

Discussion 02

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Introduction to Macroeconomics

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Reading list: Chapter 2, Chapter 3

1. Opportunity cost
2. PPF
3. Comparative advantages and Absolute advantages
4. Demand

Question 1

Please read the Figure 1 and answer Question 1

Part (a)

What is the opportunity cost associated with having a worker walk across the factory floor from task to task or in search of tools and parts?

Part (b)

Before lean manufacturing innovations, Japan mostly sold consumer electronics to the US. Illustrate Japan's PPF for automobiles and consumer electronics. Resources are specialized.

Part (c)

How does the PPF from (b) change as a result of lean manufacturing? How does Japan's point on the PPF change?

Part (d)

As a result of lean manufacturing, how has Japan's opportunity cost of producing consumer electronics (in terms of automobiles) changed? How has its opportunity cost of producing automobiles (in terms of consumer electronics) changed?

Part (e)

How do your answers to part (c) and (d) help you understand why the Big Three auto companies in the US asked the US government to restrict the sale of Japanese autos? Was restricting sales of Japanese autos efficient (not good or bad)?

Question 2

In each of the following parts, an event has occurred that will affect the demand or quantity demanded for a good. Illustrate the change in demand or quantity demanded for a good that is listed below(Figure 2).

Part (a)

Harry Potter movies increase interest in the books.

Part (b)

Gas prices have risen to new high levels.

Part (c)

The price of beef is expected to rise next week.

Part (d)

The first snowstorm of the season occurs.

BUSINESS CASE

Efficiency, Opportunity Cost and the Logic of Lean Production



In the summer and fall of 2010, workers were rearranging the furniture in Boeing's final assembly plant in Everett, Washington, in preparation for the production of the Boeing 767. It was a difficult and time-consuming process, however, because the items of "furniture"—Boeing's assembly equipment—weighed on the order of 200 tons each. It was a necessary part of setting up a production system based on "lean manufacturing," also called "just-in-time" production.



Lean manufacturing, pioneered by Toyota Motors of Japan, is based on the practice of having parts arrive on the factory floor just as they are needed for production. This reduces the amount of parts Boeing holds in inventory as well as the amount of the factory floor needed for production—in this case, reducing the square footage required for manufacture of the 767 by 40%.

Boeing had adopted lean manufacturing in 1999 in the manufacture of the 737, the most popular commercial airplane. By 2005, after constant refinement, Boeing had achieved a 50% reduction in the time it takes to produce a plane and a nearly 60% reduction in parts inventory. An important feature is a continuously moving assembly line, moving products from one assembly team to the next at a steady pace and eliminating the need for workers to wander across the factory floor from task to task or in search of tools and parts.

Toyota's lean production techniques have been the most widely adopted, revolutionizing manufacturing worldwide. In simple terms, lean production is focused on organization and communication. Workers and parts are organized so as to ensure a smooth and consistent workflow that minimizes wasted effort and materials. Lean production is also designed to be highly responsive to changes in the desired mix of output—for example, quickly producing more sedans and fewer minivans according to changes in customer demand.

Toyota's lean production methods were so successful that they transformed the global auto industry and severely threatened once-dominant American auto-makers. Until the 1980s, the "Big Three"—Chrysler, Ford, and General Motors—dominated the American auto industry, with virtually no foreign-made cars sold in the United States. In the 1980s, however, Toyotas became increasingly popular in the United States due to their high quality and relatively low price—so popular that the Big Three eventually prevailed upon the U.S. government to protect them by restricting the sale of Japanese autos in the U.S. Over time, Toyota responded by building assembly plants in the United States, bringing along its lean production techniques, which then spread throughout American manufacturing.

QUESTIONS FOR THOUGHT

1. What is the opportunity cost associated with having a worker wander across the factory floor from task to task or in search of tools and parts?
2. Explain how lean manufacturing improves the economy's efficiency in allocation.
3. Before lean manufacturing innovations, Japan mostly sold consumer electronics to the United States. How did lean manufacturing innovations alter Japan's comparative advantage vis-à-vis the United States?
4. Predict how the shift in the location of Toyota's production from Japan to the United States is likely to alter the pattern of comparative advantage in auto-making between the two countries.

Figure 1: Efficiency, Opportunity cost and PPF

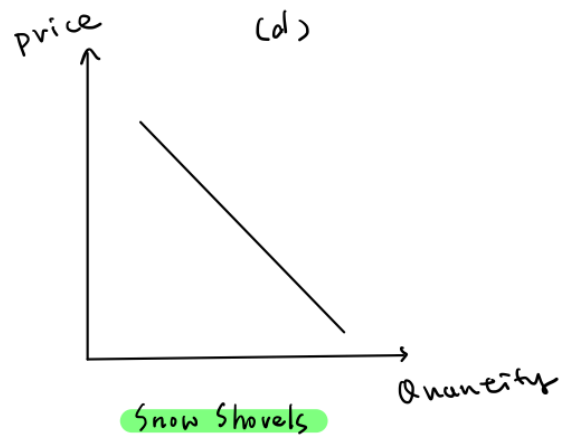
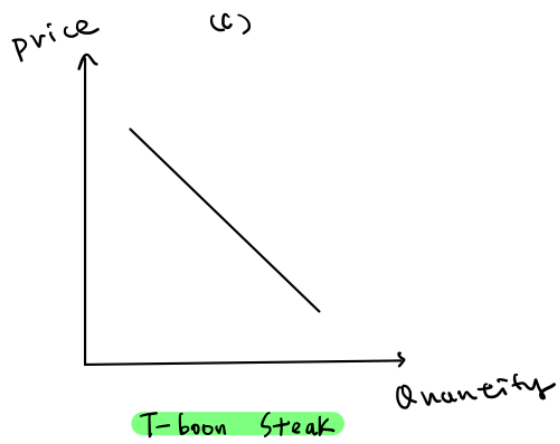
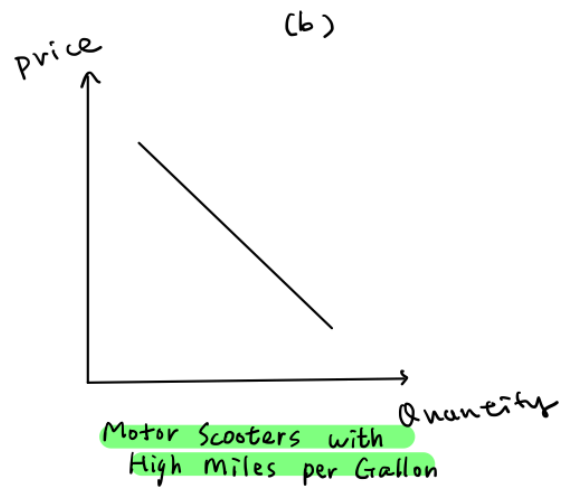
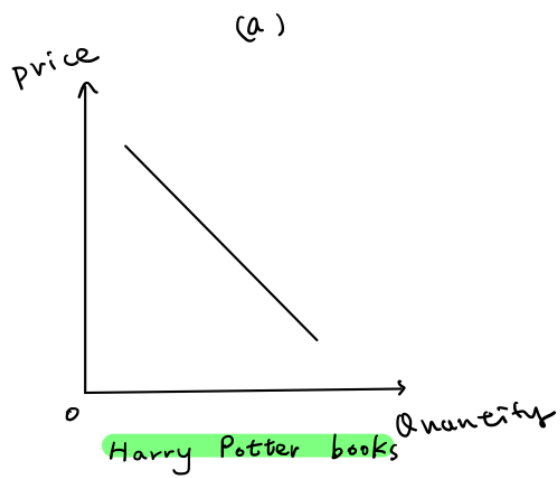


Figure 2: Demand