DO STATE ENVIRONMENTAL PROTECTION PROGRAMS CONSTRAIN STATE ECONOMIC GROWTH?

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Abstract

The purpose of paper is to examine whether state environmental programs impede economic development. Previous studies in this area omit critical political variables such as the environmental ideology of a state and employ inappropriate measures of state environmental regulation. To deal with these problems, I not only examine the impact of parties, interest groups, and administrative structures on state economy but also investigate the impact of the environmental ideology of state Representatives on economic development. The model is tested by pooled time series and the Levinson's index, which measures the stringency of state environmental regulation after controlling for the industry composition of state, is employed. The results of analysis show that stringent state environmental regulation and state expenditures for total pollution control do not substantively curb its economic growth. The results also confirm that the administrative structures of state environmental programs as well as the environmental ideology of state Representatives significantly influence state economic development.

Introduction

Goal conflict between state environmental protection and economic growth has attracted attention not only from policy decision-makers in state governments but also from scholars of public policy. The mass media and public opinion polls have emphasized potential tradeoffs between state economic growth and its environmental protection. Although the concerns of the public and policy makers regarding conflict between the economy and environmental programs have increased, scholars have not provided

clear answers to the concerns that stringent state environmental programs constrain their economic growth. The empirical evidence is mixed with regard to the trade off between state economic development and environment protection.

This article empirically examines the relationship between environmental policy and economic development at the state level as indicated by patterns of new capital investment in manufacturing. Previous studies in this area suffer from several deficiencies. First, critical political variables are omitted such as environmental ideology. Another problem is that previous studies have employed inappropriate measures of state environmental regulations to test the trade off between economic growth and environmental protection.

To address these limitations, this paper develops a theory of how political parties and ideology influence economic policy and outcomes at the state level. Partisanship of policy makers and the pervasiveness of environmental ideology impact this trade off. I also emphasize what pressure state level interest groups bring to bear on decision makers to influence state economic growth.

To improve the measurement of state government's environmental regulations, instead of using indirect measures of state environmental regulations that have been employed by most environmental scholars, I use an adjusted index of state environmental regulation that measures the stringency of environmental regulation after taking into account the industrial composition of the state (Levinson, 1996). The model is tested using pooled time series analysis with panel correct standard errors on state level data from1983 to 1994.

Controversy Over The Economic Impact Of Environmental Programs

Traditionally, scholars have argued that state environmental programs have a negative impact on economic growth, because environmental regulations impose extra production costs on firms. Since firms are required to comply with regulatory mandates, they spend more money on pollution control efforts. Increased production costs resulting from compliance with states environmental regulation lead to higher prices for products. Regulation also can reduce the

competitiveness of products in the market, decrease outputs of the firms and limit the economic development in states (Chrisiansen and Haveman, 1981; Siegel and Johnson, 1993; Goez, Ready and Stone, 1996).

Another negative impact of state environmental protection programs results because they can limit the entry of new firms (Dean and Brown, 1995). The barrier for potential new firms is a severe problem, since potential new firms would feel heavy burdens due to the complex technical, administrative, and legal issues (Brock and Evans, 1986) as well as increased production costs. Therefore, the barriers set up by state government's environmental requirements that discourage new firms from entering the markets, reduce the competitive environments of firms and have negative impacts on growth of state economies.

Although previous studies have focused on the negative aspects of state environmental programs on their economies, the results of empirical analysis do not always support this proposition. In fact, Hall (1994) finds that states that protect their environments have healthy economies. The study by Levinson (1996) does not find any significant negative relationship between different state government regulations and the location choices of manufacturing firms. Ringquist and Feiock (1999) also do not find that the air quality programs of state governments have anegative impact on economic development.

Based on the controversial results of empirical studies, several revisionist scholars explain how state environmental control programs may not limit their economic development. First, in general, the environmental programs of state governments can minimize the impact of negative externalities (pollution of state environment) which are caused by market failures. Since state environmental programs improve their environmental quality, state governments can attract more firms. By attracting more new firms to their states, states can enjoy economic growth. Goetz, Ready and Stone (1996) and Farr (1984) find that pollution problems are an important factor for firm location decisions. Goetz, Ready and Stone (1996) also argue that improved environmental quality in states would have a positive impact on worker's productivity and may lower the production costs of firms.

In particular, the environmental regulations of state government can enhance the productivity of firms. Given these governmental regulations, firms try to develop new technologies and change production processes to reduce environmental pollution. As a result of adopting new technologies and changing production lines, firms not only reduce the level of pollution they produce, but also increase their efficiency (Gray and Shadbegian, 1998).

According to the arguments of revisionists, the states with strong environmental regulations induce a positive impact on state economic growth over a long- term period, although in the short-term, it may produce a negative impact on state economic growth (Feiock and Steam 2001). Also, if state governments increase their expenditures for air, water, and waste pollution control, it would have a positive impact on their economic growth since better environmental conditions attract more firms. To examine the controversy over the economic impacts of environmental programs, two hypotheses, the economic impacts of state environmental regulations and expenditures for pollution control, are tested;

Hypothesis 1a: Stringent environmental regulation by state government does not have a negative impact on state economic growth.

Hypothesis 1b: Total State expenditures for pollution control do not have a negative relationship with state economic development.

The Impact Of Industry Interests

The theories of interest groups are rooted in the pluralist perspective of policy making. For David Truman (1951) and Robert Dahl (1956), the major virtue of the interest group system is that people have freedom to organize groups to reflect their interests. Interest groups provide a link between individuals and governments. Legislative and executive institutions were created to serve the people and respond to their preferences. Interest groups are formed to advocate their points of view, pushing representatives to present their issues in legislatures and pushing bureaucrats to administer the laws.

Interest groups occupy a very uncomfortable place in democratic theory because their activity is frequently against the will

of the majority. One problem is that one side of an issue usually has an easier time organizing and raising money than the other side. There is also a class bias in interest groups. As E.E. Schattschneider (1960) put it, “The flaw in the pluralist haven is that the heavenly chorus sings with a strong upper-class accent. Probably about 90% of the people can not get into the pressure system.” He argues that politics is dominated by organizations representing businesses and the upper-classes.

Based on Schattschneider’s (1960) arguments, many scholars conclude that business interest groups dominate politics, while the nation’s unorganized poor and workers are excluded. People in upper and middle-income classes are more willing to join groups. Politicians are more concerned about business investments than about the opinions of rank-and –file citizens. This means that corporations “have rights that we do not have. Their political impact differs from and dwarfs that of the ordinary citizen”(Lindblom, 1977). Manufacturing groups are considered the most influential interest groups in state politics (Thomas and Hrebenar, 1991). Therefore, if the power of the state manufacture industry is strong, then industry groups can exert their power in the decision-making processes of state government. In the response to pressures from the manufacturing industry, state government policy is oriented toward growth promotion. The second hypothesis tests the impact of business interest groups on state economic development;

Hypothesis 2: There is a positive relationship between the strength of state manufacturing groups and state economic growth

Party Control

Parties, similar to interest groups, aggregate and articulate interests in the political decision making processes. The major difference between parties and interest groups is that parties provide voters with alternative conceptions of the “public good” so that people can make informed choices about government’s policies they want (Schattschenider, 1960).

Traditionally, in the America political system, the Republican Party has been based on a more conservative ideology that promotes economic development and supports small government and less restriction on business. The Democratic Party, based on more liberal

ideology, emphasizes social change such as welfare policy, and thus regulation of private activity to correct market failures. If state governments are under the control of the Republican Party, the expected government focus is on economic development. Therefore, the state governments which are under control of Republican Party reduce the expenditures for pollution control and increase their spending for economic growth. State governments controlled by the Republican Party may also reduce the strength of environmental regulations in general. If the Democratic Party controls state government, the situation is opposite. State governments controlled by the Democratic Party should increase their spending on environmental programs and increase the strength of environmental regulations on firms.

Since both governors and state legislatures have significant influences on state policymaking processes, I examine the impact of the partisanship of both governor and states legislature on economic development on following hypothesis. If both Senate and House and the governorship of a state are controlled by Republican Party, economic oriented public policies are more preferred and the state should enjoy more economic development.

Hypothesis 3: States with Republican Party control of both houses of the legislature and the governorship have greater economic growth than other states.

Environmental Ideology of State Representatives

The party control of state government may signal the general tendency of state government policy. However, there is considerable variation among the positions of elected officials on environmental policy even when they share party affiliation. There is regional and individual variation on the ideology spectrum. For example, the ideological position of Democrats in Alabama is more conservative than that of Democrats in New York. In other words, although representatives may have the same party affiliation, they differ in the degree to which they support environmental policies.

Despite its theoretical importance, environmental values and ideology have been unexamined in previous work. This article introduces an approach to measuring states environmental values through assessing the environmental record of the State's delegation

to the U.S. Congress that is elected from the state. Environmentalism scores of state delegations to the U.S. Senate and House are derived from environmental voting records calculated by the League of Conservation Voters (LCV) (Gray, 1997; Levinson, 1999). States electing officials with high LCV scores indicate a pro-environment ideology. In states with higher LCV scores, public officials may be resistant to economic development that might threaten environmental quality. Therefore, I anticipate that states with higher environmental scores will have slower economic growth than other states;

Hypothesis 4: There is a negative relationship between the LCV scores of Senators and House Representatives and state economic growth.

Administrative Structure

In understanding trade offs between environmental protection and economic growth it is not just politics, but also administrative structures of state environmental programs that are important (Lester, 1989; Feiock and Stream, 2001). Borrowing from the theories of transaction cost (North, 1990), Feiock and Stream (2001) argue that "environmental regulation and pollution abatement subsidy programs may be offered within an institutional context that itself is a significant determinant of the prospects for growth… Certain forms, structures, and processes of state regulation and environmental management functions may reduce uncertainty in the business environment"(Feiock and Stream, 2001: p. 13).

Lester (1989) argues that unified organizational structures reduce transaction costs, in particular, coordination cost and information cost of organizations. Lester et al. (1983) also argue that, by minimizing the coordination cost and information cost among different bureaucratic agencies, consolidated organizations (Super Agency Consolidation) help environmental policy making and lead to positive impacts on state economic growth. Therefore, I expect that consolidated environmental programs reduce transaction cost and contribute to economic growth;

Hypothesis 5a: A state whose environmental programs are controlled in a super agency which consolidates environmental and natural resources programs may enjoy a healther economy.

Like super agency consolidation, a strategic environmental plan provides another form of unified organizational structure. A strategic environmental plan integrates pollution prevention with regulatory programs and thus can reduce uncertainty and transaction costs. Therefore, I expect that environmental strategic plan which minimizes transaction costs have positive impacts on states economic growth;

Hypothesis 5b: A state adopting strategic plan of environmental protection may enjoy a healthier economy.

State governments' regulatory capacity is also an important component of a state's administrative structure for environmental programs. Davis and Lester (1989) argue that states that gain primary authority to manage their environmental programs under the Resource Conservation and Recovery Act of 1976 (state primacy under RCRA) efficiently carry out their regulatory and environmental programs. I expect that efficiency gains through state primacy under RCRA would transfer to states economic growth.

Hypothesis 5c: A state with primary authority for controlling its environmental programs under the Resource Conservation and Recovery Act of 1976 may enjoy good economic conditions.

To properly test these hypotheses, concentration of manufacturing gross state product is included as control variable. The new capital investment in manufacturing is directly affected to the degree to which the state economy relies on the manufacturing industry. A state whose economy relies heavily on manufacturing industries would allot more money to new capital investment in manufacturing than other states.

Measurement And Model Estimation

Based on theories and hypotheses, I specify the model below. The units of analysis are states over years. That is, data were collected for the 50 states for the time period 1983 to 1994. The model is estimated as pooled time series with panel corrected standard errors. The model specification is as follows.

New capital investment in manufacture i,t=ß0+ß1 State regulation i,t

+ß2 State Expenditures for total pollution control i,t +ß3 Party Control i,t + ß4 Environmental Ideology of Senate and House i,t+ß5 Strength of state industry groups i,t +ß6 Super agency consolidation i,t +ß7 State primacy under RCRA i,t + ß8 Strategic plan of environmental protection i,t + ß9 Concentration of Manufacturing Industry i,t + Errors i,t

Where the i and t subscripts denote the geographic unit (50 states) and year observed, respectively.

The dependent variable, New capital investment in manufacturing, is an indicator of state economic development and is measured by annual new capital investments in the manufacturing sector after controlling for the manufacture industry size of state.[1] I use the numbers of worker in state manufacturing industry as measurement of state manufacture industry size

Two aspects of state environmental programs are particularly salient-the strength of state government regulations, and state government expenditures for total pollution control. The variable of State regulation is measured as an adjusted index of state environmental regulatory stringency constructed by Arik Levinson (1997). Previous measures of state environmental regulations such as pollution abatement costs and expenditures fail to adjust for industrial composition in states. Taking into account industrial compositions of states is important since states which have many industries which emit pollution would spend more money on pollution control regardless of their regulations' stringency. Levinson (1997) argues that the industry-adjusted index of state environmental regulatory stringency is superior to previous measurements since it controls for industrial compositions and is also calculated over time. This adjusted index of state environmental regulatory stringency is a more appropriate measure for comparison both among states and within states over time. The variable of State Expenditures for total pollution control measures total state government spending on pollution control. The measure aggregates state pollution control expenditures for air, soil, waste and water pollution control

Data for directly measuring the strength of manufacturing industry groups in each state are unavailable since manufacturing industry groups do not make their membership data public. This article follows the procedures of other scholars who measure the strength of manufacture industry indirectly (Feiock, 1994; Ringquist

and Feiock, 1999). The variable of Strength of state industry groups is measured by the percentage of gross state product attributed to manufacturing industry for each year during the period of 1983 to 1994. A measure of environmental group strength is not included here because no measure is available on an annual basis for the study period.

Partisan effects on state economic development are measured with a Party Control variable coded as 1 if Republican parties control both houses of legislatures and the governorship simultaneously. If Democratic parties control both houses of legislatures and the governorships simultaneously, it is coded as minus one (-1). Divided party control is coded as zero.

Environmental Ideology of Senate and House is a variable referring to the environmental ideology scores of elected officials of state government. It is measured as averaged Leagues of Conservation Voters (LCV) scores of House Representatives and Senators.

To measure administrative structures which minimize transaction costs, three indicators are employed. Super agency consolidation measures whether control of state environmental programs is centralized in a super agency that consolidates environmental and natural resource programs. State environmental programs controlled in a super agency are coded as 1 and zero otherwise. The variable of State primacy under RCRA measures whether state governments have gained primary authority to control their environmental programs under the Resource Conservation and Recovery Act of 1976. If they are primary authority, they are coded as 1, otherwise zero. The strategic plan for environmental protection variable measures whether state governments adopt strategic environmental plans. If states adopt strategic environmental plan, they are coded as 1, otherwise zero. The control variable Concentration of Manufacturing Industry is measured by state manufacturing gross product.

Findings

The result of pooled time series analysis is presented in Table 1. In Table 1 the sign of all independent variables that have significant effects on new capital investment, with the exception of

strategic planning, are in the directions predicted. Moreover, state regulation and state expenditures do not have a statistically significant effect suggesting tradeoffs between regulation and growths are not large enough to be statistically significant. The coefficient of state expenditures for total pollution control is almost zero. This result suggests that while stringent environmental regulation does not boost the state economy, neither does it seriously harm economic growth.

Which party controls state government has considerable impact on patterns of state economic growth. Where the Republican Party controls both houses of legislatures and the governorship firm investments in new capital is $530 higher. Environmental ideology also has a significant impact on its economy. A state with lower environmental scores of elected officials enjoys a better economy than other states. The impact of state interest groups on state economic growth is also important. The analysis confirms the hypothesis that a state with strong organized manufacturing industry groups enjoys economic development.

Table 1
The result of pooled time series analysis

New capitial investment in manufacturing	Coefficients	Std Error
State regulation	-0.004	0.088
State Expenditures for total pollution control	-0.00000008	0.000
Environmental Ideology of Senate and House	-0.243***	0.053
Party Control	5.317***	2.071
Strength of state industry groups	167.929***	12.513
Super agency consolidation	27.185***	2.659
Strategic plan for environmental protection	-8.746***	3.353
State primacy under RCRA	9.94***	3.672
Concentration of manufacturing industry	0.0003***	0.000
Intercept	-9.302	5.132

note: ***p<.01, **p<.05 , and *p<.1 (two-tailed test)

Some evidence is found that administrative structures of state environmental programs have significant impacts on state economic growth. By reducing transaction cost, coordination cost and information cost in state government organizations, unified administrative structures of environmental programs induce economic growth. Firms in states with a super agency that consolidates environmental and natural resource programs invest $2, 719 more in new capital investment in manufacturing than firms in states without centralized regulation. Holding other variables constant, a state government that has primary authority of environmental programs under the Resource Conservation and Recovery Act of 1976 will have $994 dollars more new capital investment in manufacturing. Although agency consolidation and primacy under RCRA have positive impacts on state economies, state strategic plans for environmental protection do not. States that adopted a strategic plan of environmental protection actually has less new capital investment. One possible reason strategic environmental protection plan does not produce any efficiency is that the adoption of a plan does not necessarily guarantee strategic management is practiced effectively (Feiock and Stream, 2001).

Discussion

The empirical results find support for elements of both conventional beliefs, which argue the negative impact of environmental programs on the state's economy and revisionist arguments which pointing out the positive impact of environmental program on state economic growth. The most important finding is that stringent state environmental regulation and state government expenditures for total pollution control did not substantially impede economic development. These findings have important implications for the controversy with regard to the trade off between environmental protection and economic development.

Another key finding is the considerable impact of environmental ideology and partisanship on state economic growth. While previous studies examine the party impacts on state economies, environmental values and ideology have been unexamined. This article provided a unique approach to measuring states environmental values though assessing the environmental record of the State's delegation to the U.S. Congress. Using the LCV score this article demonstrates the importance of state

environmental ideology.

This article also advances the debate regarding how the administrative structures of state environmental programs influence state economic development (Feiock and Stream, 2001). A unified, rather than fragmented structure has a positive impact on state economic development, because it minimizes transaction costs for different administrative organizations. Similar logic can be applied to state government as primary authority of environmental programs. The authority of environmental programs that is endowed to state government also improves state economic condition by reducing transaction costs of communications, implementation, and coordination between federal and state governments. Adopting a strategic plan may or may not reduce transaction cost in a similar way. Adoption of a new plan does not guarantee it thus will be binding. Therefore, implementation of environmental programs as well as reforming administrative structures need to be investigated in future research.

Notes

1. Manufacturing firm establishment might be a preferred dependent variable, but annual state level data on manufacturing firm establishments is unavailable. Therefore, New capital investment in manufacture is employed to estimate the model in this article.

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