

# Economics 101: International Trade

## Fall 2008

### Problem Set 1a

Instructor: Christopher Nekarda  
Email: cnekarda@ucsd.edu  
Office: 103 Marshall College  
Office hours: Wed 9:00–11:00a

Teaching assistants: Oana Hirakawa                      Li Zhou  
Email: otocoian@ucsd.edu                      lzhou@ucsd.edu  
Office: 127 Economics                      227 Sequoyah Hall  
Office hours: Mon 9:30–11:30a                      Wed 3:30–5:30p

## 1 The Gravity Model

The gravity model of international trade asserts that the bilateral trade flow between country  $i$  and country  $j$ ,  $T_{ij}$ , is related by:

$$T_{ij} = A \frac{Y_i Y_j}{D_{ij}},$$

where  $A$  is a positive constant,  $Y_i$  is the GDP of country  $i$ ,  $Y_j$  is the GDP of country  $j$ , and  $D_{ij}$  is distance between  $i$  and  $j$ .

Country	GDP (\$m)	Distance (km)			
		U.S.	Canada	Japan	Germany
U.S.	6,558	–	455	6,790	4,177
Canada	553	455	–	6,429	3,816
Japan	4,275	6,790	6,429	–	5,558
Germany	1,908	4,177	3,816	5,558	–

The table above provides data for the gravity model on 4 large industrial economies in 1993. Use these data to answer the following questions.

- a. Which country does the gravity model predict Canada will trade with more, the United States or Japan? Why?
  
  
  
  
  
  
  
  
  
  
- b. Which country does the gravity model predict Germany will trade with less, the United States or Canada? Why?

Estimating the gravity equation above for these countries yields a coefficient  $\hat{A} \approx 27$  ( $\bar{R}^2 = 0.90$ ). Use this value of  $A$  and the data from the table to answer the following questions.

- c. What is the predicted trade between the United States and Canada?
  
  
  
  
  
  
  
  
  
  
- d. What is the predicted trade between the United States and Germany?
  
  
  
  
  
  
  
  
  
  
- e. In 1993 the volume of trade between the United States and Canada was \$201,376 million; the volume of trade between the United States and Germany was \$53,697 million. How does the predicted trade you found compare with the actual volume of trade? What factors might explain your findings?

