REGULATING THE ENVIRONMENT: ECONOMIC DEVELOPEMNT AND THE STATES

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Abstract

Policy makers at all levels of government would likely agree on the desirability of both a growing economy and a clean, healthy environment. Yet, for decades there has been a widely held belief that environmental controls have undermined economic competitiveness. Thus, state policy makers are often confronted with choices between protecting the environment and promoting economic development. The work presented in this article identifies the various linkages between state environmental programs and economic growth. In this article, I apply an empirical model, based on transaction cost theory, to state manufacturing industries and investigate how well the double-focus of industry growth and environmental protection has been developed in the states. The results presented here indicate the potential for certain state environmental administrative structures to enhance economic growth by reducing uncertainty and transaction costs.

Introduction

The relationship between environmental goals and industrial competitiveness has conventionally been thought of as involving a tradeoff between social benefits and private costs. The traditional view is that firms pursue efficiency at the expense of environmental protection. Markets can induce over-consumption of environmental resources, such as clean air. Reciprocally, environmental concerns are often blamed for undermining market performance. Environmental regulation can lead to undue costs and prevent the unfettered behavior needed for achieving economic development. State policy makers would likely agree on the desirability of both a

growing economy and a clean and healthy environment. Yet, for decades there has been a widely held belief that environmental controls have undermined economic competitiveness. Thus, state policy makers are often confronted with the choices of protecting the environment or promoting economic development. Anecdotes about companies ruined by environmental regulation abound. However, some scholars and political leaders have suggested this tradeoff is false. In recent years there have been an equal number of anecdotes about companies pulled back from the brink of failure through environmental efficiency. Stories about the growth of "green companies" give rise to the argument that policies of environmental protection can actually spur economic growth.

Recently, several studies have reported positive cross-sectional correlations between levels of state environmental protection and personal income, but do not provide systematic explanations for *how* environmental programs enhance economic growth or subject their hypotheses to rigorous empirical tests (cf. Meyer, 1992; Hall, 1994; Kromm et al., 2000). The work presented here identifies the various linkages between state environmental programs and economic growth. In particular, I am interested in how the administrative design of environmental programs influences state economies. In this paper I apply an empirical model based on transaction cost theory to state manufacturing industry employment and investigate how well the double-focus of industry growth and environmental protection has been developed in the states. The model and empirical results presented here indicate the potential for certain state administrative structures to enhance economic growth by reducing uncertainty and transaction costs.

The Tradeoff Literature

Increasingly the assumption of a tradeoff between environmental protection and economic growth at the state level has been challenged. For example, a recent study by the Institute for Southern Studies correlated state rankings on economic and environmental indicators and found that the states that do the most to protect their environment also have the strongest economies. The conclusion reached by the authors was that policy makers do not have to choose between jobs and the environment (Kromm et al., 2000). Although such work is informative, it suffers from a number of limitations. Studies that have challenged the tradeoff between

environmental protection and income growth at the state level have not advanced a theoretical model to explain how environmental policies influence growth. Mostly, these studies have relied on cross-sectional, rather than longitudinal, data and have not attempted to isolate the various dimensions or policy instruments of environmental programs. Also, these studies have not addressed how the institutional structures and administrative design of environmental programs may influence growth (Meyer, 1992; Hall, 1994; Templet, 1995; Goetz, Ready, and Stone, 1996).

A base of empirical evidence in economics and political science identifies tradeoffs between economic and environmental values in state policy decisions. The political and economic implications of specific state environmental regulations have been a subject of considerable interest to scholars (Oates and Schwab, 1988; Davis and Lester, 1989; Feiock and Rowland, 1991; Bartik, 1988; Feiock and Davis, 1992; Feiock and Stream, 2001). Much of this literature focuses on the extent to which firm location and investment decisions are affected by tax incentives or environmental regulation. Nevertheless, most of this research has not systematically examined the effect of state environmental protection policy on economic development over time or addressed the consequences of state administrative design.

Also past research has often not recognized that one key measure of economic development success important to citizens and policymakers is an increase in employment. Economic development policies are typically oriented toward stimulating employment growth. From the perspective of a state policymaker or economic development official, the state should optimize the combination of development strategies into a package that will be beneficial to businesses without imposing too high a cost on taxpayers. In other words, the goal of economic development is to diversify the economy by engaging in developmental policies that result in employment opportunities for citizens.

This article addresses these limitations by employing a transaction cost framework developed by Feiock and Stream (2001) for examining the effects of environmental programs on state economies. The article also provides a test of hypotheses regarding the effects of state administrative structures on the economic growth of state manufacturing industries derived from their framework. Specifically, this article examines the different state administrative

design and policy tools established to protect state environments and their impact on employment growth.

A Theoretical Framework

The negative economic consequences of environmental policy have generally been taken for granted. This notion is grounded in production economics, industrial location theory, and public choice economics. Work in these traditions argues that state environmental protection programs generate public and private sector costs that may have a negative effect on the magnitude or rate of economic growth. These effects are tied to the impact of environmental policy on private production costs, resources and incentives for innovation.

The argument that tradeoffs between economic and environmental goals do not exist is more controversial and is often not well grounded in theory. Empirical studies which have tried to demonstrate that state environmental efforts have positive effects on economic growth often lack a strong theoretical foundation. Systematic explanations for *how* environmental policy might positively influence economic growth are conspicuous by their absence. Nevertheless, Feiock and Stream (2001) have built a theoretical framework from which to derive propositions about such positive impacts based in transaction cost theory. If government actions reduce externalities and transaction costs it benefits both the environment and the economy.

In the following sections I elaborate the framework first developed by Feiock and Stream (2001). Based on their model, I identify the ways in which state environmental programs and administrative designs may enhance economic growth through employment growth.

Employment Growth Enhancing Aspects of State Environmental Policy

The employment effects of environmental regulation have been hotly debated. Public opinion surveys show support for policies intended to produce a cleaner environment, but workers often feel that these measures threaten their jobs. When state policymakers discuss economic development, they are typically talking about stimulating state employment growth. The measuring stick most

commonly used for gauging the success of developmental efforts – as well as the individuals charged with formulating and implementing them – is the number of jobs created.

Economic theory and empirical studies to date are ambiguous on the employment effects of environmental regulation. However, there are several ways in which environmental and pollution control programs at the state level might enhance employment growth through their effects on market structure. First, improvements in environmental quality that result from the reduction of negative environmental externalities like pollution may make a state more attractive as a location for firms and affluent residents. Second, international studies suggest that environmental regulation may stimulate efficiency enhancing technological innovations. Third, environmental institutions may reduce private sector transaction costs by reducing uncertainty in the market.

Reduction of Negative Environmental Externalities

Welfare economics theory suggests that government programs, if employed simply to equate social and private costs of production, can reduce or internalize social costs resulting from negative externalities and enhance efficiency (Coase, 1960). In addition to these general social benefits, the reduction of externalities may benefit individual firms by reducing or eliminating the private costs of pollution, such as liability, compliance and disposal costs. Moreover, state environmental policy may provide indirect benefits to businesses such as improved public relations.

The reduction of negative externalities may directly translate into economic gain for states. Indeed, there is evidence that environmental investments have the potential to spark regional and economic development efforts (Goodstein, 1996). Environmental protection may enhance the desirability of a state or locality as a location for individuals and business when it reduces negative externalities associated with pollution. Several development studies report that quality of life factors, such as pollution problems, are significant in residential and business decisions. Furthermore, enhanced environmental conditions create a positive amenity for residents (Goetz, Ready and Stone, 1996; Farr, 1984). The amenities branch of location economics argues that regions with more desirable environmental features and conditions are in a better position to

attract firms and skilled workers. Employers who need to hire uniquely qualified labor in a national market may be able to attract such labor at a lower cost if they locate in regions with more and better environmental amenities.

Uncertainty And Transaction Costs

Reducing uncertainty over property rights affects incentives for investment and production which can lead to employment growth. Although given little attention in the state political economy literature, transaction cost theory provides a useful framework for the identification of effects of environmental regulation on growth. States play an important role in defining the rights rules, organizations and institutions that structure the state and local economies (Brace, 1993). This includes government action affecting property rights, governance, finance, operational rules and regulations. The complex system of state environmental policy requires efforts to build governmental capacity. Building from the foundation of earlier work, scholars contend that state government programs and administrative structures may impact the performance of economies in many ways (Eisinger, 1988; Fosler, 1992; Feiock, 1998; Feiock and Stream, 2001).

Peter Eisinger's (1988) model of the “entrepreneurial state” suggests that public investments can increase the productivity of industry. The benefits of increased productivity are more efficient business transactions, wiser investments and reduced expenditures that produce profits and jobs. Such efforts require enhanced policy and administrative capacities by state governments. Investments in institutional structures that lower private transaction costs can enhance employment growth. State capacity is difficult to define both conceptually and operationally. One dimension of institutional structure with important development consequences is the form and organization of state environmental activities.

Transaction cost theory suggests that environmental regulation and pollution abatement subsidy programs may be offered within an institutional context making them a significant determinant of growth. Certain forms, structures, and processes of state regulation and environmental management functions may reduce uncertainty in the business environment. The assignments of property rights by state regulatory policy may be especially salient to

the economic impacts of environmental policy.

Recent work demonstrates state economic growth is enhanced as transaction costs are lessened by administrative arrangements which reduce uncertainty over property rights (Feiock, 1998; Feiock and Stream, 2001). This effect may, in many instances, be more dramatic and significant than the stringency of regulations. Regulatory arrangements that are clear and predictable reduce market uncertainty. By reducing transaction costs government action can enhance market efficiency and foster economic development.

The transaction costs that result from regulatory uncertainty have important consequences for employment growth because variations in regulatory directives that cannot be easily anticipated inhibit development. Stringent regulatory requirements, if they are clear, stable and certain, may diminish firms' uncertainty. This suggests that state and local governments with stringent regulation, but stable and certain patterns and processes of regulation, may have some hope of enjoying both the social and environmental benefits resulting from regulation as well as a growing economy.

When societies are characterized by insecurity of property rights, the rates of saving and capital formation drop and economic growth may be threatened (North, 1981). Institutional arrangements, which result in complexity in environmental regulations, and uncertainty regarding future regulations or requirements, may increase the risks associated with new products, new processes and firm expansion. This in turn may cause industry to raise firm and consumer costs and reduce their workforce (Meyer, 1992). Thus, uncertainty in environmental regulation may be associated with overall industry job losses.

Institutional characteristics of state environmental policymaking determine the extent of these transaction costs. Uncertainty is promoted by circumstances that lead to rapid changes in the quantity and quality of regulations, particularly when those changes would be difficult to anticipate. This may be the case in highly political environments or when responsibility and authority for environmental programs is fragmented across agencies with little effort at coordination.

As previously noted, this research has focused primarily on

private firm production costs and location decisions. In the section that follows, I develop a framework for examining the employment growth aspects of state environmental policies.

Environmental Policy, Administrative Design and Economic Impacts

Environmental policy is not monolithic and should not be treated as unidimensional. While some environmental policy instruments may deter economic growth by increasing costs and creating inefficient regulatory programs that impede innovation, other environmental policy tools may enhance the performance of state economies by enhancing the efficiency of market structure and reducing uncertainty in property rights.

For this analysis, I disaggregate state environmental programs into four policy instruments: direct state actions, impositions of regulatory costs on private pollution producers, tax incentives to the private sector for pollution control activities, and administrative and decision making institutions which facilitate exchange or reduce uncertainty.

Direct State Actions: Environmental Spending

State governments' role in environmental management has grown dramatically over the past 25 years. The states do not simply implement federal environmental policy; they have become important actors independent of federal action. A substantial portion of each state's budget is directed to expenditures for environmental programs. These expenditures support a wide array of prominent programs -- air pollution, water pollution, and solid waste management. While some state programs impose costs on firms, many resources are directed to activities that can benefit business by facilitating voluntary pollution reduction and by subsidizing prevention and cleanup.

Rather than imposing costs on business, state programs may socialize what would otherwise be private costs for the prevention and cleanup of pollution. In doing so, state expenditures not only reduce a firm's costs but they may also reduce a firm's environmental risk by reducing liability, compliance, and disposal responsibility. In addition, expenditures to reduce or cleanup pollution may directly

translate into economic gain for states. Environmental protection may enhance the desirability of a state as a location for individuals and business by reducing the negative externalities associated with pollution. Quality of life factors, such as pollution problems, that can be influenced by state action are significant in residential and business location decisions.

Imposition of Private Regulatory Costs

In the environmental policy debate, scholars argue that regulation is costly. Installing pollution abatement equipment, disposing of hazardous waste, and cleaning up after industrial accidents are obvious expenses that derive from regulatory policies. "States have adopted a variety of environmental controls that in some cases have gone well beyond federal mandates and have delayed or aborted new plant construction" (Site Selection Handbook, 1981: pp. 378). In addition to capital investments, pollution abatement and control may entail substantial increases in operating costs to firms.

On the other hand, these environmental costs could translate into environmental spending, which could provide jobs. Some economy-wide studies show a small positive effect of environmental regulations on overall employment (Thomas, 2002). Environmental protection can raise employment levels because it is labor-intensive. Also, environmental regulation stimulates jobs disproportionately weighted to manufacturing sectors and away from the service industry (Meyer, 1992).

Tax Incentives For Pollution Control

Pollution prevention and abatement is capital intensive and may require investments in new equipment, on-site facilities, or product changes. As a result, financing becomes a deterrent to technologically advanced pollution measures. State tax incentives for pollution abatement may provide incentives to control pollution without reducing output. Cost sharing with the government for pollution control leads to a decrease in average costs paid by the industry. In the long run this creates an incentive for new firms to enter the industry (Brierly, 1989).

States also provide a wide array of subsides or incentives to firms for pollution control. Typically these are in the form of tax

relief for investment in pollution control technologies. A majority of states provide exemptions from property, sales or corporate taxes for pollution control investment. Some states even provide tax exemptions for operating costs. In addition, accelerated depreciation of pollution control equipment is widely used.

States can improve the efficiency of industrial operations and make firms more competitive by creating tax incentives for the development of pollution abatement technology, rather than imposing the costs of technological change on the private sector. Nevertheless, if incentives are directed toward inefficient technologies, they could impede economic growth (Averch, 1990).

Administrative And Decision Making Institutions

Institutional characteristics of state environmental programs such as the organization of environmental functions, the definition of rights, state administrative capacity, and strategic planning initiatives may influence the level of uncertainty in the regulatory environment. The organization of environmental functions in state bureaucracies can have great significance for uncertainty and risk. Organizational structure has consistently been linked to state environmental policy choices. Lester (1989) argues that unified, rather than fragmented, organizational structures reduce coordination costs and eases the transmission of information.

States have relied on three basic models of coordination: the health department, the little EPA, and the environmental super-agency (Council of State Governments, 1975). Most environmental programs were originally developed on the basis of public health considerations and a number of states have chosen to leave pollution control functions in their health department. Another group of states have what are called “little EPAs” because they are structured similarly to the Federal EPA. A substantial number of states have consolidated their pollution control functions in an environmental super-agency. These agency responsibilities extend beyond pollution control to integrate pollution programs with resource conservation or development functions (Council of State Governments, 1975).

Attention to state environmental regulation has increased since the federal government initiated the use of partial preemption policy designs over two decades ago (Davis, 1992). Under partial

preemption, once federal agencies promulgate minimum performance standards, states are given the opportunity to assume program management authority. Once a state program is authorized, the federal role is limited to oversight unless the state falls short of the minimal standards. Achievement of program responsibility, known as "primacy," enhances the stability and certainty of the regulatory environment. Davis and Lester (1989) argue that gaining primacy is a function of a state's institutional capacity to absorb decentralized programs.

Several states seeking opportunities to improve their environmental programs have integrated pollution prevention with regulatory programs through a strategic planning process. Generally, these states require pollution prevention plans from selected industries. Environmental pollution plans are deemed essential to developing a clear-cut strategy for pollution control (Williams, 1994; National Advisory Council, 1992).

Methodology

In this study, I examine the spatial distribution of manufacturing industry employment in the fifty states over a twelve-year period from 1983-1994. The federal government through the 1970s dominated environmental policy (Ringquist, 1993; Yandle, 1989). The dramatic devolution of policy responsibility to the states did not occur until after the election of President Ronald Reagan in 1980 (Vig and Kraft, 1984; Ringquist, 1993). Thus, the time frame under study is ideally suited to studying the effects of state environmental policy activities on industry growth.

To measure the extent of manufacturing employment growth in the states, Location Quotients were constructed and then differenced in order to examine the change from year to year.[1] The Location Quotient is most frequently used in economic geography and locational analysis, but it has much wider applicability. Location Quotients can be used to measure the extent to which the manufacturing industry in a particular state has some locational advantage.

The location quotient (LQ) is a device for comparing an area's share of a particular activity with the area's share of some basic or aggregate phenomenon. For this analysis, LQs are a way for

comparing a state's share of manufacturing employment with its population taking into account the national manufacturing employment share. The LQ of different states in the U.S. with respect to manufacturing employment will provide knowledge about the level of concentration of that industry in that state.

For calculating the LQ for state manufacturing industries (i) in a particular state, the following formula was used:

LQ = (ni/p) / (Ni/P)

Where ni = employment in Manufacturing industry 1 in state 1

p = total employment in state 1

Ni = employment in Manufacturing industry 1 nationally

P = total employment nationally

If the value of the quotient exceeds 1, employment growth is indicated since the employment in manufacturing in the sate exceeds that of the nation as a whole. That is, manufacturing employment has grown in activity passed its relative concentration to the country as a whole. Thus, there is a locational advantage for the manufacturing industry in that particular state. An indication of deficiency is given by a quotient value less than 1. An LQ less than 1 indicates that the particular industry has less of a share of the activity than is more generally found in the country. Finally, an LQ equal to 1 means that the state's manufacturing industry share is in accordance with its share of the national base.

Since I analyze data that combine elements of both space (i.e., American states) and time (i.e., years 1983-1993), the model was estimated using ordinary least squares (OLS) with panel corrected standard errors (PCSE).

I include independent variables to operationalize several of the dimensions of environmental policy previously discussed. State expenditures for environmental protection are measured by annual state pollution control expenditures per capita.[2] Regulatory costs are measured as annual private pollution abatement capital and operating cost per production worker.[3] To measure pollution control incentives, the date of adoptions for ten specific incentives was identified and an additive index of the number of incentives offered each year was calculated.[4] The index reports the number of incentive

programs in place for each year.

I measure state-level regulatory capacity by the date when the state was granted primacy to manage its environmental programs under the Resource Conservation and Recovery Act of 1976. This was recorded and coded one for primacy and zero otherwise.[5] Several measures of institutions to reduce regulatory uncertainty are operationalized. First is an indicator of whether environmental programs are located in a super-agency that consolidates environmental and natural resource programs.[6] Every year after such an agency was created is coded one, while non-adoption state/years are coded zero. Efforts to coordinate diverse environmental programs were measured by the presence of strategic environmental plans and a system of one-stop facility permitting. The date of adoption of a strategic plan for environmental protection was recorded.[7] Every year after the agency adopted a strategic plan is coded as one, while non-plan agencies/years are coded zero. While existence of a plan does not necessarily indicate strategic management is practiced, this is the best available measure. If strategic plans can be subject to change and revision they might not reduce uncertainty. I found state environmental management plans provide a stable policy framework during this time frame.[8] Finally because liberalism among governmental leaders may also create perceptions of regulatory uncertainty, I include the state measure of government ideology constructed by Berry et al (1998).

Results

The results are presented below in Table 1. The results support the idea that state administrative institutions and policies can have both positive and negative implications for economic development as measured by manufacturing employment.

Table 1
Estimates of Manufacturing Location Quotients
in the American States, 1983-1993

	b	s.e.	b/s.e.
State Expenditures for Pollution Control	.00003***	.00001	3.05
Regulatory Costs	-.380***	.089	-4.27
Total State Pollution Control Incentives	.023	.36	.626
State Primacy under RCRA	.297***	.060	4.98

State One Stop permitting	.988***	.192	5.14
Super Agency consolidation	.705**	.183	3.34
Environmental Protection Strategic Plan	.274	.249	1.10
Liberalism	-.425	.381	-1.12
Constant	2.45	.302	8.11
N	595		
Adjusted R^2	.35		

Note: Dependent variable is manufacturing location quotients. ***significant at .01 level or greater and ** significant at .05 level. All independent variables are lagged.

The state environmental expenditures measure had, as predicted, a positive impact. Over the years, state spending for environmental protection has increased and it appears from this analysis that this increase has given state manufacturing firms a certain locational advantaged which has allowed them to grow and expand. It may be that environmental protection enhances the desirability of a state as a location for manufacturing firms. As anticipated, private regulatory costs had a negative impact on state manufacturing sector growth. However, the analysis found no evidence that tax incentives for pollution control stimulated manufacturing growth. It may be that states are better off, as other state economic studies have found, pursuing other types of economic development tax incentives to encourage industry growth.

The results regarding institutions that reduce transaction costs were encouraging. The results show that states' environmental capacity, as indicated by achievement of primacy status for regulation, resulted in significant increases in manufacturing employment. Consistent with previous work, I found that consolidation of environmental functions in a super agency enhanced manufacturing growth. Also, the coefficient for streamlined regulatory processes that utilized one-stop permitting was significant. However, the adoption of strategic plans and pollution prevention programs did not achieve significance. Political uncertainty, as indicated by state government liberalism, had no impact on changes in the manufacturing sector employment.

Conclusion

The relationship between environmental policies and the economic health of state manufacturing sectors highlights the

predicament facing state policy-makers as they try to simultaneously foster economic growth and pursue environmental protection. States have the discretion to allocate the costs of environmental controls between the public and private sectors and to direct incentives for economic development. The results of this analysis do not mean that strong environmental policies cause strong manufacturing growth. But the results do highlight that environmental protection may enhance the desirability of a state as a location for manufacturing firms. Thus, state environmental policies appear to give certain states locational advantages in manufacturing employment. Environmental factors, such as pollution problems, that can be influenced by state action appear significant in business growth decisions. Also, it appears that state manufacturers adjust to environmental restrictions, requirements and institutions resulting in state manufacturing sector employment growth.

While the results presented here are in many ways exploratory, I believe the empirical results suggest that states may free themselves from the economic development vs. environmental regulation trade-off by reducing uncertainty through efforts to coordinate environmental decision-making capacity and provide credible regulatory commitments to the manufacturing industry. The positive relationship between certain administrative arrangements for state environmental programs and economic growth suggests there may not be an inexorable tradeoff between business and environmental interests. This study builds on previous work and finds that some elements of state environmental policies and certain state institutions may encourage firm expansion while other elements may provide disincentives for firms.

Administrative institutions and policy design have, for the most part, been neglected in the study of environmental policy at the state and local level. The conceptual framework developed by Feiock and Stream (2001) and employed here suggests the need to examine the consequences of program design for both environmental and economic outcomes. The results of this analysis highlight the importance of the choice of institutional arrangements, policy designs and policy tools for the ability of environmental programs to mediate the negative economic costs of regulation. Administrative reforms that reduce transaction costs, such as consolidation plans that concentrate bureaucratic expertise into a single agency and programs designed to reduce time delays in the permitting process, and state expenditures on pollution control appear to offer the best path for

overcoming tradeoffs between economic and environmental policy goals.

Much work, however, is still needed. Entirely absent from this effort was an attempt to examine the rent seeking aspects of state environmental policy. Innovative measurement strategies need to be implemented to examine the political role of industry and environmental groups. Such efforts will require more sophisticated modeling strategies as well. Such an approach will be necessary to account for potential simultaneity in the relationships between policy and economic performance and to capture interactive effects among policies and programs.

Notes

1. Because the Dependent variable is differenced, one year of analysis was lost. Thus, the study covers 1983-1993.

2. Expenditure data through 1981 is reported in the United States Department of Commerce's report Environmental Quality Control which was discontinued in 1981. The remaining years of environmental spending data were collected from the Council of State Governments' Resource Guide for State Environmental Management. This data was compiled and reported only 1986, 1988, and 1991, thus expenditures for several years are missing. I estimated expenditures for these years using linear interpolation.

3. The imposition of pollution abatement costs on private firms was taken from various years of Pollution Abatement Costs and Expenditures. Published annually by the U.S. Department of Commerce.

4. Pollution control incentives were taken from various issues of Industrial Development and Site Selection Handbook, published by Conway Publication. The incentives for pollution control include: real and personal property tax exemptions, sales/use tax exemptions of purchases or lease of pollution control facilities, credit against corporate income tax, accelerated depreciation of pollution control equipment, exclusion of pollution control investment from corporate franchise tax, exemption of cost of operating pollution control facilities, state financing of pollution control facilities.

5. The original source for when states gained primary administrative responsibility for RCRA programs was derived from the U.S. Code of Federal Regulations, and the U.S. EPA Office of Air and Radiation (Lester 1989).

6. The point in time which a state consolidated its environmental programs consolidated into a single "super" agency was gathered from Council of State Governments publications including Integration and Coordination of State

Environmental Programs (1975) and various years of the Resource Guide to Environmental Management, and the Book of the States.

7. Adoption dates for environmental strategic plans was derived from Berry's (1994) survey of state agencies from 1970 to 1991 for the Council of State Governments. The survey indicated the year state environmental agencies adopted a strategic plan.

8. There was some concern on my part that state environmental agencies would change their strategic plans quite often, which could contribute to uncertainty rather than certainty. Therefore, I contacted each of the states that had adopted strategic plans over the period of study. I found that state environmental strategic plans are much more stable than I even thought in the first place. State environmental agencies that had adopted a strategic planning process had originally intended for these documents to include annual reporting of programmatic success and to be revised "as needed." This was originally conceived to be annually or bi-annually depending on the state budget cycle. However, this has not been the case. The states that have strategic plans do try to revise them as needed, but these revisions have been done infrequently. For example, the strategic plan for the Washington State Department of Ecology is supposed to be revised every two years (as part of the biennial budget preparation process). However, in actuality, the strategic goals of the plan may or may not change with each new gubernatorial administration. The department also notes that the strategic mission of the agency has not changed since 1988. The Indiana Department of Environmental Management is also typical of the states with strategic plans. The IDEM adopted its strategic plan in 1994. In 1998, the plan was revised after the election of a new governor. This revision falls outside of the period of study. This is also true for many of the states. Many revisions did not occur until after the study period. Thus, from 1983 – 1994, state environmental strategic plans were quite stable, and were revised very little.

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