0.50

Plot this data and the data you obtained in part (a) above in a single figure.

5. This question will utilize data from Question 3 above.

(a) Plot the data you obtained in part (c) of Question 3 above (the inflation rate) for the years 1996 to 2015. On the same figure, include dashed lines at 1% and 3% (these are the low and high endpoints of the Bank of Canada's inflation-control target range; the Bank of Canada aims to keep inflation at the 2% midpoint of this target range).