

Assignment 2**Economics 222, Fall 2006****Due: Drop Box 2nd floor Dunning Hall by noon Oct. 13th, 2006****Maximum Group Size: 4 people****1. Unemployment (10 marks)**

Statistics Canada's Labour Force Survey for August 2006 reports the following figures: Employment=16.5 million; Unemployment=1.1 million; Participation Rate=67.2%.

- (a) How many people are in the labour force (LF)?
- (b) How many people are not in the labour force (N)?
- (c) What is the employment ratio?

2. Ricardian Equivalence (20 marks)

With the recent increase in energy prices, the Alberta government's revenues soared and record surpluses were recorded. In response, the Alberta government sent out tax rebates ("Ralph bucks") of \$400 to all of its citizens.

- (a) Compare the impact of this policy on Alberta's private consumption, savings and equilibrium real interest rates when Ricardian equivalence holds to when it does not hold. Use savings-investment diagrams to help your analysis.
- (b) What assumptions does the Ricardian equivalence theory require?
- (c) Are these assumptions likely to hold generally in the world?
- (d) Are there any special considerations in Alberta's case?

3. Modeling Consumption and Savings (30 marks)

This question studies the present-value budgeting introduced in appendix 4A. For simplicity, suppose your life is divided into two aggregate blocks of time: the 'current' and 'future' period. Your lifetime budget constraint is:

$$c + \frac{c^f}{1+r} = y + \frac{y^f}{1+r} \quad (1)$$

You want to smooth consumption over time, so that $c = c^f = c^*$. The real interest rate is 5 percent ($r = 0.05$).

(a) Suppose $y = 100$ and $y^f = 140$. What is your present value of lifetime resources? What is the highest feasible consumption in the future period? What is the highest feasible consumption in the current period? Use this to graph the budget line.

(b) Find optimal consumption in each period, c^* , and the amount of saving/borrowing. Plot this point (c^*, c^{f*}) along with the original no-borrowing, no-lending point on the graph.

(c) The Bank of Canada is worried about inflation so they raise the real interest rate to 10 percent ($r = 0.10$). First use the graph to think about how this policy changes your optimal consumption and savings plan. Then do the math to solve for c^* and confirm.

4. Crazy Current Account (25 marks)

(a) Consider the three economies: Shelbyville (city A), Springfield (city B) and Capital City (city C) with the following desired national savings and desired investment:

$$\begin{aligned} S_A^d &= 40 + 50r^w, & I_A^d &= 80 - 100r^w \\ S_B^d &= 60 + 200r^w, & I_B^d &= 110 - 150r^w \\ S_C^d &= 10 + 50r^w, & I_C^d &= 40 - 50r^w \end{aligned}$$

Assuming these were the only three economies in the world, what world interest rate would equilibrate the international market for borrowing and lending? What are the current account balances for each country? What is the level of savings and investment for each country?

(b) Illustrate your answer with a graph (and label the axes).

(c) Suppose that there is a temporary positive productivity shock in Springfield. This increases their Marginal Product of Capital so the new desired investment curve is:

$$I_B^d = 150 - 150r^w \tag{2}$$

What are the new current account balances for each country? What is the new level of savings and investment for each country?

(d) Illustrate the new equilibrium with a graph (and label the axes).

5. **Labour Supply/Demand** (15 marks)

Suppose the production function for a country is

$$Y = AK^{.5}N^{.5} \quad (3)$$

(Y = industry output, A = total factor productivity, K = capital and N = labour.)

(a) Using calculus derive an expression for aggregate labour demand.

(b) Use calculus again to show that the MPN declines as the labour force (N) increases.

(c) Assuming $A=10$ and $K=25$ and $N^S = w^5/10$, find the real wage, w^* , and level of employment, N^* , that clear the labour market.