

International Economics

2 The Law of Comparative Advantage

Trade Based on Comparative Advantage: David Ricardo

A. The Law of Comparative Advantage (LCA)

- According to LCA, even if one nation has an **absolute disadvantage** with respect to the other nation in the production of both commodities, there is still a basis for mutually beneficial trade.
- This nation should specialize in the production and export of the commodity in which its **absolute disadvantage** is ***smaller*** (this is the commodity of its **comparative advantage**) and import the commodity in which its absolute disadvantage is ***greater*** (this is the commodity of its **comparative disadvantage**).

Law of Comparative Advantage

- Even if **one nation** is **less efficient** than (has absolute disadvantage with respect to) **the other nation** in production of both commodities, there is still **a basis for mutually beneficial trade**.
- The first nation should:
 - 1) **Specialize** in the production and **export** of the commodity in which its **absolute disadvantage** is **smaller** (this is the commodity of its **comparative advantage**)
 - and 2) **Import** the commodity in which its absolute disadvantage is **greater** (this is the commodity of its comparative disadvantage).

Example

	U.S.	U.K.
Wheat (bushels/labor hour)	6	1
Cloth (yards/labor hour)	4	2

- Q) Determine:**
1. **Basis for trade**
 2. **Patterns of trade**
 3. **Gains from trade**
 4. **The range for mutually advantageous trade** (if the two countries are trading according to the following ratios $6W=6C$), can we consider it the only available rate of exchange?

- ✓ U.K. has absolute disadvantage in both goods.

- ✓ Since U.K. unit of labor is half as productive in cloth but six times less productive in wheat compared to U.S., the **U.K. has a comparative advantage in cloth.**
- ✓ **U.S. has comparative advantage in wheat.**

The range for mutually advantageous trade is:

- Rate of exchange $6W=6C$ isn't the only rate of exchange between the two countries.
 - As the range of mutually advantageous trade between them is: $4C < 6W < 12C$

Why?

- Since the US could exchange 6W for 4C domestically (in the sense that both require 1 hour to produce), the US would gain if it could exchange 6W for more than 4C from the UK.
- On the other hand, in the UK $6W = 12C$ (in the sense that both require 6 hours to produce). Anything less than 12C that the UK must give up to obtain 6W from the US represents a gain from trade for the US.

- The closer the rate of exchange is to $4C = 6W$ (the domestic, or internal, rate in the US, the smaller is the share of the gain going to the US and the larger is the share of the gain going to the UK.
- On the other hand, the closer the rate of exchange is to $6W = 12C$ (the domestic, or internal, rate in the UK), the greater is the gain of the US relative to that of the UK.

For example,

- ✓ If the US exchanged $6W$ for $8C$ with the UK, both nations would gain $4C$, for a total gain of $8C$.
- ✓ If the US could exchange $6W$ for $10C$, it would gain $6C$ and the UK only $2C$

- The range for mutually advantageous trade is:

$$4C < 6W < 12C$$

- The spread between $12C$ and $4C$ (i.e., $8C$) represents the **total gains** from trade available to be shared by the **two nations** by trading $6W$.
- **For example**, if $6W$ are exchanged for $6C$, US gains $2C$ and UK gains $6C$, making a total of $8C$ from the exchange.

Thus, we can conclude that:

- ✓ The **closer** the rate of exchange to the domestic, or internal, rate the **smaller** is the share of the gain going to the country.

The Case of No Comparative Advantage

	U.S.	U.K.
Wheat (bushels/labor hour)	6	3
Cloth (yards/labor hour)	4	2

- This occurs when the absolute disadvantage that one nation has with respect to another nation is the *same* in both commodities.
- **For example**, if one hour produced 3W instead of 1W in the **UK** the **UK** would be exactly half as productive as the US in **both** wheat and cloth.
- The **UK** (and the US) would then have a comparative advantage in neither commodity, and **no mutually beneficial trade** could take place.

- This requires slightly modifying the statement of the law of comparative advantage to read as follows:

Even if **one nation** has an **absolute disadvantage** with respect to the other nation in the production of **both commodities**, there is still a basis for **mutually beneficial trade**, *unless the absolute disadvantage (that one nation has with respect to the other nation) is in the same proportion for the two commodities.*

Comparative Advantage and Opportunity Costs

- Ricardo based his law of comparative advantage on a number of simplifying assumptions:
 - 1) Only two nations and two commodities,
 - 2) Free trade,
 - 3) Perfect mobility of labor within each nation but immobility between the two nations,
 - 4) Constant costs of production,
 - 5) No transportation costs,
 - 6) No technical change, and
 - 7) The labor theory of value.

The labor theory of value

- The best-known advocates of the labor theory were Adam Smith, David Ricardo and Karl Marx.
- The labor theory of value (LTV) was an early attempt by economists to explain why **goods** were **exchanged** for certain **relative prices** on the market.
- **It suggested that** the value of a commodity could be measured objectively by the **average number of labor hours** necessary to **produce** it.
- Accordingly, two commodities will trade for the same price if they **embody** the same amount of labor-time.

For instance, if it takes 10 hours to produce good (x), and 20 hours to produce good (y), then the exchange ratio would be two units of (y) for one unit of (x).



Comparative Advantage and Opportunity Costs

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A. Comparative Advantage and Labor Theory of Value:

- Though assumptions **1-6** can easily be relaxed, assumption **No. 7** (labor theory of value) is **not valid**.
- According to Labour theory of value, the value or **price of a commodity** depends exclusively on the amount of labor **going into its production**.

This implies that:

- 1) Either labor the **only factor of production** or it is used in same fixed proportion in production of all commodities.
 - 2) Labor is **homogeneous** (i.e. of only one type).
- **Since** neither of the assumptions is true, we can't base the **explanation** of comparative advantage on labor theory of value.

B. The Opportunity Cost Theory (OCT)

- The law of comparative advantage is sometimes referred to as the *law of comparative cost*.
- According to the **Opportunity Cost Theory**, the cost of a commodity is the amount of a second commodity that must be given up to **release just enough resources** to produce one additional unit of the first commodity.
- That is, it the value of the **next-highest-valued alternative** use of that resource.
- Thus, the nation with the **lower opportunity cost** in the production of a commodity has **a comparative advantage** in that commodity.

The theory of **comparative advantage** states that countries should **specialize** in producing goods where they have a **lower opportunity cost**.

Example

- If **US** has to give up **2/3** unit of cloth to release enough resources to produce one additional unit of wheat, then **the opportunity cost of wheat** is **2/3** unit of cloth ($1W = 2/3 C$).
- If $1W = 2C$ in **UK**, then the opportunity cost of wheat is lower in **US**, and thus US has a comparative advantage over UK in wheat.
- In a two-nation, two-commodity world, **UK** would have a comparative advantage in cloth.

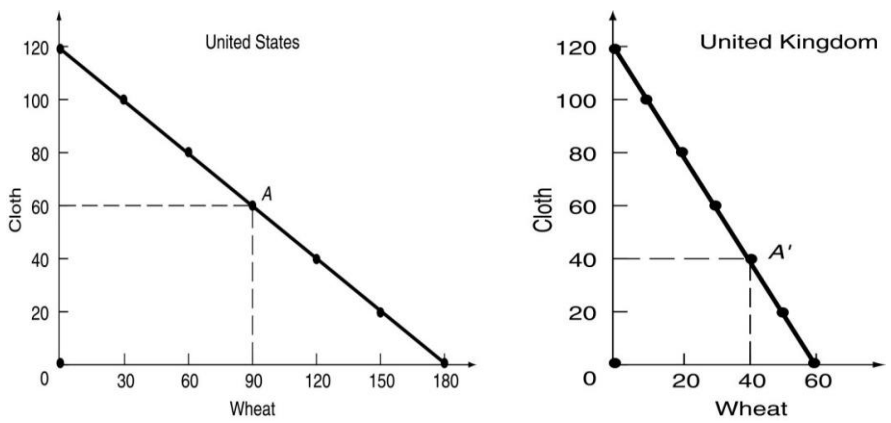
According to law of comparative advantage, **US** should specialize in producing wheat and export some of it in exchange for British cloth.

C. The Production Possibility Frontier (PPF) under Constant Costs

PPF: a curve showing **alternative combinations** of the two commodities that a nation can produce by **fully utilizing** its resources with the **best technology** available to it.

US		UK	
Wheat	Cloth	Wheat	Cloth
180	0	60	0
150	20	50	20
120	40	40	40
90	60	30	60
60	80	20	80
30	100	10	100
0	120	0	120

Figure: The PPFs of the United States and the United Kingdom.



Notes on the previous figure

- ✓ The opportunity cost is measured by the **slope of the PPF**, also known as the **marginal rate of transformation MRT**.
- ✓ The **US** has to give up **30W** to produce an additional **20C** ($30W=20C$),
 Thus, the **opportunity cost** of W in US is $1W = 2/3C$.
- ✓ The **UK** has to give up **10W** to produce an additional **20C** ($10W = 20C$),

Notes on the previous figure

- ✓ The opportunity cost is measured by the **slope of the PPF**, also known as the **marginal rate of transformation MRT**.
- ✓ The **US** has to give up **30W** to produce an additional **20C** ($30W=20C$), thus, the **opportunity cost** of W is $1W = 2/3C$.
- ✓ The **UK** has to give up **10W** to produce an additional **20C** ($10W = 20C$), the opportunity cost of W is $1W = 2C$.
- ✓ While opp. costs are **constant** in each **nation**, they **differ among nations**, providing the basis for trade.
- ✓ **Constant opportunity costs arise when:**
- ✓ **Resources** are **perfect substitutes** or used in **fixed proportions** in the production of both commodities.
- ✓ All units of the same factor are **homogeneous**.

D. Opportunity Costs and Relative Commodity Prices

- The **(absolute) slope** of US PPF is $120/180 = 2/3$ which measures opportunity cost of wheat in US.
- The (absolute) slope of UK PPF is $120/60 = 2$ which measures opportunity cost of wheat in UK.
- **Assuming** prices equal costs and the nation produces both commodities, the opp. cost of **wheat** is equal to price of wheat **relative** to price of cloth (P_w/P_c).
- In the US, $P_w/P_c=2/3$, and inversely $P_c/P_w= 3/2= 1.5$
- In the UK, $P_w/P_c=2$, and inversely $P_c/P_w= 1/2= 0.5$
- The lower P_w/P_c in the US reflects its comp-adv. in wheat.
- The lower P_c/P_w in the UK reflects its comp-adv. in cloth.

- Conclusion: the difference in relative commodity prices between the two nations is a **reflection** of their com-adv. and provides the **basis** for mutually beneficial trade.

▪ **The Case of No Comparative Advantage:**

- There is a case where there is no comparative advantage; when absolute disadvantage that one nation has with respect to another nation is the **same** in both commodities.

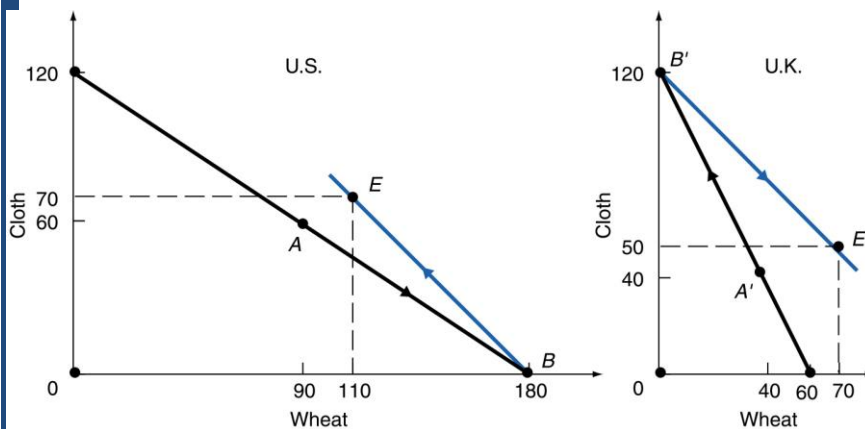
	U.S.	U.K.
Wheat (bushels/man-hour)	6	3
Cloth (yards/man-hour)	4	2

The Basis for and the gains from Trade under Constant Costs

A. Illustration of the Gains from Trade

- With no trade, US may produce (and consume) a combination of (90W-60C) on its PPF (point A).
- The UK may produce a combination of (40W-40C) on its PPF (point A').
- With trade, US would specialize in producing wheat and produce at point B (180W-0C) (**complete specialization**).
- UK would specialize in producing cloth and produce at point B' (0W-120C).
- If they trade 70W for 70C, US consumes 110W-70C (point E), the UK consumes 70W-50C (point E').

FIGURE 2-2 The Gains from Trade.



- The US gains 20W and 10C from trade (E compared to A), UK gains 30W and 10C (E' compared to A').
- Without trade, total production of wheat is 130 (90+40), but with trade it is 180 (all in the US).
- Without trade, total production of cloth is 100 (60+40), but with trade it is 120 (all in the UK).
- Gains from trade come from the **increase in production** due to **specialization** (50W and 20C); shared by both nations through **trade**, and thus lead to increased **consumption**.
- Without trade no nation would specialize in production because both need to **consume** some of the other commodity.

The End