

## Consumption with Endowments: A Simple Separation Theorem

The first half of the course deals with doing welfare evaluation correctly. The second half of the course deals with markets and market interactions. One of the themes I will try to bring out is the idea that when markets work well, people make good decisions. That is, they make decisions that maximize economic value, and then they use markets to buy and sell commodities to arrive at the consumption bundle they want. Remarkably, it turns out that when markets are perfect, this approach also maximizes the consumer's welfare. However, if markets do not function well, then people may be forced to distort their decisions to make up for the fact that they cannot use markets to modify their consumption bundle. For example, if markets are perfect and the price of bananas is high and the price of coconuts is low, even a farmer who hates bananas and loves coconuts will be best off by choosing to grow bananas. But, once the bananas are harvested he will sell them and use the proceeds to purchase coconuts. In this way, he will be able to eat more coconuts than if he grew them himself. If there are not good markets, then the farmer will be forced to eat what he grows. In this case, he will be forced to grow coconuts, and he will end up with fewer coconuts than he would have if the markets were better. In addition to the "micro" effects, there can also be larger scale effects. If everyone makes suboptimal decisions because markets are not well developed, then overall growth may be adversely impacted.

To illustrate, consider a consumer who must choose between endowment  $a = (a_1, a_2)$  and endowment  $b = (b_1, b_2)$ . (Assume non-endowment wealth is  $w = 0$  for the sake of the diagrams.) How should the consumer choose? If markets are perfect, the consumer should choose whichever bundle has the higher market value. After all, if bundle  $a$  has higher market value than bundle  $b$ , then the budget set for endowment  $a$  includes the budget set for endowment  $b$ , and therefore the consumer must be strictly better off at  $a$  than  $b$ . Thus,  $a \succ b$  if and only if  $p \cdot a > p \cdot b$ . Figure 1 illustrates. Note, however, that a critical assumption underlying this is that the price at which you can buy a commodity is the same as the price at which you can sell it. This is often not the case. In fact, it is the norm in markets for the "buy price" to be greater than the "sell price," and the extent to which the two differ is often interpreted as a sign of market development or competitiveness.

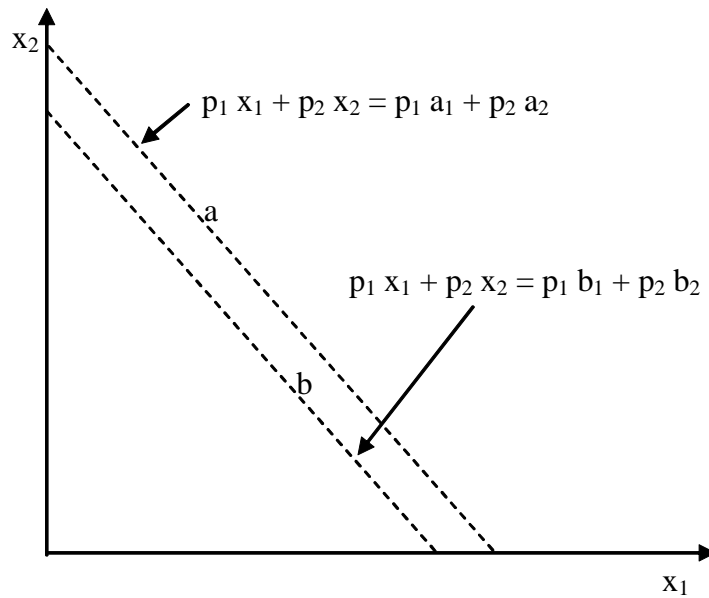


Figure 1:

Next, consider the case where the buy price of a good is greater than the sell price. Let  $p_1^b$  and  $p_2^b$  denote the buy prices and  $p_1^s$  and  $p_2^s$  denote the sell prices, and suppose  $p_1^b > p_1^s$  and  $p_2^b > p_2^s$ . In this case, the budget set will have a kink at the endowment point. Above the endowment point, the slope of the budget line is  $-\frac{p_1^s}{p_2^s}$  (since over this range the consumer is selling  $x_1$  and using the money he makes to buy  $x_2$ ). Below the endowment point, the slope of the budget line is  $-\frac{p_1^b}{p_2^b}$ , since over this range the consumer is selling good 2 and using the profit to buy good 1. (See Figure 2.) Since  $p_1^b > p_1^s$  and  $p_2^b > p_2^s$ , the slope is steeper when the consumer buys 1 and sells 2 than when he sells 1 and buys 2. (If you don't believe me, plug in some numbers for  $p_1^b$ ,  $p_1^s$ ,  $p_2^b$ , and  $p_2^s$ .)

Now, return to the question of whether the consumer should prefer endowment  $a$  or endowment  $b$ . Now the answer to the question is: "it depends." Consider Figure 3. In this case, whether the consumer prefers  $a$  or  $b$  will depend on the nature of his preferences. If he has a strong preference for good  $x_1$ , he may choose endowment  $b$ . This is true even though the "market value" of  $a$  would be larger if there were no bid-ask spread.

Thus, the inability to increase consumption of  $x_1$  through the market may lead the consumer to make decisions that maximize short run utility but have negative long-run consequences. For

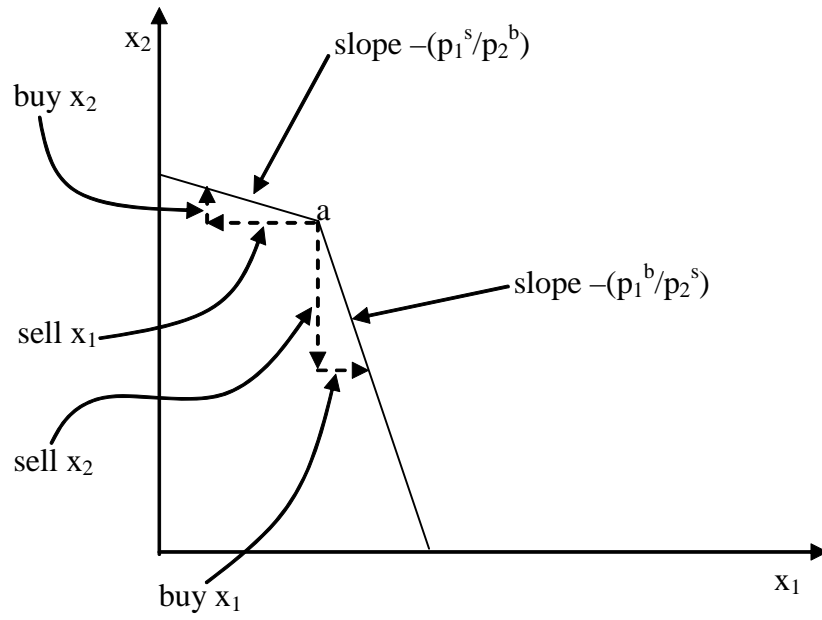


Figure 2:

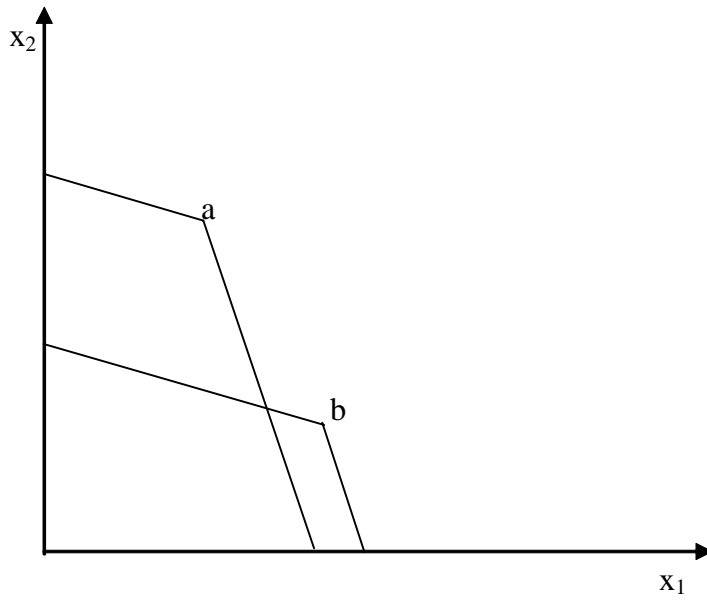


Figure 3:

example, if  $x_1$  is a food crop and  $x_2$  is a non-food crop, then  $a$  represents focusing on the cash crop while  $b$  represents focusing on the subsistence crop. If markets are good, the consumer should grow the cash crop and use the market to purchase food. If markets are not good, then the consumer will have to grow the food crop, passing on the opportunity to increase welfare by growing the cash crop.

This is known as a “separation result” because it essentially says that *if markets are perfect, then the consumer’s production decision (which endowment to choose) and consumption decision (what to consume) can be separated. The consumer maximizes welfare by making the production decision that maximizes the value of the endowment and then maximizes utility given the resulting budget set.* We will see these kind of results in a wide variety of circumstances. Often, and especially in a developing context, the real importance of these results is not when they work (since markets are never perfect!), but when they don’t. In this case, separation results suggest that improving markets can improve welfare. This is much more interesting and useful than the result is usually stated.

One way to improve markets is to improve institutions. This may have been mentioned in another one of your courses.