State Agency Discretion in a Delegated Federal Program: Evidence from Drinking Water Investment

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This article examines the use of discretion by state agencies in the context of multilevel policy. Research on agency discretion assumes that discretion represents a departure from legislative intent. However, Congress may delegate authority to promote policy innovation. Using data on investment in drinking water infrastructure from 2000 to 2008, we examine the relationship between agency discretion and functional expertise in implementing the Drinking Water State Revolving Fund program. We focus on two areas where states can exercise discretion: (i) projects not related to compliance with federal law and (ii) support to small water systems. Our results indicate that agency expertise influences investment, but problem severity reduces differences across agencies. Initial choices over agency design affect how states adapt federal programs to meet state needs.

Fragmentation and multilevel governance remain enduring characteristics in American government. Across a range of policy areas, devolution of authority has created networked governance where different levels of government and multiple agencies share responsibility for policy implementation (Agranoff 2007; Agranoff and McGuire 2003; Mullin and Daley 2010; Gerber and Teske 2000; Meyers, Riccucci, and Lurie 2001; O’Toole 1996; Potoski 2001; Scholz and Wei 1986; Whitford 2007; Woods 2006; Woods and Potoski 2010). Typically, Congress and the federal bureaucracy set broad policy goals and delegate authority to state governments to achieve those goals. States then develop rules that transfer significant responsibility for implementation to bureaucratic agencies.

State agencies play a critical role in the execution of federal public policy, but our understanding of their behavior remains underdeveloped. Part of the problem lies in the literature’s inconsistent treatment of state agency discretion in the context of multilevel governance. On the one hand, scholars of fiscal federalism treat devolution as an opportunity for states to craft policies that better match the nature of their problems and the preferences of state populations (Oates 1972).
Devolution can be a mechanism to enhance the efficient provision of public goods, particularly when faced with a diverse citizenry (Kincaid 1998; Whitaker and Time 2001). It also promotes policy experimentation, which can have benefits for the entire federal system (Bednar 2011). On the other hand, theoretical work on agency discretion and empirical research on state bureaucratic decision making typically depicts the exercise of discretion as a departure from legislative intent and, therefore, a lapse in democratic representation with unelected civil servants wielding considerable authority. Factors that contribute to variable outcomes, such as information asymmetry based on agency expertise, are represented as forces countering federal control, rather than conditions that ought to influence implementation of a devolved federal policy (Gailmard and Patty 2007, 2012; Huber and McCarty 2004).

In this article, we examine the use of discretion by agencies with different types of functional expertise in the context of a multilevel policy designed to promote state flexibility and responsiveness to state-level problems. Our analysis capitalizes on differences across institutional environments as well as problem conditions to better understand what factors promote or inhibit agency discretion. In the 1996 amendments to the Safe Drinking Water Act (SDWA), Congress established the Drinking Water State Revolving Fund (DWSRF) program to promote capital investment in drinking water. Modeled after the Clean Water State Revolving Fund (SRF) established nine years earlier, the DWSRF creates a system of shared responsibility for water infrastructure investment. Under the DWSRF program, the Environmental Protection Agency (EPA) awards capitalization grants to states, which use these funds to provide low- or no-interest loans to local communities to invest in drinking water infrastructure. Repayment by loan recipients ensures the long-term integrity of the funds, allowing future investment in other communities. Since 1997, DWSRF programs have provided more than $16.2 billion in low interest loans to maintain, improve, and protect the nation’s drinking water infrastructure (U.S. EPA 2010). Although the EPA retains authority to set and enforce drinking water standards, it is up to local actors to design infrastructure improvements that comply with federal law, and state officials are responsible for prioritizing among deserving projects.

This type of decentralization can foster innovation and experimentation by enabling states to design DWSRF programs that meet local needs. However, resource and information constraints might prevent state agencies from fully taking advantage of the discretion available to them. The DWSRF program offers a unique opportunity to systematically examine the interplay between institutional expertise and agency discretion. There is considerable variation in the functional focus of agencies administering DWSRF programs, with implementation responsibility falling under the authority of an environmental, public health, or financial agency, or some combination of the three.
Previous research indicates that institutional structure and administrative procedures can influence agency decision making and output (Brehm and Gates 1997; Gerber and Gibson 2009; Hammond and Thomas 1989; Moe 1989; Morris 1997; Potoski 2002; Whitford 2002). We expect that an agency’s functional focus, meaning an environmental, public health or financial focus in agency staffing and mission, influences how state bureaucrats capitalize on the discretion available to them in a multilevel program intended to promote state flexibility. Using data on patterns of drinking water infrastructure investment from 2000 through 2008, we analyze how these institutional differences influence responsiveness to problem conditions in a state. We focus on two areas where states have considerable opportunity to tailor water infrastructure investments: (i) projects not directly related to compliance with federal law and (ii) support to small water systems that face significant challenges in providing safe drinking water. We find evidence indicating that an agency’s functional focus influences investment patterns, but problem severity reduces differences across agency types.

**Federalism and State Decision Making**

Much of the literature on agency discretion assumes that discretion represents a departure from program designers’ intent. For some scholars, conflict between political principals and bureaucratic agents is intrinsic to the concept of discretion; Calvert, McCubbins, and Weingast (1989) define discretion as “the departure of agency decisions from the positions agreed upon by the executive and legislature at the time of delegation and appointment” (589). A large literature on political control of the bureaucracy examines the tools that elected officials use to increase their leverage over agency behavior (Hammond and Knott 1996; McCubbins, Noll, and Weingast 1987; Moe 1989, 1990; Whitford 2005; Wood 1990; Wood and Waterman 1991, 1994). Other scholars who focus on the role of street-level bureaucrats in delivering public services similarly treat bureaucrats’ use of discretion in applying rules to particular cases as shifting policy outcomes away from those defined in law (Jones et al. 1978; Lipsky 1980; Maynard-Moody and Musheno 2003).

If delegation necessarily involves agency drift, the problem should be particularly acute for complex, multilevel programs (Pressman and Wildavsky 1973). Indeed, empirical studies of state implementation of federal policies reveal considerable variation in state-level outcomes (Atlas 2007; Barrilleaux and Miller 1988; Gerber and Teske 2000; Konisky 2007, 2009; Konisky and Woods 2010; Sigman 2003; Potoski 2001; Whitford 2007). In some policy contexts, however, exercising political control over state bureaucracies may not be the primary goal of federal policy makers. Devolution instead can be an intentional effort to encourage innovation and responsiveness to state problems and needs.
For example, in creating the Temporary Aid to Needy Families (TANF) program, the federal government allowed states to set welfare eligibility requirements and benefit levels with the explicit intent to foster states’ creativity in designing effective welfare systems. Studies of TANF programs reveal important interstate differences in implementation, but unlike the case with the DWSRF program, these differences are the product of political negotiations in state legislative and executive branches (Soss et al. 2001; Fellowes and Rowe 2004). The TANF experience demonstrates that state lawmakers will respond to a variety of factors including political and economic conditions, demographics, problem severity, and the policies of neighboring states when they pass legislation to implement federal law, just as they do when enacting laws autonomously (Berry and Berry 1999; Boushey and Luedtke 2011; Daley and Garand 2005; Gerber and Teske 2000; Moreland-Russell et al. 2013; Ringquist 1993; 1994; Shipan and Volden 2006, 2008; Volden 2006). We know less about how state agencies use discretion that may be granted under federal law.

Our research focuses on multilevel policies where the federal government seeks to promote state flexibility. States implementing these policies have some discretion to design programs to meet state needs and political demands, but they are far more constrained than in the settings for most state policy adoption research. The multilevel context not only limits the autonomy of state decision makers, but it also complicates questions about political control of the bureaucracy by creating two sets of principals delegating authority to state agencies. State agencies receiving competing signals from federal and state political actors might seek to minimize conflict by hewing closely to federal standards and other states’ policies. Another factor that may reduce variation in state policies are the information demands associated with state-level policy making. State bureaucrats might not have the time, expertise, or data necessary to craft policies that address specific state needs, and therefore rely instead on professional norms and agency expertise in making implementation decisions.

We look specifically at the relationship between agency expertise and the exercise of discretion, and examine how expertise interacts with state-level problem conditions. An agency’s functional focus may help agencies navigate the two challenges to exercising discretion outlined above. Bureaucrats facing competing signals from multiple principals have an incentive to acquire further policy expertise (Gailmard and Patty 2007). They will then utilize this expertise to overcome information constraints in decision making. Implementation research points to the critical role of organizational characteristics, including agency mission, culture, and professionalism in predicting agency behavior (Bardach 1998; Brehm and Gates 1997; Downs 1964; Kaufman 2006; Soss, Fording, and Schram 2011; Thomas 2003; Wilson 1989; Whitford 2010). If reliance on mission and professional norms is a mechanism that agencies use to navigate complex decision
making, we should expect agencies with different functional responsibilities, such as environmental protection or financial management, to focus on different aspects of drinking water infrastructure investment.

**State Discretion in Prioritizing Water Infrastructure Spending**

Congress created the DWSRF program to assist community water systems in meeting rising federal standards for drinking water protection. By design, the DWSRF program is meant to give state and local governments considerable latitude in managing investments in water infrastructure. However, federal DWSRF policy creates incentive for state agencies to pursue multiple, competing goals: to foster innovative environmental investment and to maintain the fiscal integrity of the loan funds. Implementing agents are responsible to political principals at both the state and federal levels, but they may lack essential data about drinking water problems and needs. In this complex policy environment, the functional focus of an agency is likely to direct attention to some problems and issues over others, and bureaucrats will rely on their expertise and preferences in directing drinking water investment (Brehm and Gates 1997; Moe 1990; Watkins-Hayes 2011; Wilson 1989; Whitford 2008). For example, DWSRF agency staff may have different levels of knowledge about issues such as ecosystem health and source water protection, the integration of drinking water with stormwater and wastewater management, or loan portfolio analysis and cash flow modeling.

Drinking water protection is a goal clearly shared by environmental and public health professionals. However, the longstanding organizational separation between environmental and public health professionals has resulted in disengagement between the fields and little mutual understanding (Gordon 1995; Kotchian 1997). Previous work has reported that public health professionals have a tendency to ignore environmental data and that pressures from interest groups and the political environment contribute to environmental agencies focusing on their regulatory responsibilities over their role in public health protection (Black 2000; Kotchian 1997). Financial agencies bring an entirely different set of tools to program management. These agencies are staffed with individuals who have been trained to promote fiscal responsibility and understand financial risk. The organizational culture and expertise of staff working in financial agencies lends itself more to the fund management aspects of DWSRF implementation than to the policy’s substantive goals.

Substantial differences in agency mission and staff expertise exist between the three types of agencies involved in DWSRF decision making. Past research highlights the critical nature of organizational factors in shaping agency discretion (Brehm and Gates 1997; Soss, Fording, and Schram 2011; Wilson 1989). Even when public health and environmental agencies diversify by hiring financial professionals...
as agency staff, these financial experts are likely to be profoundly influenced by established organizational norms (Soss, Fording, and Schram 2011; Watkins-Hayes 2011) and they face considerable hurdles in changing agency culture (Bardach 1998; Kaufman 2006; Wilson 1989). Our research examines the relationship between agency focus and outcomes for a program operated by different agency types.

In many states DWSRF programs are operated jointly by more than one agency. Thirty-nine states have relied upon environmental agencies to manage the revolving funds alongside other environmental programs. In twenty-two states, health agencies have provided substantive policy leadership for the state funds, typically in place of the environmental agency or occasionally in cooperation. In thirty-one states, some type of financial agency has played a role in DWSRF decision making. While these implementation arrangements are complex, they allow us to examine how agency expertise influences investment decisions, and we expect the functional focus of agencies to influence the allocation of funds even in cases of shared agency authority.

Analyzing the relationship between the functional focus of an agency tasked with implementation and programmatic outcomes begs the question of whether the choice of an implementing agency is exogenous to the outcome of interest. We find no evidence that states designate lead substantive agencies for the DWSRF program in order to pursue a certain type of outcome. Delegation to the substantive agency is dictated by primacy, or the agency that has primary enforcement responsibility over public water systems in the state. In every state where either an environmental or public health agency has at least partial responsibility for the revolving fund, program management corresponds to the agency (or to at least one of the agencies, in states where primacy is shared) for SDWA implementation. In the majority of states, designation of SDWA enforcement authority was granted prior to 1980, nearly two decades prior to establishment of the DWSRF program (U.S. EPA 1994). Moreover, recent work by Sinclair and Whitford (2012) suggests that organizational structure, at least with respect to state environmental and health agencies, may be better explained by historical factors than contemporary political conditions.

Endogeneity is a bigger concern for finance agency involvement in DWSRF implementation. In most cases, states delegate fund management to a financial agency if the agency already manages the Clean Water SRF or some other infrastructure financing program. Of the thirty-one states where finance agencies have had at least partial responsibility over the DWSRF program, in all but three states the agency already had established a role with the state’s Clean Water fund. Financial agency involvement also might be an indication that the state intends to issue leveraging bonds: finance agencies play a role in program management in seventeen of the twenty-one (81 percent) leveraged states but in only thirty-one states overall (62 percent). In general, the evidence suggests that assignment of
DWSRF program responsibility to one or more agencies is largely a function of historical responsibilities over water policy and choices about whether to leverage federal funds. Case studies of SRF programs in three Southern states (Morris 2010) indicate that interagency competition and administrative capacity also contributed to state decisions about the location of program authority. Because the factors contributing to agency assignment are complex and may be state-specific, we have some confidence that the relationships we observe between an agency’s functional expertise and loan allocation decisions are not spurious. Without strict exogeneity in agency assignment, we cannot assert causal relationships, yet our results reveal important patterns in how problem conditions shape the relationship between an agency’s functional authority and decision outcomes.

Hypotheses, Models, and Data

We focus on two areas of spending in which states have some discretion: assistance for projects not related to compliance with federal water quality law and assistance for small water systems. In the EPA DWSRF spending data we use, states report the amount of loan assistance they provide that helps currently noncompliant systems meet compliance, the amount that helps compliant systems maintain compliance, the amount that aids compliant systems to meet anticipated future standards, and the amount not related to compliance. It is among the latter projects where state agencies exercise discretion to provide assistance based on their own criteria, including factors related to infrastructure improvement, affordability, the applicant’s financial health, population served, and green projects. Our review of the formulas states use to prioritize among projects reveals that the most influential of these criteria is infrastructure improvement; these projects often take a broader approach to water infrastructure development, aiming to advance green infrastructure, promote watershed management and source water protection, improve flow, or minimize service disruptions rather than address some particular contaminant.

Given their expertise, environmental agencies should be most supportive of this broad view of infrastructure development and therefore to dedicate a greater portion of loan funds to projects not directly related to compliance [H1]. Professionals in these agencies have more background in the relationship between water supply and ecosystem health. However, we expect that the severity of water quality challenges within a state will moderate this response. High rates of water quality violations will focus the attention of environmental agencies on compliance goals, minimizing the influence of agency functional focus [H2].

The second area of spending we examine is assistance for small water systems. Providing support for public water systems serving 10,000 or fewer people is an important priority for the U.S. EPA. The 1996 SDWA Amendments placed
emphasis on improving the technical, managerial, and financial capacity of small systems and created several mechanisms for helping small systems comply with drinking water regulations, including an optional set-aside fund that states may establish within their DWSRFs. DWSRF officials can exercise discretion and invest in small water systems. However, small systems entail substantial financial risk; most small water systems have no credit history and remain vulnerable to local economic conditions (Copeland 2010). States face competing pressures to design DWSRF programs that both respond to their particular water quality challenges and at the same time emphasize the fiscal health of applicant communities to ensure the long-term integrity of the fund. The SRF approach creates a powerful incentive for fiscal discipline. Enacting legislation for the state loan programs envisioned that they would operate without ongoing federal support after initial appropriations to capitalize the funds. The potential consequences for taking on financial risk are substantial: without sound management of its loan programs, a state may drain its funds and prevent its localities from accessing financial assistance for infrastructure projects for the long term.

We hypothesize that DWSRF programs located in financial agencies will emphasize the long-term fiscal integrity of loan funds, and therefore be more cautious in assisting small water systems [H3]. As with noncompliance spending, however, we expect that problem factors, such as the number of small systems within a state, will outweigh the influence of agency type. Therefore the relationship between institutional design and outcomes will be smaller in states that are more reliant on small water systems [H4]. Furthermore, given their expertise and training in financial management, we predict that financial agencies will be more responsive than other management structures to the financial health of the fund in deciding whether to award loans to small systems [H5].

Models and Data

Data on revolving fund spending patterns come from the DWSRF National Information Management Systems (DWNIMS), compiled by the EPA for accountability purposes. Our panel begins in 2000, by which time all states had begun providing DWSRF loan assistance, and runs through 2008. We merged the DWNIMS data with data from a variety of secondary sources to estimate the influence of political and problem factors on state discretion in the implementation of a multilevel policy program, and to assess how agency expertise conditions responsiveness to problem conditions.

Our dependent variables are percentages of total loan funds awarded. Spending on noncompliance-related projects is a percentage of spending across all compliance categories (loans that help currently noncompliant systems meet compliance, loans that help compliant systems maintain compliance, loans that aids
compliant systems to meet anticipated future standards, and loans not related to compliance), and assistance for small systems is the percentage of spending dedicated to systems serving 10,000 or fewer people. We estimate expenditures using Tobit, with censoring at 0 and 100. The premise of the Tobit model is that a latent dependent variable is equal to the observed dependent variable within some range, but censoring creates inequality between the latent and observed values outside of that range. It is an appropriate estimation strategy for percentages that are only observed between 0 and 100.

Coding of agency type comes from an EPA report to Congress reporting agency leadership as of 2001 and information from DWNIMS about agency leadership as of 2010. Where agency leadership changed, we identified the date of change using state program reports and news articles. The SRF implementation environment is complex. In 68 percent of state-years, program management is shared among two or more agencies. Consequently, our agency variables measure whether an environmental or financial agency has any formal decision making authority in program management. Both are treated as dichotomous variables, because agency type categories are not mutually exclusive in cases with shared program management. Appendix 1, available as supplementary data at Publius online, reports DWSRF agency leadership by state for the last year in our analysis, 2008.

To test how problem conditions might moderate the influence of an agency’s functional focus, we interact agency type with problem condition variables appropriate for our two models: (i) water quality violations to examine discretion in supporting projects not related to SDWA compliance; and (ii) the percentage of small systems and fiscal integrity of the loan fund to examine discretion in supporting small water systems. To measure compliance, we used data from the Safe Drinking Water Information System (SDWIS) on the percentage of water systems in a state reporting water quality violations. This variable is lagged by one year to give a realistic portrayal of when program officials might learn about their state’s performance in compliance. Data on system size also come from the SDWIS. To measure a loan fund’s fiscal status, we calculated the fund’s cumulative balance using data and a formula from DWNIMS.

Drinking water infrastructure investments are likely shaped by a range of factors in addition to the functional expertise of implementing agencies and problem severity. Therefore, we include a number of control variables in our models. State demographic characteristics may help direct infrastructure investment. Infrastructure spending may be partially predicated on population density and community wealth. Our analysis includes controls for population size, per capita income, and percentage urban. Drinking water infrastructure investments tend to be relatively low profile and low salience decisions. But, political factors may influence investment patterns (McCubbins, Noll, and Weingast 1987; Wood 1990). Therefore we control for state political composition by including two
variables: party control of the governor and the legislature and public opinion liberalism. Given the sheer need for widespread investment in water infrastructure (U.S. EPA 2002) and the human capital needed to oversee this investment, we include a measure to control for bureaucratic capacity: number of state employees per 1,000 residents. Similarly, infrastructure investment is likely to be controlled by overall financial constraints. Therefore, we include a measure indicating the total level of assistance awarded by a DWSRF each year and the cumulative funds available. Because the agency variables that interest us vary little over time, we omit state fixed effects but include fixed effects for year and Census region and calculate standard errors with observations clustered by state.

Results and Discussion

Table 1 presents results of the two Tobit models predicting state discretion in SRF programs. Summary statistics for all variables are given in Appendix 2 available as supplementary data at Publius online. Omitted from the analysis are two state-years with no DWSRF spending and, in the compliance model, six observations with missing data.

Investment Outside of SDWA Compliance

Our first model examines the exercise of discretion when states invest in water infrastructure that does not specifically advance SDWA compliance. This type of investment can include projects that advance green planning, protect source water, integrate technological innovations in drinking water systems, and improve drinking water flow. We predicted that environmental agencies responsible for SRF programs would invest more in noncompliance-related projects because these professionals are in the best position to view the broad environmental and public health benefits from targeting green infrastructure and technological innovation, the type of projects that would typically fall into the noncompliance category (H1). We also predicted that differences between agency types would be smaller where water quality problems are more severe (H2). Model I in table 1 displays estimates from our Tobit models.

To interpret the interaction between an agency’s functional focus and problem conditions, we used the Tobit estimates to calculate average predicted differences in DWSRF loan allocations between agencies of different types. Holding all other variables at their actual values, we generated predicted loan allocations for each observation with the agency variable set either to 0 (in this case indicating no environmental agency management) or to 1 (in this case indicating environmental agency management), accounting for censoring of the dependent variable. Calculating the difference between these probabilities and averaging across all observations produces the average predicted difference based on agency type.
Testing the first hypothesis, we estimate that environmental agencies dedicate 2.03 percentage points more of their loan funds to noncompliance-related projects, but this difference is not significant.5

We find more support for the hypothesis that differences between agency types will vary across problem conditions (H2). The left panel of figure 1 depicts the average predicted values of funding for projects not compliance related by agency type across the range of values of compliance. The right panel shows the average predicted difference between agency types. As seen in the right panel, environmental agency management has a positive and significant relationship

Table 1 State discretion in DWSRF spending, 2000–08

<table>
<thead>
<tr>
<th>Functional focus</th>
<th>I: Loans for projects not compliance related</th>
<th>II: Loans for small systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment agency</td>
<td>57.425** (24.028)</td>
<td>–</td>
</tr>
<tr>
<td>Finance agency</td>
<td>–</td>
<td>–414.942*** (131.017)</td>
</tr>
<tr>
<td>Problem conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent systems in violation, lagged</td>
<td>3.203 (1.980)</td>
<td>1.273** (0.523)</td>
</tr>
<tr>
<td>Percent small systems</td>
<td>1.589 (0.978)</td>
<td>–0.175 (0.710)</td>
</tr>
<tr>
<td>Ln(funds available)</td>
<td>–3.561 (15.912)</td>
<td>7.142 (6.763)</td>
</tr>
<tr>
<td>Functional focus * Problem conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment * percent systems in violation, lagged</td>
<td>–4.987*** (1.834)</td>
<td>–</td>
</tr>
<tr>
<td>Finance * percent small systems</td>
<td>–</td>
<td>2.025*** (0.786)</td>
</tr>
<tr>
<td>Finance * Ln(funds available)</td>
<td>–</td>
<td>12.415** (4.879)</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State employees per 1,000 population</td>
<td>2.781 (2.010)</td>
<td>–1.330*** (0.446)</td>
</tr>
<tr>
<td>Governor party, lagged</td>
<td>3.694 (4.634)</td>
<td>2.224 (1.947)</td>
</tr>
<tr>
<td>Legislature party, lagged</td>
<td>–0.477 (8.338)</td>
<td>–4.918 (4.228)</td>
</tr>
<tr>
<td>Opinion liberalism</td>
<td>0.216 (1.147)</td>
<td>1.210*** (0.409)</td>
</tr>
<tr>
<td>Ln(population)</td>
<td>12.850 (13.722)</td>
<td>–0.729 (5.766)</td>
</tr>
<tr>
<td>Ln(per capita income)</td>
<td>25.820 (23.250)</td>
<td>–9.124 (11.893)</td>
</tr>
<tr>
<td>Percent urban</td>
<td>–0.421 (0.695)</td>
<td>–0.453** (0.214)</td>
</tr>
<tr>
<td>Ln(DWSRF assistance)</td>
<td>2.212 (3.441)</td>
<td>–24.446*** (2.262)</td>
</tr>
<tr>
<td>Constant</td>
<td>–568.477 (407.552)</td>
<td>509.055*** (185.577)</td>
</tr>
<tr>
<td>N</td>
<td>442</td>
<td>448</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.036</td>
<td>0.064</td>
</tr>
</tbody>
</table>

Note. Models estimated using Tobit with censoring at 0 and 100. Year and census region fixed effects not shown. Standard errors clustered by state.

***p<.01, **p<.05, *p<.10 (two-tailed).
(p < .05) with the percentage of loans dedicated to projects that are not compliance related where compliance rates are high overall. Where just 1 percent of a state’s water systems are in violation of drinking water quality laws, environmental agencies award 13 percentage points more in noncompliance-related funding. Environmental agencies scale back and behave more like other agency types when violation rates are more severe. When levels of noncompliance are high, we detect no difference between agency types.

The model explains little of the overall variation in support for projects not related to SDWA compliance. Political control does not predict patterns of SRF spending; the estimated effects of the party of the governor and the legislature are small and insignificant. Given the relatively low salience of drinking water infrastructure investment, it is not surprising that political variables have no consistent influence in our model. The only control variable that has a nearly significant relationship with investment in projects that are not compliance related is the percentage of water systems serving 10,000 or fewer customers (p = .101). Both state and federal officials charged with drinking water protection have particular concern about small water systems, which often lack the resources

Figure 1  Agency type and loans for projects not compliance-related, by violations

Note. Estimates calculated from Tobit coefficients shown in table 1. Estimates are expected values, accounting for censoring. Shaded area shows a 95 percent confidence interval.
necessary to maintain complex infrastructure and comply with water quality regulations. Consequently, a number of states give funding priority to projects that might not address specific compliance problems but instead consolidate small systems or help small systems improve their operating capacity.

**Investment in Small Water Systems**

Loans to small water systems support the EPA’s goal of improving the performance of these systems, but they are higher risk investments that offer no greater reward than loans to larger, more financially sound water systems. We predicted that loan funds managed in part by financial agencies would give greater attention to a fund’s risk profile (H3). The pattern that emerges in this analysis is similar to that in noncompliance-related spending: agency type does not have a direct relationship with patterns of DWSRF investment when examined across the full range of observations, but it appears to shape how program administrators respond to problem conditions and fund status.

Using average predicted differences to interpret the interaction depicted in Model II of table 1, DWSRFs managed by financial agencies do not dedicate a significantly smaller percentage of their loan awards to small systems on average. However, we find a significant difference between agency types in states where small water systems are less prevalent (H4). Figure 2 shows model predictions across the range of values of small system prevalence. The majority of community water systems—92 percent in 2008—serve fewer than 10,000 people, although these small systems serve just 18 percent of the total population receiving water from community water systems (U.S. EPA 2011). As figure 2 demonstrates, in states with a low relative percentage of small systems, DWSRFs managed by financial agencies provide a significantly lower percentage of total funds to these small systems than funds managed without financial agency involvement. The difference is as much as 32 percentage points at the lowest rate of small systems (69 percent). As the percentage of small systems in a state rises, financial agencies appear to respond to their need and commit significantly more funds to them. Thus the differences across agency types dissipate with a higher percentage of small systems.

Results of the analysis of fund availability appear in figure 3. For all SRFs, the proportion of funds made available to small systems rises as the overall SRF fund balance rises. Consistent with H5, this relationship is stronger among financial agencies than among other agency types and only significant among financial agencies. By our measure of funds’ fiscal integrity—calculated using an EPA formula—financial agencies appear to be more responsive than other agency types to fund scarcity when making loan decisions. The result is that financial agencies are more generous than other agency types to small systems where the status of their funds is healthy, a finding that we had not anticipated. However, it may be
that financial agencies are in a better position to evaluate the fiscal health and potential financial risk of small systems compared to their public health or environmental counterparts. This expertise may foster investment while public health and environmental officials may adopt a conservative investment approach, even as their fund balance increases, to avoid jeopardizing infrastructure investment over the long term.

Several control variables are related to small system assistance. States with a large percentage urban area dedicate significantly less funding to small systems; urban states have a lower percentage of small systems, and loans to large urban water utilities can easily crowd out other SRF loan activity. Holding constant fund availability, the amount of assistance an SRF awards in the current year also has a negative relationship with small system support, likely for the same reason that large loans can dominate fund activity. Moreover, our measure of state capacity, the number of state employees per 1,000 residents, is associated with lower rates of small system funding. As further evidence that DWSRFs are responding to state need, assistance for small systems is positively related to compliance with the SDWA, with a one-point increase in the percentage of systems in violation yielding

![Figure 2: Agency type and loans for small systems, by small systems](image)

*Note. Estimates calculated from Tobit coefficients shown in table 1. Estimates are expected values, accounting for censoring. Shaded area shows a 95 percent confidence interval.*
a 0.98-point increase in percentage of funds to small systems. Considering that the vast majority of SDWA violations occur in small systems (92 percent in our dataset), increasing support for small systems is a sensible policy response to noncompliance. The only political variable showing any association with SRF funding patterns in either of our analyses is citizen ideology. Here, a shift from the most conservative to the most liberal state is associated with a 34-point increase in the percentage of funds going to small systems.

**Conclusion**

The devolution of policy authority to the states sometimes involves explicit delegation of decision making responsibility with the hope that states will design programs that are responsive to state-level conditions. However, the exercise of discretion by state agencies implementing devolved policies typically is treated in the literature as a departure from policy makers’ goals. We begin our analysis from a different perspective: recognizing that states might be asked to exercise discretion in policy implementation and to produce variable outcomes, but that state
bureaucrats operate in a murky environment with multiple political principals and information constraints that can limit their ability to direct program implementation toward addressing their own state’s needs. Our goal was to explore the extent to which states utilize their discretion in a multilevel program designed to foster divergent approaches and to examine how the functional focus of an agency affects responsiveness to problem conditions.

We predicted that initial decisions over allocating program responsibility to an agency might have long-term effects on program implementation. State revolving funds provide a rare opportunity to examine bureaucratic discretion and agency expertise, because the same program is managed in different states by agencies with distinct professional expertise and organizational norms. Looking across eight years of data and two areas of water infrastructure expenditure, we find no direct relationship between agency type and the exercise of state discretion. However, our analysis indicates that agencies do use their discretion to respond to problem conditions in their state, and that patterns of responsiveness vary across agency types.

We find evidence that agencies’ functional expertise is associated with decision making in areas where the state does not face a pressing problem, but that problem severity diminishes differences between agency types. This is a particularly interesting finding that highlights how problem conditions constrain agency discretion. While some scholars equate discretion with agency drift, our results emphasize the interplay of agency discretion and problem conditions. When problems are severe, state agencies—regardless of their functional expertise—focus their attention toward the problems in their state. For example, where a state has high levels of compliance with drinking water quality regulations, environmental agencies that manage DWSRF funds are more likely to engage in innovative investment, that is, investment that is not directly aimed toward specific drinking water contaminants. Differences between environmental and other agencies in compliance-related spending disappear where a higher percentage of water systems are in violation of water quality laws. Similarly, financial agencies demonstrate less support for the EPA priority of funding small systems in states with relatively fewer small systems, but where small systems are more prevalent, their support level rises and they behave more like other agency types. Financial agencies also dedicate a smaller percentage of loans to small systems where state fund balances are low, behaving more like other agency types. Consistent with research by Mullin (2009), we find that problem conditions moderate the relationship between institutional design and outcomes, such that institutional factors have less influence where problems are more severe. For federalism scholars, our findings lend support to one of the underlying tenants of decentralization: subnational governments are in a strong position to identify and respond to local problem conditions, regardless of specific details of agency and program design.
These results also reinforce the lessons from public administration research highlighting the importance of organizational identity (Bardach 1998; Wilson 1989). Although locating an SRF program in a particular type of agency does not directly produce a certain outcome, our results suggest that institutional location influences how implementing officials perceive and respond to problem conditions within a state. This creates opportunity for state political actors to exert ex ante political control over a multilevel program by situating the program in an agency that will be most sympathetic to the problems or goals the politician cares about (McCubbins, Noll, and Weingast 1987; Moe 1989).

Ultimately, our research highlights the importance of considering the intent behind devolution, delegation, and political control. State agency behavior in the context of multilevel programs, even while those programs become increasingly common, remains understudied. Our results suggest that state agencies exercise discretion when substantive problems are not severe. Federal actors cede responsibility to subnational units for a multitude of reasons and create complex multilevel governance networks where state agencies must operate. Yet, research to date tends to treat delegation as a necessary evil that will result in bureaucratic drift with agencies deliberately pursuing their own goals. Given the near constant drumbeat of devolution across multiple substantive areas, it is important to consider devolution and delegation that is designed to promote state discretion and determine the ways in which that discretion operates.

**Supplementary Data**

Supplementary data can be found at www.publius.oxfordjournals.org.

**Notes**

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1. The original goal was for SRFs to become self-sustaining, but implementation problems combined with ongoing needs have led to continued annual Congressional appropriations. The magnitude of federal appropriations for both Clean Water and Drinking Water SRFs has declined over time, until the 2009 American Recovery and Reinvestment Act (ARRA) dedicated $6 billion in emergency appropriations for SRF funds. Detailed information on capitalization grants is available at: [http://water.epa.gov/grants_funding/dwsrf/dwnims.cfm](http://water.epa.gov/grants_funding/dwsrf/dwnims.cfm)

2. We end our analysis in 2008 because new rules under the ARRA affected SRF decision rules in many states even for non-ARRA spending.

3. Because states may report negative spending for accounting purposes, a total of nine observations across the two analyses have values either less than 0 or greater than 100.
Results are robust to estimating the models using ordinary least squares or to omitting the outlying observations, and both strategies narrow the confidence intervals in the tails. We present the more conservative estimates here acknowledging the censoring that applies for most observations.

4. All variables but one are annual data or, in the case of the urban variable, linearly interpolated from decennial Census data. The exception is the measure of public opinion liberalism, a time-invariant indicator calculated by Erikson, Wright, and McIver from public opinion polls conducted from 1976 to 2003. The authors have demonstrated that state-level ideology has shown considerable stability over several decades (Erikson, Wright, and McIver 2006).

5. Because we interact agency type with variables measuring problem conditions, the coefficient in table 1 for environment agency indicates the difference in spending on loans for projects that are not compliance related where the lagged percentage of systems in violation is 0. As shown in the right panel of figure 1, environmental agencies do spending significantly more on noncompliance-related spending in these high compliance states, but the difference associated with agency type is not significant when analyzed across the full range of observations at all levels of compliance.

6. These results are even stronger when we restrict our analysis to focus on cases where a single agency implements the state’s DWSRF program. Under these conditions, an agency’s functional focus should have a stronger influence on investment decisions compared to situations where implementation is shared among agencies. When environmental agencies implement DWSRF programs on their own, they dedicate a far greater percentage of their funds to projects not related to compliance (endeavors like source water protection, ecosystem management, and green infrastructure). The functional focus of an agency has a greater impact where agencies act alone then where they operate in cooperation with other agencies. The interaction with compliance is also stronger among single agencies, so that agency type becomes insignificant where problem severity is high.

7. Similarly, we find that agency type has no relationship with loan allocations that should allow less agency discretion. In a placebo test, we regressed agency type on the percentage of loan funds dedicated to projects for noncompliant systems to meet compliance (rather than projects for maintaining compliance or meeting future standards, or those not compliance-related). Helping systems that are in violation to meet current regulatory standards should be the top priority for any funding program, and indeed we find no difference between agency types regardless of statewide compliance rates.

References


Pressman, Jeffrey, and Aaron Wildavsky. 1973. *Implementation: How great expectations in Washington are dashed in Oakland; or, why it’s amazing that federal programs work at all, this being a saga of the Economic Development Administration as told by two sympathetic observers who seek to build morals on a foundation of ruined hopes*. Berkeley: University of California Press.


