Econ 73-250A-F
Spring 2001
Prof. Daniele Coen-Pirani

Problem Set #1

As indicated on the course syllabus, this problem set is due at the beginning of your recitation section on Friday, February 2.

Exercise #1. In 1998, the Adams family was living in Concord, New Hampshire. John Adams, working as a high school teacher earned a salary of 30,000$ before taxes. As a police officer, Mary Adams earned a salary of 30,000$ a year gross of taxes.

The items on which the Adams spend their income are: i) food, specifically hamburgers; ii) clothes. The price of hamburgers in Concord is 50 cents per hamburger, while clothes are 30$ each. There is no sales tax in New Hampshire. However, the Adams pay 50% of their incomes in federal taxes. Let x_h and x_c denote the amount of hamburgers and clothes that the Adams buy in a year.

(a) What is the relative price of hamburgers in terms of clothes in Concord in 1998?

(b) Write down the equation that represents the Adams' budget constraint in 1998.

(c) Represent the Adams' budget line in 1998 on a clearly-labelled graph which has the quantity of clothes on the x-axis and the quantity of hamburgers on the y-axis. Shade in the region on the graph which contains the set of hamburgers-clothes bundles that the Adams can "afford".

(d) A president is elected at the end of the year 1998 that reduces the federal income tax rate for the following years from 50% to 10%. Write down the equation that represents the Adams' new budget constraint in 1999 and represent it on the same graph of point (c) (Assume that both the Adams's income and the goods' prices are unchanged with respect to 1998.) Shade in the region on the graph which contains the set of hamburgers-clothes bundles that the Adams can "afford".

On January 1, 2000 the Adams moved from Concord, NH to Pittsburgh, PA. John and Mary kept working in Pittsburgh as high school teacher and police officer, respectively. Their yearly incomes remain the same and so do their consumption habits. Also the prices of hamburgers and clothes remain the same. However, now their purchase of clothes is subject to a 7% sales tax.

(e) What is the relative price of hamburgers in terms of clothes in Pittsburgh in 2000? Are hamburgers more expensive in terms of clothes in Concord or in Pittsburgh?

(f) Write down the equation that represents the Adams' budget constraint in 2000.

(g) Represent the Adams' budget line in 2000 on a clearly-labelled graph which has the quantity of clothes on the x-axis and the quantity of hamburgers on the y-axis. Shade in the region on the graph which contains the set of hamburgers-clothes bundles that the Adams can "afford" and compare it to the region that you have shaded at point (c). How many dollars would the Adams pay in sales taxes in the year 2000, if they spent 30,000$ in hamburgers and the rest of their income (net of federal taxes) in clothes?

1

Exercise # 2. Do Problem 3.9 in the Workouts book. Do not hand in the sheets from the Workouts book; write your answers instead on a separate sheet to be handed in. Be sure to show your work.

Exercise # 3. Do Problem 4.7 in the Workouts book. Do not hand in the sheets from the Workouts book; write your answers instead on a separate sheet to be handed in. Be sure to show your work.

Exercise # 4. Do Problem 4.11 in the Workouts book. Do not hand in the sheets from the Workouts book; write your answers instead on a separate sheet to be handed in. Be sure to show your work.