14.54 International Trade
— Lecture 5: Exchange Economies (II) —
Welfare, Inequality, and Trade Imbalances

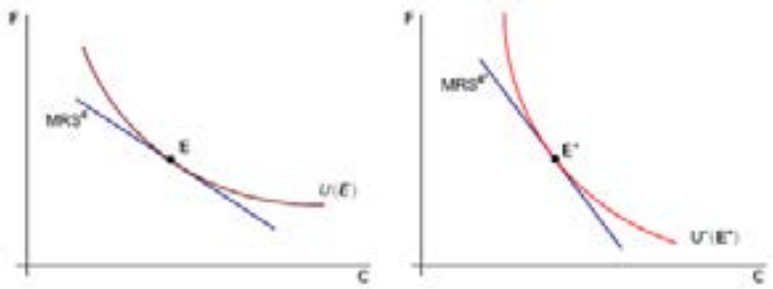
Today's Plan

1. Edgeworth Box
2. Redistributive Effects of Trade
3. Trade Over Time and the Balance of Trade

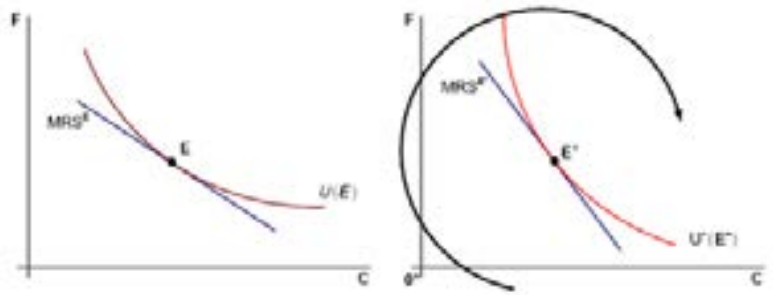
The small graphs found on slides 4-10, 16-18, 20, 26, and 29 are courtesy of Marc Melitz. Used with permission.

1. Edgeworth Box

Constructing the Edgeworth Box

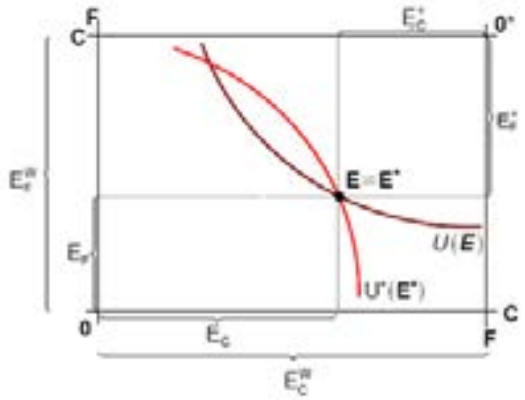


Constructing the Edgeworth Box



Examples of Edgeworth Box

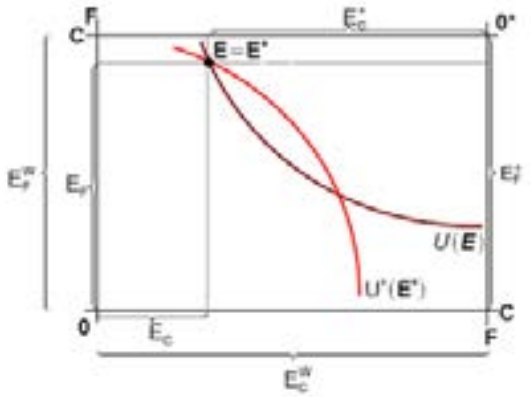
- Example 1: $MRS^E < MRS^{E^*}$



- There are gains from trade (where Home exports C)

Examples of Edgeworth Box

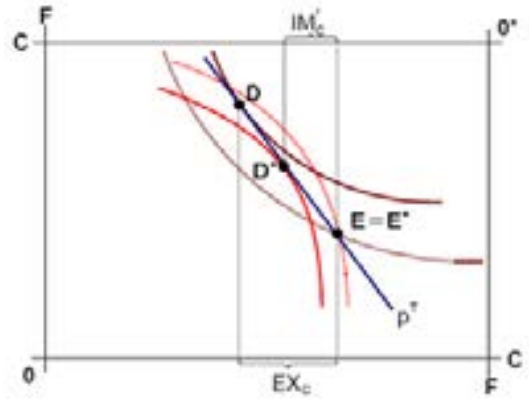
- Example 2: $MRS^E > MRS^{E^*}$



- Again, there are gains from trade (where Home exports F)

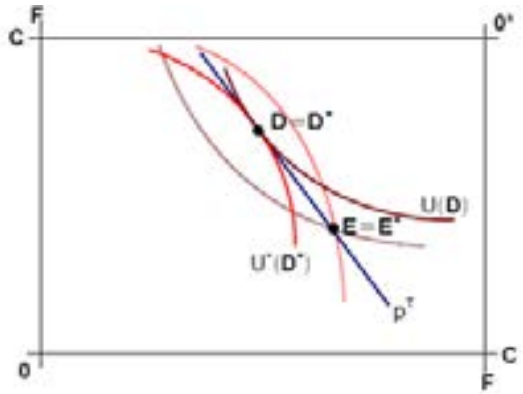
An Arbitrary Trade Price

- Consider an arbitrary trade price p^T



- p^T cannot be an equilibrium price
- Home wants to export more C than foreign wants to import
- Equilibrium price adjustment: $p^T = p_C^T / p_F^T \searrow$

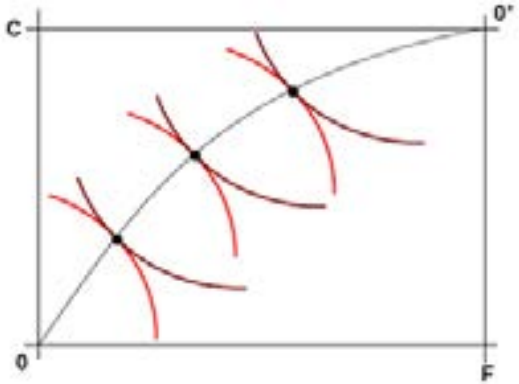
An Equilibrium Trade Price



- In the equilibrium, indifference curves must be tangent
  - All the gains from trade must be exhausted
- Pareto efficient allocation: Cannot make home better off without making foreign worse off (and vice-versa)

Pareto Efficiency

- **Definition:** the contract curve is the set of all Pareto efficient allocations in the Edgeworth box



- The free trade equilibrium must both be on the contract curve (efficient allocation) and in the "gains from trade" lens

Trade Barriers and Efficiency

- What happens when tariffs or other government interventions distort the trade prices faced by consumers in different countries?
- Consumers in both countries no longer have the same *MRS*
  - ... and efficiency property is lost

2. Redistributive Effects of Trade

Motivation

- How should one think about welfare gains for the "aggregate" consumer?
- Does this imply gains for all consumers?
- If not, how can one weigh gains for some against losses for others?
- **Basic Setup:**
  - Assume that consumers still share the same homothetic preferences but that they have different endowments **E**
  - Can think of workers as being 'endowed' with the bundle of goods they can produce

Are GM workers likely to gain from trade?

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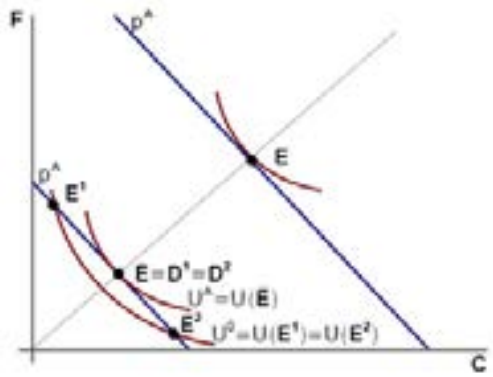
Are pharma workers likely to gain from trade?

Image courtesy of Pan American Health Organization. License: CC: BY-NC.

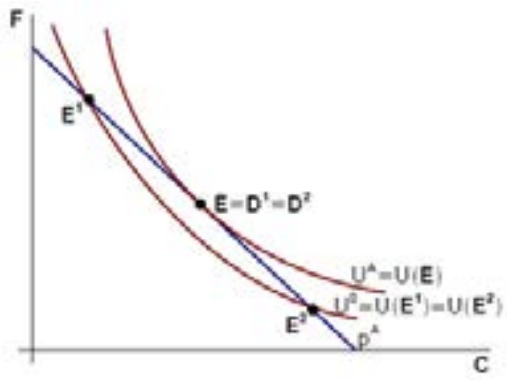
Autarky Equilibrium



- Consumers 1 and 2 have 'equally valuable' endowments: $U^0 = U(\mathbf{E}^1) = U(\mathbf{E}^2)$
- And attain the same welfare level in autarky as an 'average consumer': $U^A = U(\overline{E})$
- Note that $U^A > U^0$: gains from within-country trade

Effects of Trade

- What happens when this country opens up to international trade?
- Assume that home is relatively abundant in C so $p^T > p^A$



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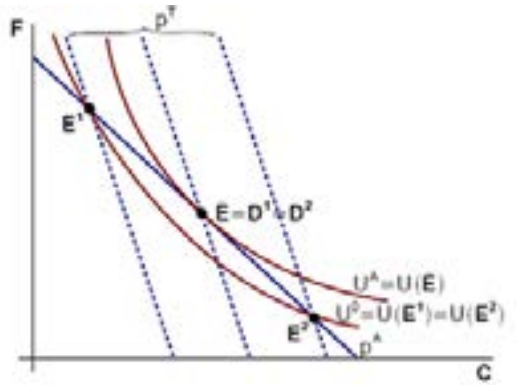
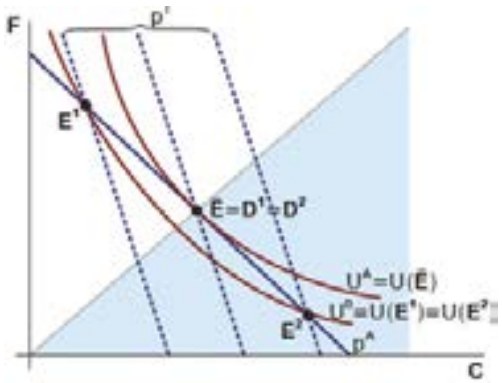


Redistributive Effects of Trade

- How are losses for consumer 1 possible?
- All consumers gain from trade compared to consuming their endowment: $\mathbf{E}_1$, $\mathbf{E}_2$, or $\overline{E}$
- But consumer 1 gains more from intra-national trade than from international trade
- Also:
  - Consumer 1 need not lose from international trade but will always gain less than 'average' consumer
  - Consumer 2 will always gain more from trade than 'average' consumer
  - 'Average' consumer must gain from trade (so long as $p^T \neq p^A$)

Redistributive Effects of Trade (Cont.)

- Who is more likely to gain from trade?



- Intuition: International trade reduces the benefit from 'scarcity'

Interpreting Aggregate Gains from Trade

- Note that for every consumer who gains less than the 'average' consumer from trade
  - ... there must be a consumer who gains more than the 'average' consumer
- A government policy maker can always redistribute the consumers' endowments to ensure that everybody gains from trade
  - For example, swap consumers' endowments so that they both end up with $\overline{\mathbf{E}}$
  - This would be an extreme case of redistribution
- More generally, there will always be a payment that consumer 2 can make to consumer 1 such that consumer 1 would not lose from trade
- However, in practice, this kind of redistribution can be very hard to implement!

Analogy for Developed Countries

- Think of 'high tech' (H) and 'low tech' (L) workers owning the goods that they help to produce
- A developed country is relatively abundant in H
- Without trade, H is relatively cheap in developed countries
  - ... and relatively expensive in the rest of the world
- Trade induces an increase in p_H / p_L in developed countries
  - This helps H workers and hurts (relatively) L workers
- **Consequences for trade and redistributive policies:**
  - Trade restrictions would help alleviate income inequality
    - ... but would lower average incomes relative to policies that redistribute income more directly (such as income taxes or trade adjustment assistance)
  - Also, in the longer run, L workers may become H workers

3. Trade Over Time and the Balance of Trade

U.S. Trade Deficits: Good or Bad?

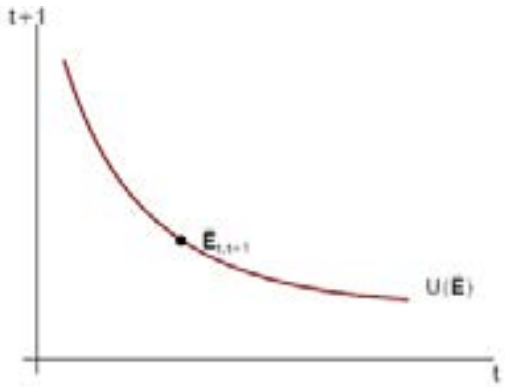
U.S. Trade Balance graph removed due to copyright restrictions.

Basic Framework

- In a single period model, trade must be balanced
- In reality, balance of trade occurs over time
- We will study this in a simplified 2-period model
- There are now 4 goods that are consumed: C and F today and tomorrow
- For simplicity, we will combine C and F consumed in a same period into an aggregate consumption index
  - Consumption today and tomorrow
- Same concept of endowments: index of goods that can be produced today and tomorrow

Consumer Preferences Over Time

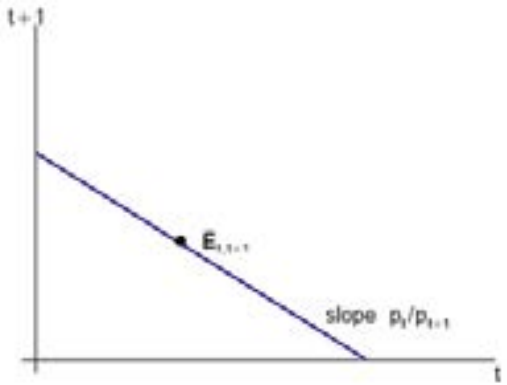
- Consumers have preferences for C and F but also for consumption today relative to tomorrow



- If can not trade over time (borrow & lend), then must consume at the endowment point

Trade Over Time

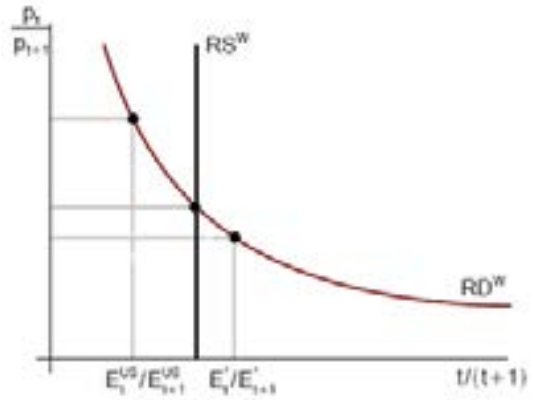
- If a country can borrow and lend with the rest of the world at a given interest rate



- The relative price p_t / p_{t+1} is directly related to the interest rate: $r_t = (p_t / p_{t+1}) - 1$

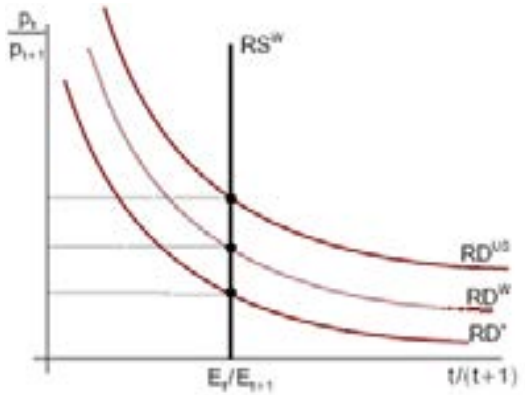
Explaining the Negative U.S. Trade Balance

- Explanation 1: The U.S. expects to be more productive tomorrow than the rest of the world (same consumer preferences over time)



Explaining the Negative U.S. Trade Balance

- Explanation 2: U.S. consumers are more impatient than consumers elsewhere



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