



# The Basic Theory Using Demand and Supply

# Key points

1. Consumer surplus and producer surplus
2. National welfare with no trade
3. Welfare effects of free trade

# 1. Demand and Consumer Surplus

- ❖ A Demand curve shows how much of a good consumers are willing to buy at each possible price, holding other influences on demand constant.
- ❖ The law of demand states that, other things being equal, the lower the price of a good, the higher is the quantity demanded
  - Other things include tastes, prices of related goods, income, expected future prices etc.

# 1. Dem and & Cons ume r Surpl us

- ❖ Changes in these other things lead to shift of the demand curve (rather than a movement along the demand curve)
- ❖ (tastes, prices of related goods, income, expected future prices)

# 1. Demand and Consumer Surplus

## ❖ Consumer surplus

- The demand curve shows the maximum price the consumer is willing to pay for each unit
- As the demand curve is negatively sloped, the consumer is willing to pay less and less for the successive units
- Yet, in a competitive market, consumers only pay the market price for these units
- Hence, there is a consumer surplus.

# 1. Dem and & Cons ume r surpl us

- Consumer surplus is a measure of the difference between the maximum price the consumer is willing to pay for a unit (measured on the demand curve) and the price she actually pays for it (the market price).

## 2. Supply & Production Surplus

- ❖ A supply curve shows the quantity of a good that producers are willing to supply at each possible price, holding constant all the other influences on supply
- ❖ The law of supply states that the higher the price of the good, the higher is the quantity supplied, holding other things constant.
  - Other things include: prices of factors of production, technology, expected future prices, the number of suppliers etc.

## 2. Supply & Production Surplus

- ❖ Changes in these other things lead to shift of the supply curve (rather than a movement along the supply curve)



## 2. Supply & Producer Surplus

### ❖ Producer Surplus

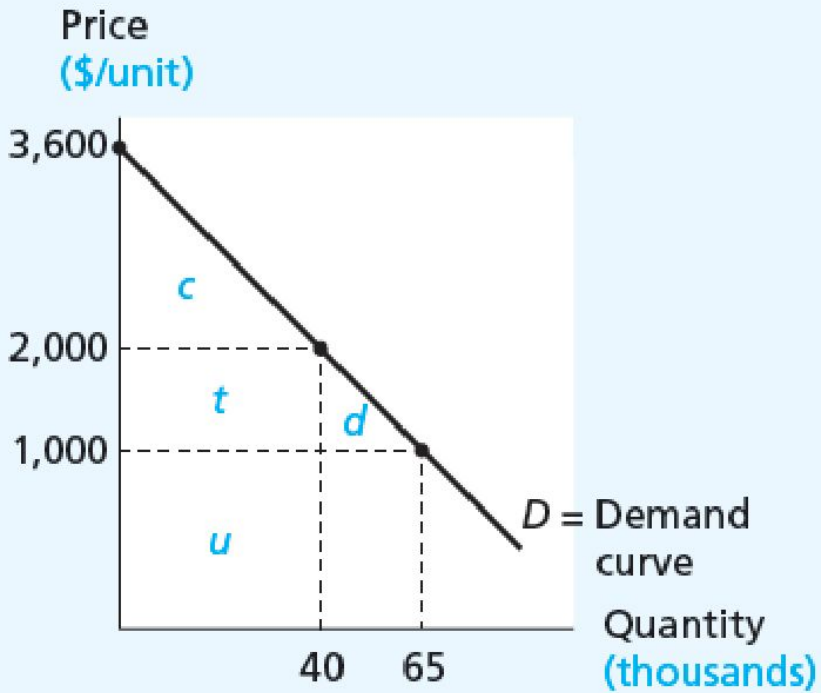
- The supply curve shows the lowest possible price at which a producer would be willing to supply each unit
- As the supply curve is positively sloped, the producer requires higher prices to produce additional units
- But, producers actually receive the going market price for these units

## 2. Supply & Producer Surplus

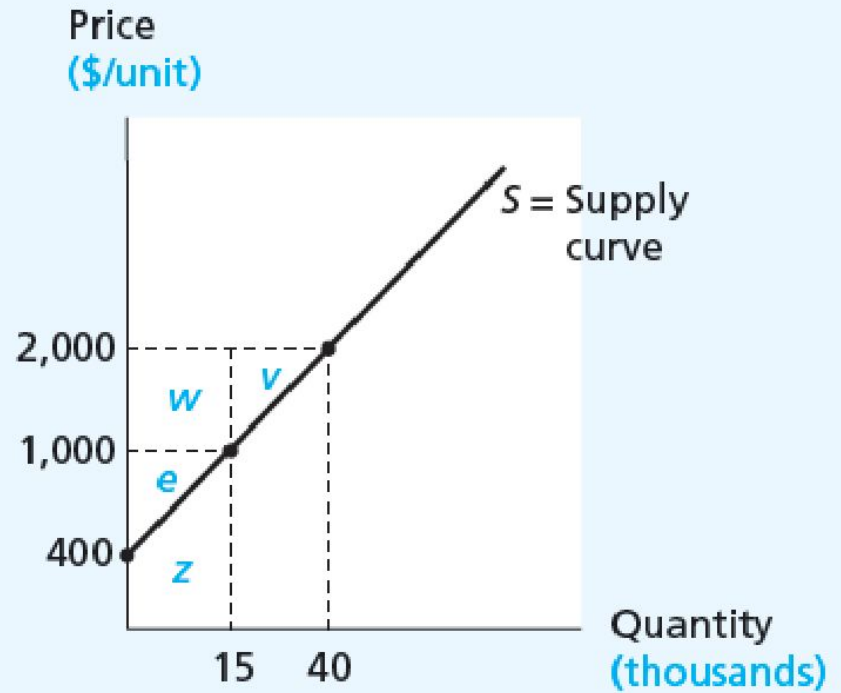
- Hence there is a producer surplus.
- Producer surplus is the difference between the price for which a good sells (the market price) and the minimum amount necessary for the producer to be willing to produce the good (measured on the supply curve)

# Figure 2.1 Demand and Supply for Motorbikes

A. Demand



B. Supply



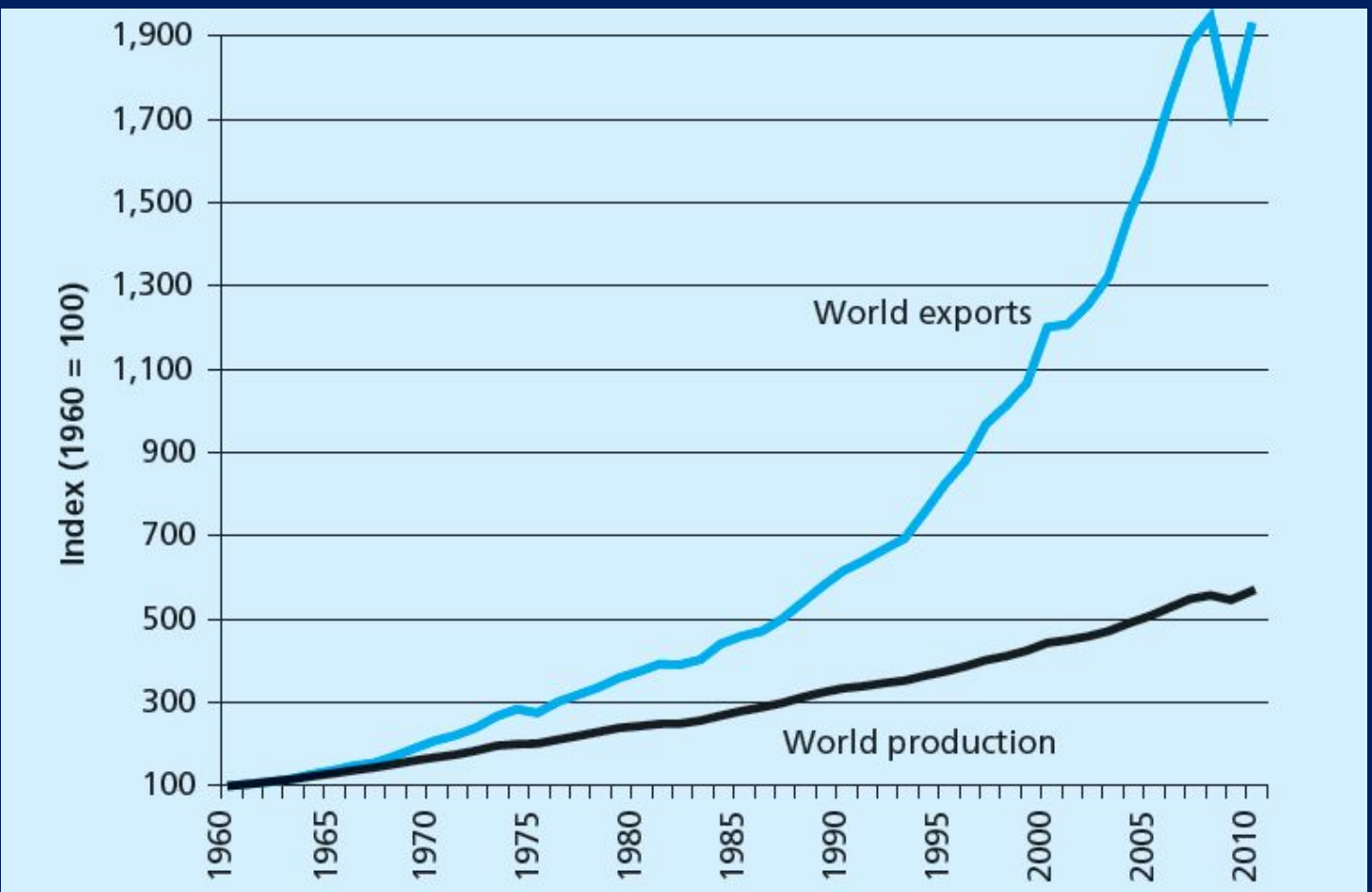
# Case study 1: Trade is important

## Exports Plus Imports as a Percentage of GDP

	1970	2009
United States	11.1	25.1
Canada	42.0	59.1
Japan	20.3	24.8
France	31.1	48.0
United Kingdom	43.6	57.8
Australia	25.8	40.3
Denmark	57.3	90.9
China	5.3	47.1
India	8.0	45.8
Korea	37.7	95.9
Brazil	14.9	22.6

# Study 2: The Trade mini collapses of 2009

## Volume of World Trade and World Production, 1960-2010



### 3. National market equilibrium with no trade

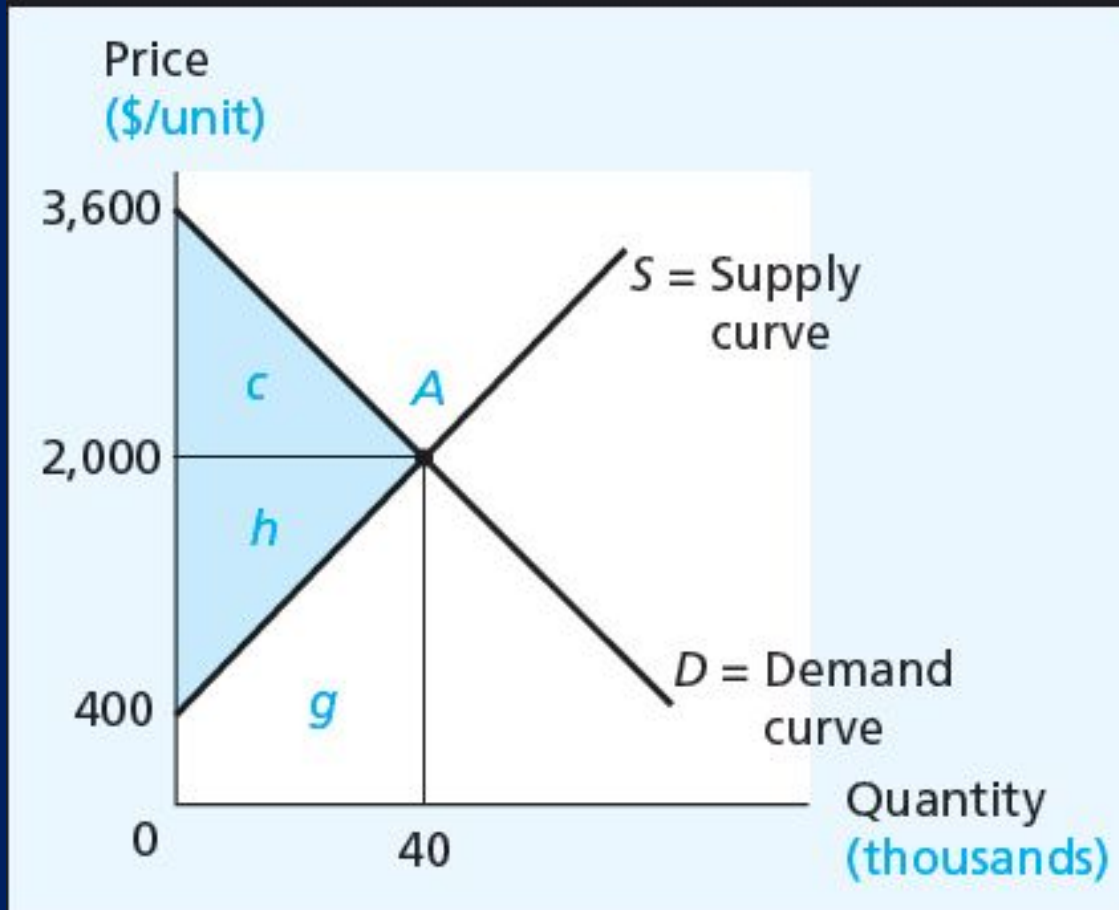
- ❖ In the following figure, D represents national demand for the product and S represents national supply
- ❖ No trade equilibrium occurs at A (where  $D=S$ ), with a price of \$2000 per motorbike and 40 000 motorbikes demanded and supplied.

### 3. National market at with no trade e

❖ Both consumers and producers benefit from this market as consumer surplus is area *c* and producer surplus is area *h*.

- Consumer surplus= $c=(1600*40\ 000)0.5= \$32$  million
- Producer surplus= $h=1600*40\ 000)0.5= \$32$  million

# Figure 2.2 The Market for Motorbikes: Demand and Supply





# 4. National markets & open trading e

- ❖ Suppose that there are two countries: the US and The Rest of the World (ROW)
- ❖ With no trade, the market equilibrium in the US occurs at A
  - $P = \$2000$  and  $Q = 40\,000$ .

## 4. National markets & opening of trade

- ❖ With no trade, the market equilibrium in The Rest of the World occurs at H
  - $P = \$700$  and  $Q = 50\,000$
- ❖ One can see profit opportunities at these prices
- ❖ That is, there will be arbitrage: “buy low” in the Rest of the World and “sell high” in the US

## 4. National markets & opening of trade

- ❖ As international market develops between the two countries, it affects the market prices in the two countries
  - Imports to US increase supply and reduce P in the US
  - The additional demand in the ROW (met by exports) increases price in the ROW.

## 4. National markets & opening of trade

- ❖ If there are no transportation costs or other frictions, free trade results in the two countries having the same price for motorbikes, the **international price** or the **world price**.

## 4. National market & open trading of trade

- ❖ Free-trade equilibrium occurs at the price that clears the international market, where quantity demanded of imports equals quantity supplied of exports
- ❖ The demand for imports can be determined for each possible price
  - i.e. at  $P = \$2000$ , there is no excess demand for imports. At  $P = \$1000$ , there is excess demand of equal to 50 000 units in the US.

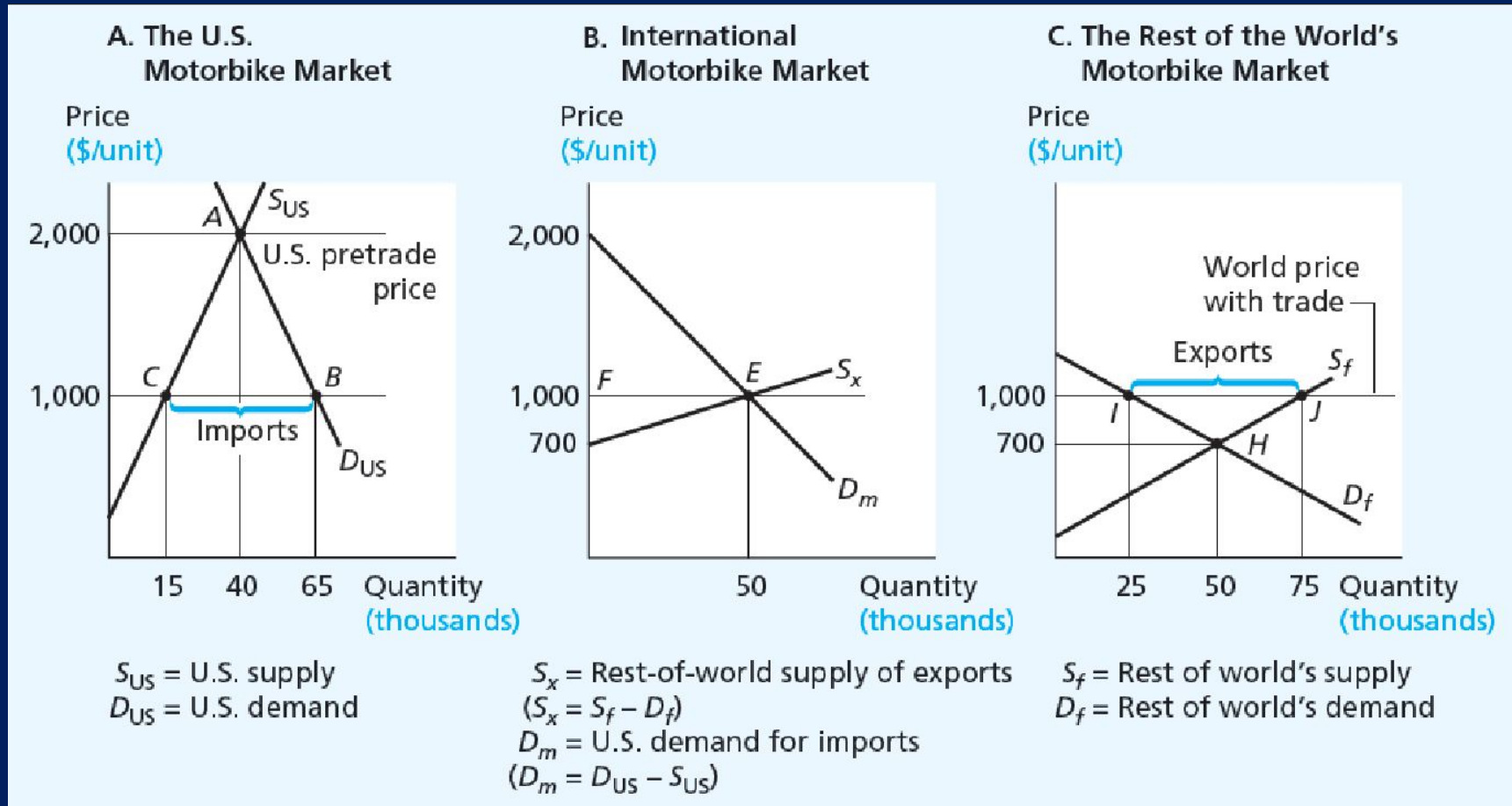
## 4. National markets & opening of trade

- ❖ The supply of exports can be determined in a similar way
  - i.e. at  $p = \$700$ , there is no excess supply (no export supply). At  $P = \$1000$ , then excess supply (exports) of 50 000 motorbikes

## 4. National markets & open ing of trade

- ❖ At the world price of \$1000, the total world quantity demanded is 90 000 motorbikes (65 000 in the US and 25 000 in the ROW)
- ❖ The excess demand for motorbikes within the US market is met by the excess supply from the ROW.

# Figure 2.3 The Effects of Trade on Production, Consumption, & Price



Effects of Trade	Price	Quantity Supplied	Quantity Demanded
United States	Down	Down	Up
Rest of the world	Up	Up	Down



# 5. The welfare effects of free trade

- ❖ The US
  - Consumers benefit from lower prices and higher quantities consumed.
    - Consumers' net gain= $a+b+d$
  - Producers are hurt by lower prices and fewer units sold
    - Producers' net loss= $a$
  - Net national gain= $b+d$

# 5. The effects of free trade on welfare

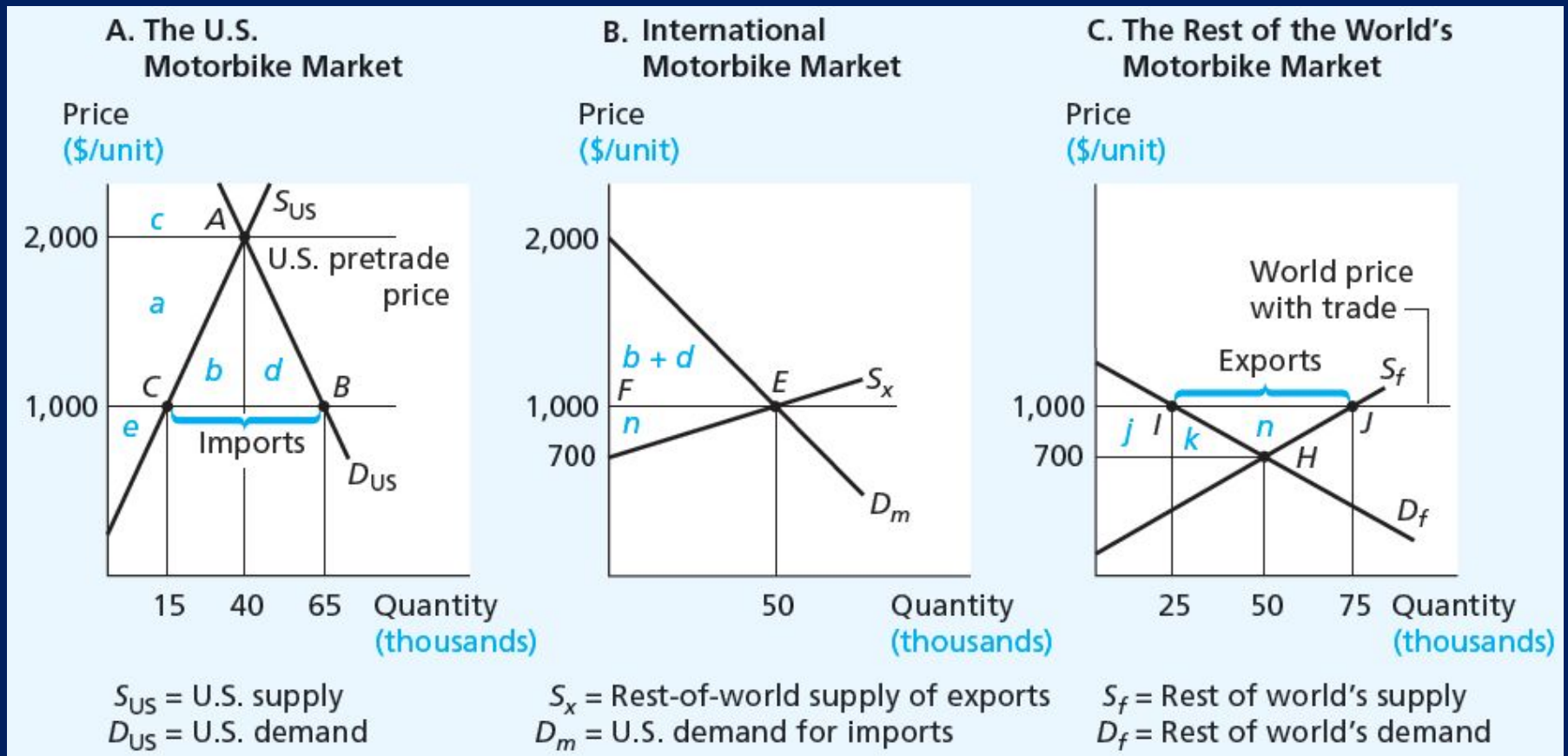
## ❖ The ROW

- Consumers are hurt by higher prices and lower consumption
  - Consumers' net loss =  $j+k$
- Producers gain from higher prices and higher production
  - Producer's net gain =  $j+k+n$
- Net national gain =  $n$

## ❖ The world as a whole

- Net world gain =  $b+d+n$

# Figure 2.4 The Effects of Trade on Well-Being of Producers, Consumers, and the Nation as a Whole



# Welfare Effects of Free Trade

## Welfare Effects of Free Trade

Group	United States			Rest of the World	
	Surplus with Free Trade	Surplus with No Trade	Net Effect of Trade	Group	Net Effect of Trade
Consumers	$a + b + c + d$	$c$	$a + b + d$	Consumers	$-(j + k)$ [a loss]
Producers	$e$	$a + e$	$-a$ [a loss]	Producers	$j + k + n$
U.S. as a whole (consumers plus producers)	$a + b + c + d + e$	$c + a + e$	$b + d$	Rest of the world as a whole	$n$