Coase Theorm

British American economist Ronald Coase developed the Coase theorem in 1960, and, although not a regulatory framework, it paved the way for incentive-driven, or market-based, regulatory systems. According to the Coase theorem, in the face of market inefficiencies resulting from externalities, private citizens (or firms) are able to negotiate a mutually beneficial, socially desirable solution as long as there are no costs associated with the negotiation process. The result is expected to hold regardless of whether the polluter has the right to pollute or the average affected bystander has a right to a clean environment. The Coase Theorem states "that when there are conflicting property right, bargaining between the parties involved will lead to an efficient outcome regardless of which party is ultimately awarded the property rights, as long as the transaction costs associated with bargaining are negligible."

Consider the negative externality example above, in which parents face soaring health care costs resulting from increased industrial activity. According to the Coase theorem, the polluter and the parents could negotiate a solution to the externalities issue even without government intervention. For example, if the legal framework in society gave the firm the right to produce pollution, the parents with sick children could possibly consider the amount they are spending on medical bills and offer a lesser sum to the firm in exchange for a reduced level of pollution. That could save the parents money (as compared with their health care costs), and the firm may find itself more than compensated for the increased costs that a reduction in emissions can bring.

If it is the parents instead who have a right to clean, safe air for their children (this is more typically the case), then the firm could offer the parents a sum of money in exchange for allowing a higher level of pollution in the area. As long as the sum offered is less than the cost of reducing emissions, the firm will be better off. As for the parents, if the sum of money more than compensates the health care costs they face with higher pollution levels, they may also find themselves preferring the negotiated outcome.

Unfortunately, because the Coase theorem's fundamental assumption of costless negotiation often falls short, the theorem is not commonly applicable as a real-world solution. Nevertheless, the Coase theorem is an important reminder that, even in the case of complex environmental problems, there may be room for mutually beneficial compromises.

What Is the Coase Theorem?

Specifically, the Coase Theorem states that "if trade in an externality is possible and there are no transaction costs, bargaining will lead to an efficient outcome regardless of the initial allocation of property rights." The Coase Theorem is most easily explained via an example. It's clear that noise pollution fits the typical definition of an externality, or a consequence of an economic activity on an unrelated third party, because noise pollution from, say, a factory, a loud garage band, or a wind turbine potentially imposes a cost on people who are neither consumers nor producers of these items. (Technically, this externality comes about because it's not well defined who owns the noise spectrum.)

In the case of the wind turbine, for example, it's efficient to let the turbine make noise if the value of operating the turbine is greater than the noise cost imposed on those who live near it. On the other hand, it's efficient to shut the turbine down if the value of operating the turbine is less than the noise cost imposed on nearby residents.

Since the potential rights and desires of the turbine company and the households are clearly in conflict, it's possible that the two parties will end up in court to figure out whose rights take precedence. In this instance, the court could decide that the turbine company has the right to operate at the expense of the nearby households or that the households have the right to quiet at the expense of the turbine company's operations. Coase's main thesis is that the decision reached regarding the assignment of property rights has no bearing on whether the turbines continue to operate in the area as long as the parties can bargain without cost.

How Does It Work in Practice?

Why is this? Let's say that it's efficient to have the turbines operating in the area, i.e., that the value to the company of operating the turbines is greater than the cost imposed on the households. Put another way, this means that the turbine company would be willing to pay the households more to stay in business than the households would be willing to pay the turbine company to shut down. If the court decides that the households have a right to quiet, the turbine company will probably compensate the households in exchange for letting the turbines operate. Because the turbines are worth more to the company than quiet is worth to the households, some offer will be acceptable to both parties, and the turbines will keep running.

On the other hand, if the court decides that the company has the right to operate the turbines, the turbines will stay in business and no money will change hands. This is because the households aren't willing to pay enough to convince the turbine company to cease operation.

In summary, the assignment of rights in this example didn't affect the outcome once the opportunity to bargain was introduced, but the property rights did affect the transfers of money between the two parties. This scenario is realistic: In 2010, for example, Caithness Energy offered households near its turbines in Eastern Oregon $5,000 each not to complain about the noise that the turbines generated.

It's most likely that in this scenario, the value of operating the turbines was greater to the company than the value of quiet was to the households, and it was probably easier for the company to proactively offer compensation to the households than it would have been to get the courts involved.

Why Would the Coase Theorem Not Work?

In practice, there are a number of reasons why the Coase Theorem may not hold (or apply, depending on context). In some cases, the endowment effect could cause the valuations elicited in negotiation to depend on the initial allocation of property rights. In other cases, negotiation may not be feasible either due to the number of parties involved or social conventions.

Taxation

In 1920 British economist Arthur C. Pigou developed a taxation method for dealing with the goods suffering from externalities. His idea, now known as the Pigouvian tax, is to force producers to pay a tax equal to the external damage caused by their production decisions in order to allow the market to take into consideration the full costs associated with the taxed goods. This process is often referred to as internalizing an externality. Of course, because the amount of the tax must equal the value of the external environmental damage in order to correct for market inefficiencies, the valuation techniques detailed above are crucial in developing a sound tax policy.

This concept can also be applied to goods that suffer from positive externalities. However, in this case a negative tax (or subsidy) is provided to allow an individual to gain an additional benefit from providing the subsidized good. A common example of this type of subsidy is when an individual receives a tax break for purchasing an exceptionally energy-efficient household appliance.

Permit markets

The concept of using a permit market to control pollution levels was first developed by Canadian economist John Dales and American economist Thomas Crocker in the 1960s. Through this method, pollution permits are issued to firms in an industry where a reduction in emissions is desired. The permits give each firm the right to produce emissions according to the number of permits it holds. However, the total number of permits issued is limited to the amount of pollution that is allowed throughout the industry. This means that some firms will not be able to pollute as much as they would like, and they will be forced to either reduce emissions or purchase permits from another firm in the industry (*see also* emissions trading).

Those firms that can reduce their emissions for the lowest possible cost benefit from this type of regulation. Firms that emit less can sell their permits for an amount greater than or equal to the cost of their own emissions reduction, resulting in profits in the permit market. However, even firms for which it is very costly to reduce pollution experience a cost savings through permit markets, because they can purchase pollution permits at a price that is less than or equal to the taxes or other penalties that they would face if they were required to reduce emissions. Ultimately, permit markets make it less costly for an industry to comply with environmental regulations and, with the prospect of profits in the permit market, this type of regulation provides an incentive for firms to find cheaper pollution-reducing technologies.

Environmentalists have called for the creation of local, regional, and international permit markets to address the problem of carbon emissions coming from industrial facilities and electrical utilities, many of which burn coal to generate electricity. Dales and Crocker argued that applying permit marketing to issues of global warming and climate change, an idea called “cap and trade,” could be most useful in situations where there are a limited number of actors working to solve a discrete pollution problem, such as pollution abatement in a single waterway. Carbon emissions, however, are produced by numerous utilities and industries in every country. Creating international rules to address global carbon emissions that all actors can abide by has been problematic because rapidly developing countries—such as China and India, which are among the world’s largest producers of carbon emissions—view restraints on carbon emissions as impediments to growth. As such, developing a carbon market made up of willing players alone will not solve the problem, since any progress made to staunch carbon emissions by industrialized countries will be offset by those countries that are not part of the agreement.