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**The Environment, Government Policies, and International Trade: A
Proceedings**

Shane, M.D., and H. von Witzke, eds.

Proceedings of a Meeting of the
International Agricultural Trade Research Consortium
December, 1990, San Diego, CA

Chapter 1

Public Goods, the Environment, and International Trade

Mathew Shane* and Harald von Witzke**

A set of nonstandard issues has come to the forefront of economic analysis over the last decade. These issues, which come under the rubric of public goods and externalities and deal with environments that violate classical assumptions underlying competitive equilibrium, are increasingly becoming a major part of international trade analysis and have particular relevance to the environment, food safety, and health concerns.

Central to these issues is the question of why distortions in the economy persist even though we recognize their inefficiency and, thus, can perceive that gains can be made by overcoming them. The answer to this question lies in an understanding that, with lobbying and the political process, gains in the form of rents can be made to individuals and groups by distorting the economy. Furthermore, there are a set of problems in which the environment is such that Pareto Optimal solutions will not occur. These include situations in which a prisoners' dilemma is in force, when there are issues of assurance problems, and when noncompetitive elements are operating in a market.

Although issues related to public goods, the environment, and trade are seemingly unrelated, underlying them is a common core of analysis. Thus, food safety and environmental quality both relate to the tradeoffs

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between health concerns and achieving efficient production. Legal and social environment versus the physical environment both relate to the externalities created by the attributes of the system in which we operate. The authors interpreted the concept of the environment in two distinct ways, one relating to rules and institutions, and the other to the physical constraints to production. They found that these two aspects have a lot in common in terms of how they affect the economy.

Constitutional vs Allocative Economics

These new problems are amenable to economic analysis although of a nontraditional type and raise the question of the role of economists over the next decade or two. The traditional focus of economics has been allocative efficiency. The new issues lead to a focus on constitutional economics over allocative economics. In other words, the issues define how to set up an economic system so that the optimal social outcome is achieved in the face of public goods and externalities. The issues also direct attention to the dual role of economists in understanding the effects of technical change on the physical environment and the process of institutional change on the conceptual frameworks under which economic players operate. This refocus helps define the role of government as innovating institutions to overcome market failures rather than as a direct player in markets. The real challenge for economists is to design institutions that help overcome market failure and thereby internalize externalities. Markets are thus redefined so that the social costs are incorporated into private decisions and social and private returns become equal.

In many ways the refocus on constitutional issues is a byproduct of the demise of centrally planned systems around the world. One also might argue that the fall of the centrally planned systems was the result of their inability to function effectively in a world of increasing decentralization of information and technology.

The International Dimension of Environmental Issues

The issues of the environment, whether physical or institutional, are particularly relevant to international trade. In both cases, the issues transcend governments and national boundaries. Furthermore, international forums for dealing with these issues are only poorly formed

and suggest that global institutions such as the General Agreement on Tariffs and Trade (GATT), the International Monetary Fund (IMF), and others will have to be greatly strengthened. This action will further erode national sovereignty. As unfortunate as that may seem, the growing interdependence of the world's economies already reduces the effectiveness which domestically focused policies have on solving an individual nation's problems. Policies designed to deal with a single nation's problems face international repercussions which undermine the intent of those policies. A good example is the increasing importance of exchange rate adjustments and changes in foreign trade as the mechanism for achieving domestic macroeconomic stabilization.¹

One of the great ironies of our modern world is that as we increasingly take advantage of the benefits of trade, our domestic policy discretion erodes, and we must continually redesign international institutions to deal with issues which national treatment alone cannot handle.

Pollution and the Environment

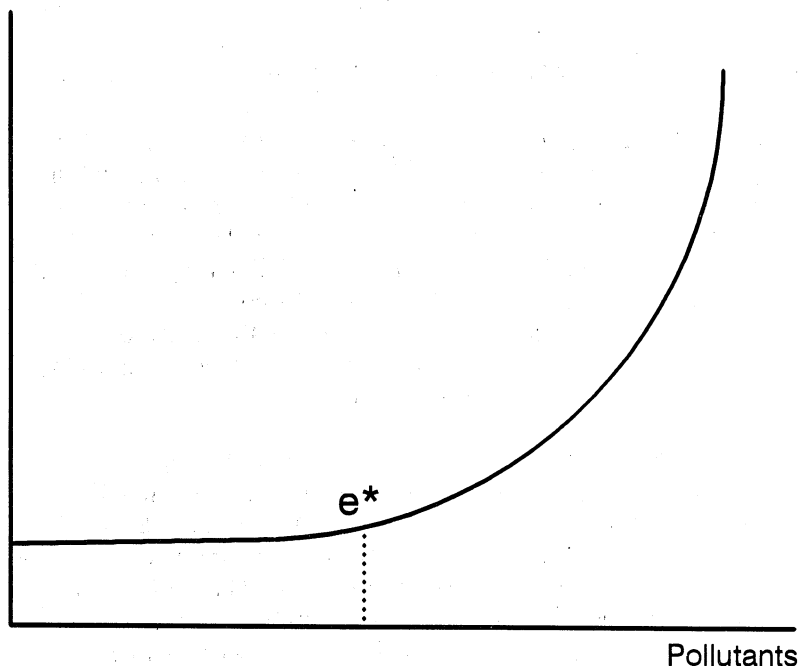
There is much concern about the effect of economic activity on the physical environment. A central issue is the stability of the physical environment to the increasing pollution resulting from increased economic activity and population. We have only a poor understanding of the ability of the environment to absorb pollutants. As we add more and more pollutants to the environment, can we expect the degradation response to be linear or nonlinear? If the response is linear, then as resources which were previously considered free become polluted, the economic systems will begin to increase the price of these resources leading to conservation. If, however, the response is severely nonlinear, then the potential for a catastrophic outcome becomes real because at some point the effects can be so large as to not allow sufficient time for an economic response. If such were the case, then only by early planning and control might we avoid a calamity. Such a situation is depicted in figure 1. As additional stress is placed on the environment, the environment can absorb the initial low level at low costs. However, at some point such as e^* , the ability of the environment to continue to absorb further abuse diminishes rapidly and costs go up substantially. If

¹ Ed Schuh has made this point more than any other agricultural economist. See, for instance, his classic 1974 article: "The Exchange Rate and U.S. Agriculture," *American Journal of Agricultural Economics*, 56(1974): 1-13.

Figure 1

Impacts of pollution on environmental quality

Environmental Impact



the inflection point is steep enough, the environment will become a severe constraint on further economic development.

Local or Global Stability

How stable are the basic economic and environmental systems? Are the equilibrium relationships globally or only locally stable? If they are globally stable, any disruption will lead to a path of smooth adjustment. If, however, they are only locally stable, a threshold will be reached where dramatic changes will take place with unanticipated outcomes.

What really is at question is the degree to which forces are at work to bring the systems into an acceptable equilibrium without a major redesign of the system. Can we be overwhelmed by the cumulative effects of environment changes before institutions can be established and appropriate policies undertaken?

Current Critical Examples

Several current issues provide empirical examples of the potential for either outcome. Will we obtain a GATT agreement so that the conflict for international markets will not turn into a trade war? Are there other economic pressures for trade liberalization such as budget constraints in the United States and the European Community (EC) which will ensure moves toward liberalization? Does the current proposal for transforming the EC's Common Agricultural Policy (CAP) imply that the economic factors to align policies with international realities are more important than the vested interest in the current policy?

Are the current concerns with global climate change, the depletion of the ozone layer, and the encroachment on the forests issues which will be resolved before crisis sets in or not? In each of these cases, the degree to which the effects are felt in a linear or nonlinear way strategically changes the concern and approach to dealing with these. If effects are felt in a linear way, economic systems should respond in time to avert a crisis. If they are felt in a nonlinear way, such a crisis may be unavoidable.

One of the factors about externalities and public goods is that their definition depends on the unit of concern. Many environmental issues relate to the global system. Thus, the solutions must be multinational. Air and water pollution are essentially of this nature. Although a multilateral trade agreement is preferable to bilateral or trading areas, the evolution of free trade areas under most circumstances will lead to increasing trade and efficiency.

The issues of concern in this report relate to the fact that what one economic agent or set of agents does affects all other economic agents. This fact, in general, violates the assumption of private property underlying much of classical analysis. How economists will learn to design new institutions so that these "externalities" will not lead to inferior solutions will be increasingly the subject of economic analysis well into the 21st century.