ADOPTING COLLABORATIVE MANAGEMENT PROGRAMS

Carl M. Dasse
Department of Political Science
Florida State University

Abstract

The decision of state legislatures to adopt collaborative management programs requires the use of competing theoretical propositions to properly model. Modeling the decision is important because state legislatures are now implementing collaborative management programs, in conjunction with their existing deterrence based programs, to govern the consumption of natural resources. The theories of transaction costs economics, environmental policy and policy innovation are useful for explaining why state legislatures chose to adopt collaborative management strategies. By using an event history analysis, this paper finds that commitment costs, agency costs, internal determinants and state political factors effect whether or not a state will adopt a collaborative management program.

State Adoption of Collaborative Management Programs

During the last decade natural resource management has undergone a fundamental change that has shifted the governance of natural resources away from the traditional deterrence based management strategies (command and control structures and litigation) to the combined management of natural resources by deterrence and compliance based methods (Kenney and Lord, 1999). Compliance based approaches rely upon positive incentives and partnership arrangements (both intergovernmental and public/private) that actively seek local community involvement in the decision-making process about the use of natural resources. Compliance based approaches have two general goals: 1) to integrate existing medium based pollution regulations, and 2) to improve communication among regulators, the regulated, and the general public through collaborative decision-making processes (Wondolleck

and Yaffee, 2001). The compliance based approach includes market based management programs (Freeman, 2001), alternative dispute resolution (Amy, 1987), negotiated rule making, and the community collaborative model (Kenney and Lord, 1999; Wondolleck and Yaffee, 2001). Even though all of the compliance strategies are worthy of discussion, this paper focuses on the decision of state legislatures to adopt the community collaborative model of natural resource management (hence forth collaborative management). Specifically, this paper addresses the following question. Why are state legislatures choosing to adopt collaborative strategies to natural resource management?

State Natural Resource Management

Before explaining why state legislatures are choosing to adopt collaborative management programs, it is important to understand that states are using compliance based methods as a *supplement* to, and not a *replacement* for, their existing deterrence based management practices (Amy, 1987; Kenney, 1998). One reason for this is because compliance based methods allow certain levels of environmental degradation to continue in order to reduce the overall environmental impact of an environmentally detrimental activity (Hockenstein et al., 1997). Another reason is that some researchers believe compliance based methods will return to the market failure conditions that most existing deterrence based institutions were designed to address; this occurs because compliance based programs do not use the same enforcement mechanism as deterrence based programs (Kenney et al., 2000; Kenney, 2000). Further, compliance based practices have incredibly high monitoring costs, which are required to ensure that compliance based programs are faithfully implemented (Hoffman, 1996). In addition, deterrence based strategies provide an avenue of appeal for collaborative decisions that some groups do not support (Barnett et al., 1995). Further, deterrence based strategies are credited with reducing pollution (Vig and Kraft, 2001), and controlling the negative activities of overgrazing, excessive timber harvests, and pollution runoff from hard rock mining on public lands (Cortner and Moote, 1999; Wondolleck and Yaffee, 2001). All of these reasons are important because they suggest that states legislatures may be hesitant to adopt collaborative management programs.

Despite the limitations of compliance based management practices, state legislatures have decided to adopt compliance based programs rather than to expand the use of deterrence based approaches. There are two general reasons why state legislatures have changed their natural resource management practices and have chosen to adopt collaborative management. First, many researchers and the general public believe that there are serious problems with deterrence based methods of natural resource management. Second, fundamental political changes have created an environment less favorable to deterrence based management practices.

Concerns with Deterrence Based Strategies

Deterrence based strategies are often criticized for their inefficiency, substantively narrow focus, and the subordination of the competing interests. Critics of the regulatory system argue that "fiscal and temporal inefficiencies plague its decision-making process, planning process … reliance on administrative rules … and its' host of other procedures" that are characteristic of most deterrence based programs (Kenney, 2000). These objections are about the financial costs of abiding by regulatory programs, which are costs created by the reliance on litigation and punitive fines to enforce management decisions (Kagan, 1999). Additionally, critics point out that deterrence based systems provide massive taxpayer subsidies to the industries profiting from the consumption of publicly owned resources (Anderson, 1992). This inefficiency is based on the fact that extractive industries profit from the consumption of natural resources while receiving government subsidies in the form of extremely low mineral royalties, and the sale of timber and grazing rights at a price far below the true market value of these goods (Cortner and Moote, 1998; Kenney, 1998).

Deterrence based systems are also criticized for having decision-making processes that are highly fragmented, which is caused by narrow agency mandates and the use of litigation to resolve disputes (Kenney, 2000). The decision-making process used by deterrence based systems is criticized for limiting public participation, particularly the participation of local communities of interest that rely on natural resource consumption for their economic livelihood (Lyden, Twight and Tuchmann, 1990). The reliance on litigation to solve disputes fails to properly use scientific information because litigation focuses more on *decision-making means* than *environmental ends* (Rosenbaum, 1995). Finally, deterrence based

systems are lambasted for concentrating on procedural issues, relying on win/lose decision-making processes, and subordinating the concerns of non-technical stakeholders (Amy, 1987). Thus, the first major reason why state legislatures are interested in alternative strategies of natural resource management is because deterrence based methods create regulatory institutions that are costly to support and politically unpopular (Rabe, 1986)

Political Changes

The push by state legislatures to use compliance based management strategies occurred around the same time as two important political changes: 1) the implementation of New Federalism, and 2) major Republican electoral gains in many state government institutions. In the 1980's president Reagan aggressively implemented Richard Nixon's policy of New Federalism, which led to the devolution era of environmental policy. This period is characterized by the transfer of government responsibility for environmental policy from the federal government to state governments (Rabe, 1986; Ringquist, 1993; Lester, 1995). The devolution era increased the importance of state environmental agencies in the protection of the nation's natural resources and human health (Rabe and Zimmerman, 1997). However, the states' ability to handle the transfer of responsibility was influenced by their financial, managerial, and political capacities (Warren, 1982), which meant some states were able to handle the transfer of authority better than others (Warren, 1982; Ringquist, 1993). At the same time, the federal government's financial support for state environmental efforts decreased (Lester, 1995), which meant state governments were forced to do more in the area of environmental protection with less federal financial support (Ringquist, 1993). This encouraged states to find more cost effective methods to protect the environment and management their natural resources.

The historic Republican gains in the U.S. Congress, state legislatures, and gubernatorial offices in the 1994 general election fundamentally altered the political support given to state and federal environmental agencies. The direction of support changed because Republican politicians are generally less supportive of environmental concerns than their Democratic counterparts (Kamieniecki, 1995). This difference has been observed between members of Congress (Ostheimer and Ritt, 1976; Kamieniecki, 1995), state legislators

(Dunlap and Gale, 1974; Lester, 1980; Kamieniecki, 1995) and state executives (Rabe and Zimmerman, 1997). The switch in party control of many state legislatures is important because oversight and budgetary committees have the ability to pressure resource management agencies to change how they manage the environment (Wood and Waterman, 1993; Wood, 1991). The election of Republican governors is particularly important because executives have the ability to appoint agency heads, alter agency budgets, and set administrative priorities (Wood, 1988; Rabe and Zimmerman, 1992, 1997).

Explaining the Decision to Adopt Collaborative Programs

In this paper, the basic question asked is why are state legislatures choosing to adopt collaborative strategies to natural resource management? One way to answer this question is by considering the economic concept of vertical integration. In the private sector, vertical integration is concerned about whether or not a firm should provide a good or service internally or externally. Essentially, firms must decide if it is more beneficial (in terms of economic efficiency) to allocate units of production to a good or service, or to outsource the good or service. Beginning with Coase (1937), the main explanation for private sector vertical integration has been the concept of transaction costs, which are the costs incurred in negotiating, monitoring, and enforcing a transaction or contract. The Coasian framework has been expanded by contemporary scholars of new institutional economics (Williamson, 1975), to view the decision to organize transactions within the firm, which they argue is based on comparing the relative costs of internal versus external provisions, as opposed to relying solely on the open market to determine the costs of provision. What this means is that when the costs of negotiating and enforcing contracts, agreements, or institutional rules by the open market are high, then firms will have an incentive to provide goods or services internally, rather than externally. In other words, a transaction cost is anything that impedes the specification, monitoring or enforcement of an economic transaction (Dixit, 1996).

Coase's framework has been utilized by social scientists to explain institutional and individual decision-making calculi. Oliver Williamson (1975) argues that institutions become vertically

integrated in order to control valuable specific assets that may be forfeited if outside suppliers renege on contractual agreements or re-interpret a contract in a way detrimental to the organization. His idea has been adopted to explain how the characteristics of goods (Ferris and Graddy, 1986; Stein 1990; 1993), the uncertainty created by political systems (Clingermayer and Feiock, 2001), and the effect of the two factors combined (Clingermayer, Feiock, and Dasse, 2002) effect municipal service delivery choice. The theory of transaction costs economics is applicable to the individual decision-making calculus of members of Congress (Horn, 1995; Epstein and O'Halloran, 1999). Researchers in this area argue, "Legislators and their constituents engage in exchange," which provides elected officials with political support, and select benefits to supportive constituents (Horn, 1995). But most importantly members of Congress design institutions of governance to minimize their overall political transaction costs, which increases their chance of reelection by delegating political authority to executive offices (Epstein and O'Halloran, 1999). This explains why public policy is often made in the most politically rather than economically feasible way (Feiock, n.d).

Transaction Cost Explanations

The decision of state legislatures to adopt collaborative management programs also involves exchange between legislators and their constituents. This exchange is affected by the following four transaction costs: agency costs, legislative decision-making costs, uncertainty costs, and commitment costs (Epstein and O'Halloran, 1999). Each of these transaction costs is useful for explaining the decision of state legislatures to adopt collaborative management programs.

Agency Costs

In terms of natural resource management state legislature face two kinds of agency costs: 1) Principal agent problems and 2) Issues caused by the reliance on local government to implement state resource management laws. Principals face political transaction costs caused by adverse selection because of the ex-ante information asymmetry present in the relationship between principals and their agents (Moe, 1980). As principals, state legislatures must elicit information from their agents responsible for implementing

collaborative management programs; their agents are the state's natural resource management agencies and their personnel (Epstein and O'Halloran, 1999). However, the agent is the only actor in the exchange that knows the true information required to address the management issues the legislature is trying to address by the adoption of a collaborative management program. This situation enables state natural resource management agencies to use their knowledge for their own advantage (Moe, 1980). Therefore, the cost of monitoring an agent implementing a newly adopted management strategy is one source of political transaction costs that affect the legislature's decision to adopt a collaborative management program. This suggests that as the number of natural resource management personnel in a state increases, the cost of monitoring these agents will also increase.

Yet, the greater the number of agents implementing a new management program, the more fragmented the responsibility for the program's adoption. Fragmentation may reduce the political transaction costs caused by the principal agent problem because it creates competition among agents to implement a new program in a more efficient manner (Feiock, n.d.). Research suggests that this scenario is possible if the fragmentation occurs between agents that are politically motivated, such as mayor council forms of government (Clingermayer and Feiock, 2001; Feiock and Baer, n.d.). However, council manager forms of government are less likely to be motivated by political incentives because career advancement and economic efficiency are more desirable to non politicians (Stein, 1990; Frant, 1996; Clingermayer and Feiock, 2001; Feiock and Baer, n.d.). With this in mind, it seems unlikely that fragmentation will actually reduce agency costs, and the moral hazard problem (risk of ex-post opportunistic behavior on the part of agents) is probably more likely to affect legislative decision-making (Moe, 1980). Thus, as the number of local governments increase, the political transaction cost of adopting a collaborative program increase.

Decision-Making Costs

The decision to adopt any new state management program requires legislatures to develop enacting legislative coalitions to write and actually pass the legislation in the legislative body (Horn, 1995). The process of writing legislation requires time and energy on the part of legislators to weigh the political benefits and costs of

adopting the legislation. The time and effort required to enact new legislation are legislative decision-making costs, which can be thought of as the "opportunity costs caused by balancing the benefits legislation offers to political supporters to the costs it imposes on political opponents" (Horn, 1995). Legislative decision-making costs are affected by many factors, but three are particularly relevant: the size of a state's legislative delegations, the importance of natural resources to a state's economy, and legislative rules that limit debate.

Legislative opportunity costs are affected by the size of a state legislature's delegations because delegation size impacts the amount of negotiation required to reach a decision. This argument is based on the idea that transaction costs increase as negotiation time required to reach a contractual agreement increase (North, 1990). Thus, with all other factors being equal, the larger a legislature's delegation the greater the legislative decision making costs to adopt collaborative management programs.

However, in democratic institutions based on the concept of majority rule, participants will deliberately create institutional rules to manipulate the agenda in their favor (Riker, 1980, 1982). One type of institutional rule that allows legislators, particularly presiding officers, to control the agenda are rules that limit legislative debate or discussion on some topic. Examples of this type of legislative rule are rules that prevent the legislature from carrying bills over to new sessions, rules that prevent the legislature from calling special sessions, and rules that limit the legislature's ability to determine the subject of special sessions. These rules limit legislative debate because they force legislators to finish bills with in some pre-determined time frame (e.g. the time period of the regular session). Thus, the greater the number of legislative rules limiting debate, the lower the political transaction costs of adopting collaborative management programs.

Legislative decision-making costs increase as the level of conflict among private interests increase (Horn, 1995). This is particularly true in terms of natural resource management policymaking, which often classified as being a highly competitive policy subsystem, (Clarke and McCool, 1985; Knott and Miller, 1987; Bosso, 1991; Klyza and Trombulak, 1994). The conflict in natural resource management subsystems occur because the beliefs about the consumption of natural resources differ greatly among

environmentalists and extractive industry representatives, the subsystems chief rivals (Klyza and Trombulak, 1994). What this means is that legislative decision-making costs to adopt collaborative management programs are greatest in states where the conflict between these two groups is most intense, and this occurs in states where natural resources are most important to the state's economy (Lester, 1995; Vig and Kraft, 2000).

Uncertainty Costs

State legislatures must accept that policies they adopt may not be implemented in a way that they had intended, which means they face uncertainty costs (Horn, 1995). Uncertainty occurs because it is difficult for legislators to predict the benefits and costs on constituents that their new programs will create (Epstein and O'Halloran, 1999). One way legislatures can reduce the uncertainty is to assign responsibility for implementing new programs to the interest that can implement the program at the lowest cost (Horn, 1995). The logic of this argument is that the interest implementing the new policy has the incentive of avoiding the loss caused by the failure to adequately implement the new program (Horn, 1995; Epstein and O'Halloran, 1999). In terms of collaborative management programs, local governments are the interest that can implement the management strategy as least cost. The reason for this assertion is because local governments are often intimately involved in many of the natural resource management issues that collaborative management programs are designed to address (Kenney, 2001). Examples include water allocation rights, storm water run off, access to public lands, and severance tax revenue sharing (Lester, 1984; Vig and Kraft, 2000).

Nevertheless, allowing local governments to implement newly adopted collaborative management programs create uncertainty costs because there is no guarantee that local governments will honor the legislature's policy intentions. This may seem odd because local governments derive their constitutional authority form their state principals (Dillon, 1911), which suggests that local governments must abide by the intentions of their state principals or face reductions in their political authority. Yet, the practice of home rule means that many state and local government power sharing arrangements are governed by legally binding charters that give local government's discretion and flexibility in the implementation of state policies

(Krane et al., 2001). The amount of uncertainty costs caused by home rule varies by state because some states allow home rule charters for no local governments, municipal governments only, or municipal and county governments (Dye, 1994). Uncertainty costs are greatest in states that allow home rule charters for municipalities and county government, and the higher the uncertainty costs the less likely a legislature is to adopt collaborative management programs.

Commitment Costs

The "exchange between legislators and their constituents is typically not simultaneous" (Horn, 1995: p.16). As a result, legislators who form enacting coalition gain immediate political benefits from new legislation, where as the benefits of the new legislation require time to reach the legislators' supporting constituent groups (Horn, 1995). Newly enacted legislation can change the distribution of government benefits, and can create friction among competing constituent groups (Baumgartner and Jones, 1993; Horn, 1995). This in turn can create political pressure to encourage legislatures, the governor, or executive agencies to change newly enacted polices (Lowi, 1979; Baumgartner and Jones, 1993; Kerwin, 1994; Kingdon, 1995). The situation just described illustrates the commitment problem, which is caused by the ability of future legislatures to amend the policy adopted in the present (Horn, 1995; Epstein and O'Halloran, 1999).

It is important to note that legislators are not bound to their actions overtime, and to minimize commitment costs legislatures adopt institutional structures to protect successfully enacted policy preferences from future legislative coalitions (Horn, 1995). One such method for doing this is the committee system which allows legislators involved in past legislative coalitions to prevent future coalitions from amending past decisions (Horn and Shepsle, 1989). The committee system allows this to happen because legislative rules require legislation to pass the committee that governs its substantive area of effect. Legislators are assumed to seek out committees that govern their substantive policy areas of interest, which then allows them to veto legislation that amends legislation they helped to create in the past (Horn and Shepsle, 1989). With this in mind, it seems logical that any institutional feature that affects the membership of committees will also impact legislative uncertainty costs. Additionally, term limits should increase commitment costs because

they increase turnover of committee membership, and the greater the turnover in a legislative chamber, the greater the legislative commitment costs. Thus, states are less likely to adopt collaborative management programs if they have a term limit law or high rates of legislative membership turnover.

Commitment costs are impacted by the institutional rules that determine how committee members and committee chairs are appointed. Legislative rules that allow presiding officers to appoint committee members and committee chairs will decrease the commitment costs of adopting collaborative management programs. The logic here is that members seeking appointments to choice committees (or chairmanships) will actively support their institution's presiding officer in an effort to ensure committee assignments of choice (Fiorina, 1989; Parker, 1996). With this in mind, the likelihood of adopting a collaborative management programs increases if a legislative body gives its presiding officer complete control over committee appointments.

Policy Innovation and Diffusion Explanations

In addition to the transaction cost factors that affect the likelihood of a state legislature adopting collaborative management programs, the policy diffusion literature has identified several factors that impact the adoption of policies. The first of the factors is the existence of near-by states that adopt similar policies (Gray, 1973; Berry and Berry 1990; Hays and Glick, 1997). Research suggests that states learn about new policies from their neighbors, and policy ideas diffuse from state to state (Berry and Berry, 1990; Hays and Glick, 1997). Therefore, the likelihood of a legislature adopting a collaborative management program increases as the number of neighboring states using the management strategy increases.

Research in the area of policy innovation suggests that certain factors seem to influence whether or not a state is more conducive to the adoption of some types of policies versus other categories of policies (Walker, 1969; Hays and Glick, 1997). Part of the reason this occurs is that political actors seek out levels of the agenda that they believe are most conducive to their policy goals (Baumgartner and Jones, 1993; Kingdon, 1995). However, certain categories of states are more conducive to choosing particular kinds of policies because of their internal characteristics (Walker, 1969; Berry and Berry, 1990;

Hays and Glick, 1997). Two factors that seem particularly important for adopting collaborative management programs are educational attainment and per capita income. Environmental policy research suggests that better educated people are more supportive of environmental policy in general (Lester, 1984; Ingram et al., 1995) and more likely to join environmental interest groups (Bosso, 1991; Kamieniecki, 1995). Thus, states with a higher level of educational attainment should be more likely to adopt collaborative management programs. Per capita income is important because states with wealthier citizens tend to capture more tax revenue, which gives state legislatures more money to spend on environmental programs (Ringquist, 1993; Lester, 1995). As a result, wealthier states appear to be more willing to experiment with alternative environmental management strategies (Rabe and Zimmerman, 1992). State legislatures from wealthier states are predicted to be more likely to adopt collaborative management programs than state legislature from less affluent states.

Political Explanations

Two additional variables seem likely to impact whether or not state legislatures will adopt collaborative management programs, and they are urbanization and political control. Most of the natural resource management problems that collaborative management programs are designed to address deal with two types of problems; non-point sources of water pollution and public land use management issues (Cortner and Moote, 1999; Wondolleck and Yaffee, 2000). Both of these issues are of particular concern to communities that rely upon natural resources for their economic well being (Kenney, 2000). Evidence suggests that people living in non urban centers are less supportive of environmental protection than people who live in urban environments (Vig and Kraft, 2000; Kenney, 2000). This finding is not surprising because environmental regulations implemented by natural resource management agencies often have an immediate economic impact on people living in rural areas because rural communities are highly dependent upon the resource consumption activities that environmental regulations limit (Koontz, 1997; Cortner and Moote, 1999; Wondolleck and Yaffee, 2000). Therefore, legislatures from more urban states are expected to be more likely to adopt collaborative management programs than legislatures from less urban states.

The political control of a state's democratic institutions is important because Democratic legislators (Dunlap and Gale, 1974; Lester, 1980; Kamieniecki, 1995) and governors (Rabe and Zimmerman, 1997) are more supportive of environmental protection than their Republican colleagues. This is important because compliance based management programs are viewed as an alternative to deterrence based systems. Yet, they are currently being used in conjunction with, and not actually replacing the deterrence based institutions. Thus, the adoption of collaborative management programs on top of existing deterrence based systems may appear as another layer of the environmental bureaucracy that Republicans oppose (Kamieniecki, 1995). What this means is that the more governing institutions in a state that are under the control of Democratic politicians, the more likely a state's legislature will adopt collaborative programs.

Methodology and Measurement

An event history analysis is used to examine the factors affecting the legislature's decision to adopt collaborative management programs. Event history analysis has been shown to be particularly useful for examining policy innovations because it "can assess the effects on the probability of adoption on characteristics of states that vary substantively from year to year" (Berry and Berry, 1990: p. 399). Event history analysis has the added advantage of being able to analyze dependent variables that are right censored (Allison, 1984; Yamacguchi, 1991), which is a particular problem for this analysis because only twenty-two states adopted collaborative management programs during the time period of analysis. When using event history analysis it is important to "have a theoretically sound reason for hypothesizing when a social process for an observation can begin," that is when does time start (Box-Steffensmeier and Jones, 1997: p. 1421). The natural starting point for studying the adoption of collaborative management programs is the election of President Ronald Reagan because of his push to implement the policy of New Federalism (Rabe, 1986; Ringquist, 1993; Lester, 1995). Therefore, the time frame being analyzed is the years of 1988 to 2001, which ends up being a statistically beneficial period because the first legislature to adopt a collaborative program does so in 1982 (i.e. the state of Maine). What this means is that the data are not left censored, and as such avoid the problems of incorrectly estimated duration effects and bias (Allison, 1984; Yamacguchi, 1991).

A discrete-time formulation event history model is specified because changes occur at only discrete periods of time. Technically speaking, a state legislature can adopt a collaborative management program any time during their session, which implies a continuous time process rather than a discrete time process because some states legislatures meet year around. This suggests that a continuous-time formulation event history model should be used instead of a discrete-time model (Allison, 1984). However, there are two reasons why a discrete-time formulation event history model is appropriate for analyzing the adoption of collaborative management programs. First, in the analyses of state policy adoptions the key issue is not knowing exactly when an event occurred, but rather when adoption occurs in relationship to other states (Box-Steffensmeier and Jones, 1997). Second, the adoption of collaborative management programs is only measurable at discrete time periods (e.g. yearly), which increases the chance that two or more states will adopt the management program at the same time (i.e., ties). Discrete-time formulation models are much more capable of analyzing "ties" than continuous time models (Yamacguchi, 1991).

Measurement of Factors

The dependent variable is an indicator of whether or not a state legislature has adopted an agency wide collaborative management program during each year of the time frame being analyzed. Each state is coded "0" in years to denote that it has not adopted the management practice, and coded "1" in years to show that the state has adopted the program. A value of "0" means that the state is still at risk for adoption, and a value of "1" means the state is no longer at risk (Allison, 1984; Yamacguchi, 1991). The data for determining a state's risk for adoption (i.e., the year a state legislature adopts a collaborative management program) was gathered by the author from each state's website. For each state the author searched all natural resource management, environmental protection, conservation, and agriculture agency web sites for collaborative management programs.

A program is considered to be a collaborative strategy if it matched the description of how existing research describes collaborative management programs. Research suggests that the

following compliance based strategies are collaborative management programs because they attempt to increase stakeholder participation, use cooperative decision-making methods, and base management decisions on geographically rather politically relevant boundaries. The following management practices are classified as collaborative management programs: watershed initiatives (Kenney et al., 2000), ecosystem management (Hartig and Zarull, 1999; Yaffee et al., 1996) and forestry partnerships (Wondolleck and Yaffee, 2001).

The Statistical Abstracts of the United States, is used to create the following variables: the number of local governments, the metropolitan population, and educational attainment. The number of local governments is a count of the total number of municipal and county governments in each state by year. The metropolitan population is the percent of each state's population living within the 253 Major Statistical Areas during each year. Educational attainment is measured as the percent of a state's population over the age of twenty-five that has attended four years of high school. The education attainment variable is measured by year, but does not vary between the years of 1982-1986, and 1992-1996 because the *United States Census Bureau* did not conduct post census surveys to update the information.

The Book of the States is used to measure the following variables over time by session (e.g. every two years): the number of natural resource management employees, the number of seats in each chamber, legislative rules limiting debate, term limit laws, chamber turnover, presiding officer control, per capita income and Democratic control. The number of natural resource management employees is a count of the full time equivalent personnel working in a state's natural resource management agencies each year. The number of seats in each chamber is a count of the number of seats in each chamber by year. The legislative rules limiting debate variable is a count of the number of the rules that limit legislative debate by session, the variable ranges from "0," most rules limiting debate, to "4," no rules limiting debate. The following rules are counted to create the variable: limits on regular session time, the legislature can call special sessions, the legislature can determine the subject of special sessions, and bills can be carried over to future sessions. The term limits variable is coded "1" in the year of and years after the adoption of a term limit law, and it is coded "0" for any year that a state does not have a term limit law. Chamber turnover is the

percent of new members in each chamber by session. The presiding officer control variable ranges from "0," meaning no control over committee appointments, to "2," implying strong control over committee appointments. The variable is created by counting the following institutional rules for each chamber: 1) the presiding officer can exclusively appoint committee members, and 2) the presiding officer can exclusively appoint committee chairs. State per capita income is the yearly per capita income for each state by year. Finally, Democratic control is a count of the number of elected offices (i.e., each legislative chamber and the governor's office) under the control of the Democrats. The variable ranges from "0," no institutions under Democratic control, to "3," meaning all three institutions are controlled by Democrats.

The neighboring state adopter variable is a count of the number neighboring states that have adopted collaborative management programs. The listing of neighboring states was taken directly from Berry and Berry (1990). The measure of home rule is a count of state home rule provisions in 1990. The variable is actually constant across the time period because not state changed its home rule provisions during the time frame (Feiock and Carr, 2001; Krane et al., 2001). It is coded "0," meaning a state has no home rule provisions, "1," implying a state has a municipal home rule provision, and "2," which means a state has a municipal and a county home rule provision. The measure of the importance of natural resources to a state's economy is based upon a subset of the *Green Index*, which was created in 1991 (Hall and Kerr, 1991). A subset of the index is used because the *Green Index* includes 256 different measures, which is why it is widely criticized as being unreliable (Lester, 1995; John, 1994). The subset of the *Green Index* used to measure a state's commitment to natural resource management consists of the states' composite scores on two of the natural resource management indicators: the forestry and fisheries index, and the fun and quality of life assessment (Hall and Kerr, 1991). As a result, the variable ranges from "0," meaning natural resources are unimportant, to "98," implying natural resources are extremely important to a state's economy.

Results

To estimate the parameters of the discrete-time event history model a logistic regression is used. The results in Table 1 show that

the overall model is statistically significant (chi square = 341.92). This suggests that the combination of variables offered by the theories of transactions cost economics, policy innovation, and the environmental policy literature are useful for modeling the legislative decision to adopt collaborative management programs. Additionally, covariates based on each of the three theories are statistically significant, which adds further evidence that the three theoretical approaches are useful for examining the adoption of collaborative management programs.

Table 1
State Adoption of Collaborative Management Programs

	Coefficient	Z-Score
Transaction Cost – Agency		
Number Natural Resource Employees	-0.009 (0.006)	-1.44
Number of Local Governments	-0.002** (4.64 E4)	-4.415
Transaction Cost – Decision-Making		
Importance of Natural Resource to Economy	6.46 E5 (4.74 E5)	1.36
Upper Chamber Seats	0.022 (0.012)	1.77
Lower Chamber Seats	0.015** (0.001)	7.87
Legislative Rules Limiting Debate	0.649* (0.128)	4.824
Transaction Cost - Uncertainty		
State Allows Home Rule	0.496 (0.283)	1.75
Transaction Cost - Commitment		
Term Limits	0.389 (0.277)	1.40
Upper Chamber Turnover	0.002 (0.012)	0.52
Lower Chamber Turnover	-0.031* (0.013)	-2.29
Presiding Officer Control Upper Chamber	-0.021 (0.156)	-0.14
Presiding Office Control Lower Chamber	-0.117 (0.201)	-0.583

Policy Innovation		
Per Capita Income	1.24 E4* (3.15 E5)	3.95
Educational Attainment	0.073** (0.029)	2.50
Neighboring Adopters	-0.270* (0.119)	-2.25
Political Explanations		
Metropolitan Population	0.016* (0.008)	1.94
Democratic Controlled Institutions	0.464** (0.129)	3.58
Constant	-15.31** (2.53)	-6.04
Log Likelihood Function	-292.11	
Chi-Squared	341.92	

* significant at 0.05 level with a two tailed test
** significant at 0.01 level with a two tailed test
[a] Numbers in parentheses are standard errors.

As lower chamber turnover increases, the chance of adopting collaborative management programs decreases. This suggests that commitment costs effect the ability of state legislatures to adopt collaborative management programs because legislative turnover reduces the security that enacted policy preferences will be protected over time (Horn, 1995). State legislatures are less likely to adopt collaborative management programs as the number of local governments increase, which shows that agency costs matter. Specifically, the moral hazard problem appears to effect a legislature's decision to adopt a collaborative management program (Moe, 1980). Unfortunately, two of the transaction costs hypotheses are statistically significant, but perform opposite of the way that they are predicted. As the number of seats in the lower chamber increases, so does the likelihood of adopting collaborative management programs. Also, as the number of rules limiting debate decreases, the likelihood of adopting a collaborative management program increases. This finding may simply suggest that fewer limitations on legislative discussion give legislators more time to

build enacting coalitions, but this is opposite of the decision-making cost argument.

Both of the political explanations are significant. Urbanization appears to affect whether or not states adopt collaborative management programs, which is not surprising because people from rural communities are less supportive of environmental policy than people living in urban areas (Vig and Kraft, 2000; Kenney, 2000). The control of political institutions by Democrats also impacts the likelihood of a state adopting a collaborative management program. Once again suggesting that Democratic politicians are more supportive of environmental policy than their Republican peers (Dunlap and Gale, 1974; Lester, 1980; Kamieniecki, 1995; Rabe and Zimmerman, 1997). This may also explain why states are adopting collaborative management programs in conjunction with, rather than as replacement for deterrence based system. In other words, Democrats who are more supportive of environmental protection are also more favorable towards the adoption of collaborative strategies because adopting compliance based systems may protect deterrence based strategies from direct attacks that are coming from their Republicans counterparts who have gained political power since the election of 1994.

All three of the policy innovation factors affect the ability of state legislatures to adopt collaborative management programs. States that have a higher per capita level of income are more likely to adopt collaborative management programs; this implies wealthier states have a greater ability to innovate their natural resource management programs (Rabe and Zimmerman 1992). As a state's level of educational attainment increases, so does its' legislatures likelihood of adopting a collaborative management program. This reinforces existing research that suggests better educated people are more supportive of environmental policy in general (Lester, 1980; Ingram et al., 1993). Finally, as the number of neighboring states adopting collaborative management programs increase, the likelihood of adoption decreases. This is opposite of the predicted relationship, and suggests that states are adopting collaborative management programs for internal political reasons (Walker, 1969), rather than by the diffusion of policy ideas from near by states (Gray, 1973; Berry and Berry 1990).

Logit coefficients can be interpreted as how much the log

hazard (i.e. risk of adoption) of adopting collaborative management programs increase or decrease over time (Box-Steffensmeier and Jones, 1997). For example, the log hazard of adopting collaborative management increases (0.464) for each government institution controlled by Democrats. However, the substantive interpretation of this finding is difficult to understand. Thus, one way to ease the interpretation of logistic regression coefficients is to use odds ratios (Yamaguchi, 1991), and the odds ratio is the antilog of the coefficient (Box-Steffensmeier and Jones, 1997). Odds ratios greater than one imply that as a covariate's value increase, the hazard rate (chance of adopting) of adoption increases, and ratios less than one imply that the likelihood of adopting decreases as the covariates value increases (Box-Steffensmeier and Jones, 1997). To further ease interpretation, the odds ratios in Table 2 have been multiplied by 100, which reveals the percentage change in the hazard rate for adopting collaborative management programs (Yamaguchi, 1991).

Table 2
Change In Hazard Rate for Selected Covariates

	The Changes In Odds Ratio
Transaction Cost – Agency	
Number of Local Governments	- 0.19 %
Transaction Cost – Decision-Making	
Lower Chamber Seats	1.54
Legislative Rules Limiting Debate	85.81 %
Transaction Cost - Commitment	
Lower Chamber Turnover	- 3.13 %
Policy Innovation	
Per Capita Income	0.01%
Educational Attainment	7.66 %
Neighboring Adopters	- 23.66 %
Political Explanations	
Metropolitan Population	1.66 %
Democratic Controlled Institutions	59.18 %

State legislatures are 1.6 percent more likely to adopt collaborative management programs in more urbanized states. Further, for each percentage increase in lower chamber turnover, the

hazard rate for adoptions decreases by 3.13 percent. Additionally, for each additional local government, a state's chance of adopting collaborative management programs decreases by 0.2 percent. The control of one state government institution by Democrats increases the hazard rate for adoption by 59.18 percent. Finally, each percentage point increase in educational attainment increased the likelihood of adoption by 7.66 percent.

Conclusions

Modeling the decision of state legislatures to adopt collaborative management programs requires using the theory of political transaction costs (Horn, 1995) because commitment and agency costs impact the legislative decision-making process. The effect of agency costs is particularly important because most national environmental policies are implemented by state governments, who in turn pass their responsibilities on to localities (Lester, 1993; Ringquist, 1993; Vig and Kraft, 2000). If state governments are less likely to adopt collaborative management programs as the number of localities increases, as this paper suggests, then state lawmakers are probably concerned about the moral hazard problem (Moe, 1980). A concern that becomes even more troubling when one realizes that the national and state political climate is changing in the direction of supporting less proactive environmental laws (Dunlap and Gale, 1974; Lester, 1980; Kamieniecki, 1995).

The insight gained from the study of policy innovation is particularly useful for modeling the decision of state legislatures to adopt collaborative management programs. As the per capita income level increases and the level of educational attainment increases, so does the hazard rate of adopting collaborative programs. The per capita income finding is troubling because wealthier states are more likely to adopt collaborative management programs, but these states are often the most industrialized states that have economies built around industries that do not rely on resource exploitation (Clarke and McCool, 1985; Knott and Miller, 1987; Bosso, 1991; Ringquist, 1993; Klyza and Trombulak, 1994; Lester 1995). This implies that the states in most need of more proactive natural resource management programs are the states least likely to adopt collaborative management programs.

Finally, the traditional political explanations from

environmental policy researchers work well for predicting the hazard rate of adoption. States that are more urbanized are more likely to adopt collaborative management programs, and states with more government institutions under the control of Democrats are also more likely to adopt. An interesting hypothesis for future research is to determine if Democrats are more supportive of the adoption of collaborative programs because they see compliance based systems a way to protect deterrence based strategies from Republicans political gains.

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Biographical Sketch

Carl Dasse (cmd1749@garnet.acns.fsu.edu) is a doctoral candidate in Political Science at Florida State University.