ECON 111: Fall 2021
Tyler Porter

These discussion sections will consist of small collections of practice problems which we will review as a group after you've had the opportunity to attempt them.

1. Suppose that you have the following production possibilities: In a single day you can produce 30 baskets of apples, or 5 bales of hay, or any combination of 30 baskets of apples and 5 bales of hay at a constant trade-off.
   (a) Sketch your PPF for a single day.
   (b) What is your opportunity cost of a basket of apples?
   (c) Now consider the combination of 25 baskets of apples and 4 bales of hay. Is this feasible for you to produce in a single day?
   (d) What prices would allow you to attain the combination of 25 baskets of apples and 4 bales of hay in a single day? At each of these prices, what would you specialize in?
   (e) Suppose now that your friend is able to produce any combination of 40 baskets of apples or 8 bales of hay in a single day. Sketch your joint PPF.
   (f) Who has the comparative advantage in producing apples?
   (g) Suppose that you are only interested in acquiring bales of hay, and that your friend is only interested in acquiring apples. You each agree to set a price of 6 baskets of apples per bale of hay. Sketch the combinations of apples and hay that your friend can achieve at this trade price by exchanging goods with you in a single day.

2. Suppose that you are given the following supply and demand curves for a new gasoline-powered car.
   $P = 25 + 2Q_s$
   $Q_d = 175 - P$
   (a) Sketch the supply and demand curves, labeling the axes and the equilibrium point.
   (b) Suppose now that the price of steel, an input in the car, rises dramatically. How would this affect the equilibrium price and quantity supplied?
   (c) Suppose now that, in addition to the increase in the price of steel, the price of fuel, a complement of the gasoline-powered car, falls. What can you say about the change in equilibrium price and quantity after the equilibrium settles following both of these changes?
   (d) Suppose instead that consumers receive a boost in income due to a temporarily reduced income tax. In addition to this, a dramatic increase in the cost of producing powerful batteries for hybrids leads manufacturers to shift production toward gasoline-powered vehicles. How would you expect these two events to affect the equilibrium price and quantity in this market?
   (e) Suppose that, in order to discourage the consumption of gasoline-powered vehicles, the government imposes a price floor of 150 on new gasoline-powered cars. What do you expect this price floor to result in?

1. (a) Your PPF for a single day is given below:

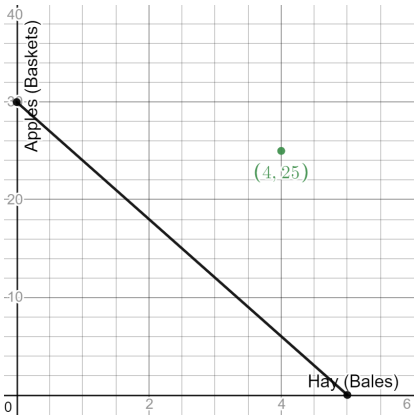

Figure 1: Your PPF

(b) Your opportunity cost of a basket of apples is $\frac{1}{6}$ bale of hay.

(c) As seen on the PPF figure above, the point (4,25) is not feasible.

(d) There are two ways to obtain this bundle, depending on the prices. If you were to specialize in hay, then any price greater than 25 baskets of apples per bale of hay would allow you to achieve this bundle. On the other hand, if you were to specialize in apples, you would require a price of at least $\frac{4}{5}$ bales of hay per basket of apples.

(e) Your joint PPF is given in the following figure:

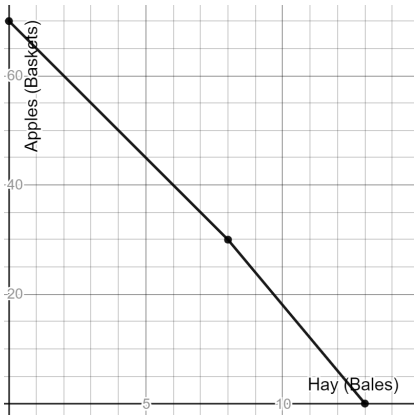

Figure 2: Joint PPF

(f) Given that your opportunity cost of a basket of apples is $\frac{1}{6}$ of a bale of hay, and your friend's opportunity cost of a basket of apples is $\frac{1}{5}$ of a bale of hay, you have the comparative advantage in producing apples.

(g) The combinations that your friend is able to achieve at this price, and given that you are constrained to only be able to trade 30 apples in a single day, are given in the following figure:

Figure 3: Friend's original PPF (black) and achievable combinations with trade (blue).

2. (a) A sketch of the curves is given in the figure below:

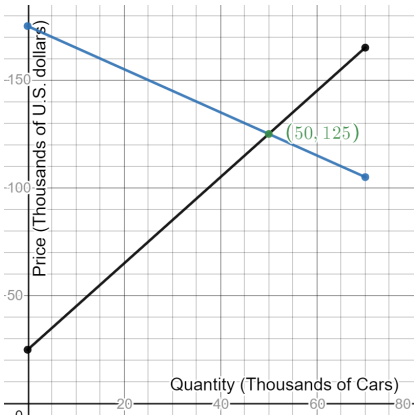

Figure 4: Sketch of market supply and demand curves.

(b) An increase in the price of an input for supply would shift the supply curve to the left so that, at any given price, fewer cars would be supplied. This would result in an increase in the equilibrium price and a decrease in equilibrium quantity.

(c) A decrease in the price of a complement will result in a shift in demand to the right so that, at any given price, a greater number of cars would be demanded. This change, coupled with the change in supply, would result in an increase in the equlibrium price (as compared to the original price of 125) and an ambiguous change in the equilibrium quantity. That is, the change in equilibrium quantity will depend on the magnitude of the shifts in supply and demand.

(d) Supposing that gasoline-powered cars are a normal good, the increase in income will shift the demand curve to the right so that consumers will demand a greater quantity at any price. A shift in production toward gasoline-powered vehicles will shift the supply curve to the right. These shifts, when taken together, will result in an increase in the equilibrium quantity (as compared to the original equilibrium quantity of 50), but an ambiguous change in the equilibrium price.

(e) Given that the price floor is above the original equilibrium price of 125, it is binding. Thus, the result would be some amount of excess supply (a surplus).