

Economics 10: Problem Set 1 (With Suggested Answers)

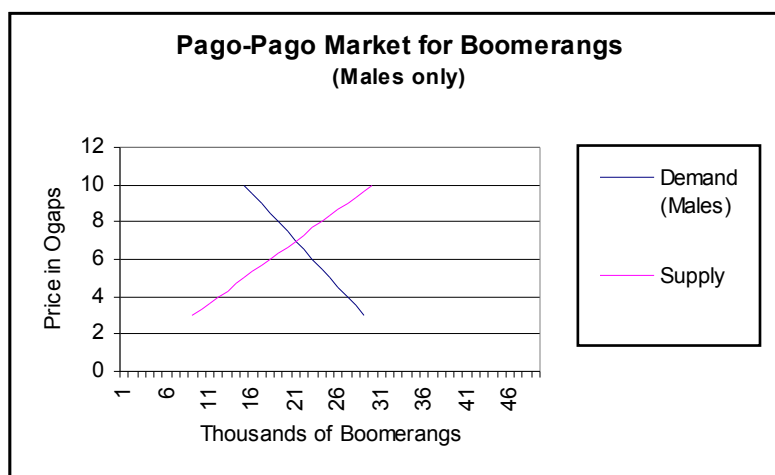
The island of Pago-Pago imports boomerangs from Australia, but by custom, only the boys of the island are allowed to play with them. Consider the following market information about boomerangs:

At a price of (in ogaps):	10	9	8	7	6	5	4	3
QD-M (in thousands)	14	16	18	20	22	24	26	28
QS (in thousands)	29	26	23	20	17	14	11	8
QD-F (in thousands)	0	2	5	8	11	14	17	20

where QD-M is the quantity of boomerangs demanded by males, QS is the quantity of boomerangs supplied by Australian companies and the "ogap" is the local currency.

PART A:

- On a single graph plot the demand curve of Pago-Pago males and the supply curve for boomerangs.



- Explain why the slopes of these two curves make sense.

a. Supply curve is upward sloping (positive slope) because the quantity supplied increases as the price goes up. An intuitive explanation of the positive relationship between price and quantity supplied is based on the concept of opportunity cost. At greater prices the firm has a greater incentive to devote more resources to production of boomerangs than it has at lower prices. On the other hand, at very low prices of boomerangs the firm can think of alternative uses of resources (e.g. make other goods out of mahogany, rent out the plant).

b. Demand curve is downward sloping (negative slope) because the quantity demanded declines as the price goes up.

..... A single individual buys smaller quantity of the product at increasing prices, and more people are attracted to
 smaller prices than high prices.

- Consider each of the following circumstances and predict their separate impacts on one or both of these two curves. If a curve shifts, indicate the direction of the shift.

a) the income of Pago-Pagoans declines after a typhoon hits the island;

The demand curve shifts to the left because people have less disposable income for goods, and thus buy fewer boomerangs.

b) the Australians win the Olympic boomerang championship;

This could have the effect of increasing the demand for boomerangs in Australia, thereby raising the price of boomerangs in Australia and causing the manufacturer to divert supplies from Pago-Pago. In that case, the supply curve in Pago-Pago will shift left, causing a rise in price, a decline in quantity sold and a decline in quantity demanded. Or,

If we assume that after the championship boomerangs become more popular in Pago-Pago and boys want to imitate the Australian boomerang stars, then the demand curve in Pago-Pago shifts to the right.

c) the price of Frisbees increases;

We assume that Frisbees and boomerangs are substitutes. An increase in the price of Frisbees will make boomerangs more attractive, and the demand curve for boomerangs will shift to the right.

d) the Pago-Pago government reduces the tariff on imported clothing, including Official Boomerang T-shirts;

If we assume that boomerang T-shirts and boomerangs are complements then a decrease in the price of T-shirts will result in an increased quantity demanded of T-shirts and an increased demand for boomerangs. The demand curve for boomerangs will shift to the right.

Another possible answer would be that clothing and boomerangs are essentially unrelated goods. If so, then the tariff on imported clothing would have no effect on the boomerang market.

e) the Australian boomerang manufacturers decide to add a money-back guarantee on their product (if you don't like your boomerang, you may send back your boomerang and they will cheerfully return your money);

This is a marketing technique to boost demand. Some people who want to check out boomerangs for free will actually keep them. The demand curve shifts to the right because preferences for boomerangs change.

Further, if we assume that the money-back guarantee increases the firm's input cost (advertising and processing returns) then the supply curve shifts to the left.

f) a new type of vinyl is discovered which has the same aerodynamic properties as the mahogany traditionally used in boomerangs but costs twice as much as mahogany;

There will be no change. No producer would switch to using an input that is two times as expensive as the old one but not any better.

g) a new type of plastic is invented which has the same aerodynamic properties as the mahogany traditionally used in boomerangs but costs half as much as mahogany.

The supply curve will shift to the right because production becomes cheaper allowing the manufacturers to sell each quantity at a lower price than before.

h) the wage rates paid to boomerang workers rise.

The supply curve will shift to the left because production becomes more expensive.

PART B:

1. Given the original information about supply and male demand shown above, find the equilibrium quantity and price of boomerangs.

The equilibrium: $P = 7$, $Q = 20,000$. At equilibrium the quantity demanded is equals to the quantity supplied.

2. Suppose some bleeding-heart liberal legislators have determined that no red-blooded Pago-Pago boy should have to pay more than 6 ogaps for a boomerang. Legislation is passed with establishes 6 ogaps as the maximum price. Determine the resulting quantity demanded, quantity supplied, quantity bought and quantity sold. How would you describe the resulting situation? What special problems arise in such a market?

Q Demanded = 22,000 @ 6 ogaps

Q Supplied = Q Sold = Q Bought = 17,000 @ 6 ogaps.

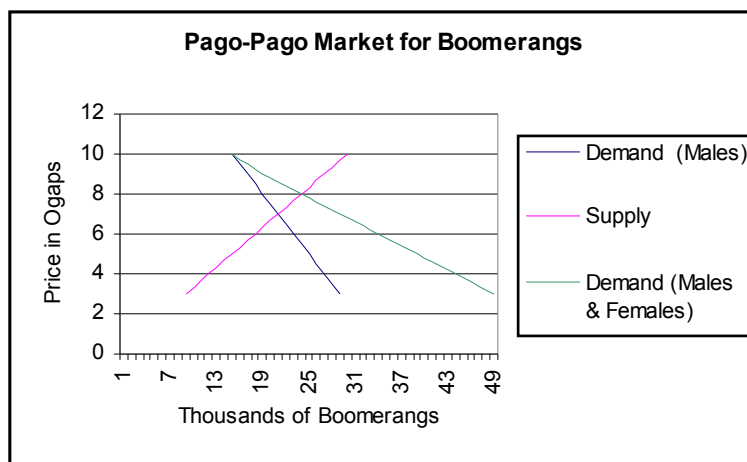
This is a case of an effective price ceiling. The result is an excess demand of 5,000 boomerangs (=shortage of boomerangs). This situation can lead to black market in boomerangs.

3. These liberal legislators conclude that they do not like the results of the maximum price (in Part B-2) and so repeal it. In its place they pass an *Equal Rights Amendment* that (among other things) permits girls also to play with boomerangs. If QD-F in the table above represents the quantity of boomerangs demanded by females, find the new equilibrium quantity and price in a market that includes both female and male buyers. Do you think that the boys welcome the presence of female players? How about boomerang producers?

New Quantity Demanded = QD Boys + QD Girls at each price.

New equilibrium $P = 8$, $Q = 23,000$.

Producers benefit and boys are hurt by the new, higher equilibrium price.



4. Consider each of the developments in Part A, question 3, and predict what each would be expected to do to the equilibrium price and quantity of boomerangs.

- a) Demand decreases → P decreases, Q decreases.
- b) Demand increases → P increases, Q increases.
- c) Supply Decreases → P increase, Q decreases; Or demand increases → P increases, Q increases.

- d) Demand increases \rightarrow P increases, Q increases.
- e) Demand increases \rightarrow P increases, Q increases.
(Note: if we assume that Demand increases and Supply decreases then P increases, but we cannot determine if Q goes up or down)
- f) No change.
- g) Supply increases \rightarrow P decreases, Q increases.
- h) Supply decreases \rightarrow P increases, Q decreases.