

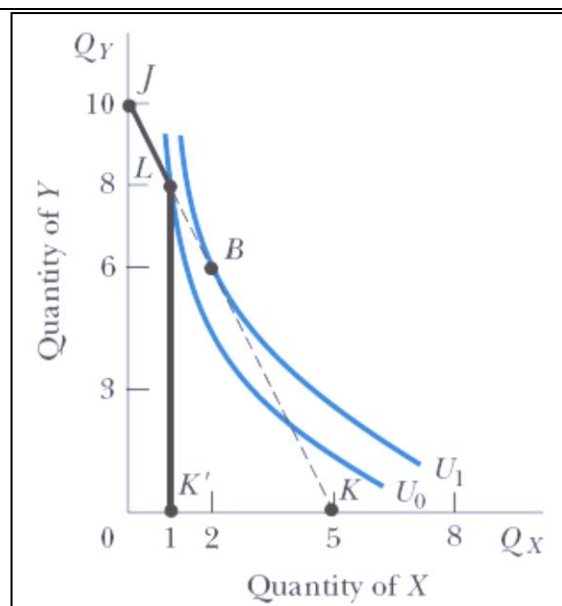
CASE STUDY – VIII

CONSUMER PREFERENCES & CHOICE

Water Rationing in the West

Because goods are scarce, some method of allocating them among individuals is required. In a free-enterprise economy such as our own, the price system accomplishes this for the most part. Sometimes, however, the government rations goods, such as water in the West of the United States (as a result of recurrent droughts) and gasoline in 1974 and 1979 (at the height of the petroleum crisis). If the maximum amount of the good that the government allows is less than the individual would have purchased or used, the **rationing** will reduce the individual's level of satisfaction.

Rationing: In the absence of rationing, the individual maximizes satisfaction at point B , where indifference curve U_1 is tangent to budget line JK , and consumes $2X$ and $6Y$ (as in Figure). If the government did not allow the individual to purchase more than $1X$ per week, the budget line becomes JLK' , with a kink at point L . The highest indifference curve that the individual can reach with budget line JLK' , is now U_0 at point L , by consuming $1X$ and $8Y$.



The effect of rationing on utility maximization and consumption can be examined with Figure. In the absence of rationing, the individual maximizes satisfaction at point B , where indifference curve U_1 is tangent to budget line JK , by consuming $2X$ and $6Y$ (as in Figure). Good X could refer to hours per week of lawn watering (in absence of an automatic water sprinkler system), while good Y could refer to hours per week of TV viewing. If the government did not allow the individual to use more than $1X$ per week, the budget line becomes JLK' , with a kink at point L . Thus, rationing changes the constraints under which utility maximization occurs. The highest indifference curve that the individual can reach with budget line JLK' is now U_0 at point L , by consuming $1X$ and $8Y$. In our water rationing case, this refers to one hour of lawn watering and eight hours of TV viewing per week. With water rationing, the incentive arises to illegally water lawns at night under the cover of darkness. On the other hand, gasoline rationing during 1974 and 1979 led to long lines at the gas pump and to black markets where gasoline could be purchased illegally at a higher price without waiting. Thus, rationing leads to price distortions and inefficiencies.

If rations were $2X$ or more per week, the rationing system would not affect this consumer since he or she maximizes utility by purchasing $2X$ and $6Y$ (point B in the figure). Rationing is more likely to be binding or restrictive on high-income people than on low-income people (who may not have sufficient income to purchase even the allowed quantity of the rationed commodity). Thus, our model predicts that high income people are more likely to make black-market purchases than low-income people. Effective rationing leads not only to black markets but also to “spill-over” of consumer purchases on other goods not subject to rationing (or into savings). Both occurred in the United States during the 1974 and 1979 gasoline rationing periods. Allowing the market to operate (i.e., letting the price of the commodity reach its equilibrium level) eliminates the inefficiency of price controls and leads to much better results.

Sources: “Trickle-Down Economics,” *Wall Street Journal*, August 23, 1999, p. A14; “Water Rights May Become More Liquid,” *Wall Street Journal*, February 15, 1996, p. A2; W. C. Lee, “The Welfare Cost of Rationing-by-Queuing Across Markets,” *Quarterly Journal of Economics*, July 1987; J. Brewer, et al., “Water Markets in the West: Prices, Trading, and Contractual Forms,” *NBER Working Paper No. 13002*, March 2007, and M. Greenstone, “Tradable Water Rights,” *Democracy Journal*, No. 8, Spring 2008, pp. 1–2.