

How Administrative Procedures Shape Agency Policy and Its Variability

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Depending on the policy area and agency, bureaucratic agencies have more or less discretion to implement policy. One way that Congress affects this level of discretion is by using administrative procedures, such as whether the agency is independent of existing bureaucracies, whether the agency is headed by a board, and how many appointed officials there are. These administrative procedures could affect the amount of influence politicians can exert over an agency or they can affect the range of options available to the agency. That is, they can affect either the mean or the variance of policy implementation. This paper uses an empirical strategy that allows us to observe the effect of administrative procedures on both the mean and the variance of policy. Using distributive program awards between 1983 and 2005, we test whether agencies with more discretion target program awards more in accord with the preferences of their political overseers in Congress. We also test whether agencies with more discretion are able to choose from a wider range of policies by assessing whether the variance in distributive spending, conditional on the modeled mean, is greater among more insulated agencies. We find that administrative procedures affect discretion by reducing the variance in agency decisions, not by making them more responsive to the electoral needs of members of Congress.

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Members of Congress and the president can use administrative procedures to increase or dampen agencies' policy autonomy. How politicians design agencies is constrained by a tradeoff, as noted in many formal theories of agency delegation (for recent reviews of the literature, see Gailmard and Patty 2012 and Moe 2012). When procedures make agencies more insulated from political control, agencies have more discretion to administer policy drawing on their own assessments of technical merits. But this insulation risks implementation of policy in accord with the agencies' own political preferences and contrary to the preferences of elected officials. When procedures make agencies more politically pliable, elected politicians can steer implementation for their own political ends, such as reelection. Reducing agencies' autonomy gives politicians more control over the agency, but sacrifices the benefits of the agencies' technical policy expertise.

Administrative procedures can influence the agency's discretion over policy implementation in two ways. First, procedures structure the amount of influence politicians can exercise over an agency's implementation. Procedures allowing for more political influence provide politicians the opportunity to steer agency implementation, such as by increasing the stringency of regulatory enforcement or by shifting distributive program spending to the districts of electorally vulnerable politicians. Second, administrative procedures structure the range of options from which agencies can select policy to implement (Bawn 1995; Epstein and O'Halloran 1999; Huber and Shipan 2002). Autonomous agencies can choose from broader range of policy options, changing regulatory enforcement or allocating spending on distributive programs funds across congressional districts as they see fit.

In this paper, we study the effects of administrative procedures on how federal agencies administer distributive programs, using an empirical strategy that captures both ways that administrative procedures influence agencies' policy implementation. The theoretical basis for this empirical strategy is consistent with models (e.g., Bawn 1995, 1997, Epstein and O'Halloran 1999; Huber and Shipan 2002) that posit that administrative procedures shape both the mean and variance of agencies' policy choices. The data are a panel of US distributive program awards made by federal agencies from 1983 to 2002, along with measures of administrative procedures (Lewis 2003; 2008) and other controls. We first examine whether distributive program spending in agencies structured to allow political influence is more sensitive to elected politicians' political circumstances than spending in agencies structured for more autonomy. For this line of inquiry, we examine whether politically pliable agencies respond to political influence by channeling more distributive program awards to the districts represented by politicians facing close elections and having positions of greater political authority. Our second line of inquiry investigates whether administrative design features can influence agencies' discretion by shaping the range of options from which agencies can implement policy. More insulation from political control implies a broader range of policy options; less insulation implies a narrower one. Our empirical approach tests whether more insulated agencies show wider variance in their distributive spending, conditional on the modeled mean from the first analysis. With the idea that

the variance provides a measure of the range of policy options available to the agency, the effects of administrative procedures become empirically discernible because autonomous agencies probabilistically choose policies across the broader range of options available to them, whether these choices are motivated by their own policy preferences or their technical policy assessments.

Across all specifications, the results indicate that administrative procedures do not consistently influence agencies' responsiveness to elected politicians but do increase the range of options from which agencies implement policy. The correlations between politicians' political circumstances and agencies' distributive policy spending in their congressional districts is no stronger for agencies structured for political influence than for agencies structured for autonomy. However, the variance of distributive policy spending is greater for agencies structured for autonomy than for those structured for control. Together, these results suggest that administrative procedures are a way of constraining agency autonomy by structuring the range of options from which agencies can choose to administer policy rather than by making agencies responsive to individual elected politicians. The next section offers a more detailed theoretical rationale in the context of the literature on delegation and administrative procedures. The paper then presents the data and analytic techniques, results, and conclusion.

Theoretical Rationale: Agency Insulation, Discretion and Distributive Spending

A core starting point in formal models is to conceptualize the delegation process as legislators choosing a target policy objective for the agency to pursue and then delegating a range of options from which the agency can select a policy for achieving it (see Gailmard and Patty 2012). The policy target represents the outcomes elected politicians want to achieve, such as the stringency of regulatory enforcement, endangered species protection, basic research on human diseases, and so on, while the range of policy options is the amount of discretion politicians grant to the agency implementing the policy. More discretion means the agency can select a policy to implement from a broader range of options. Some policies are relatively straightforward to implement and politicians need not delegate much discretion to implementing agencies. Elected politicians can set income tax rates in legislation, perhaps indexing them to income levels, and the IRS must simply ensure taxpayers' compliance with the law. For other policies, politicians may know the goals they want to achieve but not the policies to implement to achieve them. In such circumstances, delegating discretion takes advantage of the agencies' superior policy expertise. To preview our later example, elected politicians may want to improve public health by funding basic research but not know which diseases and research projects are the most promising funding candidates.

Politicians' delegation options are constrained by a tradeoff between the benefits of agency autonomy and those of political responsiveness. Because administrators may know more about a policy's technical dimensions, autonomous agencies may implement policy in more technically sound ways, leading to better policies than the less informed politicians could have

achieved (e.g., Bawn 1995; Gailmard 2002; Gailmard and Patty 2007, Huber 2007). But, discretion, coupled with administrators' expertise and information advantage over their elected political overseers, also allows them to pursue objectives that may be at odds with what elected politicians would want. Administrators' views on what constitutes technically sound policy may be different from politicians' views, or administrators may have their personal policy preferences. Because they lack administrators' information and expertise, politicians have a hard time discerning whether a particular administrative action is in line with what they would have wanted or is some form of administrative drift. The tradeoff between agency expertise and political responsiveness is well documented in empirical research on how politicians delegate policy discretion to agencies (XXX CITES). For example, politicians delegate increased discretion when agencies' expertise advantage is greater and decreased discretion when their political costs of agency drift are greater, such as for more politically salient policies (XXX CITES).

The consequences of delegated discretion for how agencies implement policy has received less empirical scrutiny, most likely because of the challenges of measuring the degree of autonomy delegated across different agencies and, perhaps more importantly, of deploying an empirical strategy that captures the effects of discretion on how agencies implement policy. This paper takes up these challenges. First, we develop a theoretical rationale for showing how administrative procedures shape the degree of autonomy with which agencies implement policies. This provides the necessary measure of the degree of autonomy across agencies. Second, we offer an empirical analysis that identifies the effect of autonomy on political responsiveness directly and on the range of policy options available to the agency.

Administrative procedures and agency discretion

A broad range of formal and informal theories of agency behavior suggests that administrative procedures can have two important consequences for agency behavior. First, agencies structured for political responsiveness should implement policy more in accordance with the demands of elected politicians compared to agencies structured for autonomy. Electorally vulnerable politicians may prefer that agencies implement policy in better accordance with their constituents' preferences (Bickers and Stein 1996, 2000). Politicians' ability to effectively impose their demands on an agency may depend on their own political authority, such as whether they are members of the majority party or have seats on the agency's legislative oversight committee (Adler 2002). Politically responsive agencies, therefore, alter how they implement policy in response to changes in politicians' effective demand for policy. Such an agency might change its distributive program spending as new legislators become politically vulnerable or assume positions of legislative authority. Policy implementation in autonomous agencies, on the other hand, should be relatively immune to changes in their political environment. Second, agencies structured for autonomy should have a broader range of options from which to choose policies. An agency with such a broader range of options can choose a more heterogeneous set of policies to implement. Of course, an agency might use its discretion to

choose policies from a narrow band of the broader range available to it, resulting in a more homogenous set of policies. However, across a large number of agencies making many policy choices, the broader range of policy options available to more autonomous agencies should produce more heterogeneous policies than the policy choices from a narrower range of options.

Administrative procedures can shape both aspects of agencies' behavior. First, administrative procedures can structure how agencies, when developing and implementing policy, respond to influence from external actors, such as elected politicians and interest groups (Bawn 1995, McCubbins, Noll and Weingast 1987). For example, the president may want to be able to influence agencies' spending across political jurisdictions so that he can target spending to places where he faces a close reelection race. To facilitate such political influence, an agency could be staffed with more political appointees and placed outside existing bureaucratic structures; an agency staffed with the president's political appointees instead of career civil servants should be more responsive to the president's policy preferences.

Second, administrative procedures shape the range of policy options available to the agencies to implement. When administrative procedures grant more autonomy, agencies can choose policy to implement from a broader range of options, perhaps following their judgments about the policies' technical merits, their own policy preferences, or changing circumstances. For example, legislators may choose to delegate broad discretion to the National Science Foundation to allow it to evaluate the technical merits when deciding which scientific research proposals to fund. Administrative procedures can affect the range of policy options from which an agency can choose by designing it to be headed by a board or commission or by placing limitations on the type of person who can head the agency.

Consider an example of how agency autonomy, administrative procedures and their tradeoffs can play out in a grant making setting. Suppose elected politicians pass a bill instructing the national public health agency to make grants to improve the nation's health through disease research. The funding legislation could specify that the agency's grants target research on the most prevalent and pernicious diseases. Elected politicians would likely want these criteria because such diseases are what their constituents would most want to cure. But common diseases may not be the best target for funding because other diseases may be more likely to be cured with additional scientific research. Agency officials are more likely to know which grant proposals have stronger scientific merit and which diseases are more promising targets for research. Thus, politicians may want to grant more autonomy because the agency's public health officials have expertise that the elected politicians want to exploit. The agency's policy decisions would in all likelihood differ from what the elected politicians would have selected themselves, but the agency's choices may do more to achieve the policy goals of improving the nation's health. However, delegating autonomy has its downsides. From the perspective of the elected politicians, the downside of agency autonomy is that policy implementation may drift from what they would want if they were as well informed as the

agency officials. For example, agency officials could exploit the cloak of autonomy to channel grants towards their favored research labs or to their own pet disease causes.

Distributive Policy

Federal distributive program spending in the United States is an ideal setting for studying the effects of administrative procedures on agencies' policy implementation. There are thousands of grant programs across the US federal government, covering diverse policy areas such as health research, transportation infrastructure, education, and the environment. The demands of public office leave politicians without the time and expertise to identify which levies need repair, which business need a loan, and so on. Elected politicians can establish via statute the broad aims of a distributive policy program and then delegate authority for making specific awards to agencies with expertise to better identify more suitable recipients. At the same time, elected politicians have important incentives to influence how agencies spend distributive policy funding. Empirical evidence shows that politicians do influence distributive spending (Stein 1981, Levitt and Snyder 1997), particularly under conditions where politicians have more capacity to influence spending and more to gain from steering spending towards their district. Much of the research on the political influence of distributive policy has focused on the US Congress: legislators channel more distributive program spending to their district when they hold favorable committee assignments (Adler 2002; Arnold 1979; Carsey and Rundquist 1999a, 1999b, 2002; Hird 1991; Rich 1989; Rundquist and Carsey 2002, though see Anderson and Tollison 1991; Wallis 1998), when their party controls Congress (Levitt and Snyder 1995; Bickers and Stein 2000; Balla et al. 2002), and to improve their own reelection prospects (Bickers and Stein 1996; Sellers 1997). The US president may also target swing voters (Lindbeck and Weibull 1993; Dixit and Londregan 1996) or reward supporters from the previous election (Cox and McCubbins 1986) with distributive spending. Some of these effects are subtle; politicians use federal spending to reward strong political supporters from the previous election (Anderson and Tollison 1991; Chen 2010; Couch and Shugart 1998; Larcinese, Rizzo, and Testa 2006) but also to target swing voters if upcoming elections (Garrett and Sobel 2003; Wallis 1987, Wright 1974).¹

Politicians can influence how agencies allocate distributive grants by designing agencies to be responsive to their political influence. Distributive spending by agencies structured for influence should be more strongly correlated with politicians' political circumstances than spending by autonomous agencies. Elected politicians' demands for distributive spending in their district increase with their political vulnerability, and their ability to influence spending increases when they and their party hold positions of political authority. Thus, observable factors such as characteristics of the districts (demographics, partisan leanings, etc), attributes of the

¹ Higher spending is also correlated with district demographics (Arnold 1979; Bickers and Stein 1996, 2000; Carsey and Rundquist 1999a, 1999b, 2002; Hird 1991; Lee and Oppenheimer 1999; Levitt and Snyder 1995; Potoski and Talbert 2000; Rich 1989; Rundquist and Carsey 2002) and strength of organized interests in states (Lowry and Potoski 2004), reflecting the level of citizens' needs and demands.

elected politicians (electoral vulnerability, political authority, etc), and agencies' previous spending patterns, offer opportunities to assess whether administrative procedures shape the responsiveness of agencies to individual politicians. For example, if a formerly safe incumbent faces a daunting reelection challenge, her district would receive more funding from agencies structured for political influence, while politically insulated agencies would not spending in response to the the legislator's new electoral circumstances. Comparing how autonomous and politically controlled agencies respond to such political circumstances provides insights into how administrative procedures condition agencies' responsiveness to elected politicians.

More difficult to evaluate is whether administrative procedures shape the range of policy choices available to the agency. Agencies may change their distributive spending across districts based on how they evaluate changing circumstances, their own policy preferences, and their assessments of spending policies' technical merits. An agency enjoying a broader range of options from which to implement policy will be able to change its policies more than if its policy options were narrower. Below we describe an analytic approach to evaluating distributive program spending that provides an empirically tractable means for evaluating the effects of administrative procedures on the range of policy options available for agencies to implement. We argue that the variance in distributive program awards by US agencies, conditional on the mean predicted by politically relevant observable factors, provides a measure of the range of policy options available to the agency. In this approach, a broader range of options means that, conditional on observed factors, agencies enjoying discretion are more likely to choose policies that are bigger deviations from what the observed factors would have predicted. This is not to say that agencies have a preference for or against policy change. Rather, our assumption is that if the broader options are available to them, agencies may choose from them, whether their choices are grounded in their assessments of circumstances, the policies' technical merits, or their own preferences.

Data and Methods

Empirically evaluating the effects of administrative procedures on agency policy implementation requires data on policy choices across agencies operating under different administrative procedures and political conditions. Our analyses first model the mean of agencies' distributive program implementation across congressional districts as a function of agencies' administrative procedures, politicians' political circumstances, and other controls. The first key test of the administrative procedures theory are interaction terms between politicians' political circumstances and agencies' administrative procedures. The expectation is that procedures that enhance politicians' political control over agencies will increase the correlation between politicians' political circumstances and the amount of agency distributive program spending in their district. We estimate coefficients on the interaction between political factors and insulation to assess whether insulated agencies are less responsive to the characteristics of individual politicians. Our analyses then model the variance of agencies' policy choices, conditional on the estimated mean, as a function of the agencies' administrative procedures. The

key test of the effect of administrative procedures on the variance of policy choice are coefficients measuring whether the variance of distributive policy spending across districts increases with the amount of administrative autonomy under which the agency implements policy. The empirical analyses for this are based on panel techniques with multiplicative heteroskedasticity (Harvey 1976). The analyses include several specification checks, including fixed and random effects and different serial correlation controls. All in all, our analytic approach offers several important advantages over previous administrative procedures and distributive policy research: a large sample of panel data with variation in administrative procedures and political circumstances and a tractable way to observe the effects of discretion on policy implementation using the conditional variance in agency policy choices.

Data

Our policy data are a panel of distributive awards in US House congressional districts from 77 agencies over 10 congresses (1983-2002), as reported in the Federal Assistance Awards Data System (FAADS), maintained by the Bureau of the Census and the Department of Commerce. The dependent variable is the log of the number of new distributive program awards (+1) within each congressional district by each distributive program in each Congress from the 98th to the 107th. Following Stein and Bickers (1996) and others, we choose the number of new awards rather than dollar value of the awards as a better indicator of political salience than dollars (Grimmer, Messing, and Westwood 2012). This is largely because the marginal political value of additional dollars declines, holding number of awards constant. As a check of this assumption, we also present alternative specification using the dollar value of awards from agencies to districts, excluding contingent liability programs. The results are similar to our main results. Counting the number of awards also allows us to include contingent liability programs such as loan guarantees and insurance, which are favored by Republicans (Bickers and Stein 2000). These awards have monetary value to recipients, but their dollar value recorded in the FAADS system is not directly comparable to cash awards (for a fuller discussion see Stein and Bickers 1996; Lowry and Potoski 2004). Also following Stein and Bickers (1995) and others, we exclude programs distributed by formula and those whose recipients are individuals, as reported in the Catalogue of Federal Domestic Assistance (CFDA).

The distributive programs were matched to David Lewis' data on administrative procedures and political appointments measures in US federal agencies created between 1946 and 1997 (Lewis 2003, 2008, (see <http://people.vanderbilt.edu/~david.lewis/>)). Although matching the names of federal agencies over time is difficult, 77 agencies appeared in both the FAAADS data and the insulation data. The agencies administered about 600 distributive spending programs. The matched agencies for which insulation data were available administered approximately 355,000 out of approximately 500,000 total grants in the FAADS data. Among districts that receive awards, the average number of new awards from an agency is 36 and the median number of awards for a district from an agency is five. However, many districts receive

no awards from a program. Out of approximately 355,000 district-agency-congress groups, only about 57,000 receive at least one award.

Lewis (2003, 2008) offers two approaches to measuring agency insulation. The first assesses each agency on five major dimensions: whether the agency is headed by a board or commission, whether the new agency is independent (created outside of existing bureaucratic structure), whether the administrator serves for a fixed term, whether there are limitations on the type of persons who can be appointed to head the agency, and the agency's proximity to the president. Further details on the coding scheme can be found in Lewis's codebook, posted at <http://people.vanderbilt.edu/~david.lewis/>. Second, Lewis (2008) offers data on the number of political appointees in an agency. To keep the analyses more tractable, we use factor analysis to collapse these variables into a summary measure of agencies' degree of insulation. This summary variable captures 86% of the variance in the underlying descriptions of agency insulation. In additional analyses, we separate out the political appointees measure from the index to create two separate measures of insulation. Table 1 shows the agencies active in the 107th Congress ordered by their value on the factor capturing insulation. Agencies at the top of the list, such as the Agricultural Marketing Service and the Centers for Disease Control are the least insulated from political control, while agencies at the bottom of the table, such as the National Science Foundation and the Corporation for National and Community Service are the most insulated.

Table 1: For 107th Congress: Agencies Ordered by Their Insulation Values

Insulation Measure	Agency				
		-0.53048	National Oceanic and Atmospheric Administration		office of human development services
				-0.51253	Travel and Tourism Administration
-0.53228	Agricultural Marketing Service		Research and Special Programs Administration	-0.51179	Bureau of Justice Programs/Office of Justice Programs
-0.53228	animal and plant health inspection service	-0.52952	Administration	-0.50499	Agency for International Development
-0.53228	office of transportation packers and stockyards admin	-0.5292	Air Force	-0.49507	Department of Energy
-0.53228	Agriculture Conservation Program	-0.52916	National Highway Traffic Safety Administration	-0.27945	Department of Housing and Urban Development
-0.53228	Service	-0.52894	Federal Maritime Commission	-0.27326	Department of Education
-0.53228	consolidated farm service agency	-0.52879	Bureau of Land Management	-0.20326	National Aeronautics and Space Administration
-0.53228	food and consumer service		Employment and Training Administration/Manpower Administration	-0.14999	Environmental Protection Agency
-0.53228	food safety and inspection service	-0.52867	Occupational Safety and Health Administration	-0.14722	General Services Administration
-0.53228	Agricultural Research Service	-0.52838	United States Fish and Wildlife Service	-0.1468	Federal Emergency Management Agency
-0.53228	cooperative state research service	-0.52789	Alcohol Drug Abuse and Mental Health Administration	-0.13902	Federal Mediation and Conciliation Service
-0.53228	economic research service		Admin Employment Standards Administration	-0.12999	department of medicine and surgery
-0.53228	national agricultural statistics service	-0.52691	Federal Railroad Administration	-0.05863	federal aviation agency
-0.53228	minority business development agency	-0.52625	Urban Mass Transit Administration	0.194733	Small Business Administration
-0.53228	Minerals Management Service	-0.52517	Administration for children and families	0.195703	Federal Labor Relations Authority
-0.53228	national biological survey	-0.52493	Federal Mine Safety and Health Review Commission	0.590209	Community Relations Service
-0.53228	center for disease control	-0.52417	Economic Development Administration	0.855263	Bureau of Transportation Statistics
-0.53228	health resources admin	-0.52375	National Telecommunications and Information Administration	1.22039	Surface Transportation Board
-0.53228	Agency of Health Care Policy and Research	-0.52262	Administration on Aging	1.911227	Nuclear Regulatory Commission
-0.53228	office of bilingual education and minority languages affairs	-0.52238	international trade administration	2.260709	Equal Employment Opportunity Commission
-0.53228	National Imagery and Mapping Agency	-0.52101	Surface Mining Reclamation Enforcement	2.410341	National Science Foundation
-0.53228	Defense Logistics Agency	-0.52086		2.422562	Corporation for National and Community Service
-0.53187	indian health service			2.610455	
-0.53179	national institutes of health				
-0.53059	Federal Highway Administration				

The remaining important independent variables fall into two categories: variables that describe the political conditions of the district and variables that describe the circumstances of the districts' representatives in congress. The variables describing district political conditions are the presidential and legislator vote margins in the district. We include the winning candidate's vote share in the prior election as a measure of the safety of the congressional district for the incumbent. We also include the safety of the seat for the incumbent president using the absolute value of the difference between 0.5 and the share of the vote going to the Democratic candidate in the prior election. These variables help assess whether distributive program awards are targeted to swing voters or political loyalists. To measure the district representatives' political conditions, we include variables that capture the political power of the member of Congress representing the district: seniority in Congress, majority party membership, whether she is a Democrat, whether she is a freshman, whether she serves on the Appropriations or Ways and Means Committees, whether she is a committee chair or ranking member, and whether she is a party leader. Drawing on the distributive politics research noted above, we expect the districts of legislators facing close elections and holding more political power in Congress to receive more distributive program spending. To assess the efficacy of administrative procedures, the analyses include interaction terms between the agency insulation measures and the district and representative characteristics.² If administrative procedures conditions legislators' influence over agencies' distributive program spending, the correlation between spending and district/legislator characteristics will be lower in agencies with procedures granting autonomy than in agencies designed for political control.

The remaining variables serve as controls. First is a suite of standard district demographic variables drawn from US census data. Following Bickers and Stein (2004) among others, we include controls for district demand characteristics derived from census data. These include the proportion of the population with no diploma, under 18 years of age, over 65 years of age, of Hispanic origin, black, living in urban areas, and employed in blue collar occupations. These are only available every 10 years from the Census Bureau so we include the district's unemployment rate and per capita income, which are available on a yearly basis from the Bureau of Labor Statistics. The analyses include House delegation size (the number of districts in the state) because theoretical literature suggests that larger delegations get more distributive benefits because of spillover from the other districts (Levitt and Snyder 1995).

Divisions among their political overseers can influence how agencies administer policy (e.g., Huber and Shipan 2002). We measure the size of the gridlock interval per Krehbiel 1998 as the difference between the Common Space Nominate scores (Carroll et al. 2009) of the leftmost and rightmost members of Congress whose votes are necessary to pass legislation. The

² We don't include an interaction between party and insulation, since we have no reason to expect that agencies would be more responsive to one party than the other. We do include the main effect of party, since Democrats may be more likely to receive more awards.

gridlock interval's leftmost and rightmost members are calculated following Chiou and Rothenberg (2003) with no role for party. Other procedures for measuring political divisions, such as whether there is divided government, did not produce appreciably different findings.³

Table 2 provides descriptive statistics of the variables in the model.

Table 2: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Logged Number of Awards (+1)	354619	0.15	0.42	0	4.21
Insulation Factor	354619	-0.19	0.78	-0.53	2.61
Winning Candidate's Vote Share	287707	0.67	0.13	0	1.00
Safety of District for the President	325311	0.10	0.09	0	0.46
Member of the President's Party	324903	0.46	0.50	0	1
Seniority	333062	28.13	120.72	1	820
Member of the Majority Party	324903	0.56	0.50	0	1
Democrat	324903	0.55	0.50	0	1
Freshman	354619	0.12	0.33	0	1
Appropriations Committee Member	295663	0.14	0.34	0	1
Ways and Means Committee Member	295663	0.09	0.28	0	1
Committee Chair	295663	0.05	0.22	0	1
Ranking Member of a Committee	295663	0.05	0.22	0	1
Member of the Leadership	295663	0.01	0.08	0	1
House Delegation Size	354619	18.56	14.15	1	53
Unemployment Rate	354619	5.93	1.73	2.4	16.05
Per Capita Income	352715	12564.68	6331.84	3567	58625
% with No Diploma	352715	0.28	0.11	0.06	0.66
% Younger than 18	352715	0.27	0.04	0.11	0.40
% Older than 66	352715	0.12	0.03	0.03	0.31
% Hispanic	352715	0.07	0.12	0.000068	0.86
% Black	352715	0.12	0.15	0.000669	0.92
% Urban	352715	0.75	0.22	0.13	1
% Blue Collar Occupations	352715	0.28	0.08	0.06	0.52

³ Divided government is associated with lower variability when it is substituted for the gridlock interval in Table 3.

Estimation Methods

The analyses are based on linear regression with multiplicative heteroskedasticity estimated via full information maximum likelihood. The approach estimates both the mean and variance of a dependent variable conditional on independent variables. Such techniques are useful for uncovering circumstances where the variance of a dependent variable depends on exogenous factors. For examples, stock market indexes may fluctuate more depending on political and economic conditions (Leblang and Mukherjee 2005) and citizens' attitudes on contentious issues may vary with how well they are informed (Alvarez and Brehm 2002).

The model regresses the log of the number of awards on the independent variables and interactions outlined above in order to assess whether the effect of political variables is conditional on the level of insulation from individual political control, shown as equation 1.

$$\ln(\text{awards}_{ijt} + 1) = \alpha + \mathbf{B}_1\mathbf{X}_{it} + \mathbf{B}_2\mathbf{Z}_j + \mathbf{B}_3(\mathbf{X}_{it} * \mathbf{Z}_j) + \mathbf{B}_4\mathbf{W}_{jt} + \varepsilon_{ijt} \quad (1)$$

where subscript i indexes congressional districts, subscript j indexes agencies, subscript t indexes congresses, and subscript k indexes decades. X represents a matrix of political characteristics measuring conditions where the district's representative has more ability or motivation to steer distributive program awards to her district, such as her seniority, committee assignment, or political vulnerability. Z is a measure of agency insulation. W is a vector of controls composed of district characteristics. The coefficients α and in B_1 , B_2 , and B_4 represent respectively the constant and direct effects of political characteristics, agency insulation, and controls on distributive program awards. B_3 are the coefficients representing whether the effects of political characteristics vary with agency insulation. ε_{ijt} is the error term which takes the form of equation 2.

$$\text{Var}(\varepsilon_{ijt}) = e^{\delta + \gamma * Z_j + \rho * G_t} \quad (2)$$

with notations the same as equation 1. Z is once again a measure of agency insulation and G is the gridlock interval measure of the Congress to control for the fact that, in addition to administrative procedures, divided government might influence the range of choices an agency faces. The coefficients δ , γ , and ρ represent respectively the constant and the coefficients for agency insulation and the gridlock interval. This specification allows us to assess whether the variance in agency policies is greater when the agency is more insulated and when the distance between the veto players is greater, with positive coefficients indicating greater variance among agencies structured for more autonomy. Equations 1 and 2 were estimated in Stata using the `regh` command.

After performing the Wooldridge test for autocorrelation in panel data, we can strongly reject the null hypothesis of no first-order autocorrelation. This means that it is important to take seriously the problem of serial autocorrelation, which is not surprising given the nature of these

data. The results reported here, therefore, offer a model with and without a lagged dependent variable.

Since the control variables may not account for all observable differences among congressional district-agency pairings, we estimate models using fixed and random district-agency-decade effects to account for unmeasured characteristics of the agency-district pair within a redistricting period that might otherwise lead to omitted variable bias. The panel variable must be the district-decade-agency pairing.⁴ This captures such factors as interest group strength or the presence of major research universities that might influence distributive program grants. It also accounts for unobservable factors in the relationship between an agency and a district.

Additional specifications use fixed and random effects estimators with AR(1) disturbances. This means, of course, that in the first stage of the estimation, we cannot estimate a coefficient for politicization because it does not vary within the district-decade-agency groupings and is captured via the fixed effects. We can, however, estimate the interaction term coefficients to see if the effects of political circumstances vary with administrative procedures, which is our primary interest. We also conduct random effects analyses, which can include both the interaction terms and their components. A disadvantage of both fixed and random effects approaches is that software procedures have not been developed for jointly estimating equations 1 and 2 with fixed and random effects. For these models, we adopt the less efficient but asymptotically equivalent approach of first estimating equation 1 and then using its squared residuals to estimate equation 3.

$$\varepsilon_{ijt}^2 = \delta + \gamma * Z_j + \rho * G_t + \mu_{ijt} \quad (3)$$

Since the Wooldridge (2002) test for serial autocorrelation suggests that there is serial autocorrelation, Table 4 presents results from fixed and random effects GLS models with AR(1) disturbances. We note the important findings and where the results differ substantially from the estimates from the multiplicative heteroskedasticity estimation.

Results

For the main analyses and alternative specifications, we first examine the interaction terms, which estimate whether more insulated agencies are less responsive to political influence, and then examine the effect of insulation on the variance. Table 3 presents results of the main analyses using panel regression models with multiplicative heteroskedasticity. The dependent

⁴ We include decade in the grouping in order to account for the fact that redistricting occurs each decade. As a result, district may not be comparable from decade to decade.

variable is the log of the number of awards plus 1 to a district. Column 1 does not include a lagged dependent variables, while Column 2 does.

We begin by examining the interaction terms, which evaluate whether insulation influences the level of correlation between legislators' political circumstances and the distributive spending in their district. These interaction terms assess whether political variables have a different effect on distributive spending for agencies with different levels of insulation. If administrative procedures act to structure the amount of influence individual politicians can have over an agencies' implementation of distributive policy, we would expect the interaction terms to be statistically distinguishable from zero and negative. Across the results in Table 3, the coefficients on the interaction terms generally do not reach conventional levels of significance. Two of the 12 interaction coefficients in column 1 (without the lagged dependent variable) have p values greater than 0.05. Likewise, two of the 12 interaction coefficients in column 2 (with the lagged dependent variable) have p values greater than 0.05. Moreover, when these coefficients do reach conventional levels of significance, they are as likely to be positive as negative, thus providing contradictory support for the hypothesis that administrative procedures condition politicians' influence over agencies. The only result that is consistent across the two specifications provides some evidence that districts from states with larger delegations receive fewer awards from insulated agencies, as the coefficient is negative and significant across both of the specifications. Taken together, these results suggest that the ex ante insulation procedures do not result in the agencies being more responsive to individual political control in the number of awards that they give out. In other words, agencies under procedures that theoretically give them insulation from political control respond identically to the attributes of the individual members of Congress as do agencies subject to political control.

The second possible way that administrative procedures can affect policy implementation is by constraining the range of policy options available to the agency. If this is the case, we would expect more insulated agencies to be able to choose from a wider range of policy options. In these models, increased insulation would thus be associated with greater variance. The results in Table 3 suggest that insulating agencies does increase the range of options from which they can choose in administering policy. In each specification, insulation is positively associated with the variance in distributive spending awards. These specifications also control for the size of the gridlock interval, but results are mixed.

The main effects of the political variables in Table 3 generally confirm the relationships from previous research. In both specifications, districts that are safer for the president receive fewer awards, but the specifications differ as to whether safer congressional seats receive more awards. These findings indicate that awards may be targeted to competitive locations for the president. And in both specifications, members of the majority party and freshmen receive more awards, while members of the leadership receive fewer awards. Districts from states with larger delegations actually receive fewer awards, consistent with splitting the awards between the districts. Results for the rest of the political variables are mixed across the specifications.

The district demographic controls generally conform to expectations. Districts with higher unemployment, lower per capita income, more education, more minorities, more rural populations, and more white collar jobs receive more awards. Districts with more children and more retirees receive fewer awards.

Table 3: Insulation as a Predictor of the Number of Awards and the Variance in Awards

	Mean	Variance	Mean Lagged Dependent Variable	Variance Lagged Dependent Variable
Insulation Factor	0.0834*** (0.0130)	0.503*** (0.0124)	-0.00362 (0.00361)	0.0827*** (0.0132)
Winning Candidate's Vote Share	-0.0376*** (0.0116)		0.00741** (0.00345)	
Safety of District for the President	-0.119*** (0.0186)		-0.0530*** (0.00594)	
Member of the President's Party	0.00919*** (0.00263)		0.000889 (0.00104)	
Seniority	0.000354 (0.000511)		4.42e-05 (0.000143)	
Member of the Majority Party	0.0269*** (0.00301)		0.00738*** (0.00115)	
Democrat	0.0107*** (0.00305)		0.000738 (0.000914)	
Freshman	0.00961*** (0.00296)		0.00413*** (0.00150)	
Appropriations Committee Member	0.00917* (0.00550)		0.00119 (0.00131)	
Ways and Means Committee Member	-0.00860 (0.00590)		-0.00263* (0.00151)	
Committee Chair	0.0145* (0.00752)		0.00274 (0.00213)	
Ranking Member of a Committee	0.00692 (0.00745)		0.00131 (0.00227)	
Member of the Leadership	-0.0354* (0.0190)		-0.00862** (0.00438)	
Winning Candidate Vote Share X Insulation Factor	0.00400 (0.0169)		0.0128*** (0.00450)	
Safety of District for the President X Insulation Factor	-0.0474* (0.0247)		0.00762 (0.00772)	
Member of the President's Party X Insulation Factor	0.00437 (0.00376)		-0.00120 (0.00141)	
Seniority X	0.000354		0.000306	

	Mean	Variance	Mean Lagged Dependent Variable	Variance Lagged Dependent Variable
Insulation Factor	(0.000740)		(0.000200)	
Member of the Majority Party X	0.00516		0.00181	
Insulation Factor	(0.00428)		(0.00153)	
House Delegation Size X	-0.000585***		-0.000108**	
Insulation Factor	(0.000196)		(4.34e-05)	
Freshman X	0.00889**		0.00210	
Insulation Factor	(0.00422)		(0.00192)	
Appropriations X	0.00482		-0.000666	
Insulation Factor	(0.00804)		(0.00178)	
Ways and Means X	-0.0128		-0.00401*	
Insulation Factor	(0.00834)		(0.00216)	
Committee Chair X	-0.000604		-0.00487*	
Insulation Factor	(0.0111)		(0.00292)	
Ranking X	0.00489		-0.00195	
Insulation Factor	(0.0108)		(0.00320)	
Leader X	-0.000495		-0.00451	
Insulation Factor	(0.0279)		(0.00565)	
House Delegation Size	-0.00227***		-0.000480***	
	(0.000159)		(3.75e-05)	
Unemployment Rate	0.00264***		0.00319***	
	(0.000709)		(0.000290)	
Per Capita Income	-1.17e-05***		-3.46e-06***	
	(5.06e-07)		(1.33e-07)	
% with No Diploma	-0.327***		-0.101***	
	(0.0298)		(0.00802)	
% Younger than 18	-0.512***		-0.0858***	
	(0.0773)		(0.0206)	
% Older than 66	-0.306***		-0.0168	
	(0.0620)		(0.0173)	
% Hispanic	0.192***		0.0319***	
	(0.0161)		(0.00466)	
% Black	0.0564***		0.00646**	
	(0.0119)		(0.00329)	
% Urban	-0.208***		-0.0511***	
	(0.00967)		(0.00257)	
% Blue Collar Occupations	-0.526***		-0.0727***	
	(0.0363)		(0.00953)	
Distance Between Veto Pivots		-0.493***		0.266**
		(0.123)		(0.128)
Lagged Log of # of Awards			0.376***	

	Mean	Variance	Mean Lagged Dependent Variable	Variance Lagged Dependent Variable
Constant	0.886*** (0.0358)	-1.519*** (0.0606)	0.154*** (0.00930)	-3.321*** (0.0597)

Dependent Variable: Logged Number of Awards + 1
Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 4 presents alternative specifications with random effects in column 1 and fixed effects in column 2 to account for unobserved heterogeneity. As before insulated agencies generally give out more awards. In both models, five of the 12 interaction terms have p values greater than 0.05, but four of the five are positive. These positive coefficients suggest that, rather than being less responsive to individual politicians, insulated agencies are more responsive to political variables, with insulated agencies being more responsive to the safety of the seat for the president, to seniority, to members of the majority party, and to freshmen. The interaction terms confirm the results from the multiplicative heteroskedasticity models in that districts from states with larger delegations receive fewer awards from insulated agencies. Like the results in Table 1, the interaction terms do not offer evidence that more insulated agencies are less responsive to political factors, as the models of delegation predict.

In this first stage estimation, coefficients on the main effects suggest that safer districts get fewer awards. They contradict the multiplicative heteroskedasticity results with respect to the safety of the president, which has a positive coefficient in Table 4, and suggest that Democrats may get fewer awards. But otherwise, the results are fairly similar.

Table 4: Random Effects and Fixed Effects with AR(1) Errors Robustness Checks

	Mean Random Effects	Mean Fixed Effects
Insulation Factor	0.0388*** (0.00481)	
Winning Candidate's Vote Share	-0.00823** (0.00384)	-0.0183*** (0.00425)
Safety of District for the President	0.0448*** (0.00730)	-0.0172** (0.00748)
Member of the President's Party	0.00208* (0.00107)	0.00762*** (0.00129)
Seniority	0.000204 (0.000198)	0.000243 (0.000227)
Member of the Majority Party	0.0145*** (0.00116)	0.0202*** (0.00170)
Democrat	-0.00826*** (0.00161)	-0.0158*** (0.00211)
Freshman	0.00300** (0.00118)	0.00905*** (0.00147)
Appropriations Committee Member	0.000838 (0.00217)	0.000787 (0.00264)
Ways and Means Committee Member	-0.00292 (0.00260)	-0.00113 (0.00315)
Committee Chair	0.00559** (0.00253)	0.00693** (0.00318)
Ranking Member of a Committee	0.00453* (0.00255)	0.0114*** (0.00325)
Member of the Leadership	-0.0219*** (0.00798)	-0.0251*** (0.00942)
Winning Candidate's Vote Share X Insulation Factor	-0.00270 (0.00475)	-0.000629 (0.00538)
Safety of District for the President X Insulation Factor	0.0776*** (0.00857)	0.104*** (0.00991)
Member of the President's Party X Insulation Factor	-0.000112 (0.00132)	-0.000967 (0.00159)
Seniority X Insulation Factor	0.000848*** (0.000243)	0.000904*** (0.000295)
Member of the Majority Party X Insulation Factor	0.00525*** (0.00144)	0.00588*** (0.00227)
House Delegation Size X Insulation Factor	-0.000379*** (0.000141)	-0.000798*** (0.000269)
Freshman X Insulation Factor	0.0106*** (0.00146)	0.0132*** (0.00188)
Appropriations X	0.00206	0.00113

	Mean Random Effects	Mean Fixed Effects
Insulation Factor	(0.00270)	(0.00334)
Ways and Means X	-0.00196	-0.00143
Insulation Factor	(0.00322)	(0.00384)
Committee Chair X	-0.00246	-0.00254
Insulation Factor	(0.00315)	(0.00430)
Ranking X	-0.00117	-0.000109
Insulation Factor	(0.00318)	(0.00434)
Leader X	-0.00521	-0.00706
Insulation Factor	(0.00993)	(0.0117)
House Delegation Size	-0.00240*** (0.000134)	
Unemployment Rate	0.00774*** (0.000317)	
Per Capita Income	-1.19e-05*** (5.82e-07)	
% with No Diploma	-0.335*** (0.0336)	
% Younger than 18	-0.621*** (0.0787)	
% Older than 66	-0.353*** (0.0670)	
% Hispanic	0.180*** (0.0193)	
% Black	0.0328** (0.0134)	
% Urban	-0.205*** (0.0101)	
% Blue Collar Occupations	-0.498*** (0.0400)	
Constant	0.869*** (0.0350)	0.152*** (0.00358)
Observations	287,095	287,095
R-squared	0.0272	0.003
Number of district-agency-decade groups	59,092	59,092

Dependent Variable: Logged Number of Awards + 1
Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

As before, there is strong agreement that insulation is positively associated with variability in awards, the second prediction from the models of delegation. Table 5 models the variance separately by using the squared residuals from the random effects and fixed effects regressions as the dependent variable in the variance section of the table. It shows that more insulated agencies exhibit more variability, even after all of the political and demographic factors

from Table 4 have been accounted for. There is also more variability when the players who must approve legislation are closer together.

Table 5: Insulation as a Predictors of the Remaining Variance

	Variance Random Effects	Variance Fixed Effects
Insulation Factor	0.0670*** (0.00317)	0.0680*** (0.00366)
Distance between Veto Pivots	-0.207*** (0.0146)	-0.198*** (0.0146)
Constant	0.278*** (0.00793)	0.278*** (0.00803)
Observations	287,095	287,095
R-squared	0.00669	0.00633
Number of district-agency-decade groups	59,092	59,092

Dependent Variable: Squared Residual from Specifications in Table 4

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Alternate Specifications

In order to assess the robustness of these findings, we conducted two different sets of analyses. First, we repeated these same analyses using different measures of insulation. The different specifications are 1) insulation without the inclusion of appointments from Lewis (2003), 2) the average percentage of political appointees in the agency alone from Lewis (2008), and 3) these two measures together in one specification. Variance results are robust to each of the different measures. More insulated agencies exhibit more variance and agencies with more political appointees exhibit less variance.

Second, we repeated these same analyses using expenditures as the dependent variable rather than the number of awards. Again, the results, particularly the variance results, are substantially the same. Thus, it appears that insulation results in more policy variability available to the agencies, both in terms of the number of awards that they give to each district, but also in terms of the amount of those awards. These robustness checks give confidence that the results are not a function of the measure of insulation that we use or something peculiar about the number of awards as the dependent variable.

Discussion

This analysis provides robust evidence that administrative procedures can affect the variability in policy implementation among US federal agencies. While theories of agency delegation would predict that administrative procedures can affect both how responsive agencies are to political demands and how much variability there is in policy implementation, the empirical evidence suggests only that the administrative procedures affect variability. Autonomous agencies can choose from a larger range of policies, allowing them to shape policy implementation. Across multiple specifications, however, there is no consistent evidence that insulated agencies are less responsive to the demands of Congress or the president.

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