

# CHAPTER 25

## MARKET SECTORS AND THE ECONOMY; EXTERNALITIES; THE COMMONS; AND GOVERNMENT'S ROLE IN RESOURCE MANAGEMENT

### 25. 1. WHAT IS AN ECONOMY?

To understand the importance of natural resources in the CNMI economy, we must understand what an **economy** is. We have seen how means of exchange have evolved. We have seen how money has allowed the creation of sophisticated markets ruled by the laws of supply and demand. Now, we need to put these pieces together.

#### 25. 1. 1. Markets

An economy is really a very complex assemblage of individual markets. Within each market for a good, a price determination process takes place. This process is based on an economic equilibrium of supply and demand.

Each market relies on many other markets. The market for automobiles is a good example. The manufacturer of an automobile combines **labor** with **capital** (in the form of production machines) and inputs of **raw materials** to produce a car. The producer must purchase many of those inputs in other markets. This means that producers are also consumers in the **input markets**.

There are literally thousands of these input markets. All of the producers that purchase goods and services from the input markets are consumers of what economists call **intermediate goods**. These intermediate goods are then used to create finished products called **final goods**.

Each intermediate good's market price is determined by producers of that intermediate good, as well as by consumers who wish to use that intermediate good to produce final goods.

A tire manufacturer buys steel, neoprene rubber, labor, and machinery in intermediate markets. The tire producer puts them all together and makes the tire. He/she then buys intermediate services for such things as testing, marketing, advertising, and transportation to buyers. One of those buyers is the automobile manufacturer who buys the tires to put on the car. Then we step in and buy the car, which makes us the consumer of the final good.



*The market for automobiles is a good example of inter-market reliance.*

There exists a market for virtually every good and/or service needed in the economy. **Industries** are made up of groups of companies competing in a certain type of market or set of markets.



*Economists group together industries such as building construction and building services.*

A good example is the construction industry. Here in the CNMI, many different companies compete to build buildings. Yet other companies compete to supply building materials. These other companies could be called the construction services industry.

### 25. 1. 2. Sectors

To make this a little easier to keep track of, economists group together industries such as building construction and building services. They call this group an economic **industrial sector**.

In an economy, we have many markets that form industries, and these industries can be grouped together to define sectors. Each sector might consist of many companies. These companies may range from the producer of raw materials to the producer of the final product of that sector. We can include the many other companies producing intermediate goods. By identifying sectors, economists can more easily study the total part each group plays in the overall economy. In Ch. 32 we discuss CNMI market sectors in detail.

### 25. 1. 3. Aggregate Markets

Sometimes economists want to know something about the total demand and total supply in the economy. In order to study these totals, economists calculate broad economic aggregates.

An **aggregate** is really an adding up of a great many things. In this case, all of the output of every production process can be added up to create aggregate supply.

The idea is the same as adding up individual producer supplies and individual consumer demands to create market supply and demand curves. The difference is that we now add up all these market curves to create the aggregates.

We can then use the aggregate market model to predict how major changes in the economy will affect the prices and quantities of all goods and services produced in an economy.

### 25. 1. 4. Overseas National and International Markets

Our economy does not always provide all of the raw materials or intermediate goods it needs. This can be because we do not have the necessary natural resources, skills, or equipment to produce some goods. It can also be because it is very costly to produce some goods within our economy. We use the overseas national and international marketplaces to purchase such goods.

## 25. 2. THE RELATIONSHIP BETWEEN NATURAL RESOURCES AND THE ECONOMY

Several pages back, we asked if you could think of any good that could be produced without the use of natural resources. Almost every good produced *does* use some kind of natural resource at some point in its production process.



*Generating electrical or motorized power requires fuel made from oil, which is a depletable natural resource.*



An obvious example is that electrical or motorized power is used in most production processes. Generating that power requires fuel. Fuel is mostly made from oil, which is a depletable natural resource. Even if the power is generated using hydroelectric dams, water is used to power the hydroelectric plant. As mentioned, water is one of our most important natural resources.

The raw materials used to produce most things are either natural resources themselves, or they rely on natural resources as factor inputs. For example, all of our food depends on soil and water, or on the aquatic habitat of lakes and oceans. It is very difficult to find anything that we consume that is not dependent on natural resources. After all, anything we make must use raw materials. Those raw materials must come from the natural resources of the earth.

Even services provided by people to other people use raw materials made from natural resources. So, every part of our economy depends on and is affected by changes in the availability and prices of natural resources. It is easy to see that careful natural resource management is very important to our economy.

### 25. 3. THE POTENTIAL IMPACTS OF NATURAL RESOURCE DEPLETION

We have discussed both renewable and depletable natural resources. We have also discussed how a renewable resource can become depletable. But, what is the impact on our economy if depletion occurs? The answer is that it depends on the resource and how it is used. When we eventually use up all of a depletable resource available on or in the earth, we can no longer use that resource for all the things we currently use it for.

Oil is a good example. If there were no more oil, we would not have gasoline to run our cars, diesel to run our generators, nor a huge list of other products that depend on petroleum (oil). Plastic, nylon, polyester fabric, and neoprene rubber are examples of goods that could not be made without oil. Also, many of the synthetic chemicals we use could not be made.

If resources become depleted, would we have to stop using the products we now make from them? Well, not exactly. The study of economics is really the study of *scarcity*. Resources are scarce and people compete for the use of them.

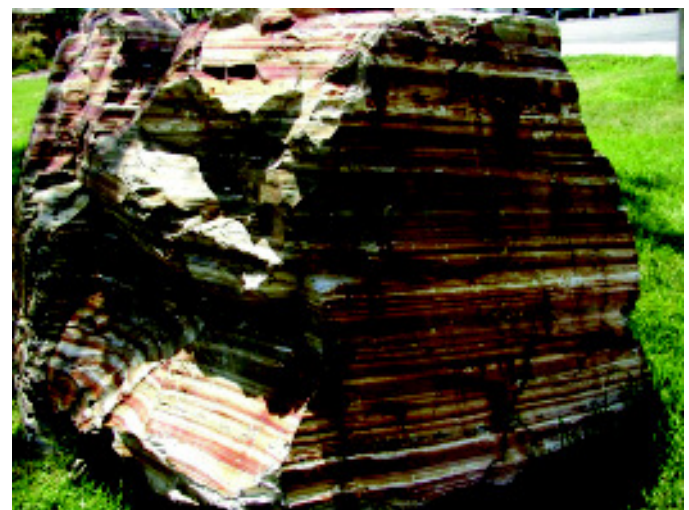
This competition affects the price of the resource. If a resource becomes scarcer, the supply of the resource is reduced. This will cause the market price of the resource to go up. As this happens, people will find that the use of that resource and all the things made from it become very expensive. Then people will begin to try to find ways to make the products by using other resources.

For example, certain kinds of rocks, called **oil shales**, actually contain oil. They can be mined, crushed, and squeezed in big presses to extract the oil. This is an expensive process compared to drilling into an underground oil pool. But, at some point, when the price of oil is high enough, it may be necessary (and profitable) to do this.

If the resource we substitute for the depleted resource is also a depletable resource, we will eventually deplete the new resource



*All of our food depends on soil and water, or on the aquatic habitat of lakes and oceans.*



*Certain kinds of rocks, called oil shales, actually contain oil.*



*Technology exists to produce from corn a kind of automotive fuel called ethanol.*



*United Nations' scientists have said that at least 70 percent of the world's fisheries are depleted.*

too. It is only a matter of time. Since depletable resources exist in limited quantities in the earth, we may eventually use up all of the available substitutes. What will we do then?

One answer is that we may be able to replace some depletable resources with renewable ones. For example, the technology exists to produce from corn a kind of automotive fuel called **ethanol**. Other vegetable oils might be substituted as well.

To grow these products, we will use a lot of land. We will require enough water and good soil. There will ultimately be a limit to how much we can grow. This limit will be based on available land and the renewability of soil and water.

The point is that use of depletable resources will require that we eventually *substitute* other depletable resources or come up with renewable alternatives. We will need to do a better job of recycling to reduce our use of natural resources and prevent depletion.

We have discussed how a renewable resource can become depletable. What would happen if our soils lost their organic material and nutrients and became depleted?

If this happened, crops would be harder to grow. Of course, we could add man-made fertilizers, but eventually the soil would not even retain the fertilizer because organic matter is needed to retain water and nutrients. If there is no organic matter in the soil, we would have to use much more water to grow crops, and this water would wash out the added fertilizers which would then end up in lakes, streams, and even oceans.

Excessive fertilizer runoff can kill fish, corals, and other marine species. Food prices would rise because of the increased cost of adding fertilizer and also because the supply of food might fall if crops are more difficult to grow. We can see, then, that soil depletion could not only cause high food prices but perhaps even **famine**.

Luckily, there are organic fertilizer alternatives to man-made fertilizers. These organic fertilizers can be used to improve the nutrient level in the soil. Farmers can also add organic matter to improve water-holding capacity. However, organic fertilizers can be expensive and are not always used voluntarily.

Another example of depletion of a renewable natural resource is depletion of the world's fish stocks. United Nations' scientists have said that at least 70 percent of the world's fisheries are depleted. It is getting more difficult for some peoples of the world to catch fish. It may take decades for some of these fish stocks to recover, even if all fishing is stopped now.

The pressure to feed people or provide jobs makes it very difficult to stop all fishing. This is especially true in countries that rely heavily on fish for food and income. The effects on their economies from such depletion are lost jobs, high fish prices, as well as poorer human health. If depletion continues, some fish might actually become extinct. This can be due both to overfishing and habitat loss.



For example, the Pacific salmon runs of the Columbia River, located in the states of Washington and Oregon, have been heavily fished. Moreover, nine hydroelectric and irrigation dams have also been built on the river.

These dams have blocked the fish's migration route up river. They have eliminated much of the habitat that salmon need to reproduce. As a result, several of the Columbia River salmon populations are endangered. Some sub-populations may have already become extinct.

We can see that management of natural resources is not an easy matter to accomplish. However, *wise management* is *essential* to our long term existence. It is also essential to the welfare of future generations, including our children and grandchildren.

To accomplish this task, we must rely on government control and regulations in cases where free markets do not provide the needed management. Economists call such circumstances **market failures**, and they are a very common occurrence in many markets.

## 25. 4. NATURAL RESOURCE MANAGEMENT AND THE ROLE OF GOVERNMENT

### 25. 4. 1. Why Should Government Manage Natural Resources?

Why should the government get involved in managing natural resources? Can't the markets for these resources and the goods produced using them just be left alone to promote economic development? Won't these markets tend to *self-regulate* resource consumption as resources become more scarce and prices are driven up?

These are questions we need to ask to understand why government must take an active role in natural resource and environmental management.

### 25. 4. 2. Common Property Resources and the Tragic Problem of the Commons

The eminent professor of human ecology, Dr. Garrett Hardin, once wrote a revealing essay about economics and resources. "*The Tragedy of the Commons*" was published in 1968 in the journal *Science*. In it he described an economic situation in England, which involved the grazing of animals and public property.

Many years ago in small villages throughout the country of England, there were plots of land known as the *village commons*, on which any owner of sheep or cattle could graze their animals.

No single person owned the common. It was owned by everyone. No single person had the right to keep others from sharing the common for grazing. On their own lands, however, ranchers limited the number of their grazing herds so that they didn't overgraze the grasses.

The number of users of the village commons increased. More and more animals were brought there to graze. Soon the grass was depleted, the soils eroded, and some of the commons became no longer able to be used for grazing.



Dams can block migration routes up rivers and thus eliminate much of the habitat that fish need to reproduce.



Many years ago in small villages throughout the country of England, there were plots of land known as the village commons.

Now, you might think that farmers would have seen this happening and stopped grazing their animals on the common before its grasses were depleted. However, farmers see only the effect of their own herd's grazing. If they were to take their animals somewhere else to graze, it would cost them more than the common, which was free.



*Farmers would graze their animals on the common until the grass was all eaten.*

Also, their self-restraining actions would actually benefit other ranchers (their competitors) who would continue to graze their animals on the commons. This is because more grass would be left over for these other farmers. Thus, the farmers had no incentive to stop or even control their grazing of the common. To do so would force them to bear added costs without any benefit.

All the farmers would continue to graze their animals on the common until the grass was all eaten. Without the grass, the soil eroded. At that point, the common was lost to all of them.

It is easy to see that if grazing were somehow limited at a level that would allow the grass to continue growing, then some of the farmers could graze their animals for many years. But, if the common is owned by the public, unregulated, and freely available to everyone — this will not happen.

The resulting depletion of such public resources is now commonly known as the “**tragedy of the commons**”. Resources that are owned in this way are called **common property goods**. Sometimes they are called **public goods** because no one has ownership or property rights over them.

In these circumstances, there is no market in which the resource can be bought or sold because it is not privately owned. Consumer-use price, therefore, *does not rise* with resource scarcity. Thus, this is not so much a failure of the market as it is a lack of a market.

Grazing is just one example of a common property resource. Water, air, coral reefs and lagoons, fish and wildlife, parks and public recreation areas are all examples of common property resources.

These, too, often suffer from the “tragedy of the commons” syndrome. If some users take too much water from the ground (or lakes and streams), then other users may not be able to get enough water for their needs.

Air is something we all use and share in common. We all poison the air by using devices that pollute it, like cars.

Fish are a very good example of a common property resource. When one person catches fish, it affects both that person's ability to catch more fish in the future as well as the ability of everyone else. If some individuals begin to catch too many fish, then future catches will be smaller or even disappear completely.

Because common property resources suffer from a lack of ownership or property rights, they may be depleted. Therefore, it is very important for governments to effectively manage these common property resources to prevent their depletion.



*Fish are a very good example of a common property resource.*



### 25. 4. 3. Market Externalities and Market Failures

Another problem is that when markets exist, they do not always work correctly. That is, markets do not always consider all of the costs of their output. A good example is **power generation**. A generator burns diesel or other fuels and that burning process produces smoke. Smoke contains several harmful chemicals.

The market for power is based on our supply and demand model. The supply takes into consideration all of the recognizable costs of production. Moreover, price is determined by the interaction of that supply with the market demand for power.

But, are all of the costs of production recognizable and accounted for? What happens if the smoke from the generator is let out into the environment, as it almost always is?

One effect is that rain washes some of the chemicals out of the air, specifically sulfur and nitrogen compounds. This is known as **acid rain**. Acid rain raises the acidity of surface water. Many plants and fish that live in the water cannot tolerate the increased acidity. They die. If the acidity gets too high, everything in the water can die and the water will not support life.

Acid rain can also harm trees. At first, the tips of the trees burn and die. Eventually, the leaves or needles fall off the trees and many trees die. In some parts of the eastern United States, entire forests, much larger in area than Saipan, have been heavily damaged by acid rain.

Power generation is not the only thing that causes acid rain. Automobiles burn fuel too, and there are many more automobiles than power generators. All gasoline-powered automobiles release chemicals that can harm the environment.

When we buy an automobile, do we pay for this cost to the environment? No, we don't! But, how would one know what these environmental costs actually are? This is a difficult question. Many economists invest great time and effort working on ways to measure and account for these damages.

There are literally thousands of examples like these. It may seem that these are problems that only big cities have. It may seem that we do not have them here in the CNMI. It is true that the problems can be much worse in big cities, but we also have them here.

For example, what happens to our land if our neighbor decides to clear their land to grow some cucumbers? If there were no government earthmoving regulations, our neighbor might not do anything to keep the loosened, exposed soil from washing onto our property.

If a big storm comes along, the sediment-rich water could easily run off of their land onto ours. This is because they had removed all of the vegetation that would normally help hold the soil. If this happens, our property could end up as a muddy mess.

The market for cucumbers does not take the polluted runoff cost to us into account. The market for power does not directly consider



*Power generation...*



*and automobiles are two major causes of acid rain, yet the costs of the damage they cause are not reflected in the market prices.*

the cost to the environment and human health from air pollution. The market for automobiles does not consider the environmental costs of pollution from burned fuel, oil changes and leaks, exhausted lead-acid batteries, and even the asbestos dust from our brakes as they wear down. The released oil and dust contain heavy metals that wash into groundwater and coastal waters whenever it rains.

When destructive activities within free markets cause damages such as these, economists say that the “market externalizes some of the costs of production”. So, we call these damages **externalities**. Environmental pollution of air, water, soil, etc., are all externalities.

#### 25. 4. 4. Depletion of Renewable Resources and Providing for Future Generations

We know that some natural resources, like soil, trees and fish, are renewable. We know it is possible to deplete these resources. By destroying habitat, polluting the environment, or simply harvesting too much of a resource, we waste our natural, renewable resources.

We depend on these and other resources as inputs to our economic process. However, won't our children need these resources as well? Won't many future generations of people also need these resources?

If the answer is yes, do we then have the “right” to deplete all of a resource? Do we have the right to damage the renewability of renewable resources for our own gains today? Many people think we do not have this right. Their argument is that we must protect some of these resources for future generations.

Unfortunately the free market system has no way to account for the needs of generations that will exist more than a few decades in the future. There is no way for it to predict what the actual needs of future generations might be. So, if we are to protect resources for future generations, it will be necessary for some common protection. Government management of resource use may provide that protection.

#### 25. 4. 5. Economic Stability

We discussed the idea that resource depletion will cause resource scarcity which causes prices to rise and results in substitution behavior. But, what happens if attempts at substitution fail to meet the need for the resource as an input?

Prices could go up even more. If this were to happen with a very critical resource like oil, it could have drastic effects on an economy. The resulting price increases would cause all prices to rise, which might cause growth in the economy to slow, sometimes dramatically.

If this happens, businesses that could not make a profit, due to the higher cost of production, might be forced to close. People could lose their jobs and an **economic recession** could occur. While this may seem extreme, it has actually happened before.



*For the sake of future generations, we must guard against the depletion of our renewable resources.*



In 1973 an **oil cartel** called the Organization of Petroleum Exporting Countries (OPEC) began to reduce the amount of oil they would sell in order to increase oil prices. The U.S. economy was (and is) so dependent on imported oil that this event caused what is known as a **price shock**. This shock was felt throughout the economy.

Because oil is used as a factor input to produce so many goods, prices for many things went up literally overnight. This caused serious **price inflation**.

There were shortages of gasoline and long lines at the gas pumps. The oil price shock, combined with several other international events, created economic instability. That instability helped cause a general recession that lasted for several years. Government intervention in markets to avoid this kind of instability is sometimes necessary.

## 25. 5. INHERITANCES FROM ADAM SMITH AND JOHN STUART MILL

### 25. 5. 1. Free Market Capitalism; Adam Smith; and the Minimal Governance Concept

An old catch-phrase of political economy is that “a government which governs least, governs best.” This comes from America’s **capitalism** mode of political economy, which has its roots in our civilization’s Western European influence. It is made by paraphrasing certain writings of the first great consumer-oriented political economist and writer, Adam Smith.

#### *Wealth of Nations*

Smith published his classic book, *An Inquiry into the Nature and Causes of the Wealth of Nations*, (usually referred to as *Wealth of Nations*) in 1776. This book should be in your school’s library. Find it, borrow it, and read it. You won’t regret it. If the library doesn’t have it, ask them to order it. You can even read it on the Internet.

#### Smith’s Observations

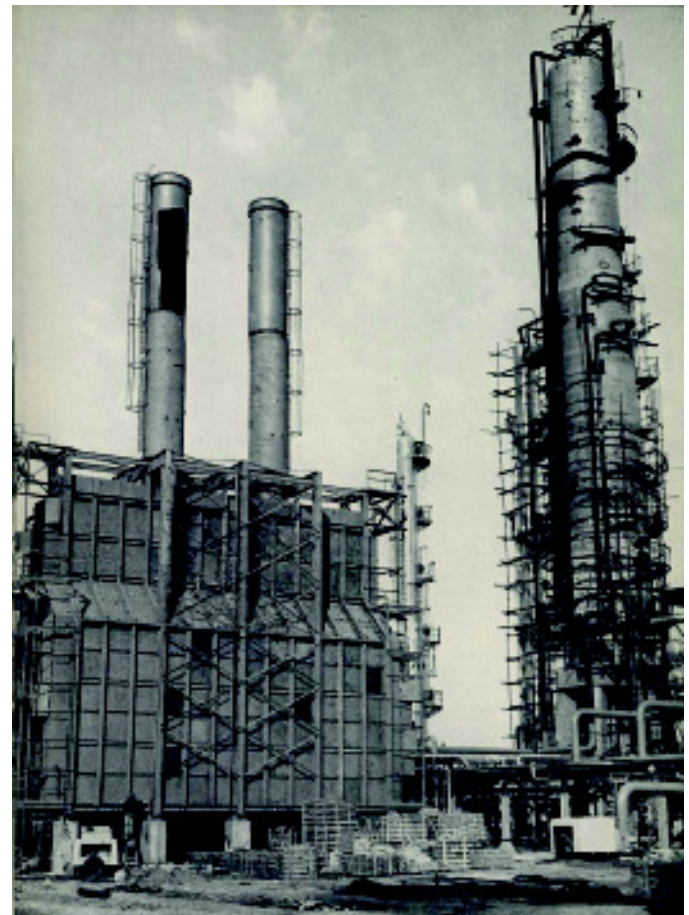
In the mid-1700’s, Smith had the rare opportunity to study the political economies of several western European nations. He analyzed how goods were made and sold. Smith saw how prices became established through economic markets.

Adam Smith wrote about how the prices consumers paid came at the end of a long line of manufacturing and middle person handling. He carefully looked at the way government actions played a role in this final price. Smith determined that certain regulatory protections caused prices to become artificially high.

### 25. 5. 2. Goods Development and Government Revenues in Smith’s Day

#### Skilled Craftsman vs. Machines and Assembly Lines

Skilled craftsmen produced most goods during Smith’s time. Assembly lines were just beginning to *out-compete* these craftsmen. Assembly lines and machines produced similar goods far more cheaply than the skilled craftsmen could.



*The 1973 OPEC oil embargo had a profound effect on the US petroleum industry and the US economy at large.*

Smith saw that lower production costs could translate into higher profits. Lower costs also allowed for the opportunity to offer goods at lower prices to consumers.

#### Government Protections and Duties

Smith saw that, at the time, many government protective measures (laws and taxes) aimed to favor the craftsmen. He determined that such measures caused higher prices by suppressing the more efficient assembly line and machine manufacturing.

Smith also saw that the protection measures that one country took, such as **import duties** and **quotas**, to support its own industries, also caused consumer prices to rise.

### 25. 5. 3. Smith Discovers the Market Economy's "Invisible Hand"

#### Protecting the Market's "Invisible Hand"

Smith determined that, although there were many opportunities for prices to be high, there were many elements of free markets which kept prices from becoming too high.

Smith referred to these price-controlling elements as capitalism's **invisible hand**. He concluded that protecting the invisible hand was the key to keeping consumer prices low.

Modern governments today help protect the invisible hand of the market by helping ensure a **level playing field** amongst producers, each having an equal chance to compete fairly. Monopolies are discouraged. Nuisances and pollution externalities are regulated. Fish and wildlife resources are managed.

Smith concluded that whenever the invisible hand is not protected, consumer prices rise quickly. When it is protected, markets stabilize and consumer prices find their lowest possible level. This is because consumers will choose the less expensive of equal quality goods.

Producers might, for a short while, try to charge higher than the market price. The invisible hand, however, keeps producers from charging too much for their goods. If they do, either consumers will not be able to afford them, or profits will rise and new competitors will enter the market.

#### Free Markets and Competition

A key element of Smith's capitalism is that where profits are extremely high, new investors, free to do so, would enter into any market. Wouldn't *you* like to legally make a quick profit? Invest some money now, and get a lot more soon afterwards?

The entry of new investors into a market causes **competition**. Where there is healthy competition, consumer prices are relatively low. Smith saw that *freedom to enter the market* was crucial. He observed that many laws protecting craftsman and national industries prevented easy market entry of new investors. The laws held back market competition and thus increased consumer prices.

Without competition, the invisible hand (to keep prices low) didn't work. Where there was competition, the drive to sell, and to make prices affordable to willing buyers, caused a lowering of consumer



*During Smith's time, assembly lines were just beginning to out-compete traditional craftsmen.*



prices. Inefficient firms, not able to meet the lower prices, failed. Smith felt that competition, including *survival of the fittest producer*, was the key to lower consumer prices.

#### 25. 5. 4. Government's Expenses

Taxes; Import Duties; Wars; and Infrastructure

At the time of Smith's studies, wars and empire building were rampant. As a source of government funds for fighting these wars, import duties were charged for items brought into a country from abroad. The duties also protected one nation's industries against competition from another nation's producers.

Smith could see that such duties increased consumer costs all across each nation's economy. The added costs applied to the parts importers, the parts sellers, the manufacturers, the shippers, the retailers, and finally, on to the consumers.

Although he supported strong governments to create laws and enforce justice, Smith opposed government-imposed import duties because they increased consumer prices. He also opposed craftsmen protection laws since they held back the cost-efficient assembly line and machine manufacturing.

Before the Industrial Revolution

The bases for incurring several commonly-accepted modern public expenses did not exist in Smith's day. There wasn't a need for paved roads (no cars). Sewerage didn't exist since the germ theory of disease hadn't been discovered yet. Piped water facilities were rare or nonexistent, as were public schools, hospitals, museums, libraries, and parks. There were no power plants and no airports. These and other sorts of "infrastructure, facilities, and vital services" (see chapter 33), were public expenses to arise in future years.

Natural resources in Smith's age were still relatively abundant. Cities were much smaller in scale. This was before the **industrial revolution**. There were much lower levels of air, water, and solid waste pollution.

The tragedy of the commons overuse issue and industries' "market-external" use of nature as a dumping ground for waste had not yet reached the levels of concern we face today.

Nonetheless a Historic and Critical Work of Literature

Although Smith did not have to address many of today's environmental economic issues, his *Wealth of Nations* is one of our most important works of literature. This is because it explains much of the *way western economies work*. No one had ever done it before.

It was (is) very influential. Smith's finding, that sometimes government involvement could be *bad* for economies, was later rewritten and (some say) *misconstrued* many times over.

A french phrase, **laissez-faire**—meaning "let do", was coined to mean the opposing of any governmental control of economic affairs beyond that necessary to maintain the peace and protect property rights. (Remember this section's opening phrase of a "government that governs least, governs best?")



At the time of Smith's studies, wars and empire building were rampant.

## Common Hopes

As an inheritance from Smith and his writings, many persons and corporations hope that their governments will not find cause to restrict their market freedoms. They hope to avoid taxes and import duties and even restrictions on monopolies.

Some hope that persons, corporations, and other entities, could carry out all of their desires without any government regulations or market interference. Regulations do restrict freedoms, pure and simple. Why, then, do we adopt them?

### 25. 5. 5. Greed and Nuisances

Humans are not always good-hearted. Smith, of course, understood this and founded much of his market capitalism “invisible hand” philosophy to take human greed into account. The market’s invisible hand restored prices to meet consumer demand. In the end, through the market mechanisms, the *greedy get punished*.

In Free Markets, However, Some of the Greedy go Unpunished  
Unfortunately, as we have seen, pollution and public commonly-held goods are not efficiently dealt with by economic markets. The needs of future generations are not taken into account when goods are priced. When and where firms can develop in an uncontrolled manner, and pollute to avoid added costs, they often do.

Without regulations, public **nuisances** occur. Historic and other cultural resources are destroyed. Property values get diminished by undesirable activities occurring on neighboring properties. Adverse environmental and social impacts occur. Prices rise whenever unregulated monopolies suppress price-lowering competition.

### 25. 5. 6. Monopolies and Living Conditions (Early to Mid-1800’s)

For one hundred years after the publication of *Wealth of Nations*, rich and influential capitalists used Smith’s anti-duties and quotas viewpoint to argue against any and all government involvement in business matters.

Unregulated **monopolies** flourished during the industrial revolution. Problems of over-development, resource depletion, and poor quality living conditions abounded. Workers had no rights. Wages were kept artificially low in the interest of “higher corporate profits”. Living conditions were frightful, including child labor, roadside sewerage, and dozens of workers crowded into small cramped housing units.

Instead of being addressed, the problems just continued and became progressively worse. The concept of “basic human standards” did not yet exist. Publicists who, through newspapers and other media, tried to bring to light such conditions, were told by the “powers that be” these conditions were not to be of any concern.

Authorities generally believed that there was no role, other than to cause more problems, for government in the affairs of economic markets. The market was **sacrosanct** (beyond control).

### 25. 5. 7. John Stuart Mill and Shifts in Political Economy Ideas

Eventually, however, beginning in the late 1800’s and early 1900’s, democracy’s political forces of numbers and power shifted. Knowl-



edgeable and influential persons effectively spoke out against overly-oppressive work and bad environmental conditions. Through organized **trade unions**, workers rallied. They demanded and eventually received human rights-focused improvements from their employers.

Several economists, beginning with another Englishman, John Stuart Mill, professed that government involvement wasn't such a terrible occurrence if it promoted the "public's health, safety and general welfare". His famous saying, "*the greatest good for the greatest number*" embodied his economic philosophy that not only the **robber barons** or the **landed gentry** should live high-quality lives. Mill effectively argued that government could play a valid role in the distribution of wealth, through taxes and public spending, without upsetting the market.

Eventually the US Congress and state legislatures began to levy business taxes and to spend public funds on sewers, water lines, and other environmental improvements. These taxes also supported public schools, hospitals, museums and libraries. Child labor was outlawed. These significant improvements to human society only happened after a series of long and difficult struggles.

Many **capitalists** joined with J.S. Mill in observing that the period's oppressed worker conditions demanded change. A happy worker might well be a productive one. Many supported improved wages and conditions in this spirit of "doing the right thing".

### 25. 5. 8. Modern Times

For these and other reasons, we mandate our government to protect our *health, safety, and welfare* as part of our Commonwealth's police power authority. Most environmental regulations ultimately find their authoritative mandate within these police powers. (Read more about police powers in our last unit).

It is important for public health to have clean drinking and recreational waters. Properly constructed buildings help ensure our public safety. Harvesting our natural resources only on a "sustained yield basis" promotes our public welfare. This way our future generations can share in these renewable resources.

Modern governments have historically helped to maintain a level playing field by applying laws and regulations equally, regulating pollution externalities, and controlling monopolies.

## 25. 6. GOVERNMENT MANAGEMENT METHODS

### 25. 6. 1. Introduction

What level of government intervention in markets is necessary to overcome the problems of common property, externalities, and economic instability? There is no clear answer to this question because the problems are very complex and change constantly.

The methods that are used must be tailored to the specific problem. However, there is a general set of management methods that economists often propose to control markets. Let us take a look at how some of these methods work.



*Unregulated monopolies flourished during the industrial revolution resulting in appalling conditions for workers and the exploitation of child labor.*

### 25. 6. 2. Taxes

We are probably all familiar with the concept of **taxation**. Taxation is an ancient method for both earning government revenues and for creating what economists call a **negative economic incentive**.

Negative economic incentives are conditions that make an action harmful or partially harmful in an economic sense. In other words, a tax causes a person or corporation to pay a fee for an action and this fee hurts them economically by taking money out of their pocket. The fee actually raises the price of the item being taxed. A tax is designed to make one less willing to do whatever it is that the tax is charged for.

As a society we can use a tax, say on gasoline, to raise the price and get people to use less. The trouble with the tax is that its success depends on how critical the good is. If we really must have gasoline, then we will likely just pay the extra amount per gallon because gasoline is a necessity. So, the tax hurts us, but it might not help control our usage of gasoline. But, what if a good has a close substitute?

Remember our discussion of opportunity costs in Chapter 23? What if a tax is put on a good that has a close substitute, but the substitute is not taxed? The opportunity cost of not using the substitute goes up, so we would likely switch to the substitute.

If the substitute were a better resource from a renewability or pollution prevention standpoint, then the tax would do a good job of promoting the use of the substitute.

Can you think of an example of a good that this might work for? How about paper? Paper is made from the pulp of trees. Paper can be recycled and made into new paper. If the cost of producing paper by using trees is less than the cost of producing paper by recycling, then the cost-minimizing producer will continue to use trees rather than recycled paper.

The problem is that the market for paper externalizes all of the costs to forest habitats. This occurs when a forest's trees are cut. This is especially true of old growth natural forests that support many habitats for birds, wildlife, and fish. These costs include soil erosion, pollution of streams, killing of fish, and destruction of habitat, just to name a few.

To internalize these costs, a tax could be placed on the sale of either the trees themselves, or the paper products made from them. This would raise the price of the paper made from non-recycled tree pulp. If the tax were large enough, it could make the recycled paper products cheaper than those made from non-recycled tree pulp. This would *promote* recycling of paper products, and decrease the demand for trees. If successful, the tax could help protect many natural forest areas.

Using a tax to promote recycling is just one example of how a tax can be used. A tax can be used in any market to raise the cost of consuming any good. However, a tax is only successful for resource conservation and management if the good is not an economic necessity and if there are substitutes available.



Another problem with taxes is that demand for a good might continue to increase even with the tax. If this happens, consumption of the good can still increase. This is the opposite of what the tax is trying to accomplish. So a tax is sometimes not the best tool for management of resources. In such circumstances, another method might be used.

### 25. 6. 3. Quotas

In some cases, a limitation might be placed on the amount of a resource that can be used. For example, suppose a tax on wood pulp was not doing a good enough job preventing overharvesting of our forests. Perhaps a better tool is to simply decide how much of these forests can be cut without creating too much damage. The amount of tree cutting that is allowed is called a **harvest quota**.

Quotas are often used to allocate the taking of timber, water, grazing land, fish, and wildlife. They can even be used to allocate the number of people at any one time allowed entry to a heavily used recreation area, such as Yellowstone National Park.

Since the quota is a direct limitation on harvest or use, it differs from a tax. This is because it does not rely on a market price structure. Once a quota is set, the market supply is limited to that amount.

A change in consumer demand will not change the quota limit. Thus, a quota is a strong protective measure, but it is also very restrictive and not responsive to changes in the market. Sometimes, however, a quota is the only way to protect a resource.

### 25. 6. 4. Prohibition

Another method that can be used to restrict resource use and depletion is a **prohibition**. If resource managers decide that the externalities of a market are too severe and cannot be allowed, then they might prohibit the activity as a way to deal with the externality.

For example, the chemical polychlorinated biphenyl, otherwise known as PCB, was once commonly added to oil to help cool electrical circuits. Unfortunately, PCBs were often allowed to leak into soil at many industrial and storage sites, including some here in the CNMI. PCBs are now known to cause cancer. Regulations were passed in the U.S. banning the use of PCBs. This was because of the extreme threat to human health that PCB's use caused.

The United States has also placed a similar prohibition on the use of chlorinated flourocarbons, or CFCs, in air conditioning and refrigeration devices. CFCs break down in the atmosphere and destroy the ozone layer. This is the same ozone layer that protects us from intense solar UV radiation.

Prohibitions like these are used to protect against the worst types of damage to the environment and threats to human health caused by pollution. Prohibitions, quotas, and taxes are some of the management methods that governments, which choose to intervene, can apply to specific resource problems.



*The amount of tree cutting that is allowed is called a harvest quota.*



