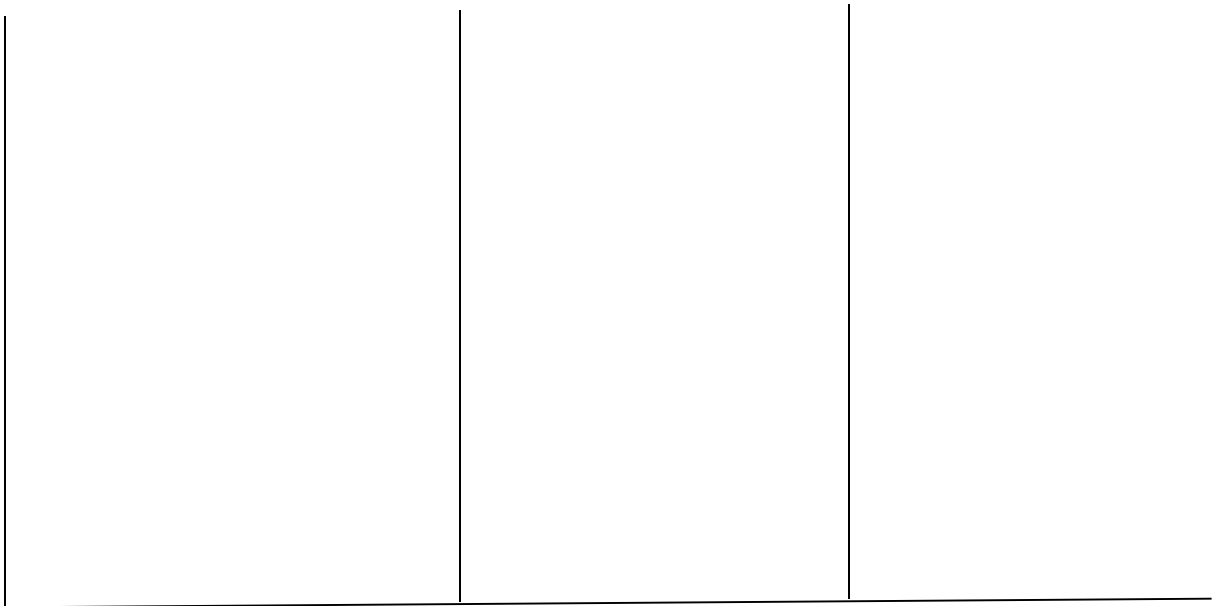


## I. WHO BENEFITS AND WHO LOSES FROM TRADE?

Goal: To formalize the terms winners and losers from trade.

### A. Set Up

1. two countries: U.S. and rest of world
2. 3 Markets: US, International, Rest of World
3. No Trade: equilibrium US \$2000 rest of world \$700
4. markets clear on their own.



5. arbitrage - an observable person would realize there is a profit making opportunity: buy in rest of world sell in US.

## B. Free Trade Equilibrium

### 1. Assumptions

- no transportation costs.
- no other frictions (i.e., quotas, tariffs, or trade restr.)

☞ trade at the *world price*: suppose price is \$1000

### 2. US market

- price: down

\$2000 to \$1000

- quantity demanded: up

excess demand in U.S. (CB) which are covered by imports ( $65-15=50$ )

- quantity supplied: down

suppliers use to supply 40, now supply 15

### 3. Rest of World Market

- price: up

\$700-\$1000

- quantity demanded: down

consumers use to demand 50, now demand 25

- quantity supplied: up

excess supply in rest of world (IJ) which are accounted for by exports.

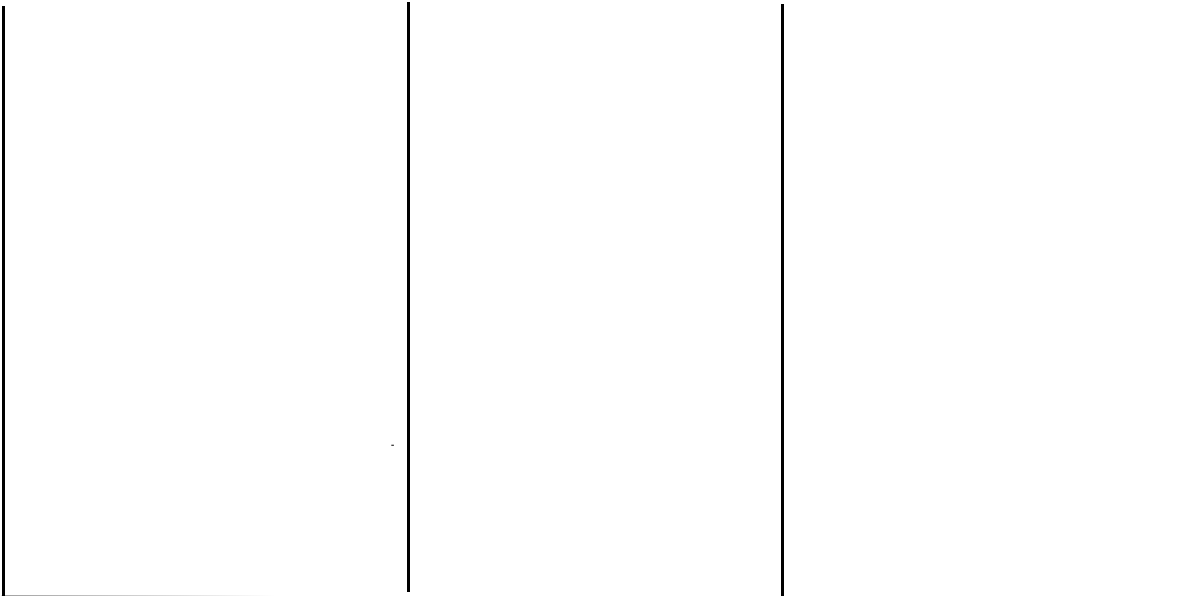
4. International Market:  $Q_D = Q_S = 50$  @ price = \$1000

### C. Net National Gains

1. Evaluation depends on value judgement: Cannot compare the welfare effects on different groups without imposing our subjective weights to economic stakes of each group.

Rule: one dollar = one vote - value any dollar of gain or loss equally, regardless who experiences it.

Value trade on the basis of aggregate well being. This is reasonable with gains and losses can be redistributed such that harmed workers are not worse off (NAFTA: Timber Workers)



## 2. U.S. Market

- Consumers: surplus w/ - surplus w/o = net

$$(a+b+c+d) - c = (a+b+d)$$

- Producers: surplus w/ - surplus w/o = net

$$(e) - (a+e) = -a \text{ (loss)}$$

- U.S. as a whole: surplus w/ - surplus w/o = net

$$(a+b+c+d+e) - (c+d+e) = b+d$$

### 3. Rest of World Market

- Consumers: surplus w/ - surplus w/o = net

-  $(j+k)$  = loss

- Producers: surplus w/ - surplus w/o = net

$(j +k+n)$

- world as a whole: surplus w/ - surplus w/o = net

$(n)$

### 4. Which Country Gains More?

- the country that experiences the greater price change gains more

- the side with the less elastic (steeper) trade curve (i.e., import demand or export supply) gains more

- in this case: US gains more

US:  $a+b = (1/2) b \cdot h = \$25$  million

Rest:  $n = (1/2) b \cdot h = \$7.5$  million

## II. THE BASIC ANALYSIS OF A TARIFF

Goal: Examine effect of tariff on producers & consumers in both the U.S. & abroad - who wins & who loses.

### A. How Many Economist Does It Take to Come Up With a Tariff?

Ans: None - we (almost) all agree that the tariff should be zero!

Why? - we have been careful to document cases when a reducing trade may be a good thing (at least for some people)

Ans: Most economists agree with the introductory trade analysis with demand and supply that trade brings greater aggregate well being than no trade (for nations as well as the world)

### B. Focus on Trade Barriers

1. trade policies that limit, but do not eliminate trade
2. show that free trade is generally better than partial restrictions on trade (with a few exceptions)
3. spell out who gains and who loses from a tariff and when a nation might benefit from limits on trade

## C. Definitions

1. tariff - tax on an imported good or service - usually collected by customs office at point of entry

2. two type of tariffs

i. specific tariff - stipulates a money amount per physical unit of import (e.g., dollars per ton of steel)

ii. ad valorem (on the value) tariff - percentage of the estimated market value of the good when it reaches the importing country

Both yield similar predictions, so analysis will not distinguish between them

## D. How do tariffs vary around the world

1. Most tariffs are low and have been decreasing since trade liberalization began in 1930.

Currently tariffs average between 4 - 6 percent in the U.S., Europe, & Japan.

2. However, maximum tariffs vary dramatically by product and country. Maximum tariff in:

US - 48%  
Canada - 28%  
Europe - 103%  
Japan - 58%

3. Average tariff rates tend to be higher in most developing countries:

Ex. - Mexico's average tariff is 14% and maximum tariff is 260%

#### E. Preview of 5 Conclusions

1. A tariff almost always lowers world well-being
2. A tariff usually lowers the well-being of each nation, including the nation imposing the tariff
3. As a general rule, whatever a tariff can do for the nation, something else can do better
4. There are exceptions to the case for free trade
  - i. nationally optimal tariffs - sometimes an individual nation can gain from a tariff through its effect on prices - but the world loses

ii. second-best arguments - sometimes when an “incurable distortion” is present in the economy, imposing a tariff may be better than doing nothing

iii. trade-specific distortions - in these few cases a tariff can be the “best policy” and not simply better than doing nothing

5. A tariff absolutely helps those groups tied closely to the production of import substitutes, even when the tariff is bad for the nation as a whole

### III. THE EFFECT OF A TARIFF ON PRODUCERS

Goal: Show how tariff helps domestic producers.

#### A. Basic Intuition

1. Domestic producers which compete against imports benefit from tariff

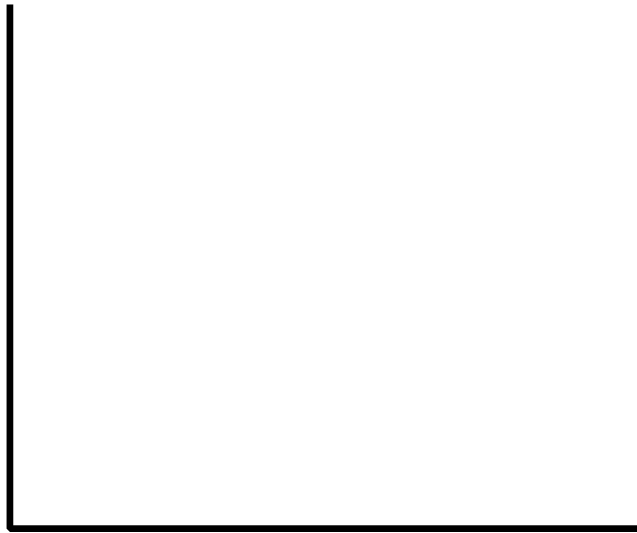
2. Domestic produces can:

- i. increase the quantity they sell
- ii. raise their price

3. Tariff, by taxing imports, makes these imports less competitive.

## B. Demand-Supply approach

1. Start with US market for bicycles w/o tariff
2. Small country assumption: start with assumption that nation is competitive “price taker” in world markets



### 3. Basic results:

- i. World price=300
- ii. domestic demand:  $D_0=1.6$
- iii. domestic supply:  $S_0=0.6$
- iv. imports:  $M_0=1.6-0.6=1.0$
- v. equilibrium:  $D_0=S_0+M_0$

4. producer surplus:  $g=$   
 $(1/2)b*h=(1/2)*90*0.6=27$  mil.

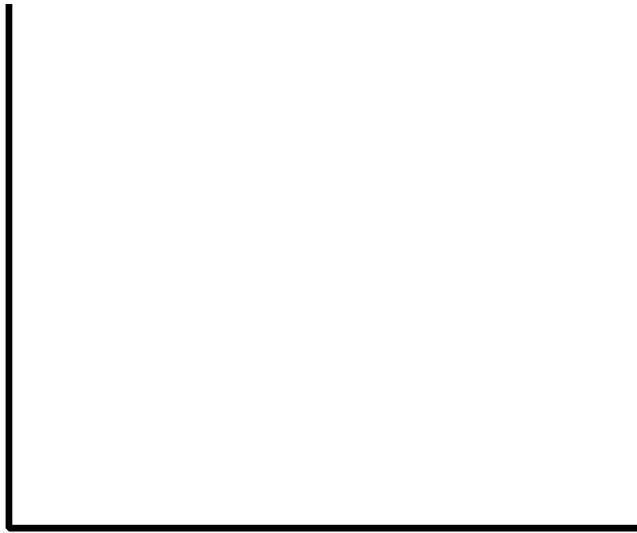
C. 10 % tariff on bikes - raises price by \$30.

- i. increases domestic supply:  $S_1=0.8$
- ii. reduces domestic demand:  $D_1=1.4$
- iii. reduces imports:  $M_1=1.4-0.8=0.6$
- iv. increases producer surplus:  $a= \$21 \text{ mil.}$

$$(30 \cdot 0.6) + (1/2)(30 \cdot .2) = 18 + 3$$

### III. The Effect of Tariff on Consumers

Goal: Show how tariff harms domestic consumers.



A. Consumers earn consumer surplus from purchase of bicycles.

- 1. before tariff: CFE
- 2. after tariff: HFG

## B. Tariff reduces consumer surplus

$$\text{CHGE} = a + b + c + d$$

Note:  $a$  = gain in producer surplus:

$$\text{Net loss in consumer surplus} = b + c + d$$

## IV. Tariff as Government Revenue

Goal: Show how tariff supplements government revenue, but by not enough to make up for loss in consumer surplus.

A. Tariff is a tax on importers, which yields revenue for government

$$\text{Tax revenue} = t * \text{imports} = 30 * 0.6 = 18 \text{ mil.} = c$$

B. Final net loss due to tariff:

$$b + c + d - c = b + d$$

C. Note: we have made an implicit value judgement

One-dollar-one-vote welfare measure - every dollar of gain or loss is just as important as every other dollar of gain or loss, regardless of whom the gainers and the losers are.

## D. Evaluation of Loss

### 1. Area d:

the consumption effect: loss in consumer surplus due to the fact that consumers consume fewer bicycles

### 2. Area b:

the production effect: loss in consumer surplus due to the fact that consumers consume more bicycles from less productive US manufacturers.