Homework Exercises 1: Introduction to Microeconomics

1. The opportunity cost of going skiing includes both *explicit* and *implicit* costs. If you choose skiing instead of working at your part-time job, the opportunity cost is the wages you would have earned (implicit cost) plus any money you spend on skiing (explicit cost).

   If you choose skiing instead of studying at the library, the opportunity cost is the money you spend to go skiing (explicit cost) and the study time you give up, which could result in lower grades or less understanding of the material (implicit cost).

2. Social media platforms do not charge a direct fee to users, but using them are not truly "free" – the time spent on them represents an opportunity cost. The estimated annual opportunity cost:

   $$\text{Annual opportunity cost} = 1\ \text{hour/day} \times \$13/\text{hour} \times 365\ \text{days} = \$4{,}745\ \text{per year}$$

   While there is no direct monetary charge, the value of the time spent is significant.

3. The opportunity cost is the value of the best alternative that is given up. If Bennett kept the Supersonics in Seattle, his opportunity cost would be $82 million—the difference between the $63 million loss from staying in Seattle and the $19 million profit from moving to Oklahoma City. By not moving, Bennett would miss out on not only avoiding the loss, but also gaining the profit he could have made by relocating the team. (The team did end up moving to Oklahoma City in 2008.)

4. Yes, you should finish the movie, since it will cost $200,000 to complete, but you expect to earn $400,000 in revenue. The $500,000 already spent is a *sunk cost*, which means it cannot be recovered and should not affect your decision. You should compare only the additional cost ($200,000) to the expected revenue ($400,000). Since $400,000 is greater than $200,000, finishing the movie makes sense. The maximum amount you should pay to finish the movie is $400,000. If finishing costs more than you will make, it is not worth it.

   This example shows that when making decisions, you should look forward and consider only the costs and benefits that will happen as a result of your choice, that is exactly the concept of opportunity cost.

5a. No, $433 million and the effort devoted are sunk cost. These have been incurred and cannot be recovered, whether the VIPER project is cancelled or not. It should not be relevant to the decision of cancellation. Instead, the potential or expected benefits of continuing the VIPER projects should be considered, as it is the relevant opportunity costs.

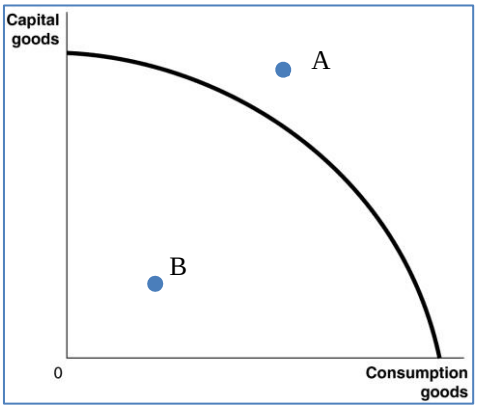
5b. The opportunity cost of continuing the VIPER project includes the potential amount NASA could receive from the commercial company by selling the VIPER project (implicit costs); and the $84 million plus other resources to be spent on projects (explicit costs).

6a. The following figure shows a typical production possibilities frontier (PPF) between consumption goods and capital goods. The PPF is usually bowed out (curved outward) from the origin.

   This bowed-out shape comes from **increasing opportunity cost**. It happens because resources are not identically good in producing both goods. At first, when the economy produces mostly

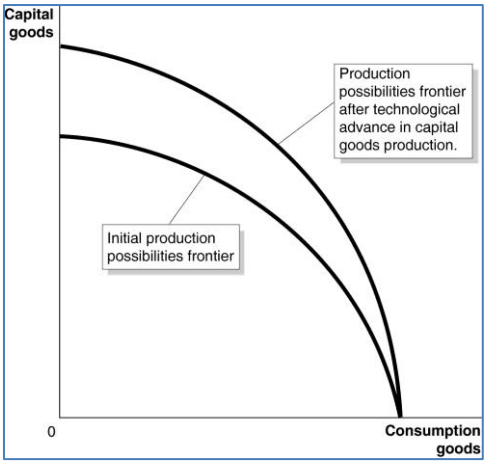
capital goods, it uses resources that are best suited for making capital goods. If it wants to make a little more consumption goods, it can shift some resources that aren't as good at making capital goods, so the opportunity cost (capital goods given up) is low.

But as the economy produces more and more consumption goods, it must begin using resources that are better suited for making capital goods. As a result, each extra unit of consumption goods comes at a higher opportunity cost, because it means giving up more and more capital goods. So, the PPF is bowed out because as you move along it, the opportunity cost of producing one type of good (like consumption goods) increases the more you produce of it. This illustrates the economic principle that resources are not equally good at producing all goods.

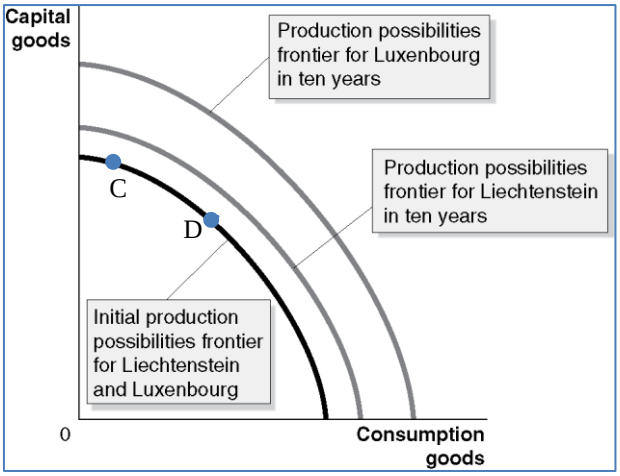


6b. Point A is impossible for the economy to achieve; it is outside the PPF. Point B is feasible but inefficient because it is inside the PPF.

6c. The biased technological progress will change the PPFs as below:



6d. Luxembourg might choose a point like C today, with lots of capital goods and not much consumption goods. Liechtenstein might choose a point like D, with a lot of consumption goods and few capital goods. Because Luxembourg will have more capital goods, such as machinery, equipment, and robots, it is likely to experience more rapid growth in the future than Liechtenstein.


Capital goods
Production possibilities frontier for Luxenbourg in ten years
Production possibilities frontier for Liechtenstein in ten years
C
D
Initial production possibilities frontier for Liechtenstein and Luxenbourg
0
Consumption goods