

## Learning Objectives

- Define consumer surplus, producer surplus and total surplus.
- Use these concepts to explain why countries gain from trade, graphically and numerically.
- Explain the uneven income distribution effects arising from free trade.
- Examine the limitations of examining incentives to trade by using demand and supply tools.
- Explore actual economic data of world trade.

## 1.1 Motivation

To begin our study on international trade issues, we must first ask why countries trade. The answer, hopefully, is that the countries that engage in trade gain from doing so. Furthermore, the gains materialize regardless of whether the countries are exporting or importing. We would need economic measurements, such as consumer surplus and producer surplus, to represent such gains. Total surplus is a welfare or well-being measurement.

We begin with comparing the total surplus of countries under two extreme cases, self-sufficient (autarky) versus free trade. We will show that, although a country as a whole will reap net positive gains in total surplus because of trade, the distribution of the gains is controversial. Some sectors within the country would lose, whereas other sectors would gain. However, because we know that the total surplus has increased, the gains from the winners must be larger than the losses of those who have suffered. This implies that, for trade to benefit everyone within the country, redistribution of gains by the government is necessary. The main idea is to allow free market forces to determine private consumption and production. Once the free market equilibrium is reached, the government can more evenly redistribute some of the wealth throughout the country.

## 1.2 Review of Microeconomic Concepts

### *Consumer Surplus (CS)*

CS is the difference between what the consumer is *willing to pay* and what he *has to pay*. For example, if the consumer plans to spend \$10 on a vase and finds one on sale for \$7, his CS is \$3. In everyday language, positive CS means that we have found a good bargain. A consumer would only consume a product only if the CS is non-negative. Specifically, the consumer will consume until the last unit bought yields zero CS.

The demand curve shows the price at which the consumer is willing to pay for a particular quantity. **Figure 1.1** shows that the consumer is willing to pay \$9 for the first unit, \$8 for the second unit, and \$7 for the third unit. The total willingness to pay by the consumer for all three units is simply the combined areas of the three “strips.”

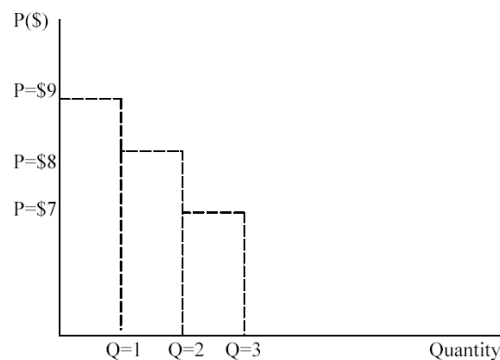


Figure 1.1 Willingness to Pay

Suppose the equilibrium price is \$7, which is what the consumer has to pay. Because the consumer values the first unit at \$9, the CS from consuming the first unit is the area  $(\$9 - \$7) = A + B$ . The CS from the second unit is  $(\$8 - \$7) = C$ . Note that the CS from consuming the third unit is equal to zero because the consumer is willing to pay \$7 for it, which is also the market price. **Figure 1.2** shows that the total CS from consuming all three units is equal to the area  $A + B + C$ , whereas the actual payment for all three units is the area D.

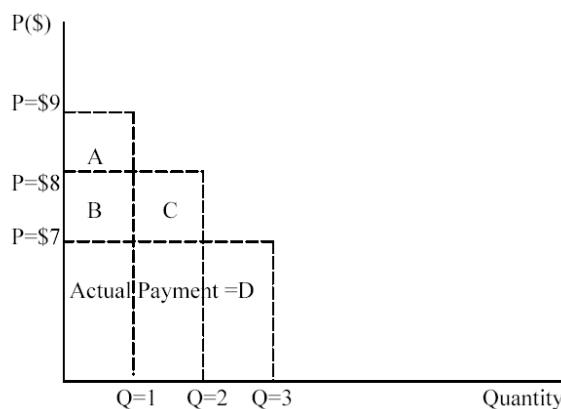


Figure 1.2 Actual Payment and Consumer Surplus

To smooth out the kinks on the demand curve, we can imagine starting from  $Q = 0$  to  $Q = 0.001$  and so on. **Figure 1.3** shows that the total willingness to pay is the area  $A + B + C + D$ ; whereas the actual payment is  $D$ . CS is the area underneath the demand curve and above the equilibrium price (i.e., area  $A + B + C$ ). CS is a measurement of the well-being or welfare of the consumers. The larger is the value of CS, the better is the bargain.

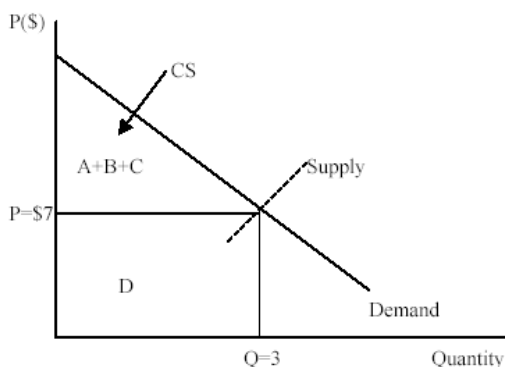


Figure 1.3 Consumer Surplus

Total willingness to pay for equilibrium quantity  $Q = 3$  is  $A + B + C + D$ .

Actual expenditure =  $D$ .

$CS = (A + B + C + D) - D = A + B + C$ .

### *Producer Surplus (PS)*

PS is the difference between what the firm actually receives and the minimum amount that he has to receive to supply a positive quantity. For example, the firm must earn at least \$4 for it to produce one vase, but it turns out the firm can sell this unit at \$7. The firm's PS is \$3. A producer would produce a product only if the PS is non-negative. Specifically, the producer will produce until the last unit made yields zero PS.

The supply curve shows the price at which the firm has to receive so that it would produce that particular quantity. **Figure 1.4** shows that the firm has to receive at least \$2 for it to produce the first unit, \$5 for the second unit, and \$7 for the third unit. The total minimum amount that the producer has to receive is the combined areas of the three "strips."

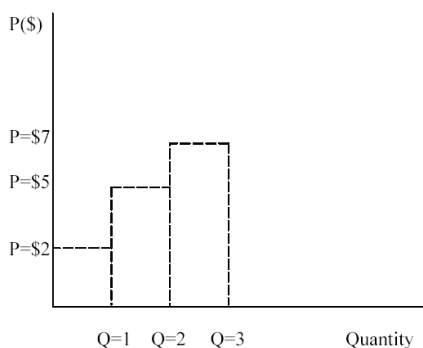


Figure 1.4 Minimum Amount to Be Received

Suppose the equilibrium price is \$7, which is what the firm will receive from the consumers. Because the producer requires \$2 to produce the first unit but receives \$7, the PS from the first unit is the area  $(\$7 - \$2) = E + F$ . The PS from the second unit is  $(\$7 - \$5) = G$ . The PS from producing the third unit is equal to zero. **Figure 1.5** shows that the total PS from producing all three units is equal to the area  $E + F + G$ , whereas the actual revenue for all three units is the area  $E + F + G + H + I + J$ .

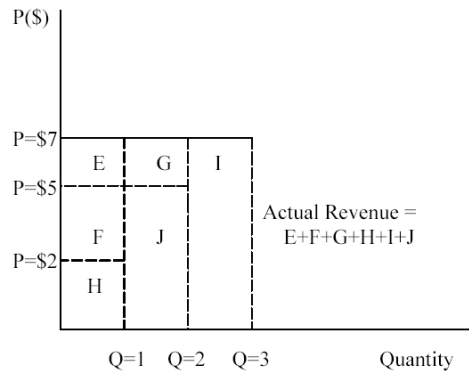


Figure 1.5 Actual Revenue and Producer Surplus

Similar to the demand curve, we can smooth out the kinks on the supply curve by imagining  $Q$  changes by very small amounts. **Figure 1.6** shows that the minimum amount the firm has to receive is the area  $H + I + J$ ; whereas the actual revenue is  $E + F + G + H + I + J$ . PS is the area underneath the equilibrium price and above the supply curve (i.e., area  $E + F + G$ ). PS is a measurement of the well-being or welfare of the firms. PS is closely related to the concept of economic profits.

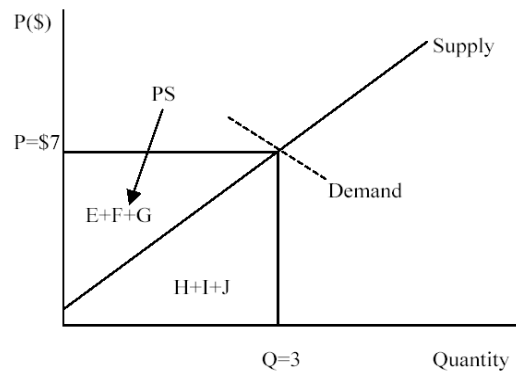


Figure 1.6 Producer Surplus

Minimum revenue required to produce at equilibrium quantity  $Q = 3$  is  $H + I + J$ .

Actual revenue =  $E + F + G + H + I + J$ .

$PS = (E + F + G + H + I + J) - (H + I + J) = E + F + G$ .

### Market Equilibrium within One Country (No Trade = Autarky)

When a country does not trade with any other countries, the country is said to be under autarky, or self-sufficient. Because a country is self-sufficient, its domestic demand must be equal to domestic supply because the price moves to clear the market. *Market-clearing* means there is no excess demand or supply at the equilibrium price. As **Figure 1.7** shows, the total surplus (TS) or well-being of the country is simply  $CS + PS = TS$ . This is the maximum welfare achievable, given that the country can only consume what it can produce.

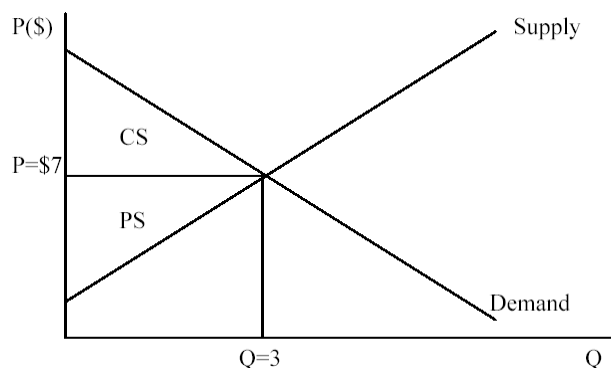


Figure 1.7 Maximum Autarkic Total Surplus

### Price Ceiling

A price ceiling is the maximum price that is allowed to exist in the market, such as rent control. Price control is a form of government intervention that must be implemented and enforced by the authorities for it to be effective. The result of price control is often excess demand at the controlled price.

Graphically, without price control the market equilibrium price is \$7 and quantity is 3. Suppose the government deems this price as being “too high” and passes a law that sets the maximum price to be \$5. **Figure 1.8** shows that this would result in quantity demanded at 5 and quantity supplied at 1. The actual quantity that will be sold and bought is 1, and the remaining 4 consumers would not be able to find anything to buy.

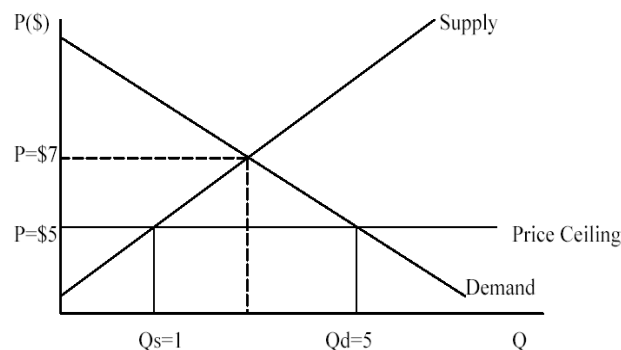


Figure 1.8 Price Ceiling

## Price Floor

A price floor is the minimum price that is allowed to exist in the market, such as minimum wage. Price support is also a method that the government may use to intervene in the market. A price support scheme must be implemented and enforced by the authorities for it to be effective. The result of price support is often excess supply at the artificially high price.

**Figure 1.9** illustrates the effects of a price floor. Graphically, without price support the market equilibrium price is \$7 and quantity is 3. Suppose the government deems this price as being “too low” that this price may not be able to afford the suppliers a “reasonable” standard of living. The government may pass a law that sets the minimum price to be \$8; however, this would result in quantity demanded at 1 and quantity supplied at 5. The actual quantity that will be sold and bought is 1, and the remaining 4 producers would not be able to sell their products. The government may intervene and buy the excess 4 units, but this purchase would be paid by tax-payers.

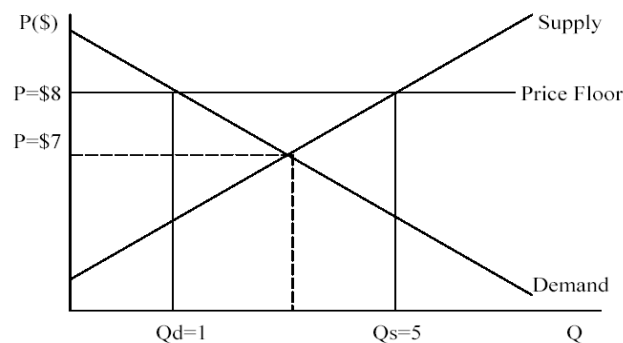


Figure 1.9 Price Floor

## 1.3 Autarky or No Trade

To answer our core question of why countries trade, we begin with examining the total surplus of countries that do not trade at all. This is obviously an extreme assumption, and we want to contrast this with the case where countries engage in free trade. Both of these cases are extremes. In subsequent chapters, we will relax such settings and examine cases where trade exists but with various forms of impediments, such as import taxes and export subsidies.

### Assumptions

1. There are only two countries: Home (H) and Foreign (F). H could be Canada, and F could be Mexico.
2. Each country is self-sufficient before trade. This implies that a country's demand must be equal to its supply. Each country can only consume what it produces.
3. The countries consume and produce good 1 ( $Q_1$ ). The product  $Q_1$  is identical in both countries.

## An Example to Illustrate Autarkic Total Surplus

$$\begin{aligned} \text{H} \\ \text{Demand: } P_1^H &= 3 - 0.5Q_1^H \\ \text{Supply: } P_1^H &= 1 + 0.5Q_1^H \end{aligned}$$

$$\begin{aligned} \text{F} \\ P_1^F &= 2 - 0.5Q_1^F \\ P_1^F &= 1 + 0.5Q_1^F \end{aligned}$$

Given the above demand equations, note that the H consumers like the product more than F consumers. H's demand is stronger than F's demand, which is evident from the vertical intercepts of the demand equations. The highest price that H consumers are willing to pay is \$3, whereas the highest price F consumers will pay is \$2. The H demand has a higher intercept. For simplicity, this example assumes that the firms in both countries produce good 1 with the same production technology and costs. Therefore, the supply equations for both countries are identical. In this example, we want to focus on how the difference in demand preferences could drive free trade rather than technological differences.

To find the autarkic equilibrium values for prices and quantities, we set demand equal to supply:

→ For H, set  $3 - 0.5Q_1^H = 1 + 0.5Q_1^H$ , so  $Q_1^H = 2$ , and substitute  $Q_1^H = 2$  into demand or supply,  $P_1^H = \$2$ .  
→ For F, set  $2 - 0.5Q_1^F = 1 + 0.5Q_1^F$ , so  $Q_1^F = 1$ , and substitute  $Q_1^F = 1$  into demand or supply,  $P_1^F = \$1.5$ .

Note that we now have the information required to plot the demand, supply, equilibrium prices, and quantities, as well as the associated CS and PS. For simplicity's sake, we will label the areas for CS and PS, without calculating the values of the geometric areas. **Figure 1.10** shows the results. Under autarky, the maximum well-being or TS that each country can enjoy is its own  $TS = CS + PS$ .

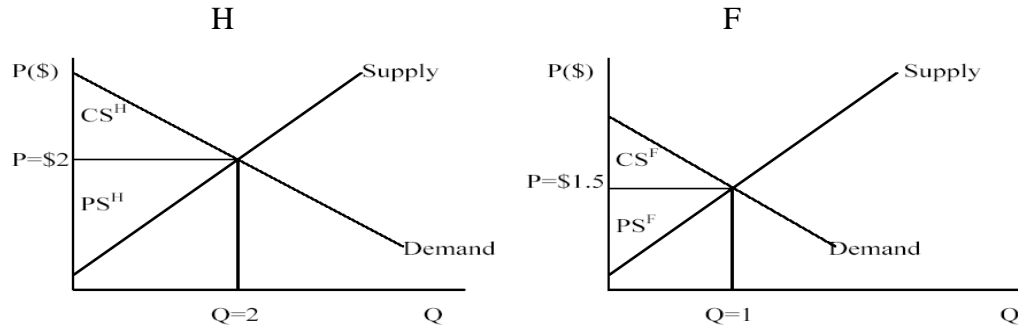


Figure 1.10 Autarkic Total Surplus of H and F

### 1.4 Free Trade

Under free trade, there are no transport costs or any types of import taxes or import quantity restrictions. This implies that free trade (FT) will lead to an identical price for good 1. Therefore,  $P_1^F = P_1^H = P_1^{FT}$ . After FT, the domestic demand will not be equal to domestic supply in each country. Consumers are no longer constrained to consume what the firms in their own country produce. They can import and the producers can export.

### Horizontal Summation

Continuing with the numerical example in 1.3, we now want to find the world (H + F) total demand and supply. We cannot, however, simply add across the existing demand and supply equations. If we did so, we would be adding across the prices from H and F. This would erroneously give us  $P_1^{FT} = \$3.5$ . This price is not sensible because both H and F would like to export because this price is higher than each country's domestic autarkic price. Because the world has only two countries, H + F can only export to another planet!

Intuitively, the  $P_1^{FT}$  should be in between  $P_1^F = \$1.5$  and  $P_1^H = \$2$ . The correct way to add across H and F equations is to first rearrange the demands and supplies such that the Q's are on the left-hand side. For example, we rewrite  $P_1^H = 3 - 0.5Q_1^H$  into  $Q_1^H = 6 - 2P_1^H$  and then we can add across the quantities  $Q_1^H + Q_1^F$ . This process is sometimes called *horizontal summation* (i.e., we add the variable on the horizontal axis, which is the quantity).

### Finding $P_1^{FT}$

With only two countries, H + F = world. We want to solve for  $D_1^H + D_1^F = S_1^H + S_1^F$  to find  $P_1^{FT}$ :

→ World demand:  $(Q_1^H + Q_1^F = 6 - 2P_1^H + 4 - 2P_1^F)$ , and  $P_1^F = P_1^H = P_1^{FT}$ , so  $Q_1^D = 10 - 4P_1^{FT}$ .

→ World supply:  $(Q_1^H + Q_1^F = 2P_1^H - 2 + 2P_1^F - 2)$ , so  $Q_1^S = 4P_1^{FT} - 4$ .

Set world demand = world supply, and we will find  $P_1^{FT} = \$1.75$ . Substitute this  $P_1^{FT}$  into the world supply or world demand, we will find  $Q_1 = 3$ .

As expected, the  $P_1^{FT} = \$1.75$  is lower than \$2 and higher than \$1.5, which immediately implies that the H consumers have the incentives to import from F because it is cheaper than \$2, whereas the F firms have incentives to export to H because they will earn more than \$1.5. This result is intuitive because we assume that H consumers have a stronger preference for the product than F consumers. Given that the supply side is identical, H should be importing this product under FT. Note that the FT price does *not* have to be exactly in the midpoint of the two autarkic prices. For example, this FT price could have been \$1.89.

### Trade Patterns and Trade Balances

We expect H to import  $Q_1$ , but by how many units? To find the import quantity, we simply substitute  $P_1^{FT}$  back into H's demand and supply:

→ H demand:  $Q_1^H = 6 - 2P_1^{FT} = 6 - 2(\$1.75) = 2.5$  units.

→ H supply:  $Q_1^H = 2P_1^{FT} - 2 = 2(\$1.75) - 2 = 1.5$  units, hence H imports 1 unit.

We can verify whether the import quantity of H was correct. To do so, we find the export quantity of F:

→ F demand:  $Q_1^F = 4 - 2P_1^{FT} = 4 - 2(\$1.75) = 0.5$  unit.

→ F supply:  $Q_1^F = 2P_1^{FT} - 2 = 2(\$1.75) - 2 = 1.5$  units, hence F exports the 1 unit that H imports.

To find the trade balance values for both countries, we simply multiply the import or export quantities by the FT price. The import expenditure of H =  $\$1.75 \times 1$  unit of import = \$1.75, which is equal to the export revenue of F =  $\$1.75 \times 1$  unit of export = \$1.75.



Graphically, the trade patterns of H and F (import or export) can be shown by **Figure 1.11**:

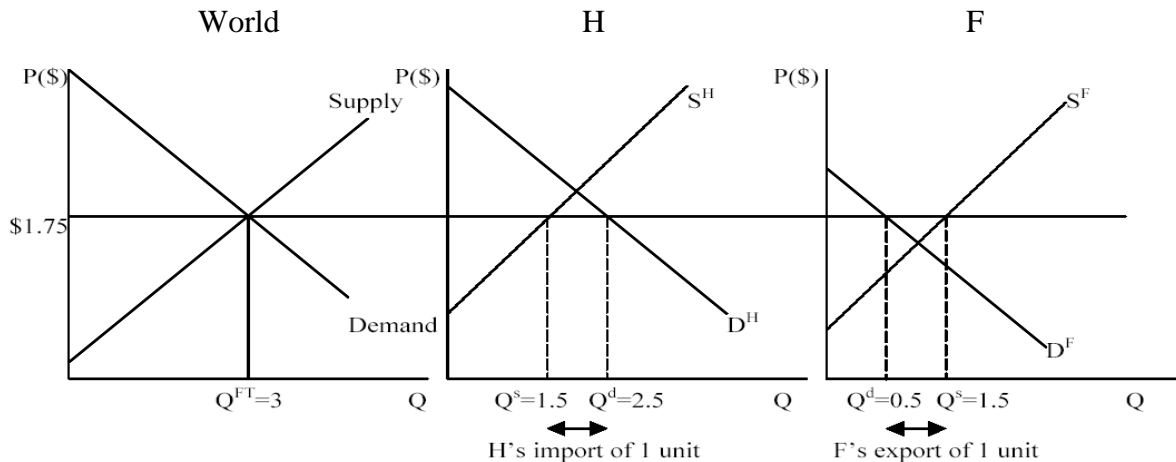


Figure 1.11 Trade Patterns of H and F

Note that the diagram of H appears as if  $P_1^{FT}$  were a price ceiling for H while  $P_1^{FT}$  were a price floor for F.  $P_1^{FT}$ , however, neither is a price ceiling nor a price floor because this price is not the result of any government interventions. Instead, it is the result of combining H and F consumers, who exhibit different demands for the product. In addition, there is neither excess demand nor excess supply in the two countries because the excess is either being imported or exported. The free trade price  $P_1^{FT}$  ensures that the world market is in equilibrium.

### *Do H and F Gain from Trade?*

Now we come to the central question of whether H and F gain from moving from autarky to FT. We can use the concepts of CS and PS to answer this question. **Figure 1.12** shows our results.

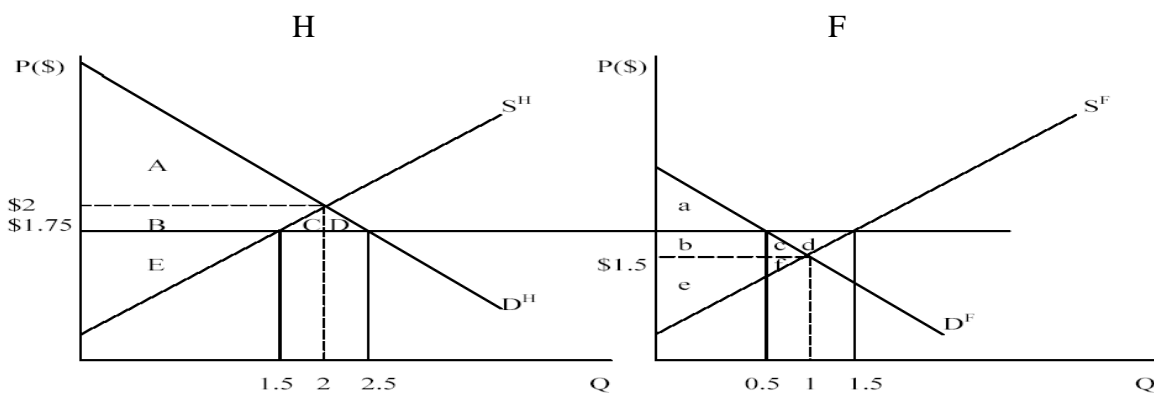


Figure 1.12 Total Surplus Analysis of H and F

Before Trade ( $P_1^H = \$2$ ):

CS = A

PS = B + E

TS = A + B + E

Before Trade ( $P_1^F = \$1.5$ ):

CS = a + b + c

PS = e + f

TS = a + b + c + e + f

After Trade ( $P_1^{FT} = \$1.75$ ):

$$CS = A + B + C + D$$

$$PS = E$$

$$TS = A + B + C + D + E$$

After Trade ( $P_1^{FT} = \$1.75$ ):

$$CS = a$$

$$PS = b + c + d + e + f$$

$$TS = a + b + c + d + e + f$$

Net Change (the symbol “ $\Delta$ ” stands for “change”):

$$\Delta CS = B + C + D$$

$$\Delta PS = -B$$

$$\Delta TS = C + D > 0$$

$$\Delta CS = -(b + c)$$

$$\Delta PS = b + c + d$$

$$\Delta TS = d > 0$$

Because both countries enjoy increases in TS, they have both gained from FT. H consumer's gain because they can now buy the product at \$1.75 instead of \$2. They pay \$1.75 for all of the 2.5 units regardless of from where they buy the product. If the H consumers can import at \$1.75 from F, the H domestic suppliers must lower their prices from \$2 to \$1.75 to stay competitive. CS increases by a net gain of  $(B + C + D)$  due to lower prices and higher quantity consumed. The import-competing H firms, however, will lose. They lose because of lower prices and more import competition. Their loss in PS is equal to B. However, the TS analysis shows us that the overall gain to the consumers is larger than the loss to the producers. Because both consumers and producers live in H, H as a country gains  $C + D$ .

A mirror image is true for F. F producers will gain  $(b + c + d)$  because they are no longer constrained to sell exclusively to F consumers. With a larger world market, the F producers export to H. As long as F producers charge the H consumers a price that is less than \$2, H consumers will import. In order for the F producers to be interested in leaving some of the product for F consumers, the F consumers must also pay the higher price \$1.75. As a result, F consumers lose  $(b + c)$ . Overall, however, the TS analysis shows that the gains from the producers are more than enough to offset the losses of the consumers, and F as a country gains from FT with an increase in TS equal to d.

## 1.5 Insights, Limitations and Further Discussion

### *Where Do the Gains From Trade Come From?*

For H, the gains from trade come from the fact that the H consumers like the product much more than the F consumers, and now they can consume more at a lower price. For F, firms gain because they now have a bigger market and they sell at a higher price. In this example, demand differences have given rise to gains from FT.

Note that an importing country can gain from FT, which contradicts with the media's focus on how imports can ruin a country. It is true that the import-competing firms in H will face more intense competition and their market share will fall, but imports at cheaper prices will benefit the consumers. Our simple demand-and-supply and total surplus analysis have shown that the gains to the consumers are larger than the losses to the import-competing firms.

The gains from trade can also arise from supply differences. Imagine that both countries have the same demand equations but different supply equations. This implies that one country must be a more efficient producer than the other. In this case, the efficient country will export and the less-efficient country will import. Production differences due to technological or cost difference can also give rise to mutually beneficial FT. This case will be explored further in Chapter 2.

### *Why Do People Oppose FT and What Are Some Remedies?*

For H, as shown in our graphs, the import-competing sector will lose because of FT. The workers and firm owners will definitely try to lobby against FT or for import protection. In Canada, these sectors are most likely to be textile, manufacturing, and automobile. They are likely to lobby against imports from China and Japan. However, one important insight is that, although restricting FT will protect some of these jobs that would otherwise have been lost, it would be the Canadian consumers who are paying for these jobs through higher prices. More importantly, given our relatively constant labour supply and capital stock, we are keeping these valuable inputs in industries in which we are not so good at (which is why we wanted to import to begin with) rather than moving them to our export-oriented, productive industries. Hence, although restricting imports can save some Canadian jobs, consumers pay the price and so would other Canadian industries.

For F, it is conceivable that F consumers may be against FT because they are now effectively competing with the H consumers for the products to consume. Consumers, however, are not as organized as industries, such as unions, trade associations, etc., and hence consumers are not likely to have a loud voice in protests.

The fact that FT can lead to some people gaining and some people losing implies that there is a role for the government, especially the H government in this example, to redistribute income from those who gain to those who lose. The most economically efficient way to redistribute income is through lump-sum transfers. For example, knowing that opening to more FT in textile products will benefit Canadian consumers but hurt Canadian textile firms, the Canadian government can provide income supplements (such as extended employment insurance benefits), free retraining programs (such as vocational training or computer training), and relocation assistance to the displaced workers. The government can pay for these programs by collecting lump-sum taxes from the profiting export sectors. Instead of obstructing imports, it might serve the consumers and workers better if the government were to retrain the laid-off workers for jobs that require better skills but provide better pay. Of course, in reality, this is much easier said than done. Uprooting workers who have been working in industries that are most familiar to them and retraining them for new skills is both time-consuming and unsettling to the workers.

### *Incorporating Trade Surplus or Deficits*

The simple example that we have discussed has given rise to a balanced trade such that the import expenditure of H is equal to the export revenue of F ( $\$1.75 \times 1$ ). Obviously, in reality this does not have to be the case. We often hear about trade deficits of the United States and trade surpluses of China and Japan in the news. We can incorporate trade imbalances (i.e., deficits or surpluses), but this would complicate our analysis significantly because we would need to add the following conditions:

1. At least two time periods: We need the country to borrow or lend in one time period and repay or collect in the second period, which means we would need one set of demand and supply equations for H and F this time period and another set of equations for the second time period. Basically, the more time periods there are, the more equations there are. Also, the repayment of debt or collection of loans can be spread across many time periods, which means that we need to link the equations across time. In the literature, this type of studies is often called *dynamic equilibrium studies*. As we can imagine, the calculations would become significantly more complicated.

2. Reasons for borrowing or lending: Why does a country routinely run into deficits, whereas other countries have surpluses? A country is not much different from individuals. Individuals borrow because they have a habit of spending a high portion of their income and save very little. To explain why a country borrows, we need to explore the underlying reasons such as saving habit, spending patterns, and consumer culture.
3. Cost of borrowing: A country has to pay interests on its debt. How is the interest rate determined? Is it a long-term debt or short-term debt? Would borrowing have an effect on the exchange rate? These are some of the questions that need to be answered.
4. How to pay back debt: How can the country pay back its debt in the future? Does this require higher future economic growth? Or does it need weaker consumer spending?

By allowing for trade imbalances, we complicate our analysis significantly. For international trade, we would concentrate on situations when trade balances and then look at the features (gains, losses, income distributions, government policies, etc.). For international finance, we would focus more on the reasons, effects, and potential solutions for trade imbalances.

### *Limitations*

Our economic analysis in the previous pages suggest that free trade is at least as beneficial as autarky, but usually better, because free trade offers the firms and the consumers the freedom to import and export. If this freedom hurts them, they can choose to not exercise this freedom. However, as we have learned from introductory economics courses, our conclusion from the previous pages will hold only if markets could be accurately depicted by demand and supply. For demand and supply to accurately reflect the true benefits and costs of transactions, the markets need to be efficient. If the markets are not efficient, such as due to the presence of externalities, incomplete information, search costs, corruption and imperfect foresight, then trade may serve to exacerbate the underlying market inefficiencies. As a result, free trade may decrease, rather than increase, the welfare of an economy.

A common example that has often been quoted as an argument against free trade is pollution. If opening up a foreign market could stimulate domestic production and if such production pollutes the environment, trade will worsen the environment. Specifically, if private production creates air, noise or water pollution, the private marginal costs are under-estimating the total production costs. Unless the government forces the firms to internalize the pollution costs, that is, requires them to clean up, the firms will over-produce and over-pollute. Since pollution would decrease our future ability to produce (unsustainable current production), we may have a sound argument to limit production, and hence trade, if we care about our future generations. The counter argument, of course, is that if the economy is weak, the workers may prefer to have jobs now and tolerate some pollution. We would explore this topic in detail in Chapter 6.

Another argument against free trade is the lack of an efficient market system, which is quite true in developing countries. If corruption were rampant in the country, more production and trade could lead to even more outrageous corruption. As a result, free trade could fuel corruption, and income inequality could widen even further. Market inefficiencies may also be the result of the lack of a sound infrastructure, such as a weak communication network, an under-developed transportation system, tax evasion, and others. The economic opportunities that come with free trade may exacerbate these problems, and it may be advisable to confront these issues prior to opening a market that is not ready to handle the economic responsibilities that come with globalization.

## 1.6 Data and Interpretation

We now turn to examine some actual trade data. We begin with an overview of the values of world trade and some countries' main trade partners. Most countries usually, though not always, trade mainly with other countries located within close geographical proximity. Perhaps surprisingly, the countries we often hear in the news related to trade controversies, such as the United States (US) and Japan, are not that open to trade when openness is measured as trade value (imports plus exports) as a percentage of GDP. In addition, products that generate news headlines, such as agriculture and textile, account for rather small shares of world trade. We will conclude with a look at Canada's main trade statistics.

### *World Trade*

**Figure 1.13** shows the values of world merchandise trade from 1992 to 2010. Our first observation is that these trade values have been growing steadily over these years. The importance of world trade has been expanding in the world. Exports or imports have been accounting for approximately 30% of the world gross domestic product (GDP) in the last decade. In fact, studies have found that world trade has been growing at a faster pace than world GDP. This result may suggest that the world is increasingly open to trade. Secondly, note that because earth does not trade with another planet, the values of exports and imports *must* be equal to each other, and yet they are not! The main reason for this discrepancy is data measurement errors, such as illegal trade and missing data from various countries. Thirdly, the values of world trade dropped in the years 2001-2 and 2009-10. This drop in trade values was the result of the global recessions in these years. The 2001-2 stock market shock in the technology sector led to a brief global recession. In slow economic times, countries typically have lower imports due to weakened consumer demand and more restrictive import policies. Countries going through economic downturns are tempted to “save” their domestic jobs by imposing new import restrictions and by encouraging their citizens to buy “local”. However, such policies tend to backfire because countries that are on the exporting end are likely to do the same. For example, if the US tries to save American jobs by imposing import taxes on European Union (EU) products, the EU is likely to revenge by restricting its imports of American products. In other words, a job saved through import restrictions may be offset by a job loss in the export sector. Hence, both exports and imports are likely to fall. In Chapters 3 and 4 we would explore the different ways in which a country can restrict imports as well as the economic wisdom in doing so. We observe a similar drop in trade values during the banking sector induced recession in 2009-10. We often observe a rise in protectionism in economic tough times.

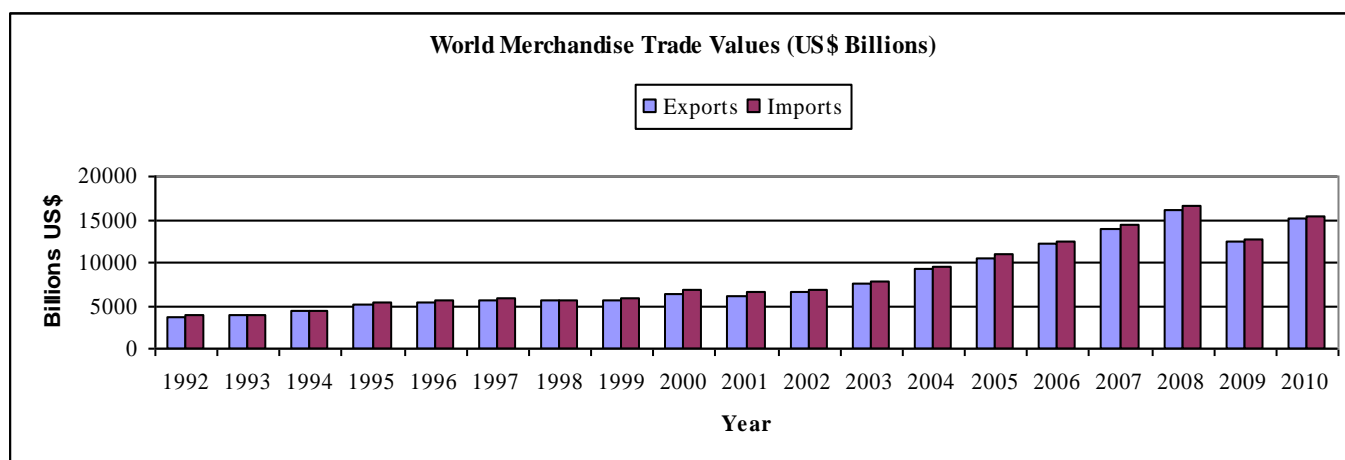


Figure 1.13 World Merchandise Trade Values, 1992 to 2010

Source: [http://www.wto.org/english/res\\_e/statistics\\_e/statistics\\_e.htm](http://www.wto.org/english/res_e/statistics_e/statistics_e.htm) and author's calculations.

## World Trade by Region and Main Trade Partners

**Table 1.1** shows the main trade partners of different regions in the world in 2010. Let us pick a column and look at the corresponding rows. The world, of course, trades 100% with the world. North America accounts for around 13% of world trade, whereas Europe and Asia account for 38% and 32%, respectively. The second column shows that 38% of North America's trade is with itself. This is sensible because about 75% of Canadian and Mexican trade is with the US, while about 20% and 15% of US trade are with Canada and Mexico, respectively. Intra-Europe trade is also high at 68%. Quite surprisingly, Asia's main trade partner is Asia, at 58%. South and Central America mainly trade within the region, as well as with North America and Asia. CIS, which stands for Commonwealth of Independent States, includes various former Soviet Union countries. CIS trades mainly with Europe and within CIS. Europe is also the main trade partner of Africa, while Asia is the Middle East's main trade partner.

<b>Shares of Regional Trade Flows in World Merchandise Exports, 2010 (Percentages)</b>									
<b>Origin</b>	<b>Destination</b>	<b>World</b>	<b>North America</b>	<b>South and Central</b>	<b>Europe</b>	<b>CIS</b>	<b>Africa</b>	<b>Middle East</b>	<b>Asia</b>
World		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
North America		13.2	38.1	28.2	5.6	2.8	7.2	9.4	9.8
South and Central America		3.9	5.5	25.2	1.8	1.9	3.3	2.7	3.2
Europe		37.9	16.6	16.7	68.4	45.1	39.0	29.9	12.4
CIS		4.0	1.3	1.1	5.3	27.3	1.9	3.5	2.1
Africa		3.4	3.4	2.3	3.1	0.5	13.8	3.3	2.9
Middle East		6.0	3.1	1.2	1.8	1.2	6.4	15.9	11.2
Asia		31.6	31.9	25.3	13.8	21.2	28.4	35.3	58.4

Table 1.1 Trading Partners by Main Regions

Source: [http://www.wto.org/english/res\\_e/statistics\\_e/its2011\\_e/its11\\_toc\\_e.htm](http://www.wto.org/english/res_e/statistics_e/its2011_e/its11_toc_e.htm), page 21.

## Leading Exporters and Importers

**Table 1.2** shows that the EU is the largest exporter and importer in the world even after intra-EU trade has been excluded. Extra-EU trade accounts for 15% and 16.5% of the world's total export and import, respectively. Notice that Hong Kong and Singapore have significant values for re-exports and rather low values for retained imports. These two economies rely on value-added trade. They import various inputs, turn them into manufactured products, and then re-export such products to the world.

<b>Top Ten Exporters and Importers in Merchandise Trade, 2010 (Billions and %)</b>						
<b>Rank</b>	<b>Exporters</b>	<b>Value</b>	<b>Share (%)</b>	<b>Importers</b>	<b>Value</b>	<b>Share (%)</b>
1	Extra-EU (27)	\$1,788	15.1	Extra-EU (27)	\$1,991	16.5
2	China	\$1,578	13.3	United States	\$1,969	16.4
3	United States	\$1,278	10.8	China	\$1,395	11.6
4	Japan	\$770	6.5	Japan	\$694	5.8
5	Korea, Republic of	\$466	3.9	Hong Kong, China	\$442	3.7
6	Hong Kong, China	\$401	3.4	retained imports	\$116	1.0
	domestic exports	\$15	0.1	Korea, Republic of	\$425	3.5
	re-exports	\$386	3.3			
7	Russian Federation	\$400	3.4	Canada	\$402	3.3
8	Canada	\$388	3.3	India	\$327	2.7
9	Singapore	\$352	3.0	Singapore	\$311	2.6
	domestic exports	\$183	1.5	retained imports	\$142	1.2
	re-exports	\$169	1.4			
10	Mexico	\$298	2.5	Mexico	\$311	2.6

Table 1.2 Top Ten Exporters and Importers in Merchandise Trade

Source: [http://www.wto.org/english/res\\_e/statistics\\_e/its2011\\_e/its11\\_toc\\_e.htm](http://www.wto.org/english/res_e/statistics_e/its2011_e/its11_toc_e.htm), page 25, and author's adjustments.

## Countries' Share of World Trade

**Table 1.3** shows the changing shares of different countries in world trade from the period 1948 to 2010. Note that the share of the US has dropped from around 15% in the 1960s to 9% in 2010, whereas the share of Asian countries has been increasing over the years. The share of Japan, however, has dropped since 1993. Japan has been going through a recession over the past two decades or so, affecting its trade values. Interestingly, even though we often hear in the media about the rising economic threat from India as an exporter of cheap, labour-intensive products, India's share of world trade is only around 1.5%.

<b>World Merchandise Exports by Region and Selected Economy (Percentages)</b>								
	<b>1948</b>	<b>1953</b>	<b>1963</b>	<b>1973</b>	<b>1983</b>	<b>1993</b>	<b>2003</b>	<b>2010</b>
<b>World</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>North America</b>	<b>28.1</b>	<b>24.8</b>	<b>19.9</b>	<b>17.3</b>	<b>16.8</b>	<b>18.0</b>	<b>15.8</b>	<b>13.2</b>
United States	21.7	18.8	14.9	12.3	11.2	12.6	9.8	8.6
Canada	5.5	5.2	4.3	4.6	4.2	3.9	3.7	2.6
Mexico	0.9	0.7	0.6	0.4	1.4	1.4	2.2	2.0
<b>South and Central America</b>	<b>11.3</b>	<b>9.7</b>	<b>6.4</b>	<b>4.3</b>	<b>4.4</b>	<b>3.0</b>	<b>3.0</b>	<b>3.9</b>
Brazil	2.0	1.8	0.9	1.1	1.2	1.0	1.0	1.4
Argentina	2.8	1.3	0.9	0.6	0.4	0.4	0.4	0.5
<b>Europe</b>	<b>35.1</b>	<b>39.4</b>	<b>47.8</b>	<b>50.9</b>	<b>43.5</b>	<b>45.4</b>	<b>45.9</b>	<b>37.9</b>
Germany	1.4	5.3	9.3	11.7	9.2	10.3	10.2	8.5
France	3.4	4.8	5.2	6.3	5.2	6.0	5.3	3.5
Italy	1.8	1.8	3.2	3.8	4.0	4.6	4.1	3.0
United Kingdom	11.3	9.0	7.8	5.1	5.0	4.9	4.1	2.7
<b>Africa</b>	<b>7.3</b>	<b>6.5</b>	<b>5.7</b>	<b>4.8</b>	<b>4.5</b>	<b>2.5</b>	<b>2.4</b>	<b>3.4</b>
South Africa	2.0	1.6	1.5	1.0	1.0	0.7	0.5	0.6
<b>Middle East</b>	<b>2.0</b>	<b>2.7</b>	<b>3.2</b>	<b>4.1</b>	<b>6.8</b>	<b>3.5</b>	<b>4.1</b>	<b>6.0</b>
<b>Asia</b>	<b>14.0</b>	<b>13.4</b>	<b>12.5</b>	<b>14.9</b>	<b>19.1</b>	<b>26.1</b>	<b>26.2</b>	<b>31.6</b>
China	0.9	1.2	1.3	1.0	1.2	2.5	5.9	10.6
Japan	0.4	1.5	3.5	6.4	8.0	9.9	6.4	5.2
India	2.2	1.3	1.0	0.5	0.5	0.6	0.8	1.5
Australia and New Zealand	3.7	3.2	2.4	2.1	1.4	1.4	1.2	1.6
Six East Asian traders	3.4	3.0	2.5	3.6	5.8	9.7	9.6	10.1

Table 1.3 Countries' Share of World Trade 1948, 1953, 1963, 1973, 1983, 1993, 2003, and 2010

Source: [http://www.wto.org/english/res\\_e/statistics\\_e/its2011\\_e/its11\\_toc\\_e.htm](http://www.wto.org/english/res_e/statistics_e/its2011_e/its11_toc_e.htm), page 22 and author's adjustments.

## Openness of Countries

**Table 1.4** shows the degree of openness of some countries. Openness is measured as the values of exports plus imports expressed as a percentage of GDP. It is possible for exports plus imports to exceed GDP because GDP includes exports minus imports. This table shows the most recent openness values for the year 2010 as well as from the year 2006. We can contrast the trade values of different countries during economic cycles. Overall, we see that countries import and export less during a recession.

In 2006, Canada's overall openness was around 70%. This is why Canada is often described as a small, open economy. International trade accounts for a sizeable portion of Canada's GDP. However, with the global recession in 2010, especially with a weakened US economy, our trade with our main trading partners has dropped significantly. As a result, our openness index has fallen to around 60%.

Perhaps quite surprisingly, countries that often have trade frictions with their trading partners, such as the US and Japan, are not very open to trade. Exports or imports account for less than 20% of their GDPs. However, we can also see that the US' trade deficits amount to roughly 5% of its GDP. These deficits are mainly owed to countries such as Japan and China. China's openness is comparable to that of Canada's, and the trend in China is to increase international trade even further, even though its openness did drop a bit due to the 2010 recession.

Two of the most open economies in the world are Hong Kong and Singapore. Exports or imports account for more than 100% of these economies' GDP. The sum of exports and imports amounts to a whopping 400% of their economies. As previously discussed in **Table 1.2**, these two economies engage in substantial volumes of re-export trade. Hong Kong and Singapore are probably the closest examples of economies that practice "free trade" in reality.

Note that Ireland is also quite open to trade. In 2006, its openness index was around 150%. However, due to its 2009-10 financial problems, the Irish economy has since slowed down significantly. European countries such as Germany and France are quite open to trade, but a substantial amount of trade occurs within the European area. Mexico is also quite open to trade, but about 80% of its trade is with the US.

Overall, large economies tend to have low index of openness to trade, whereas small economies have higher index. Perhaps because of their sheer economic size, large economies can be more self-sufficient than small economies, and could therefore rely on their own domestic markets as their main consumers.

<b>Openness of Various Countries as Measured by (Exports+Imports) as a Percentage of GDP 2010 (2006)</b>			
<b>Country</b>	<b>Exports as a Percentage of GDP</b>	<b>Imports as a Percentage of GDP</b>	<b>Exports + Imports as a Percentage of GDP</b>
Canada	28.98	30.05	59.03 (2006 = 70.7)
US	9.05	13.94	22.99 (= 28.2)
Japan	15.19	13.66	28.85 (= 30.9)
China	31.65	27.98	59.63 (= 63.2)
Hong Kong	186.21	205.26	391.47 (= 399.4)
Singapore	193.09	170.55	363.63 (= 385.4)
Germany	38.10	32.04	70.15 (= 84.7)
France	19.65	22.87	42.51 (= 55.1)
Mexico	34.11	35.51	69.61 (= 66.6)
Ireland	51.59	26.02	77.62 (= 149.3)

Table 1.4 Openness of Various Countries as a Percentage of GDP

Source: <http://www.imf.org>, International Financial Statistics database, [http://www.wto.org/english/res\\_e/statistics\\_e.htm](http://www.wto.org/english/res_e/statistics_e.htm), and author's calculations.

### *Main Categories of Traded Goods (Percentages of Total Trade Values)*

**Table 1.5** shows the world's main traded products. Machinery accounts for around 34% of all merchandise trade. Agriculture, however, accounts for only 9% of world trade. Products that tend to garner substantial controversies in the media, such as textiles and clothing, only account for around 4% of total world trade. We often hear about how trade with labour abundant countries has decreased the wages and standards of living in developed countries. Given the small shares of textiles and clothing in total world trade, we need to exercise care when evaluating the validity of such claims.

<b>World Merchandise Trade Values 2009 (in US\$ Millions)</b>		
<b>Products</b>	<b>Value</b>	<b>Shares (%)</b>
Machinery and Transport Equipment	\$4,209,057	33.6
Fuel and mining products	\$2,262,878	18.1
Agricultural products	\$1,158,846	9.3
Clothing	\$315,621	2.5
Textiles	\$211,053	1.7

Table 1.5 World Merchandise Exports by Product Categories in 2009

Source: [http://www.wto.org/english/res\\_e/statistics\\_e.htm](http://www.wto.org/english/res_e/statistics_e.htm) and author's calculations.



Figure 1.14 shows Canada's export and import values from 1992 to 2010. Canada's trade values have been increasing over the years, and we have consistently had small trade surpluses over the time period, except for the years 2009 and 2010. In these two years we have run a small trade deficit. The 2009-2010 recession has had a much more detrimental impact on the US economy compared to that of Canada's, and because two-thirds of Canada's trade is with the US, our total exports to the world have dropped significantly. Also note that because our export values are very similar to our import values, net exports account for only approximately 2-3% of our GDP. Each component of our trade, exports versus imports, however, accounts for approximately 35-40% of our GDP.

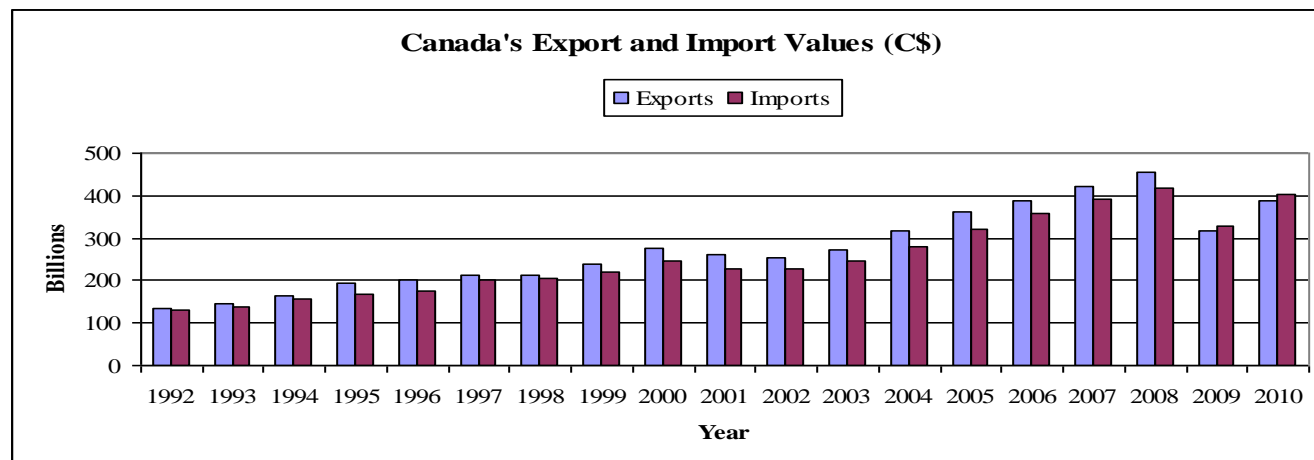


Figure 1.14 Canada's Export and Import Values from 1992 to 2010  
Source: WTO's Statistical Database, <http://stat.wto.org/Home/WSDBHome.aspx>, and author's conversions.

### Canada's Main Exports and Imports

Table 1.6 shows the top five categories of products that Canada has exported and imported in the year 2009. Canada mainly exports fuels and machinery, but it also imports much of these products, which suggests that Canada engages in substantial amounts of intra-industry, or within-industry, trade. Canada's main net export (exports – imports) is fuels, followed by agricultural products. This is the reason why Canada is often considered to be a commodity-based economy. The worldwide demand for commodities often affects the value of the Canadian dollar, and the recession in 2009-10 has weakened the demand for Canadian exports. This weaker global demand is the main reason for the Canadian dollar to fall below parity against the US dollar in late 2011.

Canada's Top Exports and Imports (in US\$ Millions) 2009				
Products	Exports	Shares (%)	Imports	Shares (%)
Fuels and mining products	\$165,090	38.9	\$68,460	16.4
Machinery	\$84,230	19.5	\$129,258	31.1
Agricultural products	\$76,920	18.1	\$53,712	12.9
Automotive products	\$34,170	8.1	\$43,505	10.5
Chemicals	\$27,935	6.6	\$36,597	8.8

Table 1.6 Canada's Main Exports and Imports by Product Categories in 2009  
Source: WTO's Statistical Database, <http://stat.wto.org/Home/WSDBHome.aspx>, and author's conversions.

## Canada's Main Trade Partners

Canada trades mainly with North America, as shown in **Table 1.7**. Approximately 75% of our exports go to the US and we sell around 1% of our products to Mexico. Note that our reliance on the US as our primary export market has been diminishing over the past five years, dropping from 84% to 74%. We have since been selling more of our products to the EU and China. Our import sources are more balanced than our export destinations, with only about 50% of our imports purchased from the US, followed by the EU at around 12%. Perhaps rather surprisingly, our purchases from China account for only 11% of our total imports. Even though we may see the presence of “Made in China” products everywhere, we should keep in the mind the low monetary values of such products. Our main imports from the US, heavy machinery, carry much higher monetary values. Also note that our trade with Mexico is insignificant. Canada, the US and Mexico signed the North American Free Trade Agreement in 1994 and there have been concerns that we would run a significant trade deficit with the relatively low-wage Mexico. Even though we do run a trade deficit with Mexico, our trade with Mexico has not exceeded 5.5% of our total trade in the past few years.

<b>Merchandise Trade of Canada by Origin and Destination, 2010 (Billions and %)</b>							
<b>Destination</b>	<b>Exports</b>			<b>Origin</b>	<b>Imports</b>		
	<b>Value</b>	<b>Share</b>			<b>Value</b>	<b>Share</b>	
	<b>2010</b>	<b>2005</b>	<b>2010</b>		<b>2010</b>	<b>2005</b>	<b>2010</b>
United States	\$288,816	83.9	74.4	United States	\$202,722	55.6	50.4
European Union (27)	\$33,080	5.7	8.5	European Union (27)	\$47,721	11.9	11.9
China	\$12,842	1.6	3.3	China	\$44,354	7.6	11.0
Japan	\$8,931	2.1	2.3	Mexico	\$22,060	3.8	5.5
Mexico	\$4,865	0.8	1.3	Japan	\$13,373	3.8	3.3
<b>Above 5</b>	<b>\$348,533</b>	<b>94.2</b>	<b>89.8</b>	<b>Above 5</b>	<b>\$330,229</b>	<b>82.7</b>	<b>82.1</b>

Table 1.7 Canada's Main Trade Partners

Source: [http://www.wto.org/english/res\\_e/statis\\_e/its2011\\_e/its11\\_toc\\_e.htm](http://www.wto.org/english/res_e/statis_e/its2011_e/its11_toc_e.htm), page 28, and author's adjustments.

## Changing Patterns in Canadian Job Markets

Our graphical analysis of total surplus suggests that free trade can create income redistribution effects in the sense that jobs will be lost in the import-competing sectors while jobs will be created in the export-expanding sectors. Given that Canada exports products that are skill-intensive, such as machinery, fuels, and computer technology, we expect more high-paying jobs to be created. Unfortunately, we also expect jobs to be lost in industries such as textiles and clothing. **Figure 1.15** shows an article from *The Globe and Mail* that supports our expectations. The Canadian job market has been strong in the past few years, and the even-more-welcoming news is that overall, the jobs created are high-paying and high-quality.

Of course, the regional effects of the job market changes are unequal. Provinces such as Alberta, New Foundland, and Labrador have gained from jobs created in the oil and gas sector. Ontario, which depends on manufacturing jobs, has seen substantial job losses. One of the main reasons for the loss in Ontario and Quebec jobs was the strength of the Canadian dollar in the past few years. In 2002, it took C\$1.5 to buy US\$1, but by 2007, it took only C\$0.9. As the value of the Canadian dollar rises, Canada's exports become more expensive for its trade partners, and hence their import demand for our products will be weaker. To somewhat ease the pain of income redistribution, the federal and provincial governments have introduced various aid packages to provinces that have been adversely affected. The “Forum” section of this chapter as well as Chapter 2 will explore such aid packages and other issues further.

## Canada replacing lost manufacturing jobs with better work

By ROMA LUCIW, *Globe and Mail*, January 28, 2008

The bad news is that like the United States, Canada's economy is shedding manufacturing jobs. The good news is that unlike the US, Canada is replacing them with high-quality work in the public administration and energy extraction sectors.

CIBC World Markets Inc.'s employment quality index, which measures the value of jobs created based on compensation and stability, rose 2.8 per cent in 2007, its largest annual jump since 1999. It found that not only did the Canadian economy create close to 400,000 new jobs last year, most of them were well-paid positions.

Work in low-paying sectors – such as general goods retail stores, gasoline stations and clothing factories – slumped by 1.2 per cent last year. However, the number of full-time paid employment in well-compensated areas – like public administration and oil and gas extraction – jumped 3.6 per cent.

Not surprisingly, Alberta and Saskatchewan led the labour quality parade last year, fuelled by strong job gains in energy extraction and mining exploration and development, where paycheques run between 50 per cent and 125 per cent above the industrial average. Ontario, meanwhile, continued to feel the pain of losing manufacturing employment levels.

“If you want high-quality work, you need to move to Alberta or Saskatchewan,” joked Benjamin Tal, a CIBC economist and author of the report. “Or apply for a government job.”

With government coffers in excellent shape, public sector employment ramped up in a big way in 2007, Mr. Tal said, creating a flood of good-quality jobs.

The big question, he said, is whether the government will continue to hire this way next year, given the expected weakness in the Canadian economy. “If you expect the government to stop spending, which we all do, that will translate back to less hiring, both provincially and federally,” Mr. Tal said.

The strong Canadian gains tell a starkly different story than in the US, where CIBC's index showed that employment quality dropped by 1.9 per cent in 2007.

A big part of the US weakness has been the collapse of the construction and real estate industries, which Canada has and will not likely see, Mr. Tal said. “Real estate-related jobs are very important in the current cycle, and we will not fall off the cliff like they did in the US, because we did not push the envelope with exotic mortgages like they did.”

Rising fears of a US recession have triggered a massive selloff on global stock markets in recent weeks, and economists expect the slowdown will lead the job situation to deteriorate in 2008. The US housing market has been mired in a deep slump since last year, a situation that will not improve until the meltdown in the subprime mortgage market and ensuing credit crunch are over.

Mr. Tal expects the US slowdown will slow the momentum in Canada's labour market in 2008, contributing to a rise in lower-quality self-employed and part-time jobs.

“However...we expect the level of employment quality in Canada to remain elevated enough to support healthy income gains and further shield consumers from the chill coming from south of the border,” he said.

### Tracking the winners and losers

CIBC's tally of job gains and losses in selected high and low-paying sectors from Dec. 2006 to Dec. 2007.

Low-Paying Sectors	% Drop	High-Paying Sectors	% Rise
General Merchandise Stores	-12.5	Public Administration	84.6
Gasoline Stations	-16.2	Internet Service Providers, Web Search Portals	35.6
Real Estate	-16.3	Heritage Institutions	34.8
Miscellaneous Manufacturing	-19.7	Support Activities for Rail Transportation	32.9
Wood Product Manufacturing	-21.7	Non-Metallic Mineral Manufacturing	27.8
Furniture and Related Manufacturing	-23.9	Published Industries	23.5
Crop Production	-27.9	Performing Arts Spectator Sports	23.3
Clothing Manufacturing	-29.3	Leather & Allied Product Manufacturing	22.9
Rental and Leasing Services	-98.1	Oil & Gas Extraction	22.5

Figure 1.15 *The Globe and Mail* article on the Changing Job Markets in Canada

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