

**Stern School of Business
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Firms and Markets

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Problem Set 1

1. Suppose Samantha and Jason both spend \$24 per week on video and movie entertainment. When the prices of videos and movies are both \$4, they each rent 3 videos and buy 3 movie tickets. Following a video price war and an increase in the cost of movie tickets, the price of videos falls by \$2 while the price of movies increases to \$6. Samantha now rents 6 videos and buys 2 movie tickets; Jason, however, buys 1 movie ticket and rents 9 videos.
- (a) Is Samantha better off or worse off after the price change?
(b) Is Jason better off or worse off?

2. Suppose that good X and Y are perfect complements used in 1:1 ratio. The consumer has an income of \$20 in period 0 as well as in period 1 and faces the following prices:

Period 0: $P_x = 1$; $P_y = 2$

Period 1: $P_x = 4$; $P_y = 1$

- (a) Draw the consumer's budget constraint for each period on the same graph.
- (b) Is he better or worse off (or indifferent) in period 0 vs. period 1?
- (c) Now suppose that the price of X in period 0 is increased so that the consumer becomes indifferent between the bundles he consumes in each period. What is the new price of X?

3. You have just been appointed an executive at a local telephone company, and you review the pricing practices of the firm. You realize that the pricing schedule in effect for telephone calls differs from the "standard" one. In particular, customers pay a fixed fee equal to T for access to the network, plus a price P per call. Thus, in effect, they face a higher price per call for the first call than for the second, and so on. You are puzzled by this scheme, which does not conform to your standard knowledge of microeconomics, where all units of a good were sold at the same price. You are very interested to analyze the difference between the current practice and the "standard" one, where all units cost the same to the consumer. In particular, you want to see which scheme can sell more telephone calls, and which can make more money for your company. To analyze the situation, you create the following hypothetical example.

- (a) Suppose that there are two goods in the world, telephone calls t , and a general consumption good z . Assume that the price of z is $P_z = 1$, and let the price of telephone calls be P' per call.

Assume there is only one consumer. This is your standard example, where all units are sold at the same price.

Write and draw a typical budget constraint noting its intercepts and slope. Now draw a set of indifference curves, and show on the diagram the optimal choice for the consumer.

(b) Now you want to analyze the alternative scheme that is currently in practice. The company collects a fixed fee equal to T and offers a lower price P , $P < P'$, so that the new budget line passes through the old optimum of the consumer (of case (a)). Draw the new budget line and show the new typical choice of the consumer.

(c) Are more or fewer telephone calls made under the new scheme? On what feature(s) of the indifference curves does your answer depend?

(d) In which regime is more money spent on telephone calls? (Hint: remember, that since there are only two goods, all money that is not spent on other goods is spent on telephone calls. Now compare the consumption of z across regimes.)