THE EFFECT OF PARTISAN POLITICS ON THE SUPPLY OF ENVIRONMENTAL REGULATION: THE CASE OF STATE VOLUNTARY DISCLOSURE LAWS

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Abstract

This paper examines the determinants of environmental policy at the state level and the influence of partisan politics on the provision of incentives that reward businesses that voluntarily disclose and correct environmental violations. The findings indicate that state legislatures were primarily influenced by constituent interests and their political composition. There is some evidence that partisan politics at the national level also influenced state legislatures.

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1. Introduction

After the 1994 elections in which the GOP gained control of the houses of Congress, the Republican agenda focused on revising federal regulation, including environmental policies. This paper analyzes the influence of the Republican majority in Congress on the selection of environmental policy at the state level, specifically on the supply of voluntary disclosure laws that reward businesses that voluntarily disclose and correct an environmental offense.

Three hypotheses are considered: (1) state legislatures considered the perceived benefits of providing voluntary disclosure laws and the perceived economic costs of conventional enforcement of environmental regulation; (2) state legislatures responded to businesses' interests and environmental preferences of their constituents; and (3) partisan politics at the national level influenced the decision of state legislators during the period of Republican control in Congress (1995-1998). Random effects probit models are estimated where the dependent variable takes on the value of 1 if the state is providing voluntary disclosure laws and the independent variables control for economic and environmental quality conditions, constituent interests, and political factors.

The results suggest that states did not resort to these incentives because of economic and environmental quality conditions. Rather, the findings indicate that legislatures considered the benefits to regulated sectors as well as voters' preferences for environmental goods. The political composition of the legislature is also found to be a determinant of the legislatures' decision. There is some evidence that partisan politics at the *national* level might have also influenced state legislatures.

Section 2 discusses the policy instrument that is the focus of the paper: voluntary disclosure laws. The hypotheses of interest are presented and the relevant literature is briefly discussed. Section 3 presents the econometric model and considers the determinants in the provision of voluntary disclosure laws. Section 4 presents the results and Section 5 concludes.

2. Voluntary Disclosure Laws

Under Republican control, the 104th and 105th Congresses (1995-1998) used budget cuts and appropriation riders to relax the federal enforcement of environmental regulation (Kraft, 2000). The reduction of resources allocated to environmental agencies promoted a greater emphasis on new approaches to environmental regulation. One class of these new policy instruments was voluntary disclosure laws. In 1995, House and Senate bills were introduced to provide, under Federal law, privilege from disclosure of information acquired through a voluntary environmental audit and immunity from penalties to entities that voluntarily disclosed offenses of environmental standards. Although Congress did not vote on these bills, similar proposals were introduced in 1997 and 2001.

Some state legislatures, however, did enact legislation that provides immunity from enforcement actions and protects the information disclosed by the offenders under privilege provisions. Twenty-one states passed privilege or immunity laws (or both) during the years of Republican majority in Congress. Only five states passed these laws either before 1995 or after 1998 (see Table 1).

Table 1: Voluntary Disclosure Laws

Year	States that enact laws	Cumulative
1993	1	1
1994	3	4
1995	**10**	**14**
1996	**5**	**19**
1997	**4**	**23**
1998	**2**	**25**
1999	0	25
2000	2	27

To the extent that state legislators subscribed to the principles of the Republican agenda rallying behind party lines, the decision to provide voluntary disclosure incentives could have been influenced by the values and priorities that the GOP advanced.

Indeed, opponents view these measures as part of a pro-business deregulatory agenda, with no sound environmental basis, that aims to reduce the size of government and weaken environmental enforcement programs (Coequyt and Wiles, 2000).

On the other hand, some advocates of these laws claim that a different approach to environmental regulation is needed to encourage economic activity because traditional regulatory programs create unemployment and undermine economic growth. It is also claimed that these laws need not threaten existing environmental quality and may even advance the goal of a cleaner environment by promoting the disclosure and remediation of offenses (Weaver, Martineau, and Stagg, 1997).

This paper examines empirically the decision of state legislatures to provide voluntary disclosure incentives. Three hypotheses are considered: (1) state legislatures acted as informed welfare-maximizers that responded to perceived benefits of providing the incentives and the perceived economic costs of conventional enforcement; (2) state legislatures responded to businesses' interests and environmental preferences of their constituents; and (3) partisan politics at the national level influenced the decision of the legislators during the period of Republican control in Congress (1995-1998).

There is a large literature that has examined the factors that determine a legislator's vote on environmental bills in Congress. In their study of coal strip-mining regulation, Kalt and Zupan (1984) control for ideological values by producing residuals of the regression of constituency preferences on political variables. Hird (1993) followed Kalt's and Zupan's methodology to analyze voting on Superfund. After removing the effects of constituency preferences, party affiliation and ratings by interest groups are found to have strong explanatory power in both Hird's and Kalt's and Zupan's articles. This methodology has been criticized. Goff and Grier (1993), for example, argue that both theoretically and empirically this approach is flawed[1].

Rather than analyzing voting on measures that specify the policy instrument, Hamilton (1997) focuses on the explicit choice of policy instruments in Superfund regulation. The results indicate that legislators in Congress considered the distributional impact of alternative instruments on their voters' districts. Constituents' and legislators' ideologies, measured by voters' support for Reagan and the legislators' ratings provided by the League of Conservation Voters, seemed to play a role in the final vote on the bill but not on the choice of instruments.

[1] See also Lott and Davis (1992) and Lott and Bronars (1993) for more evidence of this topic.

The difficulty with variables such as legislators' rankings and political affiliation that intend to proxy ideology is that they may just capture constituency interests (Downs, 1957) rather than the legislators' values.

This paper takes a different approach made possible by panel data. Time dummy variables are used to capture the influence of partisan politics at the national level in a period of strong ideological debate. If there were not major changes in the trend of socio-economic factors that were fundamental to a legislature's decision (other than those accounted for by the variables included in the model), then time indicators variables will capture the impact of the Republican agenda on the provision of voluntary disclosure laws. In addition, panel data make it possible to control for unobserved time-invariant state heterogeneity.

Given the repeated intents to enact these laws at the federal level it is important to examine the legislators' motivations. The efficacy and effectiveness of voluntary disclosure incentives will depend on the intentions of the legislators that design and approve these policies as well as on the efforts of the regulators that apply them.

3 Provision of Voluntary Disclosure Laws

Econometric Model

The (unobservable) perceived net benefits of providing voluntary disclosure incentives in state *i* in year *t*, y_{it}^{*}, are a function of a vector of political factors ***s***, a vector of variables capturing economic conditions and environmental quality ***z***, and socio-demographic characteristics ***x***:

$$y_{it}^{*} = c_i + \lambda_t + x_{it}\beta + z_{it}\gamma + s_{it}\theta + \upsilon_{it},$$

where c denotes unobservable state effects, λ denotes an unobservable individual-invariant component effect and υ is the remaining error term that is assumed to follow a normal distribution.

If the perceived net benefits of having in place either immunity law or privilege law or both are larger than zero, $y^*_{it} > 0$, then a dummy variable y_{it} takes the value of one, and zero otherwise[2]. Therefore,

$$\Pr ob(y_{it} = 1) = \Phi(c_i + \lambda_t + x_{it}\beta + z_{it}\gamma + s_{it}\theta + \upsilon_{it}).$$

Given that the data set is a panel, random effects probit models are estimated. Because of an incidental parameters problem, a fixed effects probit analysis is not feasible. The disadvantage of the random effects specification is the assumption that the covariates and the unobserved effects are independent. If some variables are correlated with unobserved state characteristics, then the coefficients could be inconsistent. To allow for some dependence, it is assumed that c_i depends on the time averages of the covariates (Chamberlain, 1980):

$$c_i = \psi + a_i + \bar{x}_i\xi_x + \bar{z}_i\xi_z + \bar{s}_i\xi_s .$$

Hence, the cumulative density distribution can be written as:

$$\Pr ob(y_{it} = 1) = \Phi(\psi + a_i + \lambda_t + x_{it}\beta + \bar{x}_i\xi_x + z_{it}\gamma + \bar{z}_i\xi_z + s_{it}\theta + \bar{s}_i\xi_s + \upsilon_{it}).$$

This model is referred to as Chamberlain's random effects probit model. Adding time averages implies that the θ, β, and γ coefficients measure the effect of changing the corresponding covariates holding the time average fixed. A test for the independence between state effects and covariates is obtained as a test for H_0: $\xi = 0$ (Wooldridge, 2002).

Explanatory Variables

A time indicator that takes on the value of 1 for the years 1995-1996, and 0 otherwise, and a second time dummy that takes on the value of 1 for the years 1997-1998, and 0 otherwise, are included to capture the influence of the Republican control of Congress during the 104th Congress and 105th Congress, respectively. The coefficients are expected to be positive.

To control for political affiliation, an indicator variable takes on the value of one if the weighted average of seats occupied by Democrats in the state House and Senate is

[2] In the time period covered by the data set, two states, Idaho and Montana, repealed voluntary disclosure laws. In other states, like Minnesota and Colorado, for example, these laws were supposed to be discontinued in 1999 but were extended. Thus, the dependent variable is best described as the decision to offer voluntary disclosure incentives in any given year.

equal to or larger than 50 percent. The balance of power of a legislature may also influence its decision although a priori it is unclear the direction of the effect. In a divided legislature parties may need to compete for votes in order to gain control of the legislature and pass legislation that represents the needs and wants of the voters (Gilligan and Matsusaka, 1995). It is also possible that legislators may not feel compelled to follow the governor's lead and attempt to set their own agenda. In this case, the legislators may pass polices that accentuate partisan differences. An indicator variable takes on the value of one if the state governor and the majority party have different political affiliation.

The unemployment rate is included to describe business conditions. Even in the absence of an actual connection between the level of enforcement of environmental regulations and the rate of unemployment, legislators may react to the perceived effects of stringent enforcement in a way intended to improve the state's welfare[3]. Under the hypothesis that legislatures follow the public interest, states with larger unemployment rates are supposed to be more likely to pass voluntary disclosure laws in order to encourage and promote business activity. Lagged values of the variable are used to avoid endogeneity effects.

Environmental quality variables are needed to test the hypothesis that legislatures respond to public interests. Tons per capita of toxics classified in the Toxic Release Inventory (TRI) released to the air, water, and land are included. The coefficient of this variable could measure either environmental quality or regulatory intensity. To control for regulatory intensity, the number of forms per facility that pollution sources submit to the TRI is also included[4].

Ground-level ozone is the most persistent of air pollution problems.[5] Ozone is a pollutant that is not directly emitted into the air but results from chemical reactions between volatile organic compounds (VOCs) and nitrogen oxides in the presence of sunlight. Because there are many sources of these gases (consumer products, combustion of certain fuels, and chemical solvents, among others), the extent to which ozone

[3] The growth rate of gross state product (GSP) was also included in preliminary specifications but did not have any explanatory power either by itself or when the unemployment rate was included.
[4] Under the Emergency Planning and Community Right-to-Know Act (EPCRA), each regulated facility must submit one form for each chemical subject to reporting that is manufactured or used.
[5] Ozone is a major component of "smog" and has been associated to reduced lung function and other respiratory problems.

problems affect the decision of a legislature is more likely to capture concern for environmental quality than a response to regulatory intensity. The proportion of counties within a state that are designated ozone non-attainment areas is included in the regression. The variable for tons per capita of TRI and percent of non-attainment counties are lagged to avoid endogeneity effects.

Income is assumed to be a key determinant of preferences for environmental goods (Kahn and Matsusaka, 1997). Per capita income is included as a control for environmental preferences.

Supporters and opponents argue that voluntary disclosure laws benefit businesses. Considering that these incentives do address a large array of industries, the proportion of a state's labor force employed in all affected sectors, construction, manufacturing, transportation, and utilities, is included to control for the possible distributional effects of voluntary disclosure laws. The coefficient of this variable is expected to be positive if the incentives are intended to benefit regulated entities.

Additionally, the panel nature of the data allows controlling for unobserved heterogeneity due to state characteristics that are roughly constant over the period in question.

Table 2 present summary statistics of the independent variables for the years 1994-2000.

Sources of data

Unemployment rates and labor force data were obtained form the U.S. Department of Labor, Bureau of Labor Statistics. Data on income per capita were obtained from the U.S. Census Bureau. Data on TRI emissions, forms, and regulated facilities come from the EPA annual Public Data Release files available from the EPA TRI Program Web site. Information on ozone non-attainment areas were obtained from the EPA National Air Quality and Emissions Trends reports.

Data on composition of state legislatures come from the National Conference of State Legislatures. Information on states that provide voluntary disclosure laws was obtained from the EPA.

Table 2: Descriptive Statistics (Number of observations: 350)

VARIABLES (350 OBSERVATIONS)	**MEAN (STANDARD DEVIATION)**	**MAXIMUM**	**MINIMUM**
Dependent Variable			
Voluntary Disclosure Laws	37.71		
Independent Variables			
Unemployment rate	4.57 (1.18)	8.4	2.2
Total TRI releases (tons per capita)	32.63 (96.03)	854.145	.068
Percent ozone non-attainment counties	12.69 (19.25)	100.0	0
TRI forms per facility	3.60 (.96)	7.33	1.88
Percent labor forced employed in affected sectors	24.81 (4.48)	35.30	14.51
Per capita income ($1,000)	24.50 (4.14)	40.70	16.40
Majority is Democrat	44.25		
Divided Legislature	47.75		

4. Results

Table 3 presents results from Chamberlain's random effects probit models in which the dependent variable takes on the value 1 if the state provides privilege provisions, immunity law, or both. The first column includes variables that measure economic and environmental conditions and constituent interests. Political variables and time dummies are added in the second column. In both specifications, a likelihood ratio test rejects at

the 1 percent level or better the null hypothesis that the panel estimator is not statistically different from the pooled estimator. χ^2 statistics reject at the 1 percent significance level the null hypothesis that independent variables are jointly insignificant.

The results are consistent with those of previous studies. Constituent interests and the political composition of the legislature are found to be determinants in the provision of environmental policy. Additionally, there is some evidence that partisan politics at the national level might have also influenced the decision of state legislatures.

Advocates of voluntary disclosure laws usually argue that it is necessary to provide incentives to bolster employment. The results suggest that, on the contrary, states with higher unemployment rates were less likely to provide these laws. The coefficient for the rate of unemployment is negative and significant at the 5 percent level in the first specification and the time average is also negative and statistically significant in the second specification. This negative relationship may be due to the fact that legislatures with higher unemployment rates were more likely to dedicate their efforts to address this problem through more conventional and direct policies than environmental incentives.

States with larger average TRI emissions per capita over the period in question were more likely to provide incentives. The coefficients of the time averages are positive and statistically significant at the conventional levels. If more TRI emissions per capita indicate that the state economy is more dependent on polluting sectors, the finding suggests that legislators considered the benefit to regulated businesses of providing these incentives. The effect of increasing TRI emissions *holding the time average fixed* is not statistically different from zero in the first specification and marginally significant in the second model.

Alternatively, the fact that states with larger average TRI emissions per capita over the period in question were more likely to provide incentives could be interpreted as a sign that legislators viewed disclosure laws as genuine instruments to improve environmental quality. However, states in which there are more counties classified as non-attainment ozone zones over the period considered are less likely to provide incentives. Assuming this variable is capturing concerns for environmental problems, the result suggests that states did not envision these incentives as having a positive effect on

environmental quality. The effect of increasing the percent of non-attainment counties *holding the time average fixed* is also reduction in the probability but the coefficients are not statistically different from zero at any of the conventional significance levels.

The coefficient of TRI forms per facility is positive and statistically significant at the 1 percent significance level. To the extent that this variable measures regulatory intensity, the finding offers further evidence that legislatures considered the benefits to regulated sources of providing voluntary disclosure incentives.

The coefficient estimates of the time average of income per capita are negative and significant at the 1 percent level in the second model. If income is a determinant of increased preferences for environmental goods, it appears that legislatures may have considered their voters' preferences. On the other hand, increasing income per capita holding the time average fixed increases the probability of providing incentives. The coefficients are positive and significant at the 1 percent level. These two results are difficult to interpret. One possible interpretation is that increasingly favorable economic conditions during 1994-1995 created the perception that deregulation was advisable.

Regarding the political factors, the political affiliation of the majority in the legislature is not statistically significant at any of the conventional levels. On the other hand, divided legislatures were more likely to provide voluntary disclosure laws. The coefficient of the dummy variable is statistically significant at the 1 percent level. This effect may have been due to the fact that over 1995-1998 the Republican agenda intended to accentuate partisan differences.

The time dummies are statistically significant at the 1 percent level indicating that during 1995-1998 legislatures were more likely to provide incentives than before and after[6]. These time dummy variables may capture the influence of the Republican victory and subsequent advancements of the GOP agenda. If there are not major changes in cultural or socio-demographic characteristics of the constituency that are fundamental to the legislature's mandate (other than those accounted for variables included in the model) then the time dummy variables indicate that a factor that led legislatures to pass voluntary disclosure laws was partisan politics at the national level.

[6] A χ^2 test cannot reject the null hypothesis that the coefficient estimates of the time dummies are equal. This implies that there is no statistical difference between 1995-96 (the 104th Congress) and 1997-1998 (the 105th Congress).

To estimate the economic significance of the time dummies, the differential effect on the response probability is calculated. First, the standard normal cumulative distribution function is evaluated at the sample averages of the variables that are statistically significant at the 10 percent level or better. Setting the time dummy for 1995-96 equal to 1 and then equal to 0, and taking differences, the coefficients are such that during 1995-96 legislatures were between 79 and 77 percent more likely to provide voluntary disclosure laws[7]. Replicating the procedure for the time dummy for 1997-98, during that period legislatures were between 74 and 59 percent more likely to provide voluntary disclosure laws[8].

Despite their economic significance, political variables and time dummies improve the goodness of fit of the model modestly. The reported measure of goodness of fit is the pseudo R-squared calculated as $1 - L_{ur}/L_o$ where L_{ur} is the log-likelihood of the estimated model and L_o is the log-likelihood for the model with only a constant term (Wooldridge, 2002). In terms of goodness of fit, unemployment rates, measures of environmental quality and regulatory intensity, and income per capita contribute more than the political variables. This result is consistent with previous studies, for example Kahn and Matsusaka (1997).

5. Summary

During the 104th and 105th Congresses (1995-1998) the Republican agenda focused on accentuating partisan differences and advancing basic conservative principles, specially, limited government. The results in this paper suggest that these values may have influenced policymaking at the state level and, in particular, the decision to provide voluntary disclosure laws that are policy instruments generally considered to benefit businesses and to require less government intervention.

[7] State legislatures were almost 77 percent more likely to provide voluntary disclosure incentives when the dummy variable for divided government is 0 and 79 percent more likely when the dummy variable for divided government is 1.

[8] Legislatures were almost 56 percent more likely to provide incentives the dummy variable for divided government is 0 and almost 74 percent when the dummy variable for divided government is 1.

States were more likely to provide voluntary disclosure incentives during the years that Republicans controlled Congress. The magnitude of the time dummies is considerable: legislatures were between 54 and 79 percent more likely to provide voluntary disclosure incentives during 1995-1998 than before or after this period. The political composition of the legislatures was also an important determinant.

The results also suggest that states did not provide voluntary disclosure laws as a response to the economic consequences of environmental regulations or the quality of the environment. Rather, legislatures considered the benefits to regulated sectors of providing incentives as well as voters' preferences for environmental goods.

Although it is possible that the time dummy variables included in the model are capturing the trends of economic or socio-demographic factors not taken into account, the results suggests that besides efficiency and distributional concerns, political factors are very likely to affect the decision to supply policy instruments.

It would be interesting to analyze other instances in which the decisions of legislators and regulators may be influenced by ideological values in periods dominated by strong political and rhetorical debates.

Table 3: Results from Random Effects Probit Model

DEPENDENT VARIABLE = 1 IF STATE PROVIDES VOLUNTARY DISCLOSURE LAW		
	Coefficient (Standard Error)	Coefficient (Standard Error)
Unemployment Rate$_{t-1}$	-.71[b] (.37)	-.06 (.48)
Average Unemployment Rate	-.55 (.43)	-1.55[b] (.63)
Non-attainment zones$_{t-1}$ (%)	-.028 (.020)	-.029 (.020)
Average Non-attainment zones (%)	-.071[a] (.029)	-.12[a] (.048)
Per capita TRI Releases$_{t-1}$	-.003 (.002)	.010[c] (.006)
Average Per capita TRI Releases	.006[b] (.003)	.04[a] (.009)
TRI Forms per Facility	.75[a] (.28)	.79[a] (.31)
Average TRI Forms per Facility	.42[c] (.22)	.78[a] (.31)
Labor Force Affected by Laws (%)	-.04 (.30)	-.20 (.38)
Average Labor Force (%)	.17 (.33)	.17 (.41)
Per Capita Income ($1,000)	.48[a] (.15)	.91[a] (.22)
Average Per Capita Income	-.17 (.14)	-.63[a] (.24)
Majority is Democrat		-.72 (.60)
Divided Legislature		1.15[a] (.46)
1995-1996		2.87[a] (.80)
1997-1998		2.31[a] (.64)
Constant	-9.89[a] (2.95)	-7.61[c] (4.10)
Log Likelihood	-96.24	-85.10
Pseudo- R^2	.35	.43
χ^2 (p-value)	50.31 (<.001)	34.74 (.004)
Observations	350	

[a] Significant at the 1 percent level. [b] Significant at the 5 percent level. [c] Significant at the 10 percent level.

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