

Problem Set #5-Key

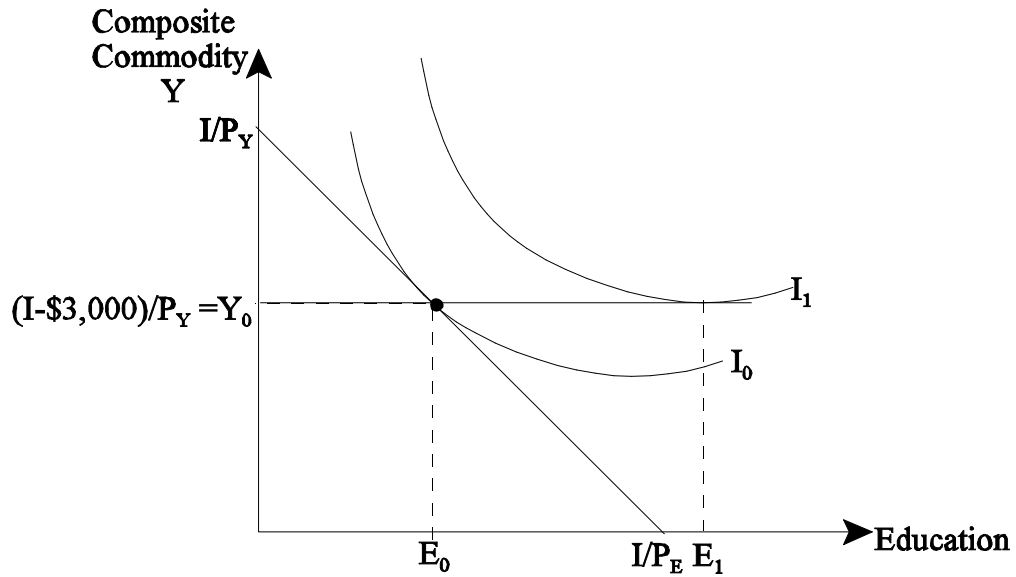
Sonoma State University
Economics 305-Intermediate Microeconomic Theory

Dr. Cuellar

- (1) Suppose that you are paying your for your own education and that your college tuition is \$200 per credit hour. At that price you generally take 15 hours per semester at a cost of \$3,000. Now suppose your college changes to a policy of charging \$3,000 per semester regardless of the number of hours taken.

- (a) Will this alter your budget line?

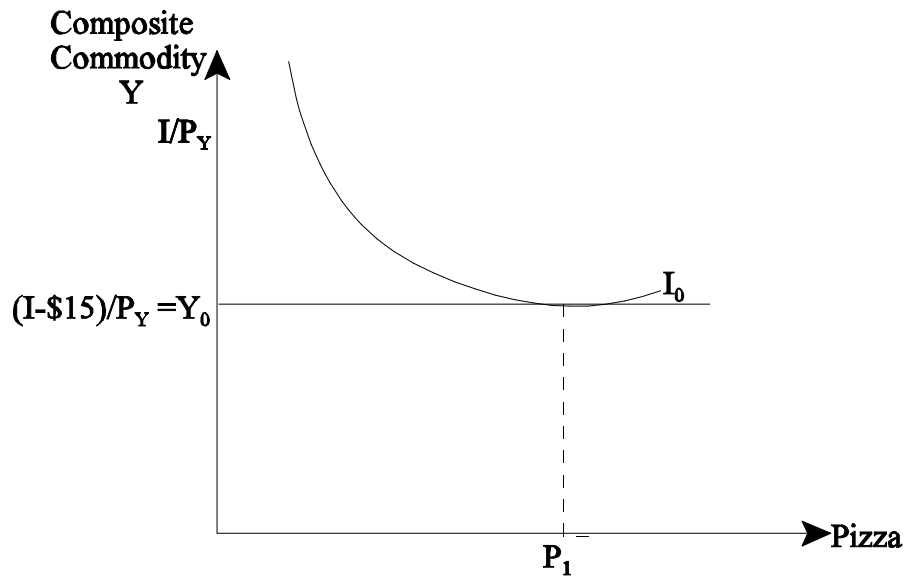
Yes, the budget constraint goes from $(I/P_X, I/P_Y)$ to the horizontal line at $(I-\$3,000)/P_Y$. Note that the budget constraint passes through the original equilibrium point.



- (b) Will it affect your course load?

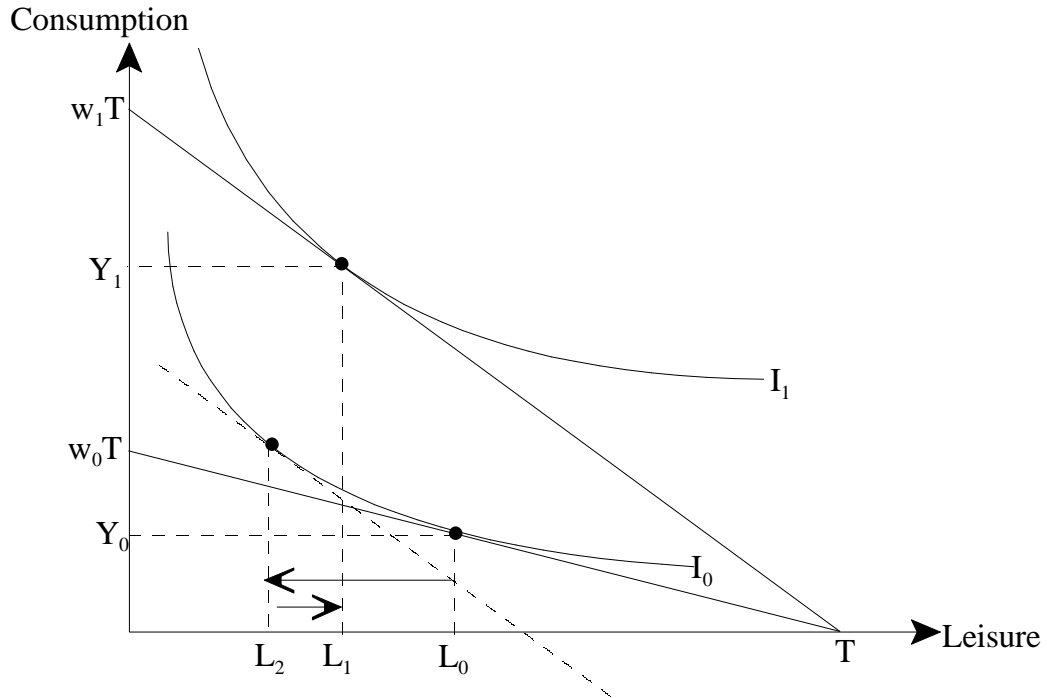
Yes, in the above example, the consumer will now consume more education since the per unit cost (i.e., marginal cost) is zero.

- (2) Suppose you go to an all you can eat buffet in which you pay \$15 and then you can consume all you want. Using an indifference curve and budget line, show your optimal consumption bundle. Discuss the equilibrium conditions at the optimal level of consumption.



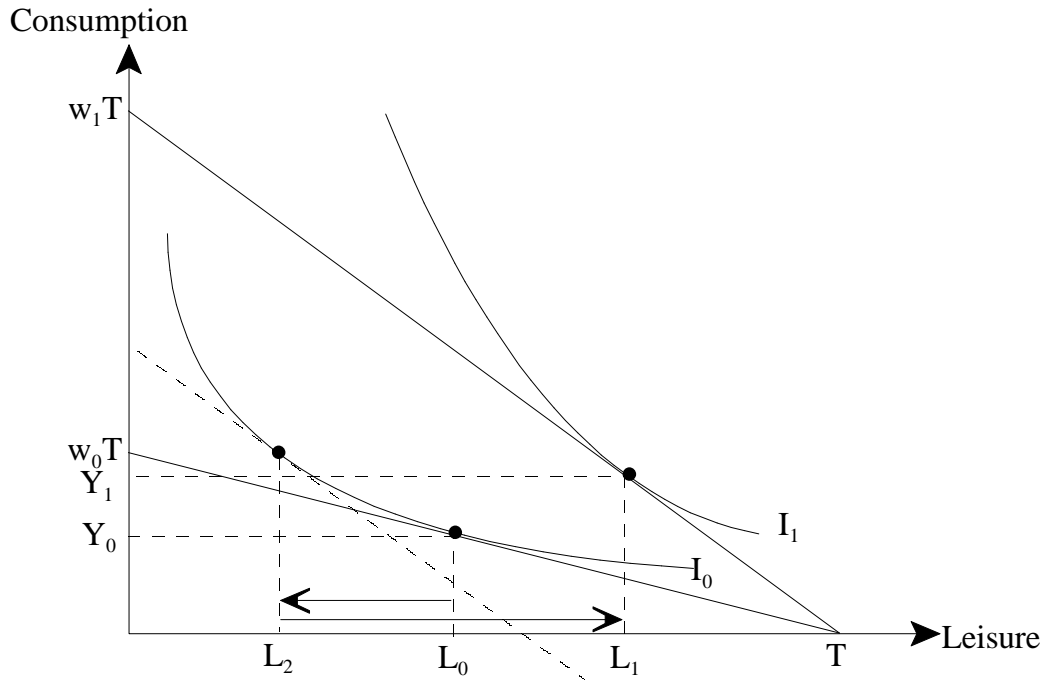
At the equilibrium, the $MRS = P_p/P_Y$. Since the price per unit of pizza is zero, the ratio $P_p/P_Y = 0$ and thus the $MRS = 0$. At the equilibrium point, the $MU_p = 0$, which implies that the individual consumes pizza until its marginal utility is zero.

- (3) A wage increase will induce both an income and substitution effect on the hours worked of a utility maximizing consumer.
- Explain the substitution effect of a wage increase on hours worked.
 - Explain the income effect of a wage increase on hours worked.
 - Using the labor leisure model, show the effect of a wage increase on hours worked if the substitution effect dominates the income effect. Explain fully and show graphically.



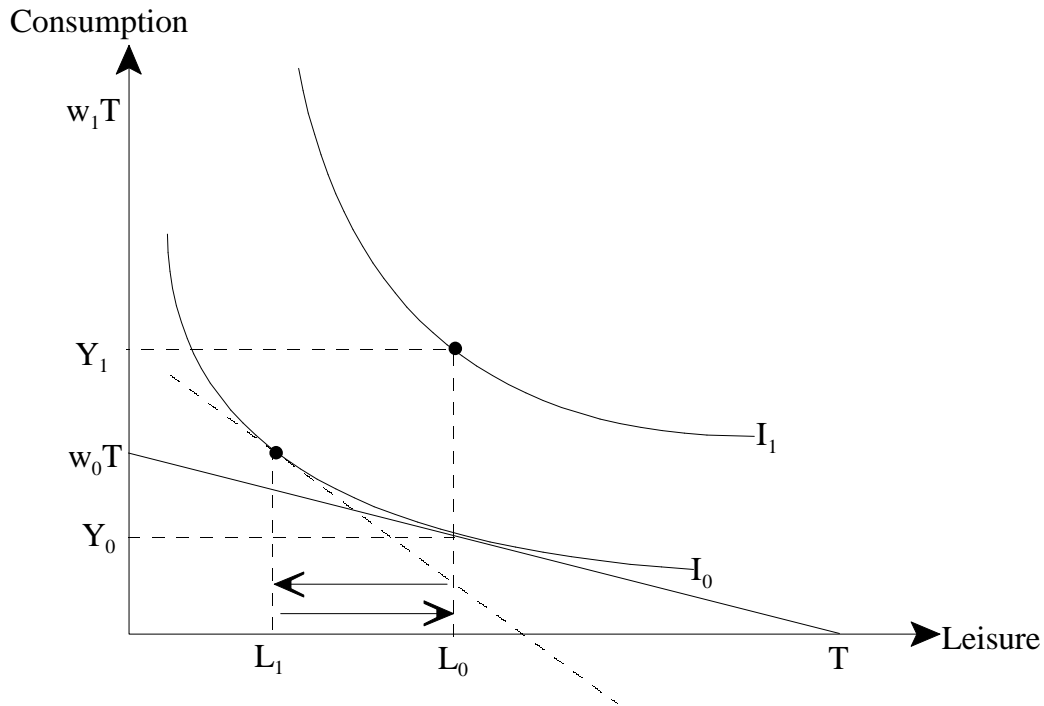
In the graph, the substitution effect is the movement from L_0 to L_2 . The income effect is the movement from L_2 to L_1 . Clearly the substitution effect dominates the income effect so that the hours worked increase.

- (d) Using the labor leisure model, show the effect of a wage increase on hours worked if the income effect dominates the substitution effect. Explain fully and show graphically.



In the graph, the substitution effect is the movement from L_0 to L_2 . The income effect is the movement from L_2 to L_1 . Clearly the income effect dominates the substitution effect so that the hours worked decrease.

- (e) Using the labor leisure model, show the effect of a wage increase on hours worked if the income effect and the substitution effect are of equal size. Explain fully and show graphically.



In the graph, the substitution effect is the movement from L_0 to L_2 . The income effect is the movement from L_2 to L_1 . In this case, the substitution effect and the income effect offset each other so that the hours worked remains the same.

- (f) What are the implications of your answers in c-e on the shape of the labor supply curve?

It can easily be shown that case “c” results in an upward sloping labor supply curve, case “d” results in a downward sloping labor supply curve and case “e” results in a vertical supply curve.

- (4) Assume that a parcel of land in Fresno County costs \$50,000 while an equivalently sized parcel of land in Sonoma County costs \$150,000. A nice house cost 200,000 to build while an average house cost \$50,000. Which area will have a greater number of nice houses? Explain fully.

This is an example of relative price differences in Fresno and Sonoma County. In this case the fixed cost is the cost of construction, which is the same in both locations.

In Fresno County, the relative price of a nice house is $\frac{\$50,000 + \$200,000}{\$50,000 + \$50,000} = \frac{\$250,000}{\$100,000} = 2.5$

To purchase a nice house in Fresno County you have to give up 2.5 average houses.

In Sonoma County, the relative price of a nice house is $\frac{\$150,000 + \$200,000}{\$150,000 + \$50,000} = \frac{\$350,000}{\$200,000} = 1.75$.

to purchase a nice house in Sonoma County you only have to give up 1.75 average houses.

Although houses are more expensive in Sonoma County, nice houses are relatively cheaper. Thus, there should be a greater proportion of nice homes in Sonoma County.