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FEATURED ARTICLE:
"Coase, Pigou, and Environmental Rights"
by Bruce Yandle

This chapter draws on my book, *Common Sense and Common Law for the Environment* (see Yandle 1997).

When I was a sophomore in high school, back in 1949, a buddy in my homeroon had a wonderful after-school job. He worked for the local paper mill located on a large river that flowed through our town. My friend's job seemed simple enough, and it paid well. Each day, he sat on the bank of the river near the mill's discharge point and sampled the river water, dutifully recording the level of dissolved oxygen and other chemical characteristics.

Consider these facts: The Ocmulgee River was a common-access resource. Discharge from the mill was potentially harmful to fish as well as to the general ambiance of that part of middle Georgia, of which there was very little in the immediate section of the river where the mill was located. Several downstream communities obtained drinking water from the river, and a large number of farms operated along the banks of the river. Bear in mind that this was years before the federal government seriously entered the water pollution control business. At the time, there were no federal statutes guarding the nation's rivers and streams, and there were few rigorous state statutes.

Flash back to the time when the mill was being planned. Suppose an economist was given these facts about the Ocmulgee River and told that a paper mill was to be sited so that it could discharge oxygen-consuming waste into the river. Suppose further that the economist was asked to analyze the situation, offer a policy for siting the mill, and comment on the practical aspects of adopting the policy proposal as a general rule. Most economists, such as Tom Tietenberg (1992, 51-69) would consider two primary theoretical approaches for analyzing the problem. The first approach involves an externality analysis, where the paper mill pollutes the river, imposing an unwanted cost on society, a cost that does not enter the mill owners' profit calculations. This is the problem of social cost.

Following this line of inquiry, failure to consider the external cost leads to too much paper and too little environmental quality. This economist would be using an analytical framework developed by A. C. Pigou (1920), a noted British economist whose works were published in the early twentieth century. Pigou argued that pollution generates a social cost that should be dealt with by the central government. He proposed a system of taxes, bounties, and regulations for resolving the problem. Most likely, the economist using this framework would call for some form of effluent taxes or regulation to control the mill's discharge.

The second approach likely taken by an economist considers the paper mill and others who wish to consume or enjoy water quality as part of a competitive market where people bargain for the use of rights to scarce property. This analysis has nothing to do with polluters' imposing cost on society, but everything to do with competing demands for use of an asset. If rights to the asset are defined and assigned to members of the river-basin community, then

those planning to build the paper mill must bargain with the rightholders to determine just how much, if any, they will discharge into the river. If the rights are held by the mill, then the existing communities along the river must bargain with the mill owner for rights to water quality. Again, bargaining determines the amount of discharge to the river.

This approach relies on the work of Nobel Laureate Ronald H. Coase (1960), who established a different way of thinking about the problem of social cost. Using this framework, an economist might recommend a meeting of the mill owners and others who have access to the river. After organizing the parties, negotiations would ensue. If existing river users owned water-quality rights, the mill would have to buy the rights in order to discharge specified amounts of waste. If the mill had the right to pollute, existing river users would have to buy water quality from the mill, paying the mill to limit its discharges.

Having offered two options and moving to make a recommendation, the economist would consider the practical aspects of the two approaches. Pigou's approach will likely miss the mark. Information is costly to assemble. It is impossible to determine the optimal amount of discharge for thousands of industrial dischargers located along hundreds of rivers and streams, a difficulty Pigou recognized late in his career. F. A. Hayek describes Pigou's misgivings this way:

Perhaps even more instructive is the case of the late Professor A. C. Pigou, the founder of the theory of welfare economics-who at the end of a long life devoted almost entirely to the task of defining the conditions in which government interference might be used to improve upon the results of the market, had to concede that the practical value of these theoretical considerations was somewhat doubtful because we are rarely in a position to ascertain whether the particular circumstance to which the theory refers exist in fact in any given situation. Not because he knows so much, but because he knows how much he would have to know in order to interfere successfully, and because he knows that he will never know all the relevant circumstances, it would seem that the economist should refrain from recommending isolated acts of interference even in conditions in which the theory tells him that they may be sometimes beneficial.'

What about Coase? While the Coase solution theoretically handles the information problem, because the parties involved are the decision makers, it can fail because of transaction costs that emerge if thousands of people along a river are expected to bargain with multiple dischargers. The pure Pigou and Coase options are difficult to apply in the real world. This suggests two possibilities: (1) the mill will locate and do nothing to affect its discharge or (2) the troubled community will call on government to regulate, hoping that most of the inherent difficulties will be overcome. Given the options, regulation will take the day. Coase gets the Nobel Prize and academic recognition for having developed a powerful approach for analyzing social cost; Pigovians seem to have won the policy battle by default.

We should not be too quick in naming Coase the loser in a contest he did not enter. He was not developing an environmental policy prescription. Quite the contrary, Coase explains how an appropriate interpretation of market forces relying on a rule of law could eliminate the need for specialized statutes for handling "the problem of social cost," which includes environmental issues. In doing so, he calls attention to institutions that evolve for reducing the inevitable costs that are generated in communities. Government regulation is just one of the many approaches that might be taken. The cost of organizing and running the various institutions dictates which, if any, approach might be utilized.

Evidence of the record of Coase's intellectual influence is seen in the count of citations to his 1960 article, which is shown in figure 5. 1. This shows the annual count of citations to "The Problem of Social Cost" for the years 1966-1995. Included in the figure are citations to Pigou's The Economics of Welfare. The citation data are superimposed on a count of Federal Register pages for the same years. The data mapping suggests several things. First, Pigou's influence on academics seems to operate at a steady state. There is no evidence that Pigovians were responding to the growth of regulation occurring around them. The Coase citations indicate the reverse. References to his ideas seem to be a reaction to the growth of the regulatory state. There is a systematic relationship between Coase citations and new pages of federal rules. Coase challenges command-and-control regulation. Pigou's influence seems to be narrow and focused; his prescriptions are in harmony with the rise of the regulatory state.

Externalities, Pigou, and Coase: Final Thoughts

This chapter has discussed pollution as a negative externality--unwanted costs that can be imposed on unwitting parties who have no direct voice in the polluter's decision. Two very different approaches to the problem have been described. Pigou's solution spoke of market failure and the need for a central authority to fine-tune markets so that the appropriate level of pollution would emerge. This approach called for collection of complicated and rapidly changing information, translating the information into a tax or regulation, and imposing the tax or rule on the polluter. This chapter considered some of the problems with this approach and indicated that in spite of the problems, Pigovian taxes continue to be debated and used.

Following Pigou, the chapter turned to the Coasean analysis of the same problem. Instead of speaking of market failure, this analysis looked to markets for the solution. Where transaction costs are low and property rights are clearly assigned, the market process can lead to an optimal solution. The Coase solution takes a decentralized, process approach where parties involved in the problem assemble their own information and use it in formulating contracts, just as in any other market. The Coase solution is dynamic. If conditions change, the parties can revise their agreement in the next contracting period. They do not have to wait for elections and changes in national statutes.

In its barest form, the Coasean approach seems to fit small numbers cases where people involved in a problem can transact, an issue discussed by De Alessi (1998) in this collection. The Pigovian approach seems to fit larger numbers cases, where there are just too many parties to rely on contracts and trading. But before jumping to conclusions about the relative merits of the two approaches, we should recognize that large numbers cases can become smaller numbers when the large numbers form associations, clubs, or firms, such as river basin associations.

In thinking about Coase versus Pigou, we should also recall the purpose of Coase's investigation; he wanted to understand a world in which transaction costs are positive. When we investigate that world, a rich array of quality assurance devices are observed. Rules of liability and common law rules form a minor part of that world. Brand name capital, capital market monitoring, concern for community, and third-party monitoring form a major part. These are evidence of positive transaction costs that limit direct Coasean bargaining. Among the world players are governments and other organizations that are immune to the spur of competition and have no need for quality assurance. It is this part of the world that Pigou was really addressing. It is government itself that must be controlled with government regulation.

At first blush, suggesting that government should focus on itself, imposing command-and-control regulation on government enterprises and leaving the unfettered forces of the market to deal with private firms and individuals, seems itself to be a Pigovian prescription. The recommendation implicitly assumes that a centralized authority managed by wise welfare-maxin-tizing economists will rule the day. Yet if Public Choice theory has taught anything, it is that government is endogenous to the political economy. Barring benevolent dictatorships, there is no ruling authority. Process alone determines outcomes, and it is in analyzing process that Coase has the advantage over Pigou.

To avoid the Pigovian trap, we must focus on first principles, constitutional rules that recognize privately arranged property rules of the sort discussed by Richard Wagner (1998). When the rule of law is accepted by consensus, the role of government become clear. Government has a constitutional duty to protect property rights and accordingly to manage its own affairs so the unwanted costs are not imposed on citizens. When fundamental constitutional protections are compromised by the politics of expediency, we find ourselves at sea without an anchor. Instead of pleading for Pigovian solutions that compromise constitutional property rights protection, we should call for a constitutional order that minimizes the need for Pigovian approaches and maximizes the domain for Coasean bargaining.

We live our lives in a world formed by statutes and rules. There is tension between the rule of law and rule by politics. Property rights and the market process affect and are affected by the political forces as they play through the larger social system. Political initiatives inspired by purposeful interest groups encounter the untamed forces of the market where contracts and property rights dictate outcomes. New institutions for protecting environmental assets that emerge from the market encounter the raw forces of politics and an entrenched bureaucracy. Each day, a new world emerges from these encounters. Part of the outcome we observe is Coasean; another part is Pigovian. Underlying it all is a system of property rights that continues to evolve. Both Coase and Pigou help us to understand this evolutionary process that generates an ever-changing definition of environmental fights.

Notes

1. Hayek (1969, 264). In his discussion, Hayek refers to A. C. Pigou's 1954 article, "Some Aspects of the Welfare State," Diogenes 7: 6.
