Introduction to Public Policy

Lecture Note 10

Economic Incentives vs Command and Control

One of the most important changes in public policy over the past two decades is the increasing use of economic incentives in place of "command and control" regulations. In environmental protection policy, there has been a pronounced shift *away from* regulatory limits on the amount of pollutants that can be emitted into the air and water and towards the use of prices to make emitting pollutants more expensive for firms and households. While the ultimate goal of public policy is still to reduce the level of harmful emissions, greater reliance on the price mechanism reduces implementation costs by harnessing the power of financial incentives to encourage firms and citizens to "do the right thing." Administrative command and control measures are expensive to implement because the public has an incentive to evade them, and government officials do not have sufficient incentive to enforce them.

Economists view pollution as something that imposes costs, but also has benefits. The "benefits" from pollution are lower costs of goods produced using polluting processes. The economic task is therefore to identify the optimal rate of pollution. This should not be confused with the optimal level of pollution from the scientific perspective. The "best" level of pollution in terms of protecting human health and ecosystem is NO pollution. But economics is about trade offs, not absolutes.

From this perspective, the marginal private benefits from pollution are equal to the marginal costs of abatement (or what it costs to avoid pollution per unit of production). Viewing the problem from the other side, the marginal costs of pollution (say, for example, emissions of pollutants into the water) are equal to the marginal social benefits from abatement of pollution. The optimal level of pollution can be found were the marginal abatement costs (MAC) equal the Marginal External Costs (MEC) of emissions because this is the point that minimizes the costs of pollution and the abatement costs. Having some pollution is better than having none, because it is too expensive (relative to the benefits) to eliminate it all.

We usually distinguish between two kinds of pollution control policies. The first are regulations or "command and control," and the second consist of a broad group of policies known as economic instruments. Economists tend to favor economic instruments since command and control policies in general pay less attention to economic efficiency. Moreover, enforcement costs are generally higher for command and control policies.

There are three types of command and control regulations or standards. The first sets ambient standards, for example the amount of carbon monoxide that is permissible in the air. Ambient standards are useful for specific pollutants when there is one easily identifiable source. For example, if there is only one coal-fired power plant in the region then setting a maximum concentration of sulphur in the air is possible. Technology standards do not specify the maximum level of pollutant, but instead require all firms to use a specific pollution-reducing technology. The government might require all coal-fired power plants to use a sulphur scrubber of a particular specification. Finally, the government can specify performance standards. Under such schemes, each coal fired power plant can only emit a certain amount of sulphur per day, month or year.

Economic Incentives or Market Based Instruments attempt to achieve the same goals as command and control policies through the price mechanism. There are three main types of economic incentives. The first type consists of all of the fees and taxes that governments apply to polluting behavior and subsidies for environmentally-friendly behavior, for example acquiring pollution-abating technologies. The second type is deposit-refund systems, for example "bottle laws" adopted in some US states that require retailers to add a small sum to the price of bottled drinks, a sum that the consumer can reclaim if they return the bottle to the shop (or any shop). Marketable permit systems are the third type.

One lesson that economists have learned is that emissions standards, technology standards and performance standards cannot be set centrally because different regions have different marginal costs of pollution and pollution abatement. This is partly a result of natural differences. For example, some cities record higher concentrations of carbon monoxide and other pollutants than other cities that have more cars simply because of weather patterns. Setting the wrong standard could mean that a location has too much pollution abatement (and pays too much for it) than is efficient in economic terms.

A good example of a successful marketable permits scheme is the Clean Air Act in the United States, which set up a program to reduce acid rain in the eastern states. Acid rain is caused by sulphur dioxide in the atmosphere, which is largely the result of burning coal to produce energy. Command and control had reduced emissions, but was seen as very costly. The tradable permit scheme allowed power plants to sell, buy or save permits to emit amounts of sulphur dioxide and other emissions. The Environmental Protection Agency served as market maker to monitor transactions and compliance. Under the scheme, the most efficient abaters would sell permits to less efficient abaters. The government estimates that the scheme saves $3 billion per year, and achieves emissions targets.

Environmental taxes and subsidies are alternative economic instruments that are appropriate when there are many small polluters, for example automobiles. Taxes

increase the cost of the polluting activity (driving) and hopefully reduce pollution. Subsidies work in the same way to encourage good behavior, for example, using solar, wind and other renewable energy sources.

Taxes are easy to implement and work through the market, which allows people to select the most appropriate means of reducing their consumption of polluting goods. They can buy more fuel efficient cars or drive less. If taxes do not change regularly they are predictable, which enables people to form expectations and change their behavior accordingly. Taxes also raise revenue, which can be used to compensate the losers, for example through the development of better public transport systems.

The main disadvantage of environmental taxes is that they impose a heavy burden on the poor. Also, if demand is inelastic this heavy burden may not in the end reduce the polluting behavior as much as originally hoped. If the government over-estimates the costs of pollution, taxes could reduce the rate of economic growth without compensating savings in the form of reduced pollution. Political resistance is also a problem. Firms and households object to taxes are charges even if they are a more efficient means of reducing pollution levels than command and control. Taxes and charges immediately turn up in firms' profit and loss statements, but the costs of command and control regulation are concealed in the form of other costs: for example, new technology or lower productivity. Since the costs of command and control are concealed, they do not result in as much direct political resistance.

An interesting example of the use of economic instruments is congestion charging. In 2002, the average all-day traffic speed in Central London was 14 km/hr. Londoners ranked traffic jams among the most serious public problems facing the city. Pollution levels in Central London were also high and rising because of the increase in traffic volumes. But the local authorities in London could not agree on a mechanism to reduce congestion. Car registration fees were already high, but had not discouraged people from buying cars. Bus and train fares had been reduced for regular commuters, but people were not moving from cars to buses. Collecting tolls on urban roads was not practical, since the time required to collect the tolls would slow traffic even more.

The central government set up research program to study the idea of congestion charging, and this program issued its final report in 1995. The report recommended the imposition of an area charge on all vehicles entering Central London. Another report in 2000 (*Road Charging Options for London*) recommended either charging high parking fees in Central London or the use of video cameras to identify cars entering the center of the city. The video camera technology was ultimately chosen because it was expected to be more effective and fairer than high parking charges.

From February 17, 2003, all cars entering or parking in Central London from 7:00 to 18:30, Monday to Friday (excluding public holidays), were required to pay a congestion

charge of £5.00. At the same time, the government allocated £100 million to improve bus service, and made a commitment to use all revenues from the congestion charging scheme to improve public transport over a ten year period.

The congestion charge works like a day pass. After paying the charge, vehicles may move freely around Central London without additional charges during the day. The area covered by the charge was very small—only eight square miles or one percent of the total land area of the city. Vehicles registered to people who live inside the zone do not pay the charge if their cars are parked off the street, and if they use their cars or park on the street they receive a 90 percent discount on the charge. These exemptions were important to ensure that the new policy received political backing from the wealthy and influential people who live in Central London.

Payment of the charge must be made the day before or the day of travel. The charge can be paid over the internet, by telephone or text message, at dedicated kiosks and in local shops. Cameras are set up at every entry point to Central London to capture vehicle registration numbers and to photograph vehicles. This information is compiled in a centralized database. Roving cameras circulate around city streets photographing vehicles and registration numbers to ensure that the list of cars in the city on that day is accurate. Drivers who fail to pay the charge by midnight are sent notices that they have been fined £100. Penalty letters include a photo of the vehicle. The penalty is reduced to £50 if paid within two weeks and increase to £150 if not paid after one month.

The scheme succeeded in reducing passenger car journeys while increasing reliance on taxis, buses and bicycles. All day traffic speeds increased from 14 to 17 kilometers per hour. The lower traffic volumes have resulted in a decrease in road accidents, and a small decrease in carbon emissions.

In 2007, Transport for London conducted a social cost benefit analysis of the scheme. It found that individuals and businesses saved about £260 million in time and greater reliability of travel. Also, drivers saved £28 million in vehicle operating costs, and bus riders saved £43 million worth of time. The study did not quantify savings due to reduced road accidents or emissions. On the cost side, the scheme cost £19 in compliance costs and £31 was lost to travelers and businesses due to cancelled trips to Central London.

Note that the £236 million paid in tolls is not a cost because it is simply a transfer from one group of people (drivers) to another (bus riders), and also financed the operating costs of the scheme.

Would it work in Ho Chi Minh City? What are the challenges? Are there viable alternatives to raise money for public transport?