

1. Mutual gains from exchange
2. Gains from specialization
3. The gains-from-trade theorem
4. The distribution of gains between countries
5. The distribution of gains between individuals within countries
6. Distorted economies

The emphasis here is on showing that the ability to trade (voluntarily, non-coerced) leads to *mutual gains* from trade.

We show that the common fallacy that one country can only benefit at the expense of the other is *false*.

We start with simple examples and proceed later to more general cases. 2

Gains from exchange: individuals have fixed endowments, no production

Assume that there are two individuals, one (Ole) has a fixed amount of good Y and the other (Lena) has a fixed amount of good X.

Contrast the welfare levels when each does not trade, versus when each person gives half of his/her endowment for half of the other person's endowment.

### **Figure 1**

This illustrates a pure case of increasing welfare through having more products to consume (products are imperfect substitutes).

But this is an extreme case. There are still gains to be had as long as endowments are unbalanced and the traders have similar preferences.

So when two traders have similar preferences, trade allows them to have a more diverse consumption basket or a more balanced consumption basket.

As an exercise, draw a case in which the traders have the same endowment but have very different preferences. Then there are also gains from trade.

### Gains from specialization

However, typically countries have the ability to produce different bundles of goods (the production possibility curve).

We now show that there are further gains to be captured by specializing in what a country is good at.

In Figure 3, we show the production possibilities curves for Ole and Lena. Ole is relatively good at producing Y and Lena is relatively good at producing X.

### **Figure 3**

In this simple “symmetric” case, Ole and Lena have the same levels of autarky welfare ( $U^a$ ). But both have somewhat unbalanced consumption: Ole is not very good at producing X and Lena is not very good at Y.

Figure 4 reproduces the autarky equilibrium. If they are stuck with this year’s production, they can trade to the mutually preferred point  $U^e$ , where Ole “exports” Y for X and vice versa for Lena. This is once again pure gains from exchange.

### **Figure 4**

However, they can both do much better than this. Ole can specialize in Y and Lena can specialize in X. Then they can trade to the mutually preferred point  $U^S$ .

This illustrates a fundamental point. There are large gains from specialization: concentrating on what you do well and selling that to others in exchange for what you do badly (what is costly for you to produce).

The gains-from-trade theorem:

An undistorted, competitive economy must be better off in free trade than in autarky.

$p^f$  - vector of free trade prices,  $p_i^f$

$X^f$  - vector of free trade outputs,  $X_i^f$

$C^f$  - vector of free trade consumption,  $C_i^f$

$X^a$  - vector of autarky outputs,  $X_i^a$

$C^a$  - vector of autarky consumption,  $C_i^a$

(1) Production efficiency in a competitive, undistorted economy

$$\sum_i p_i^f X_i^f \geq \sum_i p_i^f X_i^a$$

The free-trade production bundle yields a higher income at free-trade prices than the autarky bundle. We established this in earlier notes

## Figure 5

(2) Autarky market clearing, trade balance

$$X_i^a = C_i^a \quad \sum_i p_i^f X_i^f = \sum_i p_i^f C_i^f$$

(3) Substitute (2) into (1)

$$\sum_i p_i^f C_i^f \geq \sum_i p_i^f C_i^a$$

Free trade is "Revealed Preferred" autarky

In free trade (at free-trade prices), the economy could have purchased the autarky consumption bundle but chose not to (the autarky bundle is cheaper than the free-trade bundle actually purchased).

This means that the economy prefers the free-trade bundle to the autarky bundle.

Figure 6 adds in indifference curves for illustration, but we stress that the validity of the argument is independent of the position of the indifference curves.

## **Figure 6**

The gains from trade theorem is very powerful, but limited.

It says that free trade is better than autarky, but it doesn't say anything about the size of the gains, and which country gets more of the total gains.

Figure 7 illustrates the problem: Lena has all the X initially and Ole has all of the Y.

There are a whole set of trades that make both better off (or no worse off): all points in the “lens” formed by the indifference curves through the endowment point E.

### **Figure 7**

The set of “Pareto efficient” trade are the tangency points (contract curve) between A and B in Figure 7. At A Ole gets all of the gains, at B Lena gets all of the gains.

In a situation with only two traders, we usually think of this as a bargaining situation, where better or more patient bargainers get more of the gains.

In market situations where there are large numbers of traders in the two economies, the outcome is determined through supply and demands that determine *equilibrium prices*, and equilibrium *prices* determine the *distribution* of the total gains.

Refer back to Figure 1. Suppose that both Ole and Lena like good X better and both would like to trade their endowment to get to point B when the price ratio is the slope of the diagonal between their endowments.

Point B cannot be an equilibrium: There is excess demand for X and excess supply for Y.

To get an equilibrium, the relative price for X has to rise and the relative price for Y has to fall. The outcome is shown in Figure 8: Lena has a larger gain because she has the more preferred good.

Later, in chapter 7, we will show that country size has an important role to play in the distribution of gains from trade.

Distribution of gains between consumers *within* a country.

The situation gets more complicated when there are many consumers within a country who have difference endowments, abilities, or preferences.

The situation is shown in Figures 9-11. Suppose country h has lots of X producers but only one Y producer. Each producer is useless at the other task.

Figure 9

Equilibrium for country h with lots of X and little Y is at point H, and the tangent to the indifference curve is the equilibrium relative price ratio.

Equilibrium for country f is at point F in Figure 9, where lots of Y and little X mean a low high price for X relative to Y.

Now let the countries trade. Perhaps they will trade to the mid-point between F and H, denoted point A in Figure 9.

Note especially that the relative price ratio is now between the two autarky price ratios.

Who don't you want to be in this example: answer, the single Y producer in country H or the single X producer in country F.

**Figure 10**      **Figure 11**

The “income” of the single X producer in country F is fixed at  $\bar{X}$  in Figure 10. But after trade, the producer gets a lower price relative to the cost of buying Y, and so this individual is worse off with trade.

Similarly, the single Y producer in country H is worse off with trade because the price that he/she can sell Y for is now lower after trade.

Figures 9-11 reveal the *fundamental tension* over trade policy and give the key intuition as to why groups within a country fight so ferociously over free trade versus protection:

While free trade increases aggregate income for a country, nothing guarantees that all *individuals* within the country benefit much less benefit equally.

We will return to this point many times in this book.

We want to close with one caveat. We will return to this point many times but want to give a quick introduction here.

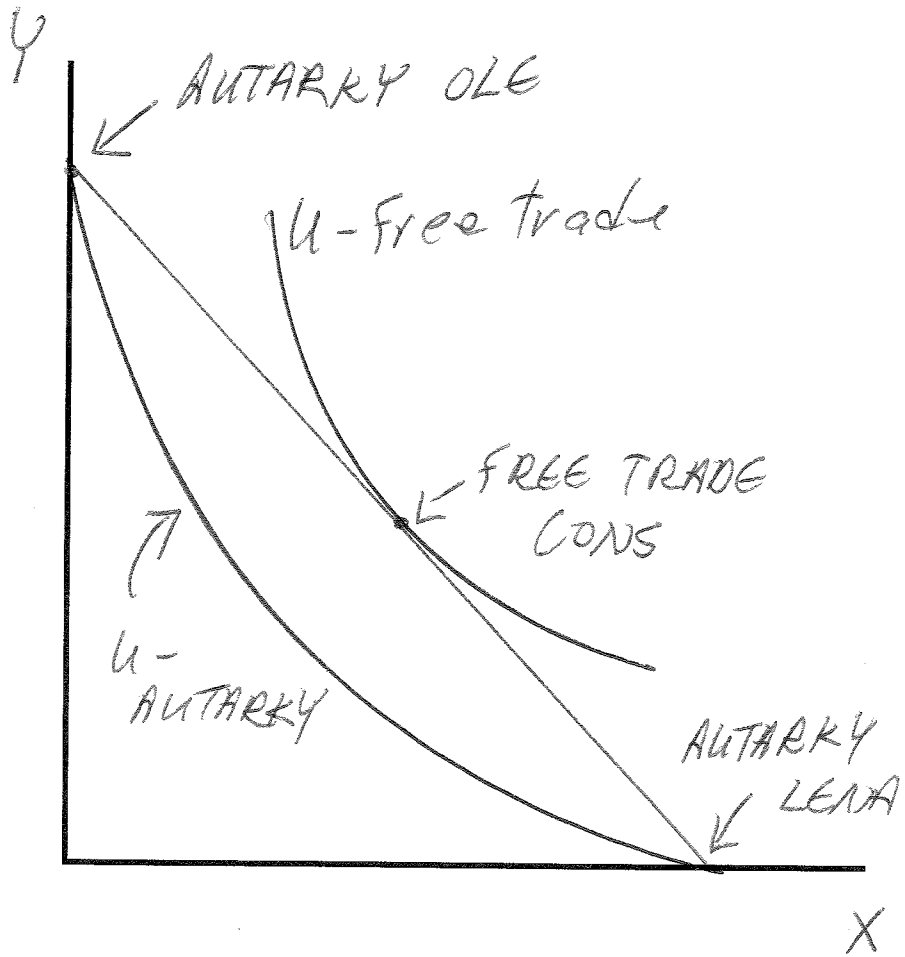
The gains-from-trade theorem relies on *competitive, undistorted markets and pricing*.

Consider Figure 12 where the country is in free-trade equilibrium at price ratio  $p^*$  producing at point Q and consuming at C, importing good X.

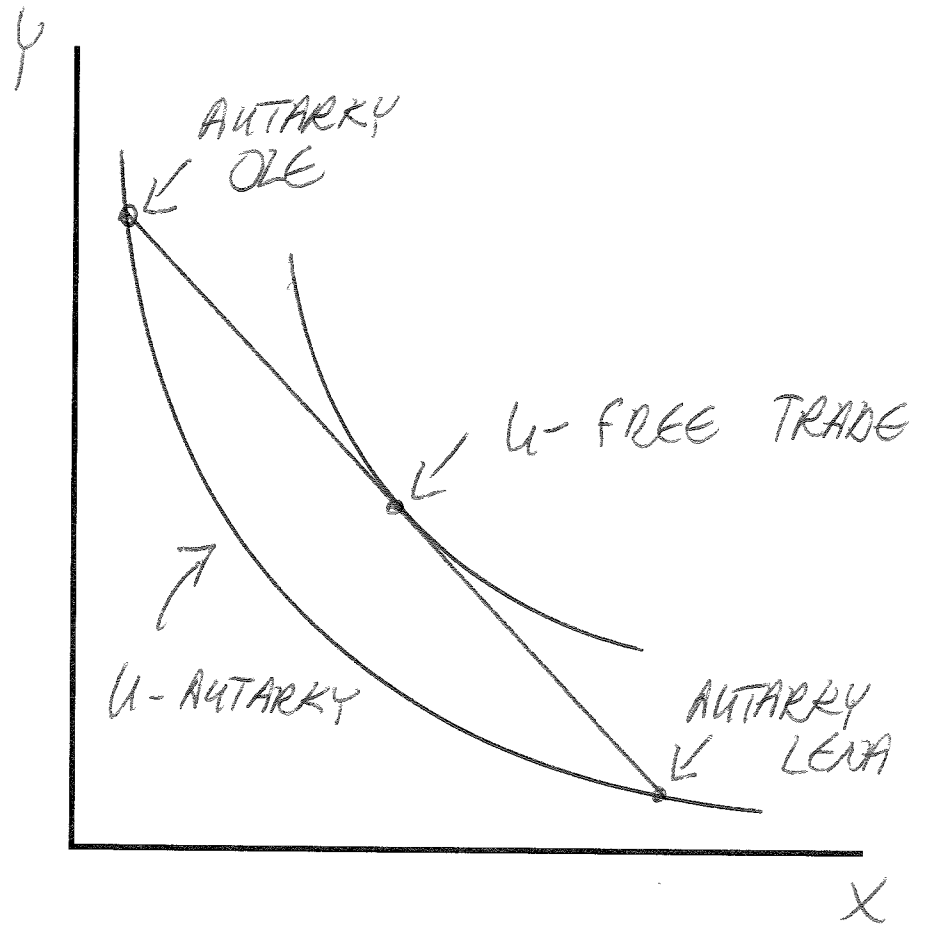
Now the government decides it doesn't like Y (potato chips) and thinks the country should produce and export X (computer chips).

Yup, a big subsidy on X could move production to point Q', specializing in X. But now the best the country can do is trade to point C' which is worse than no trade and no subsidy!

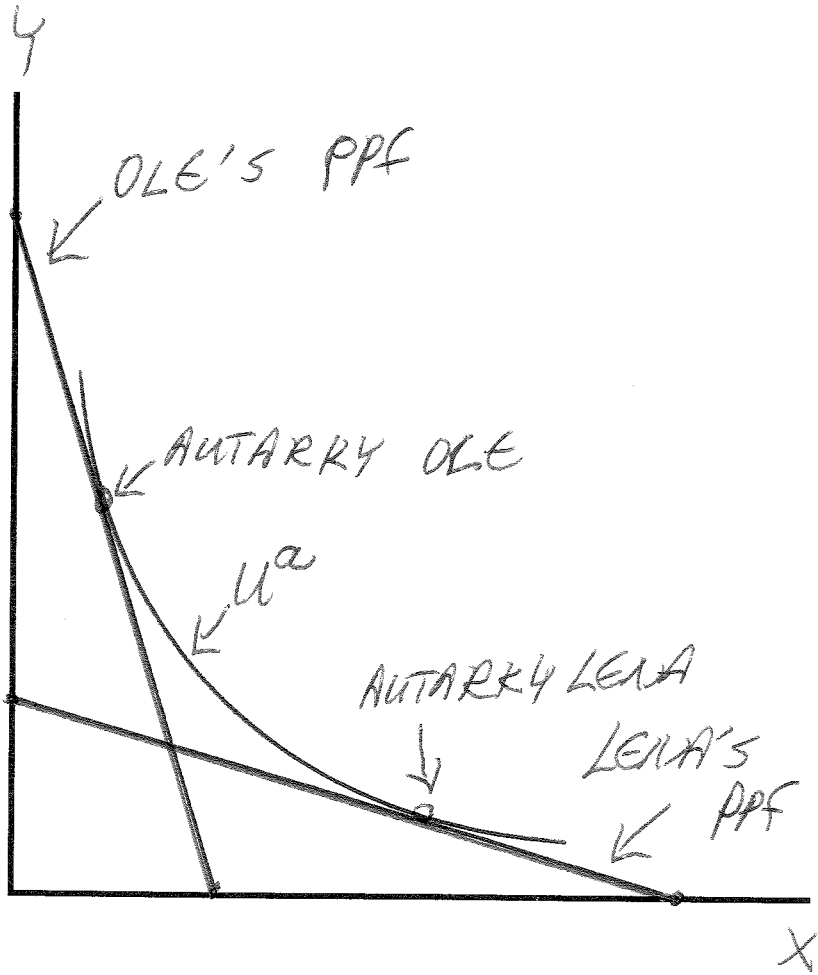
**Figure 12**



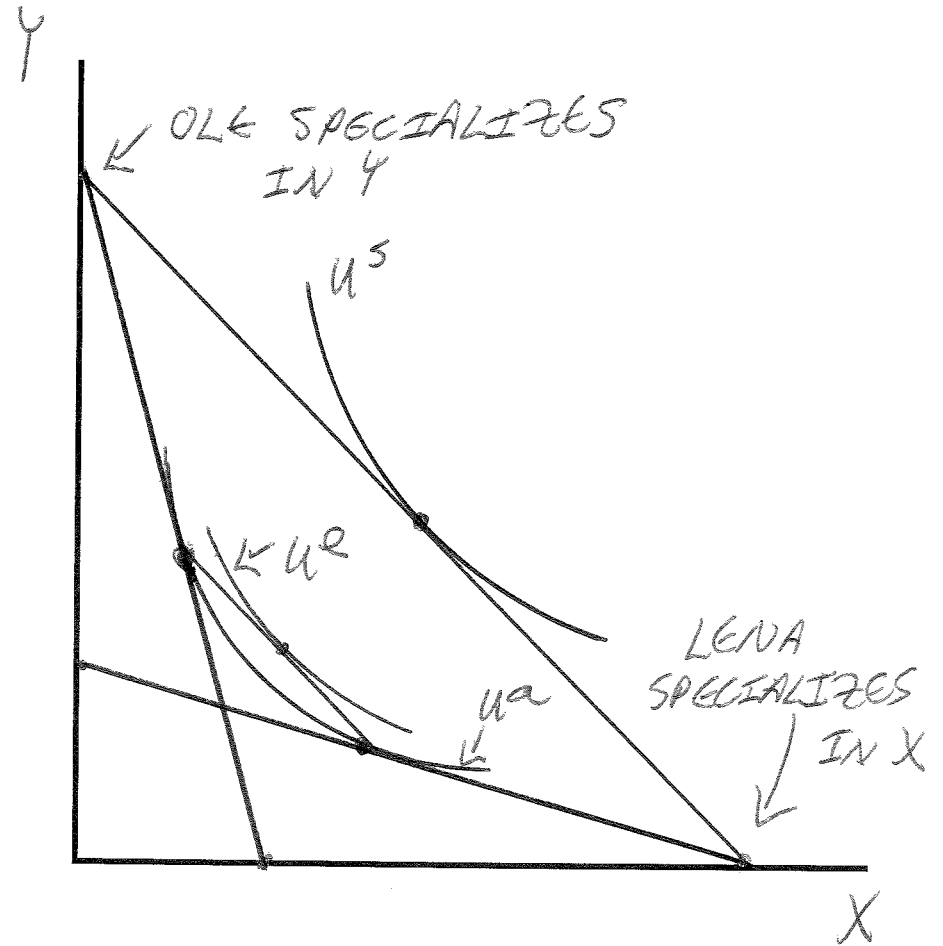
Unotes 3 Figure 1



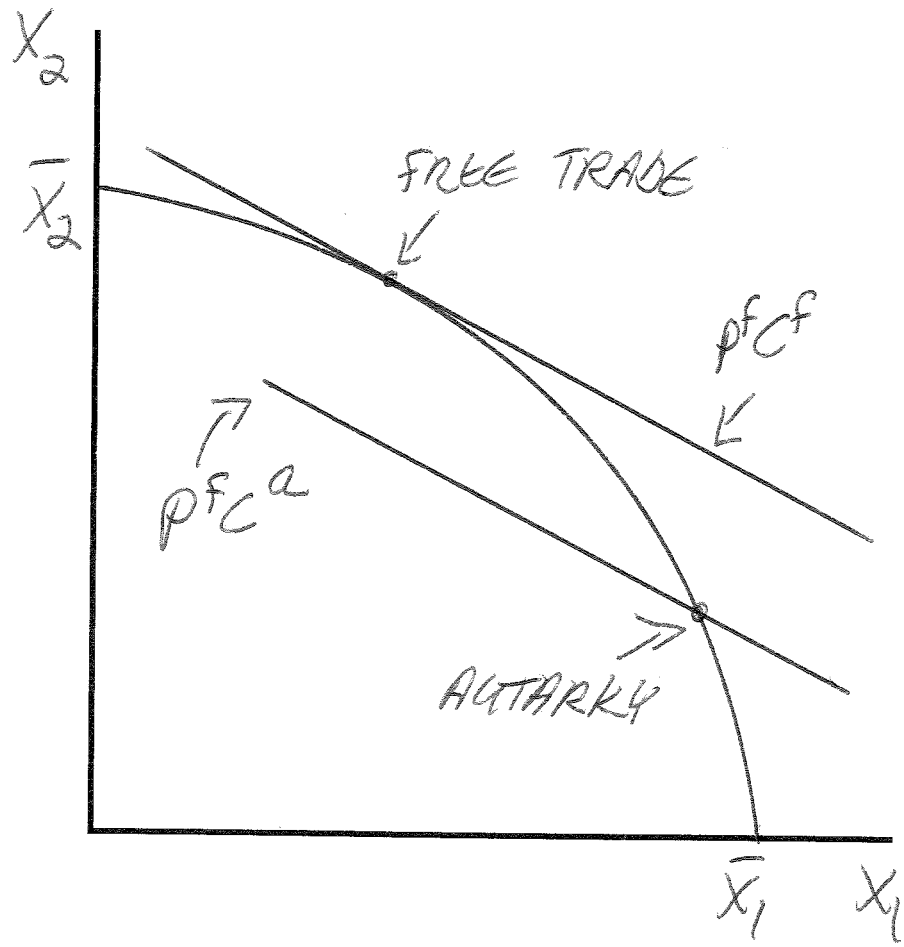
Unotes 3 Figure 2



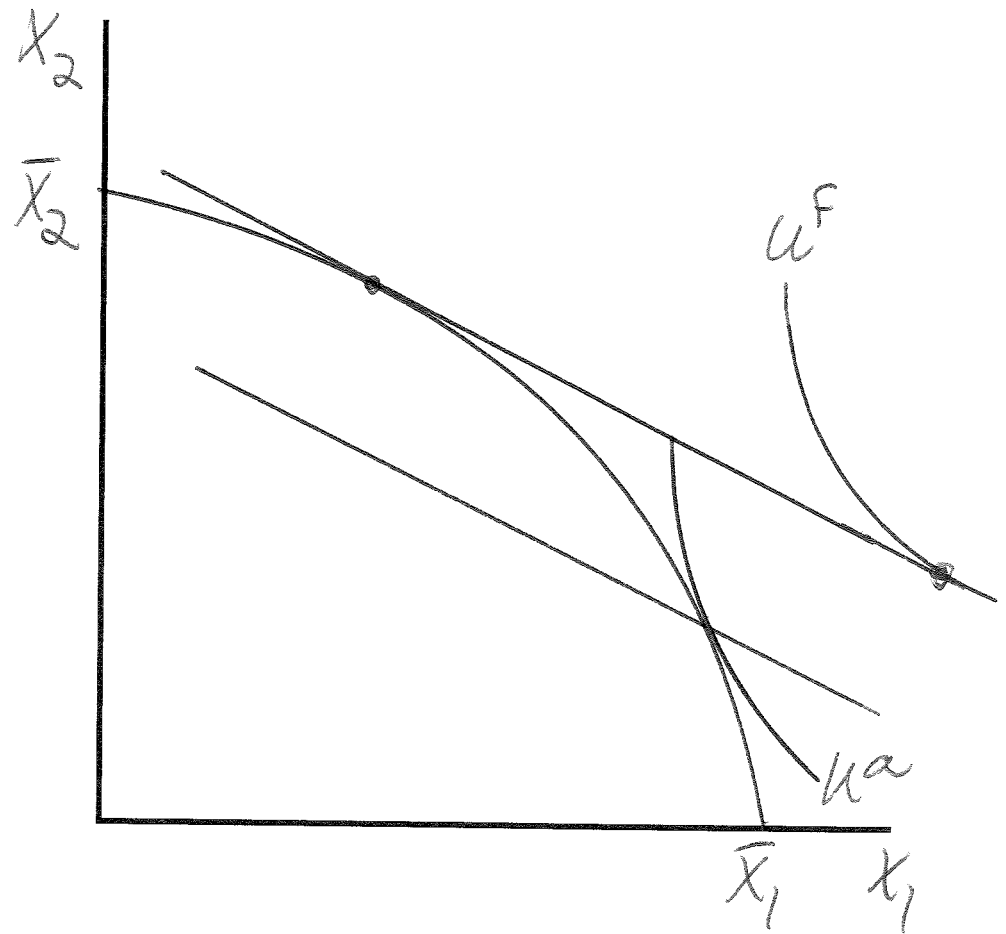
Unotes 3 Figure 3



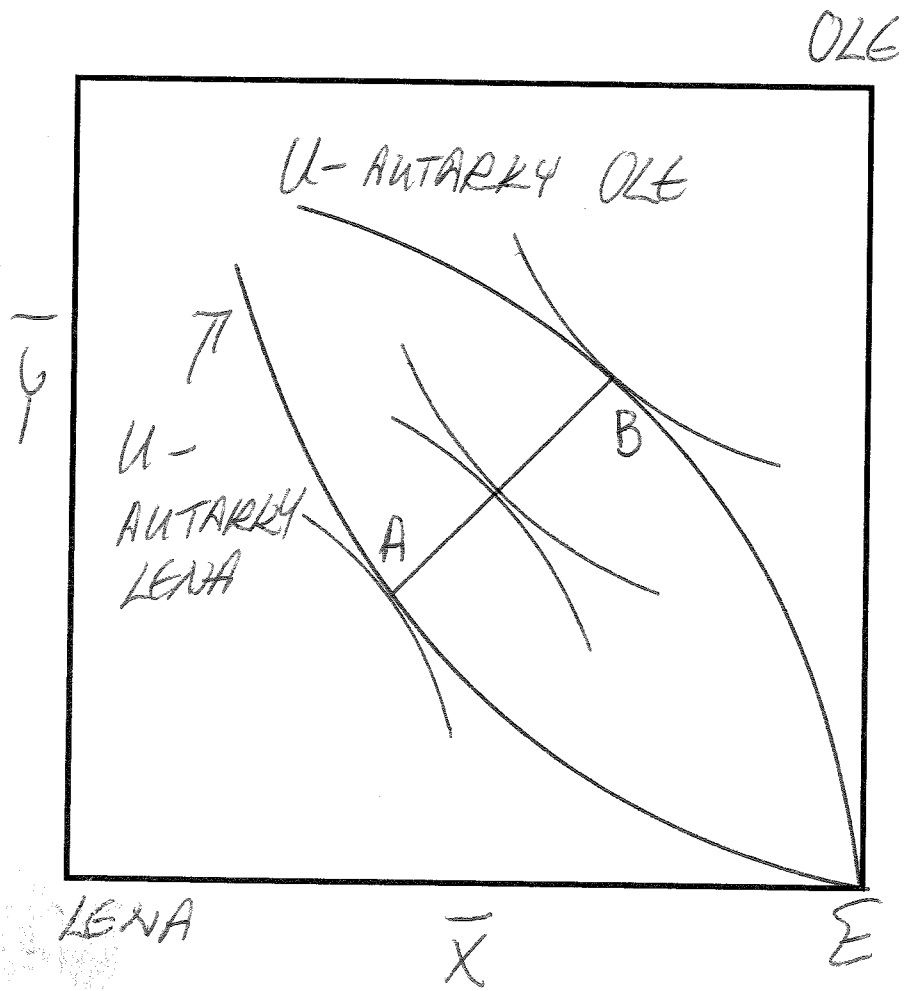
Unotes 3 Figure 4



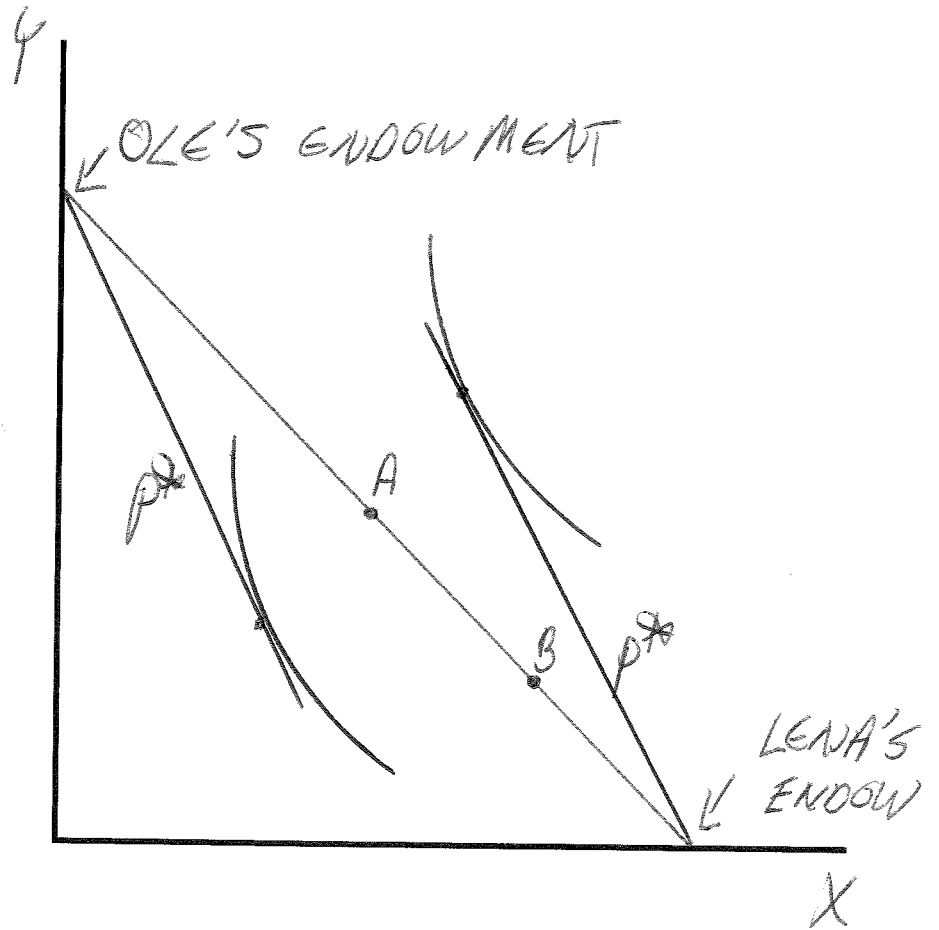
Unotes 3 Figure 5



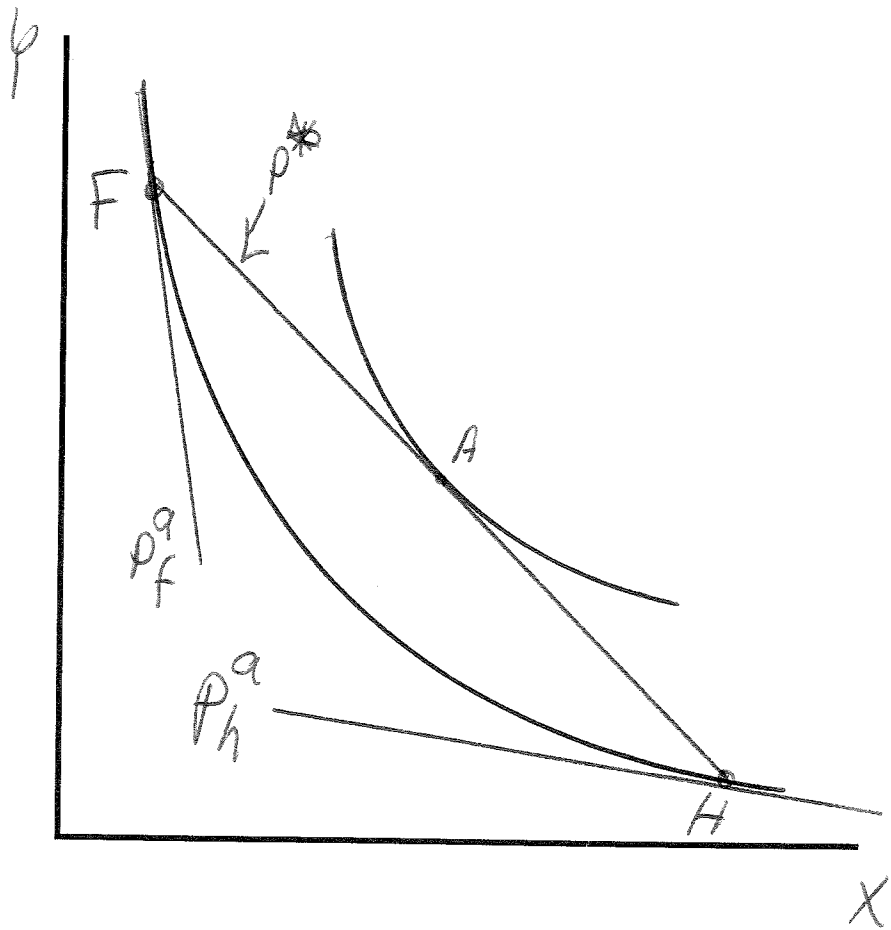
Unotes 3 Figure 6



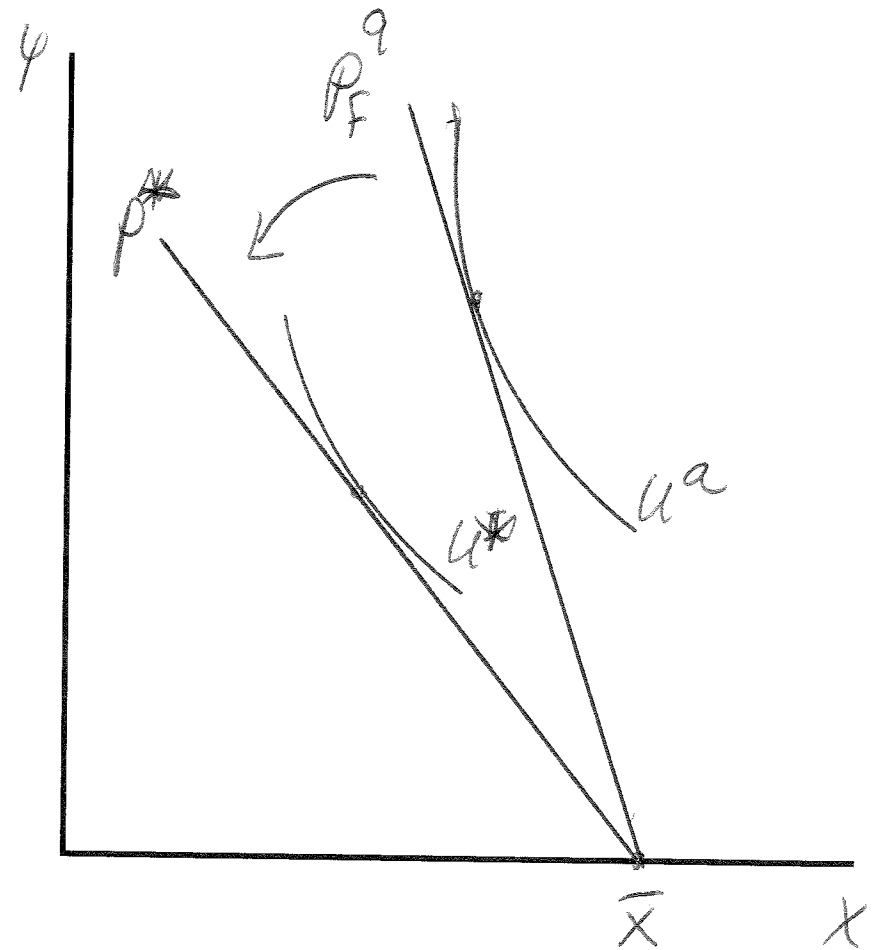
Unotes 3 Figure 7



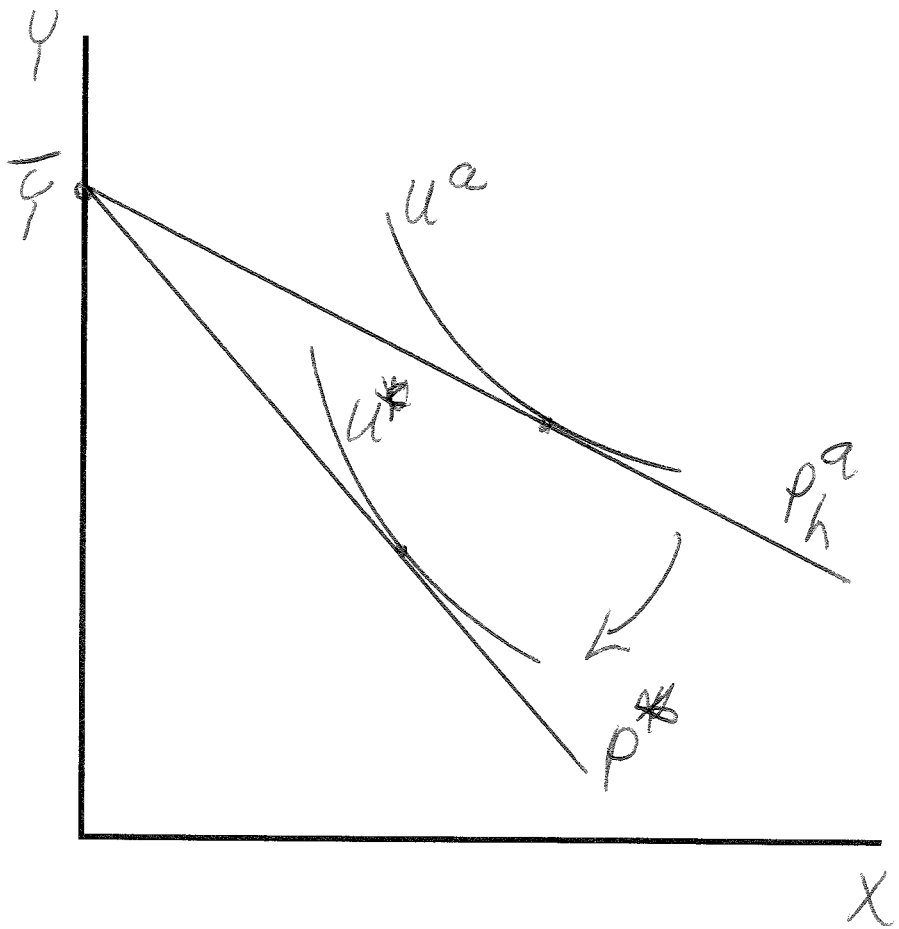
Unotes 3 Figure 8



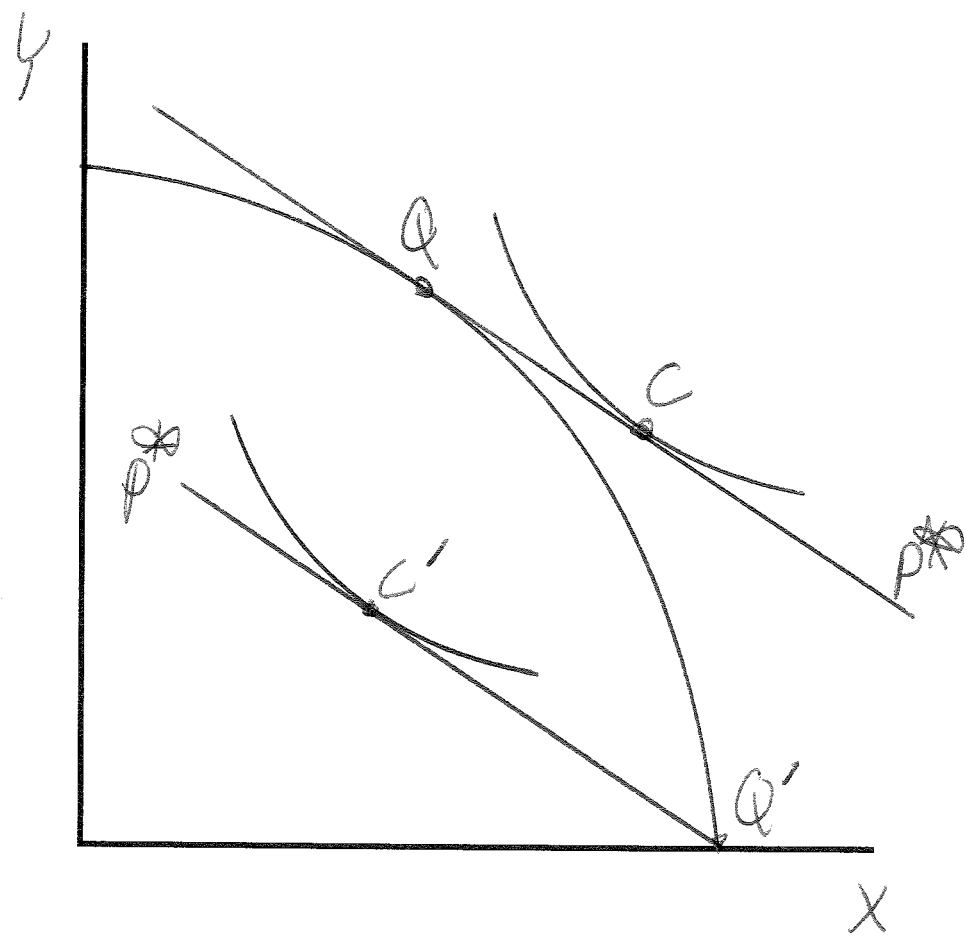
Unotes 3 Figure 9



Unotes 3 Figure 10



Unotes 3 Figure 11



Unotes 3 Figure 12