

# Tariffs

# The Tariff Concept

- Tariff: A tax (duty) levied on a product when it crosses national boundaries
  - Import tariff
  - Export tariff (not common)
- Tariffs may be imposed for protection or revenue
  - Protective tariff (protect domestic industry from competition)
  - Revenue tariff
    - Decreasing tariff revenue trend for industrial nations
    - Percentage of government revenue derived from tariffs

# Tariffs – Big Deal or Not?

**TABLE 6.6** Post-Uruguay Round Simple Bound Tariff Rates for Selected Countries

(mean percentages by HS section)

HS Section	Product group	Australia	Brazil	Canada	EU	India	Indonesia	Japan	Korea	Malaysia	Mexico	New Zealand	Norway	Poland	Sri Lanka	Switzerland	Turkey	United States	Venezuela
01	Live animals and products	1.0	36.2	2.8	25.5	87.2	46.3	8.1	27.1	20.5	49.5	4.2	151.9	52.4	50.0	28.9	80.4	5.4	59.8
02	Vegetable products	1.8	35.1	3.7	13.5	110.2	44.0	6.8	109.6	9.0	34.8	4.6	106.3	30.3	50.0	66.2	42.4	3.3	54.5
03	Fats and oils	3.1	34.5	5.3	12.8	215.0	40.9	5.0	24.9	7.2	46.8	3.9	93.7	30.8	50.0	0.2	32.5	4.2	72.1
04	Prepared food	6.6	36.8	6.0	19.2	136.5	52.8	17.4	38.2	15.9	51.0	14.2	103.4	64.9	50.0	27.7	68.6	7.1	52.9
05	Mineral products	1.7	34.4	2.4	1.0	38.8	39.4	0.8	5.9	6.3	33.9	2.6	0.2	6.7	50.0	4.9	22.9	0.6	34.0
06	Chemicals	7.9	23.8	4.0	4.7	46.4	36.9	2.4	9.7	9.8	35.1	3.1	7.3	9.8	50.0	6.2	22.8	3.2	34.2
07	Plastics and rubber	10.5	25.2	6.2	5.0	53.8	38.8	2.7	9.1	21.6	34.8	16.5	4.1	8.9	0.0	1.2	48.2	3.3	33.8
08	Hides and skins	8.7	34.6	5.9	2.7	61.5	40.0	10.3	18.0	14.5	29.6	12.4	2.6	15.6	50.0	1.4	100.7	5.5	34.9
09	Wood and articles	3.5	20.7	3.7	1.9	41.5	40.0	2.9	10.7	20.4	34.8	8.8	0.0	8.2	50.0	2.5	33.4	2.0	35.0
10	Pulp, paper, etc.	6.6	32.8	0.0	0.0	57.2	39.2	0.0	0.0	15.7	33.5	0.0	0.6	8.0	0.0	2.3	40.3	0.0	33.1
11	Textiles and clothing	21.9	35.0	12.3	7.9	88.3	40.0	6.6	18.5	20.3	34.8	25.2	8.4	13.0	50.0	4.5	75.7	8.0	35.1
12	Footwear, headgear	18.5	35.0	13.1	8.0	100.0	40.0	26.0	13.0	27.0	35.0	29.9	4.6	14.4	50.0	4.3	94.2	13.0	35.0
13	Articles of stone	9.6	34.7	4.1	3.9	51.4	40.0	1.2	15.5	24.3	35.2	12.2	1.3	10.0	50.0	1.5	58.3	4.6	34.3
14	Precious stones	5.4	34.9	3.4	0.7	54.2	37.4	1.4	8.4	11.0	35.0	7.9	0.3	8.5	50.0	0.4	20.3	3.1	35.0
15	Base metals and products	4.5	32.9	3.1	1.7	61.8	36.9	0.9	7.5	13.7	34.7	11.8	1.2	10.6	50.0	1.1	31.2	1.8	33.2
16	Machinery	9.8	32.2	4.1	2.6	39.6	37.2	0.1	13.2	11.9	34.7	15.1	2.8	9.5	50.0	0.6	27.1	1.7	33.0
17	Transport equipment	11.7	33.3	6.5	4.6	53.0	53.9	0.1	23.3	28.6	35.8	17.3	3.3	18.4	50.0	2.2	25.8	2.4	34.2
18	Precision instruments	3.5	32.1	3.2	2.6	55.5	37.1	0.3	11.0	6.7	34.4	6.6	2.0	10.0	0.0	0.7	29.1	3.5	32.6
19	Arms and ammunition	4.4	34.2	5.0	2.5	100.0	22.4	6.7	7.4	15.7	35.0	12.0	1.8	21.0	0.0	0.8	65.8	1.4	35.0
20	Miscellaneous manufactures	12.6	34.0	5.9	2.4	96.7	39.5	1.7	10.1	19.4	35.0	19.3	2.4	11.2	50.0	1.9	70.9	3.1	33.8
21	Works of art	0.8	35.0	1.5	0.0	57.1	25.2	0.0	0.0	14.0	35.0	1.4	0.0	0.0	0.0	0.1	42.7	0.0	35.0
	<b>Agriculture</b>	3.3	35.3	4.6	19.5	124.3	47.2	11.7	62.2	13.6	42.9	8.7	123.7	52.8	50.0	51.1	63.9	5.5	55.4
	<b>Industry</b>	10.6	29.7	5.3	4.1	59.0	38.6	3.6	11.4	16.4	34.8	13.8	3.4	10.6	50.0	1.9	40.7	3.8	33.8
	<b>All lines</b>	9.7	30.3	5.2	7.4	67.4	39.8	5.1	18.3	16.1	35.5	13.1	26.0	19.9	50.0	8.9	44.1	4.1	36.7

SOURCE: Post-Uruguay Round Tariff Regimes: Achievements and Outlook (Paris: OECD, 1999).

Higher income, industrialized countries do not rely on tariffs as a substantial source of government revenues.

**TABLE 4.1**

**TARIFF REVENUES AS A PERCENTAGE OF GOVERNMENT REVENUES, 2004:  
SELECTED COUNTRIES**

<b>Developing Countries</b>	<b>Percentage</b>	<b>Industrial Countries</b>	<b>Percentage</b>
The Bahamas	51.2	New Zealand	2.6
Guinea	47.9	Australia	2.5
Ethiopia	33.5	Japan	1.2
Ghana	28.5	Canada	1.2
Sierra Leone	27.6	Switzerland	1.2
Madagascar	26.9	United States	1.1
Dominican Republic	20.9	United Kingdom	1.0
Jordan	11.3	Iceland	1.0

**Source:** From International Monetary Fund, *Government Finance Statistics, Yearbook*, 2005, Washington, DC, 2005.

# Types of Tariffs

- Specific tariff
  - Fixed amount of money per physical unit of the imported product
- Ad valorem (of value) tariff
  - Fixed percentage of the value of the imported product
- Compound tariff
  - Combination of specific and ad valorem tariffs

# Average Tariff Rates by Country and Industry

[\(Link to WTO tariff profiles\)](#)

	United States	Canada	Japan	China	European Union
Textiles and clothing	9.6%	11.7%	7.4%	17.5%	7.9%
Footwear	4.3	5.7	6.4	14.6	4.2
Metals	2.1	1.9	1.3	7.3	1.9
Chemicals	3.4	3.0	2.5	7.5	4.5
Nonelectrical machinery	1.2	1.5	0.0	9.9	1.7
Electrical machinery	1.9	2.4	0.2	10.4	2.5
Petroleum	1.9	3.0	1.7	5.0	3.1
Sugar	13.0	4.3	10.2	33.6	11.4
Dairy products	19.0	7.4	28.0	24.5	7.7
Average	3.9	4.1	3.2	12.4	4.2

# US Tariff Schedule

**TABLE 6.1** Harmonized Tariff Schedule of the United States (2006)

Heading/ Subheading	Article Description	Unit of Quantity	Rates of Duty		
			1 General	2 Special	
2008 (con.)	Fruit, nuts, and other edible parts of plants, otherwise prepared or preserved, whether or not containing added sugar or other sweetening matter or spirit, not elsewhere specified or included (con.):				
2008.40.00	Pears		15.3%	Free (A+, CA, D, E, IL, J, JO, MX) 9.5% (SG)	35%
	In other containers each holding less than 1.4 kg	kg			
	Other	kg			
2008.50	Apricots:				
2008.50.20	Pulp	kg	10%	Free (A*, CA, E, IL, J, JO, MX)	35%
2008.50.40	Other	kg	29.8%	Free (A+, CA, E, IL, J, MX) 11.9% (JO) 20.8% (SG)	35%
2008.60.00	Cherries		6.9¢/kg+ 4.5%	Free (A+, CA, D, E, IL, J, MX) 11.9% (JO)	21¢/kg+ 40%
	Maraschino	kg			
	Other:				
	Sweet varieties	kg		1.7¢/kg+ 1.1% (SG)	
	Tart varieties	kg		5.5¢/kg+ 3.6% (AU, MA)	
2008.70	Peaches, including nectarines:				
2008.70.10	Nectarines	16%		Free (A+, CA, D, E, IL, J, JO, MX) 10% (SG), 14.2% (AU), 16% (CL)	35%
	In containers each holding less than 1.4 kg	kg			
	Other	kg			
2008.70.20	Other peaches		17%	Free (A+, CA, E, IL, J, MX) 6.8% (JO)	35%
	In containers each holding less than 1.4 kg	kg			
	Other	kg			
2008.80.00	Strawberries	kg	11.9%	Free (A+, CA, D, E, IL, J, JO, MX) 10.6% (SG), 17% (CL)	35%
2008.91.00	Palm hearts	kg	0.9%	Free (A, CA, E, IL, J, JO, MX)	35%
2008.92	Mixtures:				
2008.92.10	In airtight containers and not containing apricots, citrus fruits, peaches, or pears		5.6%	Free (A+, CA, D, E, IL, J, JO, MX) 1.4% (SG), 3.9% (CL), 4.4% (AU)	35%
	Prepared cereal products	kg			
	Other	kg			

# US Tariffs, 1981-2008

[Link to data \(pdf\)](#)



# Look Up US Tariffs for Specific Commodities at USTIC

[USTIC tariff data](#)

(e.g. type in “beef” and it will return a menu of different classes of beef and return the US tariff information)

# Effective Rate of Protection

- Nominal tariff rate
  - Gives a general idea of the level of protection
  - Applies only to the total value of the final import product
- Effective tariff rate
  - Indicator of actual level of protection that a nominal tariff rate provides
  - Total increase in domestic productive activities in comparison with the occurrence under free-trade conditions

# Effective Rate of Protection

- Effective tariff rate

$$e = \frac{(n - ab)}{(1 - a)}$$

- e: effective rate of protection
- n: nominal tariff rate on the final product
- a: ratio of the value of the imported input to the value of the final product
- b: nominal tariff rate on the imported input

TABLE 6.7

## Illustration of Effective Rates of Protection

World Price, Suits (\$)	Tariff on Suits (%)	World Price, Textiles (\$)	Tariff on Textiles (%)	Value Added (\$)	NRP, Suits (%)	ERP, Suits (%)
150	0	100	0	50	0	0
150	20	100	0	80	20	60
150	20	100	10	70	20	40
150	20	100	20	60	20	20
150	20	100	30	50	20	0
150	20	100	40	40	20	-20
150	20	100	50	30	20	-40

TABLE 6.9

Nominal and Effective Rates of Protection, United States,  
European Union, and Japan (percentage)<sup>1</sup>

	United States Nominal Tariffs	Effective Rate of Protection	EU Nominal Tariffs	Effective Rate of Protection	Japan Nominal Tariffs	Effective Rate of Protection
<b>Traded Goods</b>						
Agriculture, forest products, and fish	1.80 (17)	1.91 (18)	4.86 (12)	4.10 (17)	21.80 ( 2)	21.40 ( 4)
Food, beverages, and tobacco	4.70 ( 7)	10.16 ( 4)	10.06 ( 3)	17.83 ( 3)	28.50 ( 1)	50.31 ( 1)
Textiles	9.20 ( 2)	18.02 ( 2)	7.17 ( 8)	8.79 (10)	3.30 (12)	-2.41 (24)
Wearing apparel	22.70 ( 1)	43.30 ( 1)	13.37 ( 1)	19.26 ( 2)	13.90 ( 4)	42.20 ( 3)
Leather products	4.20 ( 9)	4.95 (12)	2.01 (21)	-2.19 (28)	3.10 (13)	-14.75 (28)
Footwear	8.80 ( 3)	15.37 ( 3)	11.63 ( 2)	20.08 ( 1)	15.70 ( 3)	50.02 ( 2)
Wood products	1.70 (18)	1.72 (19)	2.51 (18)	1.68 (20)	0.30 (21)	-30.59 (29)
Furniture and fixtures	4.10 (11)	5.52 (11)	5.60 ( 9)	11.30 ( 8)	5.10 ( 6)	10.26 (v5)
Paper and paper products	0.20 (22)	-0.86 (28)	5.37 (11)	8.29 (12)	2.90 (14)	1.75 (14)
Printing and publishing	0.70 (21)	0.90 (20)	2.06 (20)	-1.03 (26)	0.10 (22)	-1.51 (23)
Chemicals	2.40 (16)	3.66 (15)	7.95 ( 5)	11.71 ( 6)	4.80 ( 8)	6.39 (11)
Petroleum and related products	1.40 (19)	4.69 (13)	1.16 (22)	3.39 (18)	2.20 (16)	4.14 (13)
Rubber products	2.50 (14)	1.95 (16)	3.54 (17)	2.29 (19)	1.10 (18)	-4.99 (27)
Nonmetal mineral products	5.30 ( 5)	9.23 ( 6)	3.66 (16)	6.52 (15)	0.50 (20)	-0.54 (19)
Glass and glass products	6.20 ( 4)	9.77 ( 5)	7.70 ( 7)	12.16 ( 5)	5.10 ( 7)	8.10 ( 7)
Iron and steel	3.60 (12)	6.18 ( 9)	4.67 (14)	11.59 ( 7)	2.80 (15)	4.34 (12)
Nonferrous metals	0.70 (20)	0.50 (21)	2.13 (19)	8.29 (11)	1.10 (19)	1.73 (15)
Metal products	4.80 ( 6)	7.86 ( 7)	5.46 (10)	7.07 (13)	5.20 ( 5)	9.23 ( 6)
Nonelectric machinery	3.30 (13)	4.06 (14)	4.37 (15)	4.71 (16)	4.40 (10)	6.74 ( 9)
Electric machinery	4.40 ( 8)	6.34 ( 8)	7.89 ( 6)	10.79 ( 9)	4.30 (11)	6.73 (10)
Transportation equipment	2.50 (15)	1.94 (17)	7.95 ( 4)	12.31 ( 4)	1.50 (17)	0.03 (16)
Miscellaneous manufactures	4.20 (10)	5.79 (10)	4.67 (13)	6.55 (14)	4.60 ( 9)	7.30 ( 8)
<b>Nontraded goods</b>						
Mining and quarrying		-0.47 (26)		-0.51 (22)		-0.99 (22)
Electricity, gas, and water		-0.16 (23)		-0.61 (23)		-0.79 (21)
Construction		-2.88 (29)		-2.96 (29)		-3.64 (25)
Wholesale and retail trade		-0.55 (27)		-1.37 (27)		-0.39 (18)
Transportation, storage, and communication		-0.35 (25)		-0.74 (25)		-0.54 (20)
Finance, insurance, and real estate		-0.09 (22)		-0.46 (21)		-0.16 (17)
Commercial, social, and personal services		-0.28 (24)		-0.61 (24)		-3.69 (26)

<sup>1</sup>Numbers in parentheses are column ranks.

SOURCE: Alan Deardorff and Robert Stern, "The Effects of the Tokyo Round on the Structure of Protection," in *The Structure and Evolution of Recent U.S. Trade Policy*, ed. Robert Baldwin and Anne Krueger (Chicago: University of Chicago Press, 1984), Tables 10.1-10.3. Reprinted by permission.

# Effective Rate of Protection

- Consequences of effective-rate calculation:
  - Degree of effective protection increases as the value added by domestic producers declines
  - A tariff on imports used in production process reduces the level of effective protection

# Tariffs and the Poor

- Empirical studies often maintain that:
  - Welfare costs of tariffs can be high
  - Tariffs cause inequitable income-redistribution
- U.S. tariffs highest on goods important to the poor
- US Tariffs higher on goods where developing countries have a comparative advantage (e.g. textiles, sugar)

### Poor countries get hit the hardest

The United States collects more tariffs on imports from Bangladesh than on imports from France.

	U.S. imports (billion dollars)	Tariffs paid (million dollars)	Per capita GDP (dollars)
Bangladesh	2.4	331	370
France	30.0	330	24,170

Source: United States International Trade Commission, 2001.



Table 4

**Who says polyester is cheap?**

U.S. tariff rates are higher on cheaper goods than on luxury items.

(percent)

	<b>Suits</b>	<b>Knitted shirts</b>
Silk	1.9	1.9
Wool	12.0	14.3
Cotton	11.3	20.0
Synthetic	29.0	32.5

Source: United States International Trade Commission, 2002.

# Welfare Effect of a Tariff

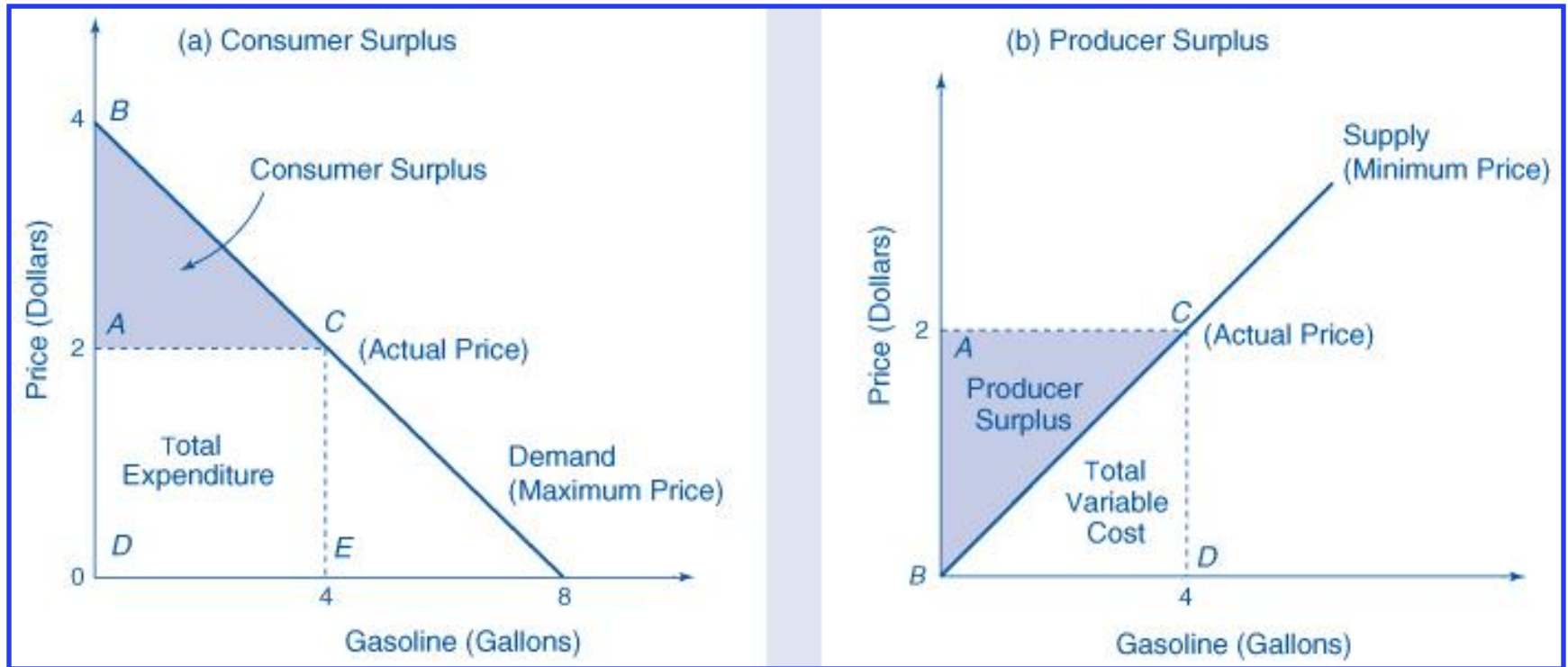
## Small Nation Model

- Changes in the country's imports or exports are small relative to the world market.
- The world price is independent of changes in the quantity of the country's imports or exports
- Costa Rica in the world oil market
- Norway in the world cotton market
- US in the world rice market?

# Consumer & Producer Surplus

- 1) **consumer surplus** – additional benefit obtained by the buyer of a good
  - difference between the maximum that the buyer is willing to pay and the actual price
  - area below demand and above price
- 2) **producer surplus** – additional benefit obtained by the seller of a good
  - difference between the minimum that the seller is willing to accept and the actual price
  - area above supply and below price

# Consumer & Producer Surplus (cont.)



When combined, the areas of consumer surplus and producer surplus represent the total welfare to the nation resulting from the sale of this good.

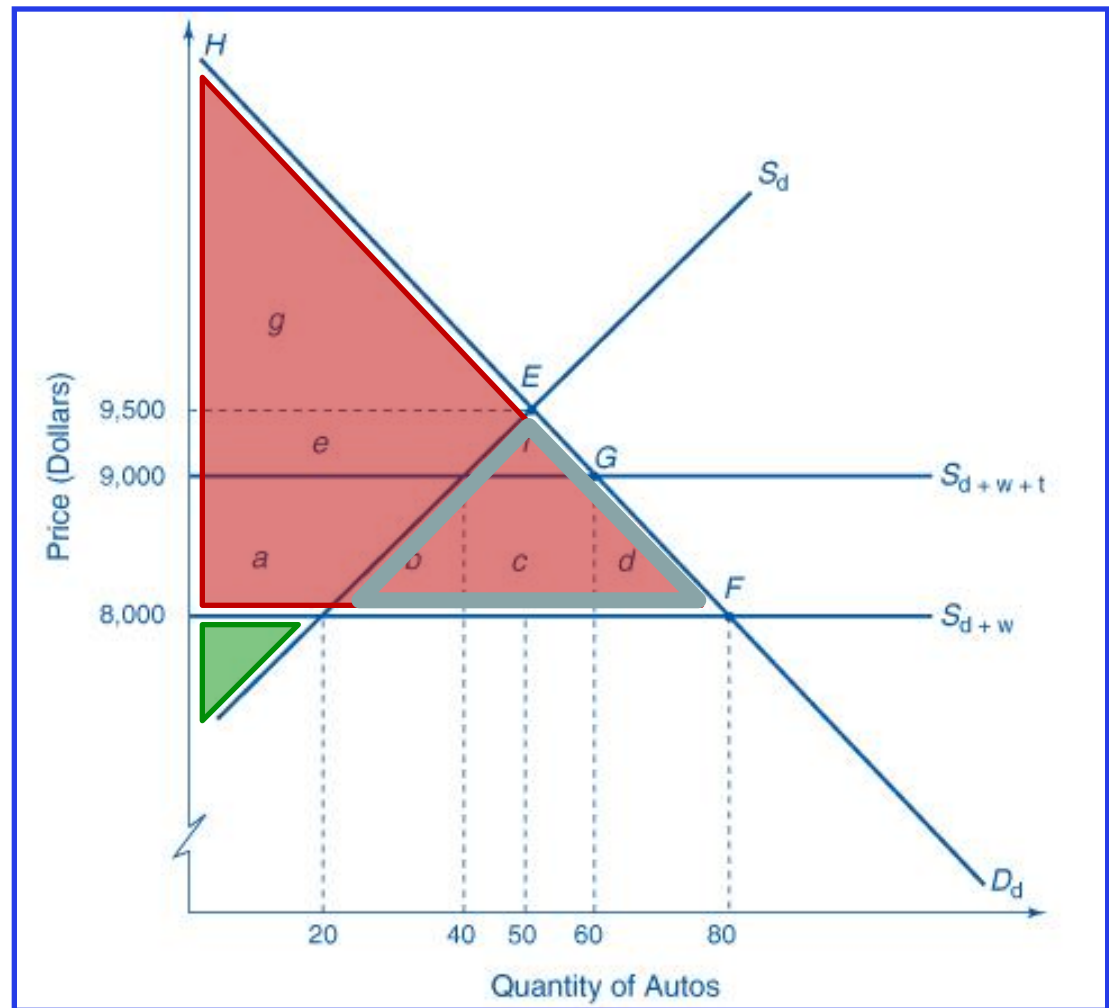
# Tariff Welfare Effects – Small Country

With Open Trade:

Consumer surplus increases by areas a, b, c, d, e, f and g.

Producer surplus decreases by areas a and e.

The overall increase in welfare is b, c, d and f.



# Tariff Welfare Effects – Small Country

## With Tariff:

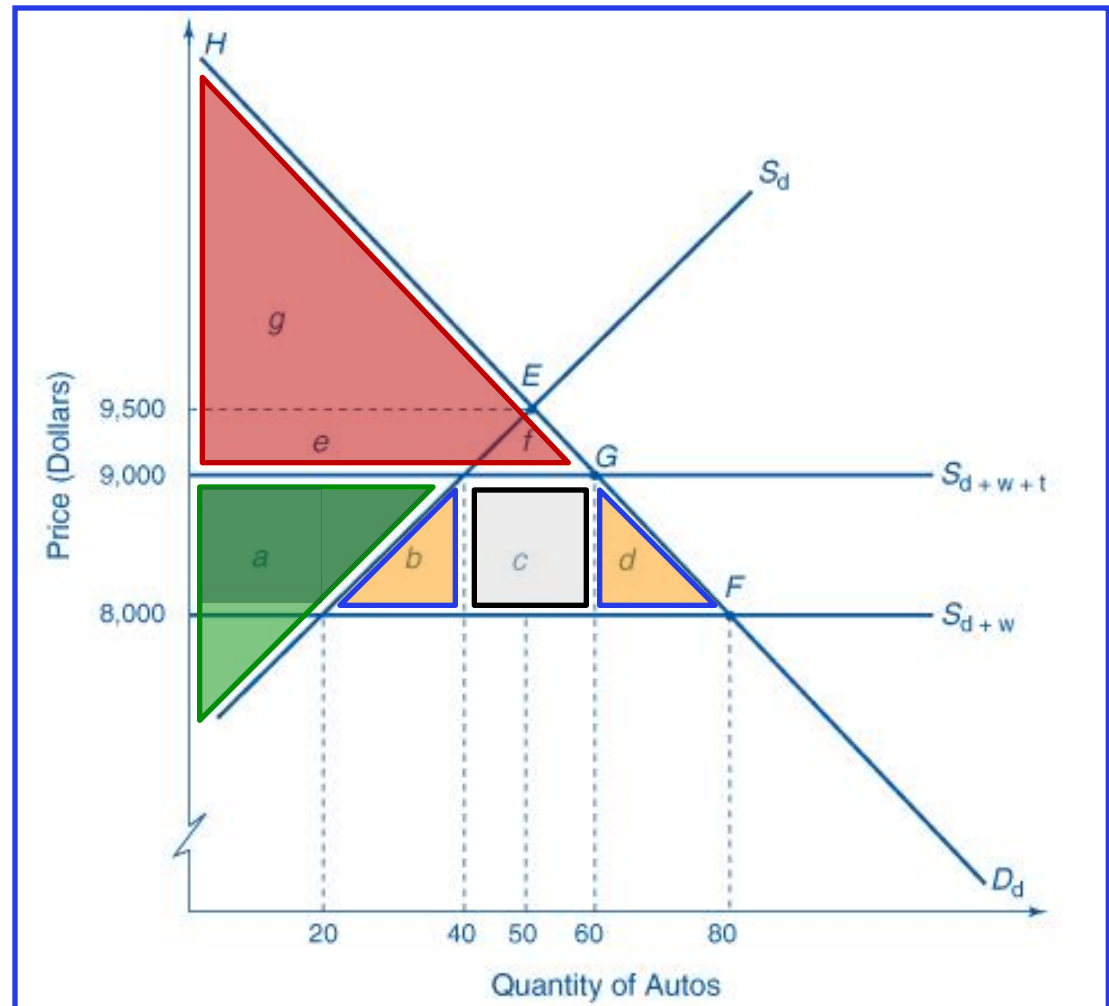
$c$  = revenue effect = lost consumer surplus now government rev.

$a$  = redistributive effect = shift from consumer to producer surplus

$b + d$  = deadweight loss = benefits lost to all parties

$b$  = protective effect

$d$  = consumption effect

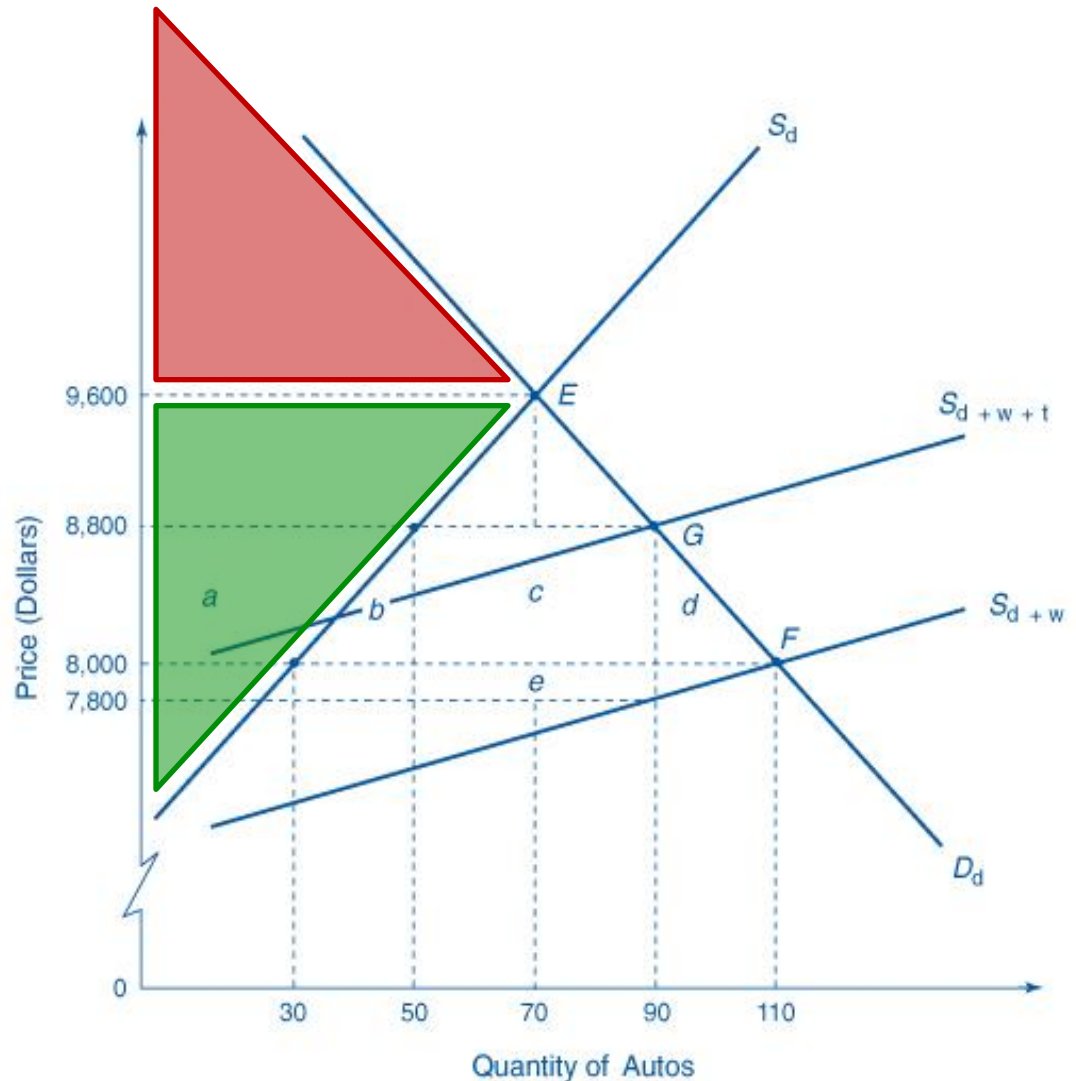


# Tariff Welfare Effects – Large Nation

Before Trade:

U.S. consumer surplus is area in red

U.S. producer surplus is area in green.







# Tariff Welfare Effects – Large Nation

## With Tariff:

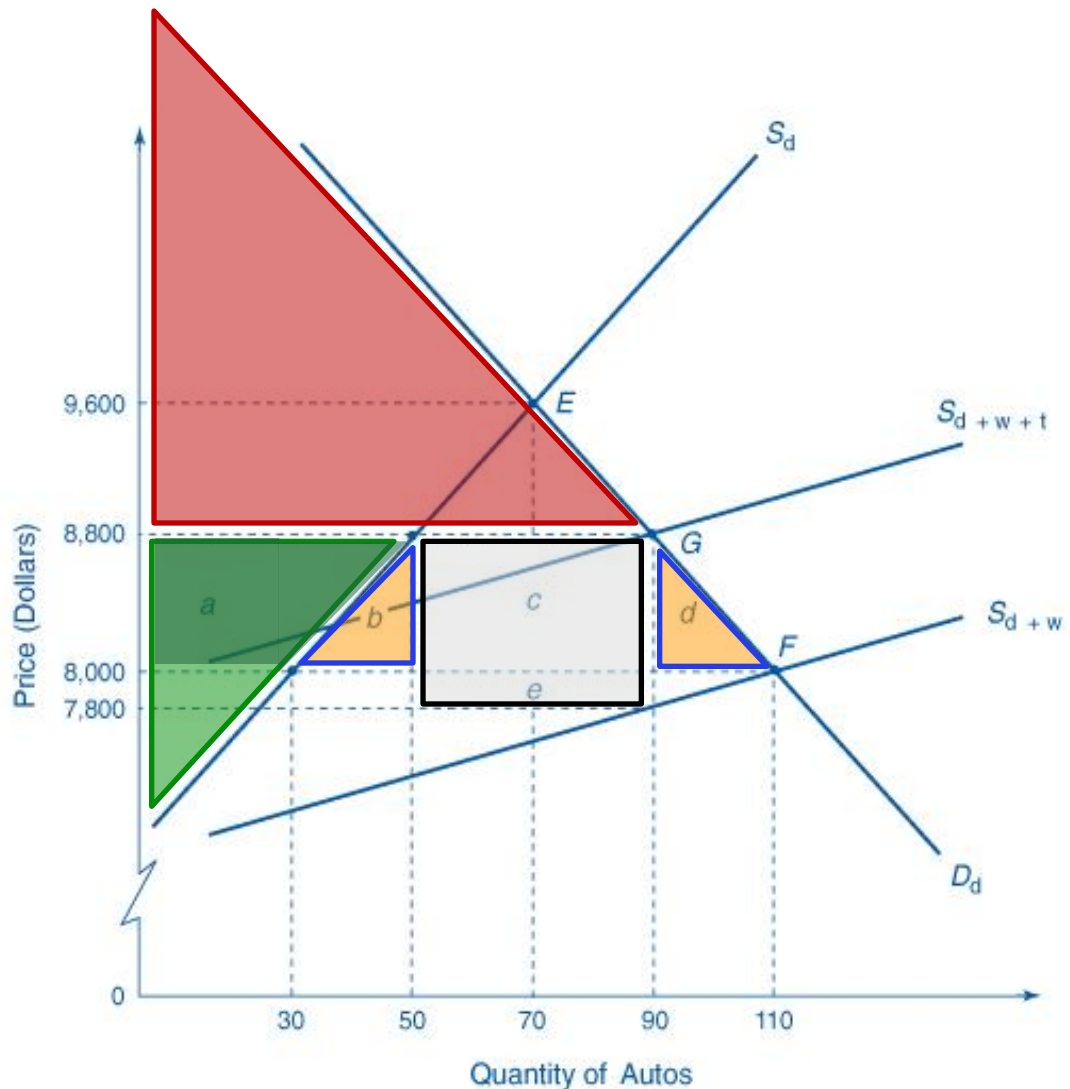
$c + e$  = revenue effect =  
consumer surplus now  
government rev.

$a$  = redistributive effect  
= shift from consumer  
to producer surplus

$b + d$  = deadweight loss  
= benefits lost to all  
parties

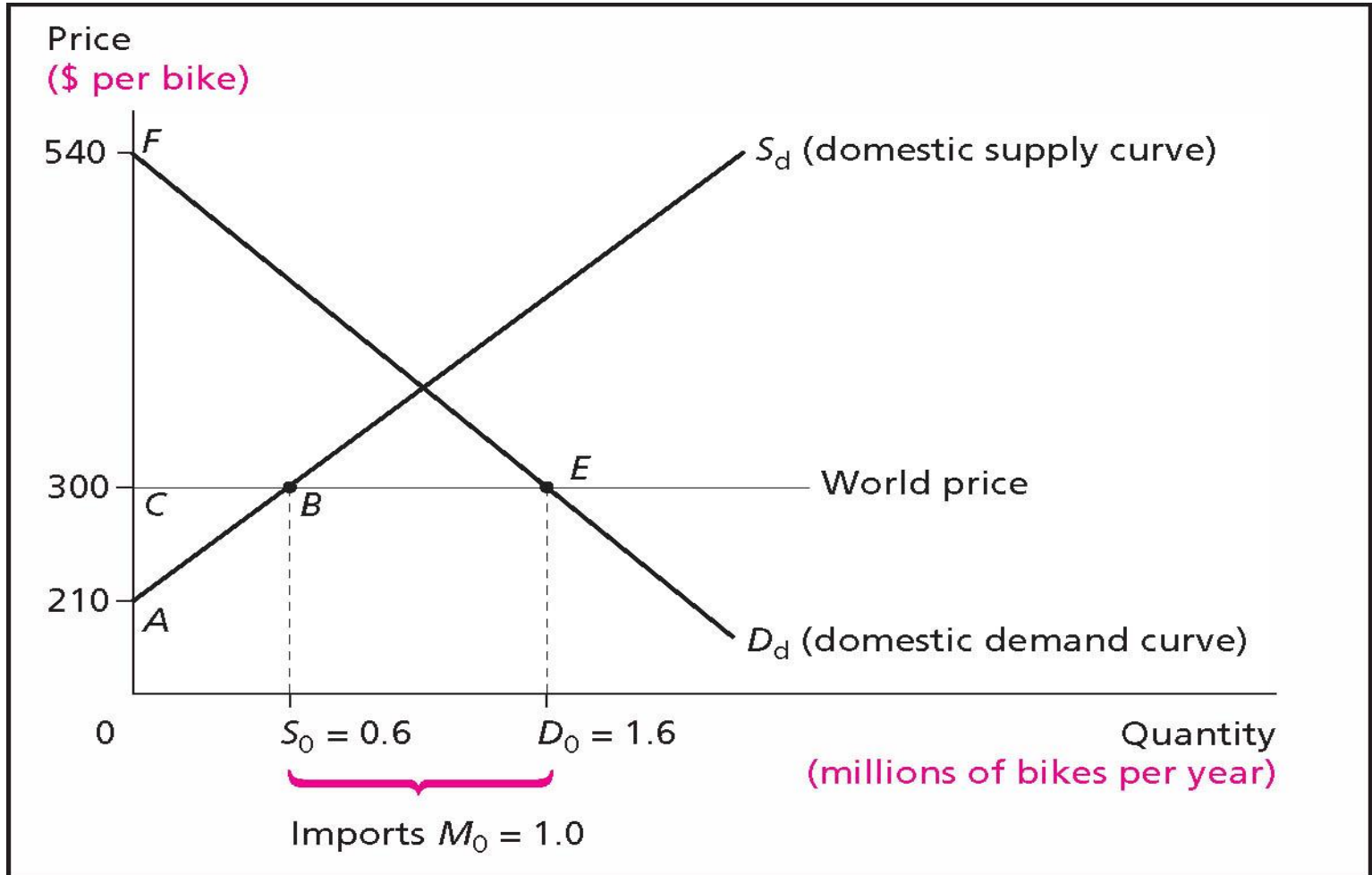
$b$  = protective effect

$d$  = consumption effect  
above.





# Market for Bicycles with Free Trade (Small Nation Model)



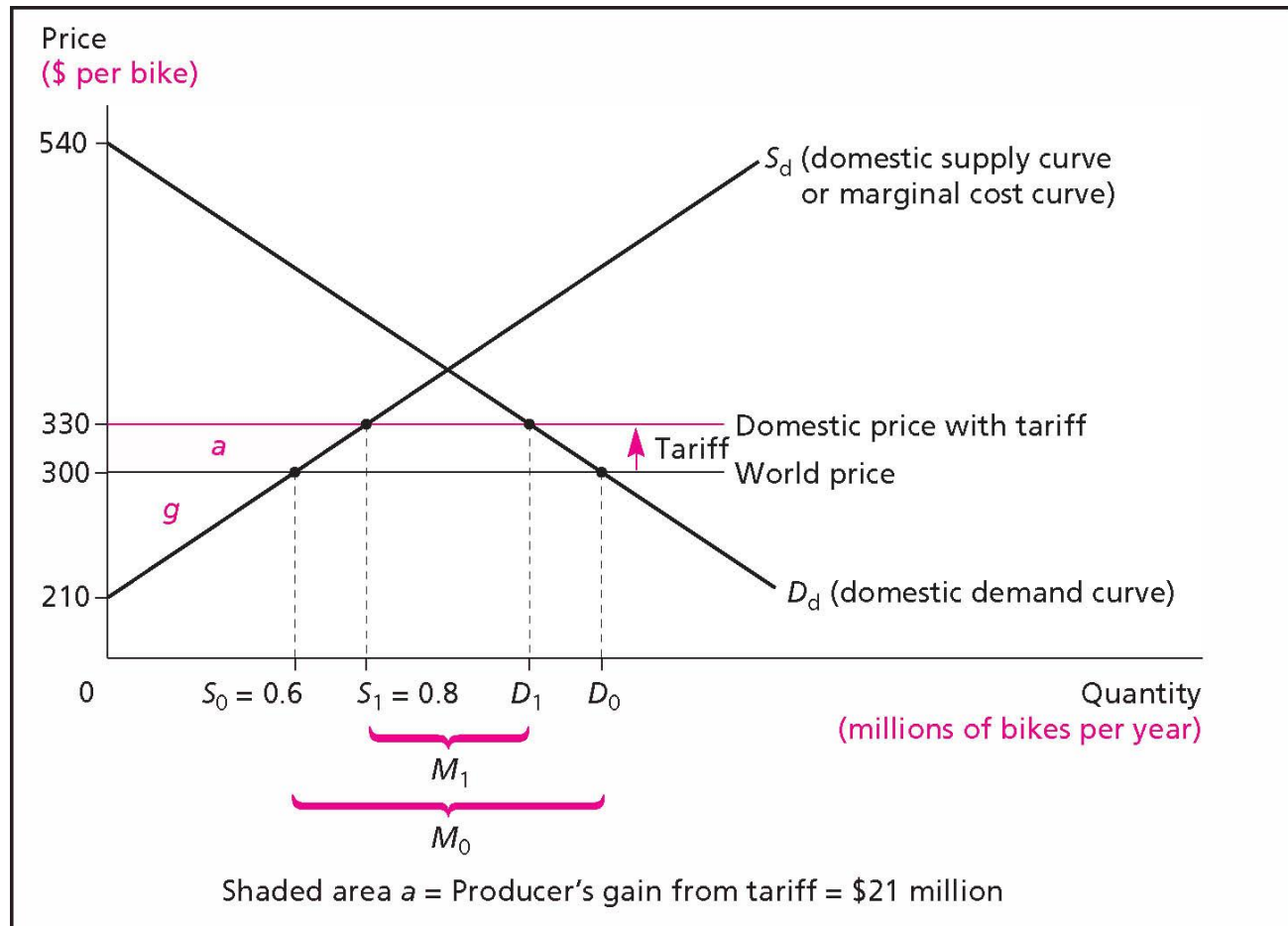
# Free trade (no tariff)

## Small Country Model

World Price	\$300
Q Demanded	1.6
Q Supplied	.6
Q Imported	1.0
Consumer Surplus	$.5(1.6)(\$240)=\$192$
Producer Surplus	$.5(.6)(\$90)=\$27$
Tariff Revenue	\$0
Total Surplus	\$219

# Figure 8.2 – The Effect of a Tariff

## Small Country Model



# Trade with \$30 Tariff - Small Country Model

World Price	\$300
Domestic Price	\$330
Q Demanded	1.4
Q Supplied	.8
Q Imported	.6
Consumer Surplus	$.5(1.4)(\$210) = \$147$
Producer Surplus	$.5(.8)(\$120) = \$48$
Tariff Revenue	$(\$30)(.6) = \$18$
Total Surplus	\$213

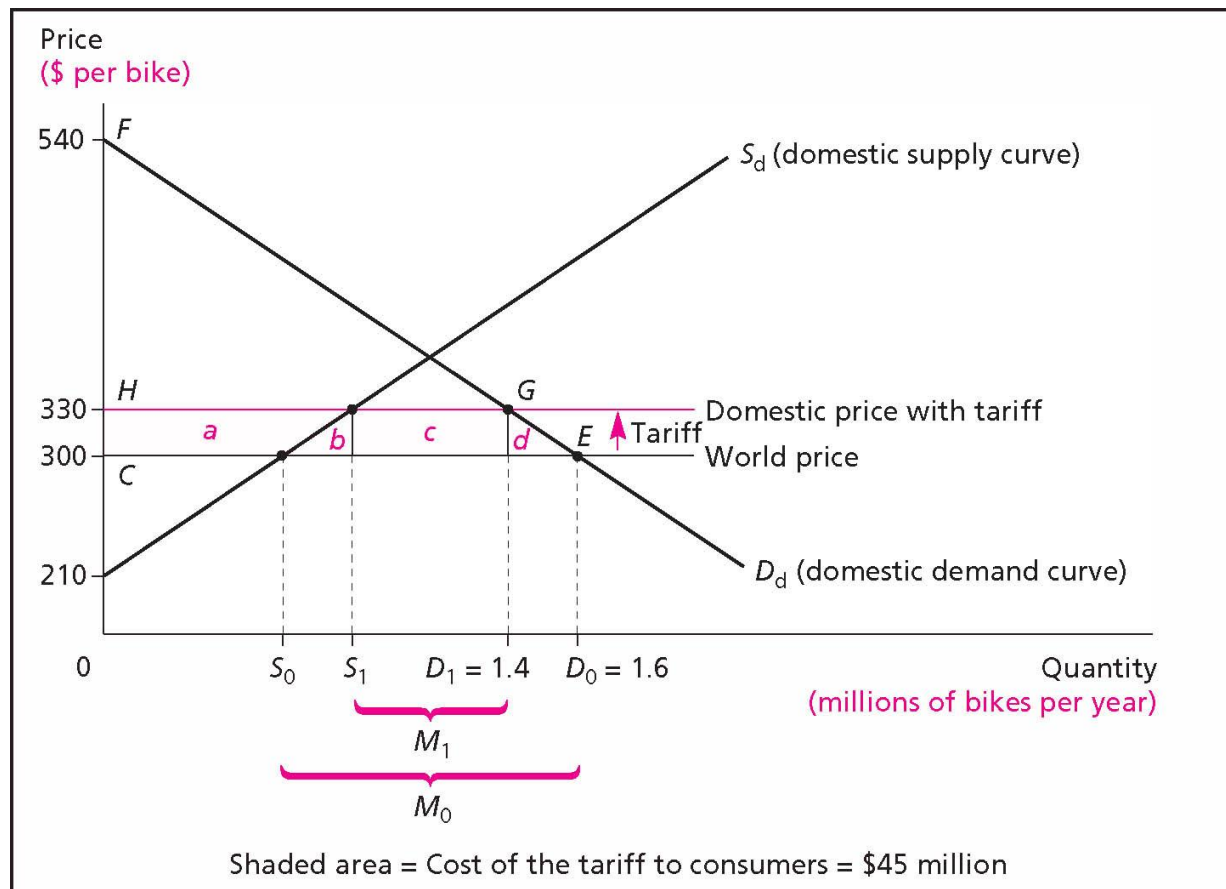
# Trade with \$30 Tariff

Small Country Model

	Before Tariff	After \$30 Tariff
World Price	\$300	\$300
Domestic Price	\$300	\$330
Q Demanded	1.6	1.4
Q Supplied	.6	.8
Q Imported	1.0	.6
Consumer Surplus	$.5(1.6)(\$240)=\$192$	$.5(1.4)(\$210)=\$147$
Producer Surplus	$.5(.6)(\$90)=\$27$	$.5(.8)(\$120)=\$48$
Tariff Revenue	\$0	$(\$30)(.6)=\$18$
Total Surplus	\$219	\$213 (loss in surplus=\$6)

**Area b: Production Effect:** Inefficiency from producing domestically at a  $MC > \text{world price}$  ( $=.5(\$30)(.2)=\$3$ )

**Area d: Consumption Effect:** Inefficiency from reducing consumption when its marginal benefit  $>$  world price ( $=.5(\$30)(.2)=\$3$ )





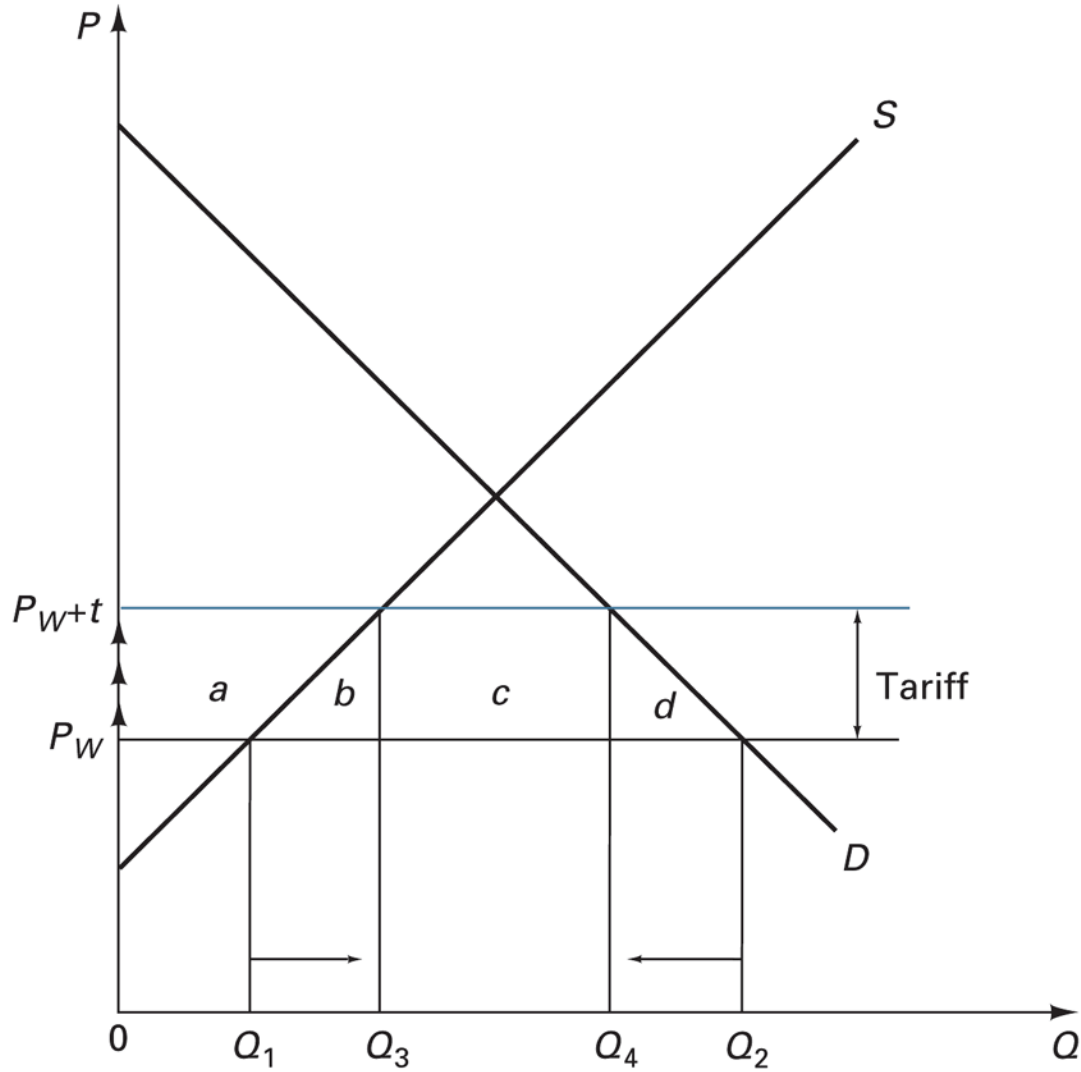
# Another Example

## Tariff in Small Country Model

- Price effect
- Consumption effect
- Production (or protective) effect
- Imports effect
- Government revenue effect
- Consumer surplus effect
- Producer surplus effect

FIGURE 6.6

The Effect of an Import Tariff

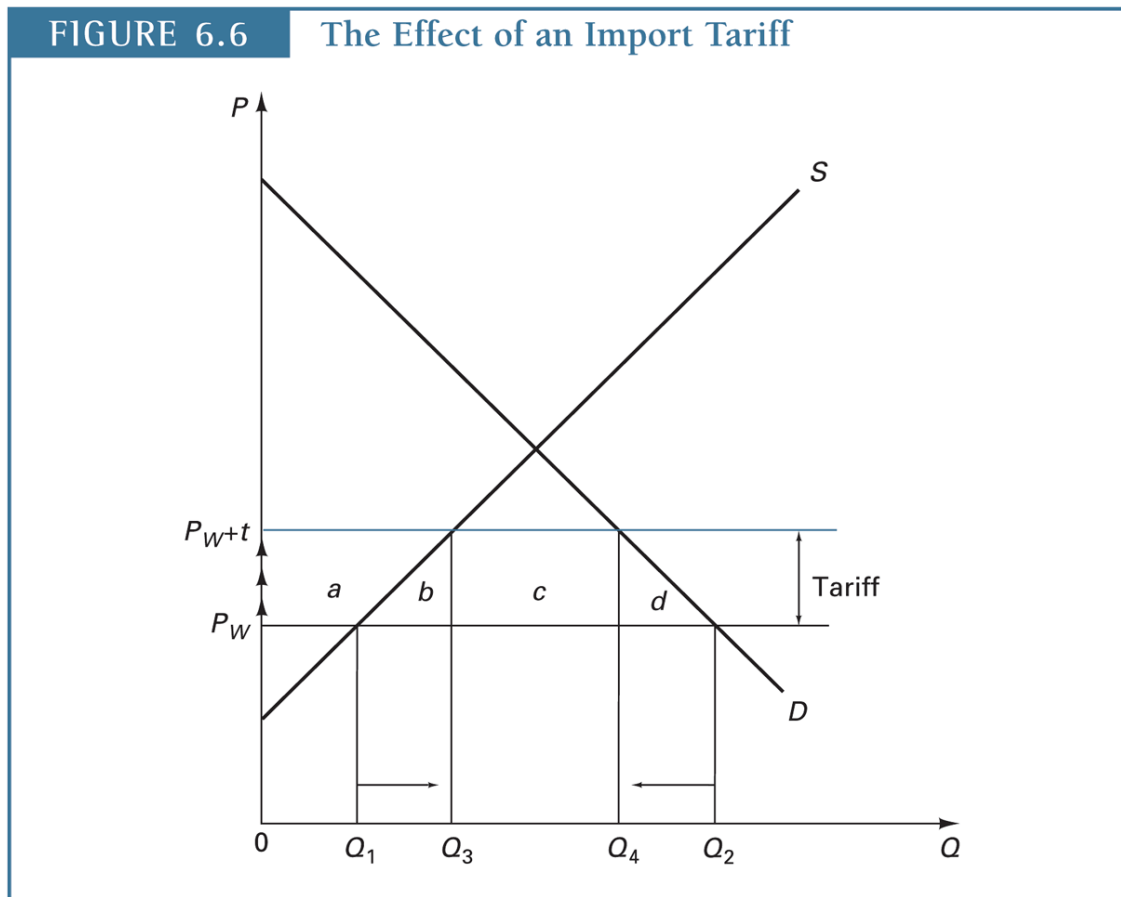


**TABLE 6.4**

**Welfare Cost of a Tariff Imposed by a Small Country**

Change in consumer surplus	-\$a	-\$b	-\$c	-\$d
Change in producer surplus	\$a			
Change in government revenue			\$c	
<b>NET WELFARE CHANGE</b>		<b>-\$b</b>		<b>-\$d</b>

**FIGURE 6.6** The Effect of an Import Tariff



# Two Deadweight Costs (inefficiencies) of the Tariff

- Production deadweight cost —refers to the protective effect of the tariff which allows domestic firms to increase production above free trade levels (area b).
- Consumer deadweight cost—the value of lost consumer satisfaction due to a shift in consumption to less-desired substitutes brought on by the higher price (area d).
- Total deadweight cost =  $\frac{1}{2}$  x tariff x reduction in imports (with linear domestic demand and supply curves for a small country)

# Welfare Effect of a Tariff

## Large Country Model

- Changes in the country's imports or exports are large relative to the world market
- Terms of Trade Effect: The world price is influenced by changes in the quantity of the country's imports or exports. Imports tariffs reduce imports and this causes a decline in the world price.
- US in the world oil market?, semi conductor market?  
Wheat market?
- Brazil in the World Sugar Market?

# Welfare Effects of a Tariff on a Large Country

- Because of its market power, the large country is able to shift part of the burden of the tariff onto the exporting country.
- The greater the tariff burden or revenue paid by foreign exporters compared to the large country's deadweight costs, the greater the welfare increase in the large country

# Effects of a Tariff Imposed by a Large Country

- Price (terms of trade) Effect
  - A plus since the world price decreases
- Consumer Surplus Effect
  - A negative since  $Q_d$  down and domestic  $P$  up
- Producer Surplus Effect
  - A plus since  $Q_s$  up and  $P$  up
- Government revenue effect
  - A plus since tariff revenues are up
- Overall effect: up or down

FIGURE 6.9

Illustration of a Tariff for a Large Country

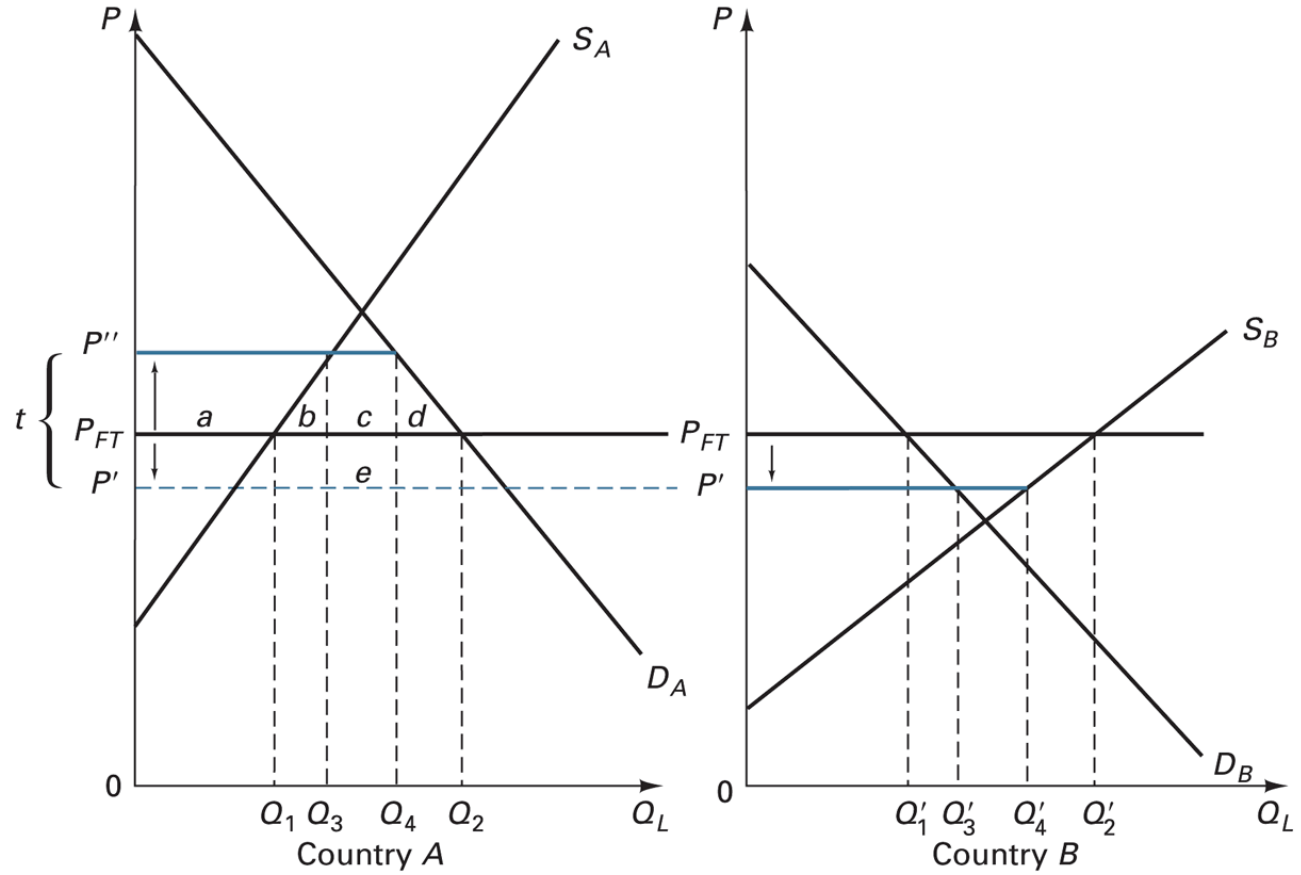


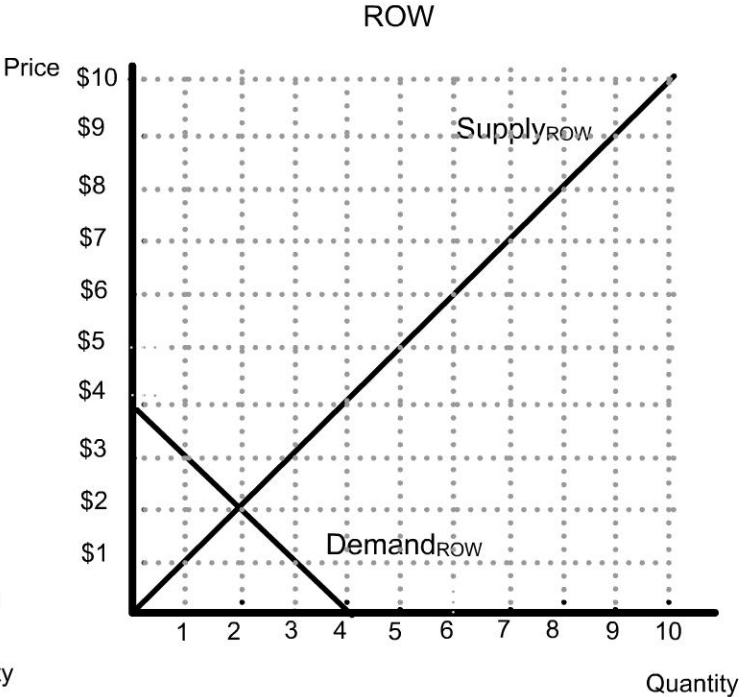
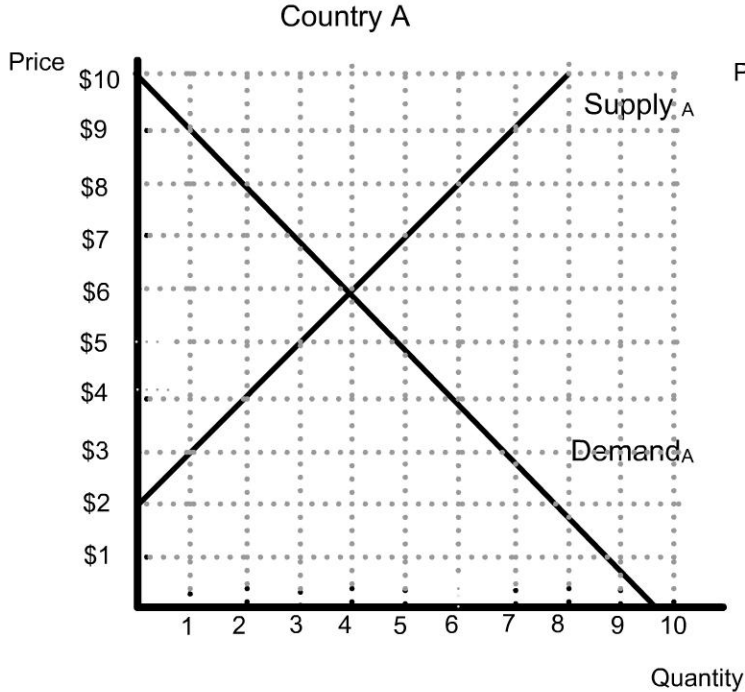


TABLE 6.5

## Welfare Cost of a Tariff Imposed by a Large Country

Change in consumer surplus	$-\$a$	$-\$b$	$-\$c$	$-\$d$	
Change in producer surplus	$\$a$				
Change in government revenue			$\$c$		$+\$e$
NET WELFARE CHANGE		$-\$b$		$-\$d$	$+\$e$

# A Large Country Imposes a Small Tariff



# Trade with \$2 Tariff

Large Country Model

	Before Tariff	After \$2 Tariff
World Price	\$4	\$5
Domestic Price	\$4	\$3
Q Demanded	6	5
Q Supplied	2	3
Q Imported	4	2
Consumer Surplus	$.5(6 \text{ units})(\$6) = \$18$	$.5(5 \text{ units})(\$5) = \$12.50$
Producer Surplus	$.5(2 \text{ units})(\$2) = \$2$	$.5(3)(\$3) = \$4.50$
Tariff Revenue	\$0	$(\$2)(2 \text{ units}) = \$4$
Total Surplus	\$20	\$21 (gain in net national welfare of \$1)

# Optimal Tariff

- The size of a tariff that raises the welfare of a tariff-imposing country by the greatest amount relative to free-trade welfare levels.

# Trade (or Tariff) War

- A general reduction in world trade brought about by retaliation and increases in trade barriers around the world