



By Robert N. Stavins

Independence is Important: Coase

The fiftieth anniversary of the publication of Ronald Coase's landmark study "The Problem of Social Cost" provides an opportunity to examine one of that study's key implications, which is of great importance for public policy, and in particular, for environmental policy.

In an article that recently appeared in *The Journal of Law and Economics*, Robert Hahn of the University of Oxford and I take as our starting point a well-known result from Coase's work, namely, that bilateral negotiation between the generator and the recipient of an externality will lead to the same efficient outcome regardless of the initial assignment of property rights, in the absence of transaction costs, income effects, and third party impacts. This result, or a variation of it, has come to be known as the Coase Theorem.

We focus on an idea that is closely related to the Coase Theorem, namely, that the market equilibrium in a cap-and-trade system will be cost-effective and independent of the initial allocation of tradable rights (typically referred to as permits or allowances). That is, the overall cost of achieving a given emission reduction will be minimized, and the final allocation of permits will be independent of the initial allocation, under

certain conditions. We call this the independence property.

We are interested in the independence property because of its great political importance. The reason why this property is of such great relevance to the practical development of public policy is that it allows equity and efficiency concerns to be separated. In particular, a government can set an overall cap (a pollution reduction goal) and leave it up to a legislature to construct a constituency in support of the program by allocating shares of the allowances to various interests, such as sectors and geographic regions, without affecting either the environmental performance of the system or its aggregate social costs. Indeed, this property is a key reason why cap-and-trade systems have been employed and have evolved as the preferred instrument in a variety of environmental policy settings.

Because of the importance of this property, it is essential to examine the conditions under which it is more or less likely to hold — both in theory and in practice. In short, we find that in theory, a number of factors can lead to the independence property's being violated. These are particular types of transaction costs in cap-and-trade markets; significant market power in the allowance market; uncertainty regarding the future price of allowances; conditional allowance allocations, such as output-based updating-allocation mechanisms; non-cost-minimizing behavior by firms; and specific kinds of regulatory treatment of participants in a cap-and-trade market.

Of course, the fact that these factors can lead to the violation of the independence property does not mean that in practice they do so in quantitatively significant ways. Therefore, Hahn and I also carry out an empirical assessment of the independence property in past and

current cap-and-trade systems: lead trading; chlorofluorocarbons under the Montreal Protocol; the sulfur dioxide allowance trading program; the Regional Clean Air Incentives Market (RECLAIM) in Southern California; eastern nitrogen oxides markets; the European Union Emission Trading Scheme; and Article 17 of the Kyoto Protocol. I hope that some of you will want to read the full article, but a brief summary of the results of our assessment is that we find modest support for the independence property in these seven cases.

The fact that the independence property appears to be broadly validated provides support for the efficacy of past political judgments regarding constituency building through legislatures' allowance allocations in cap-and-trade systems. Governments have repeatedly set the overall emissions cap and then left it up to the political process to allocate the available number of allowances among sources to build support for

an initiative without reducing the system's environmental performance or driving up its cost.

This success with environmental cap-and-trade systems

should be contrasted with many other public policy proposals for which the normal course of events is that the political bargaining that is necessary to develop support reduces the effectiveness of the policy or drives up its overall cost. So, the independence property of well-designed and implemented cap-and-trade systems is hardly something to be taken for granted. It is of real political importance and remarkable social value.

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