Econ 101: Principles of Microeconomics Fall 2012

Homework 6 Due: Nov 1-2, 2012

Problem 1: Consider the decisions of Batman and Iron Man. They are each deciding about how much to work versus how much time they want to spend keeping their respective cities safe (assume Batman can earn only $200/hour while Iron Man can earn $500/hour in his profession). They each have 18 hours per day that they can allocate between crime fighting and work. Currently, it is optimal for Batman to spend 4 hours working per day, earning him $800. He then spends 14 hours patrolling Gotham City and fighting crime. For Iron Man, on the other hand, it is currently optimal for him to spend 12 hours working every day, and then 6 hours fighting evil. The superhero union to which they both belong sees that Batman is earning less, causing him to deplete his reserves and threatening the job of Alfred, his long-time butler, while Iron Man is building up millions of dollars annually. In an attempt to ease the financial pain of Batman, the union institutes an income redistribution program. The income earned by Iron Man will be split, such that for every hour he works, he will receive $300 and Batman will receive $200.

(a) What do you expect to happen to the number of hours each spends working in his day job?

Suppose that in response to the new policy, Batman still works 4 hours per day but Iron Man now works 8 hours per day.

(b) What is the total income of each superhero with the income redistribution?
(c) Graph the labor supply curve for Iron Man.
(d) Suppose that instead of decreasing his hours of work from 12 to 8 hours per day after the policy is implemented, Iron Man *increases* his hours worked to 14 hours per day. Draw Iron Man's budget constraint and optimal consumption bundles before and after the policy change. What would be the explanation for his increase in hours worked as a result of the policy change in terms of income and substitution effects?
(e) What would be a possible graph of Iron Man's labor supply curve under the scenario described in part (d)?

Problem 2: Suppose that you are a policymaker trying to predict the effects of an aid program. The program is set up so that for every hour worked, the government will supplement the hourly wage by an additional $5 until income reaches $30. Once income surpasses $50, the supplement will be "phased out", which means that income will be taxed at 25% until the entire benefit is recovered. Assume that after the phase out is complete and outside of the program income goes untaxed. Suppose that workers cannot work more than 12 hours in a day.

(a) Draw the labor supply curve with and without the aid program for a wage of $10 per hour.
(b) Suppose that without the aid program, it is currently optimal for workers to work 6 hours per day. Once the aid program begins, however, the workers only supply 3 hours per day. Graph the scenario and applicable ICs. Denote where the income effect and substitution effect are on the graph.
(c) Suppose that currently (without the aid program) it is optimal to work 8 hours per day. On a new graph, draw the income and substitution effects of the program if the implementation of the aid program leads the worker to work only 4 hours per day.
(d) For what ranges of hours worked once the aid program is implemented is the substitution effect greater than zero?