

# MARKET-BASED INSTRUMENTS FOR ENVIRONMENTAL POLICYMAKING IN LATIN AMERICA AND THE CARIBBEAN pdf

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*This report is a summary of country studies in Latin America and the Caribbean, addressing the use of market-based instruments (MBIs) and command-and-control (CAC) measures for environmental management in the region.*

Ann Wolverton See discussions, stats, and author profiles for this publication at: The user has requested enhancement of the downloaded file. All in-text references underlined in blue are linked to publications on ResearchGate, letting you access and read them immediately. Environmental Protection Agency Washington, D. In addition, although the research described in this paper may have been funded entirely or in part by the U. No official Agency endorsement should be inferred. Economists tout policies based on market-based economic incentives as the most cost-effective methods for addressing a wide variety of environmental problems. This chapter examines market-based incentives and their applicability to Latin America. We first review the market-based incentives traditionally used to address pollution – emissions taxes, environmental subsidies, tax and subsidy combinations, tradable pollution permits, and hybrid instruments – and compare these instruments to command-and-control policies. We then discuss two sets of factors that affect how feasible and efficient pollution control policy will be in Latin America. We focus on practical considerations such as monitoring and enforcement, distributional issues, political feasibility, institutional considerations, administrative costs, and compliance costs. We also examine what the violation of standard modeling assumptions implies for the success of pollution control policy. In particular, we focus on non-competitive market structures, imperfect information or uncertainty, the effects of regulation on global competitiveness, and the compatibility of environmental goals with the goals of growth and development. Finally, we compare Latin American experiences with market-based incentives with those in the U. For their useful comments and suggestions, the authors thank Raymond Robertson, Charles Griffiths, and an anonymous referee. For his exceptionally helpful comments and suggestions, they thank Tom Tietenberg. The views expressed in this paper are those of the authors and do not reflect the official views or policies of the Environmental Protection Agency or Macalester College.

**Introduction** Rapid urbanization and increased industrialization have led to high levels of air, water, and land pollution throughout Latin America. As economic development continues, household incomes will increase and domestic firms will increasingly participate and compete in the global economy. As these changes occur, Latin Americans and their governments will be willing to dedicate more funds to the alleviation of pollution. Since most Latin American countries have little in the way of institutional pollution control infrastructure, they still have the opportunity to determine exactly how to allocate funds and approach their pollution problems. They have the opportunity to decide whether to base their pollution abatement strategies on centralized standard-oriented, command-and-control approaches, on market-based incentives, or on some combination of both. Policies based on market-based economic incentives have long been touted by economists as the most cost-effective method for addressing a wide variety of environmental problems. Successful application of such policies, in contrast to implementation of command- and-control regulations, is of much more recent vintage and has largely been accomplished in developed countries. Research on these experiences confirms that in the United States and Europe, incentives can often attain pollution reduction goals at much lower costs. This chapter examines market-based incentives and their applicability to the Latin American context. We first review the market-based incentives traditionally used to address pollution and compare these instruments to command-and-control policies. Such incentives include emissions taxes, environmental subsidies, tax and subsidy combinations, tradable pollution permits, and hybrid instruments. We also examine what the violation of standard modeling assumptions implies for the success of pollution control policy in Latin America. In particular, we focus on non-competitive market structures, imperfect information or uncertainty, the effects of regulation on global competitiveness, and the compatibility of environmental goals with the goals of growth and development. We begin with a discussion of the use of five types of incentives – taxes, subsidies, tax-subsidy combinations, tradable permits, and the

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use of information as regulation " in the United States and Europe. While market-based instruments have been used more extensively in the United States and Europe, interest in the use of such instruments in Latin America is growing and several experiences are highlighted. Finally, based on our comparison of Latin American experiences with those in the U. Command-and-Control Regulations and Market-Based Instruments

When firms or consumers decide how much to produce or consume, they weigh the costs of their activity against its benefits. Without proper incentives, however, producers and consumers will not include the costs that they impose on the environment and others in their decision of how much and what to produce or consume. When market failure occurs, usually a case can be made for government intervention. We discuss each of these below as well as the possibility of combining aspects of CAC and market-based incentives in a hybrid policy instrument.

Command-and-Control Regulations Prior to virtually every environmental regulation in the U. As such, they tend to be either technology-based or performance-based. Technology-based regulations mandate the control technology or production process that polluters must use to meet the emissions standard set by the government. One problem with this type of CAC regulation is that it applies a one-size-fits-all policy to firms that may differ widely in size and cost structure. Thus, while pollution is abated to the desired level, it is accomplished at a higher cost to firms and consumers than might have occurred if firms were allowed to determine the most cost-effective means for meeting the standard. Alternatively, if more flexible policies were used, higher environmental quality could be achieved at the same cost. There must be well-established property rights, a willingness of affected parties to bargain, and a small number of parties affected. In many cases, one or more of these conditions are not met in the context of environmental problems. Performance-based regulations are more flexible CAC policies; they mandate that polluters reach an emissions standard but allow them to choose the method by which to meet the standard. Still, once polluters have reached the level specified by the standard, they face little incentive to reduce pollution any further. A polluting firm or consumer faces a potential penalty in the form of a tax or permit price per unit of emissions. The polluter can choose to pay for existing emissions via the tax or permit or reduce emissions to avoid paying the penalty. Other market-based policies subsidize pollution abatement or combine taxes and subsidies. Market-based policies give polluters more flexibility than most command-and-control policies. First, the method for reducing pollution is not specified, giving polluters with heterogeneous costs the flexibility to use the least costly abatement method. Polluters that face the same regulation may reduce pollution by recycling, installing new equipment, switching fuels, using labor-intensive methods, or reducing production or consumption. Second, when abatement is relatively costly, polluters can opt not to abate and to instead pay for their higher emissions. Polluters with relatively high costs continue to pollute at a higher level but pay more

2 Stavins, Robert N. Stavins, eds, *Public Policies for Environmental Protection*. Resources for the Future. Those with relatively low costs reduce their pollution when it is cheaper than paying the tax or permit price and pay for residual emissions that are more costly to abate. Since market-based incentives force polluters to pay taxes, buy permits, or forgo subsidies when they pollute, they provide an always-present incentive to abate. Such incentives therefore also promote innovation in pollution control technologies. In each section we describe the principal advantages and disadvantages of using each incentive.

The Emissions Tax An emissions tax is exacted per unit of pollution emitted and forces a firm or consumer to internalize the external cost of its emissions. The tax is set so that, for each unit of pollution emitted, a polluter pays the value of the marginal additional external damage caused by that unit of pollution. These external damages may include the costs, for example, of worsened human health, reduced visibility, lower property values, and loss of crop yields or biodiversity. To avoid the emissions tax a polluter finds the cheapest way to reduce pollution. For any residual pollution, the polluter pays the tax. In addition, the government earns revenue that it can use to reduce other pollution or to reduce other taxes. It is also difficult to define and monetarily value the marginal external damages of a unit of pollution. Another reason why policymakers do not often use emissions taxes is that they are difficult to enforce since they are often exacted on goods that are not directly bought and sold. In addition, attempts to measure and tax emissions may lead to

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illegal dumping. Environmental Subsidies A subsidy per unit of pollution abatement establishes incentives for emission reductions identical to a tax per unit of pollution. For instance, if use of a cleaner fuel or purchase of control technology is subsidized at the appropriate level it induces firms to switch from a dirtier fuel or to install control technology until the same level of abatement is reached as under the emissions tax. Unlike an emissions tax, however, the subsidy distorts long-run economic incentives of firms. The result could conceivably be that, while each individual firm decreases its pollution, the overall level of pollution actually increases. Once subsidies have been given, however, they are often quite difficult Approaches to Environmental Protection: The Economics of Welfare. The Theory of Environmental Policy. Another potential disadvantage is that instead of collecting revenue, as with a tax, the government pays firms or consumers and funds it through another revenue-raising device. Tax and Subsidy Combinations A tax and subsidy also can be combined to achieve an efficient level of pollution. In the case of a firm, the tax is applied to output under the presumption that all production processes pollute. A subsidy is then provided to the extent that a firm provides proof of the use of a cleaner form of production. The tax increases the cost of output and induces the firm to reduce its use of both clean and dirty inputs. The subsidy provides the firm with an incentive to switch into cleaner forms of fuel or install more control technology. Policy makers can also use tax and subsidy combinations to induce pollution reduction on the part of consumers. For instance, a bottle bill requires a deposit on all glass bottles or aluminum cans under the presumption that consumers will litter or throw them away. A refund is provided when the bottle or can is returned for recycling. The bottle bill does not just provide incentives to consumers of the goods packaged in glass or aluminum. It also provides incentives to individuals to pick up litter and return it for the refund. The main advantage of a tax-subsidy combination is that both parts apply to a market transaction. Instead of attempting to monitor emissions and control illegal dumping, which may be difficult or infeasible, policy makers can immediately observe the taxed and subsidized items. Also, polluters have an incentive to reveal information on abatement activity to qualify for the subsidy instead of hiding information to cover up illegal activity. Disadvantages include potentially high implementation and administrative costs and the political temptation to set the tax or subsidy too low to induce proper behavior. Permits While an emissions tax sets the price of pollution, a permit system allows policy makers to set the quantity of allowable emissions. Permits are distributed or auctioned, generally to firms, and represent the right to pollute some set amount of pollution. Firms then buy and sell permits to each other as needed. The market-clearing price is established through this buying and selling and, if the government chooses the optimal level of pollution, will be the same amount as an emissions tax. As in the case of a tax, a firm can reduce pollution to avoid the cost of purchasing permits. For any residual pollution, the firm purchases the needed number of permits. If they are auctioned to firms, then the government collects the proceeds of the auction.

### 2: Latin America & Caribbean Climate Week – Nairobi Framework Partnership

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