

Section Exercise for March 14/15: Inequality

Jeremy Bentham (1748-1832), the founder of “utilitarianism”, was an English economist, social reformer, philosopher, and jurist. His economics and philosophy was based on the "fundamental axiom" that: "it is the greatest happiness of the greatest number that is the measure of right and wrong". And, for Bentham, happiness was the amount of pleasure minus the amount of pain, as determined by the “felicific calculus”, for:

Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects, are fastened to their throne. They govern us in all we do, in all we say, in all we think... (cf.: Wikipedia <http://tinyurl.com/j4gpvc2>)

Bentham thought that in the future economists would be able to calculate the net amount of happiness—or “utility”—produced by alternative policies. For, after all, if what appeared to be highly-subjective qualities like temperature and color were, as people in the eighteenth century were discovering, susceptible to direct and quantitative measurement, why not human happiness? And if the application of electricity to the dead leg of a frog could make the leg move, how many more years before scientists discovered enough about what made people move? And how many more years before scientists discovered enough about what made people think? And then with that understanding what made people happy would be an open book—you could even reproduce nature from scratch after the fashion of Freiherr Viktor von Frankenstein (cf.: Wikipedia <http://tinyurl.com/zszku2p>). Bentham’s dreams were largely vain. But his goals allow us to think about to what extent the workings of a competitive market in equilibrium free of market failures leads to a good society.

Across the continent from Avicenna is Durolibridge, populated by equal numbers of farmers and biotechnologists. Farmers grow grain, which they use to make and sell either simple (pizza) or gourmet (flatbread) meals—the typical farmer can make 10 pizza or 2 flatbread or any combination of meals a day. Biotechnologists breed and grow botanicals, which they use to make and sell pharmaceutical capsules—the typical biotechnologist can make 10 pharmaceutical capsules a day.

The typical farmer’s demand for pharmaceutical capsules is:

$$P_c = 6 - Q_c$$

where P_c and Q_c are the prices of pharmaceutical capsules in terms of pizza and the quantity of pharmaceutical capsules produced.

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a) Suppose that biotechnologists are *abstemious*: because their demand for food in terms of capsules is low, their supply curve for pharmaceutical capsules is:

$$P_c = 0 + 5Q_c$$

What is the equilibrium price and quantity of pharmaceutical capsules? What is the consumer and producer surplus?

b) In the situation of case (a), what are the consumption levels of pharmaceutical capsules and pizza-equivalent meals by farmers and biotechnologists, respectively?

c) Suppose that biotechnologists are *moderate* in their demand for food in terms of capsules: thus their supply curve for pharmaceutical capsules is:

$$P_c = 0 + Q_c$$

What is the equilibrium price and quantity of pharmaceutical capsules bought and sold? What is the consumer and producer surplus?

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d) In the situation of case (c), what are the consumption levels of pharmaceutical capsules and pizza-equivalent meals by farmers and biotechnologists, respectively?

e) Suppose that biotechnologists are *gluttonous* and have a high demand for food in terms of capsules: thus their supply curve for pharmaceutical capsules is:

$$P_c = 0 + (0.2)Q_c$$

What is the equilibrium price and quantity of pharmaceutical capsules bought and sold? What is the consumer and producer surplus?

f) In the situation of case (e), what are the consumption levels of pharmaceutical capsules and pizza-equivalent meals by farmers and biotechnologists, respectively?

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g) In all three of (a-b), (c-d), and (e-f), the same commodities are produced and consumed. In all three the market is “efficient” in that (i) sales and purchases exhaust all win-win deals, (ii) those with a low opportunity cost of capsules sell them (for pizzas) and (iii) those with a high willingness-to-pay for capsules buy them (for pizzas). But the distributions is different. Which situation would farmers say is “better”? Which situation would biotechnologist say is “better”? Which situation do you think Jeremy Bentham would believe led to *the greatest good of the greatest number*? Why?

h) Farmers are much poorer in (a-b) than in (e-f)—they consume the same amount of food in both, but only 1/5 as many pharmaceuticals in (a-b) as in (e-f). *Biotechnologists’ relatively low demand for what farmers produce makes farmers poor in (a-b) (and makes biotechnologists rich)*. To what extent do you think that biotechnologists’ relatively-low demand for food in (a-b) is a proper matter of public concern?

i) Jeremy Bentham believed that a good society is one in which matters are arranged in such a way that leads to the greatest good of the greatest number. Robert Nozick believed that a good society is one in which matters are arranged so that what you make with the things that are yours stays yours—unless you voluntarily decide to trade what is yours for other things. John Rawls believed that a good society is one in which matters are arranged so that everyone is free and that whatever material inequalities emerge are those that happen to make even the worst-off better off than they would otherwise be. Which principle, if any, do you find most compelling?